

Australia. Progress report on cetacean research, January 2008 to December 2008, with statistical data for the calendar year 2008

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Note: Data presented here are compiled from federal and state agencies, research organizations, and individual researchers who respond to a request for information. It is based upon submissions received, and as such, is not a complete record of research undertaken in Australia, and data that are reported are often based upon unpublished records.

1. SPECIES AND STOCKS STUDIED—

IWC common name	IWC recommended scientific name	Area/stock(s)	Items referred to
MYSTICETES			
Blue whale (Antarctic and/or pygmy forms)	<i>Balaenoptera musculus (brevicauda)</i>	Southern hemisphere; QLD; SA; Scott Reef/Browse Basin	2.1.1; 2.1.2; 2.2; 3; 3.1.1; 3.1.3; 4.1; 8; 9
Bryde's whale	<i>Balaenoptera edeni</i>	Southern hemisphere	2.1.1; 6.3.2
Fin whale	<i>Balaenoptera physalus</i>	Southern Ocean	2.1.1; 2.2
Humpback whale	<i>Megaptera novaeangliae</i>	Breeding Stock D & E; Group IV & 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; 6.3.1; 6.3.2; 8; 9; 10; 11
Minke whale, Antarctic	<i>Balaenoptera bonaerensis</i>	East Antarctica	2.1.1; 2.2; 9
Minke whale, dwarf	<i>Balaenoptera acutorostrata</i>	Eastern Australia; TAS	2.1.1; 2.1.2; 2.2; 3.1.1; 3.1.2; 4.3; 8; 9; 11
Right whale, pygmy	<i>Caperea marginata</i>	TAS; SA; S. Ocean	2.1.1; 2.1.2; 2.2; 4.2; 4.3; 6.3.1; 8; 9; 11
Right whale, Southern	<i>Eubalaena australis</i>	NSW; SA; SE Australia	2.1.1; 2.1.2; 2.2; 3.1.1; 4.1; 6.3.1; 6.3.2; 9; 11
Unid. baleen whale	<i>Unidentified Mysticeti</i>	TAS	2.1.2
ODONTOCETES			
Andrew's beaked whale	<i>Mesoplodon bowdoini</i>	VIC;	4.3
Australian Snubfin dolphin	<i>Orcaella heinsohni</i>	NT; QLD	2.1.1; 2.2; 3.1.1; 4.1; 9
Beaked Whale	<i>Mesoplodon sp.</i>	South Australia; worldwide	4.3; 8; 9; 10; 11
Bottlenose dolphin	<i>Tursiops truncatus</i>	NT; TAS; Southern Ocean; VIC; QLD; SA; NSW	2.1.1; 2.1.2; 2.2; 3.1.1; 4.1; 4.2; 4.3; 7.3.1; 7.3.2; 8; 9
Bottlenose Dolphin, Indo-pacific	<i>Tursiops aduncus</i>	Australia; NSW; SA;	3.1; 4.3; 5; 8; 9; 11.1; 11.2
Common dolphin	<i>Delphinus delphis</i>	TAS; Southern Ocean; NSW; SA; VIC; QLD	2.1.1; 2.1.2; 3.1.1; 3.1.2; 4.1; 4.2; 4.3; 7.3.2; 8; 9; 11
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	worldwide; VIC, TAS	4.3; 8; 9; 10; 11
Dwarf sperm whale	<i>Kogia simis</i>	Southern hemisphere	4.1; 4.3; 8
False killer whale	<i>Pseudorca crassidens</i>	Australia	8
Gray's beaked whale	<i>Mesoplodon grayi</i>	TAS; NSW	4.3; 8;
Indo-Pacific humpback dolphin	<i>Sousa chinensis</i>	NT; QLD; WA	2.1; 2.1.1; 2.2; 3.1.1; 4.1; 8; 9
Killer whale	<i>Orcinus orca</i>	TAS; SA; East Antarctica	2.1.1; 2.1.2; 2.2
Long-finned pilot whale	<i>Globicephala melas</i>	Southern Ocean; TAS; SA	2.1.1.; 2.2; 3.1.2; 3.1.3; 4.3; 8
Melon headed whale	<i>Peponocephala electra</i>	Australia	7.3.2
Pantropical spotted dolphin	<i>Stenella attenuata</i>	Australia; VIC	4.3; 7.3.2
Pilot Whale	<i>Globicephala sp.</i>	South Australia; Australia	2.1.2; 8
Pygmy Killer Whale	<i>Feresa attenuate</i>	South Australia	4.3; 8
Pygmy sperm whale	<i>Kogia breviceps</i>	Southern hemisphere; VIC; SA	4.3; 8
Shepherd's beaked whale	<i>Tasmacetus shepherdi</i>	Southern Ocean	2.1.1; 2.2; 4.3; 8
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	QLD; SA	4.3; 8
Sperm whale	<i>Physeter macrocephalus</i>	TAS;; VIC; SA; NSW	2.1.1; 2.1.2; 2.2; 4.3; 6.3.1; 8
Spinner dolphin	<i>Stenella longirostris</i>	Australian	8
Straptooth Beaked Whale	<i>Mesoplodon layardii</i>	SA	4.2; 7.3.2
Striped dolphin	<i>Stenella coeruleoalba</i>	TAS	4.3; 8
Unid. beaked whale	Possible <i>Mesoplodon bowdoini</i> & <i>Ziphius Cavirostris</i>	VIC	4.3; 8
Unid. Dolphin	<i>Delphinidae</i>	SA; QLD; TAS	2.1.2; 8
Unid. Large cetacean		SA	8

Unidentified whale		Australia	6.3.1
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2. SIGHTINGS DATA

