

**AUSTRALIA**  
**PROGRESS REPORT ON CETACEAN RESEARCH, JANUARY 2005 TO DECEMBER 2005,**  
**WITH STATISTICAL DATA FOR THE CALENDAR YEAR 2005**

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This report summarises information obtained from: Australian Fisheries Management Authority (AFMA), Canberra—ACT; The Department of Environment and Conservation, Parks and Wildlife Division (NPWS)—NSW; NSW Fisheries—NSW; Taronga Zoo—NSW; Southern Cross University Whale Research Centre (SCUWRC)—NSW; ORRCA—NSW; University of New South Wales—NSW; the Department of Sustainability & Environment—VIC; Dolphin Research Institute Limited—VIC; Australocetus Research, Whale Ecology Group, Deakin University—VIC; Museum of Victoria—VIC; Freshwater and Marine Sciences & Wildlife Ecology Unit, Environmental Sciences Division, Queensland Environmental Protection Agency—QLD; Great Barrier Reef Marine Park Authority (GBRMPA)—QLD; James Cook University (JCU)—QLD; Museum of Tropical Queensland (MTQ)—QLD; Queensland Department of Primary Industries and Fisheries (QDPI&F)—QLD; the University of Queensland (UQ)—QLD; Queensland Museum—QLD; Biodiversity Conservation Branch, Department of Primary Industries Water and Environment (DPIWE)—TAS; Applied Marine Mammal Ecology Unit, Australian Antarctic Division—TAS; South Australian Museum (SA Museum)—SA; Department for Environment and Heritage, SA—SA; Eubalaena Pty Ltd.—SA; Curtin University—WA; Edith Cowan University—WA; Western Australian Department of Conservation and Land Management—WA; Western Australian Museum—WA; Western Whale Research Pty Ltd—WA; Centre for Whale Research, Western Australia—WA; NT Parks and Wildlife Service (NT PWS); The International Fund for Animal Welfare (IFAW); Pacific Whale Foundation (PWF); Georgetown University, USA; Dolphin Ecology Project, USA; Woods Hole Oceanographic Institution, USA

Abbreviations are used for all States and Territories: Australian Capital Territory (ACT), New South Wales (NSW), Northern Territory (NT), Queensland (QLD), South Australia (SA), Tasmania (TAS), Victoria (VIC), and Western Australia (WA).

## 1. Species and stocks studied

Common name	Scientific name	Area/stock(s)	Items referred to
<b>MYSTICETI</b>			
Blue whale/Pygmy blue whale	<i>Balaenoptera musculus musculus/ Balaenoptera musculus brevicauda</i>	Southern hemisphere; Southern Australia; WA	2.1.1; 2.1.2; 2.2; 3.1.1; 3.1.3; 4.3; 6.2.1; 9
Humpback whale	<i>Megaptera novaeangliae</i>	Groups E1; Group V (Eastern Coast); Group D; Northern GBR; TAS; E. Australia; SA	2.1.1; 2.1.2; 2.2; 3.1; 3.1.1; 3.1.3; 3.2; 4.1; 4.3; 4.4; 6.2; 6.2.1; 6.2.3; 9
Southern right whale	<i>Eubalaena australis</i>	TAS; Southern Australian Coast; E Australia; SA	2.1.1; 2.1.2; 2.2; 3.1; 3.1.1; 4.3; 6.2.1; 6.2.3; 9
Pygmy right whale	<i>Caperea marginata</i>	TAS	4.3; 6.2.1
Dwarf minke whale	<i>Balaenoptera acutorostrata</i>	Southern Hemisphere; Northern Great Barrier Reef	2.1.2; 2.2; 3.1; 3.2; 4.1; 4.3; 6.2.1; 9
Minke whale sp.	<i>Balaenoptera acutorostrata/bonaerensis</i>	TAS; S. Hemisphere; E. Australia	2.1.1; 3.1; 3.1.1; 6.2.1
Fin whale	<i>Balaenoptera physalis</i>	Southern Ocean	9
Bryde's whale	<i>Balaenoptera edeni</i>	NSW	2.1.2; 6.2.1
Sei whale	<i>Balaenoptera borealis</i>	Southern Australia	2.1.2
Unidentified baleen whale	<i>Balaenoptera</i> sp.	SA	2.1.2; 4.3
<b>ODONTOCETI</b>			
Sperm whale	<i>Physeter macrocephalus</i>	E Australia; TAS; S. Hemisphere; VIC; SA	2.1.1; 4.2; 4.3; 6.2.1; 6.2.3
Pygmy sperm whale	<i>Kogia breviceps</i>	QLD; E. Australia	4.3; 7.3.1
Dwarf sperm whale	<i>Kogia simis</i>	Southern hemisphere	7.3.1
Unidentified Kogia spp.	<i>Kogia</i> spp.	SA	7.3.1
Killer whale	<i>Orcinus orca</i>	Northern GBR, VIC	2.1.2
False killer whale	<i>Pseudorca crassidens</i>	Southern hemisphere	2.1.1; 7.3.1
Melon-headed whale	<i>Peponocephala electra</i>	E. Australia; N. NSW	4.3; 7.3.1
Short finned pilot whale	<i>Globicephala macrorhynchus</i>	QLD	7.3.1
Long-finned pilot whale	<i>Globicephala melas</i>	TAS/Southern Australia; S. Hemisphere	3.1.2; 4.3; 7.3.1; 9

Unidentified pilot whale	<i>Globicephala spp.</i>	SA; QLD	2.1.2; 7.3.3
Risso's dolphin	<i>Grampus griseus</i>	Indian Ocean; NSW	2.1; 4.1; 4.3; 4.4; 7.3; 8
Bottlenose dolphin	<i>Tursiops truncatus</i> / <i>Tursiops aduncus</i>	QLD; N NSW; SA; E Australia; TAS; Australian; VIC;	2.1.1; 2.1.2; 3.1.1; 4.1; 4.2; 4.3; 5; 7.3; 7.3.1; 7.3.3; 7.4; 9
Common dolphin	<i>Delphinus delphis</i>	QLD; TAS; N NSW; VIC; SA	2.1.1; 2.1.2; 3.1; 4.2; 4.3; 7.3; 7.3.1
Striped dolphin	<i>Stenella coeruleoalba</i>	Australian; E. Australian	7.3.1
Australian snubfin dolphin	<i>Orcaella heinsohni</i>	Australian	9
Indo-Pacific humpback dolphin	<i>Sousa chinensis</i>	Australian; Indian ocean	4.3; 7.3.1; 7.3.3; 9
Pantropical spotted dolphin	<i>Stenella attenuata</i>	Northern NSW	4.1; 4.3; 7.3.1
Fraser's dolphin	<i>Lagenodelphis hosei</i>	E. Australia	4.3; 7.3.1
Irrawaddy dolphin	<i>Orcaella heinsohni</i> ( <i>brevirostris</i> )	QLD	4.3; 7.3; 7.3.1
Unidentified dolphin		QLD	4.3; 7.3; 7.3.1; 7.3.2
Strap-tooth beaked whale	<i>Mesoplodon layardii</i>	TAS; SA	4.3; 7.3.1
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	TAS; S. Hemisphere	4.3; 7.3.1
Gray's beaked whale	<i>Mesoplodon grayi</i>	Southern hemisphere	4.3; 7.3.1
Hector's beaked whale	<i>Mesoplodon hectori</i>	SA	4.3; 7.3.1
Blainsville's beaked whale	<i>Mesoplodon densirostris</i>	Eastern Australia	4.3; 7.3.1
Unidentified beaked whale	<i>Mesoplodon sp.</i>	TAS; S. Hemisphere	4.3; 7.3.1; 7.3.3
Unidentified cetacean	<i>Cetacean</i>	SA	2.1.2; 7.3.1
Unidentified whale		QLD	6.2.1

## 2. Sightings data

### 2.1 Field work

#### 2.1.1 SYSTEMATIC

##### Blue whale surveys in the Bonney Upwelling (P. Gill)

Seven aerial surveys were conducted in the Bonney Upwelling and adjacent feeding grounds as far west as the eastern Great Australian Bight. Surveys were conducted between January and April, and in December. Ninety-seven blue whales (including two calves) were recorded in 70 sightings. Other species sighted included 22 sperm whales in five sightings; ~150 pilot whales in four sightings; and a feeding sei whale.

No systematic vessel surveys were conducted during 2005.

##### Blue whale vessel surveys—Perth Canyon (C & M Jenner and V. Sturrock—Centre for Whale Research, WA)

Over the January to April period of 2005, a series of vessel surveys were carried out in Perth Canyon to observe pygmy blue whale activity in this area. Work included: photo-identification, behavioural observations, genetic sampling, echo-sounder logging and deployment of satellite tags. A total of 116 photo-identifications were obtained. These studies constituted part of the Western Australian Exercise Area Blue Whale Project.

##### Blue whale surveys in Geographe Bay and Perth Canyon, WA (C. Burton—Western Whale Research Pty Ltd)

###### *Geographe Bay*

Investigation of blue whales in Geographe Bay, south western Australia included the use of photo images to measure the size of blue whales observed during aerial surveys. Blue whales were observed using three methods of survey in Geographe Bay, southwestern Australia, over a 10-week period, from November to December 2005:

- 1) Land-based sightings were made from a small rocky headland approximately 6 metres above sea level on Cape Naturaliste, and showed a similar wide temporal distribution previously recorded from surveys conducted there in 2003 and 2004.
- 2) Twenty eight vessel-based surveys from a small research vessels recorded 38 blue whales in 17 pods, including 4 calves, close to the Cape. Thirty-five sets of identification photos of blue whales were obtained, processed and included in the blue whale database. An additional 8 sets were also obtained from land-based operations, bringing the total number to over 140 individuals in the database.
- 3) Eight aerial surveys were proposed but less were conducted (5) due to restrictions placed by the Dept of Defence on access to the airspace during the predicted peak of blue whale abundance in Geographe Bay (November).

A combined total of approximately 140 sightings of blue whales were made during land and vessel based surveys, being similar to results of 2003 and 2004. There was no data collected from whale-watching vessels during the project in 2005. Two thirds of the blue whale sightings were made from the land station and reflects the higher effort there. Humpback, southern right, minke whales (several cow/calf pairs) and bottlenose dolphins were also observed and photographed during the blue whale project.

### *Perth Canyon*

In continuation of work since 1999, aerial surveys in the Perth Canyon area, southwestern Australia, (ca 32°S, 115°W) were conducted during January-May 2005. The dedicated Perth Canyon transects continued, as in past years, to maintain consistency in the data. Eight flights were flown in the Canyon survey area from February to May 2005. High numbers of blue whales were reported in the Canyon area with sixty-five blue whale sightings in 57 pods recorded (Table 1). The highest number of sightings (24) was made during the flight in early April. Numerous dolphins and 13 sperm whales were also sighted.

Blue whales observed during aerial surveys from January to May 2005.

