

Australia. Progress report on cetacean research, January 2006 to December 2006, with statistical data for the *calendar year* 2006.

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[*primary compilers of state/territory data in bold on table below. State and Territory abbreviations: NSW—New South Wales, NT—Northern Territory, QLD—Queensland, TAS—Tasmania, SA—South Australia, VIC—Victoria, WA—Western Australia]

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1. SPECIES AND STOCKS STUDIED

IWC common name	IWC recommended scientific name	Area/stock(s)	Items referred to
MYSTICETI			
Blue whale	<i>Balaenoptera musculus</i>	S.A.	2.1.1; 2.1.2; 2.2; 3.1.1; 3.1.3; 4.1; 4.3; 6.3.1
Pygmy blue whale	<i>Balaenoptera musculus brevicauda</i>	Southern hemisphere	
Bryde's whale	<i>Balaenoptera edeni</i>	Northern GBR; E Australia	2.1.2; 3.1.1
Dwarf minke whale	<i>Balaenoptera acutorostrata</i> (subsp.)	Southern Hemisphere; Northern Great Barrier Reef; Queensland	2.1.1; 2.1.2; 2.2; 3.1.1; 3.2; 4.3; 8; 9
Southern minke whale	<i>Balaenoptera bonaerensis</i>	E & S. Australia	
Humpback whale	<i>Megaptera novaeangliae</i>	Groups D and E; Area IV and V	2.1.1; 2.1.2; 2.2; 3.1; 3.1.1; 3.1.3; 3.2; 4.1; 4.3; 4.4; 5; 6.1; 6.3; 6.3.1; 6.3.2; 8; 9
Pygmy right Whale	<i>Caperea marginata</i>	S.A.; VIC; Southern Ocean	3.1.2; 4.3; 8
Southern right whale	<i>Eubalaena australis</i>	Southern Australia; Southern Ocean	2.1.1; 2.1.2; 2.2; 3.1.1; 3.2; 4.3; 8; 9
Unidentified whale		Queensland	8
ODONTOCETI			
Andrew's beaked whale	<i>Mesoplodon bowdoini</i>	Southern Ocean	4.3
Australian snubfin dolphin	<i>Orcaella heinsohni</i>	Australia; Cleveland Bay, QLD	4.2; 7.3.2; 8; 9
Beaked whale	<i>Ziphiidae spp</i>	S.A.	8
Bottlenose dolphin	<i>Tursiops spp.</i>	Northern GBR; Southeast Queensland; WA; Shark Bay WA, NSW, SA, VIC	2.1.1; 2.1.2; 3.1.1; 4.1; 4.2; 4.3; 4.4; 7.1; 7.3.1; 7.3.2; 8; 9
Common bottlenose Dolphin	<i>Tursiops truncatus</i>	S.A.; VIC; Southern Ocean	2.1.1; 2.1.2; 4.3; 8
Common dolphin	<i>Delphinus delphus</i>	VIC; NSW; Queensland; Southern Ocean	2.1.1; 2.1.2; 3.1.1; 4.1; 4.2; 4.3; 7.3.1; 7.3.2; 8
Cuvier's beaked whale	<i>Ziphius Cavirostris</i>	E and S Australia	4.4
False killer whale	<i>Pseudorca crassidens</i>	Northern GBR; Coral Sea; VIC	2.1.2; 4.3
Gray's beaked whale	<i>Mesoplodon grayi</i>	WA	8
Hector's Beaked Whale	<i>Mesoplodon hectori</i>	S.A.	4.3; 8
Indo-Pacific bottlenose dolphin	<i>Tursiops aduncus</i>	S.A., Australia	2.1.1; 3.1.1; 4.1; 4.2; 4.3; 5; 7.3.2; 8

IWC common name	IWC recommended scientific name	Area/stock(s)	Items referred to
Indo-Pacific humpback dolphin	<i>Sousa chinensis</i>	QLD	8; 9
Killer whale	<i>Orcinus orca</i>	E and S Australia	2.1.1; 2.1.2
Long-finned pilot whale	<i>Globicephala melas</i>	S.A.; Southern Ocean	2.1.1; 3.1.2; 4.3; 8
Melon-headed whale	<i>Peponocephala electra</i>	E Australia; NE NSW	4.3; 8
Pantropical spotted dolphin	<i>Stenella attenuata</i>	NE NSW	4.3
Pilot whale	<i>Globicephala</i> sp.	S.A.	2.1.2; 7.3.2
Pygmy sperm whale	<i>Kogia breviceps</i>	WA	8
Short-beaked Common dolphin	<i>Delphinus delphis</i>	S.A., Gulf St. Vincent	2.1.1; 2.1.2; 3.1.1; 4.3; 7.3.2; 8
Sperm whale	<i>Physeter macrocephalus</i>	QLD; SA; Southern Ocean; Southern Hemisphere; VIC	2.1.1; 4.3; 4.4; 6.3.2; 8
Spinner dolphin	<i>Stenella longirostris</i>	Queensland	7.3.2; 9
Striped dolphin	<i>Stenella coeruleoalba</i>	WA	7.3.2; 8
Unidentified. <i>Delphinidae</i>	<u><i>Delphinidae</i> spp</u>	S.A.	8
Unidentified dolphin/toothed whale			5; 7.3.2; 8; 9

2. SIGHTINGS DATA

2.1 Field work

2.1.1 Systematic

Summary Table:

Target species	Date	Area	No. of sightings	Contact person/institute and references
Blue whale	Feb-May 2006	Perth Canyon, WA west coast	10 (not allowing for possible duplication between flights)	J Bannister /WAM; Bannister et al 2006
Blue whale	27 Feb 2006	Bonney Upwelling	19	P. Gill (AR)
	22 Mar 2006		5	
	29 Mar 2006		20	
	29 Dec 2006		5	
Blue whale	9/9/06-22/12/06	Geographe Bay	Approx 140	Chris Burton – aerial, land and small vessel surveys
Blue whale	1/1/06-20/5/06	Perth Canyon	10	J.Bannister, C. Burton – aerial surveys
Humpback whale/Pygmy Blue whale	15/06/06 – 15/07/06	Continental Shelf off Dampier WA, closing mode vessel surveys	53/0	C.Jenner/CWR/ field report to Santos 2006
	16/06/06 – 06/10/06	Continental Shelf off Dampier WA, passing mode aerial surveys	37/1	C.Jenner/CWR/ field report to Santos 2006
	17/07/06 - 01/10/06	West of North West Cape, passing mode vessel surveys	1478	C.Jenner/CWR/ field report to Woodside Energy 2006
	04/06/06 – 31/10/06	West of North West Cape, passing mode aerial surveys	642	C.Jenner/CWR/ field report to Woodside Energy 2006
Humpback whale (*1)	5-8-06-15-10-06	Hervey Bay	950	Trish & Wally Franklin, TOP
Humpback whale (*2)	26/06/06 – 07/07/06	Byron Bay	792	D.Paton & D.Burns / SCUWRC
Humpback whale (*3)	24 th May to the 31 st July 2006	Cape Solander, Botany Bay National Park Sydney	1607	Maryrose Gulesserian, Cape Solander Whale Migration Study Co-ordinator, NSW Department of Environment and Conservation (DEC).
Humpback whale	17/09-14/10/06	Norfolk Is.	5	Oosterman and M. Whicker (NIWS); Oosterman & Whicker (2006); SC/A06/HW36

Target species	Date	Area	No. of sightings	Contact person/institute and references
Humpback whale	01/10/06 – 31/10/06	Exmouth Gulf, passing and closing mode vessel surveys	150	C.Jenner/CWR/ field report to Straits Salt 2006 (incomplete)
Humpback whale	13/08/06 – 29/10/06	Kimberley Region, passing mode vessel and aerial surveys	735	C.Jenner/CWR/ final report to Inpex 2007 (incomplete)
Humpback whale	9/9/06-22/12/06	Geographe Bay	Approx 600	Chris Burton – aerial, land and small vessel surveys
Humpback whale	5-23/9/06	Pender Bay, Western Australia	76 pods: 128 individuals tracked by theodolite	S. McKay (WEG) - Unpublished data (part of PhD thesis to be submitted mid-2008)
Southern right whale	4-16/7/06, 11-24/8/06, 18-30/9/06	Head of Bight	Max. single day: 98 (19/8/06)	R Pirzl (AE)/S Burnell (EubPL); Pirzl & Burnell 2006
Southern right whale	13/9/06	Head of Bight	35 F & c, 6A	Dr. D. J. "Pin" Needham
Southern right whale	17/9/06	Head of Bight	32 F& c, 5A	
Southern right whale	August-September 2006	Australian southern coast between C Leeuwin WA and Ceduna, SA	447 (allowing for duplication between flight legs) including 143 'unaccompanied' adults and 152 calves	J Bannister./WAM; Bannister J L, 2007
Bottlenose dolphin (*4)	31/05-31/10/2006	Port Philip Bay	14	David Donnelly/DRI
	18/07-28/07/2006	Gippsland Lakes	31	
	11/08-31/10/2006	Port Philip Bay	21	
Short-beaked Common dolphin	All of 2006	Gulf St Vincent South Australia	>100	M Bossley/ADRF
Indo-Pacific Bottlenose dolphin	All of 2006	Port Adelaide	>400	

(*1) The Oceania Research Project – Long Term Humpback whale Photo-ID Survey, Hervey Bay 1992-2006.

The Oceania Project conducted the 15th year of fieldwork of a long-term survey of humpback whales in Hervey Bay. Boundaries of the survey area are Rooney's Point, Fairway Buoy, Coongul Creek and west coast of Fraser Island within the Whale Management & Monitoring Area of the Hervey Bay Marine Park. The survey is being undertaken in conjunction and collaboration with the Queensland Environment Protection Agency and is conducted under scientific permit WITK01192903.

