The impact of recreational boats around whales and dolphins in their Australian habitats

A preliminary review for the International Fund for Animal Welfare

Revised 24th May 2012

Margi Prideaux, Migratory Wildlife Network
May 2012
The impact of recreational boats around whales and dolphins in their Australian habitats: A preliminary review for the International Fund for Animal Welfare

Margi Prideaux, Migratory Wildlife Network
Revised 24th May 2012

Contents

| 1. | Executive summary | 4 |
| 2. | Introduction | 6 |
| 2.1 | A note about methodology | 6 |
| 3. | International research about boat disturbance of whales and dolphins | 7 |
| 3.1 | Example 1: Resident orca | 8 |
| 3.2 | Example 2: Small bottlenose dolphin populations | 8 |
| 3.3 | Example 3: Migrating whales | 9 |
| 3.4 | A note on boat collisions | 9 |
| 4. | Whales and dolphins at risk in Australia | 10 |
| 4.1 | Distribution of whales and dolphins in Australia | 10 |
| 4.2 | Critical habitat | 10 |
| 4.3 | Humpback whales | 10 |
| 4.4 | Southern right whales | 10 |
| 4.5 | Blue whales | 11 |
| 4.6 | Dwarf minke whales | 11 |
| 4.7 | Bottlenose dolphin | 11 |
| 4.8 | Common dolphins | 11 |
| 4.9 | Australian snubfin dolphins | 12 |
| 4.10 | Indo-Pacific humpback dolphins | 12 |
| 5. | Recreational boat interactions with whales and dolphins in Australia | 12 |
| 5.1 | Recreational boats around Australia | 13 |
| 5.2 | Boat noise characteristics | 13 |
| 5.3 | Boat use distance from shore | 15 |
| 5.4 | Projected increases in types of boats | 16 |
| 5.5 | A note on pollution | 16 |
| 6. | Boats, whales and dolphins in Commonwealth waters and Australian Territorial waters | 17 |
| 6.1 | The rules and guidelines for Commonwealth waters and Australian Territorial waters: The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and the Australian National Guidelines for Whale and Dolphin Watching | 17 |
| 6.2 | Recreational boats in Commonwealth waters | 19 |
| 6.3 | Species likely to be most affected | 19 |
| 6.4 | Public accessibility of the National Guidelines | 19 |
| 7. | Boats, whales and dolphins in New South Wales | 20 |
| 7.2 | Recreational boats in New South Wales | 20 |
| 7.3 | Species most affected | 20 |
| 7.4 | Public accessibility of the New South Wales rules | 20 |
| 8. | Boats, whales and dolphins in Queensland and the Great Barrier Reef | 21 |
Recreational boats in Queensland 21
Species most likely to be affected 22
Public accessibility of the Queensland rules 22

**[9.]** Boats, whales and dolphins in South Australia 22
The rules for South Australia: *National Parks and Wildlife (Protected Animals—Marine Mammals) Regulations, 2010* and *Adelaide Dolphin Sanctuary Act, 2005* 22
Recreational boats in South Australia 23
Species most likely to be affected 23
Public accessibility of the South Australian rules 23

**[10.]** Boats, whales and dolphins in Tasmania 24
The guidelines for Tasmania: *Whale Watching Guidelines* 24
Recreational boats in Tasmania 24
Species most likely to be affected 24
Public accessibility of the Tasmanian guidelines 24

**[11.]** Boats, whales and dolphins in Victoria 25
Recreational boats in Victoria 25
Species most likely to be affected 25
Public accessibility of the Victorian rules 25

**[12.]** Boats, whales and dolphins in Western Australia 26
The regulations for Western Australia: *Wildlife Conservation (Close Season for Marine Mammals) Notice 1998* 26
Recreational boats in Western Australia 26
Species likely to be most affected 26
Public accessibility of the Western Australia regulations 27

**[13.]** Effectiveness of the National Guidelines 27
Public profile 28
Prosecutions 28
Review of the National Guidelines 29
The findings of Operation CETUS 29
Investigating the situation in the Northern Territory 31

**[14.]** Findings and recommendations of this review 31
The National Guidelines 31
Better profile for the Guidelines and Rules around Australia 31
Education 32
Critical habitat 32
Scientific research 33
Investigating the situation in the Northern Territory 33

**[15.]** References 34

**[16.]** Annex 37

---

**Tables**

Table 1: Number of registered recreational boats in Australia 13
Table 2: Percentage of registered recreational boats in New South Wales and Queensland 13
Table 3: National Guidelines organized into two categories — Tier 1 and 2 17
Table 4: Tier 1 approach distances and operating procedures for whales and dolphins 18
Table 5: Additional Tier 1 elements 18

**Figures**

Figure 1: Distribution of boat (ship and boat) noise peak frequencies by type 14
Figure 2: Boat operation distance from shore 16
Figure 3: Sub-percentage of boat operation distance from shore by boat size 16
Executive summary

As more and more people spend time on the water with each passing year in Australia, whale and dolphin populations will be increasingly encroached upon. Unlike commercial whale watching, recreational boats are not capped, coordinated or restricted to a schedule, and it is easy for each individual boat skipper to see their ‘chance encounter’ as an isolated incident, when it might be one of many for the whale or dolphin community or population on any given day.

However, research from around the world is revealing that the experiences of whales and dolphins around boats is a complex picture, suggesting we need to reassess our assumptions about what individual and population level impacts might be. Boats and the noise they generate are entering into habitat important to the animals and avoiding boats is not necessarily a simple issue. Being forced away can have significant consequences. We may need to reassess the way we monitor these impact levels and the mechanisms we employ to reduce them.

This review attempts to set these areas in a context, by first describing what is known about whale and dolphin avoidance behaviours and the likely impacts that disturbance can cause. Even if all boat skippers operate within the boundaries of the National Guidelines, interactions with boats can still impact whales and dolphins. Avoiding boats can elevate whale and dolphin metabolic rates and force them to use more energy; they may shift their tactics to cope with the disturbance; group structures might change; in the worst cases individuals or populations may abandon places that have been important to them for feeding, breeding or resting – their critical habitat. Serious long-term impacts may lead to nutritional stress or reduced reproductive success, putting their young, their communities and in some cases their whole population at risk.

The review then seeks to highlight the species likely to be encountered in different parts of Australia and then juxtaposes this with information about number of recreational boats and their management in each of the Australian jurisdictions.

As there is currently no sustained and long-term investigation into the rate and impact of interactions between recreational boats and whales and dolphins in Australia it is impossible to exactly quantify the current extent of the problem. However, when compared to the size of the commercial whale watching fleet, the sheer number of recreational boats indicates a significant presence on the water - a presence that is largely unaware that they may be having an impact. Operation CETUS was the first significant operational effort made by all the governments of all jurisdictions across Australia to raise the profile of the Australian National Guidelines for Whale and Dolphin Watching. During this time 340 recreational boats were directly contacted. They found that these boat operators had only a limited understanding of the approach limits, although there was some understanding that ‘laws’ might exist, even if this knowledge was incomplete or incorrect. While 340 contacts in one year is a commendable outcome, it still represents a tiny fraction of one percent (0.0004%) of the total number of recreational boats in Australia today.

The sheer numbers of boats, the diversity and distributions of whale and dolphin species around the coastline, and the predictions that recreational boat use is growing in many jurisdictions all provide a solid foundation for considerable concern.

This review puts forward 12 key recommendations:

1. The amended National Guidelines should be adopted into legislation in each state jurisdiction, as one consistent set of rules around the country, being applied through the various state and territory legislative mechanisms.
2. Victoria’s greater distance rules and Queensland’s mandatory reporting rules should be considered for adoption in the National Guidelines.
3. Cumulative boat noise should be considered within the context of the National Guidelines review.
4. ‘No wake speed’ should be adopted around the country, rather than slow speed limits, as this ensures the lowest level of propeller noise from different classes of boats.
5. Operation CETUS should systematically cover every jurisdictions in Australia – both inshore and offshore - and ensure that information is disseminated and data is collected on a wide range of whale and dolphin populations around the Australian coastline.
6. Questions about the regulations or guidelines should be included in all boat licence tests around Australia.
7. A national focal point should support communication of the regulations and guidelines to the public, by providing a national hotline and readily identifiable website that:
   - explains the rules in simple language and ensures that people reporting incidents are connected with the right government departments; and
provides advice on the information needed by government authorities from members of the public in order to successfully prosecute cases. This national hotline and national website should be profiled in each jurisdiction’s boat safety handbooks and government websites.

8. Systematic education of rangers, enforcement officers and policy officials about the potential impact of recreational boats on a wide range of whale and dolphin populations should be considered a priority.

9. **Important Cetacean Habitat Areas** should be declared in each jurisdiction, and **Tier 2: Additional Management Considerations** should be then articulated for these critical habitats.

10. Passive acoustic studies should be carried out in critical habitats, in each geographic and geological region, for key populations of whales and dolphins around the Australian coastline.

11. The impact of recreational boats should be integrated into the development of a national cetacean research prospectus to better target limited funding.

12. The level of boat activity and potential interaction should be systematically investigated by government agencies in the Northern Territory.

Australia has some of the finest wildlife protection legislation in the world and it is important it is used for the benefit of those it was created to serve – the wildlife that share Australia with us all.
[ 2. ] Introduction

Around the world, more and more people are experiencing the delight of watching whales, dolphins and porpoises in the wild. Whale watching is a fast growing industry, encouraging people to protect these animals and their habitats. Between 1998 and 2008, the number of whale watchers grew from 9 million to 13 million, making it one of the fastest developing tourism industries (O’Connor et al 2008).

IFAW has long championed well managed whale watching, knowing such industries support local economies and whale conservation together. IFAW has actively: assessed and helped build the potential for whale watching through research on whale distribution patterns from IFAW’s research boat, Song of the Whale; worked with governments and tourist industries to analyze the regional potential for whale watching to ensure they are based on responsible whale watching regulations; produced and distributed educational materials on whales and coordinated research protocols and projects associated with whale watching; and conducted seminars, operator-training workshops and information-exchange meetings to promote the whale watching industry and ensure minimal disturbance to whales (Hoyt 2001; Birnie & Moscrop 2007; O’Connor et al 2008).

IFAW was also deeply involved in the development of the Australian National Guidelines for Whale and Dolphin Watching. In large part because of the pressure that IFAW has placed on government, most of the jurisdictional guidelines and regulations in Australia compare well against world standards, and while there is room for improvement Australia’s commercial whale watching industry is comparatively well monitored and the Australian governments appear committed to reducing the impact on whales and dolphins.

It is legally an offence to deliberately harass a whale or dolphin in any Australian jurisdiction. In addition to potentially strong Commonwealth laws, each state and territory now also has guideline or regulations about managing interactions with whales and dolphins, and efforts are being made to educate the public about their responsibilities. However, there is a perception that ‘impact’ is limited to intentional harassment (deliberately chasing animals or making physical contact) and that impact is not occurring if the guidelines or regulations are followed. It is therefore important to consider the international research to determine if this is so.

IFAW’s credentials are strong and the organization is well placed to independently investigate the other side of whale watching - the adhoc and unmanaged interactions recreational boats users have with whales every day around Australia. It is therefore appropriate that IFAW has commissioned this initial review to assess the potential for impact from recreational whale and dolphin watching as well as the incidental relationship that recreational boats have with whales and dolphins around the Australian coastline.

A note about methodology

This review has been completed through a combination of: desk-top analysis and telephone interviews. The desk top analysis has focused on international information about impact and on Australian guidelines and regulations, their continuity and their accessibility to the public. Limited interviews with Australian government departmental staff focused on the application of the National Guidelines as they pertained to recreational boaters in their state. In assessing the accessibility of information, the approach was twofold. An initial internet search was conducted using key words such as ‘whales and boats’, ‘rules around whales’, ‘distances from whales’, ‘distances from dolphins’, ‘whale watching in …’ etc, as well as following the easily accessible navigation on government websites. The purpose of this was to determine how simple it would be for the general public to find the information themselves. A more thorough search was then conducted as well a telephone interviews to find specific information about the jurisdiction’s guidelines or regulations, and how well aspects of the National Guidelines were working in different contexts. An appropriate snapshot of rangers, compliance officers in both environment and transport departments, and policy officers was achieved.

It must be stressed, that while the review is sometimes critical of the accessibility of information on government websites, this is intended simply to indicate where more accessible information might be beneficial. It is easy to find information when you know what you are looking for, but more difficult if the question is new to you.