Date	Flight #.	Flight Time	Mean Sea State	Pods	Whales observed	Other species
04.02.05	1	3.4 hours	2.5	8	8 blue whales	1 sperm, 5 unid whales 80 dolphins
23.02.05	2	3.5	4.0	8	8 blue whales	
03.03.05	3	3.3 hours	1.0	9	11 blue whales	170 dolphins, 200 Risso
20.03.05	4	2.8 hours	2.8	1	1 blue whale	30 dolphins; aborted
29.03.04	5	3.6 hours	2.0	12	13 blue whales	700 dolphins, 6 sperm
04.04.05	6	3.5 hours	3.4	19	24 blue whales	50 dolphins, 6 sperm
30.04.05	7	1.1 hours	3.6		0 blue whales	No sightings; aborted
09.05.05	8	3.3	3.0	0	0 blue whales	10 dolphins
<b>Total</b>	<b>8</b>	<b>24.5 hours</b>	<b>2.5</b>	<b>57</b>	<b>65 blue whales</b>	<b>1040 dolphins, 13 sperm, 200 Risso 5 Unid.</b>

### Blue, southern right, and humpback whale surveys (J. Bannister—Western Australian Museum)

*Blue whales:* An aerial survey for blue whales was undertaken in the Perth Canyon area, 10-40 nmiles west of Rottnest I WA, in late summer 2005. Eight flights (two incomplete) took place in Feb-May, continuing a series of similar flights each year since 2000. The timing, aircraft, pilot, observers, flight path and sighting protocol were, as far as possible, the same as earlier in the series. Sixty five blue whale sightings in 57 pods, comprising 53 singles, four pairs, and one group of four were recorded. The highest number (24 in 19 pods) was on a flight in early April.

*Right whales:* Annual aerial survey for southern right whales continued off the southern Australian coast in 2005. As usual flights were close inshore between C Leeuwin, Western Australia, and Ceduna, South Australia, where the majority of the 'Australian' population seems to approach the coast in winter/spring. Two 'short' flights, 25-27 July and 8-11 October, C Leeuwin-Twilight Cove, WA, maintained the series since 1976. A 'long' flight, C Leeuwin, WA-Ceduna, SA, 20-23 and 26 August, continued the series extended into South Australia from 1993. Usual concentrations, mainly cows accompanied by calves of the year, were recorded in and near Doubtful I Bay (WA), in and east of Israelite Bay (WA), and at Head of Bight (SA). Relatively large numbers of 'unaccompanied adults' were found between Esperance and Cape Arid, WA, north east of Israelite Bay and west of Twilight Cove WA. There were more sightings than in recent years in and west of Twilight Cove, WA and in and near Fowler Bay, SA. The number recorded on the 'long' flight (600 including 176 cow/calf pairs) was the highest so far in the series.

*Humpback whales:* A combined aerial and land-based survey took place from late June 2005 off Shark Bay, WA. The aerial component was to fly every two days over two months from 20 June, to cover the northern migration, augmented by a land-based component over two weeks in mid-July. The aerial survey followed much the same flight path as in the previous (1999) survey, itself over ten 'good' days at the height of the northward migration since 1976, particularly *ca* every three years 1982-94. The 2005 land-based operation was to cover the middle part of the aerial survey period, to 'ground-truth' it, particularly to estimate pods missed by the aircraft. Because of generally very poor weather, of 30 possible flights (one every two days from 22 June), only 14 could be attempted, and only 11 were in 'excellent' conditions. Difficulties in siting the land-based operation resulted in less of the northern migration being sampled than planned: many animals were not moving in any defined direction, or changed direction north-south; there was a strong likelihood that many passed beyond visual range.

### Humpback whale aerial survey —Shark Bay, WA (C. Burton—Western Whale Research Pty Ltd)

Six aerial survey flights were undertaken inside Shark Bay in July and August 2005, using a similar set of transect to those done six years earlier in 1999, as an adjunct study to surveys carried for the estimation of the population size of humpback whales migrating north on the outside of Shark Bay. Results of the 1999 survey inside Shark Bay have been previously presented in conjunction with historical catch data (Burton, 2001).

No analysis as been done to date on the 2005 survey, however preliminary investigation of the data indicate a similar distribution to that found in 1999 and with the historical catch data. The total number of humpback whales observed during the survey was up by about 15%, with the final flight in August showing very high numbers compared to the last flight at the same time in 1999, up by almost 100%. Bathymetry and the higher salinity waters maybe important factors in restricting the distribution into the southern reaches of Shark Bay.

### Humpback whale—Ballina, NSW

The Ballina Whale Research Project is aimed at determining population characteristics of humpback whales migrating along the east coast of Australia, including timing and speed of migration, association patterns, migratory movements and pod characteristics. The field research element of the project includes vessel based photographic identification of individual whales and opportunistic collection of sloughed skin samples for genetic analysis of whales passing Ballina/Skennars Head during the southern migration in conjunction with land based observations counting and tracking whales using a theodolite and the tracking software *Cyclops*.

Fieldwork was conducted between the dates of 17 Aug and 4 Nov 05 under DEC licence S10403, mainly in NSW waters.

#### *Land based surveys*

A total of 331 hours and 56 minutes of observations were conducted over 43 days between 18 August and 4 November 2005 (an additional 3 days surveys were cancelled due to weather).

#### Summary of the land based survey results - Ballina Whale Research Project 2005

Total period of land based survey	331 hours 56 min
Total humpback whales observed	1258
Total number of pods observed	724
Average pod size	1.74
Average number of pods observed per day	17 (range 1 - 38)
Average number of humpbacks observed per day	29 (range 3 - 69)

#### *Vessel based survey*

A total of 264 hrs and 54 mins of small vessel operation was undertaken on 38 days under Environment Australia Permit number E2001/0005 and NPWS Permit number S10403.

#### Summary of the Vessel Survey Results - Ballina Whale Research Project 2005

<i>Item</i>	<i>Results</i>
Total hours on water	264 hrs 54 mins
Total time with whales	118 hrs 51 mins
Percentage of time with whales	44.9%
Total number of humpback whale pods encountered	191
Total number of humpback whales	451
Average Pod composition	2.36
Total number of humpback whales identified by fluke photograph	Approximately 290 (intra-season resight analysis is currently underway)
Total number of sloughed skin samples collected	55

Identification photos have been sorted and entered into the Southern Cross University Whale Research Centre (SCUWRC) humpback whale database for comparison and full life history analysis. Intra-season resight analysis is currently underway. All sloughed skin samples will be individually identified (using 14 microsatellite loci and d-loop) and sexed. Individual identification results will be entered into the new SCUWRC humpback whale database for comparison and full life history analysis.

### Humpback whale land based survey—Cape Solander, NSW (Cape Solander Project)

An ongoing study of the migration patterns, distribution and abundance of humpback whales undertaken from Cape Solander, New South Wales since 1998. This project involves daily counts of humpback whales from a land based platform during daylight hours from late May until the end of July. This year volunteers counted whales passing Cape Solander on 67 days between 24 May and 31 July. A total of 1368 humpback whales were counted in 2005 and there were also a number of sightings of common dolphins, bottlenose dolphins, pygmy killer whales, minke whales and false killer whales recorded.

### Bottlenose dolphin behaviour and communication project (E. Hawkins)

Since May 2003, behaviour and acoustic recordings have been made of dolphins along coastal zone of the Byron Bay region, northern New South Wales between Brunswick Heads and Ballina to five nautical miles seaward. Both land and vessel surveys were conducted seasonally during two-week intensive data collection periods. The primary aim of this project is to investigate the influence of human activities on the behavioural patterns and use of acoustic communication of resident and transient bottlenose dolphins (*Tursiops sp.*). In addition, this project also aims to assess the abundance, distribution and residency patterns of dolphin groups within the survey area. The table below outlines the survey effort of 2005 along with sighting data and the number of dolphins individually identified and catalogued from two research vessel platforms used during this study.

Survey Season	Total # Vessel Survey Hours	Total # Dolphins Sighted	# Dolphins Identified & Catalogued
Summer (2004/2005)	50.23	437	174
Autumn (2005)	4.20	55	9
Winter (2005)	6.32	181	57
Spring (2005)	8.58	97	12
<b>TOTAL</b>	<b>70.21</b>	<b>770</b>	<b>252</b>

#### Bottlenose dolphin habitat use in estuaries project (C.Fury)

Habitat use of Bottlenose dolphins (*Tursiops aduncus*) is being investigated to determine habitat use of the Richmond & Clarence estuaries, NSW, determine the population dynamics and site fidelity of bottlenose dolphins in the two estuarine habitats and to assess the affect of abiotic factors on bottlenose dolphins inhabiting these estuaries, in particular water quality components such as pH, dissolved oxygen and turbidity (effect from acid sulphate soils and agricultural run-off).

The Clarence River has an estimated dolphin population of 58 SE 1.2 (58-73 95% CI) and the Richmond River 24 SE 0.9 (24-30 95% CI). Feeding was the major behaviour exhibited by the dolphins in both estuaries occurring 57% (CR) and 74% (RR) of their total time in the estuaries. A determining factor of the dolphins habitat use in the estuaries was 3 flood events that occurred during the 2.5 years of the study so far. Another 6 months of field work is still to be completed.

<b>Richmond River</b>			
Survey Season	Total # Vessel Survey Hours	Total # Dolphins Sighted	# Dolphins Identified & Catalogued
Summer (2004/2005)	27	12	7
Autumn (2005)	40	13	8
Winter (2005)	57	12	6
Spring (2005)	51	24	14
<b>TOTAL</b>	<b>175</b>	<b>61</b>	<b>20 catalogued</b>
<b>Clarence River</b>			
Survey Season	Total # Vessel Survey Hours	Total # Dolphins Sighted	# Dolphins Identified & Catalogued
Summer (2004/2005)	20	18	18
Autumn (2005)	38	65	49
Winter (2005)	52	28	26
Spring (2005)	45	91	75
<b>TOTAL</b>	<b>155</b>	<b>202</b>	<b>51 catalogued</b>

#### Bottlenose dolphins-Port Phillip, VIC

The Dolphin Research Institute conducted surveys on the bottlenose dolphin population in southern Port Phillip from January to December 2005. During 2005, the Institute collected dorsal fin photographs for use in photo-identification of individuals, and collected behavioural data. Researchers conducted 8 surveys from the Institute's vessel, resulting in approximately 26.8 field hours. A total of 18 sightings of dolphins were made over this period.

#### Bottlenose dolphin aerial surveys—South Australian gulfs (South Australian Museum)

During March and April 2005, the South Australian Museum was funded by DEH (Canberra) to carry out aerial surveys for dolphins in the South Australian gulfs. Collaborators are Macquarie University, DEH (Adelaide) and WDSCS. A trial flight of central and southern Gulf St Vincent on 9 March observed bottlenose dolphins, as well as seals, rays and sharks. The main survey was carried out in Spencer Gulf between 17 and 23 April when east-west transects were run at 2.5 degree or 5 degree intervals from the northern end of the gulf to approximately the latitude of the Althorpe Islands in Investigator Strait. The survey was flown at 500 ft and 100 kts. The report for this study will be submitted by mid-April 2006. There was a marked increase in dolphin sightings at the southern extremity of Spencer Gulf and in Investigator Strait (part of Eyre Bioregion). All dolphins that could be identified to genus with certainty were bottlenose dolphins but it was difficult to distinguish species in most cases. It is probable that most sightings well within Spencer Gulf were *Tursiops aduncus*. One group of about 100 dolphins in Investigator Strait were clearly *T. truncatus*. The study will report on density and distribution of dolphins and other marine vertebrates in Spencer Gulf.

## 2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY

### Blue whales—Bonney Upwelling (P. Gill)

Additional aerial surveys (not following regular survey tracklines) were conducted while assisting in the making of a wildlife documentary, with 81 blue whales from 59 sightings. During February-April 2005, weeks were spent at sea assisting a documentary team who were filming blue whales and other marine fauna. During this period, 63 blue whales were recorded in 37 sightings. Blue whales were sighted by local lobster fishers and by a seabird watching vessel. A single humpback and a single killer whale were reported by a crewman on a longline fishing vessel.