The 2006 survey was undertaken from a 12-metre vessel for 58 days between August 5th and October 15th 2006 involving a total 464 hours of effort. Observations were made on 950 individual Humpbacks in 417 pods. A total of approximately 5700 Photo Identification photographs were obtained, 12 hours of behavioural DV video and 2 hours of DAT Whalesong recordings. In addition 114 sloughed skin samples were obtained.

Systematic observational data of pods included date, time, GPS positions, number of individuals, composition & behaviour. Photography of ventral flukes, lateral body colouration patterns and left and right dorsals were obtained as well as behavioural video and samples of whalesong.

(*2) Humpback whale count – Byron Bay, NSW (SCUWRC)

An annual count of humpback whales (*Megaptera novaeangliae*) was undertaken from Cape Byron, northern New South Wales, Australia during 2006. This study provides information that assists in monitoring the migration patterns, distribution, abundance, and behaviour of humpback whales on the east coast of Australia. This is the 12th year of this annual survey. Unlike previous years, the 2006 Cape Byron Whale Research Project (CBWRP) was entirely land-based, with no vessel-based surveys being undertaken.

The 2006 research project was conducted between the dates of 26th June and 7th July 2006, which covers the peak period of the northern migration recorded for humpback whales off northern NSW coast.

The project, as in previous years, had a strong collaborative approach and was coordinated by David Paton/Dan Burns through Southern Cross University and undertaken in collaboration with Newcastle University and NSW National Parks and Wildlife Service (NPWS) /Marine Park Authority (MPA). Note: the 2005 land-based survey was undertaken from Skennars Head, south of Cape Byron, and therefore was not directly comparable with the 2006 results.

Survey Dates	26 th June to the 7 th July 2006
Total number of survey hours	110.22 hours (Av 8.5 hours/day)
Total humpback whales observed	792
Total number of pods observed	414
Average pod size	1.91
Average number of pods observed per day	34 (range 20 – 53) increase on previous years
Average number of humpbacks observed per day	66 (range 34 -102)
Standardized 10 hour count	60.48 (up from 47.02 in 2004)

(*3) *Humpback whale count – Cape Solander, Sydney NSW (NSW NPWS)*

Between the 24th of May and the 31st of July 2006, trained volunteers recorded the species, pod size, time sighted, bearing, distance from shore and behaviour of all marine mammals observed passing Cape Solander in Botany Bay National Park, Sydney during daylight hours. A total of 66 days were surveyed during the 2006 whale migration season. Weather data was also recorded on an hourly basis. The watch was only discontinued when conditions such as heavy rain, fog or darkness substantially hindered visibility. The data collected by community volunteers provides NPWS with an index number of cetaceans that migrate past the coast, the approximate preferred distance offshore, and average pod size. It also provides information on the peak periods of migration and the percentage annual increase/decrease in the recovering population numbers. A two- percent increase of humpback whales was recorded over the previous year.

Species (common name)	Number sighted
Humpback whale	1607
Dolphin (both common and bottlenose)	750
Minke whale	5
Southern right whale	4
Orca	1

Survey Dates	24 th May to the 31 st July 2006
Total number of survey hours	702.299 (Av. 10.64 hours/day)
Total humpback whales observed	1607
Total number of pods observed	860
Average pod size	1.87
Average number of pods observed per day	13
Average number of humpbacks observed per day	24 (range 0 – 61)

(*4) *Bottlenose dolphin survey-DRI*

The Dolphin Research Institute conducted surveys on the bottlenose dolphin population in Port Phillip from January to December 2006, and in the Gippsland Lakes in July 2006. During 2006, the Institute collected dorsal fin photographs for use in photo-identification of individuals, and collected behavioural data, Monash University researcher collected biopsy samples. Researchers conducted 38 surveys from the Institute's vessel, resulting in approximately 225 field hours. A total of 67 sightings of dolphins were made over this period.

Additional surveys not listed in summary table above:

“The distribution and habitat preferences of cetaceans along the west coast of Tasmania”

The following are the preliminary results. A final report for this project is due to be complete in May 2007.

Shipboard surveys: (CSIRO): In collaboration with Santos Pty Ltd and as part of their Federal requirements for seismic surveys, a marine mammal observer was placed on the *Pacific Titan* during seismic surveys carried out by this company along the west coast of Tasmania during May and June 2006.

Target species	Date	Area	No. of sightings
Sperm whale	1/6/2006	West coast of Tasmania	1
Humpback whale	8/6/2006	West coast of Tasmania	1

Aerial surveys: (CSIRO): Regular aerial surveys across an area bounding the west coast of Tasmania from 41°S to 43°S are currently being undertaken through to April 2007.

Target species	Date	Area	No. of sightings
Sperm whale	May– December 2006	West coast of Tasmania	2
Long-finned pilot whale	May– December 2006	West coast of Tasmania	1
Common dolphin	May– December 2006	West coast of Tasmania	11

Southern right whale (DPIW): Aerial survey flights have been flown on the East, West and North Coasts of Tasmania on a scheduled basis to quantify the abundance of Southern right whales in Tasmanian state waters. Survey flights commenced in April and follow a transect line approximately one nautical mile seaward from the coastline, at an air speed of 100 knots and an altitude of 1500 feet. Two independent observers are present on each flight enabling an area extending to 2.5 nautical miles from the coast to be surveyed. The transect lines survey 650 km of coastline in the East, 450 km in the North, and 230 km in the West. Timing of surveys is weather dependant as sea conditions must be less than beaufort scale 3, but are scheduled monthly during peak whale migration. Survey data is held by R. Gales, DPIW.

<i>Southern right whales</i>	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>East</i>	-	-	-	0	0	0	0	0	0	0	-	-
<i>West</i>	-	-	-	-	0	0	0	-	-	0	-	-
<i>North</i>	-	-	-	-	0	0	0	-	-	0	-	-

Dolphin Behaviour and Communication Project, Northern NSW (SCUWRC)

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 dolphins within the survey area. The table below outlines the survey effort of 2006 along with sighting data and the number of dolphins individually identified and catalogued from two research vessel platforms used during this study.

Survey Dates for 2006	Total # Vessel Survey Hours	Total # Dolphins Sighted	# Dolphins Identified & Catalogued
16/01/2006 – 5/02/2006	73hrs.18mins	180	122

Population size, habitat use and residency patterns of bottlenose dolphins in the Richmond and Clarence Rivers (SCUWRC)

Christine Fury has completed her 3-year fieldwork for her PhD project on population size, habitat use and residency patterns of the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) in the Richmond River (RR) and Clarence River (CR) in northern New South Wales, Australia. Boat and land-based surveys were undertaken on a monthly basis. Photo-identification, behavioural, GPS and water quality data were collected and are being analysed for publications and the PhD thesis.

Richmond River			
Survey Season	Total # Vessel Survey Hours	Total # Dolphins Sighted	# Dolphins Identified & Catalogued
Summer (2005/2006)	59	21	16
Autumn (2006)	51	12	11
Winter (2006)	36.5	20	16
TOTAL	175	43	23 catalogued
Clarence River			
Summer (2005/2006)	52	75	58
Autumn (2006)	48	25	19
Winter (2006)	42	35	30
TOTAL	142	135	48 catalogued

2.1.2 Opportunistic, platforms of opportunity

Summary Table:

Primary species	Area	Data type/method	Collected by	Platform	Contact person/institute and refs
Blue whale	Bonney Upwelling	Photo-id; sightings	P. Gill, M. Morrice, crew	Documentary filming –sailing vessel	P. Gill, M. Morrice (AR)
Dwarf minke whale (*1)	N GBR	Photo-id; behavioural observation; sightings	Primarily scientists + vessel crew	whalewatching vessel	Dr A. Birtles; JCU.
Humpback whale (*2)	Hervey Bay QLD	Photo-id; sightings	scientists	research vessel	Greg Kaufman/PWF
Humpback whale (*3)	Eden, NSW	Photo-id; sightings	scientists	whalewatch vessel	Greg Kaufman/PWF

Primary species	Area	Data type/method	Collected by	Platform	Contact person/institute and refs
Humpback whale	NW Shelf WA	Migratory timing and direction	crew	Oil and Gas Platform (FPSO, Griffin Venture)	C.Jenner/CWR/ www.cwr.org.au/research/oilandgas.html
Humpback whale	Perth-Rottnest Is WA	Photo-id; sightings	Experienced volunteers	whalewatching vessel	Chris Burton –vessel surveys
Humpback whale	Pender Bay WA	Theodolite tracking, photo id, acoustic recordings	WEG research team (x 4 individuals)	Theodolite tracking from cliff, photo id and acoustic recordings from small vessel	S. McKay (WEG) - Unpublished data (part of PhD thesis to be submitted mid-2008)
Humpback whale(*4)	Port Philip Bay VIC	Photo ID & behavioural observations	scientists	DRI Research Vessel	David Donnelly/DRI
Common dolphin(*4)	Port Philip Bay	Photo ID & behavioural observations	scientists	DRI Research Vessel	David Donnelly/DRI
Southern right whale (147 sightings)	SA	Sightings	Various = (but is not limited to) collected by members of the public, dedicated marine mammal observers, crew of various research and fishing vessels; platforms include from land, research, fishing and tourist charter vessels and light aircraft.	C. Kemper/S.A. Museum	
Blue whale (2 sightings)					
Humpback whale (12 sightings)					
Short-beaked common dolphin (2 sightings)					
Pilot whale (1 sighting)					
Killer whale (1 sighting)					
Common bottlenose dolphin (1 sighting)					
Bottlenose dolphin (1 sighting)					

(*1) Dwarf minke whale

Dr Alastair Birtles, Team Leader for the Minke whale Project, James Cook University, Tourism Program, QLD 4811, tel: 0747814736 : *Dr A. Birtles & Ms S. Sobotzick, JCU* : Observations were conducted primarily from *Undersea Explorer*, a 25m long commercial live-aboard dive tourism vessel, during seven trips of 6 days each (June 2 – July 21, 2006). Further observations were recorded by researchers who were provided space on six other tourist dive vessels (*Taka, Nimrod Explorer, Spoil Sport, Poseidon III, Silver Sonic & Aristocat IV*), covering from 1 to 22 days on an individual vessel (total of 167 researcher days at sea). Additional whales seen when researchers were not on board were reported on Whale Sighting Sheets (see below).