2.1 Field work

2.1.1 Systematic—

Target species	Date	Area	No. of sightings	Contact person/institute and references
Australian Snubfin dolphin	4/11/2008	Southern Great Barrier Reef	72	Daniele Cagnazzi SCUWRC
Australian Snubfin; Indo-Pacific Humpback; Bottle-nosed dolphin	2008 monthly (ongoing)	Alligator Rivers Region, Kakadu National Park, Darwin Harbour, Cobourg Peninsula, Northern Territory Australia		Carol Palmer, NRETAS, 08 8995 5011
Blue whale	1/9/08-14/12/08	Geographe Bay	Approx 140	Chris Burton –land and small vessel surveys
Blue whale	5 Apr 2008; 5 May 2008	Bonney Upwelling	9; 4	Peter Gill/Margie Morrice, BWS
Bottlenose & Common dolphins (*1)	07/01/08-17	Port Phillip; Western Port	20	Kate Charlton-Robb/Monash Sue Mason/DRI
Bottlenose dolphin	Jan-Dec 2008	Bunbury	259 group sightings (2008) 191 individuals (2007/2009)	Holly Smith/MUCRU
Bottlenose dolphin	26 Nov 2008 – 22 Dec 2009	Ningaloo, Western Australia	16 groups (48 individuals)	Kristel Wenziker/MUCRU
Bottlenose dolphin	July-Nov 2008	Cockburn Sound	85 groups (75 individuals)	Hugh Finn/MUCRU
Bottlenose dolphin	4/11/2008	Southern Great Barrier Reef	131	Daniele Cagnazzi SCUWRC
Bottlenose dolphin	11/07-11/09/08	Moreton Bay, QLD	57	I. C. Ansmann (UQ)
Bottlenose dolphin (*1)	14/01-14/11/08	Gippsland Lakes	39	Kate Charlton-Robb/Monash Sue Mason/DRI
Humpback whale	11/08/08 – 15/09/08	WA - Pender Bay	417 pods/750 individuals tracked by theodolite	S. McKay / WEG – Unpublished data (part of PhD thesis to be submitted mid-2009).
Humpback whale	23/08/08-13/11/08	Norfolk Island	114	A. Oosterman (NIWS); Oosterman (2009)
Humpback whale	21/6 – 6/7/08	NSW - Byron Bay	1183	D.Burns, SCUWRC
Humpback whale	1/9 – 7/11/08	NSW – Byron Bay	1217	K. Brown, SCUWRC
Humpback whale	1/9/08-14/12/08	Geographe Bay	Approx 950	Chris Burton – land and small vessel surveys
Humpback whale	22/06/08-22/08/08	Shark Bay	1122 pods/1759 animals	J Bannister/WAM
Humpback whale	19/06/08-19/07/08	Stradbroke Island, Brisbane Australia	28	C. Waugh, EnTox
Humpback whale	27/09/08-26/10/08	Peregian beach, Sunshine Coast, QLD	31	C. Waugh, EnTox
Humpback Whale (*2)	16 Aug – 3 Sept 2008	Lomaiviti Island Group - Fiji	22	David Paton /BPM
Humpback Whale (*3)	24/05/08 – 31/07/08	Cape Solander, Sydney	1493	Maryrose Gulesserian (MQ)
Humpback Whale (*3)	26/5/08 - 26/11/08	North Head, Sydney	955	Megan Kessler (MQ)
Humpback Whale (*4)	19/07 – 20/10	Kimberley- Aerial Surveys	1508	C.Jenner/CWR, Jenner and Jenner 2009b
Humpback Whale (*4)	04/07 – 17/08, 2008	NW Cape- Aerial Surveys	442	C.Jenner/CWR, Jenner and Jenner unpub. data
Humpback Whale (*4)	20/09 – 04/10	Kimberley- Vessel surveys	411	C.Jenner/CWR, Jenner and Jenner 2009d
Humpback whale (*5)	23 June – 30 September	Logans Beach whale viewing platform	4	Mandy Watson, DSE
Humpback whale (*6)	5-8-08-15-10-08	Hervey Bay	950	Trish & Wally Franklin, TOP
Humpback Whale, P. Blue	03/08 – 05/10, 2008	Scott Reef- Aerial Surveys	233, 2	C.Jenner/CWR , Jenner and Jenner 2009a

Whale (*4)				
Humpback Whale, P. Blue Whale (*4)	09/06 – 23/07/08; 17/10 – 30/11/08	Browse Basin-Vessel surveys	1150	C.Jenner/CWR, Jenner and Jenner 2009c
Humpback Whale, S. Right Whale (*4)	05/09 – 17/10	Exmouth Gulf-Vessel surveys	325, 4	C.Jenner, W.Osborn/CWR, unpub. data
Indo-pacific dolphin	26 Nov 2008 – 22 Dec 2008	Ningaloo, Western Australia	3 groups (7 individuals)	Kristel Wenziker/MUCRU
Indo-Pacific humpback dolphin	4/11/2008	Southern Great Barrier Reef	123	Daniele Cagnazzi SCUWRC
Indo-Pacific humpback dolphin	11/07-11/09/08	Moreton Bay, QLD	20	I. C. Ansmann (UQ)
Indo-Pacific humpback dolphin	01/05/08-31/08/08	Cardwell-Townsville region, QLD	50	G. J. Parra (UQ)
Killer whale (*7)	11-31/12/2008	Antarctica-Vincennes Bay	300	N. Kelly (AMMC)
Minke whale	23/08/08-13/11/08	Norfolk Island	13	A. Oosterman (NIWS); Oosterman (2009)
Minke whale	1/9/08-14/12/08	Geographe Bay	Approx 2	Chris Burton – land and small vessel surveys
Minke whale, Antarctic (*7)	11-31/12/2008	Antarctica-Vincennes Bay	68	N. Kelly (AMMC)
Multi-species (*8)	2008	Southern Ocean west of Tasmania		K.Evans (UTAS)
P. Blue Whale, Sperm Whale (*4)	03/05 – 22/05/08	Kangaroo Trough-Vessel Surveys	2, 27	C.Jenner/CWR, Jenner and Jenner 2009e
Snubfin dolphin	1/05/2008	Cardwell-Townsville region, North Queensland	70	G. J. Parra (UQ)
Southern right whale	Aug-08	C Leeuwin (WA) to Ceduna (SA)	702 animals, 236 cow/calf pairs	J Bannister/WAM
Southern right whale	1/9/08-14/12/08	Geographe Bay	Approx 4	Chris Burton – land and small vessel surveys
Southern Right whale (*5)	23 June – 30 September	Logans Beach whale viewing platform	Approx 350 (includes repeat sightings)	Mandy Watson, DSE

Notes

(*1) *Common and bottlenose dolphin populations surveys (DRI & MU)*. During 2008, DRI collected dorsal fin photographs for use in photo-identification of individuals, and collected behavioural data, while our Monash University researcher collected biopsy samples. Researchers conducted 35 surveys from the DRI's research vessel. A total of 59 sightings of dolphins were made over this period.