### Humpback whales—Eden, NSW

Pacific Whale Foundation and Ros Butt conducted opportunistic vessel-based research activities off Eden, NSW using the whalewatch vessel *Cat Balou*, a 12 m power catamaran, from 20 September – 22 December 2005 in the form of digital photographs and real time observations recorded on pre-formatted data sheets.

### Opportunistic sighting by fisheries observers and fishers (AFMA)

In 2005, AFMA fisheries observers were present on board:

- 190 fishing trips to the Eastern Tuna and Billfish Fishery
- three fishing trips to the Southern and Western Tuna and Billfish Fishery
- five fishing trips to the South East Trawl Fishery
- all fishing trips to the Heard Island and McDonald Island Fishery
- all fishing trips to the Macquarie Island Fishery
- three trips to the Purse Seine Fishery
- two trip to the North West Slope Trawl Fishery
- seven trips to the Gillnet, Hook and Trap Fishery
- ten trips to the Coral Sea Fishery
- 23 trips to the Small Pelagic Fishery
- three to the Northern Prawn Fishery
- eleven trips to the Torres Strain Prawn Trawl Fishery

Opportunistic sightings made by AFMA fisheries observers and fishers, from commercial fishing vessels were recorded between 1 January 2005 and 31 December 2005.

### Humpback Whale—Hervey Bay (Pacific Whale Foundation)

Opportunistic vessel-based research activities were conducted by Pacific Whale Foundation under Hervey Bay Marine Park Permit (MP2004/005) to document the use of Hervey Bay Marine Park by humpback whale mothers with calf. Observations were conducted from a 5.8 m XL Naiad (rigid hull inflatable) from 13 August - 22 October 2005. Data was collected opportunistically in the form of digital photographs, digital audio recordings, and real time observations recorded on pre-formatted data sheets. Approaches to whales were made with a view to ensuring that the ongoing behaviour of the whales was not changed by the presence of the boat, and were limited to 100 m distance in Hervey Bay.

### Dwarf minke whale studies (Dr Alastair Birtles—JCU and Dr Peter Arnold—MTQ)

Observations were conducted primarily from *Undersea Explorer*, a 25 m long commercial live-aboard dive vessel, during ten trips of 6 days each (May 28 – August 5, 2005, with core weeks from June 11 to July 22). Researchers who were provided space on 5 other tourist dive vessels, covering from 8 to 29 days on an individual vessel, recorded further observations. Additional whales seen when researchers were not on board were reported on Whale Sighting Sheets (see below).

Substantially *Undersea Explorer* covered the same route in each of the six core weeks - from Port Douglas to the outer Great Barrier Reef Ribbon Reefs east of Lizard Island and return, with a watch maintained throughout daylight hours. There were 96 encounters with dwarf minke whales, of which 50 included an underwater interaction. The total number of whales seen in these encounters was 255-271, of which 162-170 were seen underwater. Surface and underwater observations were routinely made during encounters, concentrating on recognizing individual whales and documenting whale-swimmer interactions. Sighting sheets were received from all live-aboard dive vessels running swim-with whale programs (return of these has been a permit requirement since 2003 season). Returns (276 encounters: 260 dwarf minke whales, one incidental killer whale and 12 incidental humpback whale sightings) from 12 vessels are being analyzed.

#### Humpback whales—Rottneest Island (Chris Burton—Western Whale Research Pty Ltd)

In continuation of work since 1989, vessel based surveys in the inshore coastal waters off Perth and Rottneest Island, southwestern Australia, (ca 31° 50'S, 115° 30' W) were conducted during September to November 2005. Observations, gps locations and photo-identification were made aboard two vessels during whale watching operations from Hillarys Boat Harbour, on the northern coastal suburbs of Perth. One sighting of blue whales was made and one animal photographed.

To date no analysis of the collected data has been attempted, however from all accounts the season was typical of previous years. Many photographs were again taken in 2005 to be added to the previous 16 years data for inclusion into the WA humpback photo-id catalogue. Funding assistance is required for this work to be completed.

#### Ballina Whale Research Project—Ballina, NSW

The project recorded sightings of a number of other species in waters of northern NSW. These included confirmed sightings of bottlenose dolphins *Tursiops truncatus*, common dolphins *Delphinus delphis*, a mother/calf pair of southern right whales *Eubalaena australis*, a Bryde's whale *Balaenoptera edeni* and a dwarf minke whale *Balaenoptera acutorostrata*

#### Pacific Whale Foundation—Eden, NSW

The Pacific Whale Foundation spent nearly 241 hours on the water off Eden during 60 days of field effort. Feeding was observed in 19.1% of the animals observed, with the 80% of the feeding bouts observed during October. A total of 345 whales were sighted, with 79 individuals (23%) observed feeding. Using photographic identification techniques, 120 whales were individually identified. The season was highlighted by the late appearance (17–22 December) of a mother with a calf.

#### NSW Wildlife Atlas—NSW

Department of Environment and Conservation maintain a Wildlife Atlas of all native fauna sighted in NSW. Sightings of marine mammals are provided from a variety of sources including records kept at Greencape Lightstation by Sandy Roadknight, and are put on the NSW Wildlife Atlas as opportunity arises.

#### Dolphin Research Institute Community dolphin-sighting network—Port Phillip, VIC

The Dolphin Research Institute continued building its community dolphin-sighting network which has resulted in the recording of regular dolphin sightings within most of Victoria's coastal waters including Port Phillip, Western Port and the Gippsland Lakes, resulting in approximately 120 sightings of cetaceans being reported throughout the year. Most reports are of bottlenose dolphins, but some other species reported included humpback whales (*Megaptera novaeangliae*) and killer whales (*Orcinus orca*), as well as several unidentified whales.

#### Opportunistic sightings—S.A. (Kemper—S.A. Museum)

Species	Number of Sightings in 2005	Contact person/institute
Large Cetacean	2	C. Kemper/S.A. Museum
Baleen Whale	1	
Southern Right Whale	81	
Humpback Whale	2	
Indo-Pacific Bottlenose Dolphin	1	

Mike Bossley continues his series of opportunistic sightings of dolphins from tour boats in Gulf St Vincent.

## *2.2 Analyses/development of techniques*

#### Blue, southern right, and humpback whale surveys (J. Bannister—Western Australian Museum)

*Right whales:* Significant positive increase rates were obtained on the 2005 aerial survey (see 2.1.1) for the three classes, 'all' animals, 'unaccompanied' animals and cow/calf pairs. For cow/calf pairs, 1993-2005, the increase rate was 7.53% ( $p=0.015$ ), with 95% CI (4.03, 11.04 %), in line with a 1997 power analysis indicating the need for a time series to 2007 to provide a reliable result. Computerised photographic matching, introduced comprehensively from late 2003, has continued, allied with a computerised database.

Current (2003-5) population size for the 'Australian' population, i.e. visiting the area surveyed, is estimated at ca 1500-1600.

*Blue whales*: Line transect analysis of the 2005 survey results (see 2.1.1), with estimated effective half strip-width of 2.58km, gave an estimated average abundance of 11 (%cv 16.6, 95% CI 8,15). The corresponding estimate for the period 2000-2005 was also 11 (%cv 20.01). Correcting for diving animals by a factor of 2.52, obtained using the methodology of Barlow et al (1988), dive time data from boat-based observations in January-May 2003 and the empirical method of Bannister and Hedley (2001), gave 2005 adjusted abundance of 27 (95% CI 17,44) with that for 2000-2005 also 27 (95% CI 17,44). An attempt to estimate 2005 abundance using cue counting data gave anomalous results.

*Humpback whales*: Preliminary data review of the 2005 survey (see 2.1.1) suggests a peak during the first part of the aerial survey on 12 July, with a 'trough' during the last two weeks in July followed by a second peak at the end, highly suggestive of a change in migration direction during the survey; the proportions moving north and south during the period, as observed from the aircraft, indicate that a change in migration did occur, with the southern migration beginning after mid-July, and becoming more pronounced after the first week in August. There may be insufficient data to attempt a population assessment. Account is being taken of the relatively small amount of aerial survey effort, the reduced number of aerial survey legs likely to have covered the migration path, the change in migration direction during the period, and the likelihood that the land-based operation was not covering the main migration path.

#### Blue whale photographic size estimation—Geographe Bay, WA (C. Burton—Western Whale Research Pty Ltd)

A new technique was used to measure the size of blue whales using photographs taken during aerial surveys. The objective was to see if 'true' and 'pygmy' blue whales can be distinguished by various morphometric dimensions from photos taken during aerial surveys. A digital SLR camera and fixed focal length 300mm telephoto lens were calibrated for height by taking photos of an object of known dimensions from various heights with the objective to photograph blue whales from the same height and using a software program to measure particular dimensions of the whale that are known to assist in distinguishing the two species apart.

Because of limitations placed on the frequency of flying surveys by Defence, the 'peak' of known abundance of blue whales in Geographe Bay was missed and only 6 blue whales were recorded. Four of these animals were photographed. No data analysis has been attempted as yet.

#### Dwarf minke whale videogrammetry studies—Great Barrier Reef, QLD (P. Arnold and A. Birtles)

Ms Susan Sobtzick submitted a Diploma thesis at the University of Rostock, based on her work using underwater videogrammetry to measure dwarf minke whales. A manuscript with Dunstan, Birtles & Arnold has been submitted for review (see section 11.2).

#### Humpback whale abundance estimates and behavioural ecology—QLD (M. Noad—UQ)

Provisional analysis of 2004 east Australian abundance estimate from Pt Lookout to IWC (SC/57/SH12) was conducted. Analysis finalised later in 2005 with absolute abundance estimate (for 2004) of 7090 whales ( $\pm 660$ , 95% CI) and rate of increase of 10.6% ( $\pm 0.5\%$ ). Analyses were also conducted on aspects of the behavioural ecology of the humpback whales with particular emphasis on the use of song (J. Smith, MS in prep) and social sounds (R. Dunlop, 2xMS in prep).

#### Humpback Whales—Hervey Bay, QLD (Pacific Whale Foundation)

Slightly over 458 hours were spent on the water in Hervey Bay during 59 days of field effort. A total of 558 groups (including affiliations and disaffiliations) of whales were observed comprised of 1505 animals (62% adults, 36% sub adults, 20% calves, and 4% undetermined). Mean pod size was 2.7 whales. 280 hours were spent observing whales (61% of field effort), with just over 25 (total) animals observed each day. Using photographic identifications techniques, 760 whales were individually identified.

#### Bottlenose dolphin acoustic behaviour—NSW (M. Lemon- Macquarie University)

M. Lemon completed acoustic and statistical analyses on data collected throughout her PhD (2001 – 2004). Data includes background ambient noise measurements from selected positions around Jervis Bay & Port Stephens NSW, data relating to the acoustic behaviour of bottlenose dolphins in both of these locations (description of acoustic repertoire and investigation of geographic variation) and data on the effect of powerboats on the surface and acoustic behaviour of the dolphins. A peer reviewed paper on the effect of powerboats on travelling bottlenose dolphins in Jervis Bay was submitted to Biological Conservation in mid 2005 and accepted for publication in early 2006 (see below).



### Dolphin Research Institute—VIC

Population analyses by DRI currently being undertaken on photo-identification data using mark-recapture programs.

## **3. Marking data**

### *3.1 Field work*

#### Dwarf minke whale studies—Great Barrier Reef (A. Birtles—JCU & P. Arnold-MTQ)

During the 2005 season, recognition of individual dwarf minke whales based on scar and colour pattern variations, as well as length measurements, were priorities. Approximately twelve hours of video and about 2700 digital still images were taken for photo-identification.