Substantially the same route was covered by *Undersea Explorer* in each of the seven core weeks – from Port Douglas to the outer Great Barrier Reef Ribbon Reefs east of Lizard Island, with a watch maintained throughout daylight hours. During the seven core weeks on *Undersea Explorer* there were 76 encounters with dwarf minke whales, of which 43 included an underwater interaction. The total number of whales seen in these encounters was 354-376, of which 301-318 were seen underwater. Surface and underwater observations were routinely made during encounters, concentrating on recognizing individual whales and documenting whale-swimmer interactions. Whale Sighting Sheets were received from 14 tourism vessels operating in the northern GBR, including all live-aboard dive vessels running swim-with whale programs (return of these has been a GBRMPA permit requirement since 2003 season). We are analyzing those returns (301 reported cetacean encounters involving 1143 individual cetaceans, including: 258 encounters with dwarf minke whales, 35 incidental humpback whale sightings, three sightings of Bryde’s whales, two sightings of false killer whales, one sighting of bottlenose dolphins).

(*2) Humpback whale

The following details the vessel-based research activities 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 6.1 m XL Naiad (rigid hull inflatable) from 3 August – 8 October 2006. 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.

(*3) *Humpback whale*

The following details the vessel-based research activities conducted by Pacific Whale Foundation on board the Cat Balou in Eden, NSW from 12-15 October 2006. Data was collected opportunistically in the form of digital photographs and real time observations recorded on pre-formatted data sheets. In addition to photo-ids reported here, we also received photographs from Ros Butt, the owner of Cat Balou, for the Eden whale watch season, during September to November 2006. An additional 48 whales were identified.

(*4) *Dolphin Research Institute*

DRI 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.

During routine surveys within Port Phillip Bay, DRI and Monash University researchers opportunistically collected data on animals not regularly observed in PPB.

Additional opportunistic work not listed on summary table above:

Whale Watching Operator Collaborative Project Sightings, Northern NSW (SCUWRC)

Data of whale and dolphin sightings were reported from Baysail Pty Ltd. as part of a collaborative project between the Whale Research Centre and the commercial whale and dolphin watching operators in the Byron Bay and Ballina regions of northern New South Wales. Each sighting of a whale or dolphin during commercial tours conducted by Baysail Pty Ltd was noted along with the species, GPS location and number of individuals present and reported to the Whale Research Centre.

Survey Period for 2006	Species Sighted	Total # of Sightings	Total # of Individuals
3/06/2006 - 8/12/2006	Humpback whale (<i>Megaptera novaeangliae</i>)	25	> 142
	Bryde's Whale (<i>Balaenoptera edeni</i>)	1	2
	Minke whale (<i>Balaenoptera bonaerensis</i>)	1	2
	Bottlenose dolphin (<i>Tursiops sp.</i>)	12	> 195
	Common dolphin (<i>Delphinus delphis</i>)	3	> 24
	Orca (<i>Orcinus orca</i>)	1	20

Annual Whale Census (ORRCA)

On June 25 2006, ORRCA conducted their annual whale census. Members of the public were encouraged to count the number of whales they see along the east coast of New South Wales. A total of 668 whales were sighted on the day; the highest ever recorded.

2.2 Analyses/development of techniques

Summary Table:

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Blue whale	Feb-March, 2006 ('peak season')	Perth Canyon, WA west coast	Aerial survey, line transect	Estimated abundance, for 'peak season' (Feb-March) adjusted for unavailability when diving (2006: 9, 95% CI 2, 24; average, 2000-2006: 30, 95% CI 18, 39)	J Bannister/WAM; Bannister et al, 2006
Blue whale	09/12/06	Western Australia	Closing mode vessel surveys, 2000-2005	Distribution, photo-id, biopsy, satellite tracking	C.Jenner/CWR/Branch et.al. 2006 and unpublished data
Dwarf minke whale; other species on opportunistic basis	2003-present	Northern GBR (primarily offshore from Cairns, Port Douglas, Cooktown, Lizard Is.)	GBR Minke whale Sightings Network (Whale Sighting Sheets)	Species, location, date, time, type and duration of encounter, weather & sea conditions, behaviours observed	Dr A. Birtles, JCU; Ms Sarah Salmon, Great Barrier Reef Marine Park Authority
Humpback whale	04/04/06	Western Australia	Line transect survey/2000-2005	Distribution; relative abundance	C. Jenner/CWR/SC/A06/HW21

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Humpback whale	04/04/06	Western Australia	Biopsy sampling, ananalysis./2002-2003	Sex ratio	C. Jenner/CWR//SC/A06/HW20
Humpback whale	07/2006	NW Shelf	Satellite tagging	Migratory patterns	C.Jenner/CWR, N.Gales/AAD, unpubl.
Humpback whale(*1)	3/08 – 08/10/06	Hervey Bay	Photo-id	Distribution; population estimate, calving rates	Greg Kaufman/PWF
Humpback whale (*1)	12/10 – 15/10/06	Eden	Photo-id	Distribution; population estimate, calving rates	Greg Kaufman/PWF
Southern right whale	Aug-Sept, 2006	Southern Australian coast, C Leeuwin wa – Ceduna SA	Aerial survey, direct count	Number present (2006: 447, incl 152 cow/calf pairs); increase rate (cow/calf pairs, 1993-2006: 7.56, p=0.000, 95% CI 4.61, 10.51); current population size, (all animals: ca 2100 for survey area, ca 2400 for Australia as a whole)	J Bannister/WAM; Bannister J L, 2007

*(*1) Pacific Whale Foundation*

Hervey Bay: 500.57 hours were spent on the water during 56 days of field effort. A total of 676 groups (including affiliations and disaffiliations) of whales were observed comprised of 1791 animals (975 adults, 494 sub adults, 300 calves, and 22 undetermined). Mean pod size was 2.65 whales. 222.43 hours were spent observing whales (43% of field effort), with nearly 32 (total) animals observed each day. Using photographic identifications techniques, 762 unique whales were identified.

Eden: 14.85 hours were spent on the water during 4 days of field effort. A total of 25 groups (including affiliations and disaffiliations) of whales were observed comprised of 60 animals (9 adults, 34 sub adults, 5 calves, and 0 undetermined). Mean pod size was 2.4 whales. 6.31 hours were spent observing whales (42.5% of field effort), with 15 (total) animals observed each day. Using photographic identifications techniques, 27 unique whales were identified.

Additional analyses not listed on summary table above:

Oceania Project

The Oceania Project's photography in Hervey Bay for 2006 has been recorded in the field notes log, and archived on CD. The catalogue total for the period 1992-2005 is 2736 flukes. The Fluke Catalogue has been reconciled intra season for all years and inter season for the period 1999-2005. Intra season reconciliation for the other years will be completed during 2007. Statistical analysis of the 1992-2005 dataset has been completed for group characteristics and behaviour.

Dolphin Research Institute

DRI population analyses are currently being undertaken on photo-identification data using mark-recapture programs.

3. MARKING DATA

3.1 Field work

3.1.1 Natural marking data

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Bryde's Whale	Dorsal Fin	NSW	2	Y	5	Liz Hawkins, SCUWRC
Blue whale	Flank pigment	VIC	12	Y	54	M. Morrice, P. Gill (AR/WEG)
	lateral	WA-Geographe Bay	20	Y	160	Chris Burton – land and small vessel surveys
Pygmy Blue whale	Fluke	WA	0	Y	52	C.Jenner/CWR
	Left Lateral Body	WA	2	Y	227	
	Right Lateral Body	WA	2	Y	232	
	Sex ID	WA	0	Y	52	
	ID'd cow/calf pairs	WA	0	Y	10	

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Dwarf minke whale	L & R thorax region primarily; plus scar patterns and other unique features where present.	QLD- Northern GBR	45 whales ID'd from 12 encounters; analysis ongoing	Y	45 whales ID'd from 12 encounters; analysis ongoing	Dr A. Birtles & Ms S. Soltzick, JCU.
Humpback whale	Flukes, Lateral Body	QLD- Hervey Bay	762	Y	2762 (through '05)	Alicia Malo/PWF
	Flukes, lateral body	NSW- Group E Eden region	27	Y	2762 (through '05)	
	Fluke	WA	20	Y	1550	C.Jenner/CWR
	Left Lateral Body	WA	34	Y	2085	
	Right Lateral Body	WA	30	Y	2088	
	Sex ID (including biopsy results)	WA	0	Y	419	
	ID'd cow/calf pairs	WA	15 2005	Y	308	
	Fluke	WA- Group D	1	Pending	Pending	S. McKay - WEG
	Dorsal fin	WA- Group D	13	Pending	Pending	
	Flukes	TAS/Area V	3	Y	3	R. Gales, DPIW
	Fluke	NSW- Group E (i)	6	Y	~650	Daniel.Burns, SCUWRC
	Dorsal fin, fluke and general body markings	VIC- Port Phillip	1	Y	1	David Donnelly/DRI
	Fluke	Norfolk Is. Group V Breeding Stock E(ii)	2(*)	Y	3	A. Oosterman/NIWS; SC/A06/HW36
Ventral Flukes/ Left & right Dorsal fin/ Lateral Body marks	QLD- Area V Hervey Bay	950	Y	2736	Trish & Wally Franklin, TOP	
Southern right whale	Callosity	SA- Head of Bight	125	Y	757	R Pirzl (AE)/S Burnell (EubPL); Pirzl et. Al. 2006
	Callosities	QLD- Hervey Bay	2	Y	4	Alicia Malo/PWF
	Head callosity pattern	Southern Australia	2006: 419 ('good' photos, including duplicates)	Y	1976-2006: 4571 images; 858 individs ID'd so far, mainly to 2002	J Bannister/WAM; Bannister J L, 2007
	Dorsal head (callosities)	TAS	11	Y	70	R. Gales, DPIW
Bottlenose dolphin	Dorsal Fin	NSW- Richmond Riv.		Y	23	Christine Fury, SCUWRC
	Dorsal Fin	NSW- Clarence River		Y	68	Christine Fury, SCUWRC
	Dorsal Fin	NSW- Northern	122	Y	474	Liz Hawkins, SCUWRC
	Dorsal fin	VIC- Port Phillip	Analysis underway	Y	110	David Donnelly, DRI
Common dolphin	Dorsal fin	VIC- Port Phillip	35	Y	35	David Donnelly/DRI
	Dorsal Fin	N NSW	2	Y	20	Liz Hawkins, SCUWRC
Indo-Pacific Bottlenose dolphin	Dorsal fin	SA	15	Y	200	M Bossley
	Dorsal fin	NSW	116	Y	132	J. Wiszniewski- MQ
Short-beaked Common dolphin	Dorsal fin	SA- Gulf St Vincent	25	Y	28	M Bossley

(*) NOTE: One (1) fluke identification match occurred between Norfolk Island (19/09/06) and New Caledonia (14/08/06 ~ C.Garrigue, *Operation Cetaces*).