(*2) *2008 Whale and Dolphin survey undertaken in the Lomaiviti Island Group, Fiji. (BPM)*. During August and September of 2008 a systematic land and vessel-based whale and dolphin survey was undertaken of the Lomaiviti Island group, Fiji. This survey was the third systematic cetacean survey as part of the South Pacific Island Whale and Dolphin survey undertaken in Fiji. The major aim of the work was to compare the current status of humpback whales in the Lomaiviti Group of Fiji with that recorded by Dawbin in the 1950's.

A total of 19 days of surveys were conducted, with a mean of 10 hours survey effort per day. There were a total of 27 cetacean sightings comprising five different species. The species recorded included: humpback whales (10 pods), Short finned pilot whales (3 pods), false killer whales (1 pod), long snouted spinner dolphins (8 pods), bottlenose dolphins (1 pod). This is the first recent record of a confirmed sighting of bottlenose dolphin in Fijian waters.

(*3) *Cape Solander Whale Migration Study (CSWMS)*. Cape Solander: Between the 24th of May and the 31st of July 2008, 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 63 days were surveyed during the 2008 northern migration season. In addition to humpback whales (1493), common and bottlenose dolphins (856) and minke whales (5) were sighted.

North Head: This new whale watching program seeks to extend the CSWMS to include volunteers at North Head and include the southern migration. Between the 26th of May and the 26th of November 2008, new volunteers recorded the species, pod size, time sighted, bearing, distance from shore and behaviour of all marine mammals observed passing North Head, Sydney between 9am and 3pm. A total of 112 days were surveyed during the 2008 migration season.

(*4) *Centre for Whale Research (CWR) Surveys.* The Kangaroo Trough region (centred at S19.4, E114.5 to the north and west of the Monte Bellow Islands) in NW Australia was systematically searched for evidence of a pygmy blue whale migratory paths or feeding grounds during May, 2008. Two pygmy blue whales were sighted as well as 27 sperm whales and nine other species of cetaceans over a 20 day period. Oceanographic variables (biological and physical to 600m depth), seabird, fish and marine reptile sightings were recorded continuously during daylight hours across a 23,000 km² grid area (25 km resolution) for future correlation and modelling with cetacean distribution and abundance.

A continuation of the above grid survey technique, focussed temporally on the expected northern and southern pygmy blue whale migrations (predicted by acoustic loggers in 2006 and 2007) was carried out at the Scott Reef and Browse Basin areas (centred at S14 E122.5) across 31,000 km². A forty day period during the anticipated northern migration resulted in 1 pygmy blue whale sighting and a further 82 sightings involving 11 other species of cetaceans (approx. 512 individual cetaceans). The predicted southern migratory period resulted in 6 sightings of pygmy blue whales and 104 sightings of 9 other cetacean species (approx. 3,219 individual cetaceans).

Aerial surveys were carried out at NW Cape for the fifth season. Double-blind, "Distance-style", line transect methodology was used to sample northbound humpback whales. In fourteen flights flown at five day intervals, a total of 1172 whales were sighted. The data will be used to calculate an absolute estimate of abundance for Breeding Population D humpback whales and to contribute to a long term spatial analysis of humpback whale migratory reaction to oil and gas infrastructure.

(*5) *Logans Beach, Warnambool VIC surveys (DSE).* DSE undertook dedicated survey carried out by trained volunteers 4 hours per day (2 hrs AM, 2hrs PM) every day between June and October at Logans Beach, Warnambool.

(*6) *Long-term humpback whale study, Hervey Bay 1992-2008 (TOP).* The Oceania Project conducted the 17th year of fieldwork of a long-term survey of humpback whales in Hervey Bay. The 2008 survey was undertaken from a 12-metre vessel for 60 days between August 10th and October 17th 2008 involving a total 480 hours of effort. Observations were made on 1218 individual Humpbacks in 494 pods. A total of approximately 7000 Photo-id photographs were obtained, 15 hours of behavioural DV-CAM video. A total of 148 x 15 min systematic samples of humpback song and social sounds were recorded. In addition 56 sloughed skin samples were obtained.

The Hervey Bay Fluke catalogue, reconciled within and between seasons, for the period 1992-2005 consists of 1961 flukes. The photo-id analysis and intra-, inter-season reconciliation for 2006, 2007 and 2008 will be completed by mid-2009. Statistical analysis of the 1992-2005 dataset has been completed for group characteristics and group behaviour. The 1992-2008 re-sight dataset will be completed and ready for CMR analysis by mid-2009.

(*7) *Aerial survey for Antarctic minke whales (AMMC).* This aerial survey programme aims to discover whether Antarctic minke whales are in fact in the sea ice in east Antarctica (in waters where non-ice strengthened ships cannot access) in significant enough numbers to explain the overall population decline detected over the last few decades. A secondary motivation for this research is to provide a foundation for a habitat model for minke whales based on sea ice distribution and dynamics. Field work for this aerial survey programme has been running now for two summer seasons. The 2007/08 season tested the concept of flying aerial surveys using the CASA-212 aircraft from an Australian Antarctic station. In the second season (2008/09) a full survey was conducted over Vincennes Bay near Casey station in eastern Antarctica (66° 17' S 110° 32' E). During full aerial survey, in the 2008/09 season, a systematic survey design with north-south orientated transects was implemented, covering a wide range of sea ice concentrations and habitats. Although this aerial survey was targeting Antarctic minke whales, many killer whales were also observed (ecotype undecided). Analyses are ongoing.

(*8) *Aerial surveys of Southern Ocean west of Tasmania (UTAS).* The results presented are preliminary results from two projects focused on establishing the species assemblage, distribution and habitat preferences of cetaceans in the region of the Southern Ocean west of Tasmania. A final report summarising the results and analyses of data from these projects is due to be complete in March 2009. These projects involve regular aerial surveys utilising line transect methods throughout the area west of Tasmania from 40°S to 43°S and 143°E to 145°E predominantly throughout Commonwealth waters. In 2008, the species followed by the number of sightings are as follows: sperm whale (5), pygmy blue whale (6), fin whale (1), Shepherds beaked whale (4), pygmy right whale (1), long finned pilot whale (4), common dolphin (7), and bottlenose dolphin (1).

