



International Fund for Animal Welfare

IFAW Oceania office
6 Belmore Street
Surry Hills NSW 2010
Australia
Tel: +61 (0)2 9288 4900
Fax: +61 (0)2 9288 4901
Free call: 1800 00 IFAW (4329)
Email: info-au@ifaw.org

**IFAW submission: Senate Environment and Communications References Committee
inquiry into the Great Barrier Reef**

Submitted electronically, 2 June 2014

1. Executive summary

- 1.1 As one of the leading international animal welfare and conservation organisations, the International Fund for Animal Welfare (IFAW) welcomes the opportunity to make a submission to the Committee's inquiry into the Great Barrier Reef.
- 1.2 IFAW works to save animals in crisis around the world. This includes protecting whales and dolphins from the many threats they face today. In Australia, this work has focused on whaling by Japan in the Southern Ocean, promoting and supporting whale research and protecting whale habitats in Australian waters.
- 1.3 This submission focuses very specifically on the increasing risk of ship strike to whales in the Great Barrier Reef (GBR) as a result of current and projected increases in shipping. IFAW believes further steps could be taken to reduce this risk. As such, this submission relates most specifically to the following term of reference of the inquiry: "(a) management of the impacts of industrialisation of the reef coastline, including dredging, offshore dumping, and **industrial shipping** ..." (our emphasis).
- 1.4 Collisions with vessels, or 'ship strike' as it is known, is a significant risk to whales worldwide. Globally, both the number of ships and the speeds at which ships are able to travel are increasing and this means a greater risk of ship strikes and injuries to whales, particularly where shipping activities overlap with critical whale habitat. The GBR represents critical mating and calving grounds for humpback whales. However, analysis of shipping traffic in the GBR shows considerable overlap between shipping lanes and critical whale habitats; 1340 ships passed through the two core humpback whale habitat areas identified in the GBRMP during the months of June – September 2013, the core period for whale presence in the GBR. This demonstrates the high level of risk to these whales from ship strikes. This risk is likely to increase considerably with projected growth in both shipping traffic (more than double by 2020) and humpback whale numbers (10% increase per annum), as the whales continue to recover from past whaling.
- 1.5 Much like pedestrian injuries in road accidents, the speed at which ships are travelling has a strong bearing on the likelihood of a fatal injury being sustained by a whale in the event of a collision. Analysis of shipping traffic through the main areas of habitat for humpback whales in the GBR shows the majority of ships travelling at speeds with an elevated risk of fatal injury to whales. The most common ship speeds recorded in these areas was between 12 and 14 knots. At this speed the chance of a fatal ship strike is approximately 50-70%. Moreover, on average, ships are travelling faster through areas of importance to humpback whales than they are for the GBR as a whole.

- 1.6 There is an opportunity to address this risk to whales before it increases further. As has been employed elsewhere in the world, ship speed controls should be introduced in the GBR to reduce the risk of fatal ship strikes on whales. 10 knot speed limits should be used as this is a speed that reduces the chance of a lethal ship strike to approximately 25% but is also practical for shipping purposes. Much as we use 'school zones' to control speed on roads and reduce the risk of fatal injuries to children, so the Australian Government should consider the use of 'whale zones' within the GBRMP to reduce ship speeds and reduce the risk of fatal collisions with whales. The current Strategic Assessment contains very little detail on measures to reduce risks from shipping, deferring to the planned North East Shipping Management Plan. The draft of this plan released for consultation did not propose ship speed controls.
- 1.7 Additional steps could also be taken to reduce the risk to whales. These include: assessing whether shipping lanes can be moved at all to avoid areas of whale habitat; alerting mariners to areas of whale habitat through navigational charts, the REEFVTS system, and other targeted awareness programmes; improving mariner awareness about the risk of ship strikes and the need to report incidences; and producing as a priority the Government's planned ship strike strategy to provide a policy basis for measures such as these and those required elsewhere in Australia to reduce the risk of ship strike to whales and other marine fauna.