A list of questions asked of various government officials is available in the Annex. While every attempt has been made to accurately represent comments and perspectives, all information indentifying individuals has been deliberately omitted to ensure accidental misrepresentation does not occur.

No attempt has been made to assess the impact of commercial whale watching.
Long-lived animals which have complex social structures, such as whales and dolphins, can be impacted by interactions with boats in many different ways. Behavioural changes, if of sufficient severity and frequency, can affect the health of individual animals, their communities and ultimately their populations (Mann et al. 2000). Depending on the species and the frequency of the impact, short term disturbance can become more serious long-term impact, like the abandonment of important habitat, habituation to detrimental behaviour, or physiological conditions such as nutritional stress or reduced reproductive success. In time the viability of the whole population can be put at risk (Constantine, Brunton, and Dennis 2004; Gill, Norris, and Sutherland 2001; Gregory and Rowden 2001).

Researchers studying the responses of whales and dolphins often use behaviour cues to help them detect if something is disturbing animals. These cues focus on changes in group structure including if different individuals are grouping together more than when boats are not around, or if particular animals are suddenly missing from the group (Nowacek, Wells, and Solow 2001). They also look for different individual movements from each animal, such as attempts to get away from boats or perhaps noise boats are making, stopping feeding or abandoning parental care (de Fatima Filla and de Araujo Monteiro-Filho 2009; Lemon et al. 2006; Stensland and Berggren 2007). It is interesting to realize that some of the boat avoidance behaviours are the same as those used to get away from predators (Jenkins, Brown, and Phillips 2009; Steckneuter, Harcourt, and Möller 2012).

The impact that boats can have around whales and dolphins is not only caused by direct contact or intentional interaction. Researchers have found that the noise made by boats can also impact whales and dolphin to a significant degree, masking communications between animals. Sound travels significant distances in the marine environment and many marine mammals, including whales and dolphins, rely heavily on sound for important life functions, including communicating, breeding and foraging. The marine environment already has a significant level of natural background sound generated by wind, waves, geological activities and many marine species. Whale and dolphin reliance on sound means that exposure to additional noise can have detrimental effects on these life functions. Orcas, for instance, have been recorded increasing the length and volume of their communications to overcome the ‘masking’ created by the noise of nearby boats (Foote, Osborne, and Hoelzel 2004). A small boat travelling at 5 knots in shallow water has been shown to reduce the communication range of bottlenose dolphins within 50 metres by 26 percent. Animals exposed to a similar boat and speed, but in a quieter deep-water could have their communication range reduced by 58 percent. Not surprisingly, increased boat noise at higher speeds drastically exacerbates the impact on the communication range (Jensen et al. 2009).

To give these figures some context, imagine the impact that similar noise would have on a hypothetical human family in their home, if between a quarter and two-thirds of their communications were not heard. This might be fine occasionally, but if it happened for a sustained number of hours, every day over a number of weeks or months, such exposure would begin to have measureable detrimental impacts on the welfare of individuals and the family unit.

Avoiding boats is not necessarily a simple issue either. Boats and the noise they generate are entering into habitat important to the animals. Being forced away from that habitat can have significant consequences. The energy demands (metabolic rate and use of energy reserves) of some avoidance techniques the animals use can also have an impact. Individual animals may be forced to make energetic trade-offs, or to shift their tactics to cope with the disturbance. In some instances short-term avoidance tactics may lead individuals or populations to abandon places that have been important feeding, breeding or resting grounds (critical habitats). When individuals are forced to remain around something that is disturbing them, such as boat traffic, regular harassment or boat noise, their fitness and their reproductive success can be reduced (Bejder, Dawson, and Harraway 1999; Duprey, Weir, and Würsig 2008; Frid and Dill 2002; Jenkins, Brown, and Phillips 2009; Lusseau and Bejder 2007).

Researchers have extrapolated information regarding stress responses in other species to marine mammals to determine the extent to which noise acts as a stressor to marine mammals. They specifically looked at prolonged exposures to stressors (including those induced by noise) and found that extended stress response include suppression of reproduction (physiologically and behaviourally), acceleration of aging and sickness-like symptoms. They determined that interpretation of a reduction in behavioural responses to noise as acclimation will be a mistake in many situations and they have recommended that effects of cumulative and synergistic responses to stressors is important and should not be dismissed lightly (Lusseau and Bejder 2007; Rolland et al. 2012; Wright AJ. et al. 2007).
Three different types of whales and dolphins, all found in Australian waters, are briefly profiled to provide an illustration of the research findings surrounding noise, avoidance behaviour, cumulative impact and their implications.

**Example 1: Resident orca**

One of the most studied populations of whales and dolphins in the world not surprisingly provides some of the most concrete evidence that caution needs to be applied in relation to boats interacting with whales and dolphins. Boat traffic has been identified as a conservation concern for the northern resident population of orcas (*Orcinus orca*) in the Johnstone Strait, British Columbia, Canada. At certain times of the year, boat traffic through the strait averages at least 13 boats an hour, consisting of both recreational and commercial boats. The exposure of these animals to such significant boat traffic has revealed important insights for similar species, in similar situations, in other parts of the world. Researchers have investigated whether boat presence has altered the orcas’ activities and they found that the orcas did switch from one activity to another; that the animals reduced their time spent feeding and the time spent rubbing their bodies on smooth pebble beaches (an important activity in orca communities). The researchers estimated that the lost feeding opportunities alone might have resulted in almost 20 percent less energy intake (Williams, Lusseau, and Hammond 2006). Other researchers have sought to determine how different orcas’ responses to boats can be used to inform wildlife-viewing guidelines. These studies found that orcas responded quite differently to different numbers of boats in their vicinity. The swimming paths of the orcas became more convoluted when a few boats approached, but were straighter when more than three boats approached. The researchers have cautioned that even a few boats may be having an impact on sensitive populations (Williams and Ashe 2007). This information highlights that each response needs to be considered in context and that responses can be complex.

In the Robson Bight - Michael Bigg Ecological Reserve, British Columbia, Canadian orcas spend significantly more time near the rubbing beaches than anywhere else. However, these orcas moved to other areas of the Reserve or left the Reserve entirely when boats were present, and were more sensitive to boats near the rubbing beaches than anywhere else in the Reserve (Trites et al. 2007). In a later study, focused on the southern resident orcas in San Juan Island, Washington, USA, the reaction of the orcas to the presence and absence of boats at two different sites was also investigated. These researchers found that the orcas behaved differently in the presence of boats, and most importantly that they spent less time foraging for food, raising concern that boat exposure is having biologically significant consequences for the animals (Lusseau et al. 2009).

**Example 2: Small bottlenose dolphin populations**

Similar concerns about the presence of boats having an impact on whales and dolphins have been raised about other species. Bottlenose dolphins (*Tursiops truncatus*) in Doubtful Sound, New Zealand have been studied to determine their reactions to boats. Researchers found that the dolphins spent longer periods of time underwater; a behaviour thought to be a typical bottlenose dolphin response to avoiding predators, but one that costs the dolphins more energy than their usual swimming pattern. It is interesting to note that these dolphins started to react before boats were in visual range and that males and females from the same group responded differently to the boats. The male dolphins started to avoid boats as soon as they were present, while the female dolphins reacted when the boats became intrusive. Researchers think the different reactions between the sexes may be because the male dolphins have greater energy reserves that might allow them to respond earlier, whereas the female dolphins delayed their reaction to save valuable energy (Lusseau 2003).

Researchers have found that boats approaching bottlenose dolphins in Shark Bay, Western Australia also prompted reactions from the animals. In the presence of boats these dolphins compacted into a tighter group and their speeds and direction were more erratic. Once again, when there were fewer boats involved the reactions of the dolphins were stronger and longer-lasting than when similar groups were exposed to more boats at the same time. It might be easy to infer from this that long-term boat activity within a region habituates the animals and that there is no detrimental effect on resident dolphins. However, another study has shown that long-term boat activity around these dolphins has contributed to a long-term decline in dolphin numbers. It is possible that more sensitive dolphins were forced to leave the region. These researchers have used these findings to highlight that short-term behavioural responses are not sufficient indicators to measure impact (Bejder et al. 2006).

Another study focused on measuring the impacts of personal watercraft (more commonly known as Jet Skis, WaveRunners or Sea-Doos) on Atlantic bottlenose dolphin in the Mississippi Sound, USA and found that when personal watercraft were nearby the dolphins spent significantly longer periods of time...
underwater, using greater energy stores. These animals also travelled tightly together, breathing in unison. Many dolphins either left the area or ceased feeding in the watercraft’s presence. All these impacts could have long-term detrimental effects (Miller, Solangi, and Kuczaj 2008).

Bottlenose dolphins are renowned for approaching and interacting with boats – bow-riding, wake-riding, and engaging it what seems to be sustained contact. However, researchers have found that relatively small proportions of individuals within a population engage in this interactive behaviour (22 percent of the groups observed). During interactions these dolphins also emitted a diverse repertoire of whistles with a high repetition rate suggesting that either the group cohesion was affected or that there were higher levels of excitation. It is easy to presume that such interactions are positive, but these researchers are urging caution to ensure that dolphin-watching activities do not negatively impact social cohesion and long-term survival of dolphin populations (Hawkins and Gartside 2009).

The impact of commercial dolphin-watching boats on the small population of bottlenose dolphins in Port Stephens, New South Wales, Australia, has been shown to alter the dolphin population’s behaviour and energy use, and while not specific to recreational boat use, the information remains relevant. Researchers have found that the dolphins spent only a third of their usual time feeding and almost half their usual time socializing, spending their time instead milling, but never at rest in the presence of the boats. The impact on behaviour was much higher with boats at a distance of 50 metres than at a distance of 150 metres. Another important element of the research findings relates to the high rate of approach, with boats approaching each dolphin group three times per day in winter and six times in summer. The researchers have recommended that additional exclusion zones should be considered to reduce pressure on dolphins undertaking critical activities such as feeding and resting (Steckenreuter, Möller and Harcourt 2012; Steckenreuter, Harcourt and Möller 2012). This suggests that consideration should be given to the overall impact of cumulative interactions dolphins and whales may experience in busy boating areas from many separate and isolated boat approaches by recreational boat users.

Example 3: Migrating whales

In a study of the reactions of humpback whales (*Megaptera novaeangliae*) to whale-watching boats during their southward migration along the south coast of New South Wales, Australia, researchers found that some individuals showed obvious signs of moving away from boats, whereas others approached boats, seemingly initiating interactions. Calf pods were more sensitive to the presence of boats, and dive times and the overall percentage of time whales spent submerged were higher in the presence of boats, but breathing rate intervals did not differ. Whales were more likely to avoid a boat moving within 100 metres (Stamation et al. 2010).

Similar studies were conducted in New Caledonia and researchers found that whales significantly increased their dive time and changed their direction when boats were within 1000 metres. These researchers have suggested that these avoidance strategies also resemble what would be expected from humpback whales when avoiding predators, and that like orcas and bottlenose dolphins the greater use of energy could have longer term implications for humpback whales. Likewise, researchers found in the Machalilla National Park, on the coast of mainland Ecuador, the short-term reactions of humpback whales to whale watching boat activity typically seen in this area were similar to those of New Caledonia (Corkeron 1995; Schaffer et al. 2009; Scheidat et al. 2004).

Similar conclusions are being drawn in studies of southern right whales (*Eubalaena australis*) in Peninsula Valdés, Argentina. Resting and socializing significantly decreased and travelling activities significantly increased when boats approached (and when swimmers entered the water). Whales swam faster, reoriented more often, and changed their direction during these interactions. Effects were greater for mother/calf pairs than for juveniles. As with other whales and dolphins, increased levels of activity are a concern for the whales that are resting and not feeding in this area (Lundquist 2007).

A note on boat collisions

Collisions with ships are a well-documented conservation problem for some populations of large whales in the Northern Hemisphere. Less attention has been given to incidents in the Southern Hemisphere or to collisions with whales and dolphins by smaller boats worldwide. Species that may be impacted from collisions include bottlenose dolphins, orca, short-finned pilot whales (*Globicephala macrorhynchus*) and pygmy sperm whales (*Kogia breviceps*), however, vast underreporting is thought to be the norm and so it is difficult to ascertain the severity of this impact (Berman-Kowalewski et al. 2010; Reeves et al. 2003; Van Waerebeek et al. 2007).
Distribution of whales and dolphins in Australia

The waters around Australia range from the warm tropical waters of northern Australia to the cooler waters around the southern coastline and the colder subantarctic waters and Antarctic waters.