2.1.2 Opportunistic, platforms of opportunity

Primary species	Area	Data type/method	Collected by	Platform	Location of archive (if applicable)	Contact person/institute and refs

Blue whale	Bonney Upwelling	Photo-ID	SA Fisheries	Fisheries patrol vessel	BWS, Portland	Peter Gill/Margie Morrice, BWS
Humpback whale	N=9 Australia-wide	Whale sighting form	Fishery observers	Commercial Fishing Vessel		Justine Johnston, AFMA (*1)
Humpback whale	Ballina / Byron Bay	Sightings & photo-ID data	Scientists	University research vessel	SCUWRC	D.Burns, SCUWRC
Humpback whale	Byron Bay	Sightings & photo-ID data	Scientists	Whale watching vessel	SCUWRC	P. Beeman, SCUWRC
Humpback whale	Tweed Heads	Photo-ID data	Professional photographer	Whale watching vessel	SCUWRC	P. Beeman, SCUWRC
Humpback whale	Western Victoria	Sightings (count, date, time, location, behaviour)	DSE staff, trained volunteers, other reliable sources	Loans Beach whale viewing platform, other locations along Victorian coast	DSE, Warmambool	Mandy Watson, DSE (*5)
Humpback Whale (*2)	Sydney, NSW	Photo-ID; sightings, animal behaviour	Dedicated observer	Whale watching vessel	MQ	Megan Kessler (MQ)
Humpback whale (*3)	Eden, NSW	Photo-ID; sightings	Scientists	Whale watching vessel	PWF (Hawaii)	Q. Gibson (PWF)
Humpback whale (*6)	Hervey Bay, QLD	Photo-ID*; sightings	Scientists	Research vessel	*PWF (Hawaii)	Q. Gibson (PWF)
Humpback whales	Kimberley Western Australia	Visual & acoustic from boat & shore	crew	Kimberley Quest whale watching vessel	R Costin and A Sandes/KWW	R Costin and A Sandes/KWW see report Costin and Sandes (2009)
Humpback Whales (*4)	NW Shelf	Visual sightings with effort	crew	FPSO vessel	C.Jenner/CWR, CWR website oil and gas link	Humpback Whales
Pilot whale	N= 26, Australia-wide	Whale sighting form	Fishery observer	Commercial Fishing Vessel		Justine Johnston, AFMA (*1)
Southern Right whale	Western Victoria	Sightings (count, date, time, location, behaviour) photo-identifications*	DSE staff, trained volunteers, other reliable sources	Loans Beach whale viewing platform, other locations along Victorian coast	DSE, Warmambool	Mandy Watson, DSE (*5)
Various species (*7)	SA	Opportunistic	Public	various	SAM	Cath Kemper (SAM)
Various species (*8)	TAS	Sightings	Public/Staff	Biopsy vessel, shore, whalewatching vessel	DPIW-TAS	Rosemary Gales (DPIW-TAS)

Notes

(*1) *Australian Fisheries Management Authority*. In 2008, AFMA fisheries observers were present on board a total of 267 trips to a variety of fisheries including: the Great Australian Bight Trawl Fishery (5), South East Trawl Fishery (47), Torres Strait Prawn Fishery (2), Northern Prawn Fishery (10), Eastern Tuna and Billfish Fishery (156), Western Tuna and Billfish Fishery (3), Southern Bluefin Tuna Fishery (purse seine) (5), Gillnet Hook and Trap fishery (longline) (15), Gillnet Hook and Trap Fishery (gillnet) (4), Coral Sea Fishery (trap & Autoline) (2), Small Pelagic Fishery (6), the Bass Strait Central Zone Scallop Fishery (3), Macquarie Island Fishery (1), and and McDonald Island Fisheries (8).

(*2) *Watching Migrating Whales: Ensuring the sustainability of a growing whale-watch industry (MO)*. The Sydney whale watching vessel Ocean Dreaming (Bass & Flinders Cruises) was used as a platform of opportunity to record behaviour of humpback whales around whale watching vessels as they migrated past Sydney. Experimental approaches of whales were also undertaken with different numbers of vessels and different approach distances. Data collection will continue in 2009 with the aim of the project to determine with the current Australian approach distances are the most appropriate. Passengers aboard whale watching vessels and whale watchers at three shore based locations were surveyed using a willingness-to-pay method that considered the different aspects of whale watching, including vessel size, price and approach distance.

(*3) *Pacific Whale Foundation (PWF)*. PWF conducted vessel-based research onboard the Cat Balou, Eden, NSW from 21 September - 13 November 2008. Data was collected opportunistically in the form of digital photographs, digital audio recordings, and real time observations recorded on pre-formatted data sheets. In

addition to photo-IDs reported here, we also received fluke photographs from Ros Butt, owner of Cat Balou, for the Eden whalewatch season, Sept. – Nov. 2008.

(*4) Center for Whale Research (CWR). This is the 4th year of a programme involving BHP Billiton employees on their FPSO Griffin Venture near NW Cape, Western Australia. The programme aims to stimulate interest in the environment for oil and gas workers and won an industry award in 2006.

(*5) Department of Sustainability and Environment (DSE). DSE also collected sightings data from across Victoria via network of volunteers.

(*6) Pacific Whale Foundation (PWF). PWF annually conducts vessel-based research in Hervey Bay to document the use of Hervey Bay Marine Park by humpback whale mothers with calf. Observations were conducted from a 6.2 m XL Naiad (rigid hull inflatable) from 5 August - 15 October 2008. Data was collected opportunistically in the form of digital photographs, digital audio recordings, and real time observations recorded on pre-formatted data sheets.

(*7) South Australia Museum (SAM). Public reports include S. right, blue, humpback, killer, and pilot whales, and common dolphins.

(*8) Department of Primary Industry and Water Whale Hotline (DPIW-TAS). DPIW manages a comprehensive sightings database facilitated by the Whale Hotline (0427 whales). The hotline provides a single point of call to report whale sightings and strandings within Tasmania. Due to the variety of sources (agency staff undertaking dedicated cetacean work, whale-watching and eco-tour operators, maritime professionals and the general public), sightings are scored for their reliability based on key criteria such as experience of observer, features described and the availability of images relating to the sighting. Sighting events are an aggregate of sightings from multiple observers that relate to the same discrete individuals, considering the time between sightings, pod size, direction of travel and the presence of identifying features. Reported sightings include: minke (1 sighting, 2 animals), pygmy right (1,2), southern right (49, 93), humpback (92, 252), killer (10, 64), sperm (1,1), and unidentified baleen whales (8,29), common (9, 369), bottlenose (14, 258) and unidentified dolphins (9, 87).