2. Introduction

- 2.1 As one of the leading international animal welfare and conservation organisations, the International Fund for Animal Welfare (IFAW) works to save animals in crisis around the world. IFAW focuses its work on improving the welfare of wild and domestic animals by reducing the commercial exploitation of animals, protecting wildlife habitats and assisting animals in distress. IFAW seeks to promote animal welfare and conservation policies that advance the well-being of both animals and people.
- 2.2 IFAW has a particular focus on the protection of marine mammals and works around the world to protect whales and dolphins from the many threats they face today, including commercial whaling, noise pollution, ship strikes, entanglement and bycatch. In Australia, IFAW's work has focused on whaling by Japan in the Southern Ocean, promoting and supporting cetacean research and protecting whale habitats in Australian waters.
- 2.3 The focus of this submission is very specifically on the increasing risk of ship strike to whales in the Great Barrier Reef as a result of current and projected increases in shipping. IFAW believes further steps could be taken to reduce this risk. As such, this submission relates most specifically to the following term of reference of the inquiry: "(a) management of the impacts of industrialisation of the reef coastline, including dredging, offshore dumping, and **industrial shipping** ..." (our emphasis):

3. Humpback whales in the Great Barrier Reef

- 3.1 The Great Barrier Reef provides critical mating and calving grounds for humpback whales. Each year these whales migrate north from Antarctica to the Great Barrier Reef to give birth to and nurse their young and to mate. In Australia, the east coast population of humpback whales is increasing at a rate of approximately 10.9% per annum (Noad *et al.*, 2008), as it recovers from the devastating impacts of whaling. The recovery of humpback whales is one of Australia's few conservation success stories and today their migration supports a multi-million dollar whale watching industry.
- 3.2 Surprisingly, until recently, the locations of humpback whale wintering grounds were poorly defined in eastern Australia. In 2012, Smith and colleagues (Smith *et al.*, 2012) used whale sighting data and environmental variables to identify the location of suitable humpback whale breeding grounds in the Great Barrier Reef Marine Park (GBRMP). Their report revealed two core areas of very high probability humpback occurrence (>70%) in the southern area of the GBRMP. These two core areas are: Mackay northwards to Proserpine within the inner reef area, extending out approximately 100km; and around the Capricorn and Bunker island groups 100km offshore from Gladstone.

4. Shipping within the Great Barrier Reef Marine Park

- 4.1 In 2012, over 4,500 ships transited the GBRMP to access Queensland ports (Maritime Safety QLD, 2012). This figure is rising annually and is expected to continue increasing as the mining and liquefied natural gas industries in Queensland expand along with the available port capacity. This expansion is likely to increase the ship traffic within the GBRMP by 230% by 2020 (Deloitte Access Economics, 2011).

- 4.2 IFAW analysed monthly shipping records for large commercial vessels operating in the GBRMP in 2013 (obtained from Australian Maritime Safety Authority - www.operations.amsa.gov.au/Spatial/DataServices) to better understand the ships numbers and speed within humpback whale breeding grounds. A subset of all monthly shipping traffic within the area surrounding the two core humpback habitat areas (identified by Smith *et al.*, (2012)) was extracted for the months of June to September 2013 (when whales are present in the GBR) and is shown in the map below (figure 1).