3.1.2. Artificial marking data

Species	Date	Tag number	Sex	Age class	Notes
Long-finned pilot whale	01/12/2006	W00-401	Female	Adult	Stranded then released SW TAS
	01/12/2006	W00-402	Male	Adult	Stranded then released SW TAS, restranded, euthanized 06/12/2006
	01/12/2006	W00-403	Female	Adult	Stranded then released SW TAS
	01/12/2006	W00-404	Female	Adult	Stranded then released SW TAS, restranded 04/12/2006, deceased.
Pygmy Right whale	19/11/2006	W00-069	Male	Adult	Stranded, released alive SE TAS

3.1.3 Telemetry data

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute; refs
Blue whale	Satellite	1	0 days	C.Jenner/CWR, N.Gales/AAD
Humpback whale	Satellite	4	20 days	C.Jenner/CWR, N.Gales/AAD
	Satellite	1	0 days	R. Gales, DPIW

3.2 Analyses/development of techniques

Southern right whale

Aspects of the population dynamics of the Head of Bight breeding aggregation, including seasonal patterns of use, trends in the 15 year dataset, and calving cohort shifts detected in 2005 were explored briefly (Pirzl and Burnell 2006). Field surveys conducted in 2006 were summarised (Pirzl et. al. 2006) and detailed analysis of the long-term photo-identification dataset from Head of Bight is underway to determine incidence and nature of predatory and human interactions with the Australian population based on marks and scars patterns.

A code based callosity pattern recognition system was implemented for processing southern right whale photo-identifications for the Head of Bight study (Pirzl et. al. 2006). The system was designed for use with any systematic or opportunistically obtained southern right whale callosity images, including partial identifications.

Dwarf minke whale

Dr A. Birtles & Ms S. Soltzick, JCU: Based on initial results from 2006, there were 15 within-season resightings. Maximum distance between the re-sightings was about 132km (1 animal, re-sighted 6 days later). There were 6 between year re-sightings, including one female 'Wiggly Nape Streak' seen in 1999, 2001, 2002, 2005 and 2006; in 2006 she was accompanied by her 2nd calf in successive years. On 11th July 2006 the first confirmed between-years re-sighting of a male dwarf minke was made ('Seagull Scar Left'; previously seen on 14th July 2004) from Undersea Explorer. This also represents the first confirmed re-sighting of a male oceanic rorqual in its tropical wintering grounds.

Humpback whale-NSW & QLD-Pacific Whale Foundation

Photographs were obtained using Canon D20 and D30 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. Song was collected using an amplified hydrophone and a Sony TCD-D8 DAT recorder. Copies of 6 QLD songs bouts were provided to Libby Eyre of Macquarie University, NSW for analysis.

Humpback whale-QLD

Trish and Wally Franklin as PhD Candidates at Southern Cross University are analysing photo-id data for fourteen-year period 1992-2005 which was obtained during The Oceania Projects long-term humpback survey in Hervey Bay. The respective focus of their PhD work is the ‘Social and ecological significance of Hervey Bay to the Area V humpback whales’ and ‘An investigation into genetic relatedness amongst humpback whales in Hervey Bay’.

Collaborations using data from the Hervey Bay Fluke catalogue are underway between Members of the Southern Cross University Whale Centre Group (Dave Paton & Dan Burns) and Members of the South Pacific Whale Research Consortium (Claire Garrigue et al). Papers in preparation from this work are listed in Section 11.2 (Unpublished literature):

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

4.1 Biopsy samples (summary only)

Species	Area/stock	Calendar year/season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Pygmy Blue whale	WA-Perth Canyon	2000/2005	Y	90	90	C.Jenner/CWR,J.Bannister/WAM
Humpback whale	WA-Group D	2002/2003	Y	258	258	C.Jenner/CWR, M.Brasseur/Edith Cowan
	TAS-Area V	2	Y	0	2	R. Gales, DPIW
	Norfolk Is. Group V	2006 - 2	N	0	2	I.Kenny/NIWS
Bottlenose dolphin	WA-Australia	2006/11				M. Krutzen/University of Zurich
	VIC-PPB	27	Y	27	30	Kate Charlton/Monash University
	VIC-Gippsland Lakes	7	Y	2	7	
Common Bottlenose dolphin	NSW	2006/6	N	0	112	Joanna Wiszniewski, MQ
Common dolphin	NSW	2006/8	N	0	20	
Indo-Pacific bottlenose dolphin	NSW coast	2006/4	N	0	245	

Sloughed skin samples (summary only)

Species	Area/stock	Calendar year/season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Humpback whale	AreaV Hervey Bay	114	Y	846	1356	Wally Franklin, TOP

4.2 Samples from bycatches

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Indo-Pacific Bottlenose dolphin(*)	S.A.	(**)	1	Y	(#)	C. Kemper/S.A. Museum
Common dolphin	South East QLD	Skin	4	Y		Org. : DPI&F Contact: Baden Lane Email baden.lane@dpi.qld.gov.au
Australian snubfin dolphin	South East QLD	Skin	2	Y		
Bottlenose dolphin	South East QLD	Skin	2	Y		
(*)The lists includes- Entanglement probable. Note also that some animals were classed as <u>possible</u> entanglements but were included in 4.3						
(**) Genetic tissues, (blood, liver, kidney, muscle, skin) reproductives, stomach and intestines, toxic contaminants (liver, kidney, muscle, blubber)						
(#) Many samples have been analysed for various purposes in the last 10 years and publications written on them.						

4.3 Samples from stranded animals

Species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Pygmy Blue whale	WA-Group D	Skin, blubber	1	N	0	C.Jenner/CWR
Humpback whale	SE QLD	Baleen & blubber	1			col.limpus@epa.qld.gov.au
	NSW	Lung, liver, brain, baleen, kidney	1	Y		C.Fury, SCUWRC
Minke whale	TAS	Blubber(2), skin(2),	2	Y		R. Gales / DPIW
Southern right whale	S.A.	Genetic tissues	1	Y	#	C. Kemper/S.A. Museum
Pygmy Right whale	VIC	Muscle	1	Y		R.O'Brien/MV
	TAS	Skin	1	Y		R. Gales / DPIW
	S.A.	**	2	Y	#	C. Kemper/S.A. Museum
Sperm Whale	S.A.	**	1	Y	#	C. Kemper/S.A. Museum
	TAS	Skin	1	Y		R. Gales / DPIW
	VIC	Muscle	1	Y		R.O'Brien/MV
Andrews beaked whale	TAS	Blubber, skin , skull	1	Y		R. Gales / DPIW
	TAS	blubber, muscle, kidney, liver, skin, stomach contents, skeleton	1	Y		R. Gales / DPIW
Bottlenose dolphin	S.A.	**	5	Y	#	C. Kemper/S.A. Museum
	TAS	Blubber (2), skin(4),	4	Y		R. Gales / DPIW
	VIC	Muscle	10	Y		R.O'Brien/MV
	VIC-SE Australia	Skin, blubber, liver, kidney, melon	3	Y	3 (genetics only)	Kate Charlton/Monash University
	NSW	Liver, heart, kidney, muscle, ovary, lung, spleen, blubber, stomach contents	3	Y		C.Fury, SCUWRC
Common Bottlenose dolphin	S.A.	**	2	Y	#	C. Kemper/S.A. Museum
Indo-Pacific Bottlenose dolphin	S.A.	**	6	Y	#	C. Kemper/S.A. Museum
Common dolphin	TAS	Blubber(3) , muscle(2), skin (4), kidney(2), liver(2) , stomach contents(2).	4	Y		R. Gales / DPIW
	VIC	Muscle	1	Y		R.O'Brien/MV
	VIC-SE Australia	Skin, blubber, liver, kidney, melon	2	Y	2 (genetics only)	Kate Charlton/Monash University
Short-beaked Common dolphin	S.A.	**	25	Y	#	C. Kemper/S.A. Museum
False Killer Whale	VIC	Muscle	1	Y		R.O'Brien/MV
Hector's Beaked Whale	S.A.	Genetic tissues	1	Y	#	C. Kemper/S.A. Museum
Long-finned Pilot Whale	S.A.	**	1	Y	#	C. Kemper/S.A. Museum
	TAS	Blubber(24), muscle(24), skin (27), teeth(24), Stomach(20)	27	Y		R. Gales / DPIW
Melon-headed whale	NSW	Liver, heart, kidney, muscle, lung, spleen, blubber,	1	Y		C.Fury, SCUWRC
Pantropical spotted dolphin	NSW	Liver, heart, kidney, muscle, lung, spleen, blubber, stomach contents	1	Y		C.Fury, SCUWRC

*Complete sets of tissue samples were not collected from all animals because in some cases the state of decomposition made this inappropriate and/or the animal was not studied by S.A. Museum.

