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Environmental crime in Australia

Samantha Bricknell

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Foreword

Environmental crime encompasses a wide range of activities and behaviours that produce environmental harm. These activities range from careless behaviour to those of a more deliberate nature. The first true environmental laws were not enacted in Australia until the 1970s and in the 40 years since then, a plethora of statutes have been introduced to proscribe behaviours deemed harmful to the environment. These laws restrict polluting and waste disposal practices, ban the trade in, and exploitation of, protected faunal (animal) and floral (plant) species, regulate recreational and commercial fishing, prohibit unauthorised clearance of native vegetation, promote sustainable forestry and circumvent illegal logging and reverse past practices of water overuse. During the past 40 years and particularly in the last 10 to 15 years, there has been growing concern about the environment, greater acceptance of the need for its protection and for the punishment of those found in breach of environmental laws. A number of current environment issues, such as the impact of climate change, the ongoing drought in southeast Australia and the desperate state of the Murray-Darling Basin (and other water resources), has arguably intensified this disquiet.

Nonetheless, environmental crime is an area of criminal activity that has existed just below the research radar in Australia. There have been occasional waves of research attention, mostly examining existing and best-practice models of regulation and sanctioning, but little attempt has been made to describe the actual prevalence of environmental crime in Australia. Also missing are inquiries into to the scale, mechanics and mindsets of offending, the sorts of harmful behaviours normally perpetrated and the impact (if any) of current methods of enforcement and punishment in preventing or halting practices that produce environmental degradation.

In recent years, the work of a number of Australian scholars has contributed to filling in these research gaps. This report adds to this small but growing collection by providing a comprehensive overview of environmental crime as it is perpetrated, detected and dealt with in Australia. Employing a stocktake of existing literature, the report summarises for the first time what is known about the current status of different typologies of environmental crime and the international, national and state/territory controls in place to deter harmful practices. The report also highlights the difficulties in monitoring and detecting environmental crimes and describes to what extent penalties are meted out (and to what effect). The variability in information gathered means that the report cannot estimate which of the environmental crimes are most commonly committed, nor the accumulated harms these crimes produce. It does, however, present commentary on, and can be used to identify, different motivations and the offender groups associated with different categories of environmental crime, the inherent risks for continuing or escalating behaviour and how this might intersect with current laws and regulatory approaches. Environmental crimes are often difficult to recognise or detect, and it is apparent that as a result this area has experienced a belated approach to developing appropriate sanctions. While the report acknowledges calls for a move away from traditional penalties to that of alternative sanctions (eg restoration and rehabilitation orders) and the incorporation of the tenets of restorative justice, it also recognises that a reinvigorated approach to prevention might provide the real key to reducing environmental crime. The prevention of environmental crime clearly warrants further research attention.

Adam Tomison
Director

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Acronyms

ACBPS	Australian Customs and Border Protection Service
ADF	Australian Defence Force
AELERT	Australasian Environmental Law and Enforcement Network
AFCS	Australian Forest Certification Scheme
AFMA	Australian Fisheries Management Authority
AFP	Australian Federal Police
AFZ	Australian Fishing Zone
AIC	Australian Institute of Criminology
ASEAN	Association of Southeast Asian Nations
AS/NZ ISO	Australia/New Zealand International Organization for Standardization
AUS-NPOA-IUU	Australian National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
CBD	Convention on Biological Diversity
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CDM	Clean Development Mechanism
CAWT	Coalition Against Wildlife Trafficking
CFCs	chloroflurocarbons
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DAFF	Department of Agriculture, Fisheries and Forestry
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DEPHA	Department of Environment, Parks, Heritage and the Arts
DPIPWE	Department of Primary Industries, Parks, Water and Environment
DPP	Director of Public Prosecutions
EPA	Environmental Protection Agency/Authority
EPPs	environmental protection policies
EU	European Union
EEZ	Exclusive Economic Zones
e-waste	electronic waste

FAO	Food and Agriculture Organization
FLEGT	Forest Law Enforcement, Governance and Trade
FOC	flags of convenience
FSC	Forest Stewardship Council
GNSS	Global Navigation Satellite System
HCFCs	hydrochlorofluorocarbons
IPOA-IUU	International Plan of Action—Illegal, Unreported and Unregulated Fishing
ISO	International Organization for Standardization
ITTO	International Tropical Timber Organization
IUU	illegal, unregulated and unreported
JIRs	Judicial Information Research System
MEAs	Multilateral Environment Agreements
MOU	memorandum of understanding
MOU Box	Operations of Indonesian Traditional Fisherman in Areas of the Australian Fishing Zone and Continental Shelf
MSC	Marine Stewardship Council
NEPMs	National Environment Protection Measures
NGOs	non-government organisations
NWI	National Water Initiative
OCS	Offshore Constitutional Settlements
ODSs	Ozone depleting substances
PVC	polyvinyl chloride
PVPs	property vegetation (management) plans
SEPPs	state environment protection policies
SFRs	Statutory Fishing Rights
SGGs	synthetic greenhouse gases
SLATs	Statewide Landcare and Trees Study
STR Arrangement	South Tasman Rise Arrangement
TEC	transnational environmental crime
TFT	tit-for-tat enforcement strategy
TST	Torres Strait Treaty
UNCLOS	1982 United Nations Convention on the Law of the Sea
VMS	vessel monitoring systems
VPAs	Voluntary Partnership Agreements
WWF	World Wide Fund for Nature

Executive summary

Environmental crime is the perpetration of harms against the environment that violate current law. The term *environmental harm* is often interchanged with *environmental crime* and, for some, any activity that has a deleterious effect on the environment is considered an environmental crime. At the other end of the spectrum, the harm may be conceived of as a crime *per se* only if it is subject to criminal prosecution and criminal sanction.

The activities that are recognised in Australia as environmental crimes include:

- pollution or other contamination of air, land and water;
- illegal discharge and dumping of, or trade in, hazardous and other regulated waste;
- illegal trade in ozone-depleting substances;
- illegal, unregulated and unreported (IUU) fishing;
- illegal trade in (protected) flora and fauna and harms to biodiversity;
- illegal logging and timber trade;
- illegal native vegetation clearance; and
- water theft.

Compared with other crimes, environmental crime has taken longer to be accepted as a genuine category of crime. Changing perceptions about the vulnerability of the environment, particularly with respect to long-term outcomes of environmentally harmful practices, has altered this view to the extent that most behaviour with a potential environmental consequence is now tightly regulated.

Environmental crime has received some research attention in Australia but little in the way of a comprehensive account. This report aims to address this by assembling the available literature to examine the nature and extent of environmental crime in Australia and the laws and other processes in place to prevent, deter and sanction environmental offences.

Controls against environmental crime

Protecting Australia's environment is an especially complex process. Laws regarding the protection of Australia's environment are contained within a plethora of Commonwealth and state/territory statutes and associated regulations which prescribe rules pertaining to conservation and protection, environmental management and sustainable development. The content of these statutes reflect international expectations (as set down in multilateral environment agreements) and sovereign interests and standards. Supporting these statutes are numerous management plans that establish procedure for matters requiring specialised attention. The range of offences prescribed in environment protection statutes is vast and not always directly comparable between jurisdictions. Of greater variability is the magnitude of penalties assigned for similar offences.

Responsibility for environmental protection is similarly involved, with slightly different models of regulation being applied across the jurisdictions. Multiple agencies are involved in the protection and management of different aspects of the environment (eg wildlife, water) or regulation of environmentally harmful practices (eg pollution, waste disposal). These agencies sit at the Commonwealth, state/territory and local council level and often work independently of one another, although cross-jurisdictional contact does occur when dealing with issues requiring a multi-agency response.

Any activity that may produce an environmental harm usually requires some form of authorisation, most commonly in the form of a licence or permit with strict conditions attached. The detection of environmental offences is largely reliant on the

identification of acts of non-compliance, discovered via routine monitoring/auditing or targeted operations. Compliance monitoring primarily serves to ensure certain practices are adhering to legislated provisions and to detect breaches of licence, but plays a support role as deterrent from 'threat' of exposure.

'Chance observation' serves as an alternate means of uncovering environmental offences and is valued by environment agencies. Many agencies have established hotlines or online complaint services whereby suspicious behaviour or apparent evidence of environmental harm can be reported and from which investigations can be launched. For some environmental offences, such as illegal native vegetation clearance, the 'nosy neighbour' has proved to be a particularly reliant informant (Bartel 2003).

In more recent times, agencies have been making the transition to a model increasingly focused on environmental outcomes and the prevention of environmental wrongdoing (eg see Vic EPA 2004a). While maintaining the core elements of direct regulation, there is increased use of supplementary methods of prevention. These include the development of specialised management plans, an emphasis on education, the use of economic tools and creation of partnerships with sister agencies, community groups, industry and non-government organisations (NGOs; Woodward 2008). While now the preferred approach for environmental protection, these new or additional roles have added to factors such as diminishing resources and priority juggling in how agencies feel they are adequately responding to the containment of environmental offences. To circumvent some of these pressures, regulators have expressed a need for capacity building, improved tools in which to monitor and measure acts of environmental harm and an extension on information- and intelligence-sharing arrangements.

Sanctioning offenders

Incidents of environmental harm have been treated somewhat leniently in Australia. Most illegal acts are dealt with using lesser sanctioning options, such as infringement notices. When matters are prosecuted, fines predominate—often at a fraction of the maximum penalty prescribed. This trend towards the application of lesser sanctions suggests that the majority of offences detected are 'minor' but it also ignores past evidence that the punishing of environmental offences in Australia has been largely unsystematic.

Criminal prosecution of environmental offences is not uncommon, although some jurisdictions or agencies are likelier to pursue this option than others. In two Australian states, specialists' courts have been established to hear environmental matters—the NSW Land and Environment Court (which sits at the Supreme Court level) and SA's Environment, Resources and Development Court. In other jurisdictions, matters are heard almost exclusively in Magistrates' courts.

The trying of cases in Magistrates' courts has been proposed as contributing to the generally low penalties handed down for environmental offences. It is suggested that this is due to a combination of factors including intermittent exposure to such cases, a lack of judicial training in dealing with environmental matters and (it has been argued) a 'lack of understanding' about this type of offending and the consequences of the harm produced (Hain & Cocklin 2001; Hartley 2004; Martin 2003; Pain 1993). The result has been inconsistent sentencing (Preston 2009). Environment agencies have also noted that difficulties in preparing and presenting cases for prosecution have probably affected both conviction rates and sentencing outcomes. The majority of environmental offences are now strict liability, which has eliminated a previous hurdle in eliciting successful prosecutions, but prosecuting agencies have faced challenges in quantifying and describing the concept of environmental harm to the satisfaction of the court.

While criminal prosecution might be seen as the ultimate deterrent, there is some disagreement about whether it is the best method for dealing with environmental offenders or specific offences. More pertinently is whether fines—the most common penalty handed down for environmental crimes—are the most suitable or effective mechanism for punishment or deterrence? Fines are readily absorbed as a 'cost of business' and the tendency towards low penalties has produced endemic recidivism among particular groups of

offenders (Cole 2008; Martin 2003; Pain 1993). Nonetheless, some significant fines have been handed down in recent years, notably for pollution and native vegetation clearance offences.

There has been advocacy for the greater use of alternative sentencing options because of their capacity to both punish the offender and produce a 'more acceptable social order' (Cole 2008: 96). Alternative orders are seen as particularly useful as they can be tailor-made to suit the offence (Preston 2007) and, critically, are often seen by the offender to be the greater burden (Hain & Cocklin 2001). Some jurisdictions have embraced the use of alternative orders, specifically directions to publicise the offence, directions to restore or rehabilitate and environmental service orders/payments to offset an environmental wrong or contribute to the maintenance of a conservation/rehabilitation project. However, orders are not universally prescribed and not all courts have the option to use them.

The nature and extent of environmental crime in Australia

Gauging the true extent of environmental crime is no easy task. The incomplete nature of published data and analyses cannot be used to accurately describe trends in the prevalence of environmental crimes and recent increased enforcement and a move towards stricter punishment of environmental offenders blurs the picture further. What the data does suggest is that there is no real abatement in the commission of environmental offences, the cast of offenders is predictably diverse and offences run the spectrum of genuine ignorance of laws to deliberate environmental degradation.

Pollution and illegal disposal of waste

Pollution and the illegal disposal of waste was the first of the environmentally damaging practices to generate public concern and receive formal regulatory attention. Laws were first enacted in Australia in the early 1970s and combined with a broad range of additional statutory tools, such as National Environment Protection Measures and Environmental Protection Polices, to control the emission of pollutants and the dumping of hazardous and other controlled wastes.

The extent of illegal pollution and waste disposal in Australia, however, has received no formal analysis recently, other than that published in regulatory reports. If a prevailing polluting activity can be identified, it would be the illegal discharge and dumping of wastes, such as sewage, wastewaters emitted from mining and animal production sites, and demolition and construction debris (NSW DECC 2009a, 2008, 2007a; NSW DEC 2006a, 2005a, 2004; Qld EPA 2009, 2008, 2007, 2006, 2005, 2004a, 2003, 2002; SA EPA 2009a, 2008a, 2008b, 2007, 2006, 2005, 2004, 2003, 2002, 2001; Vic EPA 2009, 2008a, 2007, 2005, 2004b, 2003; WA DEC 2009, 2008a, 2007). Fuel spillages are another common problem. Added to this is the burgeoning load of 'new' wastes, typified by electronic waste (or e-waste). While the deposit of e-waste in prescribed landfill sites is not an offence in itself, there is no standard method as yet for the safe disposal of such items and the toxic components from which they are comprised.

Carelessness accounts for some of the polluting offences detected but incidents of waste discharge and disposal appear to be of a more deliberate nature. Much of that detected is perpetrated by small business, most likely as a means of 'cutting corners' and hence saving money. There are strict rules in Australia on how waste is transported and where and under what conditions it can be unloaded. Fees are also commonplace. By side-stepping these rules, operators can avoid additional expenses and improve profit-margins.

Waste disposal management has been infiltrated overseas by organised criminals and the business of dumping waste in Australia is not immune to similar penetration. The available evidence for an association with organised crime is presently anecdotal and specifics are lacking. However, the structure of the system, the ease in which waste can be transferred and the apparent formation of alliances between operators already working on the fringes of legal activity, makes it one of the likelier candidates for organised criminal activity (AIC Roundtable participants, personal communications 2009).

The effect of deliberate or haphazard polluting on the environment is recognised in Australia's environment protection laws by the magnitude of the harm produced. Some polluting acts produce immediate and disastrous harms, while others (the majority) represent much smaller harms, albeit harms in which the cumulative effect can be equally damaging. The environmental consequence of illegal pollution and waste disposal is reflected in the move towards the application of alternative sentence orders. These orders represent a financial penalty for the offender but, at the same, provide a means by which the damage produced by the original offence can be offset by the establishment of an environmental 'good' elsewhere.

Illegal trade in fauna and flora and harms to biodiversity

The illegal trade in fauna (wildlife) and flora (plants) involves the illegal export of native species, the import of exotic species and the breeding and trading of both natives and exotics within Australia. The size of this trade is generally considered to be 'small' when compared with overseas operations but it is likely to be on the increase (Alacs & Georges 2008) and probably involving more sophisticated operatives. Much of the detected trade involves wildlife—birds (and birds eggs), reptiles, turtles, spiders and insects—and species are targeted based on popularity and the profit they can generate.

Smuggling involves both Australian and foreign nationals, acting alone or associated with small, semi-organised groups. Human couriers and the postal system are the main methods by which fauna and flora are smuggled into and out of Australia, with the Internet playing an increasingly important role in facilitating the trade (International Fund for Animal Welfare 2008). An additional method is to smuggle wildlife (or plants) by defrauding the licensing system used to control trade in threatened species (Halstead 1992) but the extent of this practice has not been publicly documented. Between 2002–03 and 2006–07, over 26,500 wildlife and wildlife products were seized by Australian authorities. Most of these seizures were described as 'minor' as they did not lead to formal investigation or prosecution (Alacs & Georges 2008). For major cases (ie those that were prosecuted), almost half were for the illegal export of native species (mostly reptiles, birds and birds eggs) and a third for the illegal import of exotic species.

The dynamics of the illegal trade within and across Australian states and territories is less understood but almost certainly targets the same kinds of wildlife. Anecdotal evidence has suggested the involvement of outlaw motorcycle gangs in the illegal trade of snakes and other reptiles, spiders and scorpions (Blindell 2006; Peddie 2007). It is believed that the extensive bird breeding industry in Australia involves some co-mixing of captured wild birds and captive-bred birds, alongside inter-country smuggling activity. Legislative ambiguities, coupled with an over-complex regulatory system, have been cited as possible facilitators of the illegal activity (Halstead 1992).

Much of the discussion on environmental crime involving Australian fauna and flora neglects those harms perpetrated outside the trade cycle. These harms generally arise from otherwise deliberate behaviours to remove or destroy fauna or flora or damage critical habitat, which then impacts on species viability and diversity. The latter often occurs in the pursuit of development or other habitat affecting activities. Data is scarce but where available indicate that most offences that are prosecuted refer to the harming of protected faunal species or a breach of licence conditions regarding the taking or treatment of native fauna or flora.

Illegal, unregulated and unreported fishing

IUU fishing includes fishing ventures that contravene national fishing laws and regional and international obligations around fisheries conservation and management. For Australia, IUU fishing involves national and foreign fishers alike. Each step from the catching of fish to its end sale is compromised and the extensive range of offences can include (albeit are not restricted to):

- taking protected species;
- taking undersized fish;
- taking fish in excess of authorised quota;
- fishing in closed or restricted waters;
- using unauthorised equipment;
- failure to report catch;

- comingling legal with illegal catch;
- swapping catch between recreational and commercial catch;
- docketing fraud (ie misrepresent the size and/or species composition of the catch);
- possess, purchase, process or sell illegally taken fish; and
- cash sales of recreationally caught fish to clubs, restaurants etc.

Domestic

On the domestic front, illegal fishing is described as mostly 'small scale' and 'akin to low-level non-compliance with fishing regulations' (Putt & Anderson 2007: 21). Both recreational and commercial fishing are tainted but it is in the commercial fishing industry where the more insidious behaviour takes place (Anderson & McCusker 2005; Palmer 2004). Overall rates of compliance by both recreational and commercial fishers are reported to be high and much of the illegal activity can be categorised as opportunistic exploitation. However, well-established illegal fishing ventures do exist. Fisheries officers interviewed for a study on crime in the Australian fishing industry stated that around one-fifth of commercial fishing operations in their locale were activity engaged in illegal fishing activity (Putt & Anderson 2007).

It has been estimated that anywhere between 20 to 60 percent of fish caught in Australia have been taken illegally (Palmer 2004; Vic ENRC 2002). High-value species, such as abalone and rock lobster, are particularly vulnerable. Most of the poached fish are destined for overseas (primarily Asian) markets but there is also a flourishing domestic trade with restaurants. The latter market is thought to have been occupied by loosely organised groups of recreational fishers, often ethnically- or culturally-based family groups, who become involved in poaching to supplement the household income (Putt & Anderson 2007).

Commercial fishing has been identified as vulnerable to organised criminal involvement due to the competitive nature of the industry, the preponderance of the itinerant workforce and its profitability (Putt & Anderson). These factors, combined with the entrepreneurship of organised crime groups, have enabled the actual and suspected permeation of organised crime into the commercial fishing industry. This involvement centres on the exploitation of high-value, low-volume species such as abalone and shark, although anecdotal evidence suggests possible cohabitation with other illegal activities like illicit drug distribution.

Foreign

Illegal fishing by foreign nationals continues to be problematic despite concerted efforts to control it. The northern waters of the Australian Fishing Zone are regularly visited by Indonesian fishers to fish for trepang, shark (for shark fin), reef fish and other profitable marine species. The depletion of local waters from over-fishing, high international prices for target species and lowered economic prospects back home have all encouraged these ventures into Australian waters (Fox, Therik & Sen 2002; Sumaila, Alder & Keith 2004). In Australia's southern waters, illegal fishing ventures have targeted the ice mackerel fisheries around Heard and McDonald Islands but the ultimate intention has been to fish for the Patagonian toothfish. Unlike illegal fishing in Australia's northern waters, the nationality of the fishers and their holding companies is diverse and is often masked by working vessels flying so-called flags-of-convenience (FOC; Agnew & Barnes 2004; Gianni & Simpson 2005). In both regions, the result was that protected and highly-valued species were being taken at unsustainable rates.

The increase in illegal foreign fishing in northern waters was met with an escalation in enforcement activity involving multiple Australian Government agencies. This response was deemed a success since the number of foreign boats apprehended declined markedly, from a high of 368 in 2005–06 to just 27 in 2008–09 (AFMA 2009). Included in the measures to deter and punish foreign fishers has been the detention (and subsequent prosecution) of foreign fishers and the burning of their vessels. The apprehension of foreign fishers illegally fishing in the Southern Ocean has been far less numerous, in part because of fewer vessels operating in these waters, but also because of the challenges of patrolling this area. Nine arrests took place between 1997 and 2008, involving vessels with a combined catch value in excess of $1m (Griggs & Lugten 2007).

Illegal native vegetation clearance

Illegal native vegetation clearance is a comparatively 'new' phenomenon in that up until the late 1980s, the removal of native vegetation was a legally condoned practice. Laws on the clearing of native vegetation originated from concern about the effect that past practices, in particular broadscale clearing, had produced on the productivity and natural integrity of Australia's land. Most clearance, legal and illegal, had been done for agricultural purposes.

The shift to illegalising what was a long-standing permissible practice has proved to be a challenge in both gaining acceptance and achieving compliance (Bartel 2003; NSW OAG 2006; WA OAG 2007). Audits of native vegetation laws in New South Wales and Western Australia have revealed continuing illegal clearance. For example, of the 74,000 hectares of land cleared in New South Wales in 2005, 40 percent was found to have been cleared illegally (NSW OAG 2006). Some acts of illegal clearance were undertaken without any prior consent, while others involved landowners going beyond what the authorisation permitted. In some parts of Australia, such as west and northwest New South Wales, rates of illegal native vegetation clearance has been such that some of the activity was deemed to be a deliberate breach of the laws (NSW OAG 2006). This behaviour may be an inevitable consequence of the new regime, as it targets landowners who had not yet got around to clearing parts of their land.

The absence of precise methods to measure clearance activity has been found to conceal probable illegal clearance, as have unsystematic approaches in compliance monitoring and investigation of reported offences. To supplement information derived from compliance monitoring, regulators have relied on informants in the form of 'nosy neighbours and chance discovery' (Bartel 2003: 13), which have proved invaluable in uncovering cases of illegal clearance. Improvements in detection are being investigated in four states (New South Wales, Victoria, Queensland and South Australia) which have adopted or are looking to invest in satellite surveillance or aerial photography to map existing vegetation and monitor clearance patterns.

It remains to be seen what deterrent effect sophisticated technologies will have on rates of illegal clearance. More conventional approaches have not proved very successful. Up until recently, financial penalties for more serious incidents of illegal native vegetation clearance in New South Wales have been negligible (Bartel 2003, 2008a), although fines given in 2008 and 2009 have been more substantial. A pattern of increasing penalties should enforce the seriousness of the offence and encourage desistance from illegal activity. However, the prevention of illegal native vegetation clearance is also likely to benefit from other tactics, particularly education and consultation and the promotion of incentive schemes, where landowners are subsidised for the retention of important vegetative cover.

Illegal logging and timber trade

Illegal logging and the associated timber trade is synonymous with corruption. Illegal activity envelops the whole chain-of-custody. It extends from the cutting down of tree species from protected forest, illegally obtained concessions or outside mandated concession perimeters, to the processing of, and trade in, illegal logs, and their sale in consumer nations. Along with the generation of significant financial rewards, it also facilitates other environmental crimes, primarily the illegal trade in wildlife.

While not unknown, illegal logging is not endemic nor systematically performed in Australia (Schloenhardt 2008). Forestry, like fishing, is a tightly-regulated (and lucrative) enterprise in Australia and most illegal activity is likely to be small-scale or consist of minor acts of regulatory non-compliance. The concern for Australia is in its role as a consumer of illegal timber that has been harvested overseas and the current absence of a nationally-applied scheme to identify the importation of such timber.

Estimates of the proportion of illegal timber entering Australia are confined to the one study. Up to nine percent of all timber products imported into Australia in 2003–04 were considered of doubtful origin (Jaakko Pöyry Consulting 2004). Wooden furniture was particularly suspect, with an estimated 22 percent deemed of suspicious origin. While the type of timber being imported was not verified, other import data indicates that around a fifth of timber products imported into Australia are tropical woods (ITTO 2007), including the popular hardwood *merbau*, which is logged at unsustainable rates in countries such as Indonesia and Papua New Guinea.

Alongside tackling illegal logging at its source, consumer nations (such as the United States and the European Union (EU)) have responded by introducing measures to block or criminalise the importation of illegal timber and timber products. An amendment to the US' *Lacey Act 1900* now enables criminal or civil prosecution of any company knowingly or unknowingly importing illegal timber into the United States. The EU, among other instruments, are establishing licensing schemes with partner nations involved in timber harvesting to verify the legality (and sustainability of extraction) of imported timber.

Australia relies on forest certification schemes to assess forest management practices but has not introduced a formal means to identify illegal timber or curb its importation. A 2004 survey of timber importers, wholesalers, industries and hardware suppliers found no 'structured system' to assist identifying 'suspect' timber products (Jaakko Pöyry Consulting 2004) and this situation continues today. In January 2010, an Australian Government-commissioned regulation impact statement concluded that the costs of regulating timber imports would outweigh the benefits gained and recommended Australia adopt a non-regulatory response (The Centre for International Economics 2010). In the absence of a national approach, a small number of Australian companies have independently introduced verification schemes to authenticate timber imported into the country.

Water theft

Past practices in the distribution of water entitlements and allocations, coupled with the drought, have contributed to considerable water shortages in many of Australia's inland river systems. Consequently, water laws and accompanying water management plans have been revised to accommodate new restrictions on water access and use, and market-based schemes (such as water trading) have been introduced to better manage water distribution.

Water access and use has long been governed through a licensing scheme whereby an entitlement is granted to use water from a specified water source for a specified purpose. Allocations are established alongside entitlement arrangements, stipulating the volume of water that can be drawn from the entitled source. Exemptions are permitted—primarily for water used for domestic or stock purposes. Most Australian state and territories have remodelled this system in response to the worsening water situation, to the extent that allocations have been reduced, new licences are not being awarded for some regions or water systems and rights to water are no longer tied to land ownership (NSW DWE 2009a; Tas DPIW 2009a; WA Department of Water 2009a).

With added restrictions comes the temptation to rort the system and hence the purported increase in water 'theft'. Theft comes in multiple forms, including taking water for an unapproved purpose, from a source that one is not entitled to use, in excess of the amount allowed or tampering with equipment to measure usage. However, data on rates of theft are difficult to come by and much of the evidence is derived from media reports, anecdotal information and limited information published in regulators reports. All point to an increase in illegal behaviour, or at least greater recognition of how much theft had been going on. Where information is somewhat complete, it suggests that illegal behaviour is concentrated in certain regions, for specific sources of water (eg ground water) and by specific users (NSW DWE 2008a; SA DWLBC 2008a).

The impact of water theft affects the environment (healthy rivers, wetlands etc and the species dependent on them), agricultural productivity and livelihoods. Sanctions for breaches of water laws have tended to be low and offered no real deterrent effect. State and territory governments, notably New South Wales and South Australia, have acted on the increased incidence of water theft by reviewing penalty schemes and announcing considerable increases in pecuniary penalties for illegally taking water (NSW DWE 2009a; Rann 2009).

Redressing the research imbalance

The contrasting nature of the available information on environmental crime in Australia is conspicuous and challenges the ease in which a snapshot of the current situation can be assembled. Part of

this relates to the limited dissemination of data and the scarcity of research on the dynamics of environmental crime as it affects Australia. In reviewing the literature, a number of research gaps were identified which could form more substantive analyses to aid a better understanding of environmental crime. Possible research activities identified as contributing to this understanding could include:

- an examination of the concept of harm, how it is defined and applied across different statutes, and the creation of a standardised set of rules on how to measure harm;
- an audit of regulatory approaches to detail the procedures, pitfalls and triumphs of differing regulatory models, policies and alternative methods of environmental protection;
- a thorough description of the mechanics of environmental offending, embedded within a historical analysis of patterns of offending and identification of vulnerabilities;
- an analysis of sentencing trends for environmental offences and complementary exploration of alternate means of addressing environmental harm within the criminal justice setting and
- an application of the tenets of crime prevention to environmental offences, with reference to initiatives employed overseas and in Australia, to propose a tailoring of preventative responses for different kinds of environmental harm.

Introduction

Aims and scope

As a theme, environmental crime has for the most part been somewhat overlooked in Australia, receiving, at best, episodic attention in the published literature. This attention, however, is likely to magnify as environmental changes more immediate to the average Australian, such as the continuing drought, associated water restrictions (and water misuse and theft) and the uncertainty as to the likely effects of climate change, demand greater awareness and action.

In the absence of a recent comprehensive review of environmental crime in Australia, this report gathers together published literature from a broad range of sources to describe:

- what is known about the current status and trends in environmental crimes;
- the various international and national controls used to prevent and deter environmental crimes;
- detection and reporting methods; and
- the type of sanctions available to punish perpetrators of environmental offences and how they are actually applied.

Following a description of the methodology, this section defines environmental crime and the types of acts that are categorised as environmental crime. The section also provides a brief account of the incentives and drivers behind the commission of environmental offences and describes the dimensions of scale environmental crime can take.

The second section summarises the existing international and national controls for combating environmental crime, including international agreements (such as Multilateral Environment Agreements), Commonwealth and state/territory legislation, regulatory control and enforcement, and sanctioning approaches. Following this is a series of theme sections examining key areas of environmental crime, including:

- pollution and illegal waste disposal/trade;
- illegal trade in fauna (animals) and flora (plants) and harms to biodiversity;
- illegal, unregulated and unreported fishing;
- illegal native vegetation clearance;
- illegal logging and timber trade; and
- water theft.

While it is acknowledge in this report that the concept of environmental harm and its growing use in the field of environmental criminology encompasses much more than what is legally sanctioned against, this report is focused predominantly on those acts that violate current law.

The report also excludes an extended commentary on climate change and its effect on environmental and other crimes. A subsection later in this section summarises some of the literature published to date on the effect climate change may have on criminal behaviour.

Methods

Literature review

The majority of the report's content is drawn from a wide range of published literature, including:

- peer-reviewed papers published in criminology, ecology and conservation, and legal journals;
- Australian and state/territory government annual, discussion and research reports, and policy statements;
- papers and texts of international covenants from various international bodies;
- special reports from NGOs and independent think tanks;
- proceedings from conferences and summary documents; and
- media bulletins and releases.

Information made available (but not in published form) on government, NGO and international and intergovernmental body websites was also referred to and cited. Most of the information on cases of prosecution in Australia stem from that published in other accounts.

Commonwealth and state/territory legislation was sourced from the Australasian Legal Information Institute website (http://www.austlii.edu.au/) to compile an inventory of environmental offences and associated maximum penalties.

Environmental crime roundtable

To supplement the information derived from the literature review, the Australian Institute of Criminology (AIC) hosted a roundtable on environmental crime on 24 February 2009. Participants came from academia, law enforcement, the judiciary and relevant Commonwealth and state/territory agencies. The organisations and institutions represented at the roundtable are listed in Appendix Table 1. The discussion from this roundtable is incorporated into the text of the report.

Defining environmental crime

The recognition and acceptance of environmental crime as a genuine criminal offence (or rather array of offences) has perhaps been more problematic than other crime types. Traditionally, harmful practices against the environment were not viewed with the same moral repugnance as offences directed against the person or property. To some extent, this reflected the reality of the age in which they were being committed, by whom and why. With an increasing awareness and appreciation of the environment came a re-evaluation of what the environment can and cannot sustain and an acknowledgement of the need to regulate, and in some cases, criminalise these harmful practices.

Despite these advances, attitudes to environmental crime have arguably continued to suffer from a 'mindset' that has underestimated its consequences or, at best, instilled a sense of ambivalence towards it (Elliott 2007; Halsey & White 1998; South 1998; White 2008a). For example, environmental crime is often thought of as 'victimless' and, unlike a lot of other criminal offences, does not always produce an immediate consequence. Further, the assault on the environment often comprises a series of acts that may themselves, along with their impact, go undetected for a lengthy period of time. This 'out of sight, out of mind' mentality has meant environmental crimes may not be seen as important as other criminal offences and hence receives less attention from enforcement officers (Elliott 2007). Further, the leniency (both apparent and real) with which environmental offenders are treated trivialises the nature and gravity of the offence, particularly in the eyes of the would-be offender and, to some extent, the wider public (Korsell 2001).

Possibly influencing some of this misunderstanding about environmental crime is the lack of consistency in defining and classifying environmental crime. Some attention has been devoted by criminologists to both dissecting and formulating the concept of environmental crime and in some cases, establishing

a workable definition. The primary hurdle is differing perspectives as to what constitutes an environmental crime, embedded in moral, philosophical or legalistic interpretations of harm and when the enactment of harm actually becomes a crime (White 2008a). At one (and some would argue narrower) end of the spectrum is the inclusion of only those environmentally harmful acts that violate prescribed law. For example, Situ and Emmons (2000: 3) define environmental crime as:

> an unauthorised act or omission that violates the law and is therefore subject to criminal prosecution and criminal sanction. This offence harms or endangers people's physical safety or health as well as the environment itself. It serves the interest of either organizations—typically corporations—or individuals.

While such a definition omits certain practices or behaviours that the majority may deem environmentally irresponsible, negligent or destructive, Situ and Emmons (2000) argue that until the practice or behaviour actually breaks a law, it cannot be considered, and hence treated as, a crime. Certainly, choosing a legalistic approach in defining environmental crime enables a 'value free and objective' appraisal of environmental criminal activity (Bell & McGillivrary 2008: 278). It can also, however, constrain its practical application where uncertainty remains about what really constitutes an environmental crime. For example, Bell and McGillivrary (2008) alert environmental lawyers to issues relating to the setting of legal boundaries (eg which statutes should be considered), the selection of offences that should be tried and problems associated with jurisdictional variability and limitation.

Of equal relevance is the very real fact that a considerable proportion of environmental harm is 'legal and takes place with the consent of society' (Korsell 2001: 133). At the other end of the definitional (or conceptual) spectrum is the notion of environmental harm as viewed from a 'green' or 'ecological' perspective (see Halsey & White 1998; South 1998; Lynch & Stretesky 2003; White 2008a). This conceptualisation of environmental harm as environmental crime forms the basis of the relatively new discipline of *green criminology* which acknowledges the complex interconnectedness between the physical environment and its resident species.

Sitting somewhere between these viewpoints are definitions such as that proposed by Clifford and Edwards (1998: 26) whereby an environmental crime is conceived as:

> an act committed with the intent to harm or with a potential to cause harm to ecological and/or biological systems and for the purpose of securing business or personal advantage.

The deliberate neutrality of this definition, at least in the absence of a reference to the lawfulness or illegality of the act, is a response to what Clifford and Edwards (1998) criticise as the indiscriminate use of the term *environmental crime*, which users employ without clearly specifying what they mean by it. A lack of definitional consistency is a common casualty of new disciplines but can cloud and confuse what is actually being investigated. Different perceptions also lead (and have led) to the enactment of different rules regarding what is allowable and what is not and hence a lack of uniformity as to what constitutes a crime against the environment. Neutrality, then, can clear some of this confusion, particularly where differing perceptions are likely to linger.

The purpose of the 'act' alludes to the underlying assumption about what motivates environmental crime. Often described as a form of enterprise crime, environmental crimes are generally market driven rather than a form of 'social deviance' (Hayman & Brack 2002). For this reason, environmental crime has traditionally been located in the portfolio of corporate or white-collar crime (Halsey & White 1998). Clifford and Edward's (1998) definition implies a corporate role in the commission of environmental crime but, in reality, the cast of players can be and is quite broad (see below).

A primary incentive for committing environmental crimes is personal gain. These gains are obtained directly through benefits achieved from performing a specified act but also through the resources saved by ignoring standardised codes as to how certain practices should be performed. Personal gain may be distributed between distinct players and in some cases, follows a gradient of financial benefit dependent on role and circumstances. One notorious example is the involvement of the so-called *ecomafia* in relieving companies and municipalities of industrial and other waste. The companies benefit as they do not have to pay

increased costs in depositing waste at designated sites and the waste collectors benefit by exacting a fee for their services (Massari & Monzini 2004). When waste is transported across jurisdictional borders, a third group becomes involved, who take a deposit for having the waste dumped in their jurisdiction. Another example centres on the illegal wildlife trade, which typically involves a trail of participants starting with the poachers who trap the animals, through a network of intermediate dealers and concluding with the buyer. Each participant receives an incentive for contributing, with this incentive generally increasing in monetary value as the item is transferred up the trafficking pathway.

What are environmental crimes?

While a uniform definition presently remains elusive and the application of laws against environmentally harmful practices varies between (and within) nations, there is unanimity in the types of acts commonly recognised as environmental crimes. These are:

- pollution or other contamination of air, land and water;
- illegal discharge, dumping and transport of, or trade in, hazardous and other regulated waste;
- illegal trade in ozone-depleting substances;
- IUU fishing;
- illegal trade in (protected) flora and fauna and harms to biodiversity; and
- illegal logging and timber trade.

In addition, Australia recognises:

- illegal native vegetation clearance; and
- water theft.

Other activities identified as environmental crimes include the illegal trade and misuse of chemicals (eg pesticides), illegal trade in genetically modified organisms and material, and fuel smuggling (Hayman & Brack 2002). In some countries, such as Australia and the United Kingdom, 'lesser' offences such as littering are listed in environmental protection statutes. In addition are criminal behaviours not immediately recognisable as environmental crimes *per se* but which are sometimes included under its banner, such as the illegal trade and acquisition in cultural heritage (Davies 2002). For example, the Australian Federal Police (AFP) includes this cultural heritage trade in activities that constitute environmental crime under Commonwealth legislation. Finally, there is what could be termed 'associated' environmental crimes; the most relevant example at the moment being the possible and predicted fraud that could arise out of the carbon trade emissions scheme (Beck forthcoming).

Of note is the consistent use of the preface 'illegal' in the listed activities constituting environmental crime, a preface not regularly employed when describing other categories of crime. This reflects the fact that some component or level of these activities is still condoned and that it only becomes illegal once a set boundary has been passed. This tipping point of illegality contrasts environmental crimes with other established criminal offences. For example, the act of emitting (some) pollutants into the atmosphere is not itself illegal in Australia but becomes so when the amount or nature of pollutants emitted is outside prescribed guidelines and done without the relevant authority. Another example refers to the protection of threatened species—by and large, it is an offence to take a threatened animal, but in some instances it is not, as long as the purpose for taking a threatened species (eg for zoological research) has been notified to and approved by the relevant regulatory authority.

Complicity in environmental crime can be categorised as doing the harm itself and/or related to a breach of conditions associated with a mandatory licence or permit. Offences described in Australian legislation generally describe both, with an offence relating to the act itself (eg take, buy, sell or possess protected fish species) and a breach of conditions (eg contravening conditions of commercial fishing licence). Another, related categorisation follows Carrabine et al. (2004: 316) whereby environmental (or green) harms are described as primary or secondary crimes. Primary crimes are a result of concerted degradation of the environment, which Carrabine et al. (2004) list as including air and water pollution, deforestation and species decline, while secondary crimes derive from a flouting of regulatory rules.

Climate change and crime

Climate change now represents the greatest area of environmental concern to governments and the general public alike. Attention is being drawn not just to its immediate and obvious casualties (such as the predicted huge losses in biodiversity) but to associated consequences as well. Where Australia is concerned, the Garnault Report (Garnault 2008) listed direct impacts on resource-based industries such as irrigated agriculture and tourism; critical infrastructure (eg urban water supply); human health and Australia's unique ecology.

Another consideration is to what effect climate change will have on crime. This matter has received attention in the published literature but encapsulates three possible scenarios (Bergin & Allen 2008):

- an increase in climate change-related crime (such as water theft) or increased prevalence of specific crime types;
- civil unrest following natural disasters and related emergencies; and
- fraudulent and collusive behaviour associated with the establishment of carbon offset and trade emission scheme.

While suggested, there is little in the way of published predictions as to how climate change will affect crime rates. Spikes in other environmental crimes are a real possibility, predictably water theft, but the impact of harms from illegal fishing or wildlife poaching are likely to be exacerbated when coinciding with climate change induced reduction in biodiversity. Interpol have set up a special project group to identify restraints and potential loopholes in national legislation that may inadvertently facilitate climate change related crime (INTERPOL Pollution Crime Working Group 2009a).

Fraud associated with carbon offsetting and emissions trading schemes represents the greatest risk for criminal behaviour. Evidence of fraudulent behaviour in carbon offset schemes has already been cited, such as 'double selling' of credits, purchase of 'worthless' credits, purchase of carbon reductions that would have happened anyway and collusive behaviour between entities (Bergin & Allen 2008; Joyce 2008). Even the UN-managed, World Bank-administered Clean Development Mechanism (CDM) has not been impervious to 'deceitful claims', with an estimate that that two-thirds of the credits produced by the scheme did not correlate with any reduction in greenhouse gas emissions (McCully 2008). A recent survey of carbon offset schemes in Australia discovered considerable variability in the nature and standard of the carbon offsets being promoted (Riedy & Atherton 2008). The variability in the product was related to four factors:

- the voluntary and unregulated nature of the market;
- the absence of a national (regulatory) standard on the practice of carbon offset trading (the one exception being the NSW Government's Greenhouse Gas Abatement Scheme Rule);
- the absence of a formal accreditation system (carbon suppliers can opt into a system but there is no imperative to do so); and
- the absence of a carbon offsets registry for verification, monitoring and reporting.

Emissions trading schemes are also vulnerable to episodes of manipulation, collusion, corruption, deception and 'creative accounting', as reported for the EU emissions trade scheme (Glover 2009; Macallister 2009). The potential criminal vulnerabilities of an Australian emissions trading scheme are explored in detail in Beck (forthcoming) and relates to issues of liability for entry into the scheme, fraudulent reporting of emissions, market manipulation, regulatory corruption and provision of secondary services (eg advice, brokerage).

Incentives and drivers

'Greed' and 'ignorance' are the foundations of environmental crime (Grabosky 2003: 237). The former refers to individuals or organisations who understand that a considerable amount of money can be made or saved by committing particular types of environmental crime, as well as the individual or organisation who wants to avoid having to pay financial dispensations or increased costs for practices that used to be legal. For some business enterprises, such as logging, the illegal version is preferred as it can be more lucrative than the legal form (OECD 2007). 'Ignorance' covers genuine lack of awareness about environmental responsibilities (eg the subsistence poacher) or is the product of

confusion about the intricacies of these responsibilities (eg the permit, licensing and record-keeping system required to breed and trade in native birds). Feigned ignorance, of course, can arise and some benefit of the doubt might be given where legislative requirements are open to misinterpretation.

The attractiveness of the profits is enhanced by the often minimal investment that is needed to commit environmental crimes and the relatively low risk of getting caught and prosecuted (Hayman & Brack 2002). Many forms of environmental crime are not easily observed or detected, do not make an obvious impact and are not always a constant on the law enforcement radar. Regulatory loopholes and weaknesses, combined with the sometimes inefficiency or corruptibility of investigating officials, either reduces the chances of being detected or actually assists the criminal behaviour to continue (Hayman & Brack 2002). When apprehensions are made, it is frequently the 'small fry', while the primary contributors may have the connections to delay, prolong or avoid prosecution. One notorious case is Exxon Mobil's protracted (and eventually successful) effort to reduce punitive damages imposed on the company, almost 20 years after the leaking of 11 million tonnes of crude oil into the Prince William Sound off the coast of Alaska (Barnes 2008). A final factor is the application of appropriate penalties and the inconsistency in which they are applied. Penalties for more serious environmental crimes usually come in the form of a fine. For large-scale business perpetrators of environmental crime, such penalties are regarded as a 'cost of doing business', since they can be easily recouped from the profits generated from circumventing or ignoring environmental regulations (Situ & Emmons 2000).