#### Humpback Whales—Hervey Bay, QLD & Eden, NSW (Pacific Whale Foundation)

Observations were made from a 5.8 m XL Naiad (rigid hull inflatable) operating from Urangan Harbour, Hervey Bay, QLD 13 August - 22 October 2005. Observations were also made from 20 September – 22 December off Two Fold Bay, Eden NSW. Data was collected opportunistically in the form of digital photographs, audio tape recordings, and real time observations recorded on pre-formatted data sheets. Photo-id was undertaken using established procedures (Kaufman et al., 1986; 1993; Garrigue et al., 2000; Forestell et al., 2003) that have led to the identification of 3100 humpback whales along the east coast of Australia. Both fluke and lateral body images were collected for each identified animal on each separate observation opportunity.

Photographs were obtained using Canon D20 and D10 digital cameras equipped with motor drives and 100-300mm lenses. Each pod approached was designated with a coded number composed of the calendar date and pod number to indicate each consecutive encounter with humpback pods during the day.

For each pod encountered, the following data was recorded: date, time, location (determined by GPS, Map Datum: WGS 84), group size and composition (e.g., calf, adult, sub-adult), and general activity of the whales. In addition, observers recorded the following information while photo-identifying whales: frame number and content (e.g.: fluke, lateral body, etc.) of each photograph taken. All images are subsequently catalogued and recorded according to frame number, time, location, date, pod composition, size, and sex (if determined) for each frame. Hervey Bay song was collected using an amplified hydrophone and a Sony TCD-D8 DAT recorder. Copies of 8 songs bouts were provided to Libby Eyre of Macquarie University, NSW for analysis.

#### Southern right whale photo-identification, South Australia

Photo-identification and censuses of southern right whales were conducted at the Head of Bight calving aggregation area, South Australia on 34 days during the period July to October 2005. 2005 was the 15th consecutive year of the study and continued an unbroken time series of data that was begun in 1991. The study provides information on aspects of the population ecology and reproductive biology of southern right whales critical to effective monitoring and recovery planning. Photo-identifications of 146 individual adults (including 60 calving females) and approximately 40 calves of the year were obtained. The highest number of right whales recorded in a single day at Head of Bight in 2005 was 131, which included 55 calves.

#### **3.1.1 NATURAL MARKING DATA**

Species	Feature	Area/stock	2005/ no. photographed	Catalogued (Y/N)	Catalogue total	Contact person/institute
Pygmy Blue Whale	Fluke	WA	9	Y	53	C&M Jenner
	Left Lateral Body	WA	51	Y	225	C&M Jenner
	Right Lateral Body	WA	49	Y	230	C&M Jenner
	Sex ID	WA	NA	Y	52	C&M Jenner
	ID'd cow/calf pairs	WA	7	Y	10	C&M Jenner
Blue whale	Lateral body	WA	50	Y	143	Western Whale Research
	Flank pigment	Southern Australia	22	Y	50	Margie Morrice <a href="mailto:mmorr@deakin.edu.au">mmorr@deakin.edu.au</a>
Humpback whale	Fluke	WA	34	Y 1990-1998, 2003-2005	1530	C&M Jenner
	Left Lateral Body	WA	63	Y 1990-1998, 2003-2005	2051	C&M Jenner
	Right Lateral Body	WA	58	Y 1990-1998, 2003-2005	2058	C&M Jenner

Species	Feature	Area/stock	2005/ no. photographed	Catalogued (Y/N)	Catalogue total	Contact person/institute
Humpback whale	Sex ID (including biopsy results)	WA	8	Y 1990-1998, 2003-2005	419	C&M Jenner
	ID'd cow/calf pairs	WA	8	Y 1990-1998, 2003-2005	293	C&M Jenner
	Fluke photograph	Group E	290	Y	Approx. 640	Burns / SCUWRC
	Dorsal fin / laterals	Group E	Approx. 400	N		Burns / SCUWRC
	Flukes, Lateral Body	Eden—NSW	120 Eden	Y	3100	Greg Kaufman, Pacific Whale Foundation
	Flukes, Lateral Body	Hervey Bay—QLD	760 Hervey Bay	Y	3100	Greg Kaufman, Pacific Whale Foundation
	Lateral body+flukes	WA	50 estimated	N	Est 3000	Western Whale Research
Southern right whale	Callosity pattern lateral body	WA	3	N	Unknown	Western Whale Research
	Head	SA	146	Y	683	R Pirzl, S Burnell, Eubalaena Pty Ltd
	Head callosity pattern	Southern Australia (WA-SA)	Ca. 480 images selected from ca. 3800 taken	N	532	Bannister, WA Museum
	dorsal head (callosities)	TAS	17	Y	37	R. Gales, DPIWE
Minke whale	Lateral body	WA	3	N	3	Western Whale Research
Bottlenose dolphin	Dorsal Fin	Northern NSW	172	Y	435	Liz Hawkins, SCU Whale Research Center
	Dorsal Fin	Richmond River	61	Y	20	Christine Fury, SCU Whale Research Center
	Dorsal Fin	Richmond River	202	Y	51	Christine Fury, SCU Whale Research Center
	Dorsal fin	Port Phillip	57	Y	110	A Warren-Smith, Dolphin Research Institute
Common dolphin	Dorsal Fin	Northern NSW	2	Y	20	Liz Hawkins, SCU Whale Research Center

#### Humpback and Blue whale photo-ID—WA

##### C & M Jenner, V. Sturrock (Centre for Whale Research, WA)

The Western Australian Humpback Whale Sighting Database was developed as a computerised aid to matching humpback whale fluke and lateral body ID photos. A total of 5612 images of 3081 whales have been entered into the CWR 1990-2004 catalogue. From 1990 to 1998, 141 resights have been found (67 intra season and 74 inter season) resulting in a catalogue of at least 2110 individual whales. From 1999 to 2002, 377 whales were photo-identified and have yet to be added to the database. In 2003, 381 whales were photo-identified have been added to the catalogue. During 2004, 75 more whales were added. At this stage matching of the 2003/2004 images against the catalogue is incomplete.

A Blue Whale Sighting sightings database has been developed as a computerised aid to matching blue whale fluke and lateral body ID photos. A total of 231 whales were recorded in the database by the end of 2004. 30 of the whales have been sighted more than once (25 intra season and 18 inter season), resulting in a catalogue of 190 individual whales (Note that 1 whale has been sighted in 4 consecutive seasons).

##### Chris Burton—Western Whale Research Pty Ltd

A total of approximately 3000 identified humpback whales require cataloguing into the WA digital database to enable inter and intra database comparisons. A new version of this database will soon be available enabling comprehensive data storage with all images.

A concerted effort has successfully been made to enter images and data for blue whales photographed (primarily from Geographe Bay) to Dec 2005 into a database with a total of 143 individuals identified so far. Comparison analysis is underway. Three minke whale cow/calf pairs were recorded in November 2005 during land and vessel based sighting in Geographe Bay. Two were photographed.

#### Bottlenose dolphin photo-ID—Shark Bay, WA (J. Mann—Georgetown University)

Work continues to update the Digital Dorsal Fin Identification Catalogue (DDFIC). Over 2200 fins have been traced so they can be used in FinScan. There are currently 5300 digital photo images in DDFIC with over 1000

waiting to be traced, matched or added to the catalogue. Over 100 dolphins have been identified in the eastern portion of Shark Bay in the last 20 years, with approximately 600 that are routinely monitored (annually). Another 500 dolphins await matching to the existing DDFIC or to be named.

### 3.1.2. ARTIFICIAL MARKING DATA

All tags were lime green spaghetti tags inscribed with numbers:

W00 - ### Return to GPO Box 8 Canberra

Species	Date	Tag number	Sex	Age class	Notes
Long-finned pilot whale	25/10/2005	W00-304	Male	Adult	Stranded then released SE TAS
	25/10/2005	W00-305	Female	Adult	Stranded then released SE TAS
	25/10/2005	W00-306	Male	Juvenile	Stranded then released SE TAS
	25/10/2005	W00-307	Male	Adult	Stranded then released SE TAS
	25/10/2005	W00-308	Male	Adult	Stranded then released SE TAS
	25/10/2005	W00-309	Female	Adult	Stranded then released SE TAS
	25/10/2005	W00-310	Female	Adult	Stranded then released SE TAS
	26/10/2006	W00-050	Female	Adult	Stranded then released SE TAS
	26/10/2006	W00-051	Male	Adult	Restranded and released again on 27 <sup>th</sup> October. Released SE TAS
	26/10/2006	W00-052	Male	Adult	Stranded then released SE TAS
	26/10/2006	W00-053	Male	Adult	Stranded then released SE TAS
	26/10/2006	W00-054	Female	Adult	Stranded then released SE TAS
	26/10/2006	W00-055	Female	Juvenile	Stranded then released SE TAS
	26/10/2006	W00-056	Male	Juvenile	Stranded then released SE TAS

### 3.1.3 TELEMETRY DATA

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute
Pygmy blue whale	Satellite	3	2 weeks	C Jenner/CWR, N.Gales AAD
	Satellite	4	16 days	P. Gill, Australocetus; N. Gales, AAD
Humpback whale	Satellite	6	2 weeks	C Jenner/CWR, N.Gales AAD

## 3.2 Analyses/development of techniques

### Dwarf minke whale studies—Great Barrier Reef (A. Birtles—JCU & P. Arnold-MTQ)

Based on initial results, there were 15 within-season re-sightings. Maximum distance between the re-sightings was about 125 km (two animals, re-sighted 8 and 15 days later). There were 7 between year re-sightings, including one female seen in 1999, 2001, 2002 and 2005; in 2005 a calf accompanied her.

### Humpback Whales—Hervey Bay, QLD & Eden, NSW (Pacific Whale Foundation)

From the digital images, all the individual whales identified by fluke and lateral body markings were compared to Pacific Whale Foundation's East Australia Humpback Whale Catalogue. This process consists of a careful frame-by-frame record being maintained of all digital photographs taken in the field. Following each day's field effort, the field notes were transcribed onto Microsoft Excel "Boat Log" files. These files detail the photographic and observational data of each observed pod. Each frame is correlated to the date, pod number, film code, frame number, and photographer for each group of whales documented.

Every identifiable image for each pod of whales observed was then examined, and the best identifying image for each whale was noted and recorded in the Boat Log File. Each identified whale was then assigned to a temporary catalogue, and all images within that catalogue were checked for within-season sightings. At the end of within-season analysis, the best image of each whale was selected and assigned a temporary unique code for that year. This process created a Season ID Catalogue that contains images of all the individual whales identified within the 2005 season, complete with their unique code.

Analysis of the data will continue by comparing Pacific Whale Foundation's East Australian fluke ID catalogue (which now contains over 3100 individual animals identified along the east coast of Australia, Tonga, New

Zealand and Antarctica) to Pacific Whale Foundation's West Australia Catalogue, Centre for Whale Research West Australia Catalogue, the College of the Atlantic Antarctic Humpback Whale Catalogue and Pacific Whale Foundation's Latin America Catalogue. Pacific Whale Foundation is also working collaboratively with the Centre for Whale Research to develop a centralized, searchable data set of fluke identifications.

#### 4. Tissue/biological samples collected

##### 4.1 Biopsy samples

Species	Area/stock	Calendar year/ season no. collected	Archive d (Y/N)	No. analysed	Total holdings	Contact person/institute
Dwarf minke whale	GBR	6	Y	?	?	Dr Peter Arnold (Museum of Tropical Queensland)
Bottlenose dolphin	Australian	2004/56 additional to last report 2005/70				M. Krutzen/University of Zurich, W.B. Sherwin/University of N.S.W.
Humpback whale	Group E	55	Y	0	154	Burns , Anderson/ SCUWRC

\*Also see NSW report by Harcourt and Bilgmann for their studies of bottlenose and common dolphins in South Australia.