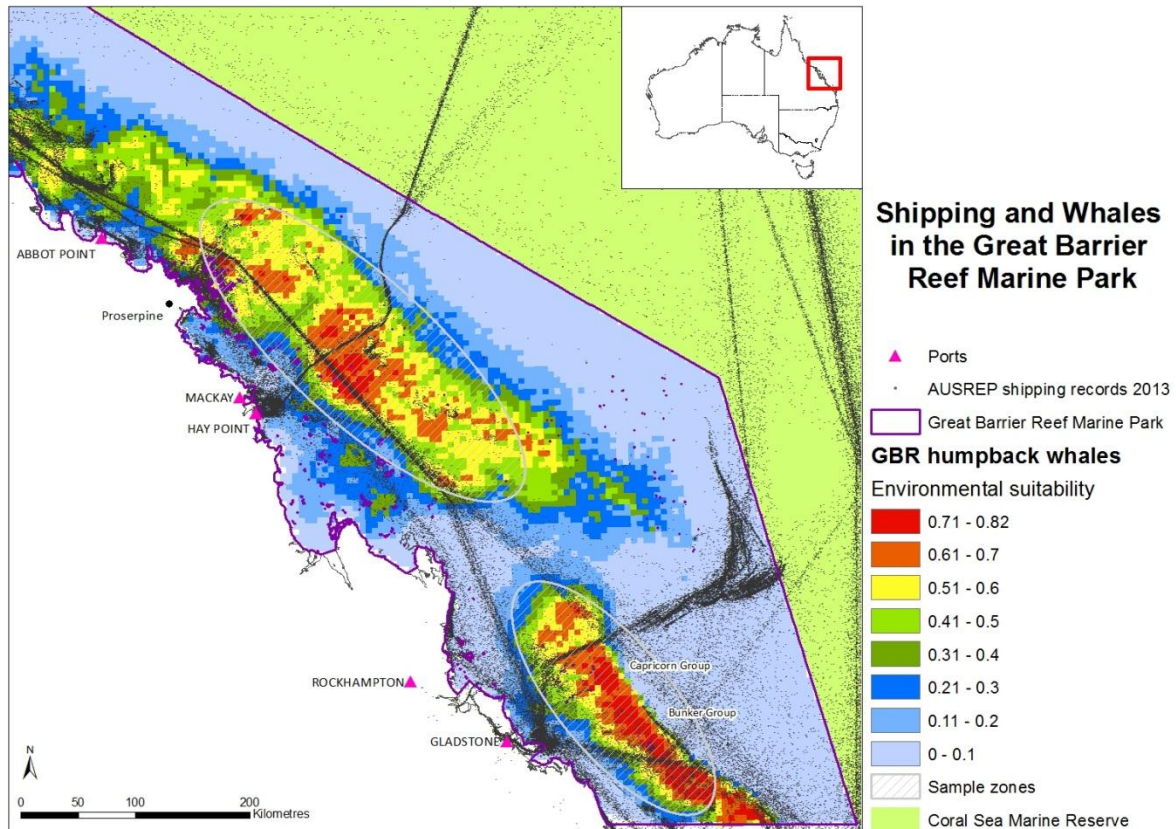


Figure 1: Map showing environmental suitability for humpback whales (Smith *et al.*, 2012), June – Sept 2013 shipping traffic records and the core habitat sample zones in the southern Great Barrier Reef

- 4.3 Records show that over 1340 ships passed through the two core humpback whale habitat areas identified in the GBRMP; an average of 11 ships per day. These vessels were recorded travelling at speeds of between 0 and 64 knots and include fishing, cargo, tankers, military, pleasure craft and passenger vessels. As can be seen from the map in figure 1, there is a high level of overlap between main shipping routes and humpback whale habitat within the GBRMP.

5. Ship strike risk to whales

- 5.1 Analysis of ship strike records worldwide demonstrates that humpback whales are the second most likely whale species to be struck by a ship (Vanderlaan and Taggart, 2006). Several factors can make a species more vulnerable to the risk of ship strike, including surface behaviour, movement patterns and habitat use.
- 5.2 Furthermore, the speed a ship is travelling when it strikes a whale is directly linked to the severity of the injury the whale will sustain. The probability of a large whale sustaining a lethal

injury if struck has been estimated for ships travelling at a variety of speeds. It was found that the severity of the injury to whales increased with ship speed and that the likelihood of a lethal injury was significantly higher when ships were travelling over 8.6 knots (Vanderlaan and Taggart, 2006). This is shown in Figure 2 and demonstrates that the probability of lethal injury increases exponentially with ship speed.