2.2 Analyses/development of techniques

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Bottlenose dolphin	Jan 08 – Dec 2008	Bunbury. Western Australia	Line transect survey/ Photo identification	Population estimate; sighting frequency; habitat use	Holly Smith/MUCRU
Bottlenose dolphin	26 Nov 2008 – 22 Dec 2008	Ningaloo, Western Australia	Line transect survey/ Photo identification	Population estimate; sighting frequency; habitat use	Kristel Wenziker/MUCRU
Bottlenose dolphin	July-Nov 2008	Cockburn Sound	Photo-identification surveys	Distribution/sighting frequency	Hugh Finn/MUCRU
Humpback whale	23/08/08-13/11/08	Norfolk Island	Land-based survey; vessel survey	Numbers observed, behaviour, weather statistics	A. Oosterman (NIWS); Oosterman (2009)
Humpback whale	23/08/08-13/11/08	Norfolk Island	Land-based survey; vessel survey	Numbers observed, behaviour, weather statistics	A. Oosterman (NIWS); Oosterman (2009)
Humpback whale (*1)	21/9/08-13/11/08	East Australia- Eden	Photo-ID surveys	Distribution; Abundance; Calving rates/intervals	Q. Gibson, PWF
Humpback whale (*1)	5/8/08-15/10/08	East Australia- Hervey Bay	Photo-ID surveys	Distribution; Abundance; Calving rates/intervals	Q. Gibson, PWF
Humpback Whale (*2)	2007	Kimberley	Aerial Line transect survey Distance modelling	Relative and Absolute population estimates	Jenner et al., 2008b
Indo-pacific dolphin	26 Nov 2008 – 22 Dec 2008	Ningaloo, Western Australia	Line transect survey/ Photo identification	Population estimate; sighting frequency; habitat use	Kristel Wenziker/MUCRU
Inshore bottlenose dolphin	5/09/2008	Shoalwater Military Area	Line transect survey	Distribution; sighting frequency	Daniele Cagnazzi SCUWRC
Killer whales	11-31/12/2008	Antarctica— Vincennes Bay	Line transect survey; double-platform	Distribution; sighting frequency; school size; sea ice concentrations; habitat	N. Kelly/AMMC; Hedley et al. (2007a), Kelly et al. (2008)
Minke whale	23/08/08-13/11/08	Norfolk Island	Land-based survey; vessel survey	Numbers observed, behaviour, weather statistics	A. Oosterman (NIWS); Oosterman (2009)

Minke whale, Antarctic	11-31/12/2008	Antarctica—Vincennes Bay	Line transect survey; double-platform	Distribution; sighting frequency; school size; sea ice concentrations; habitat	N. Kelly/AMMC; Hedley et al. (2007a), Kelly et al. (2008)
P. Blue Whale (*2)	2000 – 2005	Perth Canyon	Mark Recapture Photo-Identification Abundance Estimate	Mark recapture resights from photo-id catalogue	Jenner/CWR, Double/AAD, Jenner et. al., 2008a
Southern right whale	Aug-08	Southern Australia - C Leeuwin (WA) to Ceduna (SA)	Aerial survey	Annual percentage increase rate: All animals 6.38 (95% CI 2.88, 10.39); C/c prs 6.61 (1.89, 11.54)	J Bannister (WAM), Ref: Bannister 2008a
Various species	2008	Southern Ocean west of TAS	Line transect survey- aerial	Distribution; sighting frequency	K. Evans (UTAS)— See section 2.1.1 (*8)

Notes

(*1) *Pacific Whale Foundation (PWF)*. PWF conducted vessel-based research onboard the Cat Balou, Eden, NSW from 21 September - 13 November 2008. For the 2008 season, 217.3 hours were spent on the water in Eden during 51 days of field effort. A total of 318 groups (including affiliations and disaffiliations) of whales were observed comprised of 909 animals (769 non-calves and 140 calves). Mean pod size was 2.9 whales. 88.7 hours were spent observing whales (40.8% of field effort), with approximately 18 (total) animals observed each day. Using photographic identification techniques, 399 unique whales were identified.

For the 2008 season, 584.3 hours were spent on the water in Hervey Bay during 67 days of field effort. A total of 663 groups (including affiliations and disaffiliations) of whales were observed comprised of 1,632 animals (1385 non-calves and 247 calves). Mean pod size was 2.5 whales. 269.7 hours were spent observing whales (46% of field effort), with approximately 16 (total) animals observed each day. Using photographic identification techniques, 686 unique whales were identified.

(*2) *Centre for Whale Research*. Between January and April over six consecutive years (2000 to 2005) photographs of the dorsal fin and lateral bodies of pygmy blue whales were collected at the Perth Canyon, Western Australia. The morphology was sufficiently variable to enable individual recognition and from 1600 survey hours (mean = 266 hours each year) 208 individuals were identified from the 271 photographed sightings. Twenty-three individuals were resighted between years but only two whales were resighted in three or more of the six years. A POPAN open population model estimated the population size to be between 569 and 1,147 individuals. A closed, time-dependent, model with individual heterogeneity yielded a population size estimate of 712 to 1,754 individuals. We consider additional photo-ID data from Geographe Bay (WA) and the Bonney Upwelling (southern Australia) to assess the likelihood that these population size estimates relate to the proposed pygmy blue whale population in the eastern Indian Ocean and Australian waters.

Six aerial surveys designed using Distance Sampling protocols were used to estimate the absolute number of humpback whales using the Kimberly calving grounds during the peak of season in 2007. A point estimate of 12376 whales (range 9978,15342) was considered the best estimate and included calculations of whales unavailable to the sighting aircraft for counting due to being submerged.

3. MARKING DATA

3.1 Field work

3.1.1 Natural marking data (e.g. photo-id)

Provide this in the form of a table, e.g.