##### 4.2 Samples from directed catches or bycatches

Species	Area/stock	2005 total	Archived (Y/N)	Tissue type(s)	Contact person/institute
Common dolphin	Queensland	3	Y	skin	QDPIF
Sperm Whale	S.A.	1	1Y	Genetic tissues*	C. Kemper/S.A. Museum
Bottlenose Dolphin	S.A.	2	1Y/1Not yet	Genetic tissues*	C. Kemper/S.A. Museum

\*Genetic tissues including (blood, liver, kidney, muscle, skin) reproductive, stomach and intestines, toxic contaminants (liver, kidney, muscle, blubber). Complete sets of tissue samples were not collected from all animals because in some cases the state of decomposition made this inappropriate.

##### 4.3 Samples from stranded animals

Species	Area/stock	2005 total	Archived (Y/N)	Tissue type(s)*	Contact person/institute
Pygmy blue whale	Southern hemisphere	1		DNA	WA Museum, Murdoch University, Doug Coughran/ CALM
Humpback whale	TAS	2	Y	Blubber , muscle, kidney, liver, skin, skull *	R. Gales / DPIWE
	Group IV	1		Skin and blubber	Doug Coughran/ CALM
Southern right whale	Southern coastline	2		DNA	WA Museum, Murdoch University, Doug Coughran/ CALM
Pygmy right whale	TAS	1	Y	Skin	R. Gales / DPIWE
Minke whale	QLD	1	Y	Skin, blubber and baleen	QPWS
Unid. baleen whale	TAS	1	N/A	nil	R. Gales / DPIWE
Sperm whale	VIC	1	Y	Muscle, whole jaw and teeth, entire flipper	R.O'Brien / MV
	QLD	1	Y	Skin	QPWS
	TAS	5	Y	blubber, skin, muscle, liver, faeces , stomach contents , lower jaw*	R. Gales / DPIWE
Pygmy sperm whale	E Australia	1	Y	Skin, liver, kidney, histopathology slides and blocks	K Rose/ARWH @TZ
	Eastern Australia, NSW coast (Broken Head)	1	Y	blood, teeth, swab from around shark wounds, worm larvae, blubber, kidney, liver, gut and uterus.	NSW National Parks Alstonville file 02/07341. Also able to contact Dr Peter Harrison/Christine Fury Whale Research Centre Southern Cross University.
Melon-Headed whale	E Australia	1	Y	Full skeleton, skin, blubber, teeth	H.Janetzki, Queensland Museum and QPWS
Long-finned pilot whale	TAS	146	Y	Blubber , muscle, skin , teeth *	R. Gales / DPIWE
Bottlenose dolphin	QLD	1	Y	Skin and teeth	QPWS

Species	Area/stock	2005 total	Archived (Y/N)	Tissue type(s)*	Contact person/institute
Bottlenose dolphin	TAS	1	Y	blubber, muscle, kidney, liver, lung, skin, stomach contents*	R. Gales / DPIWE
	SE Australia	2	Y	Blubber and skin (2); all major organs (1); teeth (1)	Dr Verné Dove has histopathology samples for one of the animals. Steve McKechnie (Monash Uni) has blubber and skin for both. Dolphin Research Institute has teeth for one of the animals.
	VIC	1	Y	Muscle, part of flipper and rib	R.O'Brien / MV
	S.A.	5	3Y/ 2 Not yet	Genetic tissues**	C. Kemper/S.A. Museum
Risso's dolphin	Eastern Australia, NSW coast	1	Y	skin, blubber, liver, lung, kidney, heart, tooth, stomach nematodes.	NSW National Parks Alstonville file 02/07341. Contact Dr Peter Harrison/Christine Fury Whale Research Centre Southern Cross University.
	E.Australia	1	Y	Skin, liver, kidney, head, lungs, blubber, gonad, spleen, histopathology slides and blocks	K Rose/ARWH @ TZ
Common dolphin	Eastern Australia, NSW coast	1	Y	tooth, swab from blowhole, skin/blubber, lung, liver, testes, kidney, heart & bone sample.	NSW National Parks Alstonville file 02/07341. Contact Dr Peter Harrison/Christine Fury Whale Research Centre Southern Cross University.
	VIC	1	Y	Whole specimen	R.O'Brien / MV
	TAS	4	Y	Blubber, muscle, skin, kidney, liver, stomach contents*	R. Gales / DPIWE
	S.A.	38	32Y 6N	Genetic tissues**	C. Kemper/S.A. Museum
Pantropical spotted dolphin	Eastern Australia, NSW coast	1	Y	skin, blubber, stomach contents, lung, liver, kidney, uterus and polyps	NSW National Parks Alstonville file 02/07341. Contact Dr Peter Harrison/Christine Fury Whale Research Centre Southern Cross University.
Fraser's Dolphin	E Australia	1	Y	Full skeleton	H.Janetzki, Queensland Museum
Unidentified dolphin	QLD	1	Y	Skin	QPWS
Irrawaddy dolphin	QLD	1	Y	Skin and teeth	QPWS
Indo-Pacific humpback dolphin	QLD	3	Y	Muscle, liver, kidney, skin, blubber and a teeth	QPWS
Indo-Pacific Bottlenose Dolphin	S.A.	14	11Y 3N	Genetic tissues**	C. Kemper/S.A. Museum
Blainsville Beaked Whale	E. Australia	1	Y	Head	C. Dickman NPWS collected at request of Australian Museum.
Hector's Beaked Whale	S.A.	1	1Y	Genetic tissues**	C. Kemper/S.A. Museum
Strap-toothed beaked whale	S.A.	2	2Y	Genetic tissues**	C. Kemper/S.A. Museum
	TAS	2	Y	Blubber, muscle, kidney, liver, skin, skull*	R. Gales / DPIWE
Cuvier's beaked whale	TAS	1	Y	blubber, muscle, kidney, liver, stomach contents*	R. Gales / DPIWE
Gray's beaked whale	Perth WA	1		DNA	Murdoch University, Doug Coughran/ CALM
Unidentified beaked whale	TAS	1	Y	blubber, muscle, kidney, liver, skin, stomach contents, skeleton *	R. Gales / DPIWE

\*note – full range of samples not collected for all animals

\*\*Genetic tissues including (blood, liver, kidney, muscle, skin) reproductives, stomach and intestines, toxic contaminants (liver, kidney, muscle, blubber). Complete sets of tissue samples were not collected from all animals because in some cases the state of decomposition made this inappropriate.

#### 4.4 Analyses/development of techniques

##### Dr Michael Noad (UQ) – Humpback whale studies

A small number of biopsy samples (collected in 2002 – 04) were used for sexing humpback whales as part of the behavioural ecology studies mentioned above.

Curt and Micheline Jenner and Vanessa Sturrock (Centre for Whale Research, Western Australia)  
 Analysis of the CWR humpback whale data base for migratory patterns continues (see Jenner et al. 2001).

## 5. Pollution studies

### South Australian Museum heavy metal and organochlorine analyses

The South Australian Museum continues to routinely collect samples for heavy metal and organochlorine analyses for all marine mammals. Between July 2004 and May 2005 Trish Lavery undertook her Honours Degree at Flinders University on heavy metals in *Tursiops aduncus* (Lavery 2005) and is preparing two publications on her research. She concluded that metallothioneins, renal histology and bone density were useful markers of pathology, possibly relating to levels of cadmium, zinc, mercury and lead. The Environment Protection Authority has completed a report summarising data on the heavy metal status of dolphins in South Australia. It is soon to be released by the South Australian Government (Butterfield and Gaylard 2005).

## 6. Statistics for large cetaceans

### 6.1 Direct catches (commercial, aboriginal and scientific permits) for the calendar year 2005

Nil to report

### 6.2 Non-natural mortality for the calendar year 2005

Species	Area/stock	Male	Female	Total	Cause	Methodology
Humpback whale	Southeastern NSW			1	Entanglement (shark control net)	Dead in net
	Southeastern NSW			1	Dead on beach, rope injury to peduncle and flukes	Visual observations

#### 6.2.1 STRANDINGS OR DEAD WHALES ENCOUNTERED AT SEA

Whale species	Sex	Location	Cause of death	Det.	Source/contact institution, contact name and telephone and/or e-mail
Humpback whale	U	Initially sighted 2NM NE of Acheron Island, 18°58'00S, 146°40'00E. Carcass washed up in Townsville Region 8 days later	U	U	(*1)
	U	NW side of Heron Island, QLD 23°26.04'S, 151°55.08'E	ALIVE-calf pushed back to sea		(*1)
	U	North Stradbroke Island, Moreton Bay, QLD. 27°40.998'S, 153°27'E	ALIVE-calf pushed back to sea		(*1)
	U	Fraser Island, QLD 25°37.098'S, 153°5.502'E	ALIVE-calf pushed back to sea		(*1)
	M	TAS	U	N	(*2)
	F (calf)	28°01'S, 114°09'E, Lucky Bay	U—Photos taken.	U. Advanced decomposition.	(*3)
	F—neonatal calf	31°47'S, 115°44'E Mullaloo Beach, north	Live stranded, died shortly after. DNA taken for WA Museum. Photos taken.	U	(*3)
	F (calf)	29.95037°S, 114.9746°E Leeman	U. Washed up dead, good condition. Photos taken.	U	(*3)
	M	27°51'S, 114°06'E Bluff Point	U—Photos taken.	U. Advanced decomposition.	(*3)
	U	Mystic Beach, South Coast	U	V	Greg Tedder, NPWS-NSW
Pygmy Blue Whale	F	32°01'00"S, 115°28'07"E Strickland Bay, Rottneest Island	U—DNA taken for WA Museum. Photos taken.	U. Advanced decomposition.	(*3)
Southern right whale	U	33°54.4'S, 120°36.9'E Munglinup Beach	U—Photos taken..	U. Early decomposition.	(*3)
	M (calf)	33°51'S, 121°55'E Esperance	U—DNA taken for WA Museum. Photos taken.	U, Early decomposition.	(*3)
	U	26°15'S, 113°48'E Nanga, Shark Bay	U—DNA taken for WA Museum. Photos taken.	U. Early decomposition.	(*3)

Whale species	Sex	Location	Cause of death	Det.	Source/contact institution, contact name and telephone and/or e-mail
Pygmy right whale	M, U	TAS	U	V	(*2)
Minke whale	U	South Coast	U	U	Michelle Lemon, MQU
	M	Moreton Island, QLD 27°2.6'S, 153°27.7'E	U	U	(*1)
	F	NE TAS	U	N	(*2)
	U	35°04'S, 117°53'E Princess Royal Harbour	Live stranded, good condition	Returned to deep water	(*3)
Bryde's whale	U-calf	11 47.877'S, 130 41.517'E	U	U	Ray Chatto-NT PWS
Sperm whale	U	Fraser Island, QLD 25°8.184'S, 153°5.868'E	U	U	(*1)
	U, F	TAS	U, stranding	V	(*2)
	M	2.2km south Greenough River mouth	U—Teeth collected by WA Museum. Photos taken.	U. Advanced decomposition.	(*3)
	M	32°28'S, 115°45'E Madora	U—Photos taken.	U. Advanced decomposition, head only.	(*3)
	U	312984E: 6268082N 1km south Cape Clairault	U—Photos taken.	U. Advanced decomposition.	(*3)
	U	Stockton Beach, Newcastle	U	V	Kathleen Shaw, NPWS-NSW
<b>Contact information:</b>					
<b>*1</b>		<b>*2</b>		<b>*3</b>	
Dr Col Limpus EPA PO Box 15155, City East, QLD 4002 Tel: 0732277718 email: col.limpus@epa.qld.gov.au		Marine Conservation Section Biodiversity Conservation Branch PO Box 44 Hobart, Tas. 7001. Tel:0362336556		Doug Coughran Dept. CALM Locked Bag 104, Bentley DC WA 6983 Tel.: 9334 0224	