An underlying, but hugely influential, trigger for environmental crime is supply and demand (Hayman & Brack 2002). One consequence of the introduction of controls to combat environmental crime (see next section) is an increase in the allure and value of the 'resources' the controls are meant to protect (eg protected fish stocks) as well as the opening up of new and highly profitable avenues of criminal activity (eg trade in ozone-depleting substances). It also produces an imbalance between supply and demand, with restrictions made on supply but no change (or a small increase) in demand (Hayman & Brack 2002). Thus, alterations to supply such as fishing quotas, protection of endangered animals, restrictions on gigalitres of water pumped from inland rivers, or the impact on industrial production by following prescribed environmental regulations, may tilt the balance towards demand. The opportunity for profit, and hence the incentive to breach controls, increases where such an imbalance exists. The second imbalance arises where there is some sort of curb on demand (Hayman & Brack 2002). In this case, unregulated sources of supply are sought instead to avoid the additional costs (eg taxes) associated with regulated supply transactions.

Breadth of scale

Like any complex criminal enterprise, quantifying the true scale and profitability of environmental crime is a challenge. Nonetheless, there is consensus that environmental crime represents one of the fastest growing areas of criminal activity. Financial returns have been estimated in the millions, possibly billions of dollars. Indeed, there are claims that environmental crime is almost as lucrative as the drugs and illegal arms trade. For example, a report for the US congress on the international illegal wildlife trade cited an annual profit of between US$5–20b (Wyler & Sheikh 2009). Another US interagency government report estimated the generation of US$22–31b by international crime syndicates involved in the smuggling of hazardous materials, hazardous waste dumping and trafficking of protected flora and fauna (Central Intelligence Agency et al. 2000).

While there is no doubt about the involvement of substantial, sophisticated operations in perpetrating environmental crimes, the truth is that there is quite considerable breadth in the range of criminal enterprise. These span small-scale, opportunistic and/or one-off ventures to systematic, large-scale undertakings. The traditionally-viewed perpetrator of environmental crime is the corporation, in large part because of their involvement in pollution and contamination cases. Environmental criminality, however, comprises a much more extensive cast. As an example, Bell and McGillivray (2008: 278) compares 'the fly-tipping "man in a white van", organised criminal gangs, the egg collector, and the global corporation' as legitimate participants in crimes against the environment. A diverse group of contributors also exists in individual operations. Consider illegal logging operations in West Papua (EIA & Telepak 2005; Setiono 2007) where a central

financier is linked to the community in which the logs are taken, the loggers and logging operators, sawmill operators, forestry regulators, customs officers, timber buyers and financial institutions.

The spatial coverage of environmental criminal activity is equally broad and encompasses the:

- international and regional;
- national; and
- state/local.

International or transnational environmental crime

Because of its cross-border trajectory, the sometime involvement of organised crime and its profitability, international or transnational environmental crime (TEC) is the 'high-profile' end of the spectrum. These operations are described as transnational as they involve the movement of goods across territorial borders and because of the cross-boundary nature of their impact (Hayman & Brack 2002). In more recent years, TEC has been a beneficiary of globalisation, which has facilitated travel, transport, transaction and similar arrangements critical to the easy passage of illegal goods (Wyler & Sheik 2009).

TEC offences are typically characterised by the illegal trade in fauna/flora and ozone depleting substances, the illegal dumping and transport of hazardous waste, illegal logging and timber trade and IUU fishing. International bodies active in highlighting or preventing transnational environmental offences include the United Nations Environment Programme, the UN Interregional Crime and Justice Research Institute (which has included environmental crime into its 'Emerging crimes and Anti-Human Trafficking' portfolio), the EU, European Commission and the Association of Southeast Asian Nations (ASEAN). Since 1992, international enforcement activities have been led by Interpol, focusing on 'pollution' (primarily, the illegal transport and disposal of hazardous waste) and wildlife trafficking. NGOs and international regulatory networks also play a crucial role.

For the most part, TEC is purely profit driven or a means to avoid excise, taxes and high disposal costs (Elliott 2007). Compared with other crimes, it is also relatively low risk but has the promise of high returns. For this reason, it is sometimes relied upon as a means of creating venture capital for riskier illicit enterprises (such as drugs trafficking) with commodities from both streams sometimes trafficked in parallel (Hayman & Brack 2002). TEC is also known to cohabit with money laundering activities. Financiers of illegal logging in Indonesia, for example, are reported to launder monies derived from illegal logging with that produced from their legitimate businesses (Setiono 2007). Money laundering is also rife among European criminal organisations involved in waste disposal and wildlife trafficking. The nature of these crimes implies a level of organised criminal contribution and, in some instances, there is. Hayman and Brack's (2002: 7) analysis, however, suggests that the majority of environmental crime is perpetrated by 'loosely organised networks of individuals with some specialist knowledge'. These networks can still be intricately woven, particularly the chain(s) of connection between the middle-men or suppliers.

Differential transaction scenarios also occur, from the seemingly unwitting to the premeditated, criminal trade. Consider, for example, the smuggling of wildlife, which may follow one of four transaction modes (Hayman & Brack 2002):

- low volume, low value (eg 'tourist' or inadvertent smuggling);
- high volume, low value (eg opportunistic smuggling);
- high volume, high value (eg smuggling adopted by organised criminal networks); or
- low volume, high value (eg 'smuggle to order' operations)

There has been no evaluation as to what extent these modes contribute to the overall trade but each can be differentiated with regard to the sophistication of the operation, the identity of the participants and often the species of wildlife targeted.

National and local environmental crime

At the local and national level, there is an even broader spectrum of crimes that can be perpetrated against the environment. These offences range from one-off acts of non-compliance with permit conditions to large-scale environmental destruction. In Australia, this diversity of possible crimes derives

from legislative and regulatory differentiation between the actual act of environmental degradation and the commission of the act without appropriate authorisation.

Local occurrences of environmental crime may be defined as those where the action (or the action's outcome) is in defiance of locally prescribed rules regarding responsible environmental behaviour (in Australia, for example, this would include state- and territory-specific legislation) and/or the outcome of the action produces a detrimental effect on a localised, discrete area. Examples of these include the clearance by a landowner of protected, native vegetation; dumping of hospital waste in a residential area; kangaroo and wallaby culling by persons without authorised permits; sewage leaks onto public land or into waterways; taking of marine species in excess of recreational or commercial limits; or unauthorised sinking of, and extraction of ground water from, a bore. National environmental crimes encompass undertakings which flout laws applicable to the nation as a whole, exert a cross-jurisdictional effect or impact on an object of national significance. They may also include transgressions by international parties, the most frequent example in Australia being the illegal fishing conducted by Indonesian fishers in Australia's northern waters.

In his keynote address to the 2002 *Combating Wildlife Crime in the 21st Century* conference, AFP Deputy Commissioner Davies (2002: 23) made the point that most environmental crime represents 'continuous infringements (perpetrated) over a long period of time'. This is probably true for a sizeable component of local environmental crime. Nonetheless, and as Davies (2002) also points out, the accrual effect of these infringements and acts of non-compliance can and do produce significant and long-lasting detriments to the environment.

Controls against environmental crimes

International controls

International environmental controls are set down in Multilateral Environment Agreements (MEAs). At present, there are over 200 MEAs which formalise international obligations regarding the protection of biodiversity, the marine environment and the atmosphere, sustainable development, regulation on the use of chemicals and transfer and disposal of waste. The MEAs cited as specifically relevant to internationally recognised forms of environmental crime are:

- *1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES), which controls the international trade in fauna and flora with reference to an annually reviewed list on species vulnerability and their need for protection.
- *1987 Montreal Protocol on Substances that Deplete the Ozone Layer* (Montreal Protocol), which laid the foundation for international cooperation to protect the stratospheric ozone and required developed countries to achieve a 50 percent reduction of chlorofluorocarbons (CFCs; relative to 1986 levels). Four amendments have since been made:
  - 1990 London Amendment (complete phase-out in of CFCs, halons and carbon tetrachloride (ie ODSs) in developed countries by 2000 and developing countries by 2010);
  - 1992 Copenhagen Amendment (accelerated phase-out of ODSs by 1996 in developed countries and phase-out of hydro chlorofluorocarbons (HCFCs) starting in 2004);
  - 1997 Montreal Amendment (phase-out of HCFCs in developing countries and phase-out of methyl bromide in developed and developing countries in 2005 and 2015); and
  - 1999 Beijing Amendment (tightening of controls on production and trade in HCFCs and inclusion of bromochloromethane to the list of controlled substances for phase-out by 2004).
- *1989 Basel Convention on the Control of Trans-Boundary Movements of Hazardous Wastes and their Disposal*, which was established in response to the increased illegal movement of hazardous waste by 'toxic traders' from developed countries to developing countries and Eastern Europe. The convention outlines implementation and enforcement commitments of signatory states, whereby the movement of waste must only be undertaken with prior notification from the exporting state and consent from the transit and import states. A new focus of the convention is improving methods of minimising hazardous waste generation.

- *1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter* (otherwise known as the London Convention and updated in the 1996 Protocol), to regulate and hence limit the disposal at sea of wastes that are generated on land (eg industrial waste, sewage sludge, dredged material, radioactive wastes).
- *International Convention for the Prevention of Pollution from Ships, 1973* as modified by the Protocol of 1978 relating thereto (MARPOL 73/78 Convention), to prevent the dumping of oil, noxious liquid substances, harmful substances carried in packaged form, ship sewage and garbage from ships into the seas, as well as the emission of air pollutants (primarily sulphur oxide and nitrous oxide). Dumping refers to expulsion of wastes from operational and accidental causes.

No overriding international agreement exists to control for illegal fishing. The *1982 United Nations Convention on the Law of the Sea* (UNCLOS) acts as a framework on which the conservation and management of fisheries is based and through which Exclusive Economic Zones (EEZ) were established. EEZs designate the jurisdiction of coastal states over all living and non-living resources within. In the following decade, the UNCLOS was supplemented with various arrangements, notably the *1991 Food and Agriculture Organization* (FAO) *Code of Conduct for Responsible Fisheries*, the *1993 FAO Compliance Agreement* and *1995 UN Fish Stocks Agreement*. These further stipulated standards and requirements for the conservation and management of fisheries and specified fish species, and the operation of fishing ventures in zones that are not governed by formalised sovereign control (eg the high seas).

Similarly, there is the lack of an overarching international control over illegal logging and the timber trade. CITES enacts some international level regulation on the import and export of endangered tree species but obviously excludes those logs of less endangered status taken from protected areas. Further, CITES is generally viewed and applied as specific to endangered *faunal* species and hence not used to its full effect (or at all) to halt the illegal timber trade (Aikman 2003).

In practice, the effectiveness of MEAs is questionable (eg see Elliott 2007). First (and obviously) is the voluntary state in which international agreements are ratified or observed, with adherence only applicable to that group of nations that choose to oblige. Standards may be watered down to encourage ratification and observation of these standards is dependent on the signatory nations to pass complementary legislation and regulatory practices in their home country. Second, MEAs are sometimes perceived as 'soft laws'—while there is general guidance as to what nations can and cannot do, they often lack formal enforcement measures to truly instil compliant behaviour and direction on the sorts of penalties that should be applied for particular offences (Elliott 2007; Hayman & Brack 2002). Finally, there is a lack of detail on what constitutes illegal or criminal behaviour, which increases the risk of interpretative disparity (Elliott 2007).

Actual containment of transnational (and indeed other levels of) environmental crime relies on individual states to implement national legislation and actively enforce against environmentally criminal behaviour as they occur within their borders (Hayman & Brack 2002). It also requires a willingness to cooperate, be it through intelligence sharing, coordinated enforcement operations etc. The fact that many states still do not have effective regulatory or enforcement approaches in place (or in some cases, none at all) means that those who do are hamstrung in their ability to make a decisive dent in transnational trade. Regulatory failures can occur at the site of origin, the site of receipt and/or the transitory stations and involve a complicity of problems including:

- inadequate laws and penalties;
- overloading of key agencies;
- lack of resources; and
- poor training of key personnel (Hayman & Brack 2002).

A weak chain of enforcement also opens the flow-through of illegal goods to corruption, in the form of fraudulent declarations, forged documents and bribery. The extent of corruption need not be very sophisticated, and statutory flaws in trade permit systems allow for this exploitation. The practice of false declarations and document forgery is apparently critical in propagating some categories of environmental crime, assisting the illegal trade in flora and fauna, transport of waste, illegal logging and illegal fishing. For example, Warchol's (2004) analysis of the illegal wildlife trade out of South Africa and Namibia found the forgery of CITES permits as one of the primary forms by which smugglers moved wildlife out of these two countries.

The ability to corrupt law enforcement officers is a further facilitator and the reality is that the political, social and economic conditions of many of the countries in which environmental crime occurs fosters corrupt behaviour (Hayman & Brack 2002). For some operations, the scale of bribery reaches government officials and often those charged with protecting the resource or preventing the trade.

Pervasive corruption may be inevitable for environmental crimes that are difficult to hide or disguise, such as illegal logging (Brack 2006; Hayman & Brack 2002; Setiono 2007). The logging 'chain of custody' extends from assignment of concessions to extraction, processing and export, and each custodial point is susceptible to corruption. A recent examination of the extent of illegal logging in the Asia-Pacific region found that, from the available documentation, a considerable proportion of corrupt behaviour occurs at the concession allocation and timber extraction phases (Schloenhardt 2008). The limited information on illegal processing and export practices, however, does not eliminate the likelihood that extensive corruption occurs there too. When considering the Asia-Pacific region, the dubious partnership of illegal logging and corruption is particularly pronounced in Indonesia; Scholenhardt (2008: 53) described corruption and bribery as 'perhaps the greatest facilitators of illegal logging' in this country. This corruption involves both local and provincial forestry officials, local police and other security officers, the military, high government officers and even members of the judiciary (to halt prosecution). Bribes are proffered as 'goodwill payments' to open up or extend concessions, issue felling licences, protect illegal logging sites and activity and enable ease of transmission of logs from logged sites to sawmills.

National controls

National controls against environmental crime reflect international expectations and sovereign interests and standards. At present in Australia, there are in excess of 150 statutes and associated regulations pertaining to environmental conservation, management and protection, divided between the Commonwealth and the states and territories.

Legislation

At the Commonwealth level are six principal statutes that incorporate Australia's commitment to international standards as embodied in the aforementioned MEAs and prescribe national environmental laws (see Table 1). The majority of these statutes comprise a legal framework of prevention and regulation and for the *Environment Protection and Biodiversity Conservation Act 1999* and *Fisheries Management Act 1991*, functions of conservation and sustainable management. These statutes both stand alone and act in concert with one another and other legislative provisions to protect different aspects of the same environment at threat of harm.

There also exist statutes for entities requiring specific legislative attention, for example, those pertaining to the Antarctic region. Australia is a signatory to the *Antarctic Treaty 1959* (which outlines obligations of countries active in Antarctica as to how the continent can be used) and the *1991 Madrid Protocol* (which outlays provisions regarding protection of the Antarctic environment). These commitments are referred to in a series of statutes, such as the *Antarctic Treaty (Environment Protection) Act 2000* and the *Antarctic Marine Living Resources Act 1981*. Another example is the *Torres Strait Fisheries Act 1984*, which outlines laws on the protection of the marine environment and the observance of traditional fishing rights as stipulated in the Torres Strait Treaty. Finally is a series of legislative provisions created for the Great Barrier Marine Park, including the *Great Barrier Marine Park Act 1975*, Great Barrier Reef Marine Park Zoning Plan 2003 (for the conservation and management of the Marine Park), Great Barrier Reef Regions (Prohibition of Mining) Regulations 1999 and Great Barrier Reef Marine Park (Aquaculture) Regulations 2000. Day-to-day management and enforcement of some of the aforementioned Acts (and associated regulations) is shared or entrusted with sister agencies, such as the Australian Antarctic Division, Australian Fisheries Management Authority, Australian Maritime Safety Authority and Great Barrier Reef Marine Park Authority.

A multitude of legislation pertinent to the environment exists at the state and territory level, which will be described in greater detail in

Table 1 Primary Commonwealth environment protection statutes

Statute	Objective	International convention, treaty or agreement
Environment Protection and Biodiversity Conservation Act 1999	Protection and management of nationally and internationally important flora, fauna, ecological communities (and heritage places)	CITES
Fisheries Management Act 1991	Sustainable and cost-effective management of Australian fisheries and conservation of living resources in the Australian Fishing Zone	UNCLOS, FAO Agreements
Environment Protection (Sea Dumping) Act 1981	Prevent marine pollution through regulating the loading and dumping of waste at sea	London Convention/1996 Protocol
Protection of the Sea (Prevention of Pollution from Ships) Act 1983	Prohibition of marine pollution by oil, noxious substances, sewage and other harmful substances	MARPOL Convention
Hazardous Waste (Regulation of Exports and Imports) Act 1989	To ensure the safe disposal of hazardous waste through regulation of the export and import of waste both with and without financial value	Basel Convention
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989	To regulate the manufacture, import and export of all ozone depleting substances and synthetic greenhouse gas replacements	Montreal Protocol

subsequent chapters. Each jurisdiction has enacted its own environment protection statute on the prevention and containment of air, water and soil pollution and illegal waste transfer and disposal. Similarly, all but land-locked Australian Capital Territory observes the MARPOL and London Conventions through individual statutes preventing the pollution of marine waters. A few jurisdictions have introduced additional statutes that target specialised groups of pollutants. For example, there are separate acts controlling the use of:

- environmentally hazardous chemicals (*Environmentally Hazardous Chemicals Act 1985* (NSW));
- pesticides (*Pesticides Act 1999* (NSW));
- ozone depleting substances (*Ozone Protection Act 1989* (NSW); *Ozone Protection Act 1996* (NT)); and
- guidelines for the clean-up of contaminated land (*Contaminated Land Management Act 1997* (NSW); *Contaminated Sites Act 2003* (WA)).

Laws to ensure the protection and conservation of Australia's threatened faunal and floral species are mostly prescribed in individual threatened species/nature conservation statutes. Complementary statutes include additional provisions against the taking of fauna and flora from prescribed areas (such as marine and national parks) or removal of particular species (eg *Whales Protection Act 1988* (Tas)).

The prevention of ecologically-damaging native vegetation clearance is covered in principal conservation statutes (and in legislation pertaining to land development) in Victoria, Tasmania, the Northern Territory and the Australian Capital Territory. In Western Australia, it is covered in their primary environment protection statute and in separate native vegetation statutes in New South Wales, Queensland and South Australia.

The remaining fields of environmental protection where laws have been enacted relate to Australia's fisheries and water resources. These statutes in particular seek to balance conservation and sustainable management with sector-specific resource needs. All jurisdictions except Tasmania bundle fisheries laws and rules of management into the one statute. Tasmania observes two Acts, one for marine and the other for inland river fisheries. These statutes and their subordinate legislation act to protect aquatic species, promote sustainable recreational and commercial fishing practices and maintain a viable commercial fishing industry. Water legislation, which is backed up by a series of regulatory water plans, controls the extraction and use of surface and ground water (primarily) through the extension of water entitlements and allocations.

Built into Australian environment conservation and protection statutes is the concept of *environmental harm*. How this harm is expressed differs between statutes (and will be expanded on in the theme sections) but it is best developed in state and territory environment protection legislation which refer to offences of serious and material environmental harm, and environmental nuisances. These gradations of harm are used to prescribe the seriousness of the offence and the associated maximum penalty. There is some variation in how harm is defined but 'serious' and 'material' environmental harms are basically distinguished by the intensity and extent of the environmental impact and the actual or potential loss of (or damage to) property. The harm incurred is referenced to a predetermined monetary threshold and further differentiated as to the wilfulness or intentional nature of the act.

These laws formulate cross-cutting environmental standards that are primarily developed by government agencies. However, government is not the sole contributor to setting environmental standards. Some standards are formed in conjunction with non-state players, who often spearhead or shape these standards before governments become involved. Non-state players cover a broad range of entities, from business and industry groups, NGOs (environmental 'watchdogs', conservation groups), grassroots and public interest groups, academics etc.

One example is the adoption of self-regulatory standards by business that are:

- specific to the nature of production; or
- implemented in a more generalised format as exemplified by the International Organization for Standardization (ISO) 14000 series, and its local equivalent, the Australia/New Zealand International Organization for Standardization (AS/NZ ISO) 14000 series.

The 14000 series grew out of an application from industry groups for a systematic approach in which to manage production that minimised environmental impact, improved environmental performance and established environmental objectives. Another example is the Forest Stewardship Council (FSC), which originated from a multi-party coalition led by the World Wide Fund for Nature (WWF) and included foresters, timber traders, environmental groups and human-rights organisation. The FSC oversees the development and establishment of standards with which to certify well-managed forests and the products derived from them. The Australian chapter of the FSC works with a range of bodies (including government, industry, Indigenous, community and environmental groups) to promote the certification scheme and accredits national and regionally-derived standards of forest maintenance. A similar organisation is the Marine Stewardship Council (MSC), also created by the WWF but, in this case, in partnership with the multinational corporation Unilever. The MSC also acts to develop standards, primarily those concerning sustainable fishing and the chain-of-custody from catch to sale.

Regulatory regimes

Determining which model of regulatory practice is the best fit for preventing and deterring environmental offences has dominated the discourse on environmental crime. Two models of regulation are Scholz's (1984a, 1984b) tit-for-tat enforcement strategy (TFT) and Braithwaite's enforcement pyramid (Ayres & Braithwaite 1992; Braithwaite 1989; 1985). These were first developed for regulation of businesses but adopted and shaped by environment protection agencies. The TFT and the enforcement pyramid are both based on the premise that best-practice regulation must incorporate a mix of punishment and persuasion but they differ on how intricate or complex that mix needs to be.

The TFT relies on the establishment of a cooperative relationship between the regulator and the regulated, with the regulator desisting from imposing a deterrent strategy unless or until the regulated partner chooses to test or break this relationship (Scholz 1984a, 1984b). The partnership is resurrected if the punishment elicits a return to compliant behaviour. Alternatively, the enforcement pyramid promotes the view that compliance is only really achievable if the regulatory authority is supported by, and the regulated body is respectful of, the layers of intervention built into the enforcement pyramid (Ayres & Braithwaite 1992). In its simplest form, the enforcement pyramid is constructed of five storeys in which persuasion is applied first to elicit compliance, with the threat of escalating sanctions if non-compliance continues. A warning letter is followed by a civil penalty, then a criminal penalty and finally

incapacitation in the form of a suspension of licence. The object of this regulatory model is to give the regulated party the opportunity to voluntarily comply. Persuasion is not only less expensive but has been shown to be a more effective means of ensuring compliant behaviour (Grabosky & Braithwaite 1986; Hawkins 1984). To be really effective however, the sanctioning scale must be as steep as possible since, as Ayres and Braithwaite (1992) argue, the 'taller' the pyramid, the greater the pressure regulatory authorities can apply to ensure that compliance is obtained at the base (or persuasion component) of the pyramid.

Alongside models of enforcement are different models of regulation. In Australia, these may comprise any combination of the following:

- 'command and control' (or direct) regulation;
- self-regulation;
- voluntary agreements;
- education and information schemes;
- economic instruments/applications; and
- free-market environmentalism (Gunningham & Sinclair 1998).

The so-called command and control model of regulation has been the dominant regulatory model used in Australia to prevent environmental damage. It incorporates rules on what is allowed and not allowed, and the threat of sanction (be it in the form of administrative, civil or criminal penalties) to deter and punish non-compliant behaviour. In more recent times, sanctioning options have expanded to produce a gradation of punishments with the option to leap-frog less severe sanctions when the circumstances of the offence demand a stronger response. Staying within the law is generally established through the authorisation of certain practices. This is achieved through granting licences and/or permits with strict conditions attached to how the practice may be carried out.

Despite its widespread implementation, command and control regulation is not without its critics. The model has proved to be both inflexible and costly, although Gunningham & Sinclair (1998) note that more flexible and cost-efficient adaptations have been in use. Further, command and control regulation relies on an efficient system of inspection and detection which is dependent on resources, staff competencies and cooperation between relevant agencies. These difficulties can be made worse by the abundance of legislative and administrative tools created to support command and control regulation (Gunningham & Sinclair 1998). Even in the best examples of command and control regulation, these problems are apparent (du Rées 2001; Gunningham 1987). Such concerns derive from two factors. The first is the dual role environmental protection agencies play as both regulators and enforcers of environmental law. The second is the observation that agencies have sometimes allied themselves with the entities they are meant to be regulating, otherwise known as 'regulatory capture'.

Gunningham (2002) cautions against some of this criticism since there is evidence the command and control model has made some considerable impact on reducing types of air and water pollution. In their review of regulatory models, Gunningham and Sinclair (1998) also list as success stories:

- reductions in 'point-source' pollution;
- banning of extremely hazardous wastes;
- dumping of wastes; and
- protection of endangered species.

However, Gunningham (2002) concedes, like others (eg Stewart 2001; Watson 2005), that this strategy has had a limited effect in other areas of environmental protection. This is partly because improvements in environmental protection stimulate community expectation of even greater progress (Watson 2005), which may not be achievable with current models of regulation.

> It is one thing to discourage factories from discharging highly toxic waste into rivers. Ensuring that rivers become cleaner each year is a different proposition (Watson 2005: 191).

The response in some quarters to the incapacities of direct regulation was a move towards deregulation or self-regulation and the introduction of 'free market environmentalism'. A pyramid of regulatory strategies conceived by Braithwaite (1989) finds self-regulation at the base, so-called 'enforced self-regulation' in the middle and command and control regulation sitting at the apex. While considered by some as a panacea to regulatory incompetence, self-regulation has proved to be a highly controversial choice when it comes to protecting the environment. Placing

regulatory power in the hands of the 'polluters' can mean a watering down of standards, a lackadaisical approach to enforcement and relatively minor forms of punishment (Gunningham & Sinclair 1998). It can also lead to a loss of transparency, accountability and credibility (Webb & Morrison cited in Gunningham & Sinclair 1998).

To more comprehensively prevent environmental degradation requires a 'next generation' approach to regulatory control and a move away from the 'one size fits all' model of the past (Gunningham 2002). This means developing sector-specific regulatory mechanisms and introducing a blended range of strategies. This approach has been labelled 'smart regulation' (Gunningham & Sinclair 1998). Smart regulation embodies regulatory flexibility and includes components of self-regulation, unilateral commitment (to environmental improvement programs), voluntary participation, negotiated agreements, education and information tools, economic instruments, as well as command and control regulation. For examples of compiled information on some of these strategies which had been implemented by Australian industry (eg mining, agriculture), business groups, local and state governments, NGOs and environmental campaigns, see Grabosky and Gant (2000)

Alternate and supplementary methods of environmental protection

An additional criticism of traditional modes of regulation was the narrowed focus on 'the components of the regulatory system…rather than the 'big picture'—the environmental outcomes' (Bingham & Woodward 1993: 4). This focus fostered an over-emphasis on compliance at the expense of prevention (Hutton 2000). In recent years, Australian environment departments and protection agencies have attempted to amend this by embracing the concept of environmental harm and the need to address environmental outcomes (eg see the Victorian Environment Protection Agency's strategic plan Vic EPA 2004a). While maintaining the core elements of direct regulation, there is increased use of supplementary methods of prevention. These include the development of specialised management plans, an emphasis on education, the use of economic tools and creation of partnerships with sister agencies, community groups, industry and NGOs.

One example is New South Wales' shift from an environmental protection framework based on direct regulation, to one incorporating a mix of regulatory control, voluntarism and economic tools. The aim of this mix is to instil a risk-based approach to environmental regulation and protection that is grounded in transparency and flexibility (Woodward 2008 and see Table 2). Of particular note is the current range of economic and market-based instruments that are in use. These instruments are primarily fee-based systems (with built-in incentives) and offset and trade schemes.

The aim of fee extraction schemes is to produce a change in behaviour. For example, the waste levy is used to encourage companies to improve recycling and resource conservation measures. The load-based system was implemented to reduce pollution emissions and reward companies with a reduction in their annual licence fee if they comply with an agreed decrease in pollutants emitted (NSW DEC 2005b; Woodward 2008). If the reduction is not achieved, the company is obliged to repay the fee difference, with interest.

Variants on trading schemes have been established as an additional course of action for preserving biodiversity (eg biodiversity banking) and further reducing discharge of pollutants (tradeable emissions). The former is offered, in select cases, as an alternative to undertaking an 'assessment of significance' for threatened species (which is required under the *Environmental Planning and Assessment Act 1979* (NSW) for land development). The scheme allows developers and local government to earn biodiversity credits which they can sell to offset any environmental impact associated with land development activities that have occurred elsewhere (NSW DECC 2007b; Woodward 2008).

The tradeable emission scheme, on the other hand, is essentially a market-generated venture whereby emissions permits can be bought and sold, and credits generated when emission cuts for certain pollutants are achieved. The best developed of these schemes is the Hunter River Salinity trading scheme, established to protect the Hunter River from rising salinity levels (NSW DEC 2006b). Other examples of similar incentives and tools are described in theme sections.

Table 2 Environmental protection policy and economic tools adopted in New South Wales
Risk-based regulation and compliance
Environmental audits
Education campaigns
Public reporting (of breaches in annual reports etc)
Remediation directions
Voluntarism (environmental audits and remediation of sites)
Risk-based licensing schemes
Polluter liability
Pollution reduction programs
Economic tools/market-based instruments
Load-based licensing
Tradeable emissions
Waste levy
Biocertification and biodiversity banking
Environmental offsets

Source: Woodward 2008

Uncovering environmental offences

Environmental offences are detected both formally and informally. Compliance monitoring and auditing represents the most common method of formal detection. Licence or permit holders are subject to routine compliance checks, whereby enforcement officers inspect the site of operation, record-keeping etc to verify the conditions of the licence are being complied with. Compliance monitoring primarily serves to ensure certain practices are adhering to legislated provisions. It also detects breaches of licence, but plays a support role as a deterrent via 'threat' of exposure. Along with monitoring work, enforcement officers devote part of their time to targeted investigations. These investigations usually focus on identified areas of risk, which are ascertained through intelligence-gathering and target an identified group of licence holders or a specific activity. Such operations tend to run over a specified time period (eg a matter of months), increase the level of scrutiny and rely on random and/or unannounced spot-checks or visits. When intelligence indicates illegal practices are suspected or likely to be occurring, these unannounced visits take the form of formal raids. Depending on the gravity of the offence, these raids sometimes involve police officers (eg raids on aviaries suspected of laundering native birds). The effectiveness of more formal methods of detection is addressed in subsequent sections, but the consensus is that its reliability and capability is compromised by a lack of resources tied to the enormity of the job (Bartel 2003; du Rées 2001; Gunningham 1987; Halstead 1992; Pain 1993).

Day-to-day procedure is another avenue in which environmental offences are uncovered. Such detection is best represented by the role of the Australian Customs and Border Protection Service (ACBPS) in discovering smuggled wildlife or flora on passengers (or in their luggage), in the mail or in imported cargo. Some of this detection follows intelligence on suspect imports, or the targeting of passengers, but chance discovery accounts for a number of finds.

Chance discovery or observation also arises, and quite literally in some cases, from the 'discoverer' being in the right place at the right time. A successfully prosecuted case of illegal native vegetation clearance in New South Wales, for example, followed a chance sighting by an enforcement officer (Bartel 2003). The sighting of earthworks machinery led to the discovery of illegal clearing on property bordering the highway the enforcement officer was travelling on.

Chance observation serves as an important source of information for exposing environmental crimes and particularly for offences that are not so easily detected or require enormous resources to adequately control. The 'nosy neighbour' is cited as a key informant of incidents of illegal native vegetation clearance (Bartel 2003; NSW OAG 2006), although one might argue that some revelations are more to do with deliberate sleuthing than accidental discoveries. Nonetheless, and because their presence cannot be everywhere, regulatory agencies do depend on the public to report suspected environmental offences. State and territory fisheries departments operate hotlines on which the public can report suspect recreational or commercial fishing, environment protection agencies encourage reporting of pollution and smoky vehicles and water

agencies for any observed breaches of water restrictions. Complaints are compiled in databases, graded as to their apparent seriousness and acted upon where necessary by enforcement officers. A back-log of complaints is, however, a reality for some investigative units.

Research studies or investigations by non-enforcement entities adds evidence for environmental offences taking place. For example, a Macquarie University-led study on works constructions on the Macquarie floodplain and their effect on the viability of the Macquarie Marshes, discovered possible breaches to floodplain development guidelines and subsequent over-harvesting of environmental waters (Steinfeld & Kingsford 2008). The findings from this report persuaded the NSW Government to audit water diversion works on and surrounding the floodplain (Costa 2008) and to review their policy regarding the management of floodplain water diversion. Another, more recent example that came from a four year study on land use in the Tully-Murray, Burdekin-Townsville and Mackay Whitsunday Regions, revealed serious herbicide run-off into rivers and creeks and the Great Barrier Reef Marine Lagoon (Lewis et al. 2009). The run-off was at levels which exceeded freshwater and marine guidelines for species protection. Finally, a seven year study by the Australian National University, which monitored woodland bird populations in the Cowra region, attributed a steady decline in population numbers not only to the drought but also to extensive local native vegetation clearance (Reid & Cunningham 2008).

NGOs also play a critical role in exposing environmental offences. Evidence of illegal logging and illegal fishing has been uncovered and reported by organisations such as Greenpeace, the Environment Investigation Agency and Australia's Wilderness Society; illegal wildlife trafficking by International Fund for Animal Welfare, CAWT and the WWF, and problematic electronic waste disposal by Greenpeace (international) and the Total Environment Centre (within Australia).

Finally, some environmental harm simply just cannot go unnoticed, or the perpetrators are compelled by their own conscious or strict observance of protocol to report an incident. A condition of licence for polluting activities or forestry harvesting ventures requires the licence holder to regularly submit reports to the administering authority detailing specifics of operation, including any incident where regulations are breached. Legislation further requires breaches or accidents to be immediately reported to authorities. Failing to report or providing misleading or doctored data are prescribed offences in environment and conservation statutes, and penalties are severe.

The importance of information-sharing

Elliott (2007: 4) noted that information is an 'important commodity' in the exposing and prosecution of environmental crime. That information, however, is best delivered and acted upon where there is dynamic interagency cooperation in place. Such cooperation also ensures reciprocity of support, intelligence sharing, improved capacity for joint investigations and the production of an appropriate sanction for wrongdoing. As described earlier, environmental laws tend to be compartmentalised in separate statues and separate agencies are responsible for their enforcement. While this may have worked reasonably effectively in practice, improved provisions for interagency collaboration would help circumvent issues that arise due to the broad impact of some environmental offences.

Studies of interagency cooperation within Australia and the effectiveness of this cooperation have not been attempted. However, two papers examining the AFP's role in the investigation and prosecution of environmental crime highlighted deficiencies in both partnership arrangements between the AFP and key environmental agencies and in the adoption of formal information/intelligence-sharing arrangements (Blindell 2006; Davies 2002). Similar mutual assistance problems probably also affect other agencies but the establishment of the Australasian Environmental Law and Enforcement Network (AELERT) has helped to counteract this problem. Founded in 2003, AELERT provides a forum through which regulatory agencies can develop and enhance interagency relationships, cooperation and information sharing. At present, there are 60 member agencies from Australia and New Zealand, representing Commonwealth, state and territory, and regional agencies.

Sanctioning

Sanctioning options

Australia uses a tripartite sequence of sanctioning options—administrative, civil and criminal—to deter and penalise environmental offenders. Enforcement and prosecution guidelines have been developed to instruct enforcement agencies on the most suitable action for a particular category of wrongdoing (eg see ACT EPA 2007; NSW DWE 2008b; NSW EPA 2004; NT NRETA 2007; Qld EPA 2004b; SA EPA 2009b; Tas DPIW&E 2004a, 2004b; Vic EPA 2006; WA DEC 2008b). Depending on the nature of illegal activity and the degree of environmental harm caused, an array of options including warnings, directions, notices, orders and punitive penalties, are available for use. Different jurisdictions employ slightly different combinations and versions of these sanctioning options and variability also exists between different environment statutes. These variations will be elaborated upon in the theme sections.

The least severe end of the sanctioning spectrum are warnings, cautions or advisory letters that alert the offender that a potential or actual breach has been detected and advises on ways in which that breach might be amended. These are usually posted by enforcement officers for administrative, minor or technical breaches. At the next level are infringement and penalty notices, effectively 'one-stop' fines for 'minor', one-off breaches. No criminal conviction is recorded on payment of the fine, but persons may elect to forego the fine and have the case tested in court. Deliberate non-payment may also result in prosecution.

An assortment of orders and notices are available for medium and some serious offences. These are used to temporarily or permanently halt actual or potentially harmful activities. For example, among those prescribed in environmental protection statutes are the 'stop work', 'control', 'prevent', 'abate' or 'prohibit' directions and orders. When an actual harm has been judged as having occurred, offenders may be directed to undertake remedial or rehabilitative works. Enforcement officers are able to issue such orders or notices but, in some cases, injunctive relief can be sought, with the issuance of court-ordered directions to discontinue or prohibit the activity, order compliance or make good a contravention. The existing approval or licence can also be amended, suspended or revoked if harm is evident or there is a risk of an offence being committed in the future. Amendments list the types of actions that need to be made to achieve compliance and are sometimes used as an alternative to serving orders or notices.

Prosecution, both civil and criminal, is reserved for the more serious, or wilfully perpetrated, environmental offences. Enforcement agencies are directed to follow this course of action only if there is sufficient evidence for a prima facie case and a 'reasonable' prospect of finding guilt. Prosecution normally does not commence unless approved by the agency or Division's director, and after consultation with the Director of Public Prosecutions (DPP).

Fines are the predominant penalty for environmental offences but custodial sentences are applicable to some offences and categories of harm. Inter-jurisdictional variability exists in the maximum penalty set as well as in whether sentencing options include a pecuniary and custodial option (see theme sections for a list of environmental offences and the associated maximum penalty). Maximum penalties vary for similar offences based on the seriousness of the offence and the intent behind the illegal behaviour. Again, these variations are described in more detail in the theme sections but are most apparent for penalties for traditional environment protection offences and some conservation laws.

The theme sections will describe, where available data allows, the breakdown of penalties administered over recent years but the general rule has been a surfeit of infringement notices, with a smaller number of (non-court appointed) orders and a smaller number again of prosecutions. This distribution reflects a greater proportion of minor environmental offences than a channelling of punishments towards the lesser end of the penalty spectrum. It has been asserted, however, that the application of penalties for environmental offences has been somewhat unsystematic, with a tendency to resort to lenient sanctioning options (Bartel 2008a, 2003; du Rées 2001; Hain & Cocklin 2001; Korsell 2001; Pain 1993).

Prosecuting environmental offences and the usefulness of traditional penalties

In most Australian states and territories, environmental offences that are prosecuted are tried in Magistrates' courts. South Australia established the Environment, Resources and Development Court in 1993 to deal primarily with disputes and related cases pertaining to land development, natural resources, water resources and irrigation, mining and native title but it is only in New South Wales where there is a court that deals specifically with environmental and planning offences. The NSW Land and Environment Court, established in 1980, sits at the Supreme Court level (further differentiating it from other states and territories) and holds appellate functions with which to monitor sentences handed down in lower courts.

The trying of cases of environmental crime outside a specialty court system is thought to be a contributor to the generally low penalties meted out for environmental offences. Irregular exposure to such cases and the judiciary's comparative lack of training in dealing with (and some argue a lack of understanding of) environmental offences was noted as contributory factors by participants to an AIC roundtable on environmental crime. Martin (2003: 33) makes the point that the task of 'making the punishment fit the crime' is particularly complex when dealing with environmental offences, in part because of the identity of the victim—'the all but invisible ecosystem'. Definitional misinterpretation can and does interfere with how the seriousness and impact of the offence is weighed up. One more extreme example concerns a case in the Queensland Supreme Court in which the likely victims (a local turtle population and their habitat) of a proposed residential subdivision were deemed by the presiding judge not to fall within the definition of 'the environment' (*Murphy and Cove House Aust Pty Ltd v The Crown* cited in Hain & Cocklin 2001). Participants to the AIC's environmental crime roundtable further observed that problems with quantifying and describing environmental harm made it, at times, difficult to develop and present cases in court.

The difficulties associated with successfully prosecuting environmental crimes might also lie with the application of criminal law to environmental offences (Hartley 2004; Pain 1993). One of the central tenets of controlling against environmental crime is to prevent harm from occurring and not just punish the offender when it does happen. According to Pain (1993), this is problematic because criminal law is not by nature a preventative tool. The application of criminal law also introduces an adversarial undercurrent to the protection of the environment, which may undo good relations between regulators and the regulated, and subsequently disrupt industry achievements brought about by those good relations (Lipman 1993; Pain 1993).

Other potential problems with the application of criminal law might relate to:

- the general absence of workable and clearly understood definitions (eg what constitutes 'the environment'?, what is 'harm'?, what behaviours 'cause' environmental harm?);
- the state of mind of the offender;
- understanding the 'result offence' (ie can we prove the act caused the harm?); or
- identifying where the burden of proof lies (Lipman 1993; Pain 1993; Preston 2007).

Some of these obstacles have been dealt with in the legislation, specifically the issue of mens rea and the difficulty of proving such in cases of environmental harm. Most environmental offences are now treated as strict liability or absolute liability offences. For example, the three tier penalty schema under the *Protection of the Environment and Operations Act 1997* (NSW) defines Tier 1 offences as mens rea offences, Tier 2 offences as strict liability and Tier 3 offences as absolute liability. Tier 1 offences are limited to specific polluting and waste offences that were:

- wilfully or negligently enacted; and
- harmed or were likely to harm the environment.

Tier 2 offences refer to all other polluting offences and Tier 3 to offences that can be dealt with by penalty notice. In contrast, offences prescribed in the *Environment Protection Act 1970* (Vic) are mostly

absolute liability offences. This adoption of strict and absolute liability has enabled a consistently high number of proven cases to be returned for cases of illegal pollution (Hain & Cocklin 2001; Martin 2003).

Such complexity might be used as justification, or at least an explanation, as to why appropriately punishing the environmental offender has been less than successful. What is being recognised, though, is that some of this responsibility lies with the apparent leniency of past sentences and the apparent unsuitability and effectiveness of traditional penalties (Hain & Cocklin 2001; Hartley 2004; Martin 2003; Pain 1993). Between 1990–91 and 1999–2000, for example, conviction rates for offences prosecuted under the *Environment Protection Act 1979* (Vic) ranged markedly, from 40 percent of proven charges in 1993–94 to 78 percent in 1992–93 (Hain & Cocklin 2001). Fines were imposed in just half or less of such cases in each year; the one exception was in 1999–2000 when fines were imposed in 54 percent of cases. The fines represented between five percent (1998–99) and 25 percent (1993–94) of the maximum fine that could be imposed. Conviction and fine imposition rates for offences tried under the *Protection of the Environment and Operations Act 1997* (NSW) were higher in New South Wales over the same time period but, like Victoria, the actual fines handed down were a fraction of the maximum penalty (15% or less; Hain & Cocklin 2001).

The influence of 'regulatory capture' on the distribution of sanctions prompted state governments (for example, in New South Wales and Victoria) to review penalty schemes and tilt the balance back towards coercion (Pain 1993). An increase in penalties also resulted from the observation that difficulties in comprehensive compliance monitoring, combined with 'soft' penalties, produced endemic recidivism among certain parties and was almost ineffectual in discouraging smaller players (Martin 2003; Pain 1993). The introduction of more severe penalties had the complementary purpose of reflecting emerging community attitudes and expectations about appropriate punishment of environmental offences (Hain & Cocklin 2001; Martin 2003).

Nonetheless, the effectiveness of traditional penalties is questioned. Fines are the main penalty imposed (Abbott 2005) but they are viewed as not being particularly successful as either a mechanism of deterrence or of punishment (Hain & Cocklin 2001; Cole 2008). Custodial sentences are rarely given. Most criticisms against fines refer to the ability of the body corporate to simply absorb fines as a 'cost of business' (Cole 2008). As yet, there is little or no analysis on the deterrent effect of fines on the non-corporate environmental offender. Data collated for this report shows that fines are considerably lower than the maximum penalty, suggesting their deterrence effect is minimal.

A broader application of civil penalties has been proposed as providing the flexibility to shape appropriate sanctions to environmental offences in Australia (Hartley 2004; Pain 1993). Among the benefits of following civil prosecution are the faster process, the lower standard of proof required (based on the balance of probabilities and the ability to bypass mens rea) and the flexibility and variety of available sanctions (ALRC 2002). It also provides a vehicle through which other parties (such as individuals and environmental groups) can pursue claims of environmental harm (Pain 1993). Hartley (2004) argues that supplementing criminal penalties with civil penalties is particularly useful for dealing with 'problem' offenders. This is because civil proceedings, as opposed to criminal prosecutions, are more likely to deliver a successful outcome for prosecutions of more serious acts of harm. Hartley (2004) uses as his example Tier 1 offences under the *Environmental Protection Act 1986* (WA) which ordinarily requires a proof of intent. Conversely, however, is the potential evaluation of civil penalties as being less serious than criminal penalties. A greater use of the former may not produce the 'long-term value readjustment' needed to instil the gravity of environmental offences (Pain 1993: 9).