** Genetic tissues, (blood, liver, kidney, muscle, skin) reproductives, stomach and intestines, toxic contaminants (liver, kidney, muscle, blubber)

#Many samples have been analysed for various purposes and publications written on them.

4.4 Analyses/development of techniques

Bottlenose dolphins (UNSW)

Molecular genetic analyses to investigate patterns of relatedness, affiliations and social networks among female bottlenose dolphins in Shark Bay, Western Australia are ongoing. Female bottlenose dolphins are generally thought to associate in 'bands' or 'cliques', but associations between individual females are not as strong as those between adult males and can be highly variable. This project will explore the following: (1) female-female associations using dyadic association indices and social network analysis; (2) the role of kinship in female patterns of association; and, (3) the relationships between female calving success, social bonds and kinship. For more information, contact Celine Frere (c.frere@student.unsw.edu.au) or Dr. William Sherwin (w.sherwin@unsw.edu.au). See also the webpage of the Monkey Mia Dolphin Research Consortium (<http://www.monkeymiadolphins.org/>).

Cuvier's beaked whales (UNSW)

This project aims to identify distinct population units for conservation and management in Cuvier's beaked whales worldwide. Over 400 samples (22% soft tissue, 78% bone) have been obtained from specimens stranded along the coasts of over 30 countries, including Australia, with the assistance and collaboration of numerous museums and other scientific institutions. These include the Australian Museum Sydney, the South Australian Museum, and the Queensland Museum. The majority of specimens sampled for this study were collected in the last 30 years (1970's to present; 65%). Approximately half of the samples are now held at UNSW and laboratory work (DNA extraction and sequencing) is in progress. Permitting issues are causing delays with some of the other samples but these should be resolved in the next few months. For more information, contact: Dr. Merel Dalebout (m.dalebout@unsw.edu.au).

Dolphin Research Institute- VIC

DRI samples collected during 2006 are in the process of being genetically processed and analysed. The DNA of these samples have been extracted and the mitochondrial DNA control region and cytochrome *b* have been sequenced and nuclear (microsatellite markers) are currently being analysed. Genetic data is being processed at Monash University. Liver, kidney and blubber samples will be processed and analysed throughout 2007 at Monash University.

Humpback whale- QLD

DNA analysis of Sloughed Skin Samples being undertaken by Megan Anderson and Wally Franklin (Anderson *et al*, 2001 and Elphinstone *et al*, 2003), at the Centre for Animal Conservation Genetics, Southern Cross University, under the Supervision of Professor Peter Baverstock. Analysis of total holdings will be completed and up to date by end of 2007. The following references on the development of technique are relevant:

Humpback whale genetic analyses-SCUWRC

Two main analyses of genetic data were undertaken at the Southern Cross University Whale Research Centre in 2006.

1. Genetic comparison of the Western Australian and Eastern Australian humpback whales stocks. Analyses were conducted using mitochondrial and nuclear DNA and included descriptions of stock structuring, gene flow, measures of genetic diversity and tracking of individual movements between and within each stock.

Results suggest that subtle stock structuring is present between the WA and EA stocks, which exhibit a moderate level of gene flow. This finding supports previous results from discovery tagging and acoustic research which found mixing of the WA and EA stocks, and confirms that this mixing of stocks is biologically functional. Although gene flow is believed to be moderate between the two stocks, no instances of movements of individual whales between the two coasts were detected. Detection of movements of individual whales within stocks, however, suggests a high level of site fidelity to a specific migratory route. Both stocks possess similarly high levels of genetic diversity refuting previous suggestions that historic commercial whaling practices had impacted negatively upon the genetic diversity within the species. The low frequencies of mitochondrial haplotypes which form a uniquely diverged clade only found to occur within the Southern Hemisphere, was noted as cause for concern, as removal of even small numbers of whales possessing this clade could potentially lead to the loss of this evolutionary unique genetic variation.

2. Genetic comparison of Eastern Australian humpback whales to humpback whale stocks from breeding grounds from Western Australia to Colombia (Stocks D-G). Analyses were conducted using mitochondrial DNA and included analyses of stock structuring, gene flow and measures of genetic diversity.

This analysis revealed significant differences between the Eastern Australian whales and those from throughout the South Pacific (New Caledonia, Tonga, Cook Islands, French Polynesia and Colombia) as well as Western Australia. Structure between adjacent breeding areas tended to be weaker than those which were more distant from one another. Levels of genetic variation were found to be similar within all breeding stocks and were quite high in comparison to previous studies from the Northern Hemisphere.

This analysis was conducted for consideration by the Scientific Committee of the International Whaling Commission. A more in-depth analysis is currently being conducted and is anticipated to be published in the Comprehensive Assessment of Southern Hemisphere Humpback whales volume of the Journal of Cetacean Research and Management in 2007.

Sperm whales-TAS

Age determination for 29 stranded sperm whales has been performed by analysing the annual growth layer groups in the tooth dentine, using tooth sectioning and the acid etching technique. Diet samples collected from two animals have also been analysed. These data are to be compiled and published in the future.

5. POLLUTION STUDIES

Heavy metal and organochlorine levels in South Australia

C. Kemper continues to work with students from Flinders University who are undertaking studies of heavy metal and organochlorine levels in South Australia. A paper summarizing the data for three dolphin species is ready for submission (Lavery et al. in prep.). A second manuscript (near final stages) reports on the results of an honours project in 2005 that found markers of pathology related to heavy metals in adult Indo-Pacific Bottlenose dolphin in South Australia (Lavery et al. in prep.).

Trish Lavery has recently embarked on a PhD project that, in part, attempts to relate toxic contaminants to lung parasite loads in South Australian dolphins.

Long-term Water Quality Monitoring Program, Hervey Bay Marine Park 1993-2006

During the 2006 humpback season The Oceania Project undertook the 14th year of Chlorophyll A sampling for a long-term habitat and water quality monitoring program, in the Whale Management and Monitoring Area of the Hervey Bay Marine Park. The program is being conducted in conjunction with Andrew Moss, Environment Division, Queensland Environment Protection Agency. Weekly triplicate Chlorophyll A samples were obtained from 6 structured geographical areas within the Hervey Bay Marine Park between August 5th and October 15th 2006. Outcomes of the first five years of monitoring (1993/1997) and the eleven years of monitoring (1993-2003) are published in Moss and Kocovski (1998) and "Long-term monitoring of chlorophyll-a in Hervey Bay, Queensland (1993-2003) by The Oceania Project" (<http://www.epa.qld.gov.au/publications?id=1771>)

6. STATISTICS FOR LARGE CETACEANS

6.1 Corrections to earlier years' statistics for large whales

Humpback whale- 20th November 2005: A dead juvenile female humpback whale was caught in a net off Thirroul. ORRCA, NPWS and Fisheries released and towed the carcass out to sea.

6.2 Direct catches of large whales (commercial, aboriginal and scientific permits) for the calendar year 2006

N/A

6.3 Anthropogenic mortality of large whales for the calendar year 2006

6.3.1 Observed or reported ship strikes of large whales (including non-fatal events)

Please indicate type of vessel, e.g. High-speed Ferry (HSF), Large Cargo (LC), Military (M), Fishing Vessel (FV), Passenger Carrying Excursion (PC), Other (O). Fate: Indicate if the whale swam away (X), appeared seriously injured (I), killed (D). Example given.

Whale species	Sex	No.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/ institute and refs
Humpback whale *	U	1	15 July 2006	Whitsundays 19°59.20'S, 148°54.30'E	PC	U	U	Member of the public	EPA PO BOX 15155, City East, QLD 4002.
Humpback whale **	U	1	25 August 2006	Whitsundays 20°19.33'S, 148°55.19'E	PC	U	I	Tourism operator	Col Limpus 0732277718 col.limpus@epa.qld.gov.au
Pygmy Blue whale***	U	1	1/12/06	Gage Roads near Fremantle, WA	M	U	D	Post mortem	C.Jenner/CWR, C.Salgado-Kent/Curtin Uni

* Whale struck by 50ft yacht reversing in Nara Inlet. Whale struck with hull not propeller.
 ** Whale struck by a trimaran. Whale swam away. Minor damage to the animals rear quarters reported.
 ***A pygmy blue whale was struck by an Australian navy frigate (HMAS Ballarat) in Gage Roads near Fremantle WA on Dec 01, 2006. The whale washed up dead on Capricorn Beach, north of Perth on Dec 05. The navy reported the strike on the Saturday, Dec 02. A skin & blubber sample was collected on Dec 06. Measurements of blubber thickness along the length of the whale were recorded at that time.

6.3.2 Fishery bycatch of large whales

Indicate fate of whale (R = released alive, D = discarded dead or seriously injured, K = kept for sale or specimen), targeted fish species (e.g. tuna, herring, etc.). Please use the internationally recognised standard gear description codes from FAO (given in Appendix 1), although more detail can be supplied if known. More detailed information and illustrations of the different types of fishing gear can be found on the FAO/FIGIS website¹. Please also include any instances of entanglement in shark exclusion nets, which are another important source of bycatch. Please indicate how observed: M = dedicated marine mammal observer, F = Fishery onboard observer, V = vessel logbook, A = anecdotal, DA = documented anecdotal, photos, etc.