## 6.2.2 OBSERVED OR REPORTED SHIP STRIKES

Nil to Report

## 6.2.3 FISHERY BYCATCH

Whale species	Sex	Date	Location	Fate	Targeted fish species	Gear	How observed	Source or contact
Humpback whale	U	29/07/05	27°35.04'S; 153°15.714'E	R	Shark	NSC	F	Queensland Department of Primary Industries & Fisheries
	M	02/08/05	28°4.56'S; 153°17.76'E	D	Shark	NSC	F	
	U	19/08/05	28°7.596'S; 153°29.676'E	R	Shark	NSC	F	
	U	08/09/05	28°4.86'S; 153°18.36'E	R	Shark	NSC	F	
	U	08/09/05	28°4.86'S; 153°18.36'E	R	Shark	NSC	F	
	U	23/09/05	27°25.758'S; 153°33.072'E	R	Shark	NSC	A	QPWS
		27/06/05	Port Macquarie	U	U	U	Sighted	Andy Marshall, NPWS
		26/07/05	North Coast	D	U	U	Sighted	David Redman, NPWS
		01/08/05	South West Rocks	U	Leather-jacket		Sighted	Andy Marshall, NPWS
		11/10/05	Coffs Coast	R		U	Released	David Nalder, NPWS
		28/07/05	Byron Bay	R			Sighted	Ian Kerr, NPWS

Whale species	Sex	Date	Location	Fate	Targeted fish species	Gear	How observed	Source or contact
Humpback whale	U	?	SE NSW	D	Shark	NSC		Kelly Waples, NPWS-NSW
	U	?	SE NSW	D	Unknown	MIS		Kelly Waples, NPWS-NSW
	U	07/05	34°21'S; 115°12'E	(*2)		MIS: Rope		Doug Coughran Dept. CALM Locked Bag 104, Bentley DC WA 6983 Tel.: 9334 0224
	U	07/05	17°56'S; 121°59'E	(*3)		MIS: Rope		
	U	08/05	35°04'S; 117°56'E	R	Mussels	MIS		
	U	08/05	22°30'S; 113°43'E	(*1)		MIS: Rope-Float		
	U	08/05	20°29'S; 116°51'E	*4		MIS		
Southern right whale	U	03/05	35°02'S; 117°53'E	(*1)		MIS: Rope-Float		
Sperm whale	M	Reported 8/1/05	35° 38' 30" S; 138° 20' 12" E	D-(*5)	U	Possibly LL	A	C. Kemper/S.A. Museum
Comments: *1. Entangled in rope and float. Disentanglement unsuccessful. *2. Entangled in a deeply embedded single rope body wrap. Entanglement documented and monitored. *3. Entangled with two rope lines trailing from right pec. Entanglement documented and monitored. *4. Entangled in ropes, two body wraps. Disentanglement unsuccessful. *5. Found dead on beach very decomposed with missing teeth and bruised jaw, suggesting that a line had been around the jaw.  Between June and Sept 2005 there were an additional 4 reports of individual humpback whale entanglements off the NSW coast. Staff were unable to locate the whales and substantiate these reports								

### 6.3 Earlier years' statistics

Nil to report

## 7. Statistics for small cetaceans

### 7.1 For the calendar year 2005

See sections 7.2 & 7.3

### 7.2 Direct catches (commercial, aboriginal and scientific permits) for the calendar year 2005

Nil to Report

### 7.3 Non-natural mortality for the calendar year 2005

Species	Area/stock	Males	Females	Total	Cause	Methodology
Bottlenose dolphin	Queensland	U	3	5	Captured within the Queensland Shark Safety Program	Found in net/drum line
Common dolphin	Queensland	U	4	15	Captured within the Queensland Shark Safety Program	Found in net/drum line
	SE TAS	1	4	5	Salmonoid fish farm interaction	Necropsy
Irrawaddy dolphin	Queensland	U	U	1	Captured within the Queensland Shark Safety Program	Found in net/drum line
Indopacific dolphin	Queensland		1	1	Captured within the Queensland Shark Safety Program	Found in net/drum line
	Queensland			1	Captured within the Queensland Shark Safety Program	Found in net/drum line – released alive



Species	Area/stock	Males	Females	Total	Cause	Methodology
Indopacific dolphin	Queensland		1	1	Washed ashore with net marks	Visual
	Queensland	U	U	1	Euthanasia	Necropsy
Risso's dolphin	Southeastern NSW		1	1	Shark control nets	Dead in net
Unidentified dolphin species	Queensland	U	U	1	Captured within the Queensland Shark Safety Program	Found in net/drum line

See section 7.3.3

#### 7.3.1 STRANDINGS OR DEAD SMALL CETACEANS ENCOUNTERED AT SEA

Species	Sex	Location	Cause of death	Det.	Source or contact institution, contact name and telephone and/or e-mail
Common dolphin	U	Palm beach, Gold Coast, Queensland. 28°6.258'S, 153°29.124'E	Possible net entanglement	N	(*1)
	mix	TAS	Released alive	-	(*2)
	U	37 06'S 149 56'E Near Edrom Lodge Eden NSW	U	V	Craig Dickman NPWS FSC Region PO Box 656 Merimbula 02 6495 5020
	M	Black Rock Beach, Bundjalung NP Northern NSW	U	N	National Parks and Wildlife-NSW PO Box 856 Alstonville NSW 2477 02 6627 0212 heather.lloyd@environment.nsw.gov.au
Short beaked common dolphin	F	34 32.73 S; 135 55.85 E	U	U	C. Kemper/S.A.Museum
	F	34 43.25 S; 135 51.33 E	U	U	
	F	34 42.17 S; 141 51.17 E	U	U	
	U	34 28.98 S; 136 1.4 E	U	U	
	U		U	U	
	F	35 5.4 S; 137 44.83 E	Diseased-large bladder stones	N	
	F	34 39.97 S; 135 51.23 E	U	U	
	F	34 32 S; 135 56 E	U (possible entanglement)	U (possible entanglement)	
	F	35 10.47 S; 138 27.67 E	U	U	
	M	35 11.22 S; 138 28.07 E	D	D	
	M	34 40.25 S; 135 51.08 E	U	U	
	U	34 55 S; 137 0.75 E	U	U	
	F	34 39.53 S; 135 51.37 E	U (trauma + sudden death)	N	
	M	34 47.75 S; 138 29.17 E	Disease-severe lung nematode burden	N	
	M	34 47.25 S; 138 28.78 E	U	U	
	M	35 17.2 S; 136 53.82 E	U	U	
	M	35 45.83 S; 137 50.17 E	Disease-severe lung nematode burden	N	
	F	35 46.65 S; 137 52.28 E	U -possible entanglement	N	
	M	34 53.27 S; 138 28.93 E	U	U	
	M	34 47.53 S; 138 29.03 E	U	U	
	F	33 56.37 S; 137 35.85 E	U	U	
	M	34 48.33 S; 135 53.48 E	U	U	
	F	33 54.5 S; 137 37.92 E	U (possible circulatory problem)	N	
	F	35 47.08 S; 137 46.67 E	U	U	

Species	Sex	Location	Cause of death	Det.	Source or contact institution, contact name and telephone and/or e-mail
Short beaked common dolphin	M	35 14.73 S; 138 28.02 E	U (moderate nematode infestation)	N	C. Kemper/S.A.Museum
	F	35 5.4 S; 137 44.98 E	Live stranding (later died)	N	
	F	34 54.67 S; 137 0.75 E	U	U	
	M	35 5 S; 138 29.67 E	U (possible complex disease)	N	
	U	34 54.5 S; 137 2.5 E	U	U	
	M	34 56.05 S; 138 29.88 E	U	U	
	U	35 22.37 S; 138 23.2 E	U	U	
	M	35 4.83 S; 138 29.67 E	U	U	
	M	34° 43' S, 135° 53' E	U (possible entanglement) Found floating	U	
	M	32° 28' 58" S, 137° 45' 55" E	U Found floating	U	
Unidentified dolphin	U	20°47'S, 149°15'E	U	V	(*1)
	U	Floating in water 27°25.4'S, 153°32.7'E	U	U	
	U	27°28.302, 153°16.998'E	U	U	
	U	21°13.884'S, 149°12.15'E	U	U	
	U	27°5.3'S, 153°12.2'E	Alive and self release – thrashing around entangled in black cord	V	
	U	Townsville, QLD	U	U	C. Kemper. S.A. Museum
	U	33 53.83 S; 136 36.92 E	U	U	
	U	34 44 S; 137 29 E	U	U	
	U	35 38.75 S; 137 38 E	U (dried skeletal remains)	U	
	U	35 39 S; 138 9 E	S (later died)	live stranding	
	U	34 54.5 S; 137 2.5 E	U	U	
	U	33 56.42 S; 137 35.73 E	U	U	
	U	35 51.58 S; 137 50.83 E	U	U	
Irrawaddy dolphin	U	Long Beach, Joskeleigh, Queensland	Possible netting	V	(*1)
Fraser's dolphin	M	200m Lake Wabby, Fraser Island, Queensland	U	V	(*1)
	U	Rainbow beach, Queensland	U	V	
Indo-Pacific humpback dolphin	M	27°5.13'S, 153°9.396'E	U	N	(*1)
	M	23°49.585'S, 151°12.909'E	U	V	
	F	27°11.7'S, 153°7'E	U	V	
	U	19°9.419'S 146°36.511'E	U	N	
	U	19°13.12'S, 146°40.88'E	U	V	
	M	23°47.964'S, 151°10.11'E	U	V	
	U	16°27'S, 145°24'E	U	V	
	M	20°40'S, 116°42'E Dampier Port Wharf Authority	U- Photos taken.	U.	(*3)
Striped dolphin	5	Dunsborough	Live stranded, restranded and released.		(*3)
		Grafton	Euthanased		Matt Clarke, NPWS-NSW
Pantropical spotted dolphin	F	Patches Beach, South of Ballina Northern NSW	U	N	National Parks & Wildlife-NSW PO Box 856 Alstonville NSW 2477 02 6627 0212 heather.lloyd@environment.nsw.gov.au
Risso's dolphin		Clarence North	U		John Kennedy, NPWS-NSW
		Airforce Beach, Evans Head Northern NSW	Bronchial pneumonia probably with bacterial infection	N	John Kennedy, NPWS-NSW
	F	Coogee	Trauma	Necropsy	Carl Hollis, NPWS-NSW
		Kiola	U	Photo	Denis Reid, DPI-NSW