At least 45 species of whales, dolphins and porpoises (Order: cetacean) are found in Australian waters including ten large whales, 20 smaller whales, 14 dolphins and one porpoise (Department of Sustainability Environment Water Population and Communities 2012).

Small whales, dolphins and porpoises can generally be grouped as those found in shallow waters close inshore as well as rivers and estuaries; those occurring most commonly in nearshore waters over the continental shelf; and the truly open ocean species seldom encountered close to land. The relevance of these groupings becomes pertinent when considering the distance from shore that recreational boats generally travel. Orcas occur in all waters though they are most abundant in the southern oceans. The other wide ranging species, the bottlenose dolphin, occurs in all but the colder waters. The migrating whales such as southern right, blue or humpback whales travel along the coastlines on a seasonal basis coming into Australian waters from elsewhere to either breed or feed (Department of Sustainability Environment Water Population and Communities 2012).

Critical habitat

Critical habitat refers to those parts of a whale or dolphin's range that are essential for day-to-day survival of the individual, population or species, as well as for maintaining a healthy population growth rate. Areas that are regularly used for feeding (including hunting), breeding (all aspects of courtship) and raising calves, as well as, sometimes, migrating, are part of critical habitat, especially if these areas are regularly used (Hoyt 2011).

Unlike land-based critical habitat, however, marine critical habitat boundaries may be less fixed, especially in terms of hunting and feeding areas which are dependent on upwelling and other ever changing oceanographic conditions. Some whales, for example, are known to feed in and around upwellings, which vary depending on local and large-scale oceanographic conditions to some extent during a season and from year to year (Hoyt 2011).

Noting that there are 45 or more species of whales and dolphins in Australian waters, a few species more likely to be encountered by recreational boats are featured below, and what is known of their critical habitats described.

Humpback whales

The migratory pathways and recognized resting and gathering areas for humpback whales utilizing Australian waters are well known along the western and eastern coastlines of Australia, and humpback whales are present in various places from April through to December each year. The known critical habitat for humpback calving includes the Southern Kimberley between Broome and the northern end of Camden Sound, the Great Barrier Reef complex between approximately 14° S and 27° S and sometimes along the migratory pathways (Department of the Environment, Water, Heritage and the Arts 2008b; Department of Sustainability, Environment, Water, Population and Communities 2012a). Along parts of the migratory route for humpback whales in Australia there are narrow corridors and bottlenecks resulting from physical and other barriers where the majority of the population passes close to shore (within 30 kilometres of the coastline). These habitat areas are important during the time of migration and include Geraldton/Abrolhos Islands, and Point Cloats to North West Cape in the west, and the east of Stradbroke Island, and east of Moreton Island in the east. Key resting areas are Exmouth Gulf, Shark Bay, Geogrape Bay, and waters adjacent to the Houtman Abrolhos Islands in the west and the Whitsundays, Hervey Bay, Moreton Bay, the Swain Reefs complex, Bell Cay, and the Palm Island Group (Department of the Environment, Water, Heritage and the Arts 2008a). Humpback whales’ near shore habitat preferences for their calving and breeding grounds, their rest stops during migration, and their easy and iconic identification make them vulnerable to disturbance from boats.

Southern right whales

Southern right whales are seasonally present on the Australian coast between May and November each year. Southern right whales have been recorded in the coastal waters of all Australian states with the
exception of the Northern Territory although they are mostly found around the southern coastline off southern Western Australia and South Australia. Significant critical habitat areas include their calving grounds at Doubtful Island Bay, Israelite Bay, Twilight Cove, Flinders Bay, Albany/Cape Riche area, Yokinup Bay/Cape Arid area in Western Australia; the Head of Bight and increasingly areas around Encounter Bay, Fowlers Bay and Sleaford Bay in South Australia; Warumbool, Port Fairy and Portland in Victoria; and Maria Island and Bruny Island, in Tasmania. Southern right whales appear to prefer to calve in a water depth of less than five metres, with a sandy bottom and close to shore (Department of Sustainability, Environment, Water, Population and Communities 2012b). Their near shore habitat preferences for calving and breeding make them vulnerable to disturbance from boats.

**Blue whales**

Blue whale (*Balaenoptera musculus*) sightings in Australian waters have been widespread and are increasing. It is likely that the whales occur right around the continent at various times of the year. Known areas of critical habitat for blue whales in Australia are their feeding grounds which they visit between November and April around the southern continental shelf, notably: the Perth Canyons, in Western Australia; the Duntroon Basin, South Australia; and the Bonney Upwelling between Robe in South Australia and Cape Otway in Victoria. Blue whales are known to lunge feed at or near the surface as well diving to varying depths to feed (Department of Sustainability, Environment, Water, Population and Communities 2012c). Surface feeding could make the whales vulnerable to entanglement and disturbance from boats.  

**Dwarf minke whales**

Dwarf minke whales (*Balaenoptera acutorostrata* unnamed subsp) are known to occur as far north as 11° S in Queensland from March to September and likely occur up the west coast to similar low latitudes. The southern distribution of dwarf minke whales extends down to approximately 41° S. Australian dwarf minke whales appear to be distributed close inshore, but it is possible they are also on the continental shelf in relatively shallow waters, out to 200 metres deep. Insufficient information exists as to how Australian dwarf minke whales use their habitat as no specific feeding or breeding grounds have been discovered off Australia. Dwarf minke whales are known for their apparent ‘curiosity’, and unlike the closely related common (*Balaenoptera acutorostrata*) or Antarctic minke whales (*Balaenoptera bonaerensis*), they often come from afar to cross the bow or run with boats (Department of Sustainability, Environment, Water, Population and Communities 2012d). This behaviour makes them vulnerable to disturbance from boats.  

**Bottlenose dolphin**

Two species of bottlenose dolphin are presently recognized - the Indian Ocean or Indo-Pacific bottlenose dolphin, (*Tursiops aduncus*) and the common bottlenose dolphin (*Tursiops truncatus*). A third may be determined in the future, but at the very least is identified as a separate population - the spotted bottlenose dolphin in the Arafura and Timor Sea. Bottlenose dolphins are found widely around Australia, both inshore and offshore. They inhabit inshore areas such as bays, lagoons, fjords and estuaries, and nearshore (open coast) and offshore environments, including the coast of oceanic islands. They are associated with many types of habitats, including mud, sand, seagrasses, mangroves and reefs (Department of Sustainability, Environment, Water, Population and Communities 2012e; 2012f; 2012g). While Indian Ocean bottlenose dolphins show both year-round residencies in small areas, and long-range migrations, many bottlenose dolphin populations in Australia are non-migratory. It is probable that where they are encountered could be considered critical habitat for the species.  

**Common dolphins**

Common dolphins (*Delphinus delphis*) (also known as short-beaked common dolphins) are most often found in offshore waters around Australia, but are rarely seen in northern Australian waters. They appear to cluster in the south-eastern Indian Ocean, along southern Australia and in the Tasman Sea. Information on their habitats is only available from outside of Australia. In most areas where they have been studied, common dolphins appear to occur mainly in medium water depths over the continental shelf, but little is known about those living near or on the edge of the shelf. They have been observed to travel over specific ocean features such as seamounts, ridges and escarpments. In the tropical eastern Pacific they are primarily associated with upwelling-modified habitats. What is known is that they are most often found in areas where surface water temperatures are between 10°C and 20°C, and in habitats also inhabited by small fish such as anchovies and sardines (Department of Sustainability, Environment, Water, Population and
Communities 2012h). It is probable that where they are encountered in Australia could be considered critical habitat for the species.

**Australian snubfin dolphins**

Australian snubfin dolphins (*Orcaella heinsohni*) occur only in waters off the northern half of Australia, from approximately Broome in the west to the Brisbane River in the east. They are found in Cleveland Bay, north-east Queensland and along the Kimberley coast, in Beagle and Pender Bays on the Dampier Peninsula and tidal creeks around Yampi Sound and between Kuri Bay and Cape Londonderry in Western Australia. They share similar habitat preferences with Indo-Pacific humpback dolphins, with these two species potentially occurring in the same areas throughout most of their Australian range. They are primarily found in shallow waters less than 20 metres deep, close to the coast, close to river and creek mouths and in the proximity of seagrass beds. Within such areas, they spend most of their time foraging and travelling, and to a lesser extent socializing (Department of Sustainability, Environment, Water, Population and Communities 2012i). The predominance of foraging activities in these areas indicates that these areas represent critical feeding habitats for these species. Their near shore distribution makes them vulnerable to disturbance.

**Indo-Pacific humpback dolphins**

Indo-Pacific humpback dolphins (*Sousa chinensis*) are known to occur along the northern coastline, extending to Exmouth Gulf on the west coast, and the Queensland/NSW border region on the east coast. The few records between the Gulf of Carpentaria in the north and Exmouth Gulf in the west is probably due to a lack of research effort and the remoteness of the area. Known habitats for Info-Pacific humpback dolphins include the Great Barrier Reef Marine Park, Moreton Bay, the lower reaches of the Brisbane River, and adjacent offshore waters in Queensland. In these areas, resident populations generally occur in water less than ten metres and offshore to six kilometres. They are also known on the western side of Bathurst Head, zoned as a Special Management Area, in the Far Northern Section of the Great Barrier Reef Marine Park. Groups at Tin Can Inlet and Great Sandy Strait in Queensland have been known to approach humans for food. Several groups also appear to be resident within Ningaloo Reef, Western Australia (Department of Sustainability, Environment, Water, Population and Communities 2012j). The predominance of foraging activities in these areas indicates that these areas represent critical feeding habitats for these species. Their near shore distribution makes them vulnerable to disturbance.

### 5. Recreational boat interactions with whales and dolphins in Australia

The Australasian Environment Law Enforcement and Regulators Network (AELERT) Operations Cluster consists of jurisdictional representatives from environment agencies for each Australian state and territory as well as the Commonwealth and New Zealand government. AELERT conducted Operation CETUS between the end of May and November 2011, engaging in compliance and enforcement activities relating to the *Australian National Guidelines for Whale and Dolphin Watching* (see Section six). This required a significant operational effort by all jurisdictions across Australia with a total of 123 separate compliance and enforcement activities being carried out, ranging from boat based patrols on the water and speaking to recreational boat owners at boat ramps through to covert surveillance operations on commercial whale watching boats. During the seven months, Operation CETUS was in direct contact with 340 recreational boat skippers around the country. They found that recreational boat operators were not aware of the *Australian National Guidelines for Whale and Dolphin Watching*, and that there was limited understanding of approach limits within the recreational boating community, although there was some understanding that there were ‘laws’ relating to distances even if this knowledge was incomplete or incorrect (Australasian Environment Law Enforcement and Regulators Network 2012).

It is timely and important that these Australian government jurisdictions are committing to this type of engagement and it is vital that the commitment continues as the sheer number of recreational boats in Australia indicates a significant task is ahead.
Recreational boats around Australia

An extensive survey conducted in 2000 found that of the then 7.2 million Australian households an estimated eleven percent owned at least one recreational boat, and the total number of recreational boats Australia wide was estimated to be over 900,000 (this may include un-registered boats). In a similar period, there were also more than 5,500 recreational ships (greater than 24 metres) registered in Australia.

A more contemporary review of available literature conservatively finds around 832,065 recreational boats in Australia (see Table 1, below). It is probable that the actual number, including unregistered boats, is somewhere between the two gross numbers. The greatest percentages of recreational boats are in Queensland, New South Wales and Victoria respectively.

Table 1: Number of registered recreational boats in Australia

<table>
<thead>
<tr>
<th></th>
<th>Approximate number of registered recreational boats (less than 24m)</th>
<th>Approximate number of recreational ships (greater than 24m)</th>
<th>Approximate total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland</td>
<td>233,600</td>
<td>1,727</td>
<td>235,327</td>
</tr>
<tr>
<td>New South Wales</td>
<td>228,643</td>
<td>1,862</td>
<td>230,505</td>
</tr>
<tr>
<td>Victoria</td>
<td>172,847</td>
<td>707</td>
<td>173,554</td>
</tr>
<tr>
<td>Western Australia</td>
<td>93,244</td>
<td>642</td>
<td>93,886</td>
</tr>
<tr>
<td>South Australia</td>
<td>51,844</td>
<td>284</td>
<td>52,128</td>
</tr>
<tr>
<td>Tasmania</td>
<td>29,370</td>
<td>287</td>
<td>29,657</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>11,717</td>
<td>296</td>
<td>12,013</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>10,800</td>
<td>N/A</td>
<td>10,800</td>
</tr>
<tr>
<td>Australia wide</td>
<td>832,065</td>
<td>5,805</td>
<td>837,870</td>
</tr>
</tbody>
</table>


When compared to the size of the commercial whale watching fleet, the sheer number of recreational boats indicates a significant presence on the water – a presence that has not, as yet, been systematically assessed for its impact on whales and dolphins around the Australian coastline.