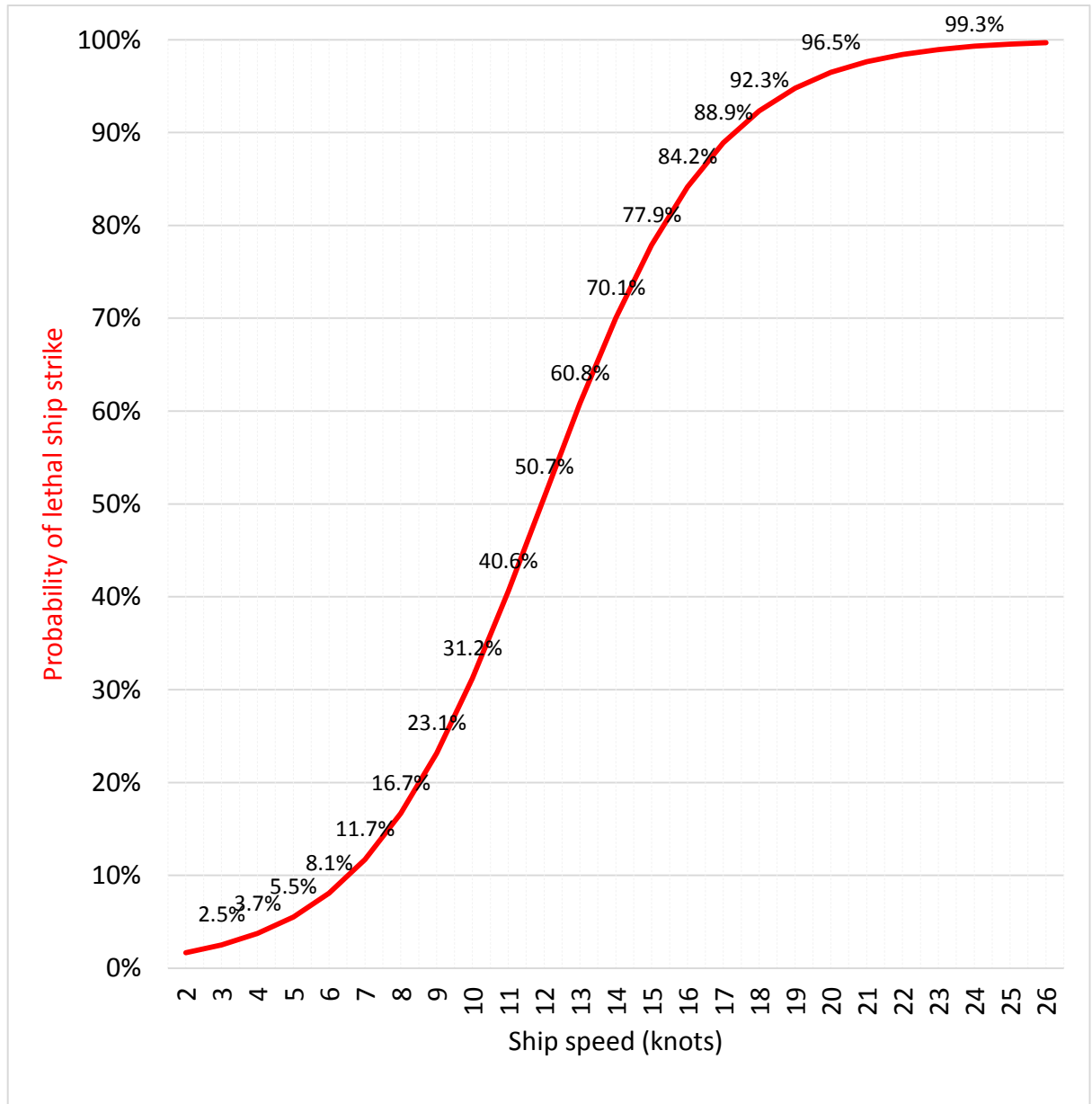


Figure 2. Probability of a lethal strike for a ship striking a whale at various ship speeds. Calculated using equations in Vanderlaan and Taggart (2006)

- 5.3 Efforts to reduce incidences and lethality of ship strikes elsewhere in the world, for example on the US east coast and in the Hauraki Gulf in New Zealand, have identified 10 knots as a speed limit that reduces the chance of a lethal ship strike to 25% but is also practical for shipping purposes. For the GBRMP, analysis of the reported ship speeds for those sampled within the core habitat zones shows that over 70% of ships in these core areas were recorded travelling at over 10 knots (see figure 3).