Alternative sentencing options and approaches

Ideally, alternative sentencing approaches for environmental crime should encompass the flexibility to fulfil the dual purpose of punishment and the provision of a 'more acceptable social outcome' (Cole 2008: 96). The measures discussed in the literature as being of particular merit are the 'alternative orders' (Cole 2008; Hain & Cocklin 2001;

Martin 2003; Preston 2007). Alternative orders can be combined with a punitive sanction or used instead of a more traditional penalty. The variety of orders available (see Table 3) depends on the statute and not all courts have the option to use them. Compared to punitive sanctions, though, they permit the creation of a sentence often better suited or 'tailor made' to the offence (Preston 2007). They also represent a punishment frequently of greater burden to the offender (Hain & Cocklin 2001).

Table 3 Alternative sentencing orders for environmental offences

Restoration and prevention orders
Payment of costs, expenses and compensation
Pay investigation costs
Monetary benefits penalty order
Publication order
Environmental service order
Environmental audit order
Payment into environmental trust or organisation
Order to allow training
Order to establish training course
Order to provide financial assistance

Source: Preston 2007

Orders that might be considered particularly effective are those that:

- put a spotlight on the fact a crime has been committed; and
- produce an environmental good.

The former is brought about by directions to publicise the offence in a medium available to the public and/or the offender's peer group. Targeting the prestige, profit and stability of larger corporations is proposed to have a greater deterrence effect than traditional pecuniary penalties (Fisse & Braithwaite 1988; Lipman 1991). 'Court ordered adverse publicity' fits in with such a tactic (Pain 1993: 7). The second outcome is achieved through directions to restore or rehabilitate the harmed environment, or the issuance of environmental service orders and payments. The latter offset environmental harms by a financial or other contribution to a conservation or rehabilitation project specified by the court.

Two reviews of sentencing provisions for environmental offences found Victoria, in particular, to have embraced the use of alternative orders for pollution offences (under s 67AC of the *Environment Protection Act 1979*; Cole 2008; Martin 2003). Prosecution data published in more recent Victorian Environment Protection Agency annual reports reveals this trend is continuing (see *Pollution and illegal waste disposal*). 'Additional orders' (under s 250 of the *Protection of the Environment and Operations Act 1997* (NSW)) have been applied in cases dealt with by the Land and Environment Court in New South Wales but there has been little application so far in SA's Environment, Resources and Development Court (Cole 2008).

Restorative justice is currently infrequently used in Australia for environmental offences but is a possible avenue for intervention for some incidents of environmental harm. Hamilton's (2008) study on the use of restorative justice in New South Wales found that intervention of this kind was not directly supported in either the legislation conferring criminal jurisdiction on the NSW Land and Environment Court, although there was scope for its use in incidents of air and water pollution prescribed under the *Protection of the Environment and Operations Act 1997* (NSW). Conversely, New Zealand makes use of restorative justice in prosecution of environmental harm. Six cases of environmental harm described in the New Zealand Ministry for the Environment (2006) report on prosecutions under the *Resource Management Act* were dealt with using restorative justice. In each, an apology was issued, payment of costs secured and monies allocated to environmental projects.

Widespread discrepancy in sentencing for environmental offences inspired the NSW Land and Environment Court to develop the NSW Land and Environment Court Sentencing Database, with the aim to improve a consistency in sentencing per se and in the approach to sentencing environmental crimes (Preston 2009; Preston & Donnelly 2008). The database, which incorporates the court's sentencing data from 1 January 1998 (following the commencement of the *Protection of the Environment and Operations Act 1997*) and is made available through the Judicial Information Research System (JIRS), provides a source of statistics on the type and magnitude of penalties imposed by the Land and Environment Court judiciary for specific environmental offences. A considerable strength of

the database is the provision of material detailing the objective and subjective considerations that were used by the presiding judge to determine why a particular sentence was given.

Improving responses

Participants in an AIC hosted roundtable on environmental crime were asked to nominate what changes could be made to legislation, regulatory procedure and/or sanctioning practices that would improve rates of detection, improve prosecutorial outcomes and achieve better compliance. A summary of the responses is given below.

Legislative complexities

The cause of environmental harm is embedded in all state and territory environment protection statutes or inferred at some level in a number of others. However, there are sometimes difficulties in recognising and identifying when an environmental harm has occurred, and quantifying the level of harm caused. The latter particularly affects the preparation and presentation of cases for prosecution, where the cause and magnitude of harm may be difficult to describe in language understood by the court. Convincing the court that harm has actually taken place can be problematic, because of a definitional lack of clarity (at the statute level) and an interpretative issue (at the court level) in conveying the extent, significance and cumulative effect of an environmental harm.

It was suggested that a way of overcoming this interpretational complexity was to:

- tighten the statutory definition of harm; and
- better integrate the concept of harm into the judicial process, including how harm is assessed in this setting.

An additional objective would be to attempt some quantification of the value of 'the environment', which would formalise a process in extracting compensation for the loss of intrinsic value. In the interim, some examination of legislative, enforcement and judiciary assessment of harm would be warranted.

Along with amending legislative deficiencies, is the need to consider legislative alignment, in particular, the creation of complementary penalty regimes across jurisdictions. For example, the Australian Capital Territory is investigating aligning its environmental protection statute with that of New South Wales. Another option is to consolidate offences under the one, over-arching set of laws. One example of successful rationalisation is the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (or *EPBC Act*). An overarching Act would include a full range of sentencing options and a number of deterrence applications that are consistently applied across the jurisdictions. The tiered penalty system set out in the *Protection of the Environment Operations Act 1997* (NSW) was thought to offer a good benchmark from which the reassessment of penalties for other environmental offences could be based.

Issues and improvements to procedure

Changing public perception on the seriousness of environmental crime and with it an expansion of duties, meant that agency roles in preventing and detecting environmental offences had become more difficult to meet. A common obstacle was the lack or diminishment of resources and a constant requirement to juggle priorities. The former affected efficiency in fulfilling responsibilities, with a steady backlog of investigations to be undertaken alongside the cycle of compliance monitoring. As a result, responses often tended to be reactive rather than proactive.

A collective wish of all participating agencies was support for capacity building and the development and implementation of innovative tools to measure, monitor and manage activities that can harm the environment. In addition was the need for extra training (particularly in investigatory techniques) and an extension of intelligence and information sharing. The nature of environmental offences made it crucial to increase capabilities to work across sectors and to better coordinate information-sharing protocols between key agencies and with other relevant organisations such as NGOs.

Stakeholders also emphasised the importance of education as a preventative tool to be used alongside of regulation and enforcement. However, traditional means of distributing educative material did not often work and better results (in terms of compliance) occurred if there was regular, education-focused dialogue between the regulators and the regulated. The value of social research was also expressed, involving the community at large and the community most affected by environmental regulation. Social research (alongside education) was being used in New South Wales with farmers, stock/station agents and land clearance contractors to gauge notions of environmental harm and illegal vegetation clearance and viewpoints on regulation and governance.

Prosecuting environmental offences

The treatment of environmental crimes by the judicial system was described by participants to the roundtable on environmental crime as still 'wanting', because of a general lack of understanding of environmental crime and the seriousness of the crime. One agency noted that the legal system in general 'is just not geared toward environmental crime'. This is partly due to the court level at which cases of environmental crime are generally tried and partly the related experience of the presiding judge. In most jurisdictions, cases were assigned to Magistrates' courts which resulted in inconsistent outcomes and according to roundtable participants, did not always adequately reflect the seriousness of the offence.

There was little enthusiasm among roundtable participants for the effectiveness of the penalties normally meted out for environmental offences. Fines were seen as particularly problematic. Most fines handed down were too low to act as an adequate deterrent and larger fines did not always meet clean-up and restoration costs needed to deal with the harm produced. Further was the view that offenders regarded fines as a 'lesser punishment' compared with a remediation or restoration order. A re-examination of penalties and sentencing options was seen as imperative. Sentencing options should ideally address deterrence, incapacitation and rehabilitation (apparently, only deterrence is usually considered) and there should be greater use of alternative sentencing options, including directions for reparations and rehabilitation.

Pollution and illegal waste disposal

Scope and definitions

Pollution—which entails the emission, leakage or spillage of a prescribed substance into the air, water or soil—was the first of the environmentally damaging practices to garner both public consideration and concern, and regulatory attention. Recognised pollutants typically comprise chemicals, pesticides and prescribed gases. While the emission of some of these substances is under the strictest of controls or banned outright, other emissions are technically permitted, albeit within specified levels. Pollution is deemed illegal where there is release of a prohibited substance, the emission or leakage of substances in excess of an established limit, or expulsion into specified media (eg water).

Illegal waste disposal is the sister offence to illegal pollution and incorporates the trade in, and transport and dumping of, waste. Waste covers everything from hazardous chemicals to demolition site refuse and sewage to electronic waste. Strict rules are in place as to who is responsible for the transport and disposal of wastes, how wastes can be moved from one site to another, the procedures that are to be followed in the treatment of waste and under what conditions waste must be stored and disposed of.

Laws and regulations

International controls

Four principal MEAs exist concerning the protection of environments from the emission of serious pollutants and the trade and dumping of hazardous and other wastes of concern. The consequences of marine dumping and polluting from ships received the earliest international attention with the London Convention and the MARPOL 73/78 Convention. The London Convention, now updated as the 1996 Protocol, was created as a regulatory framework to limit the disposal at sea of wastes generated on land (such as industrial wastes, sewage sludge, dredged material and radioactive wastes). The MARPOL Convention acts to prevent dumping at sea of wastes and the emission of air pollutants. Wastes include oil, noxious liquid substances, harmful substances carried in packaged form, ship sewage and garbage. Dumping refers to the expulsion of wastes from both operational and accidental causes.

The increased illegal movement of hazardous waste by 'toxic traders' from developed countries into developing countries and those of Eastern Europe led to the creation of the *1989 Basel Convention on the Control of Trans-Boundary Movements*

of Hazardous Wastes and their Disposal. This convention outlines implementation and enforcement commitments of signatory states, whereby the movement of waste must only be undertaken with prior notification from the exporting state and consent from the transit and import states. A new focus of the convention is improving methods of minimising hazardous waste generation.

The Montreal Protocol followed international recognition of the role the proliferation of man-made molecules (specifically CFCs and related compounds) had in detected perforations of the earth's protective ozone layer. The Montreal Protocol laid the foundation for international cooperation to protect the stratospheric ozone and required developed countries to achieve a 50 percent reduction of CFCs (relative to 1986 levels). Four amendments have since been made:

- 1990 London Amendment (complete phase-out in of CFCs and ODSs in developed countries by 2000 and developing countries by 2010);
- 1992 Copenhagen Amendment (accelerated phase-out of ODSs by 1996 in developed countries and phase-out of HCFCs starting in 2004);
- 1997 Montreal Amendment (phase-out of HCFCs in developing countries, and phase-out of methyl bromide in developed and developing countries in 2005 and 2015); and
- 1999 Beijing Amendment (tightening of controls on production and trade in HCFCs and inclusion of bromochloromethane to the list of controlled substances for phase-out by 2004).

National controls

The emission of pollutants into the air, water and soil was the first of the environmentally damaging practices to receive regulatory control. The enactment of legislation regarding the emission of pollutants began in the 1970s, first in Victoria with other states and territories following. At the time, Victoria was the only jurisdiction (and the second in the world) to combine pollution and waste laws into the one piece of legislation (Comino & Leadbeter 2005). Other jurisdictions initially relied on separate pieces of legislation until the 1980s and 1990s when they too passed comprehensive statutes. Each jurisdiction now has a primary environmental protection act and set of regulations which cover responsibilities and prescribed offences relating to air, water and land pollution, and the transfer and disposal of waste (see Table 4). While there is no environmental protection statute at the Commonwealth level, polluting activities affecting Commonwealth protected areas (or wildlife) can be prosecuted under Commonwealth legislation.

In addition to environment protection statutes are an array of legislative tools controlling the use and disposal of, and trade in, specified hazardous materials; investigation and remediation of contaminated sites; and prohibiting the dumping of oils, noxious substances, sewage and garbage into marine waters (see Tables 3 and 4). At the Commonwealth level is the:

- *Hazardous Waste (Regulations of Exports and Imports) Act 1989* to control the trade in specified waste materials and implement the 1989 Basel Convention;
- *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989* to regulate the import, export and manufacture of ozone depleting substances (ODSs) and synthetic greenhouse gases (SGGs), and implement the Montreal Protocol and subsequent amendments;
- *Environment Protection (Sea Dumping) Act 1981* to regulate dumping of wastes and incineration at sea and implement the London Convention. The Act covers all vessels, aircraft and platforms in Australian waters and Australian vessels and aircraft operating in any other seas or oceans; and
- *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* to prohibit the release or emission of specified substances and implement the MARPOL 73/78 Convention.

The Australian Government Department of Environment, Water, Heritage and the Arts is responsible for enforcing the first three statutes and associated regulations, and the Australian Maritime Safety Authority the fourth. Legislation on marine pollution (by ships) exists at the state and territory level too (except in the Australian Capital Territory; see Table 5) and in Western Australia, there is an additional statute prohibiting sea dumping.

Table 4 Environment protection statutes	
Jurisdiction	**Primary statute(s)**
Cth	*Hazardous Waste (Regulation of Exports and Imports) Act 1989*
	Ozone Protection and Synthetic Greenhouse Gas Management Act 1989
NSW	*Protection of the Environment Operations Act 1997*
	Contaminated Land Management Act 1997
	Ozone Protection Act 1989
	Pesticides Act 1999
	Radiation Control Act 1990
Vic	*Environment Protection Act 1970*
Qld	*Environmental Protection Act 1994*
WA	*Environmental Protection Act 1986*
	Contaminated Sites Act 2003
SA	*Environment Protection Act 1993*
	Radiation Protection and Control Act 1982
	Nuclear Waste Storage Facility (Prohibition) Act 2000
Tas	*Environmental Management and Pollution Control Act 1994*
ACT	*Environment Protection Act 1997*
NT	*Waste Management and Pollution Control Act*[a]
	Nuclear Waste Transport, Storage and Disposal (Prohibition) Act

a: Penalties for offences are prescribed in the Environmental Offences and Penalties Act 1996

Table 5 Marine protection statutes: Prohibition of sea dumping and pollution by ships	
Jurisdiction	**Primary statute(s)**
Cth	*Environment Protection (Sea Dumping) Act 1981*
	Protection of the Sea (Prevention of Pollution from Ships) Act 1983
NSW	*Marine Pollution Act 1987*
Vic	*Pollution of Waters by Oil and Noxious Substances Act 1986*
	Waste Management Policy (Ship's Ballast Water)
Qld	*Transport Operations (Marine Pollution) Act 1995*
WA	*Western Australian Marine (Sea Dumping) Act 1981*
	Pollution of Waters by Oil and Noxious Substances Act 1987
SA	*Protection of Marine Waters (Prevention of Pollution from Ships) Act 1987*
Tas	*Pollution of Waters by Oil and Noxious Substances Act 1987*
NT	*Marine Pollution Act*

Complementing environmental protection statutes are the National Environment Protection Measures (NEPMs), which constitute statutory instruments developed to provide uniform standards and national objectives on both the protection and monitoring of the environment. NEPMs thus far prescribed relate to:

- ambient air quality;
- air toxics;
- national pollutant inventory;
- movement of controlled wastes;
- used package materials;
- assessment of site contamination; and
- diesel vehicle emissions.

Jurisdictional implementation of NEPMs are reflected in the establishment of state environment protection policies (known as SEPPs or EPPs depending on the jurisdiction) which detail environmental standards, goals and procedures for specific areas of environmental protection (eg air quality) and provide guidance in the application of regulations. Table 6 lists some of the EPPs presently in place in Victoria and South Australia.

These policies and the statutes they support are the product of a shift from the conventional regulatory approach of 'command and control' to one where environmental harm and environmental outcomes are the defining elements (Comino & Leadbeter 2005). Environmental protection should focus on preventing pollution and waste contamination through the setting of environmental quality standards and establishment of practices to meet these standards. Fundamental to the creation of Australia's environment protection statutes are the so-called Principles of Environmental Protection (Comino & Leadbeter 2005), consisting of the:

- prevention of pollution (ie abolish or minimise polluting products and practices);
- integration of the pollution control principle (ie recognise the cross-media effect of pollutants);
- precautionary principle (ie absolve dependence on scientific certainty to delay implementation of protective practices); and
- optimisation of the regulatory mix (ie blending regulatory and market-based approaches—the polluter pays).

Offences and penalties

Concept of environmental harm and intent to commit

In all jurisdictions, the extent of environmental harm (described as a serious environmental harm, material environmental harm or environmental nuisance) is used in environmental protection statutes to prescribe the seriousness of the offence and the associated maximum penalty. There is some definitional variation to these terms but serious and material environmental harm are basically distinguished by the intensity and extensiveness of the environmental impact and the actual or potential

Table 6 Selected environmental protection policies, Victoria and South Australia

Jurisdiction	SEPPs/EPPs
Vic	State Environment Protection Policy (Ambient Air Quality)
	State Environment Protection Policy (Air Quality Management)
	State Environment Protection Policy (Prevention and Management of Contamination of Land)
	State Environment Protection Policy (Groundwaters of Victoria)
	State Environment Protection Policy (Waters Policy)
SA	Environment Protection (Air Quality) Policy 1994
	Environment Protection (Burning) Policy 1994
	Environment Protection (Motor Vehicle Fuel Quality) Policy 2002
	Environment Protection (Used Packaging Materials) Policy 2007
	Environment Protection (Waste Management) Policy 1994
	Environment Protection (Water Quality) Policy 2003
	Environment Protection (National Pollutant Inventory) Policy 2008

loss of, or damage to, property (see Tables 7, 8 and 9). This loss or damage is based on a predetermined monetary threshold in all jurisdictions except New South Wales and Victoria. Serious environmental harm includes acts that:

- exceed the threshold amount of $50,000 (Queensland, South Australia, Tasmania and the Australian Capital Territory);
- exceed by five times the threshold amount of $20,000 (Western Australia); and
- exceed $50,000 (or prescribed) amount (Northern Territory).

Material environmental harm includes acts of harm that:

- exceed the threshold amount of $5,000 (Queensland, South Australia, Tasmania and the Australian Capital Territory);
- exceed the threshold amount of $20,000 (Western Australia); and
- not exceed the threshold (or prescribed) amount of $50,000 (Northern Territory).

Individual statutes additionally incorporate into their definitions of serious environmental harm:

- harmful acts that affect areas of high conservation value (Queensland, Western Australia, Northern Territory, Australian Capital Territory);
- costs of taking action to prevent or minimise harm or action required to rehabilitate the damaged environment (Queensland, Northern Territory); and
- any adverse impact on health and safety of human beings (South Australia, Tasmania).

Harmful acts are also differentiated by the wilfulness or intentional nature of the act. Both the *Environmental Protection Act 1994* (Qld) and the *Environment Protection Act 1993* (SA) differentiate between 'wilful or unlawful' and 'unlawful' acts of serious or material environmental harm and 'unlawful' acts. The *Environmental Management and Pollution Control Act 1994* (Tas) refers to 'intentional' and 'reckless' acts.

The *Environment Protection Act 1997* (ACT) divides cases of serious and material environmental harm into three levels of responsibility; that is, those that were done:

- knowingly and recklessly; or
- negligently; and
- without evidence for recklessness or negligence.

A five level offence/penalty scheme adopted in the Northern Territory orders the seriousness of the offence as:

- 1—intentional acts of pollution that cause serious acts of environmental harm;
- 2a—acts of pollution that cause serious acts of environmental harm;
- 2b—intentional acts of pollution that cause material acts of environmental harm;
- 3—acts of pollution that cause material acts of environmental harm; and
- 4—an environmental nuisance.

Levels one to three of the offence hierarchy also include a reference to persons to have known or 'ought reasonably be expected to know' (*Waste Management and Pollution Control Act* (NT) s 83) that harm would arise from the polluting act.

Under the *Environmental Protection Act 1986* (WA), most polluting behaviours are deemed a Tier 1 offence. Different penalties, however, are prescribed according to the intentional or otherwise nature of the act. Cases of serious environmental harm (intentional and unintentional) and intentional acts leading to material environmental harm fall into the Tier 1 category of offences. Acts of material harm (where intention was not a factor) is a Tier 2 offence. When considering penalty and licence breaches, intentional actions are treated as Tier 1 and other illegal acts as Tier 2 offences.

Victoria employs a version of the offence regimes described, which incorporates some demarcation based on intent and seriousness of harm produced. The most serious offence under the five level system is 'aggravated pollution', which is defined as intentional, reckless or negligent pollution (or cause to pollute) resulting in serious damage to the environment, serious threat to human health or the risk of either (Environment Protection Act 1970 (Vic), s 59E). The provision of false information (by an environmental auditor) or fabricating results for environmental audit reports also constitute a Level 1 offence. Level 2a offences describe 'intentional' polluting or dumping practices (and giving false information), while Level 2b offences include these offences where they occur without intent. Breaches of works approvals/licences/permits and notices or directives are also Level 2b offences. Infringements are prescribed as Level 4 offences and littering as Level 5.

Table 7 Statute definitions of serious environmental harm

Act	Definition
Environmental Protection Act 1994 (Qld) (s 17)	• that is irreversible, of a high impact or widespread; or • caused to an area of high conservation value or special significance; or • that causes actual or potential loss or damage to property of an amount of, or amounts totalling, more than the threshold amount; or • that results in costs of more than the threshold amount being incurred in taking appropriate action to – prevent or minimise the harm; and – rehabilitate or restore the environment to its condition before the harm In this section, threshold amount means $50,000 or, if a greater amount is prescribed by regulation, the greater amount
Environmental Protection Act 1986 (WA) (s 3A(2))	• is irreversible, of a high impact or on a wide scale; • is significant or in an area of high conservation value or special significance; or • results in actual or potential loss, property damage or damage costs of an amount, or amounts in aggregate, exceeding five times the threshold amount Damage costs means the reasonable costs and expenses that are or would be incurred in taking all reasonable and practicable measures to prevent, control or abate the environmental harm and to make good resulting environmental damage Threshold amount means $20,000, or if a greater amount is prescribed by regulation, that amount
Environment Protection Act 1993 (SA) (s 5(3b)	• it involves actual or potential harm to the health or safety of human beings that is of a high impact or on a wide scale, or other actual or potential environmental harm (not being merely an environmental nuisance) that is of a high impact or on a wide scale; or • it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $50,000
Environmental Management and Protection Control Act 1994 (Tas) (s 5(2a) & s 5(4))	• it involves an actual adverse effect on the health or safety of human beings that is of a high impact or on a wide scale; or • it involves an actual adverse effect on the environment that is of a high impact or on a wide scale; or • it results in actual loss or property damage of an amount, or amounts in aggregate, exceeding ten times the threshold amount; 'Threshold amount' means $5 000, or if a greater amount is prescribed by regulation, that amount
Environment Protection Act 1997 (ACT) (Schedule 3)	• that is very significant, including environmental harm that becomes very significant – over time; or – due to its frequent recurrence; or – due to its cumulative effect with other relevant events; or • that is to an area of high conservation value and is significant, including environmental harm that becomes significant • over time; or • due to its frequent recurrence; or • due to its cumulative effect with other relevant events; or • that results in loss or damage to property to the value of more than $50,000; or • that results in necessary remedial action costing more than $50,000
Waste Management and Pollution Control Act (NT) (s 4)	more serious than material environmental harm and includes environmental harm that • is irreversible or otherwise of a high impact or on a wide scale; • damages an aspect of the environment that is of a high conservation value, high cultural value or high community value or is of special significance; • results or is likely to result in more than $50,000 or the prescribed amount (whichever is greater) being spent in taking appropriate action to prevent or minimise the environmental harm or rehabilitate the environment; or • results in actual or potential loss or damage to the value of more than $50,000 or the prescribed amount (whichever is greater)

Table 8 Statute definitions of material environmental harm

Act	Definition
Environmental Protection Act 1994 (Qld) (s 16)	• that is not trivial or negligible in nature, extent or context; or • that causes actual or potential loss or damage to property of an amount of, or amounts totalling, more than the threshold amount but less than the maximum amount; or • that results in costs of more than the threshold amount but less than the maximum amount being incurred in taking appropriate action to – prevent or minimise the harm; and – rehabilitate or restore the environment to its condition before the harm. In this section maximum amount means the threshold amount for serious environmental harm. 'Threshold amount' means $5,000 or, if a greater amount is prescribed by regulation, the greater amount
Environmental Protection Act 1986 (WA) (s 3A(2))	• is neither trivial nor negligible; or • results in actual or potential loss, property damage or damage costs of an amount, or amounts in aggregate, exceeding the threshold amount
Environment Protection Act 1993 (SA) (s 5(3a))	• it consists of an environmental nuisance of a high impact or on a wide scale; or • it involves actual or potential harm to the health or safety of human beings that is not trivial, or other actual or potential environmental harm (not being merely environmental nuisance) that is not trivial; or • it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $5,000
Environmental Management and Protection Control Act 1994 (Tas) (s 5(2b) & s 5(4))	• it consists of an environmental nuisance of a high impact or on a wide scale; or • it involves an actual adverse effect on the health or safety of human beings that is not negligible; or • it involves an actual adverse effect on the environment that is not negligible; or • it results in actual loss or property damage of an amount, or amounts in aggregate, exceeding the threshold amount. 'Threshold amount' means $5,000, or if a greater amount is prescribed by regulation, that amount
Environment Protection Act 1997 (ACT) (Schedule 3)	• that is significant, including environmental harm that becomes significant – over time; or – due to its frequent recurrence; or – due to its cumulative effect with other relevant events; or • that is to an area of high conservation value, other than harm that is trivial or negligible; or • that results in loss or damage to property to the value of more than $5 000; or • that results in necessary remedial action costing more than $5,000
Waste Management and Pollution Control Act (NT) (s 4)	• is not trivial or negligible in nature; • consists of an environmental nuisance of a high impact or on a wide scale; • results, or is likely to result, in not more than $50,000 or the prescribed amount (whichever is greater) being spent in taking appropriate action to prevent or minimise the environmental harm or rehabilitate the environment; or • results in actual or potential loss or damage to the value of not more than $50,000 or the prescribed amount (whichever is greater)

Table 9 Statute definitions of environmental nuisance

Act	Definition
Environmental Protection Act 1994 (Qld) (s 15)	is unreasonable interference or likely interference with an environmental value caused by • noise, dust, odour, light; or • an unhealthy, offensive or unsightly condition because of contamination; or • another way prescribed by regulation
Environment Protection Act 1993 (SA) (s 3)	• any adverse effect on an amenity value of an area that – is caused by pollution; and – unreasonably interferes with or is likely to interfere unreasonably with the enjoyment of the area by persons occupying a place within, or lawfully resorting to, the area; or • any unsightly or offensive condition caused by pollution
Environmental Management and Protection Control Act 1994 (Tas) (s 3)	• the emission of a pollutant that unreasonably interferes with, or is likely to unreasonably interfere with, a person's enjoyment of the environment; and • any emission specified in an environment protection policy to be an environmental nuisance
Environment Protection Act 1997 (ACT) (Schedule 3)	An unreasonable interference with the enjoyment by the public, a section of the public or a person of a place or area, if the interference caused or likely to be caused by • dust, fumes, light, noise, odour or smoke; or • an unhealthy, unsightly or otherwise offensive condition because of pollution
Waste Management and Pollution Control Act (NT) (s 4)	• an adverse effect on the amenity of an area that – is caused by noise, smoke, dust, fumes or odour; and – unreasonably interferes with or is likely to unreasonably interfere with the enjoyment of the area by persons who occupy a place within the area or are otherwise lawfully in the area; or • an unsightly or offensive condition caused by contaminants or waste

Note: WA legislation does not include a definition of environmental nuisance

A quite different approach is taken in New South Wales, where a three-tiered system has been adopted that locates the most serious offences in Tier 1 and all other offences in Tiers 2 and 3. Tier 1 offences require proof of willingness or negligence in the commission of the illegal act and evidence of environmental harm or likely harm, for prosecution to proceed. Waste disposal, leakage or spillage of hazardous material and the emission of ozone depleting substances constitute Tier 1 offences. Air, water and land pollution, and unlawful transport of waste, are some of the damaging acts recognised as Tier 2 and 3 offences. Tier 2 offences may be prosecuted, while Tier 3 offences are dealt with through the issuance of a penalty notice. For prosecution purposes, Tier 2 offences are treated as strict liability offences.

Criminal penalties

The most severe penalties prescribed in environment protection statutes are for wilful, intentional or reckless pollution or waste disposal that causes serious environmental harm. In New South Wales, it is for the wilful or negligent disposal of waste, causing a leak or spillage, or emitting an ODS. Any natural person found guilty of such an offence in New South Wales can receive a maximum fine of up to $1m or seven years imprisonment, or both (see Table 10). Fines prescribed in other jurisdictions for natural persons range from $200,000 in the Australian Capital Territory (for knowingly or recklessly polluting to cause serious environmental harm: *Environment Protection Act 1997* (ACT), s 137(1)) to over $500,000 in Victoria (for intentional discharge, emission or deposit or waste or 'aggravated'

pollution: *Environment Protection Act 1979* (Vic), s 67AA per ss 27A, 39, 41, 43). Maximum fines for corporations start at $1m, up to $5m in New South Wales for Tier 1 offences.

All states and territories except Victoria include a custodial option for polluting and waste disposal offences—four years in Tasmania to seven years in New South Wales. Penalties correspondingly lessen with a diminishing of the harm caused and the absence of intentional behaviour. Generally speaking, acts of serious environmental harm (minus intent) and intentionally committed acts of material environmental harm are assigned the same or similar maximum penalty and lower penalties again for acts of material environmental harm (minus intent).

Breaches of authorisation concern the contravention of environmental protection policies, conditions of licence or permit, environment protection notices and other orders served to stop or remediate a harmful act. Environment protection statutes in Queensland, Western Australia and Northern Territory add a component of intent to some of these breach offences and the associated maximum penalty is accordingly greater than for 'conventional' offences of failure to comply. For example, the offence of contravening conditions of a development approval (*Environmental Protection Act 1994* (Qld), s 435) has a maximum penalty of $150,000 or two years imprisonment. A person found contravening an environmental protection notice in Western Australia is guilty of a Tier 1 offence and liable to pay a fine of up to $250,000 and corporations up to $500,000 (*Environmental Protection Act 1986* (WA), s 65(4a)).

Sanction options

Enforcement officers can select from an array of enforcement actions to discipline offenders and most jurisdictions have developed enforcement and prosecution guidelines to instruct the most suitable action depending on the offence committed. There is some variation between jurisdictions in the order in which different types of sanctions are applied but, in effect, comprise notices, orders/directions and prosecution (see Table 11).

Infringement notices usually come in the form of on-the-spot fines, with no conviction recorded if the fine is paid within a specified timeframe. If the fine is not paid, enforcement officers can initiate court proceedings. Offenders may also opt not to pay the fine and have the matter heard in court instead. Infringement notices are generally the first option available to enforcement officers and used to punish minor, one-off and/or technical breaches. Western Australia makes use of infringement notices (for Tier 3 offences) and modified penalty notices (for Tier 2 offences; WA DEC 2008b). Tasmania locates infringement notices (known in the state as EINs) higher in the enforcement action hierarchy and EINs can only be applied for offences listed in the *Environmental Management and Pollution Control (Infringement Notices) Regulations 1996* (Tas DPIW&E 2004a). If the offence is committed again, prosecution may be undertaken.

Orders and notices are issued to prevent or halt actual or potentially harmful practices, through stop work, control, prevent, abatement or prohibit directions. Where harm has been committed, persons may be directed to clean up and/or undertake remedial or rehabilitative works. In some cases, the public authority or other designated agency will assume these responsibilities and an order is sent to the offender to this effect. For contaminated land sites, officers may initiate investigative orders to assess the cause and extent of the harm. Some jurisdictions also make provision for orders of injunctive relief, employing court-ordered directions to discontinue or prohibit environmentally damaging activities, order compliance or make good a contravention.

Where harm has occurred, the existing works approval or licence can be amended, suspended or revoked. Amendments are added describing the types of actions that need to be made to achieve compliance. Licence amendment can be used as an alternative to serving orders or notices.

Table 10 Maximum penalties for selected offences for causing environmental harm	
Act and associated selected offences	**Maximum penalty**
***Protection of the Environment Operations Act 1997* (NSW)**	
Tier 1 Act was wilful or negligent and harmed or is likely to harm environment	Wilful—$1,000,000 and/or seven years imprisonment (individual) Negligent—$500,000 and/or four years imprisonment (individual) $5,000,000 (body corporate)
Disposal of waste (s 115)	
Causes any substance to leak, spill or otherwise escape (whether or not from a container) (s 116)	
Cause any controlled ozone depleting substance to be emitted into the atmosphere (s 117)	
Tier 2 Other offences	$250,000 (individual) $1,000,000 (body corporate)
Pollution of waters (s 120)	
Air pollution (ss 124–126, 128–129)	
Pollution of land (s 142A)	
Unlawful transporting or depositing of waste (s 143)	
Unlawful use of land as a waste facility (s 144)	
False or misleading information about waste (s 145)	
Failure to notify authorities of polluting incident (s 152)	
Tier 3 All other offences	Penalty notice
***Environment Protection Act 1970* (Vic)[a]**	
Unauthorised discharge, emission or deposit of waste (waste or substances that are a danger or potential danger, or creates a state of potential danger to quality of environment (s 27A)	$272,208; $567,100 (intentional—s 67AA)
Contravenes condition of licence (s 27(2))	$272,208
Industrial waste—contravenes rules or regulations specified in a waste management policy or regulations, or causes or permits an environmental hazard (s 27A(1))	As above
Contravenes requirements of an abatement notice (s 28B(5))	As above
Contravenes pollution abatement notice (s 31A(7))	As above
Pollution of waters (s 39)	$272,208; $567,100 (intentional—s 67AA)
Pollution of atmosphere (s 41)	As above
Pollution of land (s 43)	As above
Failure to comply with authority requirement (s 49AM)	As above
Failure to comply with waste reduction agreement (s 51E(5))	$68,052
Unauthorised business to transport proscribed waste (s 53A3)	$272,208
Contravention conditions of permit—waste transportation	$68,052
Failure to comply with regulations regarding use of products that may damage the environment (s 53Q)	$272,208
Relating false information (s 59D)	$272,208; $567,100 (intentional—s 67AA)

Table 10 continued

Act and associated selected offences	Maximum penalty
Environmental Protection Act 1994 **(Qld)**	
Wilfully or unlawfully cause serious environmental harm (s 437(1))	$312,375 or five years imprisonment
Unlawfully cause serious environmental harm (s 437(2))	$124,875
Wilfully or unlawfully cause material environmental harm (s 438(1))	$124,875 or two years imprisonment
Unlawfully cause material environmental harm (s 438(2))	$62,625
Wilfully or unlawfully cause environmental nuisance (s 440(1))	$62,625
Unlawfully cause environmental nuisance (s 440(2))	$12,375
Deposit prescribed water contaminant in water and related matters (s 440ZG)	$62,625 (wilful); $22,500
Release of certain substances, sewage or garbage from boat into coastal waters (s 440ZI–K)	As above
Use fuel containing more than the permitted level of sulphur (s 440ZM)	$22,500
Release prescribed contaminant into environment/place contaminant where environmental harm or nuisance may be caused (ss 442–443)	$12,375
Contravene environment protection order/development condition (ss 435,435A)	$150,000 or two years imprisonment (wilful); $124,875
Environmental Protection Act 1986 **(WA)**	
Tier 1	
Intentionally or negligently causing pollution (s 49(1))	$500,000 and/or five years imprisonment (individual); $1,000,000 (body corporate)
Intentionally or negligently cause serious environmental harm (s 50A(1))	As above
Intentionally or negligently discharge waste to cause pollution (s 50(1))	$500,000 (individual); $1,000,000 (body corporate)
Cause or allow pollution (s 49(2))	$250,000 and/or three years imprisonment (individual); $500,000 (body corporate)
Cause serious environmental harm (s 50A(2))	As above
Intentionally or negligently cause material harm (s 50B(1))	As above
Discharge waste to cause pollution (s 50(2))	$250,000 (individual); $500,000 (body corporate)
Intentionally or negligently emit unreasonable emission (s 49(3))	$125,000 (individual); $250,000 (body corporate)
Intentionally or negligently not comply with environmental protection notice OR environmental protection directions OR prevention notice (s 65(4a))	$250,000 (individual); $500,000 (body corporate)
Tier 2	
Cause material environmental harm (s 50B(2))	$125,000 (individual); $250,000 (body corporate)
Emit unreasonable emission (s 49(4))	$62,500 (individual); $125,000 (body corporate)
Contravene conditions of works approval *or* conditions of licence (ss 55, 58)	As above

Table 10 continued

Act and associated selected offences	Maximum penalty
Contravene environment protection order *or* prevention notice (s 65(5))	As above
Tier 3	
Vehicle or vessel emission discharge *or* not maintain emission device *or* interfere with anti-pollution device (ss 77–78)	$5,000
Environment Protection Act 1993 **(SA)**	
Causing serious environmental harm by intentional or reckless polluting of the environment and with the knowledge that environmental harm will or might result (s 79(1))	$500,000 or Division 4 imprisonment (individual); $2,000,000 (body corporate)
Causing material environmental harm by intentional or reckless polluting of the environment and with the knowledge that environmental harm will or might result (s 80(1))	$250,000 or Division 5 imprisonment (individual); $500,000 (body corporate)
Causing serious environmental harm by polluting of the environment (s 79(2))	$250,000 (individual); $500,000 (body corporate)
Causing material environmental harm by polluting of the environment (s 80(2))	$150,000 (individual); $250,000 (body corporate)
Failing to notify of incident causing serious or material environmental harm (s 83)	As above
Causing environmental nuisance by intentional or reckless polluting of the environment and with the knowledge that environmental harm will or might result (s 82(1))	Division 3 fine (individual); Division 1 fine (body corporate)
Causing environmental nuisance by polluting of the environment (s 82(2))	Division 6 fine (individual); Division 4 fine (body corporate)
Contravene environment protection order (s 93(8))	Penalty associated with contravening requirement under Act
Contravene clean-up order *or* site contamination order *or* site remediation order (ss 99, 103H, 103J)	Division 1 fine (individual); $120,000 (body corporate)
Environmental Management and Pollution Control 1994 Act **(Tas)**	
Causing serious environmental harm by polluting intentionally or recklessly and with knowledge serious environmental harm will result (s 50(1))	$250,000 and/or four years imprisonment (individual); $1,000,000 (body corporate)
Causing material environmental harm by polluting intentionally or recklessly and with knowledge material environmental harm will result (s 51(1))	$120,000 and/or two years imprisonment (individual); $250,000 (body corporate)
Polluting environment and causing serious environmental harm (s 50(2))	$120,000; $250,000 (body corporate)
Deposit pollutant where environmental harm may be caused (s 51A)	As above
Polluting environment and causing material environmental harm (s 51(2))	$6,000 (individual); $120,000 (body corporate)
Fail to notify incident (s 32)	As above
Contravene environment protection notice *or* failure to comply with investigation, remediation or site management notice (ss 44, 74P)	$5,000 (individual); $100,000 (body corporate)
Wilfully or unlawfully causes environmental nuisance (s 53(1))	$3,000
Unlawfully causes environmental nuisance (s 53(2))	$1,000

Table 10 continued

Act and associated selected offences	Maximum penalty
Environment Protection Act 1997 **(ACT)**	
Knowingly or recklessly polluting causing serious environmental harm (s 137(1))	$200,000 and/or five years imprisonment
Negligently polluting causing serious environmental harm (s 137(2))	$150,000 and/or three years imprisonment
Polluting causing serious environmental harm (s 137(3))	$100,000
Knowingly or recklessly polluting causing material environmental harm (s 138(1))	$100,000 and/or two years imprisonment
Negligently polluting causing material environmental harm (s 138(2))	$75,000 and/or one year imprisonment
Polluting causing material environmental harm (s 138(3))	$500,000
Knowingly or recklessly polluting causing environmental harm (s 139(1))	$10,000 and/or six months imprisonment
Negligently polluting causing environmental harm (s 139(2))	$7,500
Polluting causing environmental harm (s 139(3))	$5,000
Placing pollutant where it can cause harm (s 142)	$1,000
Unauthorised conduct of prescribed activities (s 42(1))	$2,000
Contravene an environmental authorisation (s 45(1))	As above
Contravene order to remediate contaminated land OR environment protection order (s 91D, s 125(1))	As above
Duty to notify of actual or threatened environmental harm (s 23)	As above
Duty to notify of existence of contaminated land (s 23A)	As above
Contravene environmental improvement plan notice *or* emergency plan notice *or* assessment of contaminated land notice (ss 76(5), 82(3), 91C)	As above
Waste Management and Pollution Control Act 2007 **(NT)**[b]	
Environmental offence level 1	
Intentionally causing pollution resulting in serious environmental harm and knowing this harm will or may occur (s 83(1))	$25,000–250,000 and/or five years imprisonment (individual); $125,000–1,250,000 (body corporate)
Environmental offence level 2	
Causing pollution resulting in serious environmental harm and knowing this harm will or may occur (s 83(2))	$10,000–100,000 (individual); $50,000–500,000 (body corporate)
Intentionally causing pollution resulting in material environmental harm and knowing this harm will or may occur (s 83(3))	As above
Causing pollution resulting in material environmental harm and knowing this harm will or may occur (s 83(4))	As above
Environmental offence level 3	
Intentionally store contaminant in manner which is likely to spill or leak etc (s 83(6))	$5,000–50,000 (individual); $25,000–250,000 (body corporate)
Intentionally fail to notify of incident causing of threatening to cause pollution (s 14)	As above

Table 10 continued

Act and associated selected offences	Maximum penalty
Intentional contravene conditions of environment protection approval or licence (s 39(1))	As above
Intentionally contravene pollution abatement notice *or* compliance plan (s 63(1))	As above
Environmental offence level 4	
Cause an environmental nuisance (s 83(5))	Up to $5,000 (individual); up to $25,000 (body corporate)
Store contaminant or waste which is likely to spill or leak etc (s 83(7))	As above
Fail to notify of incident causing or threatening to cause pollution (s 14)	As above
Contravene conditions of environment protection approval or licence (s 39(2))	As above
Conduct specified activity without environment protection approval (s 30(1))	As above
Contravene pollution abatement notice *or* compliance plan (s 63(2))	As above

a: Victorian monetary penalty based on penalty unit amount for 2008–09 ($113.42); *Monetary Units Act 2004*

b: Penalties prescribed in *Environmental Offences and Penalties Act 1996*

Note: Excludes daily penalties where applied

Environmental offences may also be dealt with through civil or criminal proceedings. Each jurisdiction makes provision for civil action, or at least the option to arrange for an injunctive order. Court ordered injunctions are generally sought to restrain an act from being (or continuing to be) committed. Civil orders available are used to:

- restrain activity;
- order compliance with the Act or Regulations;
- require a specified action;
- mitigate, prevent or make good on damage arising from non-compliant activities;
- retrieve payment of costs and expenses incurred for the Authority to take action or make good damage;
- retrieve payment of compensation for injury, loss or damage to property ensuing from activity or harm/payment of costs or expenses incurred in taking action to prevent injury, loss or damage ensuing from activity or harm;
- obtain payment for exemplary damages; and/or
- retrieve payment for any financial benefit attributable to the breach.

While the outcomes of the first four listed civil orders match those requested in administrative notices and orders, civil orders are served in situations where:

- an administrative order or notice has been ignored (or the Authority 'believes' it has been disregarded);
- other forms of enforcement action have not elicited an adequate response or not undertaken in a sufficient or timely manner;
- there is a history of non-compliance with administrative orders;
- urgent action is required (and other actions would not elicit as rapid a response); or
- the severity of the contravention justifies civil proceedings.