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Humpback whale (*1)	U	1	17 August 2006	18°41.767'S, 149°21.388'E	R	Mackerel	GN	DA Skipper	EPA PO BOX 15155, City East, QLD 4002.
Unconfirmed humpback whale (*2)	U	1	24 August 2006	Off Goat Bay, Hayman Island, Whitsundays	U	U	NK	A	Col Limpus 0732277718 col.limpus@epa.qld.gov.au
Humpback whale (*3)	F	1	26/09	Hervey Bay	D	U	buoys	m	QDPI&F Baden Lane baden.lane@dpi.qld.gov.au
Humpback whale	U	1	19 July 2006	28.0265 S 153.4411 E	R	Shark	NSC	F	
Humpback whale	U	1	2 November 2006	Coolum Beach, Sunshine Coast	R	Shark	NSC	F	
Humpback whale (*4)	U	1	17/12/2006	43.027 S 147.95 E	D	U	MIS	DA	R. Gales / DPIW
Humpback whale	U	1	05/06	32:54:376 S; 115:19:498 E	R	Western Rock Lobster	FPO	M	Doug Coughran, Department of Environment and Conservation
Humpback whale	U	1	05/06	28:51:940 S; 114:01:390 E	R	Western Rock Lobster	FPO	M	
Humpback whale	U	1	06/06	34:25:511 S; 115:14:924 E		Unknown (*5)	NK	F	
Humpback whale	U	1	06/06	29:51:770 S; 114:41:861 E	R	Western Rock Lobster	FPO	M	

¹ http://www.fao.org/figis/servlet/static?dom=root&xml=tech/gears_search.xml

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Humpback whale	U	1	06/06	32:54:376 S; 115:19:498 E	R	Western Rock Lobster	FPO	M	
Humpback whale	U	1	06/06	31:16:255 S; 115:19:420 E	R	Western Rock Lobster	FPO	M	
Humpback whale	U	1	07/06	31:58:806 S; 115:36:758 E		Unknown (E)	NK	M	
Humpback whale	U	1	07/06	28:17 S; 114:21 E		Western Rock Lobster	FPO	M	
Humpback whale	U	1	07/06	Beacon Island		Western Rock Lobster	FPO	F	
Humpback whale (*6)	U	1	24/05/06	Lake Cathie Beach	D	U	MIS-netting	D.A.	ORRCA
Sperm Whale (*7)	M?	1	28/4/06	36 18 6 S 139 42 10 E	D	U	LL	S.A. Museum partial post mortem	C. Kemper/S.A. Museum
<p>Comments:</p> <p>(*1) 150m of net was around the body of the whale, pinning both pectoral fins and covering the mouth, eyes, blowhole, body and tail. A number of 15cm white floats were attached to the net. All net was removed and recovered by the QDPI&F Marine Animal Release Team.</p> <p>(*2) Member of the public reported a whale with buoys (6 inches diameter) attached travelling with another whale. QPWS deployed staff in a spotter aircraft. No sightings of whale with buoys.</p> <p>(*3) observed entangled in gear on 26/09, gear removed, found dead 2 nautical miles offshore from south Arch western side of Fraser Island Platypus Bay on 27/09/06</p> <p>(*4) Entangled Humpback sighted with 14mm orange rope, attempted disentanglement unsuccessful</p> <p>(*5) Suspected international gear</p> <p>(*6) Likely entanglement. A dead 9.2m humpback washed ashore with netting entangled around its tail. The same animal was reported to be floating further out at sea the day before.</p> <p>(*7). Possible entanglement, flukes missing suggests long-line</p>									

7. STATISTICS FOR SMALL CETACEANS

7.1 Corrections to earlier years' statistics for small cetaceans

In 2005, a total of 56 bottlenose dolphins were taken as bycatch in the Pilbara fish trawl (52 dead, 4 alive), including 10 male, and 3 females, in the region of 19-20°S latitude, 116-119°E longitude.

7.2 Direct catches of small cetaceans for the calendar year 2006

N.A.

7.3 Anthropogenic mortality of small cetaceans for the calendar year 2006

7.3.1 Observed or reported ship strikes of small cetaceans (including non fatal events)

Species	Sex	No.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/institute and refs
Common dolphin	U	1	?	Found dead 200m east of Kirribilli Point, Sydney Harbour	U	U	D	Collected by NSW DEC*	Jane Hall, Aust. Registry of Wildlife Health, Taronga Zoo Sydney NSW
Bottlenose dolphin	U	1	12/3/06	Pacific Palms	U	U	D	DA**	ORRCA

* Collected by NSW DEC and transported to Taronga Zoo for necropsy (06M167). Animal was in advanced state of decomposition and no necropsy was performed. There was significant and severe trauma to the carcass indicative of propeller strike.

** The animal had suffered many lacerations that were consistent with both a shark attack & a boat strike, suggesting one followed the other

7.3.2 Fishery bycatch of small cetaceans

Species	Sex	No	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact	
Australian snubfin dolphin	U	1	13 October 2006 (*1)	19°06.570'S, 146°50.593'E	R	Shark	NSC	F Shark contractor	DPI&F Baden Lane baden.lane@dpi.qld.gov.au	
	M & F	2	19 November 2006	-19.2550'S 146.8483'E	D	Shark	NSC	F Shark contractor		
Bottlenose dolphin	M	1	14 September 2006 (*2)	26°48.46'S 153°08.74'E	R	Shark	NSC	F Shark contractor		
	M	1	23 May 2006	-26.3939'S 153.0657'E	D	Shark	NSC	F Shark contractor		
	F	1	13 January 2006	Noosa Beach shark net, Sunshine Coast	D	Shark	NSC	F Shark contractor		
	M	1	14 May 2006	-25.8987'S 153.0977'E	D	Shark	NSC	F Shark contractor		
	U	1	24 May 2006	-25.8941'S 153.0970'	D	Shark	NSC	F Shark contractor		
	U	1	24 August 2006	North Stradbroke Island drum line, Moreton Bay	A	Shark	NSC	F Shark contractor		
	M	1	26 January 2006	Noosa shark net, Sunshine Coast	D	Shark	NSC	F Shark contractor		
	U	1	4/01/06 (*3)	32°03'S; 115°45'E	R	Unknown	RG	F		Doug Coughran, DEC
	U	1	10/06	151 19' 45" E 33 38' 58" S	D	Sharks	NSC	F		Dennis Reid, NSW DPI
	F	1	11/06	151 19' 45" E 33 38' 58" S	D	Sharks	NSC	F	Dennis Reid, NSW DPI	
U	1	30/10	Evans Head	D			Stranded dead (*4)	Christine Fury, SCUWRC		
	7M/2 F, 14U	23	01-06/06 (1 st 2 quarters of 2006. 3 rd & 4 th quarters will be reported in next year's report)	~19-20°S, ~116-119°E	21D, 2A	Multiple	TX	F/DA	Commercial Fisheries Program Department of Fisheries (WA) 168-170 St Georges Terrace, Perth, WA, 6000	
Common dolphin	F	1	3 October 2006	Alexandra Headland, Sunshine Coast shark net	D	Shark	NSC	F -Shark contractor	DPI&F Baden Lane baden.lane@dpi.qld.gov.au	
	U	1	1 November 2006(*5)	Surfair Resort, Sunshine Coast shark drum line	R	Shark	NSC	F -Shark contractor		
	F	2	11 October 2006	28°08.067'S 153°30.602'E	D	Shark	NSC	F -Shark contractor		
	F + U	2	7 February 2006	-28.1583'S 153.5381'E	D	Shark	NSC	F -Shark contractor		
	U	1	8 April 2006	27°58.406'S 153°26.161'E	D	Shark	NSC	F -Shark contractor		
	U	1	24 May 2006	-25.8941' 153.0970'E	D	Shark	NSC	F -Shark contractor		
	F	1	28 March 2006	Wurtulla shark net, Sunshine Coast	D	Shark	NSC	F -Shark contractor		

Species	Sex	No	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Common dolphin (contd)	U	1	8 April 2006	Wurtulla shark net, Sunshine Coast	D	Shark	NSC	F -Shark contractor	
	F	1	29 May 2006	-26.3939°S 153.0657°E	D	Shark	NSC	F -Shark contractor	
	M	1	4 June 2006	-26.3939°S 153.0657°E	D	Shark	NSC	F -Shark contractor	
	F	1	25 July 2006	Bribie Island shark drumline	D	Shark	NSC	F -Shark contractor	
	M	1	11 December 2006	Noosa shark net, Sunshine Coast	D	Shark	NSC	F -Shark contractor	
	U	1	10/06	151 17' 53" E 33 43' 11" S	D	Shark	NSC	F	Dennis Reid, NSW DPI
	U	1	26/3/06	Whale Beach-NSW	D	Shark	NSC		ORRCA
Indo-Pacific Bottlenose dolphin	U	1	8/7/06	34 47 15 S 138 32 00 E	R	Unknown	MIS	M	C. Kemper/S.A. Museum
	F	1	Found 10/9/06	32 59 40 S 137 46 30 E	K	<i>Unknown</i>	NK	S.A. Museum post mortem	
Pilot whale		1	6/06/2006	28°E 160°S	R	Large tuna and billfish species	LLD	V	AFMA PO Box 7051, Canberra Business Centre ACT 2610 (02) 6225 5322 Tim.Smith@afma.gov.au
Short-beaked Common dolphin	U	5	2005/ 2006 (*6)	Spencer Gulf/Investigator Strait	D	<i>Pilchard</i>	PS1/PS2	M	SARDI Aquatic Sciences
	U	1	Reported 15/6/06	32 56 17 S 137 45 54 E	D	<i>Finfish</i>	MIS (aquaculture cage)	A	C. Kemper/S.A. Museum
Spinner dolphin	M	1	15 March 2006	Kurrawa Beach shark net, Gold Coast -28.0265°S 153.4411°E	D	Shark	NSC	F Shark contractor	DPI&F Baden Lane baden.lane@dpi.qld.gov.au
Striped dolphin		1	17/03/2006	27°E 154°S	R	Large tuna and billfish species	LLD	V	AFMA PO Box 7051, Canberra Business Centre ACT 2610 (02) 6225 5322 Tim.Smith@afma.gov.au
Unid. Dolphin		1	13/10/2006	14°S 137°S	D	Prawns	TBS	V	
Unid. Toothed whale		1	12/01/2006	29°E 160°S	R	Large tuna and billfish species	LLD	V	
Unid. Dolphin	U	1	Reported 4/9/06	32 56 12 S 137 45 54 E	D	<i>Kingfish</i>	MIS (aquaculture cage)	A	C. Kemper/S.A. Museum
Comments: (*1) The dolphin was released alive. The dolphin was not hooked, but had rope around the tail. The rope was removed without injury to the dolphin. (*2) Dolphin caught in the net by it's pectoral fin. It was released and sent to Sea World for rehabilitation (*3) Entangled in fishing line. Disentangled (*4) Fluke cut off by knife or sharp item (*5) The dolphin was released alive. The hook was embedded in the pectoral fin. (*6) May have occurred in 2005									

8. STRANDINGS

New South Wales

NSW: NPWS – Contact Geoff Ross (Acting Manager, Wildlife Licensing and Management Unit, Reserve and Wildlife Conservation Branch, P.O. Box 1967, Hurstville NSW 1481) for information from the NPWS incident database. This includes the date, location, outcome, autopsy detail (when available) and contact personnel for 8 stranding events in NSW during 2006.