Species	Sex	Location	Cause of death	Det.	Source or contact institution, contact name and telephone and/or e-mail
Offshore bottlenose dolphin	M	800m south Eurong, Fraser Island, Queensland. 25°5'S, 153°31.1'E	U	V	(*1)
Bottlenose dolphin		Pottsville, North Coast	U	U	Lance Tarvey, Australian Seabird Rescue-NSW
		Sandon, North Coast	U	Observed	Matt Clarke, NPWS-NSW
	U	32°08'S, 115°44'E	U- Photos taken-advanced decomposition	U	(*3)
	U	32°14'S, 115°46'E	Huge abscess, forward of dorsal fin- Photos taken.	V	
	F (calf)	31°56'S, 115°46'E	U.	U	
	F	32°32'S, 115°43'E	U	U.	
	U	Spitfire Creek, Moreton Island, Queensland	U	U	(*1)
	U	27°20.8'S, 153°06.3'E	U	V	
	U	25°56'S, 153°10.8'E	U	V	
	U	25°51.036'S, 153°4.806'E	U	V	
	U	25°51.072, 153°4.614'E	U	V	
	F	23°5.058'S, 150°45.678'E	U	V	
	M	27°5.5'S, 153°12'E	U	V	
	mix	TAS	U or Released alive	-	(*2)
	F	Mermaid Cres, Dundee Beach, NT	U	U	Ray Chatto-NT PWS
Indo-Pacific bottlenose dolphin	F	34 1.75 S; 137 33.25 E	U (possible heart disease)	N	C. Kemper/ S.A. Museum
	F	34 22.5 S; 137 28.75 E	U (possible disease)	N	
	M	32 40.82 S; 137 45.22 E	U/ (suspicious-possible wound and infection)	N	
	U	34 54.1 S; 138 29.35 E	U	U	
	F	32 55 S; 137 46 E	U (possible respiratory problem)	N	
	F	33 9.37 S; 137 26.57 E	U (heavy parasite load)	N	
	M	34 43.18 S; 138 27.22 E	D (chronic, infected wound)	N	
	M	34 48.33 S; 138 32.45 E	D (blowhole blocked by keratinized tissue)	N	
	F ?	35 6.67 S; 138 28.18 E	Stranding (refloated)		
	F	35 20.83 S; 138 26.53 E	U	U	
	F	34 53.55 S; 138 29.13 E	U (possible disease)	N	
	F	35 18.47 S; 138 26.75 E	U (blunt trauma to dorsal surface)	U	
	F	35 21.43 S; 138 25.92 E	Disease (tumour)	N	
	M	33 55.75 S; 137 37.25 E	U	U	
Unidentified Tursiops sp.	F	34 45 S; 138 25 E	Disease (long term chronic infection)	N	C. Kemper/ S.A. Museum
	U	35 31 S; 138 42.25 E	U (too decomposed)	U	
	U	33 15.3 S; 134 41.38 E	U	U	
Unidentified Tursiops sp. & common dolphin	M-tursiops/ F-common	34 54.48 S; 137 10.77 E	U (severe lung nematode burden) U (floating dead)	N	C. Kemper. S.A. Museum

Species	Sex	Location	Cause of death	Det.	Source or contact institution, contact name and telephone and/or e-mail
Short-finned pilot whale	U	11.2 km south of Sandy Cape, Fraser Island, QLD 24°48.064'S, 153°15.628'E	U	U	(*1)
Long-finned pilot whale	mix	TAS	most stranded, 19 released alive	N	(*2)
	U-calf	34°31'S, 116°05'E Warren River Mouth	Stranded, died. Starvation. Photos taken.	V	(*3)
	M	Injidup Point	U— DNA taken	U-decomposition.	(*3)
	19	33°39'S, 115°20'E	Stranding—19 live stranded, 6 died, 13 returned to sea. Freeze branded 24-36.		(*3)
Melon headed whale	U	Double Island Point, QLD 25°56.304'S, 153°11.13'E	U	U	(*1)
	U	27°15.942'S, 153°25.056'E	U	U	(*1)
	U	Arrawarra Beach, Coffs Coast	U	V	Martin Smith, NPWS-NSW
False killer Whale	123	33°39'S, 115°19'E Busselton	Stranding, heavy parasitic load—123 live stranded, 1 died. Freeze branded 62-69.	N	(*3)
	U	34 29 S; 138 17 E	U	U	C. Kemper. S.A. Museum
Blainsville beaked whale	F	37 21'S 149 57'E	U	V	Craig Dickman NPWS PO Box 656 Merimbula NSW Tel: 6495 5020
Cuvier's beaked whale	2	TAS	U	N	(*2)
Strap-toothed beaked whale	2	TAS	U	N	
Strap-toothed beaked whale (2)	M M	33 8.75 S; 134 26.23 E	U U	U	C. Kemper. S.A. Museum
Gray's beaked whale	2 (F and calf)	Coral Bay	Live stranded then died. Skin/blubber collected for Murdoch University. ID confirmed by DNA WAM #62199. Photos Taken.	U	(*3)
	M	32°00'S, 115°44'E Parker Point, Rottneest Island	Stranding- Live stranded, returned to deep water, re-stranded and died.	U. Recovered for PM	(*3)
	U	34°20'S, 115°09'E Augusta	U- Photos taken.	U	(*3)
Cuvier's beaked whale	F	33°39'S, 115°20'E Busselton	Stranding— Live stranded, returned to sea twice. Photos taken.		(*3)
Hector's beaked whale	M	31 46.22 S; 131 50.28 E	U (too decomposed)	U	C. Kemper. S.A. Museum
Pygmy sperm whale	U	Wreck Rock, QLD 24°18.82'S, 151°57.80'E	U	U	(*1)
	F	Tallows Beach, 2.5km north of Broken Head Northern NSW	U	U	National Parks and Wildlife Alstonville NSW PO Box 856 Alstonville NSW 2477 02 6627 0212 heather.lloyd@environment.nsw.gov.au
	F	Wollongong	U	N	Helen Jessup, NPWS-NSW
		Narooma	U	N	Tony Baxter, NPWS-NSW

Species	Sex	Location	Cause of death	Det.	Source or contact institution, contact name and telephone and/or e-mail
Dwarf sperm whale	2-F & calf	40 Mile Beach, 60km west of Karratha	Stranded- Photos taken.	U	(*3)
Unid. <i>Kogia</i> sp.	U	34 31 S; 135 57 E	live stranding-refloated		C. Kemper. S.A. Museum
Unid. Cetacean	U	TAS	U	V	(*2)
	U	33 9 S; 134 24 E	U	U	C. Kemper. S.A. Museum
Unidentified whale	U	Approximately 10km offshore 17°52'S, 146°13'E. Carcass (approx 5m) reported by a recreational boat user	U	U	(*1)
Unid. beaked whale	U	33 36 S; 134 46 E	U (skull only)	U	C. Kemper. S.A. Museum
<b>Contact information:</b>					
<b>*1</b>		<b>*2</b>		<b>*3</b>	
Dr Col Limpus EPA PO Box 15155, City East, QLD 4002 Tel: 0732277718 email: col.limpus@epa.qld.gov.au		Marine Conservation Section Biodiversity Conservation Branch PO Box 44 Hobart, Tas. 7001. Tel:0362336556		Doug Coughran Dept. CALM Locked Bag 104, Bentley DC WA 6983 Tel.: 9334 0224	

Species	Sex	Date	Location	Vessel type	Sp	Fate	Source or contact
Unidentified dolphin	U	05/02	10km south of Brown's Creek, near Yarrabah, north Queensland	?	?	D	Dr Col Limpus EPA PO Box 15155, City East, QLD 4002 Tel: 0732277718 col.limpus@epa.qld.gov.au
Unidentified dolphin	U	29/12	Bongaree, Bribe Island, Queensland	?	?	D	

<b>Species</b>	<b>Sex</b>	<b>Date</b>	<b>Location</b>	<b>Fate</b>	<b>Targeted fish species</b>	<b>Gear</b>	<b>How observed ?</b>	<b>Source or contact</b>
Pilot whale	U(2 total)	19/01/05	27 S / 154 E	R		LL	V	AFMA Address: PO Box 7051, Canberra BC ACT 2610 +61-(0)2 – 6272 5029 clare.hogan@afma.gov.au
A. Beaked whale	U	26/07/05	24 S / 109 E	R		LL	V	
B. Dolphin	U	11/09/05	10 S / 143 E	R		TX	V	
Bottlenose dolphin	U	26/04/05	43 S / 148 E	D	Redbait	OT M	F / V	C. Kemper/S.A.Museum
	U(7 total)	04/05/05	41 S / 148 E	D	Redbait	OT M	DA / V	
	M*	Collected 20/4/05	34° 37' 55" S 135° 26' 45" E	D	U	U	A	
	U**	Reported 30/11/05	32° 46' 51" S 134° 12' 9" E	D	Shark	GN	F	
Indo-Pacific bottlenose dolphin	F + calf	2/9/05	33° 2' S 137° 36' E	R-disentangled	U	LX	M	C. Kemper/S.A.Museum
C. Indo-Pacific humpback dolphin	U	30/09/05	Facing Island, Gladstone Region, 23 <sup>0</sup> 48.509'S 151 <sup>0</sup> 22.100'E	D	Mackerel	GN	DA	Dr Col Limpus EPA PO Box 15155, City East, QLD 4002 Tel.0732277718 col.limpus@epa.qld.gov.au

Comments:  
A. entangled by tail in the mainline  
B. dolphin tail flipper tangled in try gear lazy line, untangled when retrieving cod end.  
C. Carcass found discarded on the beach along with fish, turtles and a dugong.

\*Found dead, post mortem shows signs of entanglement.

\*\* Caught in fisherman's shark net that was being tested/measured by PIRSA Fisheries.

#### *7.4 Earlier years' statistics*

A female bottlenose dolphin was discovered with injuries consistent with ship strike in late November 2001, in southern Port Phillip, VIC. The juvenile's tail was almost completely severed and the dolphin was subsequently euthanased. The vessel details are unknown as the strike was not observed. Source/contact: Dolphin Research Institute, PO Box 77 Hastings 3915, Anika Warren-Smith, 0417 561 586, [research@dolphinresearch.org.au](mailto:research@dolphinresearch.org.au)

### **8. Strandings contact information**

#### NSW

Manager. Wildlife Licensing and Management Unit  
Department of Environment and Conservation  
PO Box 1967  
Hurstville 2220

Christine Fury  
Southern Cross University Whale Research Centre  
PO Box 157 Lismore NSW 2480

#### QLD

Queensland Environmental Protection Agency, PO Box 15155, City East, QLD, 4002  
Contact Officer: Dr Col Limpus - Queensland Marine Wildlife Stranding and Mortality Database.  
The Queensland Environmental Protection Agency oversees the collection of stranded cetaceans in the state and maintains the Queensland Marine Wildlife Stranding and Mortality Database. The database summarises all records of sick, injured or dead marine wildlife reported to the Agency. An annual report is compiled for cetaceans and pinnipeds. Most reports of individual strandings are supplied by Agency and Great Barrier Reef Marine Park Authority staff, including those via the state-wide stranding hotline number 1300 360 898. Other reports are received directly via members of the public, and organisations such as Sea World and Underwater World. In addition to the general reporting, the database contains mortality records from the Queensland Department of Primary Industries and Fisheries Shark Safety Program.

Museum of Tropical Queensland, 70-102 Flinders Street, Townsville, QLD, 4810

The Queensland Environment Protection Agency oversees collection of stranded cetaceans in the state. No material was deposited in the Museum of Tropical Queensland during 2005. The Museum can be contacted for details of specimens previously deposited. (Dr Peter Arnold, Senior Curator, Tropical Natural History, Museum of Tropical Queensland passed away suddenly on 7 March 2006. His contribution to cetacean research is highly regarded and he will be sadly missed by many).

Queensland Museum, PO Box 3300, South Brisbane, QLD, 4101  
The Museum collects skeletal material from cetaceans found in Queensland for preparation.