Table 11 Enforcement actions for breaches of environment protection statutes

Infringement notice	Fine for relatively minor, one-off breaches. No criminal conviction is registered. Failure to pay fine may result in prosecution. Offenders may also opt to forego paying the fine to have the matter tested in court
Written warning/caution notice	A written notice to an offender that an offence has been committed and detected. Warnings are generally used for administrative, minor or technical breaches of the Act
Penalty notice	Written notice for Tier 3 offences in New South Wales and Tier 2 offences in Western Australia. Offender may pay fine or elect court action. Prosecution will proceed if fine is not paid in a specified time
Orders/notices	Orders or notices to: • stop work and/or • clean-up, remediate or rehabilitate site and/or • initiate measures to prevent, control or abate polluting activities (or comply with licence/permit requirements). Orders and notices for each jurisdiction are as follows: New South Wales—environment protection notices (clean-up, prevention and prohibition), investigation order, remediation order Victoria—pollution abatement notice Queensland—environment protection order (carry out specified works/clean-up) Western Australia—environment protection notice (prevent, control or abate), closure notice, stop orders, prevention notice (specific to waste disposal); investigation notice, clean up notice, hazard abatement notice South Australia—environment protection orders, cleanup orders and cleanup authorisations, site contamination assessment orders, site remediation orders Tasmania—environment protection notices (prevent, control, reduce or remediate; discontinue or not commence activity) Australian Capital Territory—environment protection orders (stop work, remediate, restore), order to assess whether land contaminated, order to remediate land Northern Territory—pollution abatement notices (comply, prevent, remediate)
Civil and injunctive orders	Court applied order to prevent person from engaging in improper conduct, cease activity, instruct compliance or make good a contravention or failure
Amend/cancel/suspend/revoke works approval/licence	Amend licence requiring certain actions be undertaken so to comply with Act or Regulations or cancellation/suspension following serious breach of licence conditions or Act
Prosecution	Civil or criminal proceedings following serous (wilful/negligent) breach

Source: ACT EPA 2007; NSW EPA 2004; NT NRETA 2007; Qld EPA 2004b; SA EPA 2009a; Tas DPIW&E 2004a; Vic EPA 2004a; WA DEC 2008b

The type of civil orders available varies between the jurisdictions that employ them. South Australia has probably the best developed system of civil orders, which are used for strict liability offences only (SA EPA 2009b). This state has also implemented a new civil penalty system (as at 1 July 2006) whereby the Authority may negotiate a civil penalty with the offender or apply to the Environment, Resources and Development Court for an order directing the offender to pay a civil penalty (*Environment Protection Act 1993* (SA) s 104A). Negotiated civil penalties are calculated on the basis of the degree of harm caused (actual, potential and risk of actual/potential) and the nature of the harm.

The penalty also adds the economic benefit derived from the contravening act (SA EPA 2009c) and is adjusted for factors including:

- offender's compliance record;
- corrective measures taken to prevent the harmful act;
- appropriateness and promptness of corrective measures;

- notification of act;
- offender's cooperation with the Authority; and
- degree of public contrition (eg public apology).

Civil penalties handed down in court are determined differently—either an equivalent to the criminal penalty amount specified under the Act or $120,000, whichever is the lesser sum (*Environment Protection Act 1993* (SA) s 104A).

Prosecution is reserved for serious acts of environmental harm or breaches against legislation. All jurisdictions specify that prosecution should only be commenced if there is sufficient evidence for a prima facie case and a 'reasonable' prospect of finding guilt. Western Australia, South Australia and the Northern Territory also stipulate the case must be in the public interest (NT NRETA 2007; SA EPA 2009b; WA DEC 2008b). Designated officers from the investigation authority are able to bring proceedings but usually following approval from the authority or division's Director and after consultation with the Crown Solicitor or DPP. Proceedings against Tier 1 offences in New South Wales require authorisation from the Environmental Protection Agency (EPA) Board.

Offences and penalties: Pollution of waters and marine dumping

The Commonwealth and seven of the eight states and territories have enacted legislation dealing specifically with ship pollution. In all statutes, there are offences related to the prohibited discharge of oil and oily substances but variation exists in the inclusion of offences referring to the discharge of other wastes (see Table 12). Additional offences include failure to report incidents, unauthorised or night transfer operations, various record keeping breaches and providing false or misleading information. The master of the ship, the owner (be it a person or body corporate) and in some statutes, the crew members, can be held accountable and face a pecuniary and/or custodial sentence if proven guilty.

As for other pollution and waste disposal offences, the severest penalty for pollution or dumping in coastal waters is found in New South Wales, with individuals facing a maximum fine of $500,000 and ship owners a maximum fine of $10m (see Table 12). Custodial sentences for individuals are available in Victoria (2 years), Tasmania (4 years) and the Northern Territory (5 years), and under Commonwealth law (10 years for dumping of seriously harmful substances).

Penalties are the same for all acts of coastal water pollution in New South Wales, Victoria, Queensland and Tasmania, regardless of the type of material dumped. A penalty scale is applied in Western and South Australia, dependent on the type of substance discharged, whereas in the Northern Territory it is the intentional nature of the act and the degree of resultant harm that determines the maximum penalty applicable.

Table 12 Maximum penalties for selected offences of causing pollution to and dumping in coastal waters

Act and associated selected offences	Maximum penalty
Protection of the Sea (Prevention of Pollution from Ships) Act 1983 **(Cth)**	
Prohibition of discharge of oil or oily mixtures into sea (s 9(1)(1B))	$220,000 (reckless or negligent); $55,000 (other)
Prohibition of discharge of oil residues into sea (s 10(1)(1B))	As above
Failure to report certain incidents involving oil or oily mixture (s 11(1A))	$55,000
Prohibition of carriage of substances that have not been categorised or provisionally assessed (s 17(1)(2)	$22,000 (negligent); $6,600
Prohibition of discharge of substances into the sea (s 21(1)(1B)	$220,000 (reckless or negligent); $55,000 (other)
Failure to report certain incidents involving certain noxious substances (s 22(1A))	$55,000
Prohibition of discharge by jettisoning of harmful substances into the sea (s 26AB)	$220,000 (reckless or negligent); $55,000 (other)

Table 12 continued

Act and associated selected offences	Maximum penalty
Failure to report certain incidents involving certain harmful substances (s 26B)	$55,000
Prohibition of discharge of sewage (s 26BC)	$220,000 (reckless or negligent); $55,000 (other)
Prohibition of discharge of sewage into the sea (s 26D(1)(3))	As above
Prohibition of disposal of garbage into the sea (s 26F(1)(3)	As above
Using fuel oil with a sulphur content of more than 4.5 percent m/m (s 26FEG(1)(2))	As above
Takes Australian ship into SOx emission control area (s 26FEH)(1)(2))	As above
Using fuel oil that does not meet fuel oil quality requirements (s 26FEN)	$55,000
Environment Protection (Sea Dumping) Act 1981 **(Cth)**	
Dumping of controlled matter (s 10A(2a–c))	
• Seriously harmful material	$220,000 and/or 10 years imprisonment
• Material is not within Annex 1 of Protocol	$5,000 and/or two years imprisonment
• Any other case	$2,5000 and/or one year imprisonment
Incineration of controlled material (s 10B(2a–c))	As above (per material type)
Loading for the purpose of dumping or incinerating (s 10C(2a–c))	As above (per material type)
Export for the purpose of dumping or incinerating (s 10D(2a–c))	As above (per material type)
Placement of artificial reef (s 10E(2a–c))	As above (per material type)
Marine Pollution Act 1987 **(NSW)**	
Prohibition of discharge of oil or oily mixtures into state waters (s 8)	
Persons causing a discharge of oil or oily mixtures into state waters (s 8A)	$500,000 (individual); $10,000,000 (body corporate)
Prohibition of discharge of noxious substances into state waters (s 18)	
Persons causing a discharge of noxious substances into state waters (s 18A)	As above
Prohibition of discharge during a transfer operation (s 27)	As above
Failure to report discharge of oil or oily mixtures (s 10) or noxious substances (s 20) or discharge during transfer operation (s 28)	$120,000 (individual); $2,750,000 (body corporate)
Various offences related to retention and completion of oil record book (s 11), cargo record book (s 22) and records relating to transfer operations (s 29(4–5))	$22,000 (individual)
False entries in oil record book (s 12), cargo record book (s 22) and records relating to transfer operations (s 29(6))	As above
Non-compliance with notice acting to prevent pollution (s 50(1))	$220,000
Pollution of Waters by Oil and Noxious Substances Act 1986 **(Vic)**	
Prohibition of discharge of oil or oily mixtures into state waters (s 8)	$226,840 and/or or two years imprisonment (individual); $1,134,200 (body corporate)
Prohibition of discharge of noxious substances into state waters (s 18)	As above
Prohibition of disposal of garbage into state waters (s 23B)	As above
Prohibition of discharge by jettisoning of harmful substances into state waters (s 23E)	As above

Table 12 continued

Act and associated selected offences	Maximum penalty
Prohibition of discharge of sewage into state waters (s 23G)	As above
Prohibited discharge during transfer operations (s 23J)	As above
Failure to report discharge of oily or oily mixtures (s 10(1) or noxious substances (s 19(1)) or packaged harmful substances (certain incidents) (s 23D(1)) or discharge during transfer operation (s 23L)	$56,710 and/or one year imprisonment
Various offences related to retention and completion of oil record book (ss 11, 13) and cargo record book (ss 20, 22)	$22,684 (individual); $113,420
False entries in oil record book (s 12) and cargo record book (s 21)	$22,684
Transport Operations (Marine Pollution) Act 1995 (Qld)	
Discharge of oil (s26) and oily residues (s 27) into coastal waters prohibited	$262,500
Discharge of noxious liquid substances into coastal waters prohibited (s 35)	As above
Jettisoning of harmful substances into coastal waters prohibited (s 42)	As above
Discharge of sewage (ss 47–48)	$63,750
Disposal of garbage into coastal waters prohibited (s 55)	$262,500
Discharge of pollutant into coastal waters during transfer operation prohibited (s 61)	As above
Night transfer operation in contravention of regulations (s 63(5))	$63,750
***Western Australian Marine (Sea Dumping) Act 1981* (WA)**	
Unauthorised dumping of wastes or other matter (s 5)	Annex 1 wastes; $50,000 (individual); $100,000 (body corporate) Annex 2 wastes; $25,000 (individual); $50,000 (body corporate) Other; $10,000 (individual); $25,000 (body corporate)
Unauthorised dumping of vessels, aircraft or platforms (s 6)	As above
Unauthorised loading of wastes or other matter, or vessels, aircraft or platforms for dumping or incineration (s 7)	As above
Unauthorised incineration at sea (s 9)	Annex 1 wastes (para 2, 3, 4, 6.7); $50,000 (individual); $100,000 (body corporate) Annex 1 wastes (paras 1 and 5), $40,000 (individual); $80,000 (body corporate) Annex 2 wastes; $25,000 (individual); $50,000 (body corporate) Other; $10,000 (individual); $25,000 (body corporate)
***Pollution of Water by Oil and Noxious Substances Act 1987* (WA)**	
Prohibition of discharge of oil or oily mixtures into state waters (s 8)	$50,000 (individual); $250,000 (body corporate)
Prohibition of discharge of oil or oily mixtures during transfer operations (s 9)	As above
Oil residues that cannot be discharge not retained on board the ship (s 10)	As above

Table 12 continued

Act and associated selected offences	Maximum penalty
Duty to report certain incidents involving oil or an oily mixture (s 11)	$5,000 (individual); $25,000 (body corporate)
Duty to report discharge of oil or oily substances from land or apparatus (s 12)	$5,000
Various offences related to retention and completion of (ss 13, 15)	$5,000 (individual); $25,000 (body corporate)
False entries in oil record book (s 14)	$10,000
Prohibition of discharge of substances into State waters (s 20)	$50,000 (individual); $250,000 (body corporate)
Duty to report certain incidents involving certain substances (s 22)	$5,000
Various offences related to retention and completion of oil and cargo record book (ss 23, 25)	$5,000 (individual); $25,000 (body corporate)
Protection of Marine Waters (Prevention of Pollution from Ships) Act 1987 **(SA)**	
Prohibition of discharge of oil or oily mixtures into state waters (s 8)	$200,000 (individual); $1,000,000 (body corporate)
Oil residues that cannot be discharge not retained on board the ship (s 9)	As above
Absence of shipboard oil emergency plan (s 10)	$50,000
Various offences related to retention and completion of oil record book (ss 11, 13)	$20,000 (individual); $100,000 (body corporate)
False entries in oil record book (s 12)	$20,000
Prohibition of discharge of substances into state waters (s 18)	$200,000 (individual); $1,000,000 (body corporate)
Various offences related to completion of cargo record book (ss 21, 22)	$20,000 (individual); $100,000 (body corporate)
False entries in cargo record book (s 21)	$20,000
Prohibition of discharge of harmful substances into state waters (s 24AAB)	$200,000 (individual); $1,000,000 (body corporate)
Prohibition of disposal of garbage into state waters (s 24AAD)	As above
Discharge of oil into waters from vehicles etc (s 26)	$200,000 (individual); $1,000,000 (body corporate)
Pollution of Water by Oil and Noxious Substances Act 1987 **(Tas)**	
Prohibition of discharge of oil or oily mixtures into State waters (s 8)	$250,000 and/or four years imprisonment (individual); $1,000,000 (body corporate)
Oil residues that cannot be discharged not retained on board the ship (s 9)	As above
Absence of shipboard oil emergency plan (s 10)	$50,000
Various offences related to retention and completion of oil record book (ss 11, 13)	$50,000 (individual); $100,000 (body corporate)
Prohibition of discharge of substances into state waters (s 20)	$250,000 and/or four years imprisonment (individual); $1,000,000 (body corporate)
Various offences related to completion of cargo record book (ss 23, 25)	$50,000 (individual); $100,000 (body corporate)

Table 12 continued

Act and associated selected offences	Maximum penalty
Discharge of packaged harmful substances into state waters prohibited (s 25C)	$250,000 and/or four years imprisonment (individual); $1,000,000 (body corporate)
Prohibition on discharge of sewage into state waters (s 25CB)	As above
Disposal of garbage into state waters prohibited (s 25F)	$50,000 (individual); $100,000 (body corporate)
Marine Pollution Act 1997 **(NT)**	
Discharge of oil into coastal waters prohibited (s 14)	As below
Discharge of noxious liquid substances into coastal waters prohibited (s 19)	
Jettisoning of harmful substances into coastal waters prohibited (s 27)	
Discharge of sewage from ships into coastal waters prohibited (s 31)	
Disposal of garbage into coastal waters prohibited (s 38)	
Prevention of pollution during transfer operations (s 43)	
Intentionally cause discharge resulting in serious environmental harm (EL1)	$25,000–$250,000 and/or five years imprisonment (individual); $125,000–$1,250,000 (body corporate)
Cause discharge resulting in serious environmental harm OR intentionally cause material environmental harm (EL2)	$10,000–$100,000 (individual); $50,000–$500,000 (body corporate)
• Cause discharge resulting in material environmental harm (EL3)	$5,000–$50,000 (individual); $25,000–$250,000 (body corporate)
• Ensure oil or substance etc. is not discharged (EL4)	$5,000 (individual); $25,000 (body corporate)
Absence of shipboard oil emergency plan (s 17)	$110,000

Note: Victorian monetary penalty based on penalty unit amount for 2008–09 ($113.42); *Monetary Units Act 2004*

Nature and extent

Despite being one of the most highly regulated areas of environmental control in Australia, there has been no formal analysis of the extent of illegal polluting and waste disposal activities occurring in the country. This stands in contrast with the number of published accounts coming from countries such as the United States and United Kingdom. Much of the research attention in Australia has centred on a critique of pollution laws and regulatory approaches, with scant discussion on how big a problem this category of environmental crime actually is. The fact that polluting activities are a fact of the industrialised world and are so strictly regulated here suggests pollution and waste disposal offences were, are and will continue to be, judged as a high-risk area for environmental crime.

In the absence of more formalised studies, the next best step is to assemble a picture based on the types of offences recounted in regulatory agency reports and the focus of one-off research studies. This method of assembly is acknowledged as somewhat flawed. The former source provides just a snapshot of the range of pollution harms known to have occurred, or they highlight only the more serious incidents. The latter, while providing more detail, are narrower in scope. Nonetheless, they provide a sample of what the more commonly detected offences probably entail.

A survey of pollution and illegal waste disposal offences in the five largest states reveals a considerable diversity of polluting acts and culprits (NSW DECC 2009a, 2008, 2007a; NSW DEC 2006a, 2005b, 2004; Qld EPA 2009, 2008, 2007, 2006, 2005, 2004a, 2003, 2002; SA EPA 2009a,

2008a, 2008b, 2007, 2006, 2005, 2004, 2003, 2002, 2001; Vic EPA 2009, 2008a, 2007, 2005, 2004b, 2003; WA DEC 2009, 2008a, 2007). If a prevailing polluting act exists, it would appear to be the illegal discharge or dumping of waste, generally into water sources via storm water drains, or directly into rivers, creeks and the sea or onto land. Waste discharge offences discovered over the last few years have involved liquid wastes of sewage and animal effluent; pumping of contaminated wastewaters from mining operations (eg tailings), abattoirs and meat processing factories, construction sites, medical industries and other manufacturers; and other forms of soil contamination (eg acid sulphate soils). Petrol and oil spillages are the next most common problem (from leaking, improperly serviced pipelines or following accidents or sloppy procedure at service stations or on industrial sites).

From the published information, the dumping of construction and demolition waste seems to be especially problematic and mostly done to avoid tipping fees. For example, one demolition company prosecuted in Victoria for dumping and burning demolition waste on a rural property did so to avoid $10,000 in tipping fees (Vic EPA 2008b). The company were eventually fined $11,000 and ordered to pay the EPA costs of $5,773.57. Dumping at unlicensed waste deposit sites is a related offence that is occasionally detected. Illegal dumping and waste disposal was highlighted by regulators attending the AIC's roundtable on environmental crime as an environmental crime of concern, with the prediction that the economic downturn, combined with the entry of less scrupulous operators, would see wastes increasingly being moved and dumped illegally to reduce operating costs.

Recorded incidents of serious air pollution are relatively uncommon and when cases are pursued they are overwhelmingly (at least in New South Wales) for smoky vehicle violations (under the Protection of the Environment Operations (Clean Air) Regulations 2002; NSW DECC 2009a, 2008, 2007a). Of the few offences listed in annual reports, they refer to the emission of a proscribed gas (sulphur dioxide) and failure to undertake mandatory monitoring activities as being the next most common offences. Air pollution is possibly the most strictly enforced of all polluting activities. EPAs run their own monitoring programs on specified gases, air toxins and particles. Industry, mining and other production and extractive businesses are mandated to monitor and report on air pollutant emissions.

E-waste

The disposal of e-waste is an area of environmental concern that has gained a lot of attention in recent years (see Interpol 2009b), mostly through the exposure of developed companies exporting huge quantities of e-waste to developing nations that do not have the infrastructure to dispose of it safely (Pellow 2007). It is estimated that e-waste now constitutes five percent of all municipal solid waste and the amount of waste generated across the world continues to rise, making up 20–50 million tonnes a year (Greenpeace 2009). Electronic items consist of various materials which require different disposal methods. Most importantly is their concentration of toxics, such as lead, cadmium, polyvinyl chloride (PVC), mercury and beryllium, under which even stricter disposal regimens are essential. E-waste does not breakdown and stockpiling in landfill runs the great risk of toxic leaching into surrounding soils and when landfill is unlined, possibly into ground water. A steady build-up of toxics has the potential to cause significant environmental harm.

While there are no formal estimates of how much e-waste is generated in Australia each year, the figures cited below indicate it is substantial. Australian households are estimated to own an average 22 electronic items, totalling 92.5 million items across the country (IPSOS 2005). Constant upgrading of technologies and the absence or costliness of appropriate recycling facilities has led to many of these items ending up in landfill. A report by the then Australian Government Department of Communications, Information Technology and the Arts (DCITA 2002) estimated that up to 1.6 million computers were sitting in landfill and 1.8 million were in storage. Only half a million ended up in recycling schemes. A more recent study by the Total Environment Centre calculated there were 123 million e-waste items sitting in Australian landfill at the end of 2008—37 million computers, 17 million televisions, 56 million mobile phones and 70 million fluorescent lights (Total Environment Centre 2008). Today's culture of disposal is to blame for the burgeoning number of items ending up in landfill, promoted by the desire to continually upgrade. Mobile phone

users are particularly susceptible, with an average replacement rate of 18 months (Total Environment Centre 2008) but computing equipment is also regularly replaced. Between 2006 and 2008, Australian households replaced nine million computers, five million printers and two million scanners (IPSOS 2005).

Reporting and detection

The enforcement of environment protection laws falls under the auspices of the state environment department or independent statutory authorities known as EPAs. Arrangements vary across jurisdictions, as summarised in Table 13. EPAs with enforcement powers currently operate in Victoria, South Australia and the Australian Capital Territory; until recently New South Wales also had an EPA but their responsibilities were subsumed into the then Department of Environment and Climate Change in 2007. Different manifestations of the EPA exist in Western Australia, Tasmania and the Northern Territory, which act primarily as advisory bodies but also have (in Western Australia and Tasmania) a role in environmental impact assessments and compliance auditing. In New South Wales, Queensland, Western Australian, Tasmania and the Northern Territory, enforcement is undertaken by the principal environment department. In 2003, Western Australia established Environmental Enforcement Units under the Department of Environment and Conservation to investigate breaches of the *Environmental Protection Act 1986* (WA); other jurisdictions employ enforcement officers under environment protection or similar divisions. Enforcement activities may also be shared with other government departments and local government. For example, the NSW Department of Environment, Climate Change and Water can devolve enforcement of so-called non-scheduled activities to local councils and the Queensland Department of Environment and Resource Management devolves responsibility for illegal waste disposal and waste management to local councils.

Compliance monitoring and mandatory auditing are the formal means by which polluting offences are detected. Monitoring relies heavily on site visits (announced and unannounced) to inspect soundness of processes and facilities, and to check that emissions and/or disposal of pollutants and wastes is done in accordance with licence conditions and environmental guidelines. At the same time, entities engaged in scheduled activities are expected to self-monitor and provide regulatory agencies with audit reports. The provision of false information is an offence in all jurisdictions; in Victoria, a proven charge of wilful provision of false information may be punished with a fine of up to $272,208.

When a spill or leakage occurs, or more than the prescribed amount of pollutant is emitted, the liable company are expected to report the incident within a prescribed timeframe (usually within 24 hours). Some do but when they do not, or they are unaware of the polluting event, it is often members of the public that alert the regulatory agency. Many of the recent cases prosecuted in Victoria came to the attention of the Victorian EPA following reports from the public. EPAs encourage the public to report actual or suspected cases of polluting and dumping by operating hotlines or online reporting sites.

Sanctioning

As described earlier, environment protection agencies have a broad mix of enforcement options to discipline practitioners of environmentally damaging actions. There is little information, though, as to how these responses are meted out. Comino and Leadbeter (2005) compared the enforcement of environment protection laws in New South Wales and South Australia, observing that New South Wales has become increasingly reliant in recent years on prosecuting offenders, whereas South Australia has tended to apply civil and administrative sanctions. Prosecution is the ultimate deterrent effect and in Comino and Leadbeter's (2005) estimation, South Australia's apparent failure to prosecute has diminished the state's ability to enforce environmental protection laws. When prosecutions did occur in South Australia, the ERD Court tended to hand down conventional (and arguably less effective) sentences (ie fines). This was in contrast with Victoria and New South Wales where there was a shift towards the use of alternative orders (Cole 2008; Martin 2003).

Published data from environmental protection agencies shows that New South Wales continues to follow the prosecution pathway when dealing with environmental protection offences. Between

2007–08, the then NSW Department of Environment and Climate Change completed 125 prosecutions under environment protection laws (see Table 14). Prosecutions were less common in the other jurisdictions. Infringement notices comprised the largest proportion of enforcement actions utilised and the great majority of these were for littering. Not so in Queensland where 64 percent were issued for the release of contaminants into water, 17 percent for breach of licence conditions and six percent for release of waste.

With a few exceptions, most recently prosecuted cases under environmental protection statutes resulted in the offender receiving a fine. Offences

Table 13 Administration and enforcement of state and territory environmental protection statutes

Jurisdiction	Enforcement agency	Arrangements
NSW	Department of Environment and Climate Change (Environment and Protection Division) (DECC)	DECC performs regulatory and compliance activities and can commence prosecutions under the *Protection of the Environment Operations Act 1997*. DECC is the regulatory authority for scheduled activities and local councils for non-scheduled activities The EPA Board approves significant prosecutions and exemptions
Vic	EPA	The Enforcement and Environmental Monitoring Units sit within the Environmental Services Directorate of the Victorian EPA and lists their responsibilities as including works approvals, licences, enforcement, pollution, collaboration, sustainability advice and monitoring
Qld	Department of Environment and Resource Management	The Department administers and enforces the *Environmental Protection Act 1994* in conjunction with local government and other government departments (eg Department of Natural Resources and Water, Department of Primary Industries and Fisheries). Under s 514 of the Act, the EPA can devolve enforcement of matters related to litter, illegal waste disposal and waste management facilities to local government
WA	Department of Environment and Conservation (DEC)/EPA (WA)	Environmental Enforcement Units were established under DEC in 2003 and act under the auspices of DEC to provide investigative and enforcement support. DEC undertakes regulatory activities, compliance audits and enforcement actions The EPA provides independent policy and other advice to the Western Australian Government, as well as initiating EPPs and undertaking environmental impact assessments and performance and compliance audits
SA	EPA	The SA EPA sits within the environment and conservation portfolio. The Regulation and Compliance Division provides licensing and regulatory services, as well as conducting investigations
Tas	Department of Primary Industries, Parks, Water and Environment (DPIPWE) (Environment Division)/EPA	The Environment Division of DPIPWE is responsible for enforcement of the *Environmental Management and Pollution Control Act 1994*, while the EPA (Tas) looks after environmental assessments, agreements, audits and improvement programs. The Tas EPA came into effect on 1 July 2008 and is governed by an independent board
ACT	EPA	The EPA is a statutory position held within the newly established Department of the Environment, Climate Change, Energy and Water. The EPA's powers include approving environmental authorisations, issuing environmental protection agreements and enacting enforcement actions such as fines, notices, environment protection orders and prosecution
NT	Department of Natural Resources, Environment, the Arts and Sport (Environment, Heritage and Arts Division)/Environment Protection Authority	Compliance auditing and investigation, among other roles, is undertaken by the Environmental Management section of the Department of Natural Resources, Environment, The Arts and Sport The NT EPA, also established in 2008, is not a regulatory body but provides independent advice, determines priorities and establishes guideline criteria to the Minister and Department on selected environmental themes

Table 14 Sanctions applied for offences against state and territory environment protection statutes, 2007–08

Jurisdiction	Infringement notices	Orders/notices	Prosecutions
NSW	14,954[a]	n/a	125 (finalised)
Vic	18,633	133[b]	18
Qld	2,285	97[c]	10 (finalised); 3 (continuing)
WA	50	2[d]	1
SA	n/a	53[e]	3 (criminal); 1 (civil)
Tas	12	18[f]	3 (finalised); 6 (continuing)
ACT	25	2	0[g]
NT	n/a	n/a	0

a: Excludes notices issued for littering offences. Includes notices issues by authorised officers from the Department and local government

b: 101 pollution abatement notices and 32 clean-up notices

c: 44 environment protection notices, 47 transitional environment programs and 6 restraint orders

d: Modified penalty notices

e: Environment protection orders only

f: Four formal written warnings and 18 environment protection notices

g: Excludes one out-of-court settlement

Note: n/a=not applicable

Source: ACT TAMS 2008; NSW DECC 2008; NT NRETA 2008; Qld EPA 2008; SA EPA 2008a; Tas DEPHA 2009a, 2009b; Vic EPA 2008a; WA DEC 2008a

ranged from pollution of waters, causing or permitting an environmental harm (or hazard), illegal transport and/or dumping of waste and breaches of licence conditions. Three cases prosecuted under Commonwealth legislation refer to two incidents of illegal discharge into the Great Barrier Reef Marine Park and a third involving illegal export of hazardous material (AFP 2005, 2004). The former two cases were pursued in 2002–03 and 2004–05 following the discharge of 700,000–1,000,000 litres of untreated sewage water from a Club Med and a 100km oil spill from a ship. The convicted were sentenced to fines of $6,000 and $180,000 respectively.

Of note is Victoria's practice of reserving fines for the payment of environmental restoration, rehabilitation or conservation works. Courts may order offenders, in lieu of or alongside another penalty, to carry out specified actions or projects. In Victoria, this translates to

> the restoration or enhancement of the environment in a public place or for the public benefit (even if the project is unrelated to the offence) (*Environment Protection Act 1970* (Vic), s 67AC(2b)).

Environmental protection statutes in other jurisdictions include this provision but from the data considered, it is Victoria that favours this approach over the imposition of a standard pecuniary penalty. Persons or corporations proven guilty of committing environmental offences may also be directed to undertake environmental audits and publicise the offence, usually in selected print media publications.

Summary

Due to their dual functions as regulator and enforcer, EPAs and their equivalents have been charged in the past with adopting too conciliatory a relationship with the entities they are meant to be scrutinising. Now tasked with prevention, and not just mitigation, the role of the EPA has evolved to focus on environmental outcomes, which comes with a new range of responsibilities. Enforcement options have broadened and some jurisdictions are now likelier than others to follow the prosecutorial pathway. And while lesser sanctions are still more commonly applied and fines the predominant penalty if a case is tried, there is a discernable movement, at least in

Victoria, to use alternative sanctions in which the offender pays financial assistance to a designated conservation or rehabilitation project. To what extent these sanctions elicit future good behaviour remains to be seen but, at a minimum, they facilitate some counteraction of an environmental harm caused in one place, through contribution to an environmental good in another.

Cost-cutting, along with profit-making, are recognised as key motivators for environmental crime and probably best explains current and predicted rates of illegal polluting and waste disposal practices. Such behaviour is likely to arise from either a deliberate flouting of the laws, in order to cut corners and save money, or an apathetic respect for the rules. Sloppy or careless practice is another contributing factor and possibly more commonly associated with instances of spillage or illegal emissions. Where offences are detected, smaller operatives appear to be the primary culprits and it has been suggested that this might be because larger companies have more to lose (such as corporate respectability) if found in contempt of environmental laws. The flip-side to this argument, of course, is that larger companies might just be better at hiding or covering up their transgressions.

As yet, there has been no rigorous analysis as to the extent of illegal polluting and waste disposal activities in Australia, other than that briefly described in regulatory agency reports. This is a finding not unique to this category of environmental crime, but what is evident from these reports is the broad array of offences that are committed and regularly so. From the available data, it is not possible to establish whether there has been any change in the prevalence, or indeed in the nature of, the offences committed.

Recent summaries of cases investigated, however, suggest that the illegal discharge of waste (eg sewage and other wastewaters), petrol and oil spillages (on land and out at sea) and unauthorised dumping of waste (eg industrial waste) are ongoing problems. If any act of environmental harm is thought of as being at greatest risk of worsening, it would be, according to regulators, the illegal discharge and dumping of waste. Australia has not seen a concerted influence of organised crime on the waste disposal business. However, present economic restraints and evidence of the formation of alliances between players operating on the boundaries of legality, suggest that greater collusion is inevitable and incidents of illegal waste disposal likely to escalate. Much of this diversion into illegal practices will probably arise in order to avoid paying operating costs, specifically (increasing) fees for using authorised modes of transporting and disposing of wastes.

With ongoing technological advances come new forms of pollutants and wastes harmful to the environment and in need of specialised attention. A huge surge in the availability and desire for electronic items, notably mobile phones and computer equipment, is a case in point and there has been a corresponding swell in items discarded into Australian landfill as new or better models are acquired. Notwithstanding the burgeoning volume of e-waste, the issue is that these items contain toxic components and additives and Australia has not acquired a standardised means of disposing of these items safely. The disposal of personal e-waste is currently outside the reach of legislative and regulatory consideration but as an area which is only going to worsen (in size and potential harm), some attention is warranted.

Illegal trade in fauna and flora and harms to biodiversity

Scope and definitions

The protection of animals and plants is now expressed in the language of conservation and the preservation of biodiversity. The illegal trade in fauna and flora represents the most evident (or most investigated) area of environmental crime involving wildlife and plants, and encompasses the:

- illegal exportation of native species;
- illegal importation of exotic species; and
- unauthorised, internal trade in indigenous and exotic species.

Aside from the cruel nature of the trade (for wildlife), it has the potential to devastate and endanger native faunal and floral populations, either through their removal from habitat or the introduction into Australia of pest species and the biological organisms (eg viruses) they carry. The inflow of exotics carries the additional risk of detrimentally affecting Australia's agricultural and aquaculture industries.

Crimes against nature, however, are not restricted to the illegal trade and include acts of harm that directly target ecological communities. Some acts of harm may only be recognised retrospectively (such as the devastating consequences for Australia's native fauna due to the introduction of the cane toad) or sanctioned at one level but deemed quite illegal in other quarters (such as Japanese 'scientific whaling' in the Southern Ocean). These harms cover:

- poaching and other unauthorised killing or taking of wildlife and plants;
- removal of native species from habitat areas;
- practices that interfere with the viability of individual species and population groups; and
- acts that produce damage to natural areas, especially those recognised as being of high biodiversity composition or that harbour threatened species.

Illegal native vegetation clearance and logging, and the consequences of these activities, clearly fall under this definition but will be treated separately in later sections.

Laws and regulation

International controls

Convention on International Trade in Endangered Species of Wild Fauna and Flora

CITES is an international agreement to ensure that the trade in wild fauna and flora does not threaten species survival. Presently, 175 parties, including Australia, are signatories to CITES.

Faunal and floral species recognised under CITES are categorised according to their vulnerability (CITES 2009a). Appendix I species are those threatened with extinction and can only be traded under 'exceptional circumstances'. Appendix II species are not at immediate threat but their trade must be controlled to ensure it does not impact on their survival status. The final group, Appendix III species, are protected in at least one country and assistance has been requested of other countries to help control the trade. Any import, export or re-export of listed species is subject to authorisation through a licensing system.

Each signatory has a designated Management Authority, which administers the licensing system and authorises permits, and a Scientific Authority, which advises CITES of trade patterns and its effects on species status. Both authorities in Australia sit within the Australian Government Department of Environment, Water, Heritage and the Arts, which is also responsible for enforcement activities. Import and export permits are mandatory for Appendix I species, export permits for Appendix II species (import permits are required if so designated under national law) and export permits or certificates for Appendix III (CITES 2009b). There are also rules around the use of traded species, how they are obtained and transportation and housing of live animals and plants. As a signatory to CITES, Australia is bound to protect any species listed under Appendix I (ie threatened with extinction) from any form of trade and species listed under Appendices II and III from unauthorised export arrangements.

Convention on Biological Diversity

The Convention on Biological Diversity (CBD) was signed by 150 government leaders at the 1992 United Nations Conference on Environment and Development (otherwise known as the Rio Earth Summit). The conference was held to discuss ways forward in promoting development that did not contribute to the continued deterioration of the environment. Attending governments adopted three agreements at the Summit covering a global action plan of sustainable development (Agenda 21), principles outlining the rights and responsibilities of states (Rio Declaration on Environment and Development) and standards for sustainable forest management (Statement of Forest Principles; CBD 2004). The CBD was subsequently signed as confirmation of governmental commitment to these agreements. The objectives of the Convention (which came into force in 1993), as stated in Article 1, refer to the

> conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources (Convention on Biological Diversity 1993: 46).

Australia ratified the convention in June 1993. In 1996, the Council of Australian Governments endorsed the National Strategy for the Conservation of Australia's Biological Diversity, prepared by the Australian and New Zealand Environment and Conservation Council to fulfil Australia's obligations under the Convention. The strategy aims to 'bridge the gap between current activities and the effective identification, conservation and management of Australia's biological diversity', both on land and sea (Aust DEST 1996: 2). In light of more recent international level policy advancements and decisions, the strategy is presently under review with an updated strategy endorsed in April 2010.

Other international agreements

In addition to CITES and CBD, other biodiversity/conservation relevant conventions to which Australia is bound include the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), Convention on Migratory Species, Ramsar Convention on Wetlands and the UN Convention to Combat Desertification. Australia also sits on the International Whaling Commission and plays an active role in attempting to end whaling in the Southern Ocean.

One-on-one agreements have been entered into with the governments of the People's Republic of China, Japan and Republic of Korea to protect migratory birds and their environments. The recognition of marked population losses of albatross and petrel species, linked to long-line and other damaging fishing practices, also resulted in the Agreement on the Conservation of Albatrosses and Petrels, to which Australia is a signatory.

National laws

National protection and conservation of Australia's native species and ecological communities is laid out in the *EPBC Act 1999* (Cth). The Act also specifies rules and responsibilities relating to the trade in native and exotic fauna and flora, and the protection of migratory species, the marine environment, declared Ramsar wetlands and sites of world and national heritage, as required under the aforementioned international conventions and agreements.

The *EPBC Act 1999* (Cth) works in concert with state and territory legislation protecting native fauna and flora (see Table 15). A number of jurisdictions include protective steps in more than one statute. For example, in South Australia, offences regarding the taking, harming, interference or harassment of aquatic mammals is legislated in the *Fisheries Management Act 2007* (SA). Tasmania has enacted a separate *Whales Protection Act 1988*. The *EPBC Act 1999* (Cth) and the various state and territory statutes guard against the taking, possessing and harming of fauna and flora, both in and out of protected areas, as well as activities that threaten to, or actually do, damage the communities and habitats in which they dwell. Protection of fish species are further covered in fisheries legislation.

Any acts or practices that may produce a harmful consequence require authorisation through the issue of a licence and/or permit. Licences/permits can be sought to keep or sell protected and prohibited species, trade in protected or prohibited species or take or interfere with an identified species (mostly for commercial or scientific purposes). Hunting licences must be applied for separately.

Transcribed in conservation statutes are legal provisions regarding processes that must be followed before changes to the environment (usually from development activities) can take place. Such processes are also dealt with in primary planning and development statutes, for example Victoria's *Environmental Effects Act 1978*. The most common requisite is the species impact statement or similar assessment that is often undertaken alongside heritage assessments. These assessments require an appraisal of the area as to its biodiversity 'value' and threatened species make-up and an evaluation as to how the proposed act will impact on resident ecological communities.

Table 15 Biodiversity and conservation statutes

Jurisdiction	Primary statute(s)
Commonwealth	*Environment Protection and Biodiversity Conservation Act 1999*
NSW	*Threatened Species Conservation Act 1995*
	National Parks and Wildlife Act 1974
Vic	*Wildlife Act 1975*
	Flora and Fauna Guarantee Act 1988
Qld	*Nature Conservation Act 1992*
WA	*Wildlife Conservation Act 1950*
SA	*National Parks and Wildlife Act 1972*
	Adelaide Dolphin Sanctuary Act 2005
	Fisheries Management Act 2007
Tas	*Threatened Species Protection Act 1995*
	Nature Conservation Act 2002
	Whales Protection Act 1988
ACT	*Nature Conservation Act 1980*
NT	*Territory Parks and Wildlife Conservation Act*

Conservation responsibilities for administering agencies are codified in statutes under management protocols, specifically conservation and biodiversity management, recovery and threat abatement plans for listed tax and habitat areas. In theory, individual plans are to be developed for each recognised threatened species or community but their actual completion has been noted, for New South Wales at least, as somewhat tardy (Baker 2004). For example, of the 800 threatened species listings recognised in New South Wales in 2004, only a minority (ie 90) had had a recovery or threat abatement plan completed or in development (Environmental Defenders Office 2004).

Offences and penalties

Penalties for offences related to the endangering of faunal and floral species are prescribed according to threatened status (see Table 16). Most jurisdictions separate species into two categories of protection–threatened and/or protected or other. In SA's *National Parks and Wildlife Act 1972* and under the *EPBC Act 1999* (Cth) four (albeit slightly different) categories of vulnerability are described.

A somewhat more complex scheme is employed in Queensland's *Nature Conservation Act 1992* where the penalty assigned takes into the account the vulnerability of the species (in this case, extinct in the wild, vulnerable or near threatened, or rare), the number harmed and for more serious offences, the actual species taken. For example, the most serious offence (a Class 1 offence) involves the harming of:

- one or more animals that are extinct in the wild; or
- five or more animals that are vulnerable or near threatened wildlife; or
- 10 or more animals that are rare wildlife; or
- one or more echidna, koala or platypus (*Nature Conservation Act 1992* (Qld), s 88).

Under the *EPBC Act 1999* (Cth), any act deemed to have or likely to have a significant impact on a threatened species or ecological community may be met with a maximum penalty of $550,000 (for an individual) or $5,500,000 (for a body corporate). For a similar offence under state/territory law, the most severe penalties are found in the *National Parks and Wildlife Act 1974* (NSW) ($220,000 or 2 years imprisonment, or both (s 118A)) and the *Nature Conservation Act 1992* (Qld) ($225,000 or 2 years imprisonment, or both (s 88(1)). Penalties are considerably less in other jurisdictions and neither Western Australia nor Tasmania stipulates a custodial option. A number of jurisdictions also include offences relating to damage of 'critical' or 'essential' habitat.

Penalties for unauthorised import and export, and trade within Australia, of threatened and protected species are similar to, or the same as, penalties for acts of harm. Unauthorised import or export of CITES specimens under the *EPPC Act 1999* (Cth) (ss 303CC–DC) are subject to a fine of up to $110,000 or 10 years imprisonment for individuals and $550,000 for corporations.