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Australian Snubfin dolphin	Dorsal fin	Southern Great Barrier Reef	58	Y	58	Daniele Cagnazzi SCUWRC
Australian Snubfin dolphin	Dorsal fin	N QLD	20+	Y	100	G. J. Parra (UQ)
Blue whale	Lateral/dorsal fin	Southern Australia	4	Y	57	Peter Gill/Margie Morrice, BWS
Blue whale	lateral	Geographe Bay, Western Australia	14	Y	170	Chris Burton – land and small vessel surveys
Bottlenose dolphin	Dorsal fin	Port Phillip	Analysis underway	Y	110	Sue Mason/DRI, Kate Charlton-Robb /Monash

Bottlenose dolphin	Dorsal fin/body scarring	Bunbury	191	Y	191	Holly Smith/MUCRU
Bottlenose dolphin	Dorsal fin/body scarring	Ningaloo, Western Australia	48	Y	48	Kristel Wenziker/MUCRU
Bottlenose dolphin	Dorsal fin/body scarring	Cockburn Sound	75	Y	100	Hugh Finn/MUCRU
Bottlenose dolphin	Dorsal fin	Southern Great Barrier Reef	201	Y	189	Daniele Cagnazzi SCUWRC
Bottlenose dolphin	Dorsal fin	Moreton Bay, QLD	146	Y	146	I. C. Ansmann (UQ)
Common dolphin	Dorsal fin	Port Phillip	30	Y	30	Sue Mason/DRI
Humpback whale (*1)	Fluke	Area/Group V Breeding Stock E2/E3	9	Y	12	David Paton (BPM)/Fiji Fluke id Catalogue 2002-2008
Humpback whale	Fluke	Norfolk Island	3	Y	8	A. Oosterman (NIWS); Oosterman (2009)
Humpback whale	Fluke, Dorsal	WA – Pender Bay, Group D	To be estimated	Pending	Pending	S. McKay / WEG
Humpback Whale	Fluke	Group V, Sydney Coast	4000+ photographs, # individuals unknown	-	-	Megan Kessler (MQ)
Humpback whale	Fluke	Group E (i)	6	Y	636	D.Burns, SCUWRC
Humpback whale	Fluke	Group E (i)	103	Y	103	P. Beeman, SCUWRC
Humpback whale	Fluke	Geographe Bay, Western Australia	20	N	2000	Chris Burton – land and small vessel surveys
Humpback whale	Lateral	Geographe Bay, Western Australia	30	N	2500	Chris Burton – land and small vessel surveys
Humpback whale	Fluke and lateral body	Exmouth Gulf	325	Y	2099	C.Jenner/W. and P Osborn CWR
Humpback whale	Fluke	East coast TAS (V)	7	Y	96	R.Gales, DPIW
Humpback whale	Dorsal fin	East coast TAS (V)	7	Y	90	R.Gales, DPIW
Humpback whale	Flukes/ L & R Dorsal/Lateral Body	AreaV/Hervey Bay	1218	Y	1961 (1992-2005), Approx 2771 (1992-2008)	Trish & Wally Franklin, TOP
Humpback whale (*2)	Flukes	Hervey Bay, QLD (Group V/B.S. E)	686	Y	4,591 (thru '07)	Q. Gibson, PWF
Humpback whale (*2)	Flukes	Eden, NSW (Group V/B.S. E)	399	Y	4,591 (thru '07)	Q. Gibson, PWF
Indo-Pacific Bottlenose Dolphin	Dorsal fin	SA				Bossley, WDSC
Indo-pacific humpback dolphin	Dorsal fin/body scarring	Ningaloo	7	Y	7	Kristel Wenziker/MUCRU
Indo-pacific humpback dolphin	Dorsal fin	Southern Great Barrier Reef	71	Y	71	Daniele Cagnazzi SCUWRC
Indo-Pacific humpback dolphin	Dorsal fin	Moreton Bay, QLD	40+	Y	60	G. J. Parra (UQ)
Indo-Pacific humpback dolphin	Dorsal fin	N QLD	20+	Y	100	G. J. Parra (UQ)
P. Blue Whale	Dorsal fin	Perth Canyon/ Browse Basin	7-Jun	Y	258	C.Jenner/CWR
S. Right Whale (*3)	Callosity	Exmouth Gulf	4	Y	5	C.Jenner/W. and P Osborn CWR
Southern right whale	Callosity pattern	SE Australia	9	Y	100 + (catalogue being updated)	Mandy Watson, DSE
Southern right whale	Head callosity pattern	Southern Australia - C Leeuwin (WA) to Ceduna (SA)	309 digital photos selected for matching to existing catalogue for individual id	N	Currently 5338 images from 1976-2008, with ca 1200 individuals identified to ca 2006	J Bannister (WAM), Ref: Bannister 2008a
Southern right	Callosity –	SE Aus	8	Y	84	R.Gales, DPIW

whale	aerial					
Southern right whale	Callosity – lateral	SE Aus	4	Y	4	R.Gales, DPIW
(*1-3) See section 3.2 below						

3.1.2. Artificial marking data

DPIW-TAS attach approved floy “spaghetti” tags on individuals released at stranding events. In 2008, tags were placed on 1 minke whale (female released alive), 12 Long-finned pilot whales (7 female, 4 male released alive, 1 dead male), and 1 common dolphin (female released alive). Please contact R. Gales, DPIW for further information.

3.1.3 Telemetry data

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute; refs
Blue whale	Satellite	5	11 days	N. Gales, Australian Marine Mammal Centre
Humpback whale	Satellite	22	154 days	N. Gales, Australian Marine Mammal Centre
Long-finned Pilot Whale	Satellite	5	31 days	R.Gales – DPIW (*4)
(*4) See section 3.2 below				

3.2 Analyses/development of techniques

(*1) *Blue Planet Marine (BPM)*. The fluke id catalogue has been fully reconciled between years and no resights between years have been recorded. The 3 fluke ids from 2002, 2003 and 2005 have been matched against the other Oceania catalogues held by the South Pacific Whale Research Consortium members with no matches recorded. It is proposed that the 2008 fluke ids will also be matched against the Oceania catalogues.

(*2) *Pacific Whale Foundation (Eden and Byron Bay)*. Fluke identification photograph matches are used to generate Capture-Mark-Recapture profiles for individuals across years and field sites. Reproductive parameters (i.e. calving rates and intervals) were calculated based upon mark-recapture data (obtained via photo-ID) from eastern Australia from 1984 – 2007. Analyses of rates of interchange across several sites within eastern Australia are currently underway.

(*3) *Centre for Whale Research*. Two different cow/calf southern right whale pairs were photo-identified inside Exmouth Gulf (S22°) in 2008. One cow had been sighted inside Exmouth Gulf in 2005 with another calf, and previously photo-identified by S. Burnell at the Head of the Bight in 1996 (Jenner *et al.*, unpubl. data).

(*4) *DPIW-TAS* are currently developing further satellite tagging units for future deployment in consultation with AMMC. The results are currently being written up and will be reported in the following years IWC report.