In the 2000 survey over half of the boats were identified as being used for recreational fishing in the twelve months prior to the survey completion. The survey focused further on this half of the recreational fleet, however the data still provides a useful guide to consider the level of interactions between whales and dolphins and recreational boat users. Of these indentified recreational fishing boats, 60 percent were between four to five metres. Boats under four metres accounted for about 15 percent of the recreational fishing fleet (76,000 boats) while a further eleven percent (55,000 boats) ranged from six to seven metres in length. Large boats (greater than ten metres) represented less than two percent (8,000 boats) of the total recreational fishing fleet. At the lowest end of the size scale, boats were generally non-powered canoes and dinghies, while the largest boats were more likely to be multi-purpose cruisers (Henry and Lyle 2003).

Figures of all recreational boats (fishing and non-fishing) are available for New South Whales and Queensland (see Table 2, below) and give an approximate snapshot of what the Australia wide breakdown might be.

Table 2: Percentage of registered recreational boats in New South Wales and Queensland

<table>
<thead>
<tr>
<th></th>
<th>New South Wales</th>
<th>Queensland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 4 metres</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td>4 to 6 metres</td>
<td>55%</td>
<td>47%</td>
</tr>
<tr>
<td>6 to 8 metres</td>
<td>8%</td>
<td>7%</td>
</tr>
<tr>
<td>8 metres and over</td>
<td>6%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Adapted from: New South Wales Roads and Maritime Services 2012; Blackman and Jones 2010)

Boat noise characteristics

Studies have shown that sound produced by motorized boats contain a set of harmonically related tones. The fundamental frequency of these tones as well the relative amplitudes at the harmonic frequencies are determined by the boat speed, engine type and propeller movement. Classification between the acoustic signature from different types of small boats is a relatively unexplored research area. There
has been a large amount of work on classification between large ships in the past, but for small boats there are limited efforts found in the literature (Maxwell et al. 2010; Ogden et al. 2011; Sorensen et al. 2010).

However, a study conducted in Glacier Bay, Alaska, US in 2000-2002 has provided instructive information on extent of boat noise measured underwater, within one mile (1.6 km) of a fixed position hydrophone. The findings in Glacier Bay were that large boats (slow speed propeller operations, ie passenger ships), on average, were louder than medium (mid-speed propellers, perhaps diesel engine, ie fishing boats) and small boats (high speed propellers, ie pleasure craft, small work boats, semi-rigid inflatable boats), with an average large boat noise level of 98 dB (decibels) being recorded by the hydrophone. The noise generated by small boats was 96 dB as an average, whereas medium boats were 93 dB. Large boats also logged the highest maximum level at 129 dB, whereas the maximum level for both small and medium boats was 126 dB (Kipple 2002).

To assess the frequency content of acoustic energy associated with each boat type, similar plots were developed that show the number of boat samples that had peak levels in each one-third octave frequency band. These plots show whether certain boat types were more likely to produce noise energy in particular parts of the frequency spectrum. Figure 1 (below) illustrates that large boats typically have peak levels at lower frequencies, especially in the 80 to 200 Hz (hertz) bands. Medium boat peak frequencies can be widely distributed, with most peak levels in the 125 to 3150 Hz range. Small boat noise energy typically peaks at frequencies above 800 Hz. This tendency to peak at higher frequencies might be due to the noise character of small, high speed engines and propellers, and the relative inability of small-size sources to radiate noise efficiently at lower frequencies (Kipple 2002). What is most illustrative though is that small boats contribute a significant noise pollution level, and that the presumption that ‘smaller is quieter ‘cannot be sustained.

**Figure 1: Distribution of boat (ship and boat) noise peak frequencies by type** (as represented in Kipple 2002)
To demonstrate how significant the noise generation potential can be, another study measured the noise generated by a single passing Class One power boat (taken during a race in Slovenia) to be 120 dB at 300 metres (Picciulin et al. 2008).

In 2003 and 2005 researchers studying short-finned pilot whales and bottlenose dolphins off the coast of Tenerife, Canary Islands, Spain also monitored and recorded boat noise, to document the variability of noise levels experienced by free-ranging bottlenose dolphin and pilot whales. In this study, researchers sought to identify representative boat types more specifically and therefore measured two boats. The first was a six metre aluminum hulled boat equipped with a Mercury two-stroke, 135-horsepower outboard engine. The second boat was a five metre Quintrex aluminum hulled boat propelled by an outboard Yamaha four-stroke, 80-horsepower outboard engine. Each boat was recorded at three speeds (2.5, 5 and 10 knots) and at five distances from the recording platform (10, 30, 50, 100 and 200 metres). They found that in the shallow-water habitat, boats moving at less than three knots did not significantly increase ambient noise levels within bottlenose dolphin frequencies. In contrast, cavitation noise from faster-moving boats resulted in a substantial increase in the ambient noise at ranges, even beyond 50 metres. The lower background noise levels and the use of different whistle frequencies meant that the impacts on the communication range were generally more severe for nearby pilot whales in the deep-water habitat, but also declined faster with increased distance due to the higher spreading loss. The researchers also found that gear changes produced sharp spikes of louder noise (Jensen et al. 2009).

Each of these studies also recorded a wide range of natural (wind, rain, geological, biological) and human generated noise, to ensure the veracity of the information about the potential levels of noise being added to by recreational boats.

This snapshot of research highlights what the impact might be for increasing numbers and speeds of boats in areas with populations of whales and dolphins (Nowacek et al. 2007; Nowacek, Wells, and Solow 2001; Rolland et al. 2012). When considering that many boats means cumulative impact, it is credible to surmise that increasing boat noise will be contributing to reduced habitat quality and highlight the need for similar passive acoustic studies to be carried out in critical habitats, which each have their own geographic and geological characteristics, for whales and dolphins around the Australian coastline.

Measuring cumulative boat noise might be considered as a means for triggering area closures during sensitive times (Wright AJ. et al. 2007). A new area of passive acoustic monitoring is being developed for surveillance systems with wide area coverage (Sorensen et al. 2010; Stolkin et al. 2006). Such systems could be adapted to monitoring the extent of cumulative noise in a given period of time (hours, days or weeks) signalling rangers or officials that temporary area closures are needed. This would provide respite for animals during important life periods such as mating, calving, resting prior to migrations, migrating with young or feeding in restricted habitats, as well as promoting good boating behaviour (slow speeds, good engine maintenance and lower engine noise) among the boating community, as such closures would be a direct response to their activities.

**Boat use distance from shore**

In 2009 another boating usage study for recreational boats in Australia was commissioned by the Australia New Zealand Safe Boating Education Group (ANZSBEG, 2009). The study surveyed participants from each state in Australia on various elements associated with their usage and characteristics relating to their recreational boats. Like the 2000 survey, fishing was found to be the principal activity undertaken by 60 percent of the recreational boats in Australia.

Over half (63 percent) of the surveyed boats operated within sheltered environments such as bays, estuaries, rivers and creeks. For the 30 percent of boats operating offshore (beyond ten nautical miles), most of those (70 percent) operated within ten nautical miles from shore but that the distance from shore varied by boat size - the larger the boat, the further from shore it operated (see Figure 2 and 3). Boats between five - ten metres in length were the most inclined to operate inshore and offshore.

These figures are useful in the context of likely cumulative noise generation, but also to illustrate that inshore and offshore whales and dolphins are meeting quite different boat lengths, types and likely boat speeds.
Projected increases in types of boats

Across each of the Australian state jurisdictions, the trend appears to lean towards an increase in boats over six metres (ranging from 3.2 and 15 percent of total registered boats). In Queensland the number of recreational boats twelve metres or over in length has increased 31 percent (Marine and Safety Tasmania, 2011; New South Wales Roads and Maritime Services 2012). Without having actual figures available, it is still reasonable to extrapolate that the vast majority of the recreational fleet today is still powered boats between four – five metres, with the remaining small boats as paddled boats, skiffs, jet skis, and a growth in larger sailing and power boats as well. There appears to be a significant bias towards a growth in powered boats (New South Wales Roads and Maritime Services 2012).

A number of states are now forecasting trends in order to accommodate future needs into infrastructure development. New South Wales, for instance, has projected that by 2026 there may be as many as 351,113 recreational boats registered in the state - an additional 135,000 boats from today.

A note on pollution

Recreational boats can also contribute marine pollution in the form of fuel, oil and other chemical discharges. Such pollution is worst from two-stroke engines (which use a mix of petrol and oil) traditionally used on small personal watercraft such as jet skis and speedboats with outboard engines, although the more widespread introduction of small four-stroke engines which are cleaner and more efficient, together with the increased use of modern unleaded fuels have reduced this pollution.

This form of pollution impacts water quality, sediments, and exhaust fumes contribute to air pollution, and can be bio-accumulated by marine mammals. The main chemical contaminants are methyl tertiary butyl ether (MTBE) and polycyclic aromatic hydrocarbons (PAH).

Contamination is potentially greatest in shallow confined areas such as estuaries and harbours (typically favoured recreational areas), where the pollution in the water column and sediments may increase, even when the boat is moored (Davenport and Davenport 2006; Hardiman and Burgin 2010).
Boats, whales and dolphins in Commonwealth waters and Australian Territorial waters

The rules and guidelines for Commonwealth waters and Australian Territorial waters: *The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* and the *Australian National Guidelines for Whale and Dolphin Watching*

Whales and dolphins are protected in Commonwealth and territory waters under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), within the Australian Whale Sanctuary which was established to ‘give formal recognition to the high level of protection and management afforded to whales and dolphins in Commonwealth marine areas and prescribed waters’ (Government of Australia 1999). The Australian Whale Sanctuary is defined under section 225 of the EPBC Act as all Australian waters beyond state to territory jurisdictions. The EPBC Act and its Regulations specify how whale watching activities in the Australian Whale Sanctuary may be undertaken, including setting limits on approach distances (Government of Australia 1999).

The *Australian National Guidelines for Whale and Dolphin Watching* (hereafter National Guidelines) were developed through the Natural Resource Management Ministerial Council and adopted by all Australian jurisdictions in 2005. These guidelines provide advice for all governments in the development and updating of laws regulating whale and dolphin watching, however, are not a legal instrument themselves. Instead they are a clearly defined set of standards for activity around whales and dolphins (Department of Environment and Heritage 2006). The National Guidelines build upon and replace the *Australian National Guidelines for Cetacean Observation*, published in 2000.

For the Australian government, the National Guidelines apply to waters from three nautical miles out to the limits of Australian jurisdiction (200 nautical miles) and they inform the application of the EPBC Act.

Similar guidelines or regulations are mirrored in each state jurisdiction from the high water mark to 3 nautical miles. The intention being that all Australian waters are covered by similar guidelines and regulations. Each state jurisdiction has laws that prohibit the general public from interfering (killing, injuring, taking, trading, keeping, moving or touching) with whales or dolphins. This interference bar is consistency applied around Australia. However, in some cases the laws of a state may differ from the guidelines and it is the responsibility of the whale and dolphin watching industry and the public to be aware of the laws that apply (Department of Environment and Heritage 2006).

The National Guidelines are organized into two categories — Tier 1 and 2 – which outlines the general requirements for protecting animals (see Table 3, Table 4 and Table 5).

**Table 3: National Guidelines organized into two categories — Tier 1 and 2**

<table>
<thead>
<tr>
<th>Tier 1: National Standards</th>
<th>Tier 1 applies to all people watching whales and dolphins and outlines the general requirements for protecting animals.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 2: Additional Management Considerations</td>
<td>Tier 2 provides advice for areas or activities that may require alternative levels of management and have mostly applied to the commercial whale and dolphin watching industry. Tier 2 provisions may be appropriate for specially authorised whale and dolphin watching operations where scientific evidence supports different management arrangements; regions with specific site characteristics (e.g. geography, sensitive species, important populations, marine parks etc); or areas with intense whale and dolphin watching effort.</td>
</tr>
</tbody>
</table>
### Table 4: Tier 1 approach distances and operating procedures for whales and dolphins

#### Whale Caution Zone
Distance: between 300 and 100 metres. No wake speed and maximum of three boats inside this zone. Boats should not enter caution zone if animals are stranded, entangled or distressed; not restrict the movement of animals in against the shore; not approach calves or pods containing calves (defined as an animal which is less than half the length of the mother to which it usually remains in close proximity); not drift into the not approach zone. Boats should avoid sudden or repeated changes in direction or making sudden or excessive noise and when leaving move off at a slow no wake speed.