NSW: ORRCA - Contact Ronald Ling (ronaldling@optusnet.com.au) for information on stranded cetaceans, entanglements, incidents and carcasses attended to by ORRCA.

NSW: SCUWRC - Contact Christine Fury (Southern Cross University Whale Research Centre, Southern Cross University, PO Box 157, Lismore, NSW, 2480) for information on stranded cetaceans in northern NSW, post-mortems are conducted and samples are routinely collected from almost all stranded animals and deposited in the Southern Cross University Museum. During 2006 the tissues from 3 *Tursiops aduncus*, 1 *Stenella attenuata*, 1 *Peponocephala electra* and 1 *Megaptera novaeangliae* were collected. Analysis is pending for these samples.

Northern Territory

Animal Rescue number is 08 89994536

Marine strandings – diverted through from Animal Rescue 08 89209219

Queensland

No material was deposited in the Museum of Tropical Queensland during 2006. Dr Carden Wallace can be contacted for details of specimens previously deposited.

Dr Col Limpus, QEPA, PO Box 155, Brisbane Albert Street, Qld 4002, tel: 0732277718: The EPA maintains a database of marine wildlife strandings and deaths, called StrandNet. This records information on where injured, dying and dead marine cetaceans have been found in Queensland. The EPA assesses the cause of the injuries or death where known, and summarises that information in annual reports. Most reports of individual strandings are supplied by staff of the EPA and Great Barrier Reef Marine Park Authority. Some of those reports come in via the statewide stranding hotline, 1300 130 372. Other reports come from rescue organisations such as Sea World and Underwater World and the general public.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Humpback whale	7	0	Dr Col Limpus EPA	col.limpus@epa.qld.gov.au
Minke whale	1	0		
Sperm whale	1	0		
Unidentified whale	6	0		
Australian Snubfin dolphin	1	0		
Bottlenose dolphin	5	1		
Common dolphin	3	2		
Dolphin sp.	6	0		
Indo-Pacific humpback dolphin	3	0		
Melon-headed whale	3	2		

South Australia

The South Australian Museum and Department for Environment and Heritage SA have a programme of reporting and collecting as many dead cetaceans as possible from South Australia. In the past year or so the effort has been somewhat scaled back (because of lack of resources) to put more emphasis on Gulf St Vincent. However, rare and important specimens are still collected from other parts of the State. The Dolphin Trauma Group, PIRSA Fisheries, volunteers, students, members of the public are important contributors to the programme.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Southern right whale	1	0	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Pygmy Right whale	3	2		
Short-beaked Common dolphin	31	26		
Long-finned Pilot Whale	1	1		
Indo-Pacific Bottlenose dolphin	6	6		
Common Bottlenose dolphin	2	2		
Bottlenose dolphin	10	5		
Unid. Dolphin	4	0		
Sperm Whale	2	1		
Hector's Beaked Whale	1	0		
Unid. Beaked Whale	1	0		

Tasmania

Dr. Rosemary Gales
Section Head
Wildlife and Marine Conservation Section
Biodiversity Conservation Branch
DPIW, Box 44
Hobart 7001 Tasmania
Email: Rosemary.Gales@dpiwe.tas.gov.au

Victoria

Strandings along the Victorian coastline were attended by David Donnelly (DRI), Kate Charlton (Monash University) and members representing both Victorian Strandings Network and the Melbourne Museum. Specimens collected will be incorporated into the Melbourne Museum IWC report.

West Australia

Opportunistic stranding reports are received by DEC offices from staff members and members of the public. Wherever possible a site visit is arranged to assist the animal to return to sea, to confirm identification and to determine the cause of death (if applicable). Stranding reports are entered into a centralised database once identification has been confirmed. Identification is undertaken by experienced staff in person if possible. If not possible, then less experienced observers are requested to provide photographs, measurements, teeth counts and/or DNA.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Pygmy sperm whale	1	1	Doug Coughran, Department of Environment and Conservation	doug.coughran@dec.wa.gov.au
Humpback whale	6			
Gray's beaked whale	1			
Sperm whale	5			
Striped dolphin	1	1		
Common Bottlenose dolphin	13			

9. OTHER STUDIES AND ANALYSES

Acoustic surveys of Southern Ocean waters— Jason Gedamke, AGAD

Two ARPs (Scripps Inst. Oceanography) were deployed in March 2006 off Davis station east Antarctica. They were recovered in March 2007 and each has a continuous 13 month record of underwater low frequency sound (>250 Hz). Two successive deployments of ARPS in these locations have allowed two years of continuous recordings to be collected from these locations (Gedamke et al, 2006a). These will be analysed to determine the seasonal presence of blue and fin whales and compared with data collected from the Cape Leeuwin hydrophone array for Comprehensive Nuclear Test Ban Treaty Organization. In addition, 3 acoustic loggers (in collaboration with Rob McCauley, Curtin University) were deployed between October 2005 and March 2006 along a line of longitude south of Tasmania to offshore of Dumont D'Urville, on the Antarctic Continent. All three instruments were recovered after sampling (<2000Hz) approximately a year of data (15 minutes recorded every hour) and will allow assessment of seasonal presence of vocal whales and seals along this large north-south transect.

In addition, from January to March, 2006 a broad-scale acoustic sonobuoy survey was conducted in the waters of eastern Antarctica from 30-80 degrees East. Sonobuoys were deployed every 30nm along 11 north-south transects to assess distribution and relative abundance of calling whales and seals (Gedamke et al, 2006b).

Auckland Islands, New Zealand, Southern right whales Sex Determination and mtDNA sequencing—Glenn Dunshea, AGAD

Samples gathered from the Auckland Island Southern right whales have been used for sex determination and (in collaboration with Scott Baker) the mtDNA control region has been sequenced, along with typing of 4 hyper-variable microsatellite loci. This analysis has revealed that the samples came from 62 females and 76 males. The genotyping has revealed 14 samples were recaptures from previously sampled individuals, 12 of which were unexpected (i.e. with 2 it was suspected in the field that the sample was a recapture – these were usually samples following each other of animals in the same social group). Sorting of the image library is nearly complete and analysis will be on-going to determine the minimum number of individuals recorded and to assess the use of the photo catalogue for mark recapture analysis for abundance estimates at the breeding ground during the study period. Two transects of Laurie Harbor and Port Ross were also done by boating down the middle of the harbor at <5 knots and counting individuals on either side using one observer with binoculars per side. The first of these transects was conducted from a 4.5m R.I.B and yielded a minimum count of 49 adults and 8 cow calf pairs. The second transect, conducted 5 days later and from a platform 3m above water level yielded a minimum adult count of 83 adults and 21 cow calf pairs.

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

Both students involved in this project (see reports for 2004 and 2005) are in the final stages of writing their PhDs. Sue Gibbs has obtained excellent results on the relationship between diet (including isotope concentrations in teeth) and species' ecology in South Australia.

Bottlenose dolphin studies, WA

- Dr J. Mann Behaviour and communication in bottlenose dolphins in Shark Bay
- Dr M. Krutzen Genetic study of bottlenose dolphins along WA coastline (PhD thesis)
- Dr. B. Sherwin Genetic study of bottlenose dolphins.
- Dr A. Samuels Effects of food provisioning on the behaviour of dolphins, Human-dolphin interactions at Monkey Mia and social maturation of wild juvenile dolphins.

Bottlenose dolphins Abundance - Byron Bay Region, NSW

Southern Cross University Whale Research Centre (SCUWRC) estimated the abundance of the bottlenose dolphin population in the Byron Bay region (Brunswick Heads to Ballina) to be over 800 individuals. The population is composed of a large proportion of 'transient' individuals and a smaller proportion of 'resident' individuals. Other aspects of the ecology of the bottlenose dolphins of the region have been carried out including behavioural budgets, habitat use and movement patterns.

Bottlenose dolphin acoustic analyses

Analyses of acoustic and other behaviours of bottlenose dolphins. A comparison of vocal behaviours of dolphins in three different environments (wild, wild but during provisioning, captive) while attempting to control for behavioural state. (Michael Noad, Melinda Rekdahl/ UQ)

Bycatch reduction-QLD

Baden Lane, DPI&F : The QSCP maintains an active research program that seeks to reduce the by-catch of small cetaceans in its fishing gear. Initiatives and research undertaken in the past 12 months include investigating the effectiveness of acoustic pingers and developing more efficient acoustic devices, and trialling alternative drum line baits and gear configurations to minimise scavenging of baits by small cetaceans. A final report detailing

the results of various experiments and initiatives to reduce non target capture of marine animals will be available next financial year.

Bycatch reduction-WA

DEC is working closely with Ocean Watch Australia's SeaNet program (a national environmental extension service to the professional fishing industry) and fishing industries in Western Australia to reduce bycatch. These industries include the west coast rock lobster fishery and aquaculture (eg pearling, mussels) and they have shown a keen willingness to cooperate. The department and industry identify the gear involved in bycatch and investigate contributing factors. A code of practice has been produced by the West Coast Rock Lobster Managed Fishery with assistance from DEC. A DVD is currently being produced that will be used as an orientation video for staff involved in fishing industries. The DVD will cover occupational health and safety issues, what to do when entanglements are encountered and who to contact.