Table 16 Maximum penalties for selected offences of harming and trade in threatened species

Act and associated selected offences	Maximum penalty
***Environment Protection and Biodiversity Conservation Act 1999* (Cth)**	
Unauthorised actions with significant impact on listed threatened species or endangered community prohibited (s 18)	$550,000 (individual)
$5,500,000 (body corporate)	
Offences related to threatened species (s 18A)	$46,200 and/or seven years imprisonment (individual)a
Action with significant impact on listed migratory species (s 20A)	As above
Killing or injuring member of listed threatened species or ecological community (s 196) or taking member of listed threatened species or ecological community (s 196B) or trading member of listed threatened species or ecological community (s 196D)	$110,000 and/or two years imprisonment (individual)[a]
Killing or injuring member of listed migratory species (s 211) or taking member of listed migratory species (s 211B) or trading listed migratory species (s 211D)	As above

Table 16 continued

Act and associated selected offences	Maximum penalty
Killing or injuring cetacean in Australian Whale Sanctuary or waters beyond the outer limits of the AWS (s 229) or intentionally taking cetaceans (s 229B)	As above
Killing or injuring listed marine species (s 254), taking listed marine species or trading listed marine species (s 254D)	As above
Unauthorised action results in the death, injury, taking, trade, keeping or moving of a member of a native species in a Commonwealth reserve	As above
Knowingly damaging critical habitat (s 207B)	As above
Breach of conditions attached to an approval (s 142A)	$13,200 and/or two years imprisonment
Export of CITES specimen without an authorised permit or exemption (s 303CC)	$110,000 and/or 10 years imprisonment
Import of CITES specimen without an authorised permit or exemption (s 303CC)	As above
Cruelty–export or import of specimens (s 303GP)	Two years imprisonment
Contravene conditions of permit (s 303GF)	$66,000
National Parks and Wildlife Act 1974 **(NSW)**	
Harming or picking threatened species, endangered populations or endangered ecological communities (s 118A)	
• Endangered species	$220,000 and/or two years imprisonment
• Vulnerable species	$55,000 and/or one year imprisonment
Buying, selling or possessing threatened species or endangered population (s 118B)	As above
Unauthorised import or export protected fauna (s 101)	$11,000
Harming protected fauna other than threatened species etc (s 98) or buying, selling or possessing (s 101)	$11,000 and/or six months imprisonment
Damaging critical habitat (s 118C)	$220,000 and/or two years imprisonment
Damage habitat of threatened species, endangered populations or endangered ecological communities (s 118D)	$110,000 and/or one year imprisonment
Approach marine mammal (s 112G(1))	$110,000 and/or two years imprisonment
Approach marine mammal in course in the course of commercial operations relating to the killing of marine mammal (s 112G(2))	$220,000
Wildlife Act 1975 **(Vic)**	
Hunting, taking or destroying threatened wildlife (s 41) and acquiring etc. threatened wildlife (s 45)	$27,221 and/or two years imprisonment
Hunting, taking or destroying protected wildlife (s 43) and acquiring etc. protected wildlife (s 47)	$5,671 and/or six months imprisonment
Unlawful taking of wildlife (s 47D)	$27,221 and/or two years imprisonment
Unauthorised import and export of wildlife (s 50)	$11,342
Killing, taking, injuring etc whales (s 76)	$113,420
Flora and Fauna Guarantee Act 1988 **(Vic)**	
Failure to comply with interim conservation order (s 36)	$11,342
Unauthorised take, trade in, keep, move or process protected flora (s 47(1))	$5,671
Take, trade in, keep, move or process protected flora in contravention of order (s 47(2))	$4,537

Table 16 continued

Act and associated selected offences	Maximum penalty
Not comply with conditions of licence or permit (s 56)	$5,671
Nature Conservation Act 1992 **(Qld)**	
Taking protected animal and keeping or use of unlawfully taken protected animal (s 88) or plants (s 90)	
• Class 1[b, c]	$225,000 and/or two years imprisonment
• Class 2[d, e]	$75,000 and/or one year imprisonment
• Class 3[f, g]	$16,875
• Class 4[h]	$7,500
Unauthorised taking etc. of native wildlife in areas of major interest and critical habitats (s 97)	$225,000 and/or two years imprisonment
Contravene conditions of interim conservation order (s 109)	As above
Wildlife Conservation Act 1950 **(WA)**	
Taking or possession of protected fauna (s 16–16A) and flora (s 23E–F)	
• Likely to become extinct or in need of special protection	$10,000
• Other	$4,000
Certain dealings in fauna (including import; export; sell or take for purpose of sale) (s 17)	$4,000
Unauthorised taking and selling of protected fauna from Crown Land (s 23D)	As above
Unauthorised taking of rare flora (s 23F(6))	$10,000
Fail to comply with provisions of licence (s 25(g))	$4,000
National Parks and Wildlife Act 1972 **(SA)**	
Protection and taking of protected animals and plants (ss 45, 51)	
• Endangered or marine mammal	$100,000 and/or two years imprisonment
• Vulnerable	$7,500 and/or 18 months imprisonment
• Rare	$5,000 and/or 12 months imprisonment
• Other	$2,500 and/or six months imprisonment
Keeping and sale of protected animals (s 58)	$2,500
Unauthorised export or import of protected animals or plants (s 59)	$2,500
Threatened Species Protection Act **(Tas)**[i]	
Unauthorised take, keep, trade, process or disturb specimen of a listed taxon of flora or fauna (s 51)	$10,000
Whales Protection Act 1988 **(Tas)**	
Prohibit taking etc of whales (s 6(1))	$100,000
Nature Conservation Act 1980 **(ACT)**	
Kill, take, possess, sell or import/export native animal (ss 44–48)	
• Special protection status	$10,000 and/or one year imprisonment
• Other	$5,000 and/or six months
Taking protected plants (s 51(1))	As above

Table 16 continued

Act and associated selected offences	Maximum penalty
Damages land in reserve causing serious environmental harm (s 86)	
• Reckless damage	$200,000 and/or five years imprisonment
• Negligent damage	$150,000 and/or three years imprisonment
• Damage	$100,000
Damages land in reserve causing material environmental harm (s 87)	
• Reckless damage	$100,000 and/or two years imprisonment
• Negligent damage	$75,000 and/or one year imprisonment
• Damage	$50,000
Damages land in reserve causing harm (s 88)	$10,000
Territory Parks and Wildlife Conservation Act 2007 **(NT)**	
Take, interfere, possess or move in or out of state protected wildlife (s 66)	
• Threatened species	$110,000 and/or 10 years imprisonment (individual) $550,000 (body corporate)
• Protected other than threatened	$55,000 and/or five years imprisonment (individual) $250,000 (body corporate)
Take or interfere with unprotected wildlife (s 67)	$55,000 and/or five years imprisonment (individual) $250,000 (body corporate)
Alter, damage or destroy essential habitat (s 67C(1))	As above
Unauthorised removal of wildlife from essential habitat (s 67C(2))	As above
Fail to comply with conditions of permit (s 67D)	$5,000 and/or six months imprisonment

a: A body corporate can be fined up to 5 times the maximum amount prescribed for individuals

b: Animal: Class 1 offence involves (a) 1 or more animals that are extinct in the wild or endangered, or (b) 5 or more animals that are vulnerable or near threatened wildlife, or (c) 10 or more animals that are rare wildlife, or (d) 1 or more echidna, koala or platypus

c: Plant: Class 1 offence involves (a) 1 or more plants that are extinct in the wild or endangered (b) 5 or more plants that are vulnerable or near threatened, or (c) 10 or more plants that are rare

d: Animal: Class 2 offence is not a Class 1 offence and involves (a) 3 or 4 animals that are vulnerable or near threatened wildlife, or (b) 4 or more, but no more than 9 animals that are rare wildlife, or (c) 10 or more animals that are least concern wildlife

e: Plant: Class 2 offences involves (a) 3 or 4 plants that are vulnerable or near threatened, or (b) 4 or more, but no more than 9 plants that are rare

f: Animal: Class 3 offence is not a Class 1 or 2 offence and involves (a) 1 or 2 animals that are vulnerable or near threatened wildlife, or (b) 2 or 3 animals that are rare wildlife, or (c) 5 or more, but less than 10 animals that are least concern wildlife

g: Plant: Class 3 offences involves 1 or 2 plants that are vulnerable or near threatened, or (b) 2 or 3 plants that are rare

h: Class 4 offence means an offence other than a class 1, 2 or 3 offence

i: Threatened Species Protection Regulation 2006 (Tas) includes the offence of importing and exporting listed taxon (s 6) with a maximum penalty of $10,000

Note: Victorian monetary penalty based on penalty unit amount for 2008–09 ($113.42); *Monetary Units Act 2004*

Nature and extent

The illegal trade

While the size of the overall trade is unknown, it has been described as small (relative to the trade occurring elsewhere), although 'thriving' (Halstead 1992: 4) and possibly on the increase (Alacs & Georges 2008). The great majority of it, as revealed by detections and seizures, involves the smuggling of wildlife and the following discussion reflects this focus.

Reptiles (snakes, lizards, turtles), birds (primarily parrots) and their eggs, insects (eg scarab beetles) and spiders are most commonly smuggled out of Australia, although scans of international wildlife sales notices revealed that some marsupial species were also available (eg sugar gliders, Burnett's wallaby; IFAW 2005). The prominence of reptiles and birds in the smuggled faunal pool might reflect the international buyer's preference for Australian reptilian and avian species. Much of the international trade relies on the vagaries of consumer choice. It is assumed, here, that the majority of trafficking out of Australia is undertaken for this purpose, whereas other forms of trafficking are for body parts (medicine, bush meat trade), medical research etc. On the other hand, the logistics of smuggling wildlife out of a country such as Australia, with no surrounding land-bordered nations and the presence of an efficient detection and enforcement system, might and probably does deter larger-species smuggling. Further, reptiles, insects and birds eggs are much easier to conceal and transport (Alacs & Georges 2008).

Australian fauna is moved out of the country in one of three ways:

- carried on the person (often in a specially constructed vest or belt) or in luggage;
- via mail or courier service; or
- through the illegal use of planes (commercial and light) or sea vessels, normally departing from northern locations and by-passing ACBPS (Halstead 1992).

A fourth method is to smuggle Australian wildlife by defrauding the licensing system. Part 13A of the *EPBC Act 1999* (Cth) regulates the export of all native species (other than those classified as exempt), all CITES listed species (both native and exotic) and all regulated species for import (ie those species, if brought in, that could harm native species or their habitats). Permits must be sought and approved before trade in any of these species can be undertaken. The use of permits, however, is susceptible to fraudulent behaviour. To what extent, if at all, Australian fauna or flora is exported out of the country using falsified papers has not been examined but once outside of Australia, the illegal transit may rely more frequently on the use of forged or bogus permits. Halstead (1992) describes two possible scenarios:

- illegal importation into a 'holding' country, followed by export to the destination country using a forged CITES permit citing that wildlife were captive-bred in the holding country; or
- transit through a non-CITES country, with a subsequent import permit request from a CITES country.

Singapore, Thailand and Laos have all been identified as important transit points in regional wildlife smuggling, including that of Australian wildlife, with buyers based in North America, Europe and Japan. The existence of well-established smuggling routes and experienced traffickers, alongside resource-stretched and poorly motivated enforcement agencies, has fostered Asia's position as a hub for wildlife smuggling (Maneesai 2007; Schaedla 2007). To combat the sustained escalation in smuggling activity in the Asia region, the ASEAN Wildlife Enforcement Network was established in 2006. It is a $12.7b a year operation, to which the Australian Government has committed resources and personnel.

The illicit trade is bi-directional, with exotic species also flowing into Australia. Again, it is largely avian and reptilian species, destined for aviaries and collectors, and for the pet trade. Fish, for the aquarium trade, are also regular illegal imports. Similar smuggling methods are employed, as well as the use of false declarations on import permits. Australia is also a destination for traditional Chinese or complementary medicines, which are known to use body parts from endangered animals. Callister & Blythewood (1995) found significant importation of such medicines into Australia and New Zealand between July 1991 and March 1995—43,000 units

(claiming to) contain listed musk, tiger, rhinoceros, leopard and bear species. Joint media releases from the then Ministers for Justice and Customs and Environment and Heritage in 2003 and 2004 further revealed the quantities bought into the country. A routine port inspection of two shipping containers in 2003 discovered 160 kilograms of tiger, snake, pangolin and rhinoceros body parts (Kemp & Ellison 2003). In 2004, a combined ACBPS, AFP and Australian Government Department of Environment and Heritage raid on Chinese medicine stores found large quantities of medicinal products, again with tiger, rhinoceros and bear (bile) as common ingredients (Kemp & Ellison 2004).

An important facilitator of the illegal trade is the Internet, although apparently no regular scrutiny of Internet wildlife sales is undertaken in Australia (Alacs & Georges 2008). As a one-stop shop for popular, distinctive and rare species, the Internet is a more reliable guarantor of sale anonymity. To what extent the Internet contributes to the overall illegal trade is impossible to quantify but the scale of items available is large, both in quantity as well as species representation. Investigations by the International Fund for Animal Welfare found in just one week between 7,000 and 9,000 separate listings of animals or animal-derived products available for sale (IFAW 2008, 2005). Two illegal transactions intercepted by ACBPS are known to have originated via the Internet. One involved the importation of Internet-bought samples of the threatened *Hoodia* plant (ACBPS 2007a), the other a local Internet sale of endangered Indian star tortoises originally illegally imported into the country (ACBPS 2004a).

Halstead's (1992) examination of the traffic in flora and fauna found that between 1984 and 1992, ACBPS seizures of smuggled wildlife totalled $5m. Between 2002–03 and 2006–07, the total number of wildlife seizures reported by ACBPS followed a U-shaped trend, with the largest number of seizures occurring in 2006–07 (n=7,533), increasing from 3,902 in 2004–05 (Alacs & Georges 2008). Most of these seizures were described as minor breaches with less than one percent described as major seizures (ie those eliciting formal investigation and in some cases prosecution). Between 2000–01 and 2006–07, the number of major detections and seizures ranged from two to 28 and actual prosecutions from six to 14. Almost half (46%) of the prosecutions were for the illegal export of native species and 34 percent for illegal import of exotics (Alacs & Georges 2008). No information was available for the remaining 20 percent of prosecutions although all were for trafficking of birds eggs. Based on prosecution statistics, reptiles were the primary target species (43% of prosecutions, 21% for export and 22% for import), followed by live birds and birds eggs (26 percent, of which 62 percent of these were export offences). Detections reveal some information about the scale of the trade but as Halstead (1992: 2) points out, it is more or less impossible to establish whether these detected cases represent just one percent or 99 percent of the trade. She further argues that those smuggling events that are detected are likely to be the 'least successful' and hence an unreliable measure of the total size of illegal activity.

The illegal trade also occurs within Australia's borders but information on this aspect of the trade is particularly sketchy. Certainly, it seems that reptiles, invertebrates and particularly birds are again the object of the trade, with collectors, fanciers and aviculturists the main culprits. The illegal reptile trade appears to mostly involve exotics, with snakes a favourite item, while the bird trade covers both native and exotic species. Legislative differences between Australian states and territories potentially assist the illegal trade (Halstead 1992). Since some, but not all, states and territories require authorisation before transporting species across borders, transfers are not always recorded. Further, differing species and population compositions from state to state are reflected in differing conservation priorities, with permits to own and trade in a particular species essential in one jurisdiction but not always in the next (Halstead 1992). Exploitation of legislative ambiguities is no doubt a facilitator of the illegal trade.

The structure of the legal industry can also open it up to illicit behaviour. Halstead (1992) uses the example of aviculture in Australia, which spans small, backyard aviaries to large breeding operations involving hundreds of birds. The extensive number of permits affects how well regulatory authorities can monitor each holding and in the absence of other, usual forms of scrutiny (eg consumers), admixing of the licit with the illicit is made possible (Halstead 1992). A final complexity is how to identify, with respect to native birds, those that are legal and those that have been caught in the wild, or hatched from eggs raided from nests.

Perpetrators

Individuals acting alone or associated in small, semi-organised groups are considered the primary perpetrators of the illegal trade in fauna and flora occurring in Australia, although there is evidence, both anecdotal and confirmed, of more sophisticated organisational involvement. The former includes references to the possible role of outlaw motorcycle gangs (Blindell 2006), who if not occupied with the supply end of the transaction, are certainly important consumers, particularly of exotics (Richard Janeczko, Customs Investigations National Manger cited in Peddie 2007). Examples of organised criminal activity are limited but it does occur. For example, in 2004, a combined Commonwealth and state agency operation detected an extensive bird trafficking ring, with illegal aviaries based in four states (New South Wales, Victoria, Queensland and Western Australia), and links into southern Africa and southeast Asia (ACBPS 2004b). Thousands of birds and eggs, both native and exotic, were seized, with one offender employed with a WA authority responsible for the regulation of that state's aviculture industry. Corruption in regulatory agencies has been cited before. A senate inquiry into the commercial utilisation of Australian native wildlife noted accusations in two depositions of a link between wildlife trafficking and official corruption occurring in three state government departments, but no charges were laid (Senate Standing Committee on Rural and Regional Affairs and Transport 1998).

Trafficking of Australian fauna and flora (and exotic species into the country) involves both Australian and foreign nationals but with limited information, it is difficult to ascertain what proportion of the total field they actually represent. Table 17 lists ACBPS interceptions of trafficking 'mules' and recipients of imported fauna or flora that were reported in media releases between 1 January 2004 and June 2009.

This list suggests that the nationality of couriers (where stated) is fairly evenly split between Australian and foreign nationals. Some of the courier work is being done by international tourists; for example, many of the Japanese nationals intercepted and prosecuted for couriering native species out of Australia were tourists collecting 'pets' for themselves. These incidents represent acts of spontaneity but the factors behind other smuggling events are not clear (see Table 17).

Other conservation harms

With its international connections, wildlife trafficking is the most evident and publicised of environmental crimes involving native Australian species. But it is not the only offence where fauna and flora are the casualties. As stated earlier, the EPBC Act and the various state and territory statutes protect against the taking, possession and destruction of fauna and flora, in and out of protected areas, as well as activities that threaten to, or actually do, damage the communities and habitats in which they dwell. Some of this arises from otherwise deliberate behaviours such as trapping and killing of species (eg unauthorised shooting of kangaroos and wallabies) or from habitat destruction which then impacts on species viability and diversity. The latter regularly occurs in the pursuit of development, without fulfilment of environmental and species impact assessments. A recent example detected by the Commonwealth was a case of unauthorised slope grooming and expansion work undertaken in the ski fields of Mount Buller, Victoria which was found to have impacted on the known habitat area of the Mountain Pygmy-Possum (Aust DEH 2006). The Mountain Pygmy-Possum is listed as endangered under the EPBC Act and the *Flora and Fauna Guarantee 1988 Act* (Vic) and the upgrade and expansion was undertaken without approval.

Table 17 Australian Customs detected illegal exports and imports of fauna and flora, 2004–08

Illegal exports			
Species	**Method**	**Nationality of courier**	**Penalty**
160 endangered fungi and fungal spore samples	In luggage	German	$3,000 fine and $260 costs
Two Rottnett Island bobtails	n/a intercepted before reached departure port	Japanese	No details
1,200 tiger beetles, 160 water beetles and 50 other beetles	In luggage (to United States)	American	n/a
15 Australian leaf geckos	Post (to Czech Republic)	Unknown	n/a
Two rose breasted galah and two gang-gang cockatoo eggs	On person (to Thailand)	Australian	$25,000 fine
Eight sulfur-crested cockatoo, nine Major Mitchell and seven galah eggs	On person (to South Africa)	Australia	18 months imprisonment, 12 month $1,000 good behaviour bond
Six Shingleback lizards	In baggage	Japanese	$24,000 fine plus $7,000 fine under Western Australia state legislation
23 native bird eggs (Major Mitchell, gang-gang cockatoo and red collared lorikeet)	On person (to Switzerland)	Australian	Two years imprisonment
24 oblong turtles and one shingleback lizard	Post (to Japan)	Japanese	$24,600 fine
50 shingleback lizards, one inland bearded dragon and one eastern long-necked turtle	Post (to Japan)	n/a	n/a
16 native birds (species not disclosed)	In luggage (to South Korea)	South Korean	$5,000 fine and three year good behaviour bond
Illegal imports			
Species	**Method**	**Nationality of courier/recipient**	**Penalty**
Two pigeons, birds eggs and plant seeds	On person (from Dubai)	Australian	n/a
Tupai (squirrel)	Post (from Indonesia)	Unknown	n/a
Two green tree pythons, two royal pythons, one reticulated python and tarantulas	Post (from United States)	Unknown	n/a
13 live fish (regulated species)	In baggage	Chinese	n/a
2 Asian finches	In baggage	Singaporean	n/a
4 green tree pythons	Post (from South Africa)	South African	$3,000 fine, plus $300 costs
10 West African parrot eggs	On persons (from Netherlands via Hong Kong)	Dutch	Four months and 25 days imprisonment
51 catfish plus one Asian Arowana (CITES listed)	On person (from Singapore)	Australian	Nine months community service
23 eggs (macaws, African green parrot, eclectus parrot and CITES listed moluccan cockatoo)	On person (from Bangkok)	French	Two years
One green tree python	Unknown (abandoned at airport)	n/a	n/a

Table 17 continued

Illegal imports			
Species	**Method**	**Nationality of courier/recipient**	**Penalty**
Two emerald green tree boas	Post (Sweden)	n/a	n/a
Three fish and aquarium plants	In baggage (Taiwan)	n/a	n/a
39 reptiles (green tree pythons, albino pythons, iguanas, frilled neck dragons, slider turtles, monitor lizards)	In baggage (from Singapore/Thailand)	Japanese	Three and a half years imprisonment
52 parrots eggs	On person (from Singapore)	Australian	One year, with two years suspended on good behaviour
16 Asian arowana (CITES listed)	In baggage (from Vietnam)	Vietnamese	
Four North American loggerhead musk turtles	In baggage (from Hong Kong)	Australian	n/a
Nine parrot eggs	On person (from South Africa)	Australian	n/a
Two Turkish tumbler pigeons	In baggage (from Singapore)	Australian	$1,000 fine plus $800 costs
39 cycad plants (CITES listed)	Shipment (from South Africa)	Australian	$15,000 fine, plus 9 month suspended sentence
26 spiders	Post (from Colombia)	n/a	n/a
26 spiders (including goliath bird-eating spider)	Post (from Denmark)	n/a	n/a
41 parrots eggs	On person (from Singapore)	Malaysian	Two years, three months imprisonment
19 coloured pythons	On person (from Singapore)	Australian	n/a

Note: n/a=not applicable

Source: ACBPS 2009; 2008a, 2008b, 2008c, 2008d, 2008e, 2008f, 2008g, 2008h, 2008i, 2008j; 2007a, 2007b, 2007c; 2006a, 2006b, 2006c, 2006d, 2006e, 2006f; 2005a, 2005b, 2005c, 2005d, 2005e, 2005f, 2005g, 2005h; 2004a, 2004b, 2004c, 2004d, 2004e, 2004f, 2004g, 2004h, 2004i, 2004j, 2004k, 2004l, 2004m

Published data on committed conservation harms is more or less absent and few of the administering government departments publish information on detected offences against conservation statutes. Only the NSW Department of Environment, Climate Change and Water's annual reports provide any description of the main offences committed and these refer to completed prosecutions only. A total of 75 charges were laid and prosecuted in New South Wales between 1 July 2003 and 30 June 2009; just over a quarter (26%) referred to the harming of protected fauna, a fifth for a breach of licence conditions, 13 percent for the possession of protected fauna and 13 percent for selling protected fauna (see Table 18).

Reporting and detection

Border seizures and chance findings from routine inspections, supported by intelligence-gathering and tip-offs, are the main methods by which illegal wildlife/plant imports and exports are detected (Alacs & Georges 2008; Halstead 1992). Customs officers are at the forefront of these activities, working in concert with Biosecurity Australia, Commonwealth or state/territory conservation officers, state/territory police and the AFP. Most of the detections occur during passenger or baggage checks (arrival and departure) or screening of postal articles as they enter the country, but some have been revealed following random inspections of cargo. The aforementioned discovery of 160 kilograms of tiger, snake, pangolin and rhinoceros

Table 18 Selected prosecuted charges under the *National Parks and Wildlife Act 1974* (NSW), 1 July 2003–30 June 2009

Offence	Number prosecuted
Harm protected fauna	25
Use substance to harm protected fauna	1
Possess protected fauna	12
Sell protected fauna	12
Import protected fauna	3
Failure to deliver up protected fauna when requested	1
Possess threatened species	1
Harm animal in park	1
Approach marine mammal	4
Pick plant that is part of a threatened species	10
Possess protected native plant	1
Sell protected native plant	1
Damage known habitat of threatened species	5
Breach licence conditions	19

Source: NSW DECC 2009a, 2008, 2007a; NSW DEC 2006a, 2005a; 2004

body parts in imported Chinese medicines was revealed this way. Notifications of suspicious behaviour are also relied upon and one documented case led to the arrest of three tourists observed behaving suspiciously when visiting Rottnest Island in Western Australia They were subsequently found in possession of two endemic Rottnest Island Bobtails (ACBPS 2008g). On occasion, raids are undertaken involving the agencies listed above. Two high-profile raids included the targeting of Chinese medicine retailers in Sydney, Melbourne and Brisbane, where medicines sold were found to contain parts from at least three CITES-listed species (Kemp & Ellison 2003) and aviaries in four states, suspected of laundering wild caught birds and trafficking of native and exotic avian species (ACBPS 2004b).

Detection is also reliant on compliance checking of permits and licences that are required to possess, sell or trade protected (native) and exotic species. Conservation officers (from either the relevant Commonwealth or state/territory agency) are obliged to not only check that permit or licence conditions are being respected but that mandatory record-keeping is complete and up-to-date. Monitoring is especially important to verify that exporters or importers (including collectors) are trading the same taxa they have stated on their export/import applications. Conservation statutes grant conservation officers with powers of entry, search, seizure and arrest, and offences of obstructing an enforcement officer exist in each jurisdiction.

Uncovering illegal behaviour and irregularities cannot depend solely on the work of compliance and enforcement officers but must also involve intelligence supplied by key and observational guardians (Halstead 1992). For example, intelligence from industry groups, ornithologists and landowners can all assist exposing suspected corrupt behaviour in the aviculture industry (Halstead 1992), collectively identifying where fraudulent practices might or do exist, trends in prized species and observed transgressions onto land in the vicinity of nests or 'coveted' species. For more random acts of harm, such as interfering with migrating whales or indiscriminate, recreational shooting of kangaroos, detection tends to arise from reports from the public or chance observation.

Wildlife forensics

To provide the ultimate evidence of illegal activity requires a more precise procedure for identification. One such procedure is DNA forensics. While its

application in Australia is in its infancy, there is genuine interest in its application becoming more widespread). DNA forensics (often referred to as *wildlife forensics*) is a still relatively new but increasingly used tool in the detection of (primarily) wildlife crime, however, it can also be used to identify illegal trade in CITES-listed plants and tropical timber. It provides techniques that not only identify what the species is, but potentially 'who' the specimen is (eg its relatedness to other individuals) and 'where' it came from (ie the geographic origin; Ogden, Dawnay & McEwing 2009; Ogden 2007).

Most applications of DNA forensics have been for species identification, to gain evidence of poaching, or the threatened species status of animal or plant derivatives found in imported foodstuffs (eg Chapman et al. 2003; bush meat see Ogden 2007; shark fin see Shivji et al. 2002), traditional medicines (Hsieh et al. 2003; Peppin et al. 2008; Wetton et al. 2004), and other tradeable commodities (eg shatoosh shawls see Ogden 2007; CITES-listed timber see Ogden et al. 2008). It is also regularly used in the testing of whale meat sold in Japanese and Korean markets, and has revealed the continuing sale of meat from endangered species (such as humpback and fin whales) alongside 'legal capture' species (Baker et. al. 2000; Baker, Funahashi & Steel 2008). These market surveys have also provided evidence for over-quota takes of so-called 'legal capture' species.

Another recognised application is the detection of wild animals laundered into the captive, otherwise legitimate population, of which birds are especially vulnerable. DNA profiling enables the 'identity' and relatedness of suspect birds to be compared with others in the captive group, using a 'parentage test' to verify or disprove captive-bred status. Such tests used in the United Kingdom to confirm the parentage of birds of prey (usually Peregrine falcon) chicks led to the successful exposure (and subsequent prosecution) of rogue bird keepers and a reduction in the taking of wild born eggs and chicks from known nest sites (PAWS & DEFRA 2005; Shorrock 1998). Parentage tests have been used in Australia and parts of Europe as well to confirm the legality of birds housed and traded between aviaries (Ogden, Dawnay & McEwing 2009).

Individual and geographic origin identification is still to be widely used, mainly because of the absence of comprehensive reference data. There are a couple of published examples of individual identification profiling being used to establish cases of poaching. One describes the matching of carcass DNA with information collected on wildlife DNA database (Guglich, Wilson & White 1993) and another of comparing blood found on weapons used in poaching with poached animals (Lorenzini 2005). Admixing of illegal and legal meat supply may also be thwarted by this technique, as suggested by tests on minke whale meat on sale in Norway (Palsbøll et al. 2006).

There has been some, albeit limited, use of wildlife forensics in Australia and its evidentiary capacity is recognised by enforcement agencies. The AFP is reported to have funded research projects examining the development of DNA technologies in relation to wildlife crime (Alacs & Georges 2008) and results from DNA profiling presented in cases of illegal importation and laundering of wild birds has led to successful prosecutions. Interestingly, one of the first instances of investment in DNA profiling by a commercial timber operation is also occurring in Australia (see section *Illegal logging*). Nonetheless, while there is faith in the important role of DNA forensics in uncovering wildlife crime, consideration must be extended to the practicalities and financial viability of such a tool (Haywood 2007) and the acceptability and attitude of Australian courts to DNA evidence being used in cases of wildlife crime. To assist in examining these considerations, an Australian Wildlife Forensics Network was recently established as a subsidiary of the AELERT and National Institute for Forensic Sciences (Alacs & Georges 2008), and was modelled on the UK Partnership for Action Against Wildlife Crime Forensics Working Group (Ogden 2007).

Sanctioning

Alacs & Georges (2008) note that while penalties for breaches against Australian wildlife legislation are more severe than in countries such as the United Kingdom and United States, actual sentences

handed down tend to be much more lenient. As stated earlier, persons found to have breached the EPBC Act may face a fine of up to $110,000 (or $550,000 for corporations) or 10 years imprisonment. However, custodial sentences are not commonly given and fines are usually considerably less than the value the faunal or floral species would have made on the black market (Alacs & Georges 2008). Analysis of prosecutions recorded in the Australian Customs Wildlife Prosecutions database from 1994 to 2007, found that 70 percent resulted in a fine, 10 percent in a combined custodial and pecuniary penalty, seven percent in a custodial sentence only and six percent in a good behaviour bond (Alacs & Georges 2008). The severity of custodial sentences, while more or less stagnant in number, have shown some increase in more recent years; the average custodial sentence between 1994 and 2003 was 10 months then between 2004 and 2007 it rose to 28 months (Alacs & Georges 2008). No information was provided in Alacs and Georges' paper on the median fine given. The largest fines were $30,000 in 1998 for the attempted export of 19 parrot eggs and $24,600 for the attempted export of 24 long necked turtles and one shingleback lizard.

Statistics on sanctions for breaches against state and territory conservation legislation is available for New South Wales, Queensland and Western Australia but not directly comparable due to the nature of the data published. Administrative sanctions are the norm with legal action pursued in a minority of cases. The Qld EPA (now amalgamated with the Department of Natural Resources and Water into the Department of Environment and Resource Management) issued 1,657 infringement notices totalling $282,690 in fines during 2003–08, at the same time completing 25 prosecutions with two custodial sentences secured and total fines of $157,915 imposed (Qld EPA 2008, 2007, 2006, 2005, 2004a, 2003). In the two year period between 30 June 2006 and 30 June 2008, the WA DEC issued 687 infringement notices for a total of $24,835, as well as 687 cautions and 72 letters of warning and recorded 80 convictions with fines totalling $36,355 (WA DEC 2008a, 2007). Neither agency reported on the magnitude of the penalty against the type of offence committed. The NSW DECC did however and the largest fines were for cases of harming or possessing threatened native species, with one case resulting in a $130,000 fine for a charge of taking a threatened plant species (see Table 19). Fines handed down for harming protected fauna were variable (between $300 and $9,000) as they were for the possession, selling or importation of protected fauna. No custodial sentences were given and the majority of fines were well below the maximum prescribed.

Provisions are made in some statutes for alternative penalties or 'compensation'. Unfortunately, few examples are available, even for Victoria where such penalties are regularly used for pollution offences. One available example refers to the previously mentioned case in the Victorian ski fields where slope modifications impacted on endangered mountain pygmy possum habitat. In this case, the Australian and Victorian Governments negotiated an alternative outcome with the offending parties. The agreement created a legally-binding plan of action that included committing $350,000 towards habitat rehabilitation, the establishment of a recovery plan and the funding of research projects.

Summary

With the highest extinction rate recorded for any country, the protection of Australia's remaining unique faunal and floral composition is recognised as being of paramount importance. Gradations of protective status are transcribed in all Commonwealth and state/territory conservation legislation, which establishes harms as behaviours related to the keeping, selling, trading, taking, interfering, maiming or killing a protected (or other so designated) species. Laws and management plans further acknowledge the place species occupy within the broader ecological community and subsequently recognise harms as not just impacting on the viability of the individual species but on the greater ecology.

Nonetheless, there still exists quite considerable variation in conservation laws. In jurisdictions such as New South Wales, Queensland, South Australia and the Northern Territory, the maximum penalty for taking a highly endangered species is a fine in the hundreds of thousands (with a custodial sentence of 2 years, or 10 years if the harm is committed in the Northern Territory). This is in contrast with

Table 19 Selected offences and assigned penalties for prosecuted offences against the *National Parks and Wildlife Act 1974* (NSW)

Offence	Maximum penalty	Penalty
Fauna		
Harm protected fauna	$11,000 and/or six months imprisonment	$300–9,000
Use substance to harm protected fauna	as above	$600
Possess protected fauna	as above	$100–1,000
Sell protected fauna	as above	$350–1,100
Import protected fauna	as above	$400–880
Possess threatened species	$220,000 and/or two years imprisonment	$5,000
Approach marine mammal	$110,000 and/or two years imprisonment	$400–5,000
Flora		
Pick plant that is part of a threatened species	$220,000 and/or two years imprisonment	$10,000–130,000
Possess protected native plant	$11,000 and/or six months imprisonment	$2,500
Sell protected native plant	as above	$2,500
Other		
Breach licence conditions	–	$250–3,500

Source: NSW DECC 2008, 2007a; NSW DEC 2006a, 2005a, 2004

Western Australia, Tasmania and the Australian Capital Territory where a similar offence incurs a pecuniary penalty of just one-tenth of this. However, even with strict penalties in place, imposing fines anywhere near these maximum provisions is rare. For offences related to the illegal trade, these fines come nowhere near the value these species would have made if sold on the market (Alacs & Georges 2008).

The illegal trade in fauna and flora has generated a lot of attention overseas but comparatively little in Australia. There have been different interpretations as to the size of the export trade, which mostly involves reptilian, avian and invertebrate species. The limited number of published studies available indicates that compared to neighbouring countries, the illegal trade in Australia is probably a much smaller enterprise. A lot of this is undoubtedly due to the strict nature and enforcement of Australia's conservation laws, but the use of the Internet as a facilitator of the trade and the suspected involvement of more sophisticated operatives, could mean the problem is much larger than the data indicates. Analysis of ACBPS detection data has revealed an upswing in detections in recent years, although much of this was for minor infringements.

Establishing how much illegal trade is occurring within Australia is much more difficult, as is the incidence of harms perpetrated outside the trade cycle. Harms to Australia's natural heritage that are indirectly linked to, or quite separate from, the illegal trade mostly concern 'assaults' on protected species. Which species are affected and what these harms constitute could not be discerned from the available data but made up the largest number of prosecuted offences. While apparently small in number, these acts of harm, done often, can seriously threaten local population viability and for a species already seriously threatened, produce considerable damage.

Illegal, unregulated and unreported fishing

Scope and definitions

The detrimental impact of illegal fishing in all its forms cuts a broad swath—depleting fish stocks, damaging fish ecosystems and disrupting the livelihood of lawful fishers (Agnew & Barnes 2004). Fish are an unconfined resource and up until recently, exposed to uncontrolled exploitation. This exploitation has been exacerbated over the course of the twentieth century and into the current century through the use of large-haul, highly destructive fishing methods (eg long lining), an indiscriminate approach from many fishing nations as to where, how and what they fished and soaring market prices.

The term IUU fishing was first used in 1997 by CCAMLR to describe the exploitative fishing methods employed to catch the endangered Patagonian Toothfish in the Southern Ocean. The formal definitions of IUU fishing are presented in Table 20. IUU fishing in Australia is multifaceted, involving foreign and national fishers alike. It occurs in the commercial and recreational sectors and targets marine and inland river species. The illegal behaviour spans degrees of complicity from the ignorant to organised criminal activity and includes operations that deliberately defy international conventions.

Laws and regulations

International controls and agreements

Serious depletions in fish stocks, acknowledgement of the toll certain fishing techniques take on other marine and bird species, and the threefold need to protect coastal states' fishing rights, promote sustainable fisheries management and safeguard fish populations, ushered in a compilation of international and national controls governing access and how fish can be taken. Moreover, there was the need to highlight illegal fishing as an international problem, hence the importance of developing enforcement actions at different jurisdictional levels to counteract the damage.

International recognition of illegal fishing activities began with UNCLOS. The primary tenet of UNCLOS was the designation of coastal state rights with regard to adjacent seas, by designating sea areas into one of five zones:

- territorial seas;
- continental shelf;
- EEZ;
- contiguous zone; and
- high seas.

Table 20 Definition of IUU fishing

	Activities
Illegal fishing	• conducted by national or foreign vessels in waters under the jurisdiction of a state, without the permission of that state, or in contravention of its laws and regulations;
	• conducted by vessels flying the flag of states that are parties to a relevant regional fisheries management organisation but operate in contravention of the conservation and management measures adopted by that organisation and by which the states are bound, or relevant provisions of the applicable international laws; or
	• in violation of national laws or international obligations, including those undertaken by cooperating states to a relevant regional fisheries management organisation;
	Activities
Unreported fishing	• which have not been reported, or have been misrepresented, to the relevant national authority, in contravention of national laws and regulations; or
	• undertaken in the area of competence of a relevant regional fisheries management organisation which have not been reported or have been misreported, in contravention of the reporting procedures of that organisation.
	Activities
Unregulated fishing	• in the area of application of a relevant regional fisheries management organisation that are conducted by vessels without nationality, or by those flying the flag of a state not party to that organisation, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organisation; or
	• in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner consistent with state responsibilities for the conservation of living marine resources under international law.

Source: International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (s 3.1–3.3; FAO 2001)

Especially pertinent to the practice of, and challenges in, deterring IUU fishing are the arrangements for fishing ventures occurring in the EEZs and the so-called high seas. EEZs refer to the sea mass extending 200 nautical miles from the shore or baseline and represent the area within which coastal state(s) have jurisdiction over all activities related to living and non-living resources. States are directed to address illegal fishing by preventing over-fishing in their designated EEZs and to seek permission before fishing in other EEZs. However, the UNCLOS does not make provisions for coastal state sovereignty over these zones or the right to stop vessels from other states from passing through them (Baird 2007). The high seas comprise all seas not enclosed within the other four sectors. While there is the expectation in UNCLOS that states will actively participate in the conservation of fish stocks in the high seas, there is also the precept that only flag states have jurisdiction over their vessels operating in these waters. This clause has proved to be a highly problematic factor in preventing high seas illegal fishing (Balton 2004).

In the following decade came the 1991 FAO Code of Conduct for Responsible Fisheries, the 1993 FAO Compliance Agreement and the 1995 UN Fish Stocks Agreement. The purpose of the Code of Conduct, which was originally presented in 1991 and formally adopted in October 1995, was to set down principles and international standards for the conservation, management and development of fisheries. While voluntary in nature, parts of the Code are based on relevant rules of international law, such as UNCLOS. The 1993 Compliance Agreement, which forms part (and the only legally-binding component) of the 1995 Code of Conduct, calls for flag states to ensure any vessel carrying their flag is authorised by them to fish on the high seas. It does this by making the authorisation dependant on the state having control over the vessel's fishing operations and rescinding authorisation if said vessel is found in contempt of regional fishery laws. The 1995 Fish Stocks Agreement represents the UN's implementation of specifications in the 1982 UNCLOS on the conservation and management of fish stocks and migratory fish species.

The first instrument to exclusively target IUU fishing came with the passing of the International Plan of Action–Illegal, Unreported and Unregulated Fishing (IPOA–IUU), in 2001 at the 23rd Session of the FAO Committee on Fisheries. This followed the UN General Assembly's adoption of Resolution 54/32, which makes reference to IUU fishing. Like most other international fisheries directives, the IPOA–IUU is a purely voluntary instrument, laying out the foundation for states or regions to implement national or regional plans of action to combat IUU fishing. Twelve national plans of action are listed on the FAO site, one of which is the Australian National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (AUS-NPOA-IUU; Aust DAFF 2005). The AUS-NPOA-IUU, which was presented to the FAO in March 2003, proposes schemes for implementation to combat IUU fishing on both domestic and international fronts and represents the basis on which Commonwealth and state/territory fisheries legislation were formed.

National laws

The Australian EEZ, in which Australia has sovereign rights over the conservation, use and management of fisheries, is known as the Australian Fishing Zone (or AFZ). The AFZ extends 200 nautical miles out from the mainland and Tasmanian coastline, as well as from Australia's offshore territories of Christmas Island, Cocos (Keeling) Islands in the north, Norfolk Island to the east and Macquarie, Heard and McDonald Islands in the south. Twenty-three Commonwealth fisheries are established in the AFZ.

Australia has entered into bilateral relationships with neighbouring countries regarding access to, and the use of, marine resources within the AFZ or contiguous waters. Nothing has been formalised with East Timor as yet but arrangements have been established with:

- *Indonesia*—1974 memorandum of understanding (MOU) regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf (MOU Box). The 1974 MOU Box designates an area within the AFZ in which Indonesian fishers can continue their traditional practice of fishing for species such as trepang, trochus, abalone and sponges.
- *Papua New Guinea*—the Torres Strait Treaty (TST) ascertained sovereignty and marine boundaries for the taking of swimming and sedentary species and cooperative behaviours for the conservation and management of shared fisheries. Like the MOU Box, the TST also recognises the traditional livelihoods of Indigenous inhabitants. This treaty has been legislated in the *Torres Strait Fisheries Act 1984* (Cth).
- *New Zealand*—the South Tasman Rise Arrangement (STR Arrangement) takes in the undersea ridge from the south of Tasmania to the Southern Ocean and encompasses parts of the AFZ and the high seas. The STR Arrangement follows on from the now expired MOU between Australia and New Zealand and is used as a conservation and management tool for responsible fishing of orange roughy by fishers from both countries.

Australia's commercial fisheries are managed by the Commonwealth and/or the states/Northern Territory. Offshore Constitutional Settlements (OCS) arrangements are in place for fisheries that overlap more than one jurisdiction. Where they do not exist, state/territory laws apply to waters up to three nautical miles from the coast and Commonwealth laws to those extending to the 200 nautical mile cut-off point.

The conservation and management of Commonwealth fisheries is legislated in the *Fisheries Management Act 1991* (Cth), which designates the AFZ and fishing-related offences. The *Fisheries Administration Act 1991* establishes the Australian Fisheries Management Authority (AFMA) as the primary agency in charge of Commonwealth fisheries management and their responsibilities to this task. Compliance and enforcement activities related to domestic fishing in Commonwealth waters are predominantly undertaken by AFMA officers. In dealing with illegal fishing by foreign fishers, AFMA coordinates with Coastwatch, ACBOS, the Australian Defence Force (ADF) and relevant state and territory fisheries authorities.

All other marine fisheries, as well as inland fisheries, are managed by state and territory agencies. Fisheries laws are generally laid out in the one statute, the exception being Tasmania which has separate statutes regarding the management of

marine fisheries (*Living Marine Resources Management Act 1995*) and inland fisheries (*Inland Fisheries Act 1995*; see Table 21). Subordinate legislation includes fisheries- or species-specific management plans. Fisheries management plans aim to protect particular aquatic species, promote responsible and sustainable fishing practices (both recreational and commercial) and maintain a viable commercial fishing industry. For example, Queensland has instigated management plans for five fisheries under their jurisdiction, namely the East Coast Trawl, Coral Reef Fin Fish, Freshwater, Gulf of Carpentaria Inshore Fin Fish and Spanner Crab fisheries.

Table 21 Fisheries legislation

Jurisdiction	Primary statute(s)
Commonwealth	*Fisheries Management Act 1991*
NSW	*Fisheries Management Act 1994*
Vic	*Fisheries Act 1995*
Qld	*Fisheries Act 1994*
WA	*Fish Resources Management Act 1994*
SA	*Fisheries Management Act 2007*
Tas	*Living Marine Resources Management Act 1995* *Inland Fisheries Act 1995*
ACT	*Fisheries Act 2000*
NT	*Fisheries Act*

The Commonwealth has generally limited its jurisdiction to commercial fisheries, whereas state and territory authorities manage both commercial and recreational fishing, and aquaculture. Before undertaking commercial fishing ventures in Commonwealth fisheries, a fishing permit must be granted (*Fisheries Management Act 1991* (Cth) s 32). Fishing permits allow the taking of Commonwealth-managed species and prescribes conditions of fishing, such as where the operation can take place, the sort of boat that can be used, the type of species that may be lawfully taken and fishing methods that may be used (AFMA 2008a). While there is a provision which states that permits are effective for five years, in reality, most are for a period of 12 months, albeit with the option to renew on an annual basis. Where statutory management plans apply to fisheries, commercial fishers are granted Statutory Fishing Rights (SFRs) to fish there (*Fisheries Management Act 1991* (Cth) s 31). SFRs refer to fish quotas, the type of boat that can be used, quantity of fishing equipment and permission to fish (AFMA 2008a). Currently, SFRs are valid for five of the 23 Commonwealth fisheries. For some fisheries, fish receivers (ie processors, wholesalers and retailers) must also obtain a permit (*Fisheries Management Act 1991* (Cth) s 91) which is valid for a period of 12 months. Unlike fishing permits, fish receiver permits cannot be transferred.

Authorisations at the state and territory level entail licensing systems for commercial, and for some jurisdictions, recreational fishing. A licence is required to fish recreationally in New South Wales, Victoria and Western Australia, although persons aged under 18 years or over 70 years are exempt in Victoria. Recreational (or 'angling') licences are required in Tasmania to fish inland rivers (except if fishing in a registered private fishery) but not for recreational sea fishing if using a rod or line. A licence is needed if taking abalone or rock lobster. No formal authorisation for recreational fishing is required in Queensland (unless fishing from stocked areas), South Australia or the Northern Territory (unless fishing from rivers on Aboriginal land).

Licences are mandatory for commercial fishing in all jurisdictions and generally attached to a specific fishery. Other components of commercial fishing, such as commercial fishing vessels, processors and receivers, and in some states, fishing gear, are also subject to licensing or registration, as are commercial charter operations. Vessel monitoring systems are mandatory in most, but not all, jurisdictions. Before obtaining a commercial licence in New South Wales or South Australia, a fisher must undergo a history check for violations against fisheries regulations in their home state and other jurisdictions. Further rules and regulations cover bag and quota limits, minimum legal size of fish caught, gear restrictions, sale of catch (recreational), reporting catch protocols (commercial), non-taking of protected species and respecting area enclosures.

Offences and penalties

Fisheries offences mostly entail breaches against the rules and regulations summarised above, unauthorised fishing ventures (ie fishing without a licence or permit), or fishing during closed seasons. Actual taking of protected or threatened species is also proscribed in fisheries statutes and there is overlap with similar offences listed in threatened species statutes.

Penalties vary considerably for contraventions of state and territory fisheries laws (see Table 22). South Australia, Western Australia, the Northern Territory and Tasmania (in their *Inland Fisheries Act 1995*) employ a tiered penalty scheme based on offence history. In the former two states, the penalty scheme is further broken down by the protection status of the fish species taken. In South Australia, penalties refer to *priority* and *all other* species, whereas in Western Australia, four categories of priority species are prescribed.