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
Australian Snubfin		2008		?		Carol Palmer NRETAS
Australian Snubfin dolphin	Southern GBR	6	Y	0	6	Daniele Cagnazzi SCUWRC
Australian Snubfin dolphin	North QLD	23	Y	23	35	G. J. Parra (UQ)
Bottlenose dolphin	VIC	43	Y	Currently underway	112	Kate Charlton-Robb/ Monash University (*1)
Bottlenose dolphin	Mandurah	2008	Y	0	19	Simon Allen/MUCRU, Lars Bejder/MUCRU
Bottlenose dolphin	Augusta	2008	Y	0	7	Simon Allen/MUCRU, Lars Bejder/MUCRU
Bottlenose dolphin	Busselton	2008	Y	0	6	Simon Allen/MUCRU, Lars Bejder/MUCRU
Bottlenose dolphin	Pilbara	2008	Y	47	47	Simon Allen/MUCRU, Lars Bejder/MUCRU
Bottlenose dolphin	Southern GBR &	50	Y	0	50	Daniele Cagnazzi SCUWRC

	Hervey Bay					
Bottlenose dolphin	Moreton Bay, QLD	18	Y		66	I. C. Ansmann (UQ)
Bottlenose Dolphin	TAS	13	Y	0	13	R.Gales - DPIW
Bottle-nosed Dolphin		2008		?		Carol Palmer NRETAS
Common Dolphin	TAS	8	Y	0	8	R.Gales - DPIW
Dwarf Sperm Whale	Scott Reef	2008	N	0	1	C. Jenner/CWR
Humpback whale	Group V Breeding Stock E (ii)	2008 - 1	N	0 (1 pending)	7	M. Anderson/SCU; W. Franklin/SCU
Humpback whale	WA-Exmouth Gulf	2007/223	Y	223	223	Mike Double/AMMC
Humpback whale	NSW-Eden	2008/64	Y	57	64	Natalie Schmitt/AMMC
Humpback whale	TAS	2006/2007/63	Y	63	63	Mike Double/AMMC
Humpback whale	Stock E-Hervey Bay	56	Y	846	1451	Wally Franklin, TOP
Humpback whale	Group E	59	Y	0	59	C. Waugh, EnTox
Humpback whale	Group V	12	Y	0	78	R.Gales - DPIW
Humpback whale (**sloughed skin samples only)	Area/Group V Breeding Stock E2/E3	2	Y	0	2	Debbie Steele, Molecular Ecology and Evolution Group, Auckland University
Indo-Pacific humpback dolphin		2008		?		Carol Palmer NRETAS
Indo-Pacific humpback dolphin	Southern GBR & Hervey Bay	71	Y	0	71	Daniele Cagnazzi SCUWRC
Indo-Pacific humpback dolphin	Moreton Bay, QLD	3	Y	3	23	G. J. Parra (UQ)
Indo-Pacific humpback dolphin	North QLD	9	Y	9	23	G. J. Parra (UQ)
S. right whale	Sydney	1	Y	0	-	Rob Harcourt (MQ)
S. right whale	SE Aus	1	Y	0	3	R.Gales - DPIW

4.2 Samples from directed catches (commercial, aboriginal and scientific permits) or bycatches

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Bottlenose Dolphin	S.A.	Genetic tissues(*3)	1	1Y	0	C. Kemper/S.A. Museum (*2)
Bottlenose dolphin	Pilbara	Skin/blubber	2	Y	2	Simon Allen/MUCRU
Common dolphins	Sunshine Coast	Skin biopsy	4	y	0	QDPI&F
Common Dolphin	S.A.	Genetic tissues(*3)	9	9Y		C. Kemper/S.A. Museum (*2)
Pygmy Right Whale	S.A.	Genetic tissues(*3)	1	1Y		C. Kemper/S.A. Museum (*2)
Straptooth Beaked Whale	S.A.	Genetic tissues(*3)	1	1Y		C. Kemper/S.A. Museum (*2)

(*1) . DNA of these samples will be subject to mitochondrial DNA control region and cytochrome b region sequencing, along with genotyping at several microsatellite markers. New DNA regions are also being investigated

(*2)This list includes: Entanglement in net or line, or entanglement probable, or accidental or intentional anthropogenic injury probable

(*3)Genetic tissues, (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 of the state of decomposition in some cases.

4.3 Samples from stranded animals

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Andrew's beaked whale	Vic: Warrnambool, Killarney Beach	Skin, skeleton blubber, muscle	2 = adult and calf	Y	2	R.O'Brien/NMV
Andrew's Beaked whales	SW Victoria	Entire specimen	2	Y	0	Mandy Watson, DSE
Beaked Whale (Mesoplodon sp.)	SA	skin	1	1Y	0	C. Kemper, SAM (*3)
Blue whale	Townsville	Skin, blubber	1	Y	0	C. Waugh, EnTox
Blue whale	Townsville	Skeleton and	2	y	0	Col Limpus-DERM