#### Whale No Approach Zone
Distance: 100 metres. Boat should not enter this zone. Boats should not wait in front of direction of travel and not approach from the rear.

#### Dolphin Caution Zone
Distance: between 150 and 50 metres. No wake speed and maximum of three boats inside this zone. Boats should not enter caution zone if animals are stranded, entangled or distressed; not restrict the movement of animals in against the shore; not approach calves or pods containing calves (defined as an animal which is less than half the length of the mother to which it usually remains in close proximity); not drift into the not approach zone. Boats should avoid sudden or repeated changes in direction or making sudden or excessive noise and when leaving move off at a slow no wake speed.

#### Dolphin No Approach Zone
Distance: 50 metres. Boat should not enter this zone. Boats should not wait in front of direction of travel and not approach from the rear.

### Table 5: Additional Tier 1 elements

<table>
<thead>
<tr>
<th>Reactions that may indicate that a whale or dolphin is disturbed</th>
<th>Attempts that may indicate that a whale or dolphin is disturbed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attempts to leave the area or boat (quickly or slowly); regular changes in direction or speed of swimming; hasty dives; changes in breathing patterns; increased time spent diving compared to time spent at the surface; changes in acoustic behaviour; and aggressive behaviours such as tail slashes, and trumpet blows</td>
<td></td>
</tr>
</tbody>
</table>

#### Bow Riding
Bow riding should not be encouraged. When animals are bow riding. Boats should not change course or speed suddenly. If there is a need to stop — reduce speed gradually.

#### Confined Waterways
In confined or crowded waterways such as bays, estuaries, channels and rivers it may not be possible for boats to maintain approach distances or the appropriate number of boats within the caution zone. In these instances boats should take all necessary caution to avoid whales and dolphins.

#### Swimming or diving
Deliberately swimming or diving (including the use of SCUBA or hookah gear) with whales and dolphins is prohibited unless under the authorisation of the relevant state, territory or Australian government agency. If incidentally in the vicinity of a whale or dolphin, swimmers (including snorkelers) and divers should not enter the water closer than 100 metres to a whale or 50 metres to a dolphin, and should not approach closer than 30 metres to any animal. If approached swimmers and divers should move slowly to avoid startling the animal; and not attempt to touch it or swim toward it.

#### Feeding
A person should not deliberately feed or attempt to feed a wild whale or dolphin, including throwing food or rubbish in the water in the vicinity of whales and dolphins.
Animals of special interest
Jurisdictions may choose to apply greater levels of protection than stipulated by these guidelines as additional management measures for ‘animals of special interest’ in order to ensure the safety of both people and animals.

Allowable Vessels
Vessels to which the National Guidelines apply include all other motorised, paddle and/or sail craft (e.g. motorboats, yachts, kayaks, canoes, surfskis, inflatable craft).

Prohibited Vessels
Certain boats are prohibited for use in whale and dolphin watching. These include all personal watercraft (e.g. jet skis and underwater scooters), parasails, remotely operated craft, wing-in-ground effect craft, and hovercraft. Prohibited boats should not approach closer than 300 metres to any whale or dolphin. If a prohibited boat incidentally moves to within this distance it should slow down and avoid the whale or dolphin, moving away from the animal at a no wake speed to at least 300 metres.

Recreational boats in Commonwealth waters
There are not specific figures available for trends in recreational boats operating in Commonwealth waters. However, Figures 2 and 3 (page 16) suggest that over half of recreational boats in Australia today are travelling beyond state jurisdictions.

The rules and regulations in terms of displaying boat licence numbers are managed by the corresponding state jurisdiction. Similarly, boat operator licences are managed by the corresponding state jurisdictions.

There does not appear to be any boat registration requirements for the Northern Territory.

Species likely to be most affected
As the Commonwealth waters are so vast, the species most affected should more or less correspond with those identified under each of the state jurisdictions. In the Northern Territory, is it is very likely that snubfin dolphins, Indo-Pacific humpback dolphins and spotted bottlenose dolphin are being impacted.

Public accessibility of the National Guidelines
The National Guidelines are available to the public on the Department of Sustainability, Environment, Water, Population and Communities website. The guidelines are presented clearly, and diagrams are provided to facilitate easy understanding. However, unless the public know what they are looking for the guidelines may be difficult to find. The actual EPBC Act Regulation (8.12) is very difficult for the general public to find and understand.

The department directs people who see a whale or a dolphin to notify their local ranger or parks office. They also direct people who see an infringement of the National Guidelines to contact appropriate state agencies, and these are listed, although many of the links appear to go to more general webpages. This suggests to the public however, that if they are in Commonwealth waters when they see an infringement that they have no-one to contact. The means of contacting the department directly is heavily biased to a web form. When the department’s general number is called, the reception (unless the caller specifically says the issue is about Commonwealth waters) indicates that the caller should contact a relevant state agency. It would be helpful if mechanisms to make it easier for the public to engage with the issue were created.

Commonwealth contacts
Phone:  Environment Line 131 555
Boats, whales and dolphins in New South Wales


The rules regulating the approach and interaction of recreational boats around whales and dolphins in New South Wales is the National Parks and Wildlife Amendment (Marine Mammals) Regulation 2006 and NSW National Parks and Wildlife Regulation 2009 (Government of New South Wales, 2006).

The New South Wales regulations also emulate the National Guidelines in that they have established a 100 metre limit for approaching whales and a 50 metre limit for approaching dolphins. There is a further caution zone between 100 metres and 300 metres from a whale and between 50 metres and 150 metres from a dolphin where boats must travel at a constant slow speed and leave a negligible wake. The regulations provide clear guidance about approach directions, what to do if an animal approaches the boat, and how to navigate around whales and dolphins in narrow waterways, such as avoiding sudden changes in direction and maintaining a constant and slow speed, leaving a negligible wake around whales and dolphins (Department of Environment and Heritage 2012).

New South Wales also stipulates prohibited boats as those that can make fast and erratic movements or minimal noise underwater, increasing the chance they may collide with a marine mammal. These include personal motorised watercraft like jet skis, parasail boats, hovercraft, hydrofoils, wing-in-ground effect craft, remotely operated craft or motorised diving aids like underwater scooters. The Marine Mammal Regulations also allow for the Minister to declare ‘special interest marine mammals’ under specific circumstances and to specify specific approach distances. The fines applicable under the Marine Mammal Regulations bring a maximum penalty of 50 penalty units (currently equivalent to $5,500) (Department of Environment and Heritage 2012).

The Department of Environment and Heritage information clearly states that:

“... humpback whales in NSW waters are actively migrating. Any disturbance by boats could affect these animals. Whales require 'personal space', and harassment may severely stress them - possibly causing accidents both for humans and whales if the whales feel threatened. This is especially important in the case of the adults with calves, which may be either resting or suckling. Research has shown that whales are highly sensitive to engine noises. You should also be aware that during the mating season, males competing for females may engage in rough physical contact.” (Department of Environment and Heritage 2012)

Recreational boats in New South Wales

The data from Table one (page 13) suggests that there are close to 228,643 recreational boats (under 24 metres) in New South Wales. All boats powered by an engine with a power rating of four kilowatts or more (greater than five hp), sailing boats of 5.5 metres or longer, every boat subject to a mooring licence (includes marina berths) and all personal watercraft (jetskis etc) must be registered. Registered boats must display their registration number on both sides of the hull in figures at least 15cm high (10cm for personal watercraft and sailing boats). Sailing boats may display the registration numbers on the transom. The registration numbers/letters must be in a contrasting colour to the hull, solid characters (not outlines), in a clear font or style and displayed in upper case so they can be clearly identified (Department of Roads and Maritime Services 2012).

Species most affected

Humpback whales, southern right whales and bottlenose dolphin are present along the New South Wales coastline and most likely to be impacted by recreational boats.

Public accessibility of the New South Wales rules

The regulations appear clearly on the Department of Environment and Heritage website and are moderately easy to find.
Skippers must have a boat licence in New South Wales. It was not possible to ascertain if a question on the whale watching regulations is included in the test, but New South Wales’ regulations appear prominently and clearly in the Boating Handbook 2011-2012, with a clear articulation of the rules (Department of Roads and Maritime Services 2011).

New South Wales contacts
Phone: Environment Line 131 555

[ 8. ] Boats, whales and dolphins in Queensland and the Great Barrier Reef


The Queensland and Great Barrier Reef regulations also emulate the National Guidelines in that they have established no approach limits of 100 metres to a whale, or 50 metres to a dolphin; and no approach from the front or behind whales and dolphins. They have an additional limit of 300 metres of a whale calf and 150 metres of a dolphin calf. Skippers are instructed to stop their boats and turn off the engines, disengage the gears or withdraw boats at a constant slow speed if a calf appears within 300 metres. Boats are to be operated at a constant slow speed, and if closer than 50 metres to a dolphin, boats must not change course or speed suddenly. There is a limit of three boats within 300 metres of a whale or dolphin. If a whale approaches boats, skippers are to take all precautions to avoid a collision, either slow down and steer away from the animal, or place the engines in neutral and let the animal pass. Prohibited boats (i.e. jetskis, parasails, hovercraft, hydrofoils, wing-in-ground effect craft and motorised diving aids such as underwater scooters) are not allowed within 300 metres to a whale or dolphin. A 300 meter no approach zone exists for the Whitsunday Whale Protection Area. When near a declared ‘special interest whale’, for example ‘Migaloo’ the white humpback whale, all boats, including jet skis, must remain at least 500 m away. Boats that accidentally strike a whale or dolphin must report having done so. The fines applicable under the Whales and Dolphins) Conservation Plan bring a maximum penalty of 120 penalty units for the standard approach rules and 165 penalty units for special interest whales (currently equivalent to $12,000 and $16,500 respectively) (Queensland Parks and Wildlife Service 2011).

The department provides a list of disturbance signs that include animals moving away from a boat, regularly changing swimming speed or direction, sudden changes in behaviour, sudden dives, changes in breathing patterns, more frequent dives and aggressive behaviour (e.g. tail slaps). They caution that it is important to watch for these signs, especially where there are mothers and calves highlighting that disturbance can interfere with the calf’s feeding or cause it to swim away from its mother. At the first sign of any disturbance, people are instructed to move their boat away.

Recreational boats in Queensland

The data from Table one (page 13) suggests that there are close to 233,600 recreational boats (under 24 metres) in Queensland (including those who also travel into the Great Barrier Reef Marine Park). All boats with a motor or auxiliary of three kW or more (over four hp) must be registered when on the water. Registration symbols must be clearly visible in plain characters in a contrasting colour to the hull. Boats
not capable of planing must have characters a minimum of 7.5cm high on both sides or on the stern. Boats capable of planing must have characters a minimum of 200 mm high on both sides. The tender should be marked on the exterior with the word ‘tender’ and the mother boat registration numbers, at least 7.5cm high. Personal watercraft (jet skis) registration symbols must be displayed on both sides at least 10cm high and easily seen while the craft is underway (Department of Maritime Safety 2012).

Species most likely to be affected

Dwarf minke whales, humpback whales and bottlenose dolphins are the most commonly sighted species in Queensland waters and the species most likely to be affected by recreation boats. The Australian snubfin dolphin and the Indo-Pacific humpback dolphin are also at risk of impact in the region.

Public accessibility of the Queensland rules

The regulations appear clearly on the both the Great Barrier Reef Marine Park website and the Department of Environment and Resource Management website. An online brochure is also prominently available. This includes diagrams about approach distances and directions.

Skippers must have a boat licence if they are operating a boat with a motor greater than 4.5kW (6 hp) or a personal watercraft licence to operate a personal watercraft (such as jet skis) (Department of Maritime Safety 2012). It was not possible to determine if a question about the Queensland and Great Barrier Reef regulations is part of the licence test, but the online materials provided for Boat Safe Training do not mention the regulations.