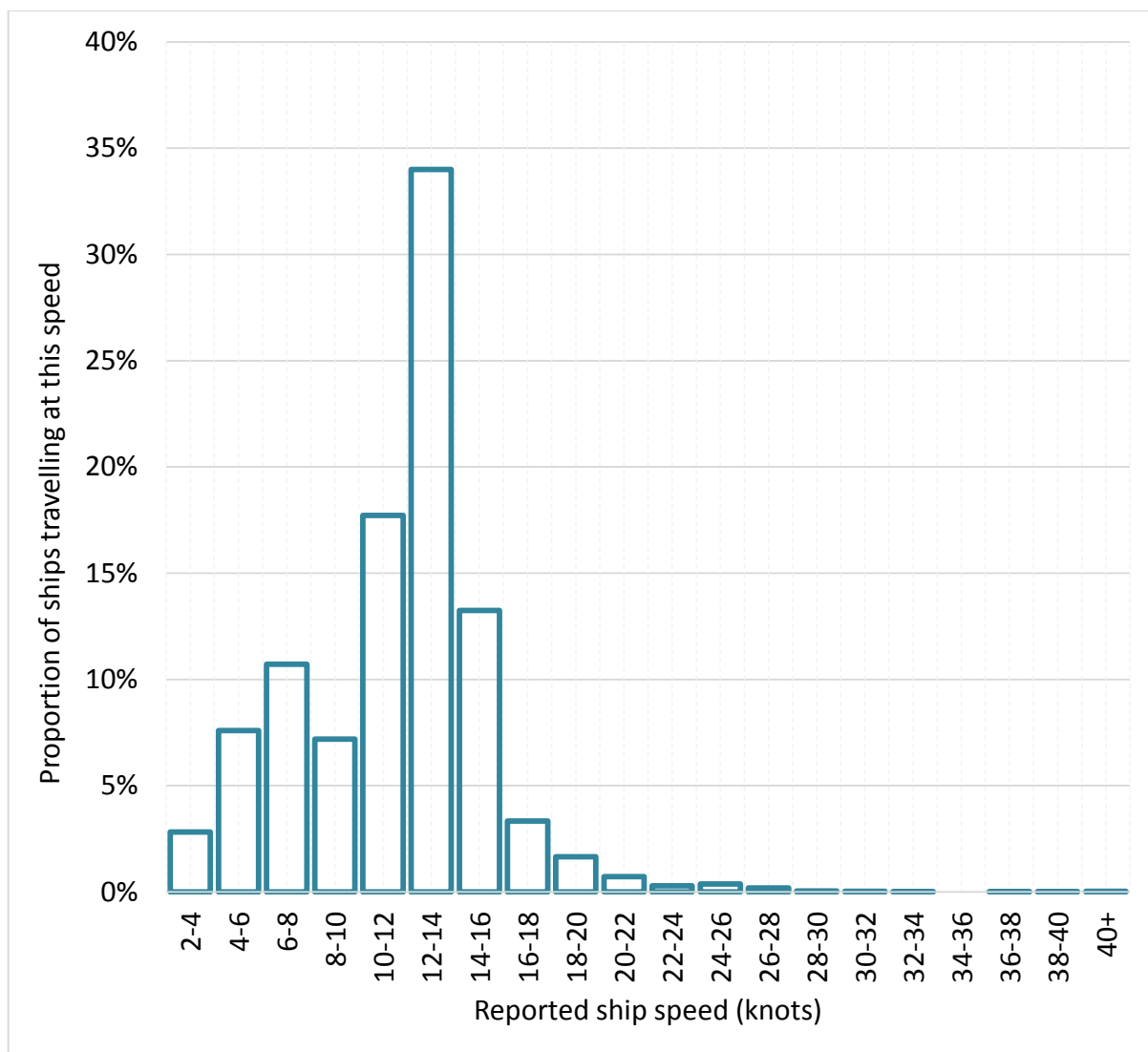


Figure 3: 2013 Reported ship speeds in the core humpback whale habitat sample zones in the Great Barrier Reef Marine Park for June to September

- 5.4 Figure 3 shows that the most common speed travelled within the core humpback whale habitats is 12-14 knots. When comparing the graphs in Figures 2 and 3, it can be seen that at this speed the chance of a whale will dying as a result of collision is between 50.7 and 70.1%.
- 5.5 Further analysis of ship speeds within the sampled core humpback whale habitat zones allows for comparison between the average ship speeds in the entire GBRMP and average speeds recorded in areas suitable for humpback whale breeding. Ships were travelling an average of 11.3 knots in the humpback whale habitat areas compared to 11 knots average across the entire GBRMP, meaning ships are travelling through these important humpback whale areas at speeds that not only pose a real threat to whales, but are often higher than the average speeds for shipping traffic elsewhere in the GBRMP.