The most severe penalties are generally reserved for the taking of protected species, unlicensed commercial fishing and fishing during a declared closed season or in contravention of a management plan. Victoria and South Australia include an offence of 'trafficking' a priority species which, in Victoria, is assigned a maximum penalty of 10 years imprisonment (*Fisheries Act 1995* s 10) and in South Australia, a maximum fine of $100,000 and/or four years imprisonment (for a natural person) or $500,000 (for a body corporate; *Fisheries Management Act 2007* s 74). The use of a foreign fishing vessel to fish in state waters (and having fishing equipment on board said vessel) attracts additional high penalties in Victoria, Western Australia, Tasmania and the Northern Territory.

Table 22 Maximum penalties for selected fisheries offences

Act and associated selected offences	Maximum penalty
Fisheries Management Act 1991 **(Cth)**	
Driftnet fishing	$55,000 (natural person)
• in the AFZ; or	$275,000 (body corporate)
• outside AFZ from Australian oat (s 13)	
Take prescribed fish (including black cod and marlin)	$13,750
• in the AFZ; or	
• outside AFZ from Australian boat (s 15–15A)	
Failure by holder of fish-receiver permit to provide information or return on fish received (s 93)	Six months imprisonment
Using foreign boat for recreational fishing in AFZ (s 99)	$27,500
Using foreign boat for unauthorised commercial fishing in AFZ (s 100–100B)	$275,000
• strict liability (s 100)	
• reckless and intentional use (s 100A)	$825,000 (boat exceeding 24m in length)
	$550,000 (boat less than 24m in length)
• reckless and intentional use in territorial sea of AFZ (s 100B)	$825,000 and/or three years imprisonment (boat exceeding 24m in length)
	$550,000 and/or two years imprisonment (boat less than 24m in length)
Having foreign boat equipped for fishing in AFZ	$275,000
• strict liability (s 101)	
• reckless and intentional use (s 101A)	$550,000
• reckless and intentions use in territorial sea of AFZ (s 101AA)	$550,000 and/or two years imprisonment

Table 22 continued

Act and associated selected offences	Maximum penalty
Using boat outside AFZ to support illegal foreign fishing in AFZ (s 101B)	$550,000
Landing of fish in Australia by foreign boats (s 103)	$5,500
Contravene conditions of treaty licence by foreign boats (s 104)	As above
Unauthorised fishing by Australian-flagged boat on high seas (s 105A)	$55,000
• fishing for WCPFC fish stock—strict liability (s 105AA)	$6,600
• fishing for WCPFC fish stock (s 105AB)	$55,000
***Fisheries Management Act 1994* (NSW)**	
Take or possess fish in contravention of fishing closure order (s 14(1)–(2))	$22,000 and/or six months imprisonment (natural person) $110,000 (body corporate)
Possess or sell prohibited size fish (s 16)	As above
Exceed daily bag limit (ss 17–18)	As above
Take or possess protected fish species (s 19)	As above
Take or sell declared species from waters protected from commercial fishing (s 20)	$110,00[a] and/or six months imprisonment (natural person)
Possess fish illegally take (s 35)	$11,000 and/or three months imprisonment (natural person) $55,000 (body corporate)
Unlicensed commercial fishing (s 102)	$110,000[a] (natural person)
Contravene conditions of commercial fishing licence (s 104) and commercial fishing boat licence (s 108)	$11,000
***Fisheries Act 1995* (Vic)**	
Unauthorised commercial taking fish or fish bait for sale, or use of commercial equipment (s 36)	$4,536.80
Use or possess commercial abalone equipment to take more than twice the catch limit (s 37)	$22,684.00
Unauthorised use of access licence (s 39)	$22,684[a] and/or 12 months imprisonment (natural person)
Unauthorised receipt or selling of priority fish species, or receipt for sale of any other fish species (s 40)	As above
Unauthorised recreational fishing or use of recreational fishing equipment (s 44)	$1,134.20 (if using hoop); $567.10 (all other)
Take in excess of amount specified on Abalone Fishery Access Licence (s 66M)	$5,671 (first offence) and forfeiture of abalone quota units, up to $22,684 and/or 12 months imprisonment (fourth or more offence)
Unauthorised taking, injuring, destroying, keeping, selling etc protected aquatic biota (s 71)	$5,671
Traffic in a commercial quantity of a priority species (s 111A)	10 years imprisonment
Take or possess a commercial quantity of a priority species within 24 hours (s 111B–C)	Five years imprisonment
Use of foreign boat for fishing (s 117)	$45,358 and/or two years imprisonment

Table 22 continued

Act and associated selected offences	Maximum penalty
Fisheries Act 1994 **(Qld)**	
Contravene closed season or closed (s 77)	$75,000
Take, possess, sell etc regulated species (s 78)	As above
Unlawfully contravene quota (s 79)	$150,000
Contravene condition of authority (s 79A)	$7,500
Use of authorised equipment eg explosives (s 80)	$22,500
Possession of fish taken in contravention of other fisheries legislation (s 88A)	$75,000
Fish Resources Management Act 1994 **(WA)**[b]	
Contravene prohibited fishing order (s 43)	First offence: Category 1 fish—$5,000 (natural person)[a] Category 2 fish—$3,000 (natural person)[a] Category 3 fish—$2,000 (natural person)[a] Other category fish—$1,000 (natural person)[a] Second or subsequent offence: double penalty per category fish
Take, possess, sell, consign etc totally protected fish (s 46)	As above
Take, possess, sell, consign etc commercially protected fish (s 47)	As above
Exceed bag limit (s 50(3))	As above
Possess excess bag limit (s 51)	As above
Mutilate fish to prevent determination (s 49)	$25,000 (individual)[a]
Contravene major provision of management plan (s 75)	First offence: $25,000 and/or one year (natural person)[a] Second or subsequent offence: double penalty as above
Contravene conditions of licence or permit (s 77)	First offence: $10,000 (natural person)[a] Second or subsequent offence: double penalty as above
Use of unauthorised equipment eg explosives, noxious substances (s 170)	$25,000 and/or 12 months imprisonment
Use of foreign vessel for fishing or processing or use of vessel equipped with fishing gear (ss 174–175)	$150,000 and/or four years imprisonment
Fisheries Management Act 2007 **(SA)**	
Unauthorised commercial fishing (s 52)	
• priority species	$250,000 and/or four years imprisonment (natural person)[a]
• other species	$50,000 and/or two years imprisonment (natural person)[a]
Use of unregistered boat(s) and fishing devices (s 53)	$50,000 (natural person) $250,000 (body corporate)
Contravene conditions of licence (s 55)	
• quota entitlement	$20,000
• other	$10,000

Table 22 continued

Act and associated selected offences	Maximum penalty
Prescribed fishing activity (s 70)	
• priority species	First offence: $10,000
	Second offence: $20,000
	Third and subsequent offences: $35,000
• other species	First offence: $5,000
	Second offence: $10,000
	Third and subsequent offences: $20,000
Take, injure, interfere or harass etc. protected species (s 71)	First offence:
	$10,000 (natural person)
	$50,000 (body corporate)
	Second and subsequent offences: double penalty as above
Unauthorised sale, purchase or possession of priority species (s 72)	
• priority species	$50,000 and/or four years imprisonment (natural person)
	$250,000 (body corporate)
• other species	$20,000 and/or two years imprisonment (natural person)
	$100,000 (body corporate)
Possess excess of fixed quantity (s 73)	
• priority species	First offence: $10,000
	Second offence: $20,000
	Third and subsequent offences: $35,000
• other species	First offence: $5,000
	Second offence: $10,000
	Third and subsequent offences: $20,000
Trafficking of priority species (s 74)	$100,000 and/or four years imprisonment (natural person)
	$500,000 (body corporate)
Living Marine Resources Management Act 1995 **(Tas)**	
Contravene conditions of permit (s 15)	$100,000 and/or one year imprisonment
Contravention of rules relating to fisheries (s 42)	$500,000 and/or two years imprisonment
Taking, possessing or selling species during closed season (s 59)	$500,000 and/or one year imprisonment
Fishing without a licence (s 60)	$500,000 and/or two years imprisonment
Marine farming without a marine farming licence (s 64)	$50,000 and or 12 months imprisonment
Unlicensed fish processing (s 67)	$50,000
Process illegally-taken fish (s 68(4))	$500,000 and/or two years imprisonment
Contravene conditions of licence (s 86A)	As above
Contravene rules for protection of marine areas and habitats (including prohibition of fishing; taking of species, size, quantity; use of equipment etc) (s 104)	As above
Contravene marine resources management plan (s 113)	$500,000

Table 22 continued

Act and associated selected offences	Maximum penalty
Use of prohibited equipment eg explosives and substances (s 255)	$500,000 and/or two years imprisonment
Use of foreign boat (s258) and equipped with fishing gear (s 259)	As above
Possess, purchase or sell illegally-taken fish (s 262)	$200,000 and/or one year imprisonment
Inland Fisheries Act 1995 **(Tas)**	
Unlicensed commercial fishing (s 21)	$100,000
Contravene conditions of commercial licence (s 25)	As above
Unlicensed recreational fishing of acclimatised or indigenous fish (s 37)	First offence: $200–500 Second and subsequent offences: $500–1,000
Unauthorised dealing with applicable fish (s 62)	$100,000
Contravene conditions of fish dealers certificate (s 64)	As above
Use of prohibited equipment and substances (ss 126–127)	$1,000–5,000
Taking of protected species (s 131)	$5,000
Unauthorised selling and buying (s 134)	$2,000
Unlawful possession of salmon during prescribe period (s 136)	$1,000
Disturbing spawn (s 137)	As above
Unauthorised taking of juvenile eel (s 140A)	$10,000
Contravening conditions of licence (s 140B)	$100,00
Fisheries Act 2000 **(ACT)**	
Taking fish for sale without licence etc (s 74)	$5,000 and/or six months imprisonment
Taking fish contrary to scientific licence (s 75)	$1,000
Importing or exporting live fish without authority (s 76)	$10,000 and/or 12 months imprisonment
Trafficking in commercial quantity of fish of priority species (s 76A)	$100,000 and/or 10 years imprisonment
Taking commercial quantity of fish of priority species (s 76B)	As above
Possessing commercial quantity of fish of a priority species (s 76C)	$50,000 and/or five years imprisonment
Possessing fish obtained illegally (s 77)	$10,000 and/or 12 months imprisonment
Takes fish in contravention of a fishing closure (s 80)	$5,000
Prohibited size and weight offences (s 81)	$5,000 and/or six months imprisonment
Quantity of fish offences (s 82)	$3,000
Non-permitted fishing gear (s 86)	$5,000
Unauthorised use and possession of commercial fishing gear (s 87)	$5,000
Unauthorised damage or disturbance to spawning areas (s 88)	$3,000
Fisheries Act **(NT)**	
Unlicensed taking, farming, selling, processing etc fish (s 10)	$20,000 and/or two years imprisonment (taking & farming) $10,000 and/or one year imprisonment

Table 22 continued

Act and associated selected offences	Maximum penalty
Failure to exercise direct control over operations (s 13A)	
• fails to comply with conditions or not in vicinity of operations	$20,000
• other offence under the Act during conduct of licensed operations	$10,000
Use prohibited equipment (s 15(c)–(d))	First offence: $5,000 or six months imprisonment Second and subsequent: double penalty as above
Use of unregistered \ vessel for licensed fishing	$100,000 or three years imprisonment (foreign vessel) $20,000 or two years imprisonment (other)
Falsely identifying fish for purpose of sale (s 41)	First offence: $5,000 or six months imprisonment Second offence: $10,000 or 12 months imprisonment Third and subsequent offences: double second offence penalty as above
Buying, selling or possessing fish in contravention of the Act (s 42)	$20,000 ($50 per fish in excess)

a: Monetary penalty is double if offender is a body corporate

b: See Schedule 4, *Fish Resources Management Regulations 1995* for categorisation of aquatic species

Note: Victorian monetary penalty based on penalty unit amount for 2008–09 ($113.42); *Monetary Units Act 2004*

'Additional' penalties may also be imposed for fishing offences. There are monetary penalties based on the number of days the offence continues, the number of fish taken or the value of the fish. The latter penalty, for persons convicted of fisheries offences in South Australia, is calculated as five times the wholesale price or $100,000, whichever is the lesser amount (*Fisheries Management Act 2007* s 110). It is up to 10 times the value for persons found in breach of Tasmania's marine fisheries laws (*Living Marine Resources Management Act 1995* s 267). Courts can strip or temporarily confiscate licences or permits from fishers, order a reduction in licence entitlements (usually the quota allocation) and impose conditions on how and where fishers conduct their commercial activities. In more serious cases, prohibition or control orders are used which effectively ban fishers from specified waters, being on a specified class of vessel, possessing certain fishing devices or catching specified fish resources (eg see *Fisheries Management Act 1994* (NSW), s 82; *Fisheries Act 1995* (Vic) s 120; *Fish Resources Management Act 1994* (WA) s 225; *Fisheries Management Act 2007* (SA) s 100). Prohibition orders are served in New South Wales for repeat offenders, defined as those who have committed no fewer than three offences. In Western Australia, repeat offenders are dealt with by automatic cancellation of their fishing licence (*Fish Resources Management Act 1994* s 224).

Along with prescribing fishing offences similar to those in state and territory statutes, the *Fisheries Management Act 1991* (Cth) includes laws related to Australia's obligations regarding illegal high seas fishing by Australian-flagged vessels and the protection of the AFZ from illegal foreign fishing. The latter comprises any recreational fishing from a foreign-owned boat and unauthorised commercial (or charter boat) fishing (ss 99–104).

Nature and extent

IUU fishing is mostly a domestic issue, perpetrated by local recreational and commercial fishers (Anderson & McCusker 2005). However, habitual incursions of foreign fishers into Australian waters, with the objective of taking high-value, often endangered marine species, have resulted in the use of considerable enforcement efforts to deter.

Domestically, the most damaging illegal fishing is conducted by commercial fishers (Anderson & McCusker 2005; Palmer 2004).

Three broad groups of offenders engaged in domestic illegal fishing might be classified as:

- habitual or repeat offenders;
- opportunists; or
- the ignorant (Vic ENRC 2002).

A considerable proportion of illegal fishing is probably perpetrated by 'the ignorant', who through a lack of knowledge of fisheries laws and regulations, or a lack of awareness about changes to said laws, 'inadvertently' illegally fish (Vic ENRC 2002). Opportunists, on the other hand, are cognisant of fisheries laws but on an occasional basis choose to contravene these laws to serve personal interests. The final group comprises the habitual offender, who regularly breaches fisheries regulations to take and sell high-value aquatic species for commercial gain. The opportunist and habitual offender occupy a spectrum of offenders motivated by personal gain, from fishers who take a conscious risk once in a while to organised, criminal operations (Vic ENRC 2002).

Illegal domestic fishing

Domestic illegal fishing activity is acknowledged as mostly 'small scale' and 'akin to low level non-compliance with regulations' (Putt & Anderson 2007). Nonetheless, even small-scale abuses can produce considerable damage if pursued habitually and extensively enough, especially if directed at species which are regulated or a favourite target for fishing ventures. Estimates of the percentage that illegal catches represent vary and tend to combine data on commercial illegal fishing with recreational illegal fishing. Anecdotal evidence referred to in a study of illegal fishing in New South Wales estimated that anywhere between 30 and 60 percent of 'legal' catch is actually taken illegally (Palmer 2004). For highly-valued species (such as abalone), illegal takes of 20 to 60 percent (in New South Wales) and 30 to 40 percent (in Victoria) have been cited (Palmer 2004; Vic ENRC 2002). The latter estimate, which equated to an illegal catch of 432 to 576 tonnes, is less than half the 1,527 tonnes presented in another submission to the same Victorian inquiry on illegal fishing (Vic ENRC 2002). This disparity illustrates the difficulty in deriving accepted estimates for an illegal behaviour not easily detected or quantifiable.

What is agreed is that most fishers, either recreational or commercial, are largely compliant with fishing laws (Putt & Anderson 2007), although the degree of such compliancy depends on whose views are being consulted. Key stakeholders interviewed for Putt and Anderson's (2007) report on crime in the Australian fishing industry stated an 85 to 90 percent compliance rate but fisheries officers, when consulted on levels of criminal activity in their area, suggested a lower percentage. The NSW Department of Primary Industries reports a compliance rate in 2007–08 of 91 percent (n=4,480) for commercial fishers and 90 percent (n=52,178) for recreational fishers (NSW DPI 2008). Overall, compliance for most Qld fisheries in 2008 was around 90 percent or higher (Qld DPI&F 2008a, 2008b, 2008c, 2008d, 2008e, 2008f, 2008g, 2008h, 2008i, 2008j, 2008k, 2008l, 2008m, 2008n).

Ignorance probably accounts for a sizeable proportion of illegal recreational fishing but the industry is not wholly immune to the deliberate flouting of fishing regulations. Common offences include exceeding quota or bag limits, taking undersized fish and using unauthorised equipment, such as traps, netting, long-lining and the use of multiple hooks (Fletcher & Santoro 2008, 2007; NSW DPI 2008; Palmer 2004; Qld DPI&F 2008a, 2008b, 2008c, 2008d, 2008e, 2008f, 2008g, 2008h, 2008i, 2008j, 2008k, 2008l, 2008m, 2008n; Vic ENRC 2002). The abuse of bag limits and the taking of undersized fish is especially problematic and the reviews of illegal fishing in New South Wales and Victoria collectively recommended a reduction in current bag limits (for particular species) as they were not only set too high but encouraged exploitation.

More insidious behaviour occurs in the commercial fishing industry. Propelled by profitability, commercially-harvested species are likelier targets of deliberate criminal action and subsequently at greatest risk of extensive harm. Fifty-two percent of fisheries officers (n=567) surveyed by Putt and Anderson (2007) estimated that around one-fifth of the commercial fishing industry in their locale as being actively engaged in illegal fishing or related criminal behaviour.

Illegality permeates all stages of the market, from poaching via processing through to consumer sales, as well as the receivers and buyers who transit fish through these key points (Tailby & Gant 2002). Illegal activity may take in:

- exceeding the allowable quota and related docketing fraud;
- failure to report catch;
- under-reporting catch;
- co-mingling illegal with legal catch;
- selling commercial catch to clubs, restaurants, hotels or private individuals on a cash or barter basis; and
- swapping catch between commercial and recreational allowances (Anderson & McCusker 2005; Tailby & Gant 2002).

There has been some discussion of the involvement of organised crime in illegal domestic fishing and (like the illegal trade in wildlife) its cohabitation with other illegal activities, notably money laundering and drug trafficking. Three key risk factors identified as facilitating organised criminal involvement in illegal fishing are:

- structural nature of the industry (characterised by competition between small business ventures and overseas importers, plus the itinerant nature of some of the workforce);
- profitability; and
- entrepreneurship of organised crime groups (Putt & Anderson 2007).

Anecdotal evidence collected as part of Putt and Anderson's (2007) study revealed incidents of outlaw motorcycle gang involvement in the theft of pearls (Western Australia), sale of fishing licences (Northern Territory) and the illegal abalone trade (South Australia). The possible use of fishing vessels to transport drugs was also reported.

Vulnerability to illegal fishing may also arise from constrained fishing access. For example, the recreational marron fishery in the Southern Inland Region of Western Australia is deemed at high risk of illegal fishing, because the open season is restricted to just 23 days a year and many dams and catchments used to fish marron are now being closed (Fletcher & Santoro 2008, 2007). In southwest New South Wales, the depletion of inland river fish stocks brought about by the ongoing drought has made vulnerable species even more susceptible to illegal recreational fishing. Twelve percent (n=360) of fishers checked during eight special operations targeting the Murray River (between Albury and Mildura) and the Murrumbidgee River (Wagga Wagga to Balranald) were found in breach of one or more fishing laws, including taking of protected species or undersized specimens, or catching fish using illegal methods (NSW DPI 2008).

High market prices appear to the primary driver for much of the illegal commercial fishing activity. Certain marine species are particularly vulnerable to illegal harvesting; they are highly sought-after on international (particularly east Asian) markets and often located in isolated coastal areas where ongoing surveillance is not always feasible (Anderson & McCusker 2005). Abalone is the highest-profile marine species targeted by illegal poachers. Limited commercial licenses, the associated costs of entering the legal industry and the profitability of a highly desired resource fosters illegal harvesting (Tailby & Gant 2002). Some theft is recreational but the spread of the black market suggests that a sizeable quantity is poached using commercial-style equipment and with commercial intentions (Palmer 2004). There is also the infiltration of organised crime into the abalone market which is described as 'blatant' in its perseverance and affecting each stage of the trade (Vic ENRC 2002). Fisheries officers from six of the eight jurisdictions surveyed for the AIC study on illegal fishing nominated abalone as the most vulnerable to organised theft (Putt & Anderson 2007).

Other, similarly vulnerable fish are sharks for their fins and seahorses which are destined for overseas markets (ie primarily Chinese-speaking countries). Illegally-taken species for the domestic market include abalone, rock lobster and various species of native fish. Illegal exploitation of sharks for their fins, seahorses and rock lobster is particularly pronounced (the former is also targeted by foreign fishers) and some level of organised criminal activity exists here too (Putt & Anderson 2007). Also evident is poaching for the restaurant and café trade, which additionally affects reef fish, razor fish, dhufish, eel, yabbies and squid. Jurisdiction-specific issues with particular species are referred to in fish status reports, such as those surrounding blue swimmer and mud crabs (Qld DPI&F 2008a, 2000j), sawfish

and marron (Fletcher & Santoro 2007) and southern rock lobster, blacklip abalone, garfish and King George whiting (SA PIRSA 2006). Some of this catch is sold to restaurants by a sub-group of loosely-organised recreational fishers, often ethnically- or culturally-based family groups who partake in illegal fishing to supplement the household income (Putt & Anderson 2007).

Illegal, unregulated and unreported fishing by foreign nationals

Northern waters

Most of the IUU fishing by foreign fishers in Australia's northern waters is done by Indonesian fishers, although vessels from Papua New Guinea and Taiwan have also been detected in the AFZ. As mentioned earlier, Australia entered into an arrangement with Indonesia in 1974 allowing 'traditional' Indonesian fishers to fish in an area of the AFZ known as the MOU Box and the waters enclosed within the reefs. An amendment in 1989 clarified the term *traditional* to exclude the use of motorised vessels and specified fishing equipment. IUU fishing by Indonesian fishers is characterised by non-traditional fishing ventures conducted in designated areas, or fishing outside designated areas.

In the period 2000 to 2006, the number of illegal fishing boats apprehended by Australian enforcement officers in the northern stretches of the AFZ rose from 78 to 368 (AFMA 2006, 2000). In 2005–06 alone, an average 12 foreign fishing vessels were intercepted each week (AFMA 2006). In 2007–08 and 2008–09, apprehension numbers dropped to 156 and 27 respectively (AFMA 2009, 2008b). These have been described as a 'significant' decline on previous years and interpreted as a direct outcome of the enforcement actions applied (AFMA 2009, 2008b, 2007a). In the same time, a total of 750 fishers were charged for offences against the *Fisheries Management Act 1991* (Cth), *Torres Strait Islander Fisheries Act 1984* (Cth), or *Criminal Code Act 1995* (Cth).

Primary targets for these fishing ventures were (and continue to be) shark fin, trepang and reef fish fisheries. Factors thought to encourage the persistent incursion of Indonesian foreign fishers comprise:

- intense fishing activity in Indonesian waters with a consequent depletion in traditionally relied upon fish stocks;
- high international prices for target species; and
- better returns for fishers whose economic prospects from other forms of employment or indeed legal fishing would be considerably less (Fox, Therik & Sen 2002; Sumaila, Alder & Keith 2004).

AFZ regions at particular threat of illegal fishing include the area around Ashmore Reef and the groundfish fisheries of the Timor and Arafura Seas (Aust DAFF 2005).

The sustained increase in illegal fishing in Australia's northern waters prompted the Australian Government to outlay an additional $389m (from the 2006–07 Federal Budget) to operate a whole-of-government deterrence scheme, involving the Department of Agriculture, Fisheries and Forestry, the Department of Defence, the Department of Immigration and Citizenship, ACBPS, AFP and the Commonwealth Department of Public Prosecutions. Much of this funding was directed at:

- increasing and co-ordinating aerial and vessel surveillance to improve detection of illegal fishing vessels;
- streamlining the process of apprehension, detention and prosecution of offenders; and
- confiscation and destruction (for a guilty finding) of property (specifically fishing vessels).

The latter was deemed to be an especially effective deterrence tool, at least for the smaller operations where the cost of replacing the vessel would in all likelihood prohibit or impede fishers from returning. Fox, Therik and Sen's (2002) study of illegal fishing by traditional Indonesian fishers showed that confiscation and destruction of vessels did not impact too greatly on large-fleet operations, as vessels could be replaced at low cost and economic loss was recouped after two or three fishing trips. For smaller operators, the cost was much more substantial, as economic viability is concentrated in the one vessel. Instead of opting out of fishing, it seemed probable that fishers would, out of necessity, return to illegal fishing, either to continue generating an income better than what they can make back in their village or, if indebted to a

financier, as captain or crew on another vessel (Fox, Therik & Sen 2002).

Southern ocean

If illegal foreign fishing vessel sightings are a gauge by which to measure the incidence of IUU fishing, then those occurring in the Southern Ocean are much less common than the situation in northern waters. The resources needed to reach and transverse the notoriously dangerous Southern Ocean probably accounts for the lower incidence, but the size and conditions of these waters also means that surveillance and chances of detection are much more restricted.

The object of most IUU fishing ventures in the Southern Ocean is the Patagonian toothfish, but an additional concern for Australia is preventing illegal harvesting of mackerel in the mackerel icefish fisheries that surround Heard and McDonald Islands (AFMA 2007b). Regular surveillance of these fisheries is conducted by Australian authorities but it is the exploitation of the Patagonian toothfish that the literature primarily covers.

Listed as endangered in the 2008 International Union for Conservation of Nature Red List, the Patagonian toothfish's vulnerability to over-fishing relates to the high market prices the species commands, exacerbated by its slow replacement rate and growth, and late maturity. The most recent, published data on illegal Patagonian toothfish catches comes from the mid-1990s to early 2000s, which estimates that in the years considered, a minimum of 30 percent of landed Patagonian toothfish were taken through IUU fishing (Levy, Prado & Tietze 1999; Miller 2004). In some years (and from specified regions), it was as high as 73 percent (eg 1996–97; Miller 2004) and 80 percent (1999; Agnew 2000). For the most recent year available (2002), the catch was estimated at 45 percent (CCAMLR Scientific Report cited in Sumaila, Alder & Keith 2004).

Recognition that toothfish stocks, and those of other Antarctic marine organisms, were at risk of serious depletion came much earlier with the establishment in 1982 of CCAMLR. The purpose of the Convention is the joint conservation of the highly fragile Antarctic ecosystem and maintenance of sustainable fisheries. CCAMLR states, of which Australia is one, are responsible for managing EEZs within the CCAMLR zone but are obliged to observe fishing regulations as established by CCAMLR regarding catch species, catch limits and permissible fishing equipment. More recent requirements include the mandatory use of vessel monitoring systems in vessels entering the CCAMLR zone and the implementation of the catch document scheme, whereby documents must be issued at the point of capture and when fish are landed to enable tracking of landing and trade flows.

Cooperative surveillance is another approach used by some CCAMLR states to deter IUU fishing. Australia and France have entered into a bilateral agreement, as transcribed in the 2004 Australia-France Surveillance Treaty and 2006 Australia-France Cooperative Fisheries Enforcement Treaty, to enable cooperative surveillance and enforcement in their respective EEZs in the Southern Ocean (Aust DEWHA 2007a). A similar arrangement is being established with South Africa with the signing in March 2007 of a Letter of Intent for future cooperation between the two countries on surveillance and enforcement (Aust DEWHA 2007b). These dual presences in the Southern Ocean are thought to have effected a decline in IUU fishing and recent AFMA reports indicated few or no foreign fishing vessel sightings (AFMA 2008b, 2007a). Nonetheless, sustained patrolling is expensive and can only cover those regions under the jurisdiction of the state or the CCAMLR zone (Sumaila, Alder & Keith 2004). Once outside this zone and on the high seas, the chances of detection are much lower.

IUU fishers thus take advantage of the dispersed distribution of the Patagonian toothfish and concentrate considerable fishing attention in areas where they are much less likely to get caught. Another much used tactic is working vessels registered to FOC countries (Agnew & Barnes 2004; Gianni & Simpson 2005). Under UNCLOS, flag states to which a vessel is registered are responsible for all high seas fishing activity those vessels engage in. Some FOC countries, however, are known or suspected to not always abide by these responsibilities (Agnew & Barnes 2004) and fishing vessels flying FOC are, in effect, given free rein to fish as and where they wish. Up to 15 percent of the large-scale fishing fleet in 2005 were flying FOC (Gianni & Simpson 2005) and such vessels are notorious for entering the waters of the Southern

Ocean for Patagonian toothfish (Agnew & Barnes 2004). Indeed, some IUU fishing operations in the Southern Ocean were found to regularly change their flags— to reduce the chance of identification, keep operation costs down and evade fishing regulations—but others were apparently registering their vessels not with FOC countries but with CCAMLR member countries (Gianni & Simpson 2005). CCAMLR reports from 1997 (cited in Baird 2004) and 2002 (cited in Agnew & Barnes 2004) refer to at least half of IUU fishing vessels flying flags of CCAMLR states, notably Uruguay and Russia.

Reporting and detection

Compliance and enforcement roles are the responsibility of fisheries officers attached to AFMA (for Commonwealth fisheries) or relevant state/territory agencies. The Northern Territory and Tasmania are the exceptions where enforcement is assumed by police services (Putt & Anderson 2007). Enforcement activities in the Northern Territory are conducted by the Marine and Fisheries Enforcement Unit of the Northern Territory Police, Fire and Emergency Services. This unit is responsible for enforcing all territory and Commonwealth legislation covering the fishing industry. In Tasmania, rock lobster, abalone and scalefish fishing are monitored by various squads attached to the Tasmania Police Marine and Rescue Division. In the Australian Capital Territory, fisheries laws are enforced by conservation officers. A summary of enforcement powers across the jurisdictions is given in Putt and Anderson (2007).

AFMA manages Commonwealth fisheries, maintains the associated fisheries licence database and public register of permits and undertakes on-the-spot inspections and targeted operations to check for compliance and detect illegal fishing activity. Fishing vessels operating in Commonwealth fisheries are obliged to use Vessel Monitoring Systems (VMS) which enable back-to-base tracking of vessel position, course and speed in each of the fishing concessions (AFMA 2007c). Using spatial rules designated in fisheries management plans, data derived from VMS provides information on quota compliance and evidence of incursions into closed fisheries. To prevent taking of protected species and excess quota consignments, vessels are to make prior-to-landing reports of species catch and planned port destination (if working in one of three designated fisheries) and complete catch disposal records on species and weight, within 50 metres of point of landing. Auditing of the fish market is managed through a National Docketing System where all transactions of purchase and sale must be recorded.

As mentioned previously, AFMA works in coalition with Coastwatch (in northern waters), ACBPS and the ADF to detect illegal foreign fishing. Aircraft and vessel surveillance covers the northern waters and vessel surveillance in the southern waters. When a foreign fishing vessel is sighted and under the provisions of the *Fisheries Management Act 1991* (Cth), the vessel can be overhauled and boarded, the captain and crew questioned, the catch inspected and, if illegal behaviour discovered, the vessel can be escorted into the closest harbour. Pursuits are officially permitted and costs of pursuits are retrievable under the Act (ss 106J¬–S). The most notorious pursuit so far involved the Uruguayan-flagged *Viarsa 1* which attempted to outrun an ACBPS/Fisheries patrol boat before being arrested south of Cape Town (Australian Antarctic Division 2008).

Fisheries officers (and police in Tasmania and the Northern Territory) responsible for state waters and inland fisheries employ a mix of day and night, land and sea patrols, covert operations and regular compliance checks. Air surveillance is used in jurisdictions with long coastlines such as Western Australia. Special operations target species at particular risk (eg abalone, rock lobster), illegal practices and regions. The public are also encouraged to report any suspicion of illegal fishing activity, recreational or commercial, to fisheries department-operated hotlines.

Sanctioning

In their study of crime in the Australian fishing industry, Putt and Anderson (2007) questioned stakeholders regarding their views as to how seriously fishing offences are treated in Australia. The consensus was that prosecution proved difficult even for the most serious infringements and in

jurisdictions such as Queensland, resulted in only a fraction of cases ever getting to trial (Putt & Anderson 2007). The type of offence also determined how the matter was dealt with. Stakeholders in New South Wales claimed that recreational fishing offences did not receive proper sanctioning attention unless a link between the offence and a commercial objective or outcome could be established.

When cases did get to court, the rate of successful prosecution was, in fact, high. Estimates of successful prosecution rates drawn from the aforementioned stakeholder consultations ranged from 57 to 80 percent in South Australia, 90 percent in the Northern Territory and 90 percent and above in New South Wales and Victoria (rates in other jurisdictions were not reported; Putt & Anderson 2007). Only one estimate could be derived from a review of annual fish status reports from fisheries/primary industry agencies; there was a 93 percent success rate for prosecutions in New South Wales in 2007–08 (NSW DPI 2008).

Illegal domestic fishing

Compiling information from agency publications on the sanctioning of domestic fishers is complicated by the variable nature of data on the number of offences detected, what those offences were and how they were dealt with. Table 23 breaks down the types of sanctions given for fishing offences detected in Commonwealth fisheries (in 2006–08), Queensland fisheries (2007) and Western Australian fisheries (2006–08). Infringement notices, or variants thereof, are the most common sanction received, followed by cautions. Prosecutions, however, were not uncommon. Prosecutions in Queensland and Western Australia usually followed detection of offences in fisheries or fishing regions that were home to highly-prized species, in areas of high fishing activity or for particular offences (eg taking, possessing or selling regulated fish, taking species regulated by size and gender, contravening closed waters notices). Most of the illegal activity discovered and dealt with in Western Australia in 2006–07 was perpetrated by recreational fishers but prosecutions usually targeted commercial fishers (Fletcher & Santoro 2007). The exceptions were for incidents of recreational fishing of rock lobster and marron, where there was greater temptation for illegal activity.

Eighteen of the 22 prosecutions conducted in 2006–08 for offences committed in Commonwealth fisheries were successful. Fines were the most common sanction, ranging from $1,000 to $165,000. Larger fines were reserved for commercial fishers found to possess excess quota amounts of a specific species (in this case, gummy shark).

Prosecution and sentencing data collated by Putt and Anderson (2007) provides the best available indication of the sorts of sentences handed down for fisheries offences but it is still limited in illustrating the prevalence and nature of illegal fishing. The data, which came from Victoria, Queensland and the Northern Territory, and for Commonwealth fisheries, referred to prosecutions that took place between 1999 and 2004. Data from the Northern Territory included offences dating back to 1987. A total of 1,365 charges for fishing offences were recorded in Victoria between 1999 and 2004, associated with 357 offenders and 431 unique events. In the Northern Territory, there were a total of 60 charges against 29 offenders for 42 unique events (Putt & Anderson 2007).

Ninety-nine percent (n=2,412) of charges prosecuted in Queensland resulted in a fine and 66 percent of charges (n=40) in the Northern Territory in a fine or restitution order (Putt & Anderson 2007). The remaining charges in the Northern Territory were dealt with by a community corrections order or other order (4%), a custodial sentence (1%), or else they were withdrawn or dismissed (29%). While the fine amount handed down in Queensland could not be linked to the actual charge (and hence maximum penalty associated with the offence), the overall trend was that fines were relatively small (mean=$1,132). Around half of charges (51%) resulted in a fine of up to $500, a fifth (21%) with a fine between $501–1,000 and a quarter (24%) between $1,001–5,000. Only two percent of charges resulted in a fine greater than $10,000.

Table 23 Penalty options used for fishing offences detected in Commonwealth, Queensland and Western Australian fisheries

Fisheries	Penalties	Offences
Commonwealth fisheries (2006–08)		
	22 prosecutions 98 infringement notices 41 written cautions Three verbal cautions 53 no further action Nine no charge laid (CDPP) Five statute of limitations expired	Take protected species (including shark finning), exceed quota and bycatch limits, fishing without authorisation, record keeping offences, VMS breach etc.
Queensland fisheries (2008)		
• Queensland Tropical Rock Lobster Fishery	Six infringement notices	Taking specimens regulated by size, number and gender
• Spanner Crab Fish	One prosecution Eight infringement notices Five cautions	Offences regarding apparatus and record keeping
• Rocky Reef Fin Fishery	88 infringement notices 30 cautions	Offences of taking specimens regulated by size and number, unauthorised commercial fishing, contravene closed waters
• River and Inshore Bream Trail Fishery	One prosecution	Take or possess regulated species
• Mud Crab Fishery	16 prosecutions 252 infringement notices 51 cautions	Take species regulated by size, gender and number, take fish in a prohibited way, apparatus offences etc
• Marine Aquarium Fishery	Three infringement notices Two cautions	Take species regulated by size etc
• Gulf of Carpentaria Line Fishery	Six infringement notices Three cautions	Take specimen regulated by size, contravene closed waters
• Gulf of Carpentaria Inshore Fin Fishery	Four prosecutions Four infringement notices Four cautions	Contravene closed waters, apparatus offences, undertake act only holder of authority can do
• East Coast Fin Fish Trail Fishery	None	
• Eel Fishery	None	
• East Coast Spanish Mackerel Fishery	One prosecution Eight infringement notices Three cautions	Take specimen regulated by size, undertake act only holder of authority can do, record keeping offences etc
• East Coast Inshore Fin Fishery	19 prosecutions 164 infringement notices 67 cautions	Take or sell regulated fish; contravene closed waters; apparatus offences; take fish in prohibited way; undertake act only holder of authority can do etc
• East Coast Beche-de-Mer Fishery	Two infringement notices One caution	Boat offences, contravene condition of authority

Table 23 continued

Fisheries	Penalties	Offences
• Blue Swimmer Crab Fishery	One prosecution 18 infringement notices Nine cautions	Take specimen regulated by size and gender, apparatus offences, record keeping offences etc
Western Australia (2006–07)		
• West Coast Bioregion	106 prosecutions 247 notices 835 warnings	Primarily offences related to taking of rock lobsters
• Gascoyne Bioregion	17 prosecutions 53 notices 109 warnings	Not stated
• North Coast Bioregion	16 prosecutions 43 notices 25 warnings	Not stated
• South Coast Bioregion	16 prosecutions 33 notices 55 warnings	High risk of illegal taking of abalone, cockles and marine fin fish
• Northern Inland Bioregion	One prosecution Two notices One warning	Not stated
• Southern Inland Bioregion	35 prosecutions 20 notices 36 warnings	High-risk illegal recreational marron fishing

Source: AFMA 2008b, 2007a; Fletcher & Santoro 2008, 2007; Qld DPI&F 2008a, 2008b, 2008c, 2008d, 2008e, 2008f, 2008g, 2008h, 2008i, 2008j, 2008k, 2008l, 2008m, 2008n

Prosecuting foreign fishers

The highest category penalty available in the *Fisheries Management Act 1991* (Cth) is a fine. This complies with s 73(3) of UNCLOS whereby coastal states cannot impose a custodial sentence on foreign nationals found fishing illegally in the former's EEZ. Penalties for operating a foreign boat for fishing in the AFZ are tiered between offences of strict liability and mens rea, and following an amendment to the Act in 2004, the latter incurs a maximum penalty of $825,000 for vessels greater than 24 metres in length and $550,000 for vessels less than 24 metres in length (*Fisheries Management Act 1991* s 100A). A further amendment made available the provision for the Australian Government to recover and/or include costs associated with pursuit and apprehension of foreign fishing vessels greater than 24 metres in length in any bonding amount set down.

In the five year period between 2003–04 and 2007–08, over 1,700 foreign fishers have been charged under the *Fisheries Management Act 1991*, *Torres Strait Fisheries Act 1984* or *Criminal Code Act 1995* (AFMA 2008b, 2007a, 2006, 2005, 2004). During the most recent four years, 1,001 foreign fishers received convictions. Almost all these prosecutions involved Indonesian fishers apprehended for illegal fishing in the northern reaches of the AFZ. The largest fine handed down so far is $130,000 (in 2004–05) to the master of a vessel in possession of 100 kilograms of dried fish, 300 kilograms of fish on ice, 100 kilograms of dried

shark fin and an unspecified quantity of fresh shark fin (AFMA 2005). Other fines ranged from $200 to $120,000.

Significantly fewer arrests have occurred in the sub-Antarctic region of the AFZ—nine between 1997 and 2008. Characteristically of many vessels involved in IUU fishing, five were registered with FOC countries but four flew flags of CCAMLR states. Their estimated catch value was, in most cases, in excess of $1m (Griggs & Lugten 2007). Ensuing prosecutions have proved more difficult in producing a finding of guilt, in part because of the circumstances of the arrest (for example, the *Viarsa 1*) but also because of the complex layering of responsible companies and so-called 'beneficial owners' behind these fishing operations (Griggs & Lugten 2007).

Five of the nine arrests resulted in a guilty finding, a fine for the master or captain of between $30,000 and $136,000 and the forfeiture of vessel, catch and gear (Table 24).

One contentious issue raised in the literature is Australia's practice of detaining foreign fishers, contrary to stipulations in the aforementioned s 73 of UNCLOS. For the most part, terms of custody occur in lieu of payment of a fine (ie a 'default imprisonment') but some fishers have received custodial sentences for breaches against the Criminal Code Act 1995 (Cth), primarily for resisting arrest. In 2006–07, for example, custodial sentences given to Indonesian fishers for 'criminal offences' ranged from 30 days to two years (AFMA 2007a).

Table 24 Penalties for foreign fishing

Name of vessel	Date of arrest	Estimated value of catch	Outcome
Salvora	16 October 1997	$178,571	$50,000 fine each to captain and fishing master Vessel, catch and gear forfeited (estimated value $1,077,478)
Aliza Glacial	17 October 1997	$250,000	Captain and Fishing Master failed to appear. Bond worth $1.47m forfeited after vessel not returned. Vessel worth $8m
Big Star	21 February 1998	$1.5m	$100,000 fine, reduced on appeal to $24,000. Master Vessel, catch and gear forfeited. Bond worth $1.5m forfeited after vessel not returned
South Tomi	12 April 2001	$1.5–1.6m	$136,000 fine (Master) Vessel, catch and gear forfeited
Lena	6 February 2002	$900,000	$50,000 fine (Captain); $25,000 (First Office and Officer) Vessel, catch and gear forfeited
Volga	7 February 2002	$1.6m	
Viarsa	27 August 2003	$1m	Failed to reach verdict (1st trial) Finding of not guilty (2nd trial) Awaiting civil trial
Maya 5	23 January 2004	$3m	$30,000 fine (Captain and Fishing Master); $1,000 fine (crew) Vessel, catch and gear forfeited
Taruman	6 September 2005	Case still to be heard	–

Source: Adapted from Table 1, Griggs & Lutgen 2007

Baird (2007) questions the legitimacy of both approaches, arguing that while they are technically sound under domestic laws, under international law they are moot. Australia, as a member of CCAMLR, has in the past applied to exclude IUU fishers apprehended for fishing in the CCAMLR zone from the provisions of article 73 of the UNCLOS (CCAMLR cited in Baird 2004) but overall accord was not reached.

Summary

With profitability comes strict, if labyrinthine, regulation and the Australian fishing industry is no exception. The regulation and management of Australia's fisheries is perhaps the most complex of any considered in this report and the list of penalties related to illegal fishing is extensive. Both recreational fishing and commercial ventures are monitored and powers extend to controlling domestic transgressions as well as those committed by foreign nationals visiting Australian fisheries.

The bulk of illegal fishing is perpetrated domestically, although how much is recreational and how much is commercial is not always so easy to discern. All fishers are obliged to respect laws regarding what they can catch, the amount they can catch and how they catch it. This involves attainment of licences and permits and a thorough understanding of rules on which species they can and cannot take, limits on size (and sometimes sex) of specimens fished and quota restrictions. While there must be strict observance of these laws, regardless of the nature of the venture, there is more scope for illegal recreational fishing to fall into the class of non-compliance by ignorance and for illegal commercial fishing to tend towards the habitual and deliberate.

The scale of illegal domestic fishing, by recreational and commercial fishers alike, is reckoned to be 'small', primarily comprising relatively minor offences, although much more problematic in the commercial industry. Nonetheless, both categories of fishing tend to target endangered or protected (read prized) species and considerable management and enforcement efforts have been needed to curb relentless exploitation of certain species. More determined examples of illegal fishing are practised by foreign fishers fishing in Australian controlled waters. While profit is the object goal for these ventures, subsistence is an equally if not more important driver for fishers illegally fishing in Australia's northern waters, predicated by local economic conditions, poor employment prospects and barren fishing fields.