Queensland contacts

Web:  

Phone:  
Department of Environment and Resource Management 1300 130 372  
1300 ANIMAL (1300 264 625)  
Great Barrier Reef Marine Park (07) 4750 0700

[ 9. ]  Boats, whales and dolphins in South Australia


The rules regulating the approach and interaction of recreation boats around whales and dolphins in South Australia is the National Parks and Wildlife Act, 1972, the National Parks and Wildlife (Protected Animals—Marine Mammals) Regulations, 2010, and the Adelaide Dolphin Sanctuary Act, 2005 within the boundaries of the Sanctuary itself (Government of South Australia, 2005; Government of South Australia 2010).

The Regulations state that a recreational boat (including a jet ski) must not approach closer than 100 metres to a whale; or 50 metres to a marine mammal other than a whale (including dolphins) and not exceed four knots speed. There is an additional approach restriction of 300 metres of a whale or 150 metres of a dolphin if the animal is a calf; shows signs of disturbance; appears to be sick or injured; is stranded; or is entangled or otherwise incapacitated; or if there are two boats already within the approach limit of the animal. There is a further 300 metre approach limit around all whales within the Encounter Bay Restricted Area (Government of South Australia 2010). When approaching within the prescribed limit, the boat must
not approach the whale head on or tail on; drop anchor; or remain within 300 metres of the whale, or 150
metres of a dolphin, for more than 60 minutes (Government of South Australia 2010). There are further
restrictions about avoidance methods, which more or less mirror the National Guidelines (Government of
South Australia 2010). Extra precautions exist within the Adelaide Dolphin Sanctuary Act relating to the
Sanctuary in general (Government of South Australia 2005). It is unclear what maximum fines are
applicable under the Protected Animals—Marine Mammals Regulation, however anecdotal suggestions of
$100,000 have been reported in the media.

Recreational boats in South Australia

The data from Table one (page 13) suggests that there are close to 51,844 recreational boats (under 24
metres) in South Australia. All boats with an engine must be registered to travel in South Australian
waters, including sailing and row boats fitted with an auxiliary engine. The registration number must be
clearly displayed in a contrasting colour to the surface, in figures at least 10cm high for boats less than
three metres long, or at least 15cm high for boats three metres or longer and displayed on both sides of the
bow clearly readable from a distance of 50 metres (in clear weather) while the boat is underway. Where
boats have excessively flared bows, boat owners can apply to display the numbers further back along the
hull or on each side of the cabin (sa.gov.au 2012).

Species most likely to be affected

The species potentially most impacted by recreational boats in South Australia are southern right
whales, common dolphins, bottlenose dolphins and increasingly also humpback whales and blue whales.

Public accessibility of the South Australian rules

Despite the strength of the regulations in South Australia, a clear and easy to read description of how
they should be interpreted was difficult to find, and information provided on the Department of
Environment and Natural Resources website was obscure. A limited summary of the regulations are more
easily found through the Victor Harbour Whale Centre website, but these relate mostly to land-based
watching and direct people to contact local rangers. A more accessible, easier to find description of the
regulations for all of South Australia’s waters would be helpful.

While the centralized South Australian government website (www.sa.gov.au) provides fairly
comprehensive information about the requirements for boat ownership, boat licences, rules about safety
and reporting an oil spill, there is no immediately obvious mention of the regulations for operating around
whales and dolphins associated with this other information.

Skippers operating a boat with a motor must have a licence, regardless of size of the boat or the
engine, or whether the engine is being used at the time. Personal watercraft must also have a licence
particular to that type of boat, and are restricted in the hours of operation to between 8am – 8pm Monday
to Saturday and 9am – 8pm on a Sunday, or until sunset on any day (Department of Transport, Energy and
Infrastructure 2011). It was not possible to ascertain if a question involving the rules is included in the
test, but the materials provided for preparing for the test describe that restrictions apply around whales and
dolphins and that this is knowledge that should be gained. A reference to the legislation is provided
(Department of Transport, Energy and Infrastructure 2011) but, once again, not an easily accessible
description.

However, South Australia is the only state that specifies the details of information that is helpful when
reporting the harassment of marine mammals. The handbook suggests that the following information
should be gathered:

1. the location and number of animals
2. the species involved—if known (and description)
3. the reporter’s name and contact details
4. the nature of the incident
5. identity or description of people involved (if any)
6. the registration number of any boats (or vehicles) involved in causing the issue
7. when it was first discovered
8. current and—if known—expected weather conditions
9. tide details
10. accessibility by boat and/or vehicle
**Boats, whales and dolphins in Tasmania**

**The guidelines for Tasmania: Whale Watching Guidelines**

The guidelines in Tasmania seek to emulate the National Guidelines and apply to all recreational boats. They stipulate that boats should not approach closer than 100 metres of a whale or 50 metres of a dolphin; boats under steam should approach no closer than 300 metres of a whale or 150 metres of a dolphin; and that no more than three boats should be within the 300 metres at any one time. If the animals show any kind of disturbance, boats should withdraw immediately, at a slow and steady pace. Boats should operate at a slow speed (no wake) while in the area, and avoid approaching the animals from the front or behind. Personal watercraft (including jet skis and remotely operated craft) should not approach whales or dolphins any closer than 300 metres. If whales or dolphins move within this distance, the personal watercraft should slow down and move away from the animal(s) at no-wake speed to at least 300 metres away (Parks and Wildlife Service 2012). More broadly, protection to whales and dolphins in Tasmania waters is provided through the Tasmanian *Whale Protection Act, 1988*. Fines under this Act bring a maximum penalty of 10 penalty units (currently equivalent to $1,300) (Government of Tasmania, 1988).

**Recreational boats in Tasmania**

The data from Table one (page 13) suggests that there are close to 29,370 recreational boats (under 24 metres) in Tasmania. All boats of four hp or greater require registration in Tasmania. All boats must display their registration numbers, 15cm high, on each side of the boat (Marine and Safety Tasmania 2011).

**Species most likely to be affected**

In Tasmanian waters the species most likely to be impacted by recreational boats are common dolphins, bottlenose dolphins, southern right whales and humpback whales. Sperm whales and blue whales might occasionally be encountered further offshore.

**Public accessibility of the Tasmanian guidelines**

The regulations appear clearly on the Parks and Wildlife Service website, but were slightly difficult to find. They are more clearly represented on the Department of Primary Industries, Parks, Water and Environment website, but again, are slightly difficult to find. A guidelines brochure has also been produced.

All skippers of registered boats in Tasmania must have a licence. It was not possible to ascertain if a question involving the guidelines is included in the test, nor if the materials provided for preparing for the test describe that restrictions apply around whales and dolphins and this is knowledge that should be gained.

---

**South Australian contacts**

**Web:** [http://www.sawhalecentre.com/regulations.html](http://www.sawhalecentre.com/regulations.html)

**Phone:**
- General information (08) 8124 4860
- Enforcement of the regulations, Investigations and compliance Unit Pager 1300 650 411 (pager no. 465393)

---

**Tasmanian contacts**


**Phone:**
- Sightings and strandings hotline 0427 WHALES (0427 942 537)
- Marine Mammal Conservation Program (03) 6233 6556
Boats, whales and dolphins in Victoria


The rules relating to the approach and interaction of recreation boats around whales and dolphins in Victoria are within the *Wildlife (Marine Mammal) Regulations, 2009 and Wildlife Act, 1975* (Government of Victoria 1975; 2009). The Department of Sustainability and Environment information states that boating can disturb whales and dolphins and threaten the animals’ wellbeing. The regulations provide clear guidance about approach directions, what to do if an animal approaches the boat, and how to navigate around whales and dolphins in narrow waterways, avoiding sudden changes in direction. Victoria’s ‘no approach zone’ distances commendably exceed those of the National Guidelines and other states, which indicated active management of the issue in this state.

Boats are not permitted within 200 metres of whales and 100 metres of dolphins. Jet skis must not approach closer than 300 metres. When within 300 metres of whales or 150 metres of dolphins boats must maintain a constant speed not exceeding five knots and avoid sudden changes in direction; not approach a whale or dolphin head on or be in their path; leave the area if a whale, dolphin or seal shows signs of disturbance; not separate any whale or dolphin from their group and not come between a mother and her calf (Department of Sustainability and Environment 2012). Logan’s Beach is declared as an exclusion zone, between 1st June and 31st October each year, to protect breeding and calving southern right whales. The Ticonderoga Bay Sanctuary Zone is also an exclusion zone to protect the resident bottlenose dolphins, and boat must remain 200 metres from the animals throughout the year (Department of Sustainability and Environment 2012b) The fines applicable under the Marine Mammal Regulations bring a maximum penalty of 20 penalty units (currently equivalent to $24,488) (Government of Victoria 1975; 2009).

Victoria has also led the way with its recent *Transport Legislation Amendment (Hoon Boating and Other Amendments) Act 2009* (otherwise known as the *Hoon Boating Bill*) which gives the water police and compliance officers the authority to order a person off the water, to prohibit the use of a boat and to seize and impound boats, as well as giving infringement notices under the marine mammal regulations. Exclusion zones for boats have been declared, as has the ability to cap permits for particular areas (Government of Victoria 2009).

Recreational boats in Victoria

The data from Table one (page 13) suggests that there are close to 172,847 recreational boats (under 24 metres) in Victoria. All recreational boats capable of being used for propulsion must be registered in Victoria. Boats must display their identification numbers on the hull of the boat on each side of the bow as high as practicable above the waterline, and no less than 15cm high (or 10cm on a personal watercraft), in proportionate breadth, and coloured in contrast to that of the surface on which they are displayed. Tenders are required to display the name of the mother ship or the registration number of that boat and the letter ‘T’ (Transport Safety Victoria 2011).

Species most likely to be affected

The species potentially most impacted by recreational boats in Victoria are southern right whales, humpback whales, blue whales, common dolphins, bottlenose dolphins.

Public accessibility of the Victorian rules

The regulations appear clearly on the Department of Sustainability and Environment and are moderately easy to find. Victoria has also produced an excellent series of printed brochures and stickers which are widely distributed throughout the state.

All skippers in Victoria must have a licence. It was not possible to ascertain if a question on the regulations is included in the test, but Victoria’s regulations appear very prominently in the Victorian Recreational Boating Safety Handbook, with perhaps the clearest articulation of the rules in a boating handbook of any of the Australian jurisdictions (Transport Safety Victoria 2011).
The regulations for Western Australia: *Wildlife Conservation (Close Season for Marine Mammals) Notice 1998*

All fauna in Western Australia is protected under section 14 of the *Wildlife Conservation Act 1950*, unless declared to be unprotected by the Minister. The legislation governing interaction with whales and dolphins in Western Australia contains similar provisions to the National Guidelines in that all boats (including everything from surfboards and kayaks to yachts and launches) are limited as to how close they may approach whales and the manner in which whales may be approached. A boat must not approach a whale in such a way as to disturb the whale by causing it to alter its direction or speed of travel, or by dispersing or separating a group of whales or coming between a cow and calf (Department of Environment and Conservation 2012). The *Wildlife Conservation (Close Season for Marine Mammals) Notice 1998* stipulates that a boat that is within an arc of 30 degrees of the whale’s direction of travel, whether in front or behind the whale, may approach to within 300 metres of the whale but no closer. If the boat approaches the whale from any other direction, such as side on, it may approach to within 100 metres of the whale but no closer. If a whale approaches a boat and the distance between the whale and the boat becomes less than 100 metres, the skipper must either switch off, or place the boat’s motor or motors in neutral or move the boat away from the whale at a speed of less than 5 knots until the boat is outside the contact zone. If a boat is near a whale or dolphin and the whale or dolphin is exhibiting signs of being disturbed, the skipper must move it away from the animal at a speed of less than 5 knots, until it is no longer affecting the animal (Government of Western Australia 1998).

While the *Wildlife Conservation (Close Season for Marine Mammals) Notice 1998* does also include restrictions on approaching dugongs, it does not specifically indentify permitted approach distances for dolphins. However, the notice does make it illegal for a boat to disturb any marine mammal, including dolphins. Conversations with enforcement officials in Western Australia have clarified that actions such as chasing, harassing or separating individual dolphins from a pod would be considered to constitute an act of disturbance.

The *Wildlife Conservation (Close Season for Marine Mammals) Notice 1998* is made under Western Australia’s *Wildlife Conservation Act, 1950*, which provides for fines of up to $10,000 in the case of anyone disturbing or harming whales, which are specially protected, and $4,000 in the case of anyone disturbing or harming dolphins (Government of Western Australia 1950).