6. Reducing the risk of ship strike to humpback whales

- 6.1 The analysis present above demonstrates the significant risk of ship strike to humpback whales from existing shipping traffic in the Great Barrier Reef. However, this risk will be exacerbated further by the predicted growth of both shipping traffic and humpback whale numbers. Given that the area in question is a calving ground for humpback whales, it needs to

be considered that if a mother with a dependent calf is struck by a ship and suffers a fatal or debilitating injury, the survival of the calf is also at risk. So the implications of ship strike in the GBR breeding grounds to both individuals and the population are greater than first assumed.

- 6.2 While records show just a handful of reports of ship strikes of humpback whales in Australia, it is widely recognised that these figures likely under-represent actual incidences. Many mariners do not know of reporting requirements for ship strikes and in many cases ship strikes may go unnoticed; even an animal as large as a whale pales into insignificance against a 300m cargo vessel.
- 6.3 Efforts to reduce incidences and lethality of ship strikes elsewhere in the world have focused on separating areas where whales and ships are or reducing ship speeds. Moving shipping lanes in a constricted topographical environment such as the Great Barrier Reef, where reefs themselves pose shipping hazards, may not be feasible, thus limiting the potential of this option for reducing the overlap between shipping traffic and humpback whales. In such incidences, reducing ship speeds may offer the best likelihood of reducing risk to whales. On the US east coast and in the Hauraki Gulf in New Zealand, 10 knot speed limits have been introduced. 10 knots is a speed that reduces the chance of a lethal ship strike to approximately 25% but is also practical for shipping purposes.
- 6.4 On that basis, IFAW believes a similar restriction should be introduced in the parts of the GBRMP where humpback whales are most likely to be found. Much as we use 'school zones' to control speed on roads around schools to reduce the risk of fatal injuries to children, so the Australian Government should consider the use of 'whale zones' within the GBRMP to reduce ship speeds and reduce the risk of fatal collisions with whales. The current Strategic Assessment contains very little detail on measures to reduce risks from shipping, deferring to the planned North East Shipping Management Plan. The draft of this plan released for consultation did not propose ship speed controls.
- 6.5 Additional steps could also be taken to reduce the risk to whales. These include: assessing whether shipping lanes can be moved at all to avoid areas of whale habitat; alerting mariners to areas of whale habitat through navigational charts, the REEFVTS system, and other targeted awareness programmes; improving mariner awareness about the risk of ship strikes and the need to report incidences; and producing as a priority the Government's planned ship strike strategy to provide a policy basis for measures such as these and those required elsewhere in Australia to reduce the risk of ship strike to whales and other marine fauna.

7. References

Deloitte Access Economics 2011, Queensland Resource Council Queensland resource sector state growth outlook study. Accessed 8/4/14, available at:

http://www.qrc.org.au/dbase/upl/Growth%20Outlook%20Report_Final.pdf

Maritime Safety Queensland 2012, Queensland Ship Movements Monthly Status Report. Accessed 8/4/14, available at: http://www.msq.qld.gov.au/~media/edff1829-a736-4163-b80d-e8bc16d62de3/ship_movements_qld_stats_june12.pdf

Noad, M. J., R. A. Dunlop, D. Paton, and D. H. Cato. 2008. An update of the east Australian humpback whale population (E1) rate of increase. IWC document SC/60/SH31.

Smith, J. N., H. S. Grantham, N. Gales, M. C. Double, M. J. Noad, and D. Paton. 2012. Identification of humpback whale breeding and calving habitat in the Great Barrier Reef. *Marine Ecology Progress Series* **447**:259-272.

Vanderlaan, A. S., and C. T. Taggart. 2006. Vessel collisions with whales: the probability of lethal injury based on vessel speed. *Marine mammal science* **23**:144-156.