#### SA

Catherine Kemper  
South Australia Museum  
North Terrace  
Adelaide, SA 5000

#### TAS

WHALE HOTLINE 0427736484 (0427WHALES)  
Dr Rosemary Gales (Biodiversity Conservation Branch, DPIWE, PO Box 44, Hobart, Tasmania, 7000)

#### VIC

The Dolphin Research Institute maintains records on strandings of small cetaceans reported in the area encompassing Port Phillip and nearby ocean beaches, and the Gippsland Lakes. All measurements are collected according to the standardised methods for measuring and recording data on small cetaceans.

#### WA

Doug Coughran  
Dept. CALM  
Locked Bag 104,  
Bentley DC WA 6983  
Tel.: 9334 0224

## NT

Ray Chatto  
Sen. Wildlife Officer  
Wildlife Operations Section  
NT Parks and Wildlife Service  
PO Box 496  
Palmerston NT 0831  
Phone: (08) 8999 4451 Mob. 0401110205  
Fax: 8999 4793  
Email: [ray.chatto@nt.gov.au](mailto:ray.chatto@nt.gov.au)

### **9. Other studies and analyses**

#### Acoustic surveys (Robert McCauley—Curtin University)

Sea noise records containing great whale signals obtained as per:

Site	Date start	Date end
Robe, SA (2670) primary data set of three along southern coast	10-Nov-2004	05-Jun-2005
Perth Canyon (2672),	30-Dec-2004	08-Jul-2005
Exmouth (2664, 2673, 2679), several data sets	Early 2005	Oct 2005

Acoustic recordings of blue whale calls made in Geographe Bay (C. Burton) during 2003 and 2005 have been analysed by Rob McCauley at Curtin University and the results incorporated into a paper presently being written on the description and propagation of blue whale calls in the Perth Canyon. Although only a relatively short duration of calls have been collected from G Bay (with minimal effort to date), a unique 'downsweep' call has been recorded for both years, and an absence of the characteristic calls made in the Perth Canyon is also significant. The deployment of a longterm acoustic logger is proposed in Geographe Bay.

#### *Development of techniques*

Counts of calling pygmy blue whales / standard time to be obtained and compared for migratory patterns in space and seasonal patterns from same locations. Blue whale acoustic presence / absence and relative abundance estimates are in progress

#### Acoustic surveys (Jason Gedamke—Australian Antarctic Division)

Two ARPs (Scripps Inst. Oceanography) were deployed in January/February 2005 off Davis station east Antarctica. They were recovered in February/March 2006 and each has a continuous 13 month record of underwater low frequency sound (>250 Hz). These will be analysed to determine the seasonal presence of blue, fin, and humpback whales.

#### GBRMPA – Cetacean permits

Summary of cetacean permits current in 2005. A search of GBRMPA databases and files indicates that:

- The maximum allowable number of 9 permits remains current (first issued in 2003) for tourist programs that include the swim-with-dwarf minke whale activity in the Ribbon Reef Sector and Offshore Port Douglas Sector of the Marine Park.
- In 2005:
  - the total number of dedicated tourism whale watching activities allowed to operate in the Far Northern Management Area of the Marine Park was 20.
  - the total number of dedicated tourism whale watching activities allowed to operate in the Cairns Management Area of the Marine Park was 22.
  - the total number of dedicated tourism whale watching activities allowed to operate in the Cairns Area of the Marine Park was 9.
  - the total number of dedicated tourism whale watching activities allowed to operate in the Townsville/Whitsundays Management Area of the Marine Park was 56.
  - the total number of dedicated tourism whale watching activities allowed to operate in the Whitsundays Area of the Marine Park was 34.
  - no permits were issued for tourist programs that included the activity of dolphin watching.

- three permits were current (i.e. had been granted in previous calendar years) for the conduct of a research program involving whales or dolphins:
  - 1) The study of dwarf minke whales (*Balaenoptera acutorostrata*) in the northern Great Barrier Reef and opportunistic observation of other cetacean species – permit expires 31 March 2007.
  - 2) Distribution and abundance of the Australian snubfin dolphins (*Orcaella heinsohni*) and Indo-Pacific humpback dolphins (*Sousa chinensis*) in the southern Great Barrier Reef – permit expires 30 April 2008.
  - 3) Conserving Australia's endemic dolphins in the Great Barrier Reef Marine Park – permit expires 30 November 2008.
- A third Dwarf Minke Whale Tourism Monitoring Program Research Contract began in the 2005 dwarf minke whale season (June-August). The project outcomes are to: analyse and evaluate whale sighting sheets supplied by permitted operators conducting swim-with-dwarf-minke-whale activities within the northern Great Barrier Reef Marine Park; and provide such results to the tourism industry and the Authority to allow any changes that may be necessary in the monitoring program and/or management of the whale-swimmer interactions.

#### Acoustic studies of *Tursiops aduncus*-(Mike Noad, University of Queensland)

Acoustic behavioural studies are currently being conducted on *Tursiops aduncus* in Moreton Bay, Queensland, and the vocal behaviours of provisioned and un-provisioned wild dolphins in the Bay are being compared to those from captive *Tursiops* at Sea World, Gold Coast (Honours project, M. Rekdahl).

#### Acoustic studies of humpback whales -(Mike Noad, University of Queensland)

Spacing data for singing humpback whales off south eastern Queensland has been analysed and no evidence to support a gross spacing function of song has been found (MS in prep). An analysis of swimming speeds of humpback whales during their southward migration has been completed and submitted (MS in review, Mar Mamm Sci). Song recordings were made at Cape Byron, NSW, during the east Australian northward migration, and Peregrine Beach, Qld, during the southward migration. These are part of a long-term monitoring program looking at changes in the patterns of the songs of the east Australian humpback whales with time.

#### Surface active behaviour of humpback whales (S. Morelli)

The influences on the incidence of surface activity by humpback whales on their southward migration along the east Australian coast were studied off Peregrine Beach, Queensland, using data collected from a bigger project (HARC-Humpback Whale Acoustic Research Collaboration). The whales' behaviour was observed from a land based platform using continuous sampling methods. Classification and regression trees showed that the likelihood of surface activity was best explained by *social factors* (pod composition) followed by *time of day*. The other variables considered (*state of migration* (days and weeks) and *presence of affiliations and disaffiliations* among whales) did not significantly influence the incidence of surface activity. The incidence of surface activity increased during the day at Peregrine Beach, a result similar to that obtained on the Hawaiian breeding grounds. Pods containing only a single whale had the lowest likelihood of surface activity, especially early in the morning. In contrast, pods containing a mother and calf pair plus another whale had the highest likelihood of surface activity, particularly late in the afternoon. Factors influencing the presence of surface activity are discussed. The east Australian migratory corridor appears to be used by humpback whales as a mating ground, thus increasing the importance of managing human impacts, such as tourism in the area.

#### Long finned pilot whale blubber and muscle composition (K. Evans)

Fat content, lipid class and fatty acid signature analysis were completed on blubber and muscle samples collected from stranded long-finned pilot whales. These data are to be integrated with hard part dietary results from additional stranded long-finned pilot whales and prepared for publication.

#### Bottlenose dolphin studies in WA

Behaviour and communication in bottlenose dolphins in Shark Bay (J. Mann)  
 Genetic study of bottlenose dolphins along WA coastline (PhD thesis)- (M. Krutzen)  
 Genetic study of bottlenose dolphins. (B. Sherwin)  
 Behavioural ecology of juvenile bottlenose dolphins in Shark Bay (A. Samuels)  
 Conservation biology of Perth metropolitan dolphins (H. Finn)  
 Effects of nature-based tourism on cetaceans (L. Bejder)  
 Calf social development (Q. Gibson)  
 Foraging development (B. Sargeant)



#### Western Australian Whale Watching Industry

Licensed commercial whale watching in Western Australia (for southern right and humpback whales) for the 2005 season involved 110 licensed vessels. Data collected from whale watching operators regarding the number of passengers and whales seen during the 2005 season are still being analysed. In 2003 a total of 459 reported whale watching trips were made with a total of 12, 220 passengers participating in whale watching activities from licensed vessels. In 2004 a total of 492 reported whale watching trips were made with a total of 13, 782 passengers participating in whale watching activities from licensed vessels. Ninety-five commercial dolphin watching licences were also issued during 2005.

#### Humpback whale migration, distribution abundance and behaviour (Cape Byron Whale Research Project)

The Project is a joint venture undertaken and coordinated by the Whale Research Centre at Southern Cross University in collaboration with other organisations including NPWS. Activities coordinated by the Southern Cross University Whale Research Centre during the whale research project include: land based surveys; theodolite tracking of humpback whales; photo identification; sloughed skin collection; acoustic surveys; and behavioural observations. Input for this research should be accessed separately through SCU.

#### Identifying *Tursiops* spp. using pigmentation patterns (Kemper, SA Museum)

Results of this study were presented in poster form at the Society for Marine Mammalogy meeting in San Diego, December 2005 (Kemper 2005). Results show that in South Australia *T. truncatus* pigmentation has several features not found in *T. aduncus* but that in some animals the characteristics are not as clear as in most animals.

#### Cause/circumstance of death of SA cetaceans (Kemper, Tomo, and Byard, SA Museum)

The Dolphin Trauma Group continues to study dead dolphins from the eastern side of Gulf St Vincent. Results will contribute to the management plan for the Adelaide Dolphin Sanctuary. An overview of this research will be published in The Natural History of Gulf St Vincent to be published in 2006. As part of this project, Ikuko Tomo and Catherine Kemper have been studying the increased incidence of lungworms (nematodes) in juvenile common dolphins since late 2004 (Tomo *et al.* 2006). In some cases the dolphins appear to survive the infestation but in others they do not. The incidence appears to increase in late autumn. The identity and life cycle of the species (s) is not known.

#### Assessing interactions between dolphins, and fishing and aquaculture in Spencer Gulf, SA (Harcourt & Kemper)

This project began in mid 2003. Two PhD students, Kerstin Bilgmann and Sue Gibbs, are enrolled at Macquarie University and are conducting field and laboratory studies on population genetics, diet (including isotope changes through time), behaviour and distribution of *Tursiops* spp. and *Delphinus delphis* in Spencer Gulf. These data will be used to describe the biology of dolphins in the region as well as past and future impacts from human development, primarily aquaculture and fishing. The aerial survey component of this research is reported in 2.1.1.

#### Southern right whale mortalities and entanglements (Kemper *et al.*)

This research summarises the mortalities, entanglements and ship strikes in Australia and subantarctic islands. It was presented as a spoken paper at the Australian Mammal Society meeting in Albany, WA in July, 2005 (Kemper *et al.* 2005). More events were recorded in the western half of Australia where whale numbers are greater.

#### Biology of *Tursiops aduncus* in the Adelaide region (Bossley, Whale and Dolphin Conservation Society)

This long-term study is focussing on the behaviour, reproduction and movements of resident dolphins in the Port River of Adelaide. Bossley is supervising several Honours students conducting projects relating to dolphins in the region.

#### Southern right whales at Head of Bight

Surveys to examine southern right whale habitat use in coastal calving grounds off Australia were conducted July-October at Head of Bight (South Australia), Doubtful Island Bay (Western Australia) and Warrnambool, (Victoria). Aspects of right whale movements, distribution and behaviour were recorded and a range of

environmental conditions sampled. Data were collected on 36 days at Head of Bight, 18 days at Doubtful Island Bay and 30 days at Warrnambool. Peak numbers of whales recorded were 94 including 37 calves, 37 including 12 calves, and 7 including 4 calves respectively. (R Pirzl, Deakin University)

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