**Recreational boats in Western Australia**

The data from Table one (page 13) suggests that there are close to 93,244 recreational boats (under 24 metres) in Western Australia. All recreational boats with a motor in Western Australia must be registered. Registered boats must also clearly display their registration numbers. Registration numbers for power boats are to be displayed mid-ship on the side or super-structure where they are clearly visible and not under the flare of the bow. They should be at least 15cm high. On yachts the registration numbers should be on the side of the hull immediately forward of the transom. Tenders must also display the parent boat’s number on each side of the boat, forward of the transom (Department of Transport 2012).

**Species likely to be most affected**

The extent of the Western Australian coastline means that a significant variety of whales and dolphins may be affected by recreational boats. Bottlenose dolphin, common and striped dolphin, humpback whale, pygmy blue whale, southern right whale are likely to be impacted.
Public accessibility of the Western Australia regulations

The Department of Environment and Conservation website represents the regulations as they relate to whales, and to this extent the guidelines are moderately easy to find. It is not immediately obvious if the ‘rules’ are binding, if there are penalties for infringements or who to contact if an individual sees something that concerns them (Department of Environment and Conservation 2012). The Wildlife Conservation (Closed Season for Marine Mammals) Notice 1998 will be difficult for the general public to find.

Skippers of boats powered by a motor greater than six hp are required to hold a Recreational Skipper’s Ticket. The workbook provided to assist individuals seeking this licence or boat registration mentions that boats should not try to get close to sea lions, whales, dolphins and whale sharks as they can become distressed, especially if the mammals have young with them. It was not possible to determine if a question was contained within the assessment, but there is no mention of the regulations within the workbook and no references to the Department of Environment and Conservation website for further details in the workbook (Department of Transport 2011).

Western Australian contacts

<table>
<thead>
<tr>
<th>Web:</th>
<th><a href="http://www.dec.wa.gov.au/content/view/258/96/1/2">http://www.dec.wa.gov.au/content/view/258/96/1/2</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone:</td>
<td>Department of Environment and Conservation (08) 9219 8000</td>
</tr>
<tr>
<td></td>
<td>Wildlife Watch to report illegal wildlife activity 1800 449 453</td>
</tr>
</tbody>
</table>

[13. ] Effectiveness of the National Guidelines

Whilst the adoption of the Australian National Guidelines for Whale and Dolphin Watching 2005 (National Guidelines) has established national standards, this review demonstrates there is an inconsistent application of measures throughout Australia’s states and territories, which results in a situation of higher standards of protection in one jurisdiction and lower levels in another jurisdiction.

Despite annual media campaigns in almost every jurisdiction to profile the National Guidelines and safe boating around whales and dolphins; and despite a clear reliance on the general public to monitor and report boating behaviours, during the first year of Operation CETUS where questions were asked of recreational boats there was still limited understanding of approach limits (Australasian Environment Law Enforcement and Regulators Network 2012). This situation highlights the very specific need to focus awareness and education on laws and regulations in all Australian jurisdictions.

It was not possible to determine the hours at sea for enforcement officials for the whole of the Australian coastline, but given the obvious constraints of department budgets in each jurisdiction there is clearly a limited capacity to actively monitor the coastline. What presence exists can be assumed to be cursory at best, except perhaps in identified parks or around commercial whale watching where rangers and enforcement officers naturally have a higher presence.

In practice, it appears that park and sanctuary rangers in each of the jurisdiction are often the front line for enforcing the guidelines and/or regulations, and it was interesting to note that during a number of the interviews a general impression was developed that recreational boat interactions with whales and dolphins was a ‘low key’ issue, and while the rangers took the rules or guidelines seriously they did not believe recreational boats were having much impact. However, they were not actually able to qualify or quantify that assumption, nor were they reflecting on areas beyond their park boundaries.

Using some basic, linear mathematics to illustrate the potential scale of interactions each day around Australia’s coastline is useful. If we accept that there are 832,065 recreational boats in Australia at present, and we very conservatively estimate that one percent (8,300) of the boats might be on the water on any given day, and that conservatively one percent of those boats on the water interact with whales or dolphins that indicates there are 83 interactions each day.

If we use the same linear mathematics, and a marginally less conservative estimate that of the 832,065 recreational boats in Australia, five percent (41,603) are on the water each day, and that five percent of those interact with whales and dolphins we have a more alarming number of 2,080 interactions each day.
The actual situation is likely somewhere between the two, and would fluctuate seasonally around the country as well, so these figures are merely put forward to illustrate that this is an area that requires much more attention. This is especially the case in regions where the recreational boat density is high (Queensland, New South Wales and Victoria) and the potential for multiple individual interactions with one group of animals might be occurring on any given day.

The interviewees also reported that there were real on-water problems in enforcing the rules relating to the ability for boat skippers to honestly determine distance as well as to the nature of some of the animals themselves. For instance, southern right whales might approach quite close to stationary boats without the occupant becoming aware of the whales until they surface. Similarly some dolphins seemed to “confound efforts to avoid them”. Perhaps most importantly, there are simply insufficient human resources applied to monitoring recreational boating activities around the Australian coastline. Too few rangers and enforcement officers are available in all the Australian jurisdictions.

In only one of these interviews was the issue of noise levels experienced by the animals’ raised by an interviewee, which indicates that there is a need to educate government officers about the acute and cumulative impact of noise on whale and dolphin individuals, communities and populations as well. In a few jurisdiction the regulations stipulate that deliberate noise should be avoided, yet none at this stage determine a cap for noise levels to address the issue of cumulative engine noise.

Many of the interviewees felt that that there was a need to be ‘reasonable’ in applying the regulations, indicating that perhaps the level of public awareness was not as high as it might be and there is a need to improve education before more forcibly applying the regulations. Also, the 300 metre limit was difficult to police, because people in boats and on land found it difficult to determine this distance accurately.

While these are real problems, solutions still need to be found because the National Guidelines have been developed for good reason.

**Public profile**

During interviews discussing how well the National Guidelines were being applied in each state jurisdiction, it became apparent that government departments have actively used the technique of raising the media profile of one or two serious prosecution cases before the start of each whale or dolphin watching season. They used this profile to raise public awareness about the guidelines themselves, and to solicit further support from the public in enforcing them.

For instance in the past few years, whale watchers were cautioned about getting to close to southern right whales when two kayakers were seen within metres of a whale and her calf at Middleton in South Australia (reported: ABC News online: August 17, 2009 16:48); the Federal Government has sought witnesses in an investigation of a five metre boat circling and moving into the path of a whale in June 2011 off Southport in Queensland (reported: AAP/The Australian online June 29, 2011 11:56). In September 2011 a teenager was investigated for allegedly climbing on the back of a southern right whale in Albany, Western Australia (reported: ABC News Online: September 27, 2010 17:33). In January 2012 the media reported jetskis harassing and separating a dolphin pod off Hobart, Tasmania (reported: ABC News Online, February 01, 2012 08:32).

These media ‘events’ need to be understood in context. They represent the absolute tip of the iceberg, where high profile activities are leading to prosecutions and have therefore caught media attention. However, they are not a representative sample of what is actually happening, given that public awareness of the approach distances is still significantly lacking and it is likely that many violations are going unreported.

**Prosecutions**

This review has not been able to ascertain the number of reported or suspected incident numbers, nor the number of prosecutions in each jurisdiction, although it was clear that when need arises (overt harassment) the process is being taken seriously and prosecutions are happening where solid evidence exists. In one jurisdiction an interviewee anecdotally reported there were approximately 10-12 reports each year, which led to only a few cases being brought before a judge. However, the comment was also made that prosecutions were difficult to secure because, despite witness statements, there was often insufficient defensible evidence.

The first year report of Operation CETUS has also highlighted the need for the Department of Sustainability, Environment, Water, Population and Communities to continue to develop and maintain working relationships with state agencies to ensure effective compliance monitoring and maintaining a
response capacity due to the extent of interactions which occur in Commonwealth waters adjacent to the state boundaries (Australasian Environment Law Enforcement and Regulators Network 2012).

The anecdotal numbers of reported or suspected incidents, as well as those indicated under the year of Operation CETUS are low when compared to the number of boats potentially on the water around Australia at any given time. More analysis should be done to tease out what this means. It is possible, but unlikely that the low numbers of infringements served are because the public has a high level of understanding about the regulations, guidelines or codes of conduct in each jurisdiction and are making every effort to comply. What is far more likely is insufficient monitoring and enforcement and that many infringements are going undetected.

However, there are no data to back this assertion, and further investigation should be a priority.

**Review of the National Guidelines**

The Department of Sustainability, Environment, Water, Populations and Communities is currently reviewing the National Guidelines (Department of Sustainability Environment Water Population and Communities 2011), which is an appropriate response given they have been in effect now for seven years. The department’s review of management arrangements highlights that as whale numbers along Australian coastlines increase there will be corresponding interest in whale watching from both recreational users and commercial operations and more potential for disturbance. It should also be noted that dolphin populations in Australia have not received the same level of scientific and governmental attention as whale populations. None-the-less the department’s review document suggests that environmental impacts in the form of increased risk of adverse impacts on protected whale and dolphin populations from the growth in boat traffic and density should be considered. Also, with the growing recognition of sea country and management by traditional owners, it is important to seek advice from managers of sea country on any guidance applicable at the national level (Department of Sustainability Environment Water Population and Communities 2011).

The National Guidelines review document, which is heavily biased towards considerations of and for the commercial whale watching sector, puts forward some perhaps contentious areas for further consideration, suggesting that as the community becomes better informed and begins to question management decisions, and as the industry sector works in an ever more challenging environment, it is important that management regimes remain informed by good science. There is a challenge implicit in this suggestion that minimum approach distances and maximum watching times might not be robust and should be more flexible, suggesting that science might play a part in providing species specific distances and times (Department of Sustainability Environment Water Population and Communities 2011). This may be a call from the commercial sector, but there are two problems inherent in following such an approach when considering the recreational sector. The first is that there is currently insufficient science to determine the level of impact already, especially if there is a suggestion to decrease approach limits and increase approach times. As such science is gathered, it is probable the approach distances and time might have to become even more precautionary, especially when it becomes apparent that there is a need to mitigate the sheer number of recreational boats on the water as well. Secondly, complicating the ‘rules’ by adding species specific flexibility will simply serve to compound an already complicated situation and will make it difficult for governments to educate and enforce and for the public to understand.

The National Guidelines review document commendably suggests mapping of critical habitat should be a priority in going forward. This is seen as particularly important in supporting the use of Tier 2 provisions (Department of Sustainability Environment Water Population and Communities 2011). However, while it is suggested that the work in recent years on Marine Bioregional Planning, and the increasing establishment of Marine Protected Areas in state and Commonwealth waters since the National Guidelines were published provides the basic information necessary to describe and map important cetacean habitat areas, evidence of this progress is yet to manifest. None-the-less, the EPBC Act (Section 228A) allows for the declaration of Important Cetacean Habitat Areas and the establishment of additional management measures in sensitive areas, which may include increased or regular boat traffic that has the potential to harm whales and dolphins. However, at this point no such Important Cetacean Habitat Areas have been declared in the Australian Whale Sanctuary.

**The findings of Operation CETUS**

During the seven months of Operation CETUS a consistent problem faced by jurisdictions across Australia related to the ability to enforce laws pertaining to alleged breaches of approach distances on water. A significant operational effort was made by all jurisdictions across Australia with a total of 123 separate compliance and enforcement activities being carried out. A further 54 commercial whale watching
boats were contacted, and 340 recreational boats (Australasian Environment Law Enforcement and Regulators Network 2012).

The summary of alleged offences provided in the report gives an important, albeit small and time-specific, snapshot of what might be transpiring more regularly around Australia’s coastlines.

In Commonwealth waters there were six alleged offences, mostly offshore from Queensland involving humpback whales. These were breaches of the approach distance, four of which were by recreational boats (Australasian Environment Law Enforcement and Regulators Network 2012).

In Queensland there were four alleged offences, two of which involved humpback whales and a breach of the approach distance by recreational boats (Australasian Environment Law Enforcement and Regulators Network 2012).

In New South Wales there were 11 alleged offences involving humpback whales and unidentified dolphins. Most of these were breaches of approach distances. Two were breaches of calf approach distances. Six involved recreational boats (Australasian Environment Law Enforcement and Regulators Network 2012).

In Victoria there were eight alleged offences involving humpbacks and southern right whales. All involved recreational boats. Most were for a breach of the approach distance and two were for interference with the whales (Australasian Environment Law Enforcement and Regulators Network 2012).