During 2006, Doug Coughran (DEC) provided nationally accredited training on whale disentanglement procedures to 45 state conservation agency staff from South Australia, Victoria and Tasmania, and was the principle presenter and trainer at a national workshop held in Victor Harbour, South Australia.

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 which has been delayed to later in 2007.

Progress has been made on the study of lung parasites in South Australian dolphins. Ikuko Tomo and Catherine Kemper hope to submit a manuscript on the incidence of lungworms by the end of 2007 and to present a poster on a new method of determining the severity of the pathology associated with lungworm burdens.

Cetacean distribution and abundance, Browse Basin, WA

CWR has conducted a mega-fauna distribution and abundance study (vessel and aerial based line transects) in the Browse Basin area of Western Australia (Kimberley Region), funded by the oil and gas industry, and has identified temporal and spatial distribution for a minimum 17 species of cetaceans (excludes unidentified species).

Cetacean molecular scatology to assess prey—Glenn Dunshea, AGAD

A method has been developed to detect and identify a diverse range of prey using a single 'universal primer' assay. Application of this 'universal primer' assay to samples from the captive feeding trial has yielded a positive identification of 8 out of 10 prey species used in the feeding trial from just 4 scat samples. One of the prey species undetected as of yet using this technique only made up 2% wet weight of diet. Work is on-going to determine whether molecular techniques can be used for quantitative reconstruction of diet. This same 'universal primer' assay has been applied to 15 scat samples from free-ranging Sarasota Bay bottlenose dolphins. This analysis has identified 19 prey species from 14 samples with a mean of 3.1 +/- 0.4 (S.E) species identified per sample (range 1-7). This is the first occurrence of teleost prey being identified to the species level in a living, free ranging cetacean outside of direct observation of feeding. Furthermore, the results from these assays are similar to the described diet of these animals (Sarasota Bay Tursiops) as revealed by stomach contents analysis of stranded individuals. The congruence of described diet from these two techniques appears to validate the premise that the use of data from stomach contents of stranded animals is in fact representative of the diet of healthy free-ranging individuals.

Dwarf minke whale biology and behaviour

A PhD study by Ms. S. Soltzick (2006-2009; supervised by Dr Alastair Birtles & Prof Helene Marsh, JCU) is investigating dwarf minke whale movement patterns, site fidelity and social structure in the northern GBR using photo-identification and underwater videogrammetry.

A PhD study by Mr. A. Mangott (2006-2009; supervised by Dr Alastair Birtles, Prof Helene Marsh, JCU, A/Prof Peter Valentine and Associate supervisor Jason Gedamke) is investigating dwarf minke whale behaviours and social vocalisations associated with human interactions in the northern GBR.

GBRMPA Summary of cetacean permits current in 2006

- 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.
- the total number of dedicated tourism whale watching activities allowed to operate in the Far Northern Management Area of the Marine Park was 23, in the Cairns Management Area of the Marine Park was 25, in the Cairns Area of the Marine Park was 7, in the Townsville/Whitsundays Management Area of the Marine Park was 58, in the Whitsundays Area of the Marine Park was 34.
- no permits were issued for tourist programs that included the activity of dolphin watching.

- six permits were current for the conduct of a research program involving whales or dolphins:
 - 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.
 - Status of spinner and bottlenose dolphins in South-East Queensland waters – permit expires 30 September 2007.
 - 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.
 - Conserving Australia's endemic dolphins in the Great Barrier Reef Marine Park – permit expires 30 November 2008.
 - Taxonomic status and phylogeographical population structure of inshore dolphins – permit expires 30 November 2008.
 - Conservation genetics of two insufficiently known inshore cetaceans: Australian snubfin and the Indo-Pacific humpback dolphins in North-East Queensland – permit expires 30 April 2009.
- A fourth Dwarf minke whale Tourism Monitoring Program Research Contract began in the 2006 dwarf minke whale season (June-August). The project objectives are monitoring of the swim-with-dwarf-minke-whale activity associated with tourist programs in the northern Great Barrier Reef Marine Park; reporting on the aims covered by the project proposal relating to the sustainability of the swim-with-dwarf-minke-whale activity to the Authority; and engagement of the permitted swim-with-dwarf-minke-whale tourism operators in the Dwarf minke whale Tourism Monitoring Program.

Humpback whale song analyses

(i) Humpback whale acoustic recordings were collected as follows:

Location	Method	Approx. number of singers	Dates
Pt Lookout, Australian E coast	Boat-based hydrophone recording	6	Late June-early July (northward migration)
Vava'u group, Tonga	Boat-based hydrophone recording	9	September (breeding ground)
Sunshine Beach, Australian E coast	Autonomous underwater acoustic recorder	At least several. 46 days of recordings not yet catalogued.	Late October – November (southward migration)

The Australian recordings are part of a long-term study of the changes in the whales' songs with time. The Tongan recordings are part of a study of the way in which song changes propagate through the South Pacific region (Groups E and F) which will help develop a metapopulation model for the region. (Michael Noad, Ellen Garland/ UQ)

(ii) Analyses were conducted on humpback whale acoustic and other behaviours of the E Australian migratory population. This included analysis of social sounds characteristics including calculation of source levels. Song unit source levels were also calculated and the behaviours of singers and conspecifics analysed to assess function of song. (Michael Noad, Rebecca Dunlop, Josh Smith/ UQ)

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

This study has not progressed beyond the draft manuscript stage. It is hoped to collaborate with other researchers studying *T. aduncus* and *T. truncatus*.

Impacts of vessels on Bottlenose Dolphin behaviour – Byron Bay, NSW

Analysis of the impact of vessels on the behaviour and acoustics of bottlenose dolphins (*Tursiops sp.*) has also been carried out in the Byron Bay region by SCUWRC. The study found that different types of vessels (yacht, motor vessel and kayaks) had a different influence on the behavioural responses of dolphins towards these potential threats. Different types of vessel behaviours (i.e. approach types, travelling, following or idling) also had variable impacts on the behaviour and acoustics responses of dolphins towards the vessels.

Impacts of vessels on Humpback whale behaviour – Cape Solander, Sydney, NSW

Maryrose Gulesserian from the Graduate School of the Environment, Macquarie University, is conducting a study to assess the impacts of vessels on humpback whale behaviour. Whales are tracked during their northern migration using a theodolite and real-time tracking software, Cyclopes, from Cape Solander in Botany Bay National Park, Sydney. Whales are tracked before, during and after encounters with vessels. In 2006, a total of 324 whales were tracked over a sample period of 28 days. Data such as direction of travel, speed and pod size were also recorded. This study will continue for a further two years in order to assess whether the presence of vessels affect humpback whale behaviour, and to what extent.

National Centre for Aging Marine Mammals

The South Australian Museum has been funded by ACCAMS to set up a laboratory to age cetaceans and pinnipeds using teeth. Funding also includes running a workshop at the Museum during 2007 at which participants from Australia will learn the specialised techniques of preparing and interpreting tooth sections.

'Pacific Island Whale Watch Tourism 2005, An Economic Valuation, Summary of Initial Findings'

A preliminary report was produced in May 2006 for IWC 58. The International Fund for Animal Welfare (IFAW), Secretariat of the Pacific Regional Environment Programme (SPREP), South Pacific Tourism Organisation (SPTO), and the South Pacific Whale Research Consortium (SPWRC) commissioned an assessment of the whale and dolphin watching industry in the Pacific Islands region. A region-wide review of the status of whale watching activities was seen as a valuable tool to further support the development of responsible whale and dolphin watching tourism and to support regional initiatives promoting the conservation of these species. The report compiles the preliminary findings of this assessment. A full report will be released in 2007 which will cover additional aspects including the economic value of whale watching in the Pacific Islands region and a country-by-country assessment of the potential for the development of whale watching tourism.

Use of telomeres to age cetaceans—Glenn Dunshea, AGAD

Telomeres are nucleoprotein caps on the ends of chromosomes that are dynamic throughout the life of most animals examined to date. Initial assays of bottlenose dolphins have indicated variation between different age individuals in telomere length, however these analyses have been complicated by non-telomeric artifacts. Subsequent experiments confirmed a substantial amount of non terminal telomere repeat sequence throughout the genome of this species. This means that many traditional methods of measuring telomeres are complicated by and probably unsuitable for this species and possibly many cetaceans. Experiments are now on-going to correct for interstitial telomere sequence when measuring telomeres of this species.

Whalewatching: swim-with-dwarf minke whales tourism

A PhD study by Mr. M. Curnock (2005- end 2008; supervised by Dr Alastair Birtles & A/Prof Peter Valentine) is investigating mechanisms for assessing the sustainability of the swim-with-dwarf minke whales tourism industry in the northern GBR.

Whalewatching summary-WA

Licensed commercial whale watching in Western Australia (for southern right and humpback whales) for the 2006 season involved 114 licensed vessels. Data collected from whale watching operators regarding the number of passengers and whales seen during the 2006 season are still being analysed. Ninety-three commercial dolphin watching licences were also issued during 2006.

Quantitative assessment of humpback whale behaviour in relation to operating seismic vessels

CWR and Curtin University have developed a quantitative system for describing humpback whale behaviour in relation to operating seismic vessels. This system, as initially described in McCauley et. al. 1998, has been improved so that behavioural, respiratory and acoustic data can be correlated with seismic vessel proximity for impact assessment. A pilot study was conducted north of Dampier, WA, during 2006 resulting in a working system of equipment, personnel and produced data. Future inclusion to this programme will be satellite tagging through a partnership with the Australian Antarctic Division.

Norfolk Island humpback whale abundance

Data on abundance from the current research on the humpback whales that migrate past Norfolk Island compared with raw data from a 1956 survey (unpublished) by Dr W.H.Dawbin demonstrates severe depletion of this previously healthy stock; recovery from Norfolk Island-based whaling operations (ceased in 1962) being negligible (Oosterman and Whicker 2006).

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