Putt and Anderson's (2007) study identified pockets of vulnerability for organised and/or persistent episodes of criminal activity. The study emphasised that the composition of the commercial industry, with a large number of smaller ventures (at greater risk of financial pressures) and the itinerant nature of much of the workforce, opened up opportunities for organised criminal activity. Similarly, as coveted fish stocks continue to decline, episodes of illegal fishing are expected to rise further.

Whether resources for fisheries officers are adequate enough to deal with illegal fishing is a topic yet to be thoroughly explored. Putt and Anderson (2007) suggest (based on stakeholder feedback) that improvements still need to be made with collaboration, information and intelligence-sharing, and the upgrading of skills to best deal with new pressures. A focus on the mechanisms of enforcement, for such a tightly controlled industry, might be the next research step in understanding how illegal fishing can be kept in check.

Illegal native vegetation clearing

Scope and definition

Up until the last couple of decades, land and hence native vegetation clearance was a conventional and legally-condoned practice, largely committed to open up land for agriculture but standard for any private landowner wishing to modify the environment. In Australia, with an historically-sanctioned economic dependence on agriculture, there has been a valuation of the land mostly founded on the profit it can turn and often at the expense of its ecological worth. Agriculture and grazing still account for a great deal of native vegetation clearance occurring today but development of land for other purposes is a significant culprit.

Definitions of *clearing* and *native vegetation* differ between the Australian states and territories (some of these are listed in Table 25). Native vegetation clearing, however, generally refers to any act that removes, disfigures or kills vegetation deemed indigenous to the region. Illegal clearance, then, is any such vegetative removal or destruction, or clearance that takes place without due authorisation.

Laws and regulation

With the realisation of the long-term consequences of native vegetation clearance on the integrity of natural landscapes and productivity of the land, came intervention in the form of government regulation whereby permission for clearance was required before it could be carried out. Of particular concern was the rampant nature of broadscale clearing, a long-used method of clearing land for agriculture and responsible for huge vegetation losses in states such as New South Wales and Queensland. Nonetheless, and compared with other environmental protection laws, legislation controlling against native vegetation clearance was not introduced until comparatively recently. Victoria and South Australia were the first to do so, in the late 1980s, with the remaining jurisdictions following suit sometime in the next decade and Tasmania not until 2002 (Bartel 2008b).

Just three jurisdictions (New South Wales, Queensland and South Australia) have enacted legislation dealing explicitly with native vegetation clearance, which works in concert with land management, development and planning and conservation statutes (see Table 26). In Western Australia, the *Environmental Protection Act 1986* includes special provisions for the clearance of native vegetation. In Tasmania, clearance is covered in the *Forest Practices Act 1985*, which was amended in 2002 to prohibit non-commercial clearing of forest for agricultural purposes. In 2003, the Tasmanian Government announced further amendments to strengthen regulations on the

clearing of non-forest vegetative communities but these legislative changes have yet to be realised. The remaining jurisdictions incorporated clearing laws within a range of land development and management acts, or statutory provisions (such as the Victorian Planning Provision (clause 52.17) and the NT Planning Scheme). This reflects the treatment of native vegetation clearance as a consideration of planning and development.

Vegetation management is predominantly controlled by the states and territories, either by state

Table 25 Definitions of clearing and native vegetation from selected statutes

Definition of clearing	Definition of native vegetation
Native Vegetation Act 2003 **(NSW)**	
Cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning	Any of the following types of indigenous vegetation • trees (including any sapling or shrub, or any scrub); • understorey plants; • groundcover (being any type of herbaceous vegetation); and • plants occurring in a wetland (s 6)
Vegetation Management Act 1999 **(Qld)**	
• remove, cut down, ringbark, push over, poison or destroy in any way including by burning, flooding or draining; but • does not include destroying standing vegetation by stock, or lopping a tree (s 86)	A native tree or plant other than the following • grass or non-woody herbage; • a plant within a grassland regional ecosystem prescribed under a regulation; • a mangrove (s 8)
Native Vegetation Act 1991 **(SA)**	
• the killing or destruction of native vegetation; • the removal of native vegetation; • the severing of branches, limbs, stems or trunks of native vegetation; • the burning of native vegetation; • any other substantial damage to native vegetation (s 3)	Plant or plants of a species indigenous to South Australia including a plant or plants growing in or under waters of the sea (s 3)
Environmental Protection Act 1986 **(WA)**	
• the killing or destruction of; • the removal of; • the severing or ringbarking of trunks or stems of; or • the doing of any other substantial damage to, some or all of the native vegetation in an area, and includes the draining or flooding of land, the burning of vegetation, the grazing of stock, or any other act or activity, that causes – the killing or destruction of; – the severing of trunks or stems of; or – any other substantial damage to, some or all of the native vegetation in an area; (s 51A)	Indigenous aquatic or terrestrial vegetation and includes dead vegetation unless that dead vegetation is of a class declared by regulation to be excluded from this definition but does not include vegetation in a plantation (s 3)

Table 26 State and territory native vegetation clearance statutes

Jurisdiction	Primary statute(s)
NSW	*Native Vegetation Act 2003*
	Threatened Species Conservation Act 1995
	Environmental Planning and Assessment Act 1979 (Local Environmental Plan)
Vic	Victorian Planning Provision (Clause 52.17)
	Planning and Environment Act 1987
	Flora & Fauna Guarantee Act 1988
	Catchment and Land Protection Act 1994
Qld	*Vegetation Management Act 1999*
	Integrated Planning Act 1997
	Nature Conservation Act 1992
WA	*Environmental Protection Act 1986*
SA	*Native Vegetation Act 1991*
Tas	*Forest Practices Act 1985*
ACT	*Planning and Development Act 2007*
	Nature Conservation Act 1980
NT	Planning Act
	NT Planning Scheme
	Pastoral Land Act

government authorities or local councils. At the national level, the EPBC Act guards against illegal native vegetation clearance through the:

- protection of threatened species and ecological communities (s 18) and declared sites (s 17B); and
- the prevention of environmentally-damaging behaviour performed on Commonwealth land (s 27A) or because of Commonwealth action (s 28).

Complementing native vegetation laws are overarching frameworks to better manage and promote the better monitoring of native vegetation coverage. Examples of these include the Commonwealth's National Framework for Management and Monitoring of Australia's Native Vegetation (Aust DEH 2001), Queensland's State Policy for Vegetation Management (Qld DNRW 2006) and Victoria's Native Vegetation Framework (Vic DSE 2002).

Part of Victoria's approach to managing native vegetation was to introduce a statewide target of 'no net loss' of native vegetation, followed by a policy of 'net gain'. South Australia has followed a similar pathway, where landowners are expected to secure a significant environment benefit if allowed to clear native vegetation. In Queensland, a 2003 moratorium on broadscale clearing led the government to introduce a bill to parliament in 2004 to phase out all broadscale clearing of remnant vegetation by 31 December 2006. Queensland recently concluded a moratorium addressing the clearance of high-value regrowth in designated regions of northeast Queensland, with new regulations around clearance in place as of October 2009.

The application of native vegetation clearance laws depends on the purpose of development, land tenure arrangements, geographic area covered and the nature of vegetation to be cleared. For example, Queensland's *Vegetation Management Act 1999* regulates all clearing of remnant vegetation on freehold land and remnant and some non-remnant vegetation on state leaseholds. In the Northern Territory, clearance on freehold and Crown land is covered in the Planning Act and clearance of

pastoral land in the Pastoral Land Act. Laws prescribed in the NT Planning Scheme cover all freehold and Crown land outside of existing towns and 'control plan areas', and all zone land in rural area bordering Katherine, Litchfield and Alice Springs. SA 's native vegetation laws apply to the whole of the state except metropolitan Adelaide. Where rare and endemic species are potentially affected, conservation laws also apply. In the Australian Capital Territory, where all land is leasehold, clearance laws are prescribed in the *Planning and Development Act 2007*.

Unless a candidate for exemption, clearing is not legal until authorisation is granted in the form of a clearing permit. Permits are generally not required if the area to be cleared is one hectare or less or clearing is needed for day-to-day farm maintenance. Clearing in urban residential and industrial locations is also mostly exempt. Administering authorities are responsible for the allocation of permits, although in Victoria, local councils are the primary outlet and in South Australia, permits must be sought from the Native Vegetation Council. Permit applications must include a description of the type and amount of native vegetation to be cleared, an aerial photo or site plan illustrating where the native vegetation exists, which sections are proposed for removal, methods proposed to minimise the amount that needs to be cleared and actions proposed to offset the clearing that goes ahead. An example of the latter is the Significant Environmental Benefit as legislated in South Australia's *Native Vegetation Act 1991* (and associated Regulations) which mandates an environmental gain be achieved in return for a clearance permit.

Longer-term clearance arrangements can be made through property vegetation (management) plans (PVPs), presently available in New South Wales, Victoria and Queensland. These are negotiated agreements between the landholder and an identified authority (eg Catchment Management Authorities in New South Wales and the Department of Sustainability and Environment in Victoria) describing the nature, scale and purpose of authorised clearing regimes on designated land holdings. PVPs are mandatory in New South Wales but voluntary in Victoria. The establishment of a PVP in Victoria benefits the landowner as it extends the agreed clearing and land management regime to a period of 10 years, whereas a conventional clearing permit normally lasts no more than two years.

Some jurisdictions use various incentive and trade schemes to encourage better vegetation management. For example, Victoria offers the following initiatives:

- *Bush tender*—here the landowner receives periodic payments (under signed agreement) for land management practices above and beyond those required by legislation.
- *Carbon tender*—carbon offset contracts with landholders who revegetate their properties, with the potential of income derived from
  - five year performance-based payments from the Victorian Government; and
  - future carbon trading markets.
- *Bush broker*—a native vegetation credit and trading scheme whereby clearance on one landholding (by developers) can be offset on another through the purchase of native vegetation credits (Vic DSE 2008).

New South Wales also offers incentive funding to landowners and Queensland operates a vegetation management offset scheme.

Offences and penalties

There is considerable variation across jurisdictions in the statutory expression of native vegetation clearance offences (see Table 27). In New South Wales, Queensland, Western Australia and South Australia, the offence is described with direct reference to the act of unauthorised clearing and/or clearing in contravention of permit conditions. Penalties for unauthorised clearing in New South Wales are not stated in the relevant statute but instead cross-refer to the penalty scheme for unauthorised planning works prescribed in the *Environment Planning and Assessment Act 1979*. For clearing in Queensland, the perpetrator may be penalised according to s 60B of the *Vegetation Management Act 1999*, alongside ss 4.31–4.35A of the *Integrated Planning Act 1997* (or any other statute which the clearance breaches). In the Northern Territory and Australian Capital Territory, unauthorised clearing is embedded within offences

Table 27 Maximum penalties for selected vegetation clearance offences	
Act and associated selected offences	**Maximum penalty**
Native Vegetation Act 2003 **(NSW)**	
Clearing without approval (s 12)	$1.1m (under s 126 of the *Environment Planning and Assessment Act 1979*)
Planning and Environment Act 1987 **(Vic)**	
Contravene scheme, permit or agreement (s 126)	$136,104
Catchment and Land Protection Act 1994 **(Vic)**	
Disobey land use condition (s 35)	$6,805
Disobey land management notice (s 41)	$27,221
Vegetation Management Act 1999 **(Qld)**	
Offence against a vegetation clearing provision (s60B)	$2,250 for each hectare in remnant endangered regional ecosystem or declared area $1,800 for each hectare in remnant of concern regional ecosystem $1,350 for each hectare in remnant not of concern regional ecosystem
Fail to comply with compliance notice[a] (s 55)	$124,875
Integrated Planning Act 1997 **(Qld)**	
Various development offences[b] (s 4.31–s 4.3.5A)	$124,875
Environmental Protection Act 1986 **(WA)**	
Unlawful clearing of native vegetation (s 51C)	$250,000 (individual) $500,000 (body corporate)
Contravene clearing permit conditions (s 51J)	$62,500 (individual) $125,000 (body corporate)
(Clearance causes) serious environmental harm with intentional and criminal negligence (s 50A(1))	$500,000 and/or five years imprisonment (individual) $1,000,000 (body corporate)
(Clearance causes) serious environmental harm (s 50A(2))	$250,000 and/or three years imprisonment (individual) $500,000 (body corporate)
(Clearance causes) material environmental harm with intentional and criminal negligence (s 50B(1))	$250,000 and/or three years imprisonment (individual) $500,000 (body corporate)
(Clearance causes) material environmental harm (s 50B(2)	$125,000 (individual) $250,000 (body corporate)
Native Vegetation Act 1991 **(SA)**	
Unauthorised clearance (s 26(1))	Sum calculated at prescribed rate for each hectare (or part of) land in relation to which offence committee or $100,000, whichever is greater
Failure to comply or contravene clearance conditions (s 26(2))	As above

Table 27 continued

Act and associated selected offences	Maximum penalty
Forest Practices Act 1985 **(Tas)**	
Clearing and conversion etc activity without certified forest practice plan (s 17(4))	$100,000
Contravene provisions of certified forest practice plan (s 21)	As above
Planning and Development Act 2007 **(ACT)**	
Develop land without appropriate approval (s 1999)	$200,000 penalty units (individual) $1,250,00 (body corporate)
Nature Conservation Act 1980 **(ACT)**	
Clearing with intent in a reserve causing serious harm (s 77(1))	$200,000 and/or five years imprisonment (individual)
Clearing (negligent) in a reserve causing serious harm (s 77(2))	$150,000 and/or three years imprisonment (individual)
Clearing with intent in a reserve causing material harm (s 78(1))	$100,000 and/or two years imprisonment (individual)
Clearing (negligent) in a reserve causing material harm (s 78(1))	$75,000 and/or one year imprisonment (individual)
Clears in a reserve (s 79)	$10,000
Pastoral Act **(NT)**	
Failure to comply with notice explaining breach of pastoral lease (s 40)	Forfeiture of lease
Failure to comply with conditions of notice (s 40(7))	$10,000[b]
Planning Act **(NT)**	
Not develop land except in accordance with planning scheme, interim development control order or permit (s 75A)	$22,000 (individual) $110,000 (body corporate)

a: Served if person is believed to be committing or having committed a vegetation clearance offence

b: Vegetation clearance interpreted as a development offence

Note: Victorian monetary penalty based on penalty unit amount for 2008–09 ($113.42); *Monetary Units Act 2004*

that relate to development that is undertaken without prescribed approval(s), or for the NT's Pastoral Act, in breach of conditions of the pastoral lease.

Maximum penalties are similarly diverse. The largest pecuniary penalty is prescribed in the Native Vegetation Act 2003 (NSW); $1.1m if found to have cleared native vegetation without approval. Persons found clearing native vegetation on pastoral leasehold land in the Northern Territory may have their lease forfeited if they fail to provide the Minister with a legitimate reason for contravening conditions of their lease. In Western Australia, where native vegetation clearance laws are embedded within the *Environmental Protection Act 1986*, offenders can additionally be penalised according to the amount of harm done by the clearance (be it serious or material) and whether the act was intentional.

Fines in Queensland and South Australia are calculated according to the number of hectares of vegetation cleared and in Queensland, the threatened status of the ecosystem the clearance affected. The maximum fine in South Australia is prescribed at no less than $100,000 for either unauthorised clearance or clearance in contravention of permit conditions.

Nature and extent

Generating acceptance of native vegetation clearance regulations has proved to be a challenge (Bartel 2003). The introduction of legislation suddenly blocked a long standing permissible practice without which, agriculturalists argued, effective management of properties and expansion of businesses would be seriously compromised. Moreover, it targeted only those landowners who had not yet cleared some or all of their properties, which may have generated an additional layer of resentment (NSW OAG 2006).

The scale of illegal clearance since the implementation of native vegetation legislation is not well documented. Data collated by the Productivity Commission for their review of native vegetation regulation found that a decline in overall clearance did take place from the early 1980s to the early 2000s in all Australian states and territories (Productivity Commission 2004). It might then be surmised that rates of illegal clearance also declined but the report warned of evidence of continued non-compliance and even cases of pre-emptive clearing in which landowners cleared vegetation as 'insurance against future policy changes' (Productivity Commission: XXVI).

Part of the problem in estimating rates of illegal clearing is the absence of past, reliable data on vegetation changes and critically, which clearance was lawful and which was not. A 2002 audit by the NSW Auditor General could not elicit information on illegal clearance rates as the clearance register maintained by the then NSW Department of Land, Water and Conservation simply did not record this data. Similarly, an audit conducted in Western Australia could not provide a reliable estimate of the rate of illegal clearing occurring in that state (WA OAG 2007). However, the reporting agency to the WA audit disclosed there were a 'large number' of cases otherwise approved for clearing which had land clearance patterns that did not match those specified on permit applications.

A subsequent audit of NSW native vegetation laws in 2006 discovered illegal clearance continued at unsustainable rates. Of the 74,000 hectares of land cleared in New South Wales in 2005, 40 percent (ie 30,000ha) was cleared illegally (ie without prior approval; NSW AOG 2006). Most of the illegal clearance in New South Wales in 2005 took place in the west and northwest of the state on, as yet, uncleared land. However, there was also evidence of illegal clearance of closed and open forest in locations of 'significant conservation value' along the coast and the Great Dividing Range (NSW AOG 2006: 16).

The prohibition of broadscale clearing in Queensland was interpreted as producing a drop in such clearance by as much as 96 percent (McGrath 2008). The most recent land cover change report recorded a 48 percent decrease in clearing between 2006–07 and 2007–08, the lowest rate of clearance recorded since 1988 (Qld DERM 2009). What proportion of this figure illegally-cleared vegetation comprised was not reported.

Published information on reported breaches, the number that end up being investigated and the resulting sanction is limited and only a few agencies report statistics in their annual reports. For the most recent year (2007–08), the Queensland EPA undertook 722 investigations and desktop evaluations regarding clearance permits, with 46 compliance actions delivered (Qld EPA 2008). No data was provided by the SA Department of Water, Land and Biodiversity Conservation for 2007–08, but in 2006–07, there were 157 reports of breaches against native vegetation laws, resulting in the issuance of 12 expiation notices and seven administrative orders, and five convictions recorded (SA DWLBC 2007a). Neither report described what these breaches constituted.

Reporting and detection

What is evident is the great difficulty in detecting clearance activity, both legal and illegal. Monitoring, in the past, generally failed to accurately determine vegetation losses, because of inadequate resources and limited technology. For example, the then NSW Department of Natural Resources stated in the aforementioned 2006 audit that they did not possess any 'accurate' information on the scale of illegal native vegetation clearance, despite being aware of the continuation of illegal activity post implementation of (the now defunct) State Environmental Planning Policy No 46 and the *Native Vegetation Conservation Act 1997* (legislative predecessors to the *Native Vegetation Act 2003*; NSW OAG 2006). Likewise, the WA Department of Conservation described the amount of illegal clearing as 'unknown'. Only in the last few years has the Department been able to identify 'hot spots' of illegal activity (WA OAG 2007).

'Nosy neighbours and chance discovery' have thus served as the likeliest avenues for detecting illegal vegetation clearance (Bartel 2003: 13). Indeed, one prosecuted case in New South Wales followed a chance sighting by an enforcement officer of bulldozers while driving the Gwydir Highway

(Bartel 2003). Complaints, however, need to be investigated and staffing numbers and other priorities influence how many do end up being attended to. In Western Australia, actual investigative work was deemed to be 'limited' and focused mostly on those cases that were 'least complex and least important' (WA OAG 2007: 16). Regional staffing issues and a directive to officers to concentrate on applications over complaints, produced this diminished vigilance, alongside a view that more complex investigations could be delayed due to the absence of a statute of limitations. Complaints and incidental observations also rely on observers to know what they are seeing and for the clearance to be obvious. Tree removal is the most visible form of clearance; all successfully prosecuted cases in New South Wales examined in Bartel (2003) dealt with illegal clearance of forest or woodlands.

In recent years, relevant agencies have invested in, or are looking to invest in, satellite surveillance and aerial photography (Bartel 2005). Alongside more traditional survey work, satellite surveillance will improve mapping of existing vegetation and provide a more systematic method of monitoring clearance patterns. Queensland operates the Global Navigation Satellite System (GNSS) from which downloaded data fulfils monitoring obligations and is used to annually update the Statewide Landcare and Trees Study (SLATs; Qld DNRW 2008a). The Change Detection Program in South Australia combines satellite imagery and high resolution aerial photography monitoring, contact with landholders and on-site inspections for clearance activity (SA DWLBC 2007b). Victoria is planning to implement the Native Vegetation Permit Tracking System, a vegetation remote-sensing mapping system, as part of the Net Gain initiative. It will assist the monitoring of native vegetation clearing and associated offset schemes and analyse tree cover change. The latter will be used as part of a compliance auditing system for forest practices and timber production. In 2003, the NSW Government pledged $3.5m to establish a satellite monitoring system in the state (although some parties have claimed the receiving department did not end up using the money for this purpose; The Wilderness Society 2008).

Compliance auditing, while somewhat sporadic and informal in the past, is not to be dispensed with altogether. Where used uniformly, it has detected significant breaches. A concerted program of compliance audits performed in 1999 in the NSW central west, for example, discovered that two-thirds of landowners had either not complied with conditions of clearance approvals or had gone ahead with clearing despite refusal from the authorising agency (NSW OAG 2002).

Sanctioning

Actions taken against offenders found in breach of native vegetation laws are overwhelmingly the least severe options available. Between 2002 and June 2006, 523 compliance actions emanated from investigations of illegal clearance in New South Wales. In increasing order of severity, 69 percent (n=361) took the form of warning letters, 11 percent (n=60) remediation agreements, 13 percent (n=69) remediation notices, four percent (n=21) stop work orders and two percent (n=12) prosecutions (NSW OAG 2006).

A total of 29 prosecutions were pursued in New South Wales between 1998 and 2005, less than five percent of detected breaches in that period (Bartel 2003; NSW OAG 2006). Eighteen were successful, six unsuccessful (ie contested and acquitted) and five were withdrawn. A similar trend was observed in Western Australia, where 10 successful or in-preparation prosecutions emanated from the 550 complaints registered between July 2005 and July 2007 (WA OAG 2007). Half of these complaints were unresolved as at July 2007, 34 percent having had been lodged over a year before. These statistics compare with the 30 to 50 prosecutions undertaken in Queensland, of which 90 percent were successful (NSW OAG 2006).

Some of the difference in prosecution rates relates to the ease (of lack thereof) with which cases for prosecution can be developed. One of the findings from the 2002 NSW audit was the difficulty in which cases could be prosecuted under the previous *Native Vegetation Conservation Act 1997* (NSW OAG 2002). Specifically, were the 'broadly worded' list of exemptions (which allowed cases of illegal clearing to be presented (and accepted) as exempt from regulation) and ambiguous guidelines as to who was ultimately responsible for incidents of illegal

clearing. The enactment of the *Native Vegetation Act 2003* consequently tightened the list of exemptions and now identifies the occupier of the land as responsible for any clearing occurring on their land, unless evidence suggests otherwise. Other deficiencies noted in the prosecution process were the adequacy of the information gathered and the preparation and presentation of that information in meeting evidentiary requirements.

The maximum monetary penalty for illegal native vegetation clearance ranges from $1.1m in New South Wales (*Native Vegetation Act 2003*) and $250,000 (for individuals) in Western Australia, to around $100,000 or less in other jurisdictions. But for the most part, actual penalties given are low. For example, monetary penalties imposed in nine cases prosecuted in the mid- to late-1990s ranged from $2,500 (plus costs) to $35,000 (total) for bulldozing of 1,200 ha. This averaged just $37 a hectare (Bartel 2008a).

Bartel (2008a, 2003) and Curran (2000), among others, have questioned the deterrence value of these fines, which promote little incentive to comply. However, Bartel (2008a) has foreseen a possible increase in fines for future acts of illegal native vegetation clearance. A case heard in 2007, where a landowner was fined $20,000 for the clearance of 30.5ha (*Director General of Environment and Climate Change v Taylor* [2007] NSWLEC 530), was interpreted by Bartel as potential evidence for a 'transition phase (in sentencing) from status quo to new horizon' as well as final recognition for a moral basis in dealing with illegal clearance (Bartel 2008a: 530). Certainly, recent cases heard in the NSW Land and Environment Court have elicited substantially higher fines. These include:

- the *Director General of Environment and Climate Change v Wilton* [2008] NSWLEC 297 (31 October 2008)—$40,000 for clearing 32ha;
- *Director General of Environment and Climate Change v Rae* [2009] NSWLEC 137 (18 August 2009)—$160,000 for clearing 215ha; and
- *Director General of Environment and Climate Change v Hudson* [2009] NSWLEC 4 (11 February 2009)—$400,000 for clearing 486ha and causing serious environmental harm.

Another recent, high-profile case considered the clearance of 750ha of vegetation in the Gwydir wetlands, to which the guilty party received the largest fine for clearance recorded. Prosecuted under s 16(1) of the *EPBC Act 1999* (Cth), the total fine amounted to $450,000 (NSW DECC 2009b).

Alongside, or in place of fines, is the option for orders, or to enter into negotiated environmental agreements or outcomes. These orders and agreements effectively refer to directions to revegetate or remediate cleared land. Remediation work may include the establishment and registration of wildlife or 'flood runner' corridors, or wildlife refuges. Alternatively, land ownership may be transferred to offset the monetary value of the land illegally cleared. Following discovery of illegal clearance in Queensland's Central Eastern Rainforest Reserve, for example, the Commonwealth negotiated a property transfer to the Crown of land worth more than $400,000 (Aust DEH 2006). This land was to be incorporated into a World Heritage Area and to compensate for the already damaged land.

Summary

Of all the environmental laws recognised in Australia, arguably the most difficult to generate widespread acceptance for and compliance with are those governing native vegetation clearance. A number of related factors have produced this impasse. Rates of compliance are likelier to be less for the most recently introduced environmental laws compared with environmental laws that have been in place longer and hence have had more time to be accepted. Second, it considers a 'resource' that many do not necessarily see as having a value they can equate into monetary terms. In some cases, its removal rather than its presence is considered of greater value. Third and possibly most crucially, it controls an activity which was both widespread and quite legal, and subsequently confronts a mindset that clearance of native vegetation should be allowed to continue as it has done in the past.

Added to this intractability is the very real problem of accurately identifying where illegal clearances

have occurred. Authority (or exemptions) must be sought before most native vegetation clearance is commenced. Only recent advances and an uptake in technological survey methods (and in only a handful of jurisdictions) has allowed regulatory authorities to

- actively monitor clearance activities and rates; and
- pinpoint where illegal clearance has occurred.

Prior to the use of monitoring instruments, such as aerial photography and satellite surveillance, there was no systematic way, other than conventional methods of detection, to investigate and uncover non-compliance. Where reliable data had been gathered, it revealed that clearance was still happening at unsustainable rates, with certain areas (such as the west and northwest of New South Wales) particularly vulnerable and often to overt and intentional clearance activity.

The control of illegal native vegetation clearance represents an area of environmental crime that could be described as resting on the ability to challenge a view that the preservation of native vegetation is not a hindrance to development and profitability. Fostering widespread appreciation of native vegetation, however, may not, in the end, be a realistic or achievable goal and alternate methods have been sought instead to achieve compliance. The conventional way of achieving this—through the application of 'threat' of discovery and the distribution of significant penalties for those who have been caught—has not proved effective (Bartel 2008a, 2003) It remains to be seen whether legislated changes to substantially increase penalties, as has occurred in New South Wales, will produce any reliable deterrent effect.

Encouragement to observe laws might be better served instead through a combination of persuasion, inducement and education. Education and social research, advocated by regulatory authorities as an important tool in promoting compliance must be prepared and presented carefully so as to encourage consideration and discussion. An alternate or complementary approach is the incentive scheme, which blends elements of persuasion and inducement to halt further clearance and in some cases, revegetate what has been lost. Unfortunately, no data are published on how readily these schemes have been adopted, how successful these schemes have been in promoting compliance and whether those landowners who have bought into such schemes were already sympathetic to the retention of native vegetation cover on their properties. As a model of land management that possibly represents a successful mechanism in preserving Australia's remaining native vegetation, further research might be directed at evaluating these schemes. These could examine the issues faced by proponents and detractors, establish how relationships are successfully (and not so successfully) forged between the landowner and regulator, and identify the precise nature of how intrinsic and monetary-based values of native vegetation are incorporated into the application of such schemes.

Illegal logging

Scope and definitions

Illegal logging, in its narrowest sense, involves the taking of protected tree species, taking of timber from protected areas or outside authorised concessions and taking timber in excess of specified quotas. In reality, it envelops every step along the timber chain-of-custody. The fact that so much timber is illegally harvested is the simple consequence of weak law enforcement and endemic corruption. The use of bribery and intimidation enables the unlawful procurement of logging concessions, encourages officials to turn a blind eye to illegal activity and increases the risk of displacement for forest-dwelling communities. These co-conspirators additionally facilitate the processing, transportation and trade in illegal logs via the use of unlicensed sawmills, a 'no-questions asked' passage to ports and false declarations regarding the size, quality, origin and species of timber.

The scale and impact of illegal logging is substantial. If just the Asia-Pacific region is considered, illegal logging is rife in Indonesia (including West Papua), Burma, Cambodia, the Philippines, Papua New Guinea and the Solomon Islands, and plagues other nations such as Malaysia and Vietnam (Schloenhardt 2008). Indonesia is an especially notorious domicile for illegal logging, as evidenced by the rampant destruction of its forests in Sumatera and the four Kalimantan provinces of Indonesian Borneo, much of which is done illegally. According to the Indonesian Government, an approximate 2.8 million hectares of forests are being illegally logged each year and if this rate of logging is to continue, Indonesia will be bereft of its forests (and the enormous faunal and floral biodiversity it supports) within 20 years (ITTO 2005). Worldwide, the sale of goods derived from illegally-procured timber is worth an estimated $15b a year (UK HCEAC 2006).

The extraction, processing and sale of timber in Australia is mostly conducted within legal provisions, although there are opposing and very vocal views as to this legality. While logging and timber extraction offences are not unknown, there is 'no evidence of systematic illegal logging taking place within Australia' (Schloenhardt 2008: 79). It is Australia's role as an 'unwitting' beneficiary of the illegal logging taking place elsewhere that is possibly the more immediate issue, through:

- the importation of timber and timber products from countries either known as sites of unchecked illegal logging activity or as passage points in the illegal trade; and
- the absence of a nationally-applied scheme by which origin and chain-of-custody information is made available to importers, retailers and consumers alike.

Laws and regulation

International controls and related measures

Logging is the one practice of environmental consequence that is not controlled by any formal, overarching international treaty other than CITES which protects some tropical hardwood species from trade. Arrangements between neighbouring or primary export-import states exist or are in development but controls against the illegal trade are mostly dependent on national laws. In countries notorious for systemic illegal logging, these laws are seen to be weak or in need of strengthening and often counteracted by endemic corruption (Brack 2006).

Alongside working with supply countries to build capacity to prevent illegal logging (see Magrath et al. 2007), consumer countries have simultaneously responded with measures to impede importation of illegally-sourced timber and timber products. Rather than targeting logging at the source point, which has produced negligible results, these measures target the end-point of the trade. This tactic is formulated on the premise that blocking consumption of illegal timber will have the effect of disrupting supply, with the eventual outcome of a substantial decrease in illegal logging practices. For example, the US Congress passed an amendment to the *Lacey Act 1900* in May 2008, creating a requirement for importers to declare the species and country of origin of any wood or wood product entering the United States (EIA 2008a). The amendment establishes criminal and civil penalties on any company knowingly or unknowingly 'participating' in the illegal trade. Within the European Union, the EU chapter of the Forest Law Enforcement, Governance and Trade (FLEGT) is fine-tuning the implementation of a licensing scheme facilitating the import of only those timber products that are harvested and produced in accordance with the forestry laws of the producing company (Commission of the European Union 2005). The EU FLEGT licensing scheme depends on the setting up of bilateral FLEGT Voluntary Partnership Agreements (VPAs) between timber producing and consumption countries (Commission of the European Union 2005). So far, a VPA has been established with Ghana, the Republic of Congo and Cameroon and negotiations are ongoing with Indonesia, Malaysia, Liberia and the Central Africa Republic.

A recent proposal by the EU Commission is the adoption of a regulation stipulating operators must use due diligence to verify the legality of timber products sold in the European Union (Commission of the European Union 2008a, 2008b). A criticism directed at the proposed regulation was that it would not directly prohibit the importation or selling of illegal timber in the European Union (EIA 2008b). The method of due diligence recommended lacked standardised rules on how to monitor and enforce the regulation and a common set of sanctions. Further, it would only target companies that 'place' timber products on the market, ignoring the 'downstream companies underpinning the demand chain' (EIA 2008b: 2). The regulation has since been amended by the European Parliament so that it is an offence to sell timber and timber products sourced from illegal-logging ventures and includes a requirement that each step of the supply chain is fully tracked.

Governments from Belgium, Denmark, Norway, France, Germany, the Netherlands, the United Kingdom, Japan and New Zealand have also turned to public procurement policies to guarantee the legality and sustainability of imported timber and timber products (Brack 2008). The aim of these policies is to procure timber harvested in accordance with international and national laws promoting sustainable forestry practices; legality is further stipulated in the policies of France, Denmark, Japan, New Zealand and the United Kingdom. Methods used to verify the sustainability and/or legality of imported products vary but centre on the use of forest and timber certification schemes combined with assessment of forest certification and supplier claims (Brack 2008).

National controls and related measures

Australian forests

Australian native forests and plantations (of native and exotic tree species) are Commonwealth, state or privately owned. Different tenure arrangements exist within state-owned forests, including nature

reserves, national parks and conservation parks, forests for recreation and conservation purposes, timber reserves and multiple-use forests, freehold land and privately-managed leasehold land. Each of the six states employs a mix of management arrangements for state-owned forests and plantations (see Table 28), mostly but not always divided between the management of multiple-purpose native and exotic species forests, and land set aside as national parks, nature and conservation reserves. Responsibility for management and/or commercial forestry operations lies in some jurisdictions with government established commercial business or public trade enterprises, such as Forests NSW (which sits within the NSW Department of Industry and Investment) and the WA Forest Product Commission, or with commercial enterprises working in collaboration with state governments (eg Forestry Tasmania and Forestry SA). In the Australian Capital Territory, reserves and commercial pine plantations are managed by Parks, Conservation and Lands, under the Department of Territory and Municipal Services. Few forestry operations exist in the Northern Territory.

Table 28 Management arrangements for state forests

Jurisdiction	Agency	Management responsibility
NSW	Forests NSW (Department of Industry and Investment)	2.4 million hectares of native forests and planted forests of pine and native species
	Department of Environment and Climate Change	National parks and reserves
	Department of Lands	Some State Crown land
Vic	Department of Sustainability and Environment	3.4 million hectares of state forest
	VicForests	Harvesting and commercial sale of timber from forests in eastern Victoria
	Parks Victoria	National, state and wilderness parks
	Department of Primary Industry	Private forestry (native forests and plantations on private land)
Qld	Primary Industries and Fisheries, Department of Employment, Economic Development and Innovation	56 million hectares of state forest and purpose-planted plantations (6 million hectares used for commercial production of forests products)
	Queensland Parks and Wildlife	National parks and reserves
WA	DEC	24 million hectares of state forest, national parks, conservation parks, nature reserves, other Crown reserves and unvested Crown land
	Forest Products Commission	Harvesting and sale of timber from state forest and timber reserves
SA[a]	Forestry SA	125,000 hectares of plantations
		23,900 hectares of native forest reserves (for conservation)
	Department for Environment and Heritage	National parks
Tas	Forestry Tasmania	1.5 million hectares of multiple use state forest (half available for timber production and includes 178,000 hectares of forest reserves)
	Tasmanian Parks and Wildlife Service	Protected forests and reserves
ACT	Environment ACT; Parks, Conservation and Land	26,000 hectares of public land
NT	Department of Natural Resources, Environment, the Arts and Sport	Pastoral and Aboriginal lands, and conservation reserves

a: PIRSA Forestry is responsible for development and implementation of forest policy

A relatively complex array of legislation is in place regarding the management and harvesting of Australia's forests and plantations. Laws pertinent to state forests (in the 6 states) and their commercial exploitation are transcribed in principal forest or forestry statute(s) and associated regulations (see Table 29). The spread of tenure arrangements across distinct forest holdings and the different purposes for these holdings means that other legislation may also be applicable. These include conservation, native vegetation, national parks, environmental protection, water, land use, planning and development statues. Queensland is a case in point. The *Forestry Act 1959* stipulates laws on the classification, reservation and management of state forests and timber reserves (parts 3 and 4) and the control and disposal of forests products (part 5). No formal laws exist on the management and harvesting of private native forests and are controlled instead via amendments to the *Vegetation Management Act 1999* on forest practices. The *Integrated Planning Act 1997* exerts additional control on forestry operations on freehold or Indigenous land through the inclusion of 'conducting a forest practice' (s 1.3.5) as a form of 'operational work' relevant to development. Arrangements for leasing Queensland state forest and national parks, and acquisition of permits to occupy and use forest entitlements, are described in the *Land Act 1994* and the *Nature Conservation Act 1992*. Finally, the *Environmental Protection Act 1994* guards against destruction of protected species and environmental harms respectively.

With the emphasis now on sustainable forest management, jurisdictions with sizeable forest coverage and significant investment in forest industries have assembled forest management plans and timber production codes of practice and/or implemented additional legislation (eg *Sustainable Forests (Timber) Act 2004* (Vic)) to ensure sustainable practices are followed. Code of practice guidelines serve as regulatory instruments for the timber production trade and outline rules and responsibilities concerning forest planning and management (including retainment of environmental values relating to watercourse, soil and biodiversity protection), forest regeneration and harvesting (felling and processing). Examples include Queensland's Code of Practice for Native Forest Timber Production, WA's Code of Practice for Timber Plantations, Tasmania's Forest Practices Code and Victoria's Code of Practice for Timber Production.

The Australian Government has also entered into Regional Forestry Agreements (RFAs; under the auspices of the *Regional Forests Agreement Act 2002*) with four states (New South Wales, Victoria, Western Australia and Tasmania) outlining 20 year

Table 29 Forestry statutes[a]

Jurisdiction	Primary statute(s)
NSW	*Forestry Act 1916*
	Plantations and Reafforestation Act 1999
	Timber Marketing Act 1977
Vic	*Forests Act 1958*
	Conservation, Forests and Lands Act 1987
	Sustainable Forests (Timber) Act 2004
Qld	*Forestry Act 1959*
WA	*Forest Products Act 2000*
	Forest Management Regulations 1993
SA	*Forestry Act 1950*
	Local Government (Forestry Reserves) Act 1944
	Forest Property Act 2000
Tas	Forest Practices Act 1985

a: There are no forestry statutes per se in the Northern Territory and Australian Capital Territory

plans fostering the conservation and sustainable management of native forests in these states. Ten RFAs have so far been negotiated:

- New South Wales (Eden, northeast and southern regions);
- Victoria (Central Highlands, Gippsland, East Gippsland, and northeast and west regions);
- Western Australia (southwest region); and
- Tasmania (whole of state—Tasmanian RFA and supplementary Tasmanian Community Forest Agreement).

At the national level, the EPBC Act 1999 protects against illegal logging through protection of threatened species and ecological communities, preservation of biodiversity, recognition and safeguarding of World Heritage and National Heritage sites and specification of principles for ecological sustainable development.

Two forest certification schemes are in use in Australia–the Australian Forest Certification Scheme (AFCS) and FSC certification scheme. These schemes certify both the responsible and sustainable management of forests and plantations and the chain-of-custody, from harvesting through processing, manufacturing, distribution and sales.

Overseas forests

The Australian Government, through the Department of Agriculture, Fisheries and Forestry (DAFF), is engaged with various intergovernmental forums such as the United Nations Forum on Forests, East Asia and Pacific FLEGT and the International Tropical Timber Organisation to encourage and promote sustainable forest management practices and prevent illegal harvesting (Davidson 2007). In 2007 the Australian Government DAFF published the discussion paper *Bringing Down the Axe on Illegal Logging* which detailed proposed government policies to stem the flow of illegally-derived timber goods into the country, as well as ensure Australian timber is harvested legally and sustainability (Aust DAFF 2007). Proposed policies and measures centred on the creation of a nationally-consistent timber legality verification scheme (domestic and imported) and the broader use of forest certification schemes. In January 2010, an Australian Government-commissioned regulation impact statement concluded that the costs of regulating timber imports would outweigh the benefits gained and recommended Australia adopt a non-regulatory response (The Centre for International Economics 2010). In the absence of a national approach, a small number of Australian companies have independently introduced verification schemes to authenticate timber imported into the country.

Timber importers represented by the Australian Timber Importers Federation approved in 2008 a code of ethics, to support forestry practices that are legally conducted with respect to source and yield, utilise multiple forest resources and preserve both biodiversity and the rights of local forest inhabitants (ATIF 2008). In upholding the code of ethics, importers are expected to formally confirm the chain-of-custody by requesting documentation from suppliers that verifies timber has been taken in accordance with the laws of the country of origin, including compliance with that country's forest management practices. Importers are also expected to have timber certified under a recognised certification scheme. Indonesia and Papua New Guinea are two countries highlighted as to receive particular attention.

Individual companies have also decided to implement their own certification schemes. Simmonds Lumber, for example, joined forces with the Singapore-based timber auditing company Centisource to enable verification of the legality of timber imported into Australia. In this scheme, trees from legal concessions are genetically profiled, logs brought to sawmills are matched against onsite genetic records and timber is processed under a strict auditing regime managed by Centisource (Simmonds Lumber 2007).

Nature and extent

In situ illegal logging is not considered to be a problem for Australia. Forestry authorities are expected to audit forestry operations as to their compliance with sustainable forest management and extraction practices, and the results of these audits are published in reports such as the Victorian EPA *Forest Audit*. The most recent of the aforementioned series for the year 2006–07, found an overall compliance of 94 percent for the sampled coupes

(Vic EPA 2008c). While this and similar reports provide extensive detail on code of conduct non-compliance, little or no data is published on 'actual' offences and how they are followed up.

The true legality of certain forest operations is, according to some commentators, open to debate (Ginting 2005; Green, Ward & McConnachie 2007; Milieudefensie et al. 2006). Green et al. (2007) take as their example the issue of old-growth logging in Tasmania. The felling of old-growth forest is banned (eg in Western Australia) or restricted (eg in Victoria) elsewhere in Australia but in Tasmania it continues apace, where clear felling, an otherwise prohibited or controlled form of harvesting, is the dominant method of extraction. Forestry Tasmania, the agency responsible for most forestry operations in Tasmania, is largely self-regulated and exempt from certain provisions in state and Commonwealth conservation laws and resource management codes of conduct. When a state-condoned practice produces the level of destruction old-growth felling does, violates standards respected elsewhere and contests social norms (as exemplified by public opposition to old-growth logging), the demarcation between legal and illegal forestry becomes blurred (Green, Ward & McConnachie 2007). It follows that any analysis of crime in this context should consider

> …behaviour that is both deviant, in the sense that it is subject to, and significantly affected by, social processes of censure and sanction, and 'criminal' in the sense that it violates normative standards… (Green, Ward & McConnachie 2007: 1)

Demand in Australia for timber and timber products far outweighs what the local industry can provide and imports from overseas are hence a major component of what is available locally. Difficulties, however, continue to exist in identifying the source and legality of logs and processed timber, and it is more than likely that some of the timber and wood products coming into Australia were harvested illegally. Schloenhardt's (2008) examination of illegal logging in the Asia-Pacific region found little information on the country of origin of wood products entering Australia and the estimated volume of timber illegally derived, other than that published in an Australian Government DAFF-commissioned report on illegal logging. This report estimated that nine percent of all 'forest products' imported into Australia between 1 July 2003 and 30 June 2004, with a total value of $452m, were probably illegally derived (Jaakko Pöyry Consulting 2005). Paper and paper products and wooden furniture comprised the majority of forest product imports, followed by sawn timber and wooden items such as doors, moulding and flooring. The proportion of these products deemed 'suspect' (as to the legality of the timber source) was as high as 22 percent for wooden furniture and 14 percent for miscellaneous wooden items (see Table 30).