In South Australia there were five alleged offences, all involving southern right whales. Of these, three involved recreational boats and were for a breach of the approach distance (Australasian Environment Law Enforcement and Regulators Network 2012).

In Western Australia there was only one alleged offence recorded, and there were none for Tasmania or the Northern Territory, although these numbers more likely reflect the on-water time in each of these jurisdictions than the reality of the situation. Also, it must be said that these three jurisdictions do not presently have binding regulations – only guidelines (Australasian Environment Law Enforcement and Regulators Network 2012).

Operation CETUS findings concur with comments made by department officials while compiling this review. The marine environment, where objects are in constant motion relative to each other, presents a challenge in trying to prove the distance between a boat and a whale or dolphin. Many jurisdictions have not been able to proceed to prosecution despite having a number of eye witnesses (Australasian Environment Law Enforcement and Regulators Network 2012). The essential problem appears to be the presence of good visual evidence such as video recordings or stills sequences. Ideally these should document the approach of the boat to the whale or dolphin, the interaction between the animal/s and the boat and the consequences of the interaction - which is a difficult task, especially for lay persons.

For Commonwealth waters this is further compounded because the Environment Protection and Biodiversity Conservation Regulations 2000 (EPBC Regs) requires a full brief of evidence for criminal prosecution by the Commonwealth Department of Public Prosecutions be developed before proceeding. For the kinds of offences detected during Operation CETUS this would have been inappropriate.

As mentioned previously, where questions were asked by Operation CETUS of recreational boat skippers there was limited understanding of approach limits, however the general feedback was an understanding that there were some laws relating to distances even if this knowledge was incorrect. Recreational boat operators were mostly not aware of the National Guidelines and it became apparent that there is an identified need to focus awareness and education on laws and regulations (Australasian Environment Law Enforcement and Regulators Network 2012).

The Operation CETUS recommendations include that:

- Education materials are introduced to those people applying for boating licences and form part of any examination to obtain a boating licence where these do not already exist.
- EPBC Act Regulations are amended to allow for the issue of Penalty Infringement Notices (PINS) in relation to cetacean offences.
- Evidence collection guide for potential cetacean offences is developed and issued to commercial whale watching operators and/or whale watching volunteers.
- Audio-visual material is produced showing lawful and unlawful behaviour around whales for distribution to tourist operators, regulators, law enforcement agencies and boat enthusiasts.
- Annual compliance operations are held in both state and Commonwealth waters to raise awareness and deter or investigate alleged offences (Australasian Environment Law Enforcement and Regulators Network 2012).
**Investigating the situation in the Northern Territory**

As recreational boats are not registered in the Northern Territory (or the Australian Capital Territory) it was difficult to systematically work through the level of boat activity and likely impact for this region of Australia, although boating activity in Northern territory is not insignificant.

The National Guidelines apply, but again, without a clear understanding of recreational boat use, or a natural government portal through which the guidelines can be communicated to recreational boat users, assessing the effectiveness of the guidelines was difficult.

**[ 14. ] Findings and recommendations of this review**

**The National Guidelines**

The National Guidelines are being implemented in all the jurisdictions, although there is an inconsistency between some states incorporating the guidelines as regulations with others retaining the guidelines alone. Consistency across all of the jurisdictions would be appropriate.

**Review recommendation #1:** the amended National Guidelines should be adopted into legislation in each state jurisdiction, as one consistent set of rules around the country, being applied through the various state and territory legislative mechanisms

Victoria’s greater distance rules and their *Hoon Boating Bill* are also elements that should be considered and incorporated into a national standard. Standardized rules would also make education easier as one set of materials could be used in all jurisdictions. Queensland’s boat strikes rule should also be included and perhaps increased to include mandatory reporting of all accidental interactions to ensure that better data is collected.

**Review recommendation #2:** Victoria’s greater distance rules and Queensland’s mandatory reporting rules should be considered for adoption in the National Guidelines

**Related Operation CETUS recommendation:** *EPBC Act Regulations are amended to allow for the issue of Penalty Infringement Notices (PINS) in relation to cetacean offences.*

Cumulative boat noise should be considered as a means for triggering area closures during sensitive times. Passive acoustic monitoring could be adapted to monitor the extent of cumulative noise in a given period of time (hours, days or weeks) signalling rangers or officials that temporary area closures are needed. This would provide respite for animals during important life periods such as mating, calving, resting prior to migrations, migrating with young or feeding in restricted habitats, as well as promoting good boating behaviour (slow speeds, good engine maintenance and lower engine noise) among the boating community, as such closures would be a direct response to their activities.

**Review recommendation #3:** Cumulative boat noise should be considered within the context of the National Guidelines review

**Review recommendation #4:** ‘No wake speed’ should be adopted around the country, rather than slow speed limits, as this ensures the lowest level of propeller noise from different classes of boats

**Better profile for the Guidelines and Rules around Australia**

Operation CETUS has commenced a programme of investigation and education around the country, but there is a real need for the on-water time to be extended to more remote regions, and to target less well understood populations of whales and dolphins – such as snubfin dolphin, Indo-Pacific humpback dolphins and spotted bottlenose dolphin around Northern Australia or blue whales in Southern Australia.

**Review recommendation #5:** Operation CETUS should systematically cover every jurisdictions in Australia – both inshore and offshore - and ensure that information
is disseminated and data is collected on a wide range of whale and dolphin populations around the Australian coastline

*Related Operation CETUS recommendation: Annual compliance operations are held in both state and Commonwealth waters to raise awareness and deter or investigate alleged offences*

The National Guidelines and jurisdictional regulations or guidelines were well disseminated to boat licence holders in some jurisdictions but not in others.

**Review recommendation #6: Questions about the regulations or guidelines should be included in all boat licence tests around Australia**

*Related Operation CETUS recommendation: Education materials be introduced to those people applying for boating licences and form part of any examination to obtain a boating licence where these do not already exist*

### Education

There is a very low level of public understanding about the guidelines and regulations around Australia, yet government departments are heavily reliant on the public for monitoring and reporting around the country.

As the regulations and guidelines currently differ between the jurisdictions it is difficult for their public display to be centralized in one easy to find, easy to understand web resource. Moreover, an easy to communicate and remember national hotline would assist with real-time reporting, and ensure that legitimate incidents were connected to the right government departments.

Boat registration in every jurisdiction, except Northern Territory, ensures appropriately clear registration numbers are visible that boats breaking the rules or guidelines should be easily identified. However, the information to be collected to ensure successful prosecution needs to be better articulated to the public.

**Review recommendation #7: A national focal point should support communication of the regulations and guidelines to the public, by providing a national hotline and readily identifiable website that:**

- explains the rules in simple language and ensures that people reporting incidents are connected with the right government departments
- provides advice on the information needed by government authorities from members of the public in order to successfully prosecute cases.

This national hotline and national website should be profiled in each jurisdiction’s boat safety handbooks and government websites

*Related Operation CETUS recommendation: Evidence collection guide for potential cetacean offences is developed and issued to commercial whale watching operators and/or whale watching volunteers*

*Related Operation CETUS recommendation: Audio-visual material is produced showing lawful and unlawful behaviour around whales for distribution to tourist operators, regulators, law enforcement agencies and boat enthusiasts*

In many jurisdictions the impact of recreational boats on whales and dolphin is managed at a ‘low key’ level. Except in Victoria and parts of Western Australia and parts of the New South Wales rangers mostly focus their attention on whales, and find the regulations or guidelines difficult to manage in relation to dolphins. Also the understanding of avoidance behaviour and impact varies significantly from one jurisdiction to another and harassment is mostly understood to relate to physical interaction. There is not a well developed understanding of the impact of noise. Impact is seen at the individual boat level, and with a few exceptions, not at the population level and cumulative impact is poorly understood.

**Review recommendation #8: Systematic education of rangers, enforcement officers and policy officials about the potential impact of recreational boats on a wide range of whale and dolphin populations should be considered a priority**

### Critical habitat
The National Guidelines review document commendably suggests that mapping of critical habitat should be a priority going forward. Despite the EPBC Act (Section 228A) allowing for the declaration of *Important Cetacean Habitat Areas* and the establishment of additional management measures in sensitive areas, no areas have been declared in the Australian Whale Sanctuary at this point.

**Review recommendation #9:** *Important Cetacean Habitat Areas should be declared in each jurisdiction, and Tier 2: Additional Management Considerations should be then articulated for these critical habitats*

Studies have shown that sound produced by motorized boats contains a set of harmonically related tones. The fundamental frequencies of these tones as well the relative amplitudes at the harmonic frequencies are determined by the boat speed, engine type, propeller movement. These harmonically related tones should be monitored for whale and dolphin responses. This research should be overlaid with additional research into the cumulative noise level in key areas around the Australian coastline.

**Review recommendation #10:** *Passive acoustic studies should be carried out in critical habitats, in each geographic and geological region, for key populations of whales and dolphins around the Australian coastline*

**Scientific research**

It is important that Australian specific information about whale and dolphin interactions with recreational boats is systematically collected.

**Review recommendation #11:** *The impact of recreational boats should be integrated into the development of a national cetacean research prospectus to better target limited funding*

**Investigating the situation in the Northern Territory**

As recreational boats are not registered in the Northern Territory (or the Australian Capital Territory) it was difficult to systematically work through the level of impact for the jurisdiction.

**Review recommendation #12:** *The level of boat activity and potential interaction should be systematically investigated by government agencies in the Northern Territory*

**Further research**

The following areas should be completed to ensure that the picture across the country is well understood:

- A thorough analysis of all state legislation should be conducted to ensure that similar legislation to Victoria’s *Hoon Boating Bill* is not already in existence but being underutilized
- An analysis of reporting levels and prosecution levels in each jurisdiction


Lusseau, D., 2003, Male and female bottlenose dolphins Tursiops spp. have different strategies to avoid interactions with tour boats in Doubtful Sound, New Zealand. Marine Ecology Progress Series 257: 267-274.


Schaffer, A., B. Madon, C. Garrigue, and R. Constantine, 2009, Avoidance of whale watching boats by humpback whales in their main breeding ground in New Caledonia, Scientific Committee, International Whaling Commission


Annex

Following is the introductory statement list of standard questions and government departments with whom contact was sought (either through desktop analysis, email or phone interview). Because of time constraints, these telephone interviews were not comprehensive, but an appropriate snapshot of rangers, compliance officers in both environment and transport departments, and policy officers was sought. While every attempt has been made to accurately represent comments and perspectives, all information identifying individuals has been omitted to ensure accidental misrepresentation does not occur.

Introductory statement

The following statement was consistently used in all approaches:

“The Migratory Wildlife Network is doing a review of regulations in each Australian jurisdiction for recreational vessels approaching cetaceans (whale and dolphins). We are looking to compare the ways the National Guidelines are being applied, while also looking to see if there are insights that are worth noting in any of the state and territory jurisdictions that might be applied elsewhere.”

Standard questions

1. Confirmation of the Regulations or Guidelines (verbal confirmation).
2. What materials are produced by the Department aside from the website?
3. Are the cetacean approach rules well understood by the boating community?
4. Are the cetacean approach rules well understood by the general community?
5. What is the main means of communicating with the boating community?
6. Is knowledge of cetacean approach rules required to gain a boat licence?
7. What are the numbers of recreational craft, and is there an increasing anywhere in particular etc.?
8. Are there any perceived increases in particular types of craft (e.g. jet skis)?
9. What are the hours at sea for enforcement officials on this issue?
10. What other measures are being taken to promote good boat behaviour?
11. What are the reported or suspected incident numbers (number of reports, follow up and prosecutions)?
12. What are the trends or species most affected or likely to be most affected?
13. Other comments.

Departments

Australasian Environment Law Enforcement and Regulators Network
Commonwealth Department of Sustainability Environment Water Population and Communities
Great Barrier Reef Marine Park Authority
Marine and Safety Tasmania
New South Wales Department of Environment and Heritage
New South Wales Department of Roads and Maritime Services
Queensland Department of Maritime Safety
Queensland Department of Transport and Main Roads
Queensland Parks and Wildlife Service
South Australian Department of Environment and Natural Resources
South Australian Department of Transport, Energy and Infrastructure
Tasmanian Department of Primary Industries, Parks, Water and Environment
Tasmanian Parks and Wildlife Service
Transport Safety Victoria
Western Australia Department of Environment and Conservation
Western Australian Department of Transport