Indonesia features prominently as a country of origin for hardwood-based plywoods and tissue paper imported into Australia, and Malaysia and Indonesia of wooden doors, mouldings and flooring materials. The legality of woods used in these latter products are thought to be especially dubious, as they are produced in-country and most illegally harvested timber is processed in situ (Jaakko Pöyry Consulting 2005; Seneca Creek Associates & Wood Resources International 2004). Wooden furniture is another problematic item; 13 percent and seven percent respectively of wooden furniture imports in 2003–04 were from Malaysia and Indonesia respectively. Of interest is that the largest supplier of wooden furniture to Australia is China (43% of imports). China continues to be the single largest importer of tropical hardwoods, with Malaysia, Indonesia and Thailand as the primary sources (ITTO 2007), but it is also a primary consumer of illegal timber, particularly from Indonesia (eg see EIA & Telepak 2005). Printing paper mostly comes from Finland, although Indonesia again is a major supplier. Finland's timber industry is tightly regulated and thus an unlikely contributor to the illegal trade, but they do process logs originating in Russia where controls on logging activity are not nearly as stringent.

More recent data on timber imports into Australia come from annual reports produced by the International Tropical Timber Organization (ITTO) but there is little on the definitive legality or illegality of the timber products brought in. In 2007, Australia imported 533,000 cubic metres of sawn timber, 124,000 cubic metres of plywood and 30,000 cubic metres of veneer (ITTO 2007). Imports of whole logs were comparatively little. Of the timber products

Table 30 Volume and value of wood products imported into Australia: Total and proportion suspected to be illegal, 1 July 2003–30 June 2004

Product type	Volume (m^3)		Value ($m)		% illegal
	Total	Illegal	Total	Illegal	
Sawn timber	871	72	494	50	8
Pulp	377	0	235	0	0
Paper and paperboard	1,557	11	2,014	71	1
Paper manufactures	n/a	n/a	369	11	3
Recovered paper	22	0	5	0	0
Wood based panels	327	37	191	23	11
• Veneer	15	n/a	2.3	n.a	16
• Plywood	176.3	n/a	112.8	n.a	19
Furniture	n/a	n/a	1000	214	22
Miscellaneous forest products	n/a	112	n/a	83	14
Total	n/a	n/a	4893	452	9

Source: Adapted from Tables 3–7, Jaakko Pöyry Consulting 2005

imported in 2007, 20 percent or more came from tropical wood sources. Tropical wood, particularly the hardwoods, are the timber species most desired by consumers and hence mostly targeted by illegal logging ventures. The ITTO defines major importers of tropical woods as those importing at least 100,000 cubic metres of one or more tropical product types and based on this definition, Australia, in 2007, was a major importer of tropical wood-derived sawn timber. Some of that timber was merbau, one of the two CITES-listed varieties of tropical hardwood (along with ramin) that is being logged at unsustainable levels (EIA & Telepak 2004).

A survey of timber importers, wholesalers, industries and hardware suppliers revealed the general absence in Australia of a 'structured' system enabling identification of 'suspect' timber products (Jaakko Pöyry Consulting 2004: 13). The physical characteristics and price of some imports exposes their likely illegality, such as sawn timber which tends to be cheaper and exhibits a poorer standard of finish. Other products derived from illegal harvests are not so easily recognised.

Sanctioning

There is no published data on sentences received for breaches of forestry Acts or regulations. The receipt of illegally-derived timber and timber products is not considered a criminal offence in Australia.

Summary

Illegal logging is the least frequently perpetrated category of environmental crime in Australia. Available data and Schloenhardt's (2008) review of illegal logging in the Asia-Pacific region suggests that forestry operations in Australia are, for the most part, adhering to forestry laws and standards of harvesting and processing. However, the limited nature of the data precludes any analysis as to what offences are actually committed, how and by whom, and how damaging to the environment these offences are.

For Australia, then, illegal logging is largely an end-user issue and our complicity is established through poor or non-existent import laws and uninformed consumer choice. A substantial proportion of timber imported into Australia either comes from countries where illegal logging is endemic (Indonesia) or via countries that regularly accept illegally-harvested timber (China). However, unlike the European Union and the United States, no uniform, national measures have been introduced or recommended to halt the importation of illegal timber into Australia. Some industry groups have taken their own steps to verify the origin of imported timber but most cannot or do not. Consumers are just as culpable, due to ignorance, lack of concern or not having the means to verify ethical wood purchases.

With only small gains being made in habitat countries engaged in or implicit in illegal logging, the role of nations such as Australia in halting the crime by plugging the trade at the consumption end is being given greater credence. This departs from customary environmental controls described in other theme sections and represents how more laterally-based options for control are necessary for more intransigent cases of environmental offending.

Water theft

Scope and definitions

Water 'theft' is not necessarily a new phenomenon for Australia but current climatic conditions, a history of overuse and variable source replenishment has brought the problem and consequences of unauthorised withdrawal and use of water to the national forefront. The introduction of water restrictions and stricter approaches to managing Australia's water resources, most prominently the Murray-Darling Basin, potentially (and probably) increases the temptation to take water that one is not entitled to. Because there is now much greater political and public awareness about water availability, the theft of water and how much theft is actually occurring, it is an emerging theme in environmental crime research.

Australia is the driest inhabited continent and reliable water sources are mostly concentrated on its coastal stretches (Harris 2006). The *2006 State of the Environment* report describes a 'geographical disjunction between (water) supply and demand' existing in Australia, that is exacerbated by population increase in coastal areas, the climate and runoff variability made worse by the recent sustained drought (Harris 2006: 2). Nonetheless, Australia's use of water is huge and has been ranked third in the world in terms of per capita water usage (Radcliffe 2004). Agriculture is the greatest consumer of water in Australia; the most recent statistics estimate that in 2004–05, consumption totalled 12,191 gigalitres of water, or 65 percent of all water used in that year (ABS 2008a). Ninety-one percent of this water is taken to irrigate crops and pasture, although in recent years, there has been a decrease in the amount diverted for irrigation purposes. Household and water supply industries consumed another 11 percent of water, 'other industries' seven percent and manufacturing and mining industries consumed three and two percent respectively (ABS 2008b, 2008c).

Water is derived from both surface and groundwater sources. The conventional view was that surface water, as available in our inland rivers, was an 'unconditionally renewable' resource. The reality is that the combination of low rainfall, higher than average temperatures (leading to increased rates of evaporation) and extraction rates exceeding that of replacement, has led to a situation where that renewable resource is in danger of becoming a rare commodity. For many inland river systems in Australia and particularly those in southeastern Australia where the drought is entrenched, this has become increasingly the case. Groundwater, on the other hand, is a limited resource and its use regulated accordingly. However, additional stress is being placed on groundwater reserves, in part because of the drought and in part because of

consumers turning to groundwater instead of surface water (URS Australia 2008). Some sources of groundwater are being used well above their recharge limits (Harris 2006).

Water theft covers not just that from natural water courses but the stealing of harnessed or piped water. The latter takes in offences of actual theft, breach of extraction conditions and construction of works to illegally take water, tampering with meters to relay false readings and contravening declared water restrictions. Much of the literature, however, focuses on the former type of theft and the following discussion reflects this emphasis.

Laws and regulation

Water management and use in Australia is governed by an extensive regulatory framework, reflecting dependence on a relatively limited resource coupled with large and disparate consumption demands from the Australian population. Up to 150 regulatory water plans are currently in effect across the states and territories; primary statutes are listed in Table 31. In New South Wales, the *Water Management Act 2000* is the predominant legislative form and while certain provisions in the *Water Act 1912* are still observed, the latter will eventually be phased out (NSW DWE 2009a).

Table 31 State and territory water management statutes

Jurisdiction	Primary statute(s)
NSW	*Water Management Act 2000*
	Water Act 1912
Vic	*Water Act 1989*
Qld	*Water Act 2000*
WA	*Rights in Water and Irrigation Act 1914*
SA	*National Resources Management Act 2004*
	Water Resources Act 1997
Tas	*Water Management Act 1999*
ACT	*Water Resources Act 2007*
NT	*Water Act*

Note: While the agencies listed are responsible for administering legislation, compliance and enforcement roles are taken up in some jurisdictions by other agencies (eg State Water in New South Wales)

In addition is the *Water Management Act 2007* (and *Water Amendment Act 2008*) which delineates management of water resources contained within the Murray-Darling Basin. The Murray-Darling Basin Authority will have responsibility for enforcing water management provisions as specified in the Act and the Australian Competition and Consumer Commission will oversee adherence to water charge and water market rules.

Water access and use is arranged through the granting of entitlements and water allocations or shares. Traditionally, an entitlement was an exclusive right to use water from a specified water source for a specified purpose and an allocation designated enforceable limits on the volume of water that could be drawn from an entitled source. These general permissions have since been remodelled and re-labelled in most jurisdictions. For example, in New South Wales, a water access licence (recognised under the *Water Management Act 2000*) stipulates the share of the available water the licence holder is entitled to (and from which an allocation is calculated) and the 'part' of the water source from which water can be extracted. An approval must be additionally sought to use the water for a specific purpose (eg irrigation) and/or to carry out a specific activity, such as the construction of water-affecting works.

Taking surface water, from a river, lake, aquifer, spring or soak, requires a licence, unless otherwise stated. Unlicensed water extraction is allowable in all jurisdictions if used for domestic or stock purposes, where landowners hold rights to water under the *Commonwealth Native Title Act 1993*, or for miscellaneous purposes such as camping or watering travelling stock. New South Wales additionally recognises 'harvestable rights', where landowners can collect up to 10 percent of average regional rainfall runoff if stored in a 'small' dam (NSW DWE 2009b). Water use licences are required in South Australia and Western Australia if surface water is extracted from 'prescribed' or 'proclaimed' areas respectively but not from other water sources if the taking of water does not affect the water rights of persons downstream (SA DWLBC 2008b; WA Department of Water 2009a).

With groundwater a much less abundant resource, licensing requirements tend to be stricter. A licence (or approval of works or permit) must be obtained before sinking a bore, even if the groundwater is to

be used for non-prescribed activities such as domestic and stock use. The bore must always be sunk by a licensed driller. Actual use of groundwater also requires a licence, but like surface water, only if the water is to be harvested for purposes other than domestic or stock-related needs. Construction of works (other than bores) such as dams, weirs etc need authorisation in the form of permits.

Licenses are accompanied by prescribed water allocation and usage plans, and where water management or water-sharing plans are in place, refer to allocation rights as specified for these regions. Allocations state how much water can be taken over a given time period and for water drawn from a source other than a dam, there is a limit (in megalitres) on how much can be drawn, plus where the water can be taken from, where it can be used and for what purpose. Allocations are not tied to the life of the licence. Accounting for water usage is inherent to the issuance of a licence and installation of meters and regular recording of water usage a mandatory condition.

One response to water shortages and overuse in Australia is to restrict issuance of new licences. Many jurisdictions have embargoed the granting of water entitlements for particular areas, for particular purposes, for particular water sources or for particular times of the years. Examples include:

- No new water licenses are being issued in New South Wales if water use is for commercial purposes (NSW DWE 2009b).
- Groundwater extraction licences in Western Australia will be available only in areas where the total number of worked bores does not exceed allocation limits (WA Department of Water 2009a)
- Water allocations will be being granted in Tasmania for extraction in winter months only, from dams or via transfers from water catchments (Tas DPIW 2009a).

Simultaneously, jurisdictions are formulating more sophisticated water trading networks. Victoria has the most developed system in operation and in Queensland, permanent surface water trading has begun with markets for groundwater in development. There is little trading so far in jurisdictions such as Tasmania, where the market is spatially disconnected because of relatively small catchments.

Offences and penalties

Water offences, then, predominantly refer to the:

- unauthorised taking of surface or groundwater ie without a licence;
- unauthorised construction of works;
  - bore construction or alteration
  - other works such as dams or weirs
  - bore construction by an unlicensed driller
- contravention of conditions of authorisation
  - taking water for purposes different to those agreed to
  - taking water in excess of allocation
  - taking water from a source not specified on authorisation (Table 32).

In 2008, New South Wales introduced the category of 'intentional, negligent and reckless conduct' to differentiate penalties for unauthorised taking of water, and in so doing, raised such an act to a Tier 1 offence (NSW DWE 2008c). Pecuniary penalties thus increased from $132,000 to $1.1m for individuals, with imprisonment up to two years, and for body corporations, a maximum penalty of $2.2m, up from $275,000. A new offence listed in NSW's *Water Management Act 2000* (s 60C) is the taking of water for which there is an insufficient water allocation. South Australia has recently announced a substantial increase in penalties under the Natural *Resources Management Act 2004* for 'water theft' (Rann 2009). Individuals discovered illegally taking water will in future be liable for a maximum penalty of up to $700,000 and corporations of up to $2.2m. Previous penalties were $35,000 and $700,000 respectively.

Water restrictions and proposed and directed reductions in allocations have placed greater emphasis on consistent monitoring of rates of water usage. As described earlier, water licence holders are obliged to install and maintain water meters and accurately record the volume of water taken and the rate and time of taking. To counteract tampering of, or failing to maintain, metering equipment, provide less than accurate water usage reports, or take advantage of faulty equipment to draw more water, some jurisdictions (New South Wales, Tasmania and the Australian Capital Territory) have legislated for offences pertinent to such behaviour.

Table 32 Maximum penalties for selected water offences

Act and associated selected offences	Maximum penalty
Water Management Act 2000 **(NSW)**	
Taking water without, or otherwise than authorised by, an access licence (s 60A)	Intentional (Tier 1): $1m and/or seven years imprisonment (natural person) $5m (body corporate) Other (Tier 2) $250,000 (natural person) $1m (body corporate)
Contravention of terms and conditions of access licence (s 60B)	Tier 2 as above
Taking water for which there is no, or insufficient, water allocation (s 60C)	Tier 1 (intentional) and Tier 2 (other) as above
Taking water otherwise than from a nominated water supply work (s 60D)	Tier 2 as above
Using water without or not authorised by a water use approval (s 91A)	Tier 2 as above
Constructing or using water supply work, drainage work or flood work without, or otherwise than as authorised by, a water supply work approval (s 91B–D)	Tier 2 as above
Carrying out controlled activity without, or otherwise than as authorised by, a controlled activity approval (s 91E)	Tier 2 as above
Carrying out aquifer interference activity without, or otherwise than as authorised by, an aquifer interference approval (s 91F)	Tier 2 as above
Contravention of terms and conditions of approval (s 91G)	Tier 2 as above
Failure to install or maintain metering equipment (s 91 H)	Tier 2 as above
Taking water when metering equipment not working (s 91I)	Tier 1 (intentional) and Tier 2 (other) as above
Failure to keep metering records (s 91J)	Tier 2 as above
Meter tampering (s 91K)	Tier 1 (intentional) and Tier 2 (other) as above
Fail to comply with requirement (directions) or enforcement (s 340A)	Tier 1 (intentional) and Tier 2 (other) as above
Water Act 1912 **(NSW)**	
Failure to comply with conditions of licence (s 17B(1c))	$11,000 (natural person) $22,000 (body corporate)
Failure to comply with terms of notice regarding • modification of licence; • amount of water that can be taken; and • restriction or suspension of rights (s 17B(2))	$11,000 (natural person) $22,000 (body corporate)
Alteration of works to affect quantity or quality of licence flowing in, to or from a river (s 18(1))	$11,000
Irrigation of area in excess of that permitted on licence (s 18(2))	As above
Continue to take or use water after suspension, withdrawal or expiry of permit (s 18R(1a–b))	As above
Failure to comply with conditions of permit (s 18R1c)	As above
Taking water where the work is not connected to a water meter or other measuring device (s 20AC(1))	$11,000 (natural person) $22,000 (body corporate)

Table 32 continued

Act and associated selected offences	Maximum penalty
Damaging water meter, preventing measurement or interfering with reading (s 20AC(2))	$11,000 and/or 12 months imprisonment (natural person)
	$22,000 (body corporate)
Construction, erection or use of works without a licence (s 21(B))	$11,000 (natural person)
	$22,000 (body corporate)
Failure to comply with restriction or suspension of rights during periods of water shortage (held under licence (s 22b); from bore (s 117E))	As above
Unauthorised sinking, enlargement, deepening or alteration to a bore (s 112)	As above
Alteration to a bore in contravention of licence conditions (s 117I(a))	As above
Taking or using water from an unlicensed bore (s 117I(b))	As above
Taking or using water from a bore in contravention of licence conditions (s 117I(d)	As above
Water Act 1989 **(Vic)**	
Unauthorised taking of water from waterway, aquifier, spring or soak, or dam in a declared system (s 33E)	$6805.20 and/or six months imprisonment (First offence)
	$13,610.40 and/or 12 months imprisonment (Second offence)
Contravene terms of bulk entitlement (s 47A)	$22,684.00
Unauthorised taking or use of water from waterway or bore in a non-declared system (s 63(1))	As above
Taking or using water from spring, soak or dam for use other than domestic or stock-related (s 63(1A))	
Use of water for irrigation or allowing irrigation from declared water system without a water use licence (s 64J(1))	As above
Unauthorised use of water for purposes other than irrigation from declared water system (s 64J(2))	$2,268.40
Use of water on land not specified in water licence or registration (s 64K)	$6,805.20
Failure to comply with conditions of water licence (s 64AF)	As above
Unauthorised construction, alteration, operation, removal or decommissioning of a private dam (s 75(2))	$2,268.40 and/or three months imprisonment
Unauthorised construction, deepening, enlargement or alteration of a bore (s 75(2))	$6805.20 and/or six months imprisonment (First offence)
	$13,610.40 and/or 12 months imprisonment (Second offence)
Wrongful taking of water (without consent of Authority) (s 289(1))	As above
Water Act 2000 **(Qld)**	
Unauthorised taking, supplying or interfering with water (s 808(1)(2)))	$124,875
Taking of water without an approved water meter (s 808(3))	As above
Use of water contrary to water use plan *or* land and water management plan (ss 809–810)	As above
Tampering with device used to measure volume, rate or time of taking water (s 811(1))	As above

Table 32 continued

Act and associated selected offences	Maximum penalty
Contravene conditions of water entitlement, seasonal assessment notice or permit (s 812)	As above
Contravene conditions of licence (s 813)	As above
Unauthorised construction of a bore (s 816)	$37,500
Taking water without an operator's licence (s 820)	$75,000
Rights in Water and Irrigation Act 1914 **(WA)**	
Obstruction of water course on Crown land (s 25)	
Unauthorised bore work (s 26a)	$10,000 (natural person) $100,0000 (body corporate)
Unauthorised taking of water for irrigation (s 39A)	$20,000 (natural person) $50,000 (body corporate)
Fraudulent use of water for irrigation (s 39C)	As above
National Resources Management Act 2004 **(SA)**	
Contravenes s 127 (1, 2, 3, 5a) and s 127 (6a): • Unauthorised taking of water (s 127(1)) • Take water from non-prescribed water course or take surface water from land not in a surface water prescribed area (in contravention of an NRM) (s 127(2)) • Unauthorised construction or modification of water affecting works (s 127(3)) • Various activities in contravention of a NRM plan (s 127(5a)	$35,000 (natural person); to be increased to $700,000 $70,000 (body corporate); to be increased to $2.2m
Contravenes or fails to comply with term or provision of water management authorisation (s 127(6ab))	As above
Contravenes or fails to comply with conditions under management authorisation, permit or water use authorisation (s 127(6b)	As above
Fail to comply with rectify unauthorised activity notice (s 130(2)	$25,000 (natural person) $50,000 (body corporate)
Fail to comply with notice regarding restrictions in case of inadequate supply or overuse of water (s 132(7)	As above
Contravenes or fails to comply with water conservation regulation (s 169(8)	$5,000 (natural person) $10,000 (body corporate)
Water Resources Act 1997 **(SA)**	
Taking water in excess of water allocation on licence (s 132(1a)) • quantity taken • source • contravention of notice under s 16	Penalty declared by Minister based on
Taking water when not owner of water licence (s 132(1b))	As above
Use of water in contravention of licence conditions (s 132(1c))	As above
Water Management Act 1999 **(Tas)**	
Take water in excess of allocation (s 82(1))	$50,000
Contravene conditions of licence (s 82(1))	As above
Using water for purposes other than those allowed (s 82(1))	As above
Breach of water restrictions (s 92)	As above

Table 32 continued

Act and associated selected offences	Maximum penalty
Building of dam without permit (s 146(3))	$20,000
Failure to comply with conditions of dam permit (s 146A)	As above
Damage or interfere with water meter (s 236)	$10,000
Water Resources Act 2007 **(ACT)**	
Unlicensed taking of surface or ground water (s 28(1))	$50,000 and/or six months imprisonment
Take water from unlicensed bore (s 28(2))	$50,000
Unlicensed bore work (s 37)	$50,000 and/or six months imprisonment
Unlicensed or adverse waterway work (s 42)	$10,000 and/or 12 months imprisonment
Unlicensed recharge work (s 47)	$50,000 and/or six months imprisonment
Contravene conditions of licence (s 58)	$50,000
Contravene installation, working or reading of water meter (s 59)	$25,000
Water Act **(NT)**	
Obstruction or interference with waterway (s 15(1))	$2,000 and/or two years imprisonment ≤ $2,000 ≥$10,000
Breach of permit conditions (s 42)	$2,000
Unauthorised construction of dam, water storage or other control structure to affect water flow (s 40)	$2,000 ≤ $2,000 ≥$10,000
Unauthorised taking of surface water (s 44)	As above
Breach of licence conditions on taking or use of surface water (s 46)	$2,000
Unlicensed drilling for ground water (s 48)	$5,000 and/or 3 months imprisonment
Unlicensed extraction of ground water (s 59)	$2,000
Contravene conditions of ground water licence (s 61)	As above
Unlicensed recharge of aquifiers (s 67)	$200
Breach of licence conditions (s 68)	$2,000
Wastage of bore water (s 69)	$200
Water Act 2007	
Contravene enforcement notice (for breaches of provisions in Part 2: *Management of Basin resources*)	$66,000

Nature and extent

The over-zealous dispensation of water entitlements and allocations is proposed, if not established, as one of the major human-sponsored factors affecting current water shortages and the precarious state of some of Australia's larger inland river systems (Webb, McKeown & Associates 2007). During the 1980s and particularly the 1990s, state governments handed out a substantial number of new water licences, with generous extraction allocations attached. Many of these went to irrigators and other equally large consumers of water. Fears about water mismanagement and severe water shortages prompted COAG discussion on water reform, which bore the Intergovernmental Agreement on a National Water Initiative (NWI). The NWI came into effect in 2004 (with Tasmanian and Western Australia joining in 2005 and 2006 respectively) and aimed to alleviate deficits in water management plans, particularly with regard to minimal focus on environmental outcomes, little systematic monitoring or assessment of

compliance and disconnected management of surface and groundwater resources. Among the objectives of the NWI are to modify the granting of water entitlements, address current and prevent future over-allocation of water, develop measures for water accounting and compliance and expand the water trade market (COAG 2005). Almost all states and territories have made good progress in developing water access entitlement and planning frameworks as prescribed by the NWI, particularly in high-priority water systems. However, in its report to COAG of 26 March 2008, the Working Group on Climate Change and Water identified that, despite this progress, significant improvements in monitoring and compliance were needed to underpin stakeholder confidence in water access entitlements and in the security of water provided for the environment (COAG Working Group on Climate Change and Water 2008).

Increased competition can increase the temptation to rort or disregard the system and with newly introduced constraints on access and allocation, this temptation will continue to grow. Such contempt commonly comes in the form of taking more water than has been allocated or from a source that one is not entitled to use, using water for non-authorised purposes and tampering with metering equipment to conceal actual usage rates. And while such behaviour is bandaged in phrases referring to unauthorised activity and contravention of conditions, as many environmental offences are, they all represent or enable in one way or another an act of taking water that is not lawfully theirs. More blatant acts of theft are also occurring in Australia, primarily through the appropriation of water stored in private water tanks and dams. Media reports over the last couple of years have described draining of water from tanks and dams in rural areas of New South Wales; in one five month period in 2007, there were five separate incidents of more than 100,000 litres of water stolen from water tanks and many more of 10,000 litres or less (Williams 2007).

The question remains, however, as to how much theft is actually happening and how much water is being 'stolen'? Quantifying the prevalence of theft is like tracking illegal native vegetation clearance—hamstrung by the practicalities of monitoring a large assemblage of licensed holders and having access to resources to undertake comprehensive surveillance work of potentially and actual affected water resources. Another complication is the absence of a nationally-consistent water accounting method. One of the objectives of the National Water Initiative that is being overseen by the National Water Commission, is the development of national standards for the measurement and metering of water, which should improve not only calculating the volume and location of available water, but who the users are and what they are using the water for (NWC 2007). Another more immediate problem affecting estimation of volume taken both by compliant and non-compliant means, is that not all water allocations are metered. As stated previously, an increase in metering of water allocations is recommended under the NWI and jurisdictions are taking steps to improve coverage. For example, meter installation is now required for users in Western Australia who extract 50,000 litres or more a year (WA Department of Water 2009b) and for all licensed, commercial users of water in Tasmania (Tas DPIW 2009b). The proportion of license holders with metered entitlements is, though, relatively low. While most water extracted from regulated rivers in New South Wales is metered, much less of that coming from groundwater sources are and none from unregulated rivers. Just 34 percent of licences in New South Wales in 2007–08 were metered (NSW DWE 2008a), which complicates estimation of overall compliance and comparison of allocation accounts with that actually taken.

Consequently, published data, or even published estimates, of theft (or evidence of non- compliance) are difficult to uncover. Data from the NSW Department of Water and Energy show that the number of investigations for non-compliance under the *Water Act 1912* and *Water Management Act 2000* was stable from 2005–06 to 2007–08 (n=114, 115 and 118 respectively) but considerable variation in compliance was apparent, at least in 2007–08, between different regions (NSW DWE 2008a). For example, the majority of bore licence holders in the Leeton area of New South Wales complied with licence conditions while a third in the Murray Irrigation Area had not. In the same time period, the SA Department of Land, Water and Biodiversity Conservation investigated 70 complaints about improper water usage in the River Murray (SA DLWBC 2008a). All violations in both states and

territories received administrative reprimands. Neither report elaborates about what these investigations or complaints referred to but the latest water statistics report from the Queensland Department of Natural Resources and Water does list cases prosecuted against relevant sections of the *Water Act 2000* (Qld). Of the 24 cases prosecuted in 2006–07, three were for unauthorised taking or interfering with water, two for contravening conditions of licence and two for tampering with a water meter (Qld DNRW 2008b).

There has been some media exposure of actual incidents and suspected participation in water theft but these too are sporadic and only report outcomes of prosecuted cases. All describe irrigators (in Victoria and South Australia) taking water they were not authorised to harvest and/or interfering with meters/altering meter readings. The drought ravaged Murray-Darling Basin and the complicity of irrigators (via the aforementioned granting of substantial water allocations in the past) in affecting its current state, has focused national attention on illegal and unmetered pumping and diversion of its waters. Certainly, the actuality of theft is acknowledged, for example in submissions to the current senate inquiry by the Rural and Regional Affairs and Transport Committee on the long-term sustainability of the basin system, scientific papers describing the crisis (eg Cullen 2007) and by media releases from affected state government and opposition parties (eg Murray 'water theft' pumping angers SA Oppn, *ABC News* 7 Aug 2008). Yet little is made publically available to describe the dynamics of this theft.

The identification of high-risk areas for intensive compliance monitoring attention also suggest elevated risk of water theft. In their latest annual report, the NSW Department of Water and Energy listed eight regions and groups of licence holders subject to such scrutiny, as the increased pressure of the ongoing drought in the state 'increased the benefit from and potential motivation for water theft' (NSW DWE 2008a: 27). Those identified included surface water licence holders (Bourke area), bore (groundwater) licence holders (Murray Irrigation, Botany Groundwater Area and Leeton areas), irrigators (along the Murray), bore drillers (Great Artesian Basin) as well as the measurement of water extraction (from the Wingecarribee River) and use of town water while under a directed water restrictions order (Deniliquin).

Another, less considered version of water theft can occur when the combination of loose regulation and inducement to 'push the system' enables quasi-permissible drainage of environmentally sustaining waters. This is exemplified by recent investigation of works constructions on the Macquarie floodplain, diversion of environmental flows and subsequent declining health of the ecological communities therein (Steinfeld & Kingsford 2008). The Macquarie Marshes is one of the largest semi-permanent wetland systems in Australia, surrounded by floodplains and an important breeding site for over 40 species of waterbird. When flooded, the wetlands can extend up to 250,000 hectares in area. Eighty-eight percent of the wetlands is privately owned and used for agricultural purposes, primarily grazing but also dryland farming and irrigation.

A four-fold increase in the construction of levees, channels and river storage facilities took place in the southern regions of the Macquarie floodplain between 1949 and 2005, with much of this development in the 1980s and 1990s, and despite the implementation of the Murray-Darling Basin Cap in 1995. While most of these constructions may be technically legal under the regulations applicable at the time, the risk of continued over-harvesting of 'environmental waters' (by diversion of flows from rivers and direct capture from the floodplain) is not (Steinfeld & Kingsford 2008). Further, the level of development, according to the report authors, breaches guidelines regarding floodplain development and disconnected vegetation communities along the floodplain. Some of these communities are severely water-stressed, with 100 percent mortality of river red gums in nine percent of sites sampled (Steinfeld & Kingsford 2008) and a marked reduction in water bird numbers (Kingsford & Auld 2005). A follow-up audit investigating unauthorised constructions and illegal water diversions is in progress (Costa 2008), as is the creation of new policy on better management of water diversions on floodplains.

Reporting and detection

The establishment of incidents of water theft come from three forms of monitoring activity. The first focuses on compliance auditing of water licences, involving site visits and in which works and

equipment are inspected (and tested) and metering and water usage records are reviewed. Compliance auditing is supplemented by surveillance comprising (depending on jurisdiction) aerial, ground and river surveys, combined with aerial photography and the use of satellite images. Surveillance is used to detect unauthorised works, irregular flows and other signs of illegal water diversion. Reports of alleged breaches from the public, local councils or state utilities and other government departments represent the third method whereby regulators are alerted to possible water theft.

Sanctioning

As for published data on incidence of theft, there is a similar dearth on sanctions applied. The NSW Department of Water and Energy, Queensland Department of Natural Resources and Water and the Tasmanian Department of Primary Industries, Water and the Environment publish recent, although not directly comparable, data on sanctions for water management offences. Further, there is little or no information on penalties following prosecution.

Between 2005–06 and 2007–08, the majority of investigations in New South Wales for breaches of the *Water Management Act 2000* or the *Water Act 1912* resulted in no compliance action recorded (NSW DWE 2008c). When sanctioning occurred, it mostly came in the form of a warning letter or negotiation. Seventeen of the 48 investigated breaches against the *Water Management Act 2000* in 2007–08 did, however, result in the issuance of a penalty notice, up from a total of two from the previous two years but there is no accompanying information as to whether this increase is relevant. No prosecutions were entered into.

In Queensland, the commission of water offences finalised in 2006–07 were also met predominantly with warnings (90 of 165 compliance actions), followed by 'statutory notices' (n=51; Qld DNRW 2008b). Unlike New South Wales, prosecutions did go ahead, against a total of 24 charges. Three referred to the taking etc of water with authorisation (s 808), two with contravening conditions of water licence etc (s 812) and two with meter tampering (s 811). Very few water offences were dealt with in Tasmania between 2004–05 and 2007–08. Nine water infringement notices were meted out for illegal taking water, 14 for illegal dam works and one each for failure to comply with the directions of an authorised officer, contravening water restrictions and taking water without metering (Tas DPIW 2009c, 2007, 2006). Total fines collected in 2006–07 amounted to $2,900, ($2,400 of this $2,900 was derived from water infringement notices issued for illegal dam works) and in 2007–08, just $240 was collected. Only two prosecutions were initiated in that time (for illegal taking of water) but the outcome was not recorded.

Summary

Establishing how much water theft is occurring in Australia is at present, and of all the environmental crimes considered here, the most difficult to do. While each of the theme sections have highlighted the general limitations of published data on the nature and extent of various categories of environmental crime, the dearth of information as to how much water is being illegally extracted and use is especially conspicuous. This deficiency in data is in no doubt related to the perceived notion of water theft as an emerging environmental offence and more practical issues related to accurate measurement and detection. The truth is that illegal water extraction and use is not a new problem for Australia and from anecdotal reports has always been pursued and regularly so. Its elevation to an environmental crime of consequence has largely been in response to more recent concerns about Australia's water supply, aggravated by drought and newly-legislated attempts to reign in past practices of over-supply and overuse. Regulatory attention has thus become more focused and information about transgressions will become more commonplace in regulatory reports. However, a national standard for water accounting is yet to be realised and detection of offences generally relies on formalised site visits, which restricts how much illegal behaviour can be uncovered.

The difficulties now associated with preventing water theft are akin to those for native vegetation clearance. While the regulation of water use has been in place much longer than it has for native

vegetation clearance, bulk water users up until very recently had what has been described as rather generous allowances regarding the where from, what for and how much. Now these same users are being told that allocations are to be reduced, old entitlements reviewed and new entitlements put on hold and construction of works for extraction and diversion purposes to be more vigorously monitored. In other words, a culture of entitlement is being challenged by a new set of rules and a level of scrutiny not previously experienced. For this reason, like native vegetation clearance, it is assumed that the scale of the crime is probably a lot larger than officially reported and comprises a significant proportion of intentional non-compliance.

Much of the blame for water theft is being levelled at irrigators and certainly the desperate state many of our important inland river systems are now in is to do with the overuse (and both lawful and unlawful overuse) of waters from these systems. An oft-repeated maxim of the Australia irrigator is ‘upstream, theft; downstream, waste’ and the culture of entitlement is probably the most entrenched within this community of water users. However, while it can be proposed that a significant amount of non-compliant behaviour is probably occurring here, it is likely that non-compliance is more broadly dispersed, between different groups of users located in different regional areas. The most recent annual report from the NSW Department of Water and Energy described where they had detected high-risk areas for non-compliance; an interesting adjunct to a study on estimating the prevalence of water theft would be to investigate why compliance for one group of users is so poor but mostly acquiescent in others.

Building a research portfolio on environmental crime

Unravelling environmental crime is a considerable task. It comprises a complex group of unlawful acts, is controlled by a multitude of laws and is monitored and dealt with by a large number of agencies sitting at different levels of government. The purpose of this report was to help disentangle this category of crime by assembling a literature-derived 'stock-take' on the nature and extent of environmental crime in Australia and describe current approaches to deter, detect and sanction environmental offences.

The available literature has proved to be widely diverse in source, content and focus. Consequently, the depth of detail available to describe the primary categories of environmental crime varied considerably and this is reflected in the discussion presented in the theme sections. Some of this variation in information is almost certainly a product of the difficulties associated with uncovering, and hence reporting on, environmental crime. However, it is also related to the limited dissemination of hard data—on rates of prevalence, facilitators, perpetrators, and application of sanctions—and the intermittent research attention environmental crime has received in Australia.

This chapter describes a number of research avenues that could be feasibly taken, based on caveats of practicality and scope, and which best attempt to redress current gaps in knowledge.

Regulating the environment

For the most part, Australia relies on a regulatory approach that encourages self-compliance but is increasingly embracing enforcement. Authorisation, in the form of licences or permit (or works approvals etc), is mandatory before environmentally-harmful practices can be undertaken and routine monitoring and targeted operations frequently used to uncover illegal behaviour. Self-regulation is granted for some operations, notably private forestry and state-managed forestry in Tasmania, but a command-and-control philosophy permeates most regulatory arrangements, albeit one which has moved with the times. Environmental outcome, rather than a fixation on regulatory procedure, is the new objective for regulatory agencies, with prevention, not just the maximisation of compliance, the operative goal.

Nevertheless, regulatory agencies acknowledge ongoing problems with their role and agencies who only recently adopted the mantle of regulator are still negotiating the regulatory culture. The push towards a more enforcement dominated role, promoted by the Australian public's increased appreciation for the seriousness of environmental crime, adds additional pressures. Then there is the challenge in promoting and sustaining inter-agency cooperation, with respect to reciprocal support, intelligence- and information-sharing, co-investigation and group

development of cases for prosecution. While many of these obstacles were described by regulators attending the roundtable, the literature was mostly silent on the specificities of these pressures and how they impact on the discovery and punishment of environmental crimes.

In trying to understand how environmental crime might be better deterred, a thorough overview of regulatory practice in Australia is critical. Rob White (personal communication 2009) has recommended there be an auditing of 'what is done on the ground' and a subsequent modelling of best practice. Such analysis might take the form of a comparative review of a selected group of agencies, from different jurisdictions and who enforce difference environmental laws, to fully describe the procedures and pitfalls of controlling against environmental crime in Australia. An important subset of this research would be to highlight the procedures or policies that are thought to, or can be shown to, have produced 'results', such as changes in attitude toward environmental laws, better engagement between regulator and regulated, and a quantifiable drop in specified offences.

How much environmental crime is there really?

The preceding theme sections used a combination of measures, such as the number of offences reported, investigated and sanctioned, to illustrate the prevalence of specific categories of environmental crime and regulatory non-compliance. However, the marked variability in the type and detail of data published made it impractical to construct a national picture on what environmental offences were frequently (or not so frequently) being committed. The limited nature of this data also restricted any comment being made regarding trends or hotspots of illegal activity. Part of this problem lay with the sole use of published data; gaining access to unpublished data may have provided better representation of the scale of illegal activity occurring.

To properly measure the prevalence of environmental crime, there needs to be a comprehensive analysis of methodologies of offending. A historical assessment of trends in environmental offending is also desirable. An observation made at the AIC environmental crime roundtable was that regulators had a good idea of 'the who' and 'the what' of environmental offending but they did not have the time to fully investigate the mechanics of the crime. Such research could confirm where suspected vulnerabilities lie and discover others that are not immediately obvious or are easily exploited. If we consider illegal waste, which was recommended by stakeholders as an area in need of further examination, topics for investigation could comprise:

- industry sectoral involvement, size of enterprise and history of compliance with waste laws;
- relationship between type of product and crime risk (class of waste being dumped, what form its being dumped in, hazardous nature of the waste);
- preferred sites for dumping (eg specially constructed illegal dumping sites, on-site or 'backyard blocks');
- methods used to conceal dumping activities (eg waste streams);
- motivations for dumping (profit-making versus cost-saving);
- associated criminal activity (eg fraud, price-fixing, bribery, other fiscal offences, collusion); and
- the environmental impact of dumping.

An historical analysis might consider tracking patterns in the perpetration of offences against:

- the timing of legislative amendments (eg changes to penalty regimes);
- introduction and fine-tuning of policy initiatives;
- transitional changes in mode of regulatory approach taken; as well as
- measures of changing social norms and perceptions of environmental crime.

Of interest would be to spotlight and compare categories of environmental crime:

- that are presently tightly regulated, yet predicted to experience a resurgence in commission (eg illegal waste disposal);
- continue to be problematic in enforcing (eg native vegetation clearance); or
- that have been the recent target of substantial publicity and strengthening of penalties (eg water theft).

An additional scope to such a study could be harm analysis—evaluating the costs and impact of environmental crimes. As well as estimating the conventional costs of crime through, for example, its economic and social impact, it is recommended there be exploration as to how to calculate the intrinsic value of the environment and the harms perpetrated against it. How best to quantify the 'value' of the environment and the harms caused was highlighted by roundtable participants as being critical to successful prosecutions.

Sanctions that work

Environmental wrongdoing is dealt with using a sequence of sanctions, from a verbal warning that unlawful behaviour has been observed and needs to rectified, all the way through to fines and custodial sentences. Published data show that most environmental offenders receive relatively minor sanctions, which is a probable reflection that many environmental offences committed in Australia are (or determined to be) themselves relatively minor. However, the view that leniency is a trait characteristic in the sanctioning of environmental offenders necessitates some caution. For more serious offences, penalty orders (or a version of) are commonly given, and when cases go to court, it is a fine. There is a view, however, that traditional penalties have largely failed to circumvent environmental crimes. Alternative sentencing orders, namely the use of directions for the offender to publish the offence (thus producing the requisite shame) and to make an environmental good (often by the diversion of monies to conservation or environment projects), are championed as one such constructive approach and are increasingly being used in some Australian states.

Two themes emerging from the literature on sanctioning that are in need of addressing is a more thorough analysis on sentencing trends for environmental offences and further exploration of alternate means of addressing environmental harm within the criminal justice setting. The absence in Australia of a centralised warehouse of sentencing data has recently been rectified with the newly established NSW Land and Environment Court Environment Sentencing Database, a ready resource on which a study of patterns of sentencing can now be readily undertaken. Analysis would be used to gauge what offences are regularly being prosecuted, the type and combination of sentences they are attracting, considerations used to determine the penalty and evidence for a cultural change in the manner in which environmental offences are being dealt with. A secondary line of analysis could consider the feasibility of extending sentencing databases into other jurisdictions and the compilation of data into a national database.

The second inquiry considers the role for restorative justice in addressing environmental harms. Restorative justice is a feature of environmental sentencing in New Zealand and while little used in Australia, has been applied in cases related to defacement of cultural heritage. Building on a first inquiry by Hamilton (2008), an exploration could be made on how restorative justice is applied in cases of environmental crime elsewhere and its applicability with Australian environmental laws and sentencing practices. Finding from this research could be used to evaluate how and under what circumstances restorative justice might be administered for incidents of environmental wrongdoing and the proposed benefits of doing so.

Environmental crime prevention

This report purposefully avoided any major discussion of models of crime prevention and preventative measures adopted in Australia, as it represented the one area where scrutiny would be best served in a complementary report. As stated earlier, regulatory agencies have made a conceptual shift towards prevention but as White (2008b) points out, the design and implementation of preventative strategies is complicated because of the nature of environmental crimes. Some questions raised by White include:

- When do we address environmental crimes as mandated in statutes and when do we consider environmental harm that is still 'legally condoned'?

- Under what circumstances does the precautionary principle need to be applied and how do we evaluate what those circumstances might be?
- What is the best way to address the different harms individual crimes produce and the differential range in scale, motivation and technique environmental crimes are characterised by?
- When should prevention refer to minimisation and when to eradication?

Any development of environmental crime prevention needs to consider these questions, as well as being mindful that the 'specificity of the harm should (always) drive the type of intervention' created (White 2008b: 4).

A two-step research agenda on crime prevention is valuable. The first, generally exploratory study would consider environmental crime as 'a whole' and extrapolate how the tenets of crime prevention—situational crime prevention, routine activities theory, rational choice theory and crime prevention through environmental design—have been used and could be used to minimise and prevent environmental harm. A focus study would then examine a specified offence or category of offences to provide evidence for a tailored approach to preventing that type of environmental crime and to emphasise the intricacies of designing preventative strategies for such crimes.

Assembling the portfolio

This chapter has proposed areas of research identified as missing from the published collection of environmental crime research and just as importantly, judged as feasible in their undertaking. The next decision is whether to connect these potentially disparate topics under a thematic umbrella. White (2008b) made the observation that the development of crime prevention strategies are strengthened if supplemented with studies such as scoping analyses of regulatory procedure and relationships, and harm analysis. An obvious approach would be to focus on a specific environmental harm or category of environmental crime, in order to create a comprehensive analysis of its characteristics and implications, and the array of current and potential preventative, enforcement and punishment responses.

A number of the research topics proposed above would lend themselves to forming a concise set of core analyses on a selected category of harm—the audit of regulatory practice, historical and harm analysis, methodologies of offending, sentencing statistics and examination of crime prevention strategies. One topic might be illegal waste (including e-waste) but areas of intransigence (native vegetation clearance, water theft) or areas of consistent criminal activity (illegal fishing) are just as viable. Alternatively, research topics could be married together under broader themes (for example, harm to biodiversity), connecting the criminal component with the wider and longer-term impact on ecological viability.

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Appendix

Table A1 Participants to the Environmental crime roundtable, Australian Institute of Criminology, 24 February 2009

Dr Lorraine Elliott	Department of International Relations, Research School of Pacific and Asian Studies, Australian National University
Dr Rob White	School of Sociology & Social Work, University of Tasmania
Dr Robyn Bartel	School of Human and Environmental Studies, University of New England
Justice Brian Preston	The Land and Environment Court of NSW
Representatives from:	Department of Environment, Water, Heritage and the Arts
	Department of Agriculture, Fisheries and Forestry
	Australian Maritime Safety Authority
	National Water Commission
	Australian Federal Police
	Environment Protection and Regulation Group, NSW Department of Environment and Climate Change
	Environmental Protection Agency Victoria
	Environmental Protection Agency Queensland
	Environment Protection Authority South Australia
	Department of Environment and Conservation Western Australia
	Environment Protection and Heritage, Environment ACT

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Environmental crime encompasses a wide range of activities and behaviours, from carelessness to deliberate acts, that result in environmental harm. This report provides a comprehensive overview of environmental crime as it is perpetrated, detected and dealt with in Australia.

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