		tissue				
Bottlenose Dolphin	TAS	Skin, blubber, skull, muscle	2 (*1)	Y	0	R. Gales. DPIW
Bottlenose Dolphin	Curl Curl, NSW	Full tissue set	1	Y	1	Jane Hall, ARWH
Bottlenose dolphin	Bunbury	Skin, blubber, tooth, organs	3	Y	3	Lars Bejder/MUCRU
Bottlenose dolphin	Coastal Victoria	Skin, blubber, kidney, liver, melon	7	Y	Currently underway	Kate Charlton-Robb / Monash University
Bottlenose dolphin	Coastal Victoria	Skin, blubber, kidney, liver, melon	7	Y	Currently underway	Kate Charlton-Robb / Monash University
Bottlenose Dolphin	SA	(*2)	2	2Y	0	C. Kemper, SAM (*3)
Common Dolphin	Avoca Beach, NSW	Full tissue set	1	Y	1	Jane Hall, ARWH
Common Dolphin	Northern NSW	Skin, blubber, liver, kidney, teeth, lung, internal and external parasites	1	Y	0	cfury@scu.edu.au
Common Dolphin	TAS	Skin, Blubber, Muscle, Liver, Kidney, Faeces, Stomach, Skull	4 (*1)	Y	0	R. Gales. DPIW
Cuvier's Beaked whale	SW Victoria	Skin, blubber	1 each	Y	0	Stan Williams, DSE
Cuvier's Beaked Whale	TAS	Skin, blubber, Muscle, Jaw Stomach, Liver, Kidney	1 (*1)	Y	0	R. Gales. DPIW
Cuvier's beaked whale	Vic: Warrnambool	Skin, blubber, muscle, skeleton	1 juv	Y	1	R.O'Brien/NMV
Dwarf Sperm Whale	Scott Reef	Skin/blubber/head	1	N	0	C. Jenner/CWR
Grays Beaked Whale	TAS	Skin, blubber, Muscle, Teeth Stomach, Skull	1 (*1)	Y	0	R. Gales. DPIW
Humpback Whale	The Basin, NSW	Full tissue set	1	Y	1	Jane Hall, ARWH
Humpback Whale	Northern NSW	Skin, blubber, umbilical cord	1	Y	0	cfury@scu.edu.au
Humpback whale	Group E	Skin, blubber	1	Y	0	C. Waugh, EnTox
Indian Ocean Bottlenose	Northern NSW	Skin, blubber, liver, kidney, teeth, lung, milk, parasites	3	Y	0	cfury@scu.edu.au
Indo-Pacific Bottlenose Dolphin	SA	(*2)	7	7Y	0	C. Kemper, SAM (*3)
Indo-Pacific humpback dolphin	Mackay	Gut sample	1	Y	0	Col Limpus-DERM
Indo-Pacific humpback dolphin	Moreton Bay	Skin biopsy	1	Y	0	Col Limpus-DERM
Long-finned Pilot Whale	TAS	Skin, blubber, Muscle, Teeth Stomach, skull	224 (*1)	Y	0	R. Gales. DPIW
Long-finned Pilot Whale	SA	skin, blubber	1	1Y	0	C. Kemper, SAM (*3)
Minke whale	TAS	Skin	1 (*1)	Y	0	R. Gales. DPIW
Pygmy Killer Whale	SA	(*2)	1	1Y	0	C. Kemper, SAM (*3)
Pygmy Right Whale	TAS	Skin, blubber, Muscle, Jaw Stomach, Liver, Kidney	1 (*1)	Y	0	R. Gales. DPIW
Pygmy Sperm whale	SW Victoria	Skin, blubber	1 each	Y	0	Steve McDougall, DSE
Shepherd's beaked whale	Shark Bay	Skin, blubber	1	Y	0	Lars Bejder/MUCRU
Short-beaked Common Dolphin	SA	(*2)	7	7Y	0	C. Kemper, SAM (*3)
Short-finned Pilot Whale	SA	(*2)	1	1Y	0	C. Kemper, SAM (*3)
Sperm Whale	TAS	Skin, blubber, Muscle, Stomach, Jaw	1 (*1)	Y	0	R. Gales. DPIW

Striped dolphin	Bunbury	Skin, blubber	1	Y	0	Lars Bejder/MUCRU
Unid: Pantropical spotted dolphin (*1)	Vic: Waratah Bay, Sandy Point	Skin, blubber, muscle, skeleton	1 adult	Y	1	R.O'Brien/NMV
Unidentified dolphin	Wollongong, NSW	Pancreas	1	Y	1	Jane Hall, ARWH
Unknown delphinid species	Sandy Point	Skin, blubber, kidney, liver, melon	1	Y	Currently underway	Kate Charlton-Robb / Monash University
(*1) No. Collected refers to total number of animals sampled, but not all tissues were taken from each animal (*2) Genetic tissues, (blood, liver, kidney, muscle, skin) reproductives, stomach and intestines, toxic contaminants (liver, kidney, muscle, blubber) (*3) Samples collected by C. Kemper/S.A. Museum includes strandings of the following types: Unknown; Diseased; Live stranding; Other natural causes.						

4.4 Analyses/development of techniques

Bottlenose dolphin genetic analyses (Monash University). The samples collected during 2008 are currently being processed in the genetics laboratory at Monash University, as a part of the continuing PhD research conducted by Kate Charlton-Robb. DNA of these samples will be subject to mitochondrial DNA control region and cytochrome b region sequencing, along with genotyping at several microsatellite markers. New DNA regions are also being investigated.

Ecology and population genetics of Australian humpback (Sousa chinensis) and bottlenose (Turiops spp.) dolphins in Moreton Bay Marine Park. (UQ- Dr Guido Parra; Inna Ansmann). This research aims to investigate: ecology and population genetics of Moreton Bay dolphin populations; information on population sizes, inter- and intra specific relationships; & information on delphinid diet compositions, feeding behaviours and trophic level. Research methods involve Taking biopsy samples for DNA analysis photographic identification

Humpback whale DNA analysis (SCU). DNA analysis of sloughed skin Samples being undertaken by Megan Anderson and Wally Franklin, 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 2009. (Anderson et al. 2001; Elphinstone et al. 2003)

Humpback whale population structure-AMMC. Through the isolation and characterization of SNPs (Single Nucleotide Polymorphisms), and the application of microsatellite loci, population substructure within breeding stocks D & E and also the distribution of these breeding stocks in Antarctic waters will be investigated.

Population genetics of provisioned and non provisioned bottlenose (Turiops spp.) dolphins in Moreton Bay Marine Park.- Dr. David Neil (UQ). The research aims to investigate the genetic relationships within the provisioned dolphin sub-population and the relationship of that sub population to the wider Moreton Bay dolphin population. Research methods involve taking of skin-swab genetic samples from provisioned dolphins at Tangalooma resort; taking of biopsy samples from non-provisioned dolphins using PAXARMS biopsy method and photographic identification

Status of spinner and bottlenose dolphins in SE Old waters.- Simon Allen (MUCRU). The purpose of this research is to document the existence and range of spinner and bottlenose dolphins in coastal waters, and further knowledge of inter-specific associations of delphinids in the marine environment. Research methods involve taking biopsy samples for DNA extraction and photographic identification.

5. POLLUTION STUDIES

Contaminant loads in bottlenose dolphins (Monash University- Alissa Monk). During 2008, a range of contaminants were detected in beach cast dead and live dolphins from coastal Victoria. Of the contaminants detected, only mercury concentrations were at levels that were of concern. The total mercury in dead adult animals from coastal Victoria was on average 2.6 times higher than the values for the live animals (one factor ANOVA for a comparison between live and dead animals; $F(1,24)=18.13$, $p<0.001$), giving evidence that mercury may be a major contributing factor to dolphin deaths. For the beach-cast animals, liver values ranged from 160 to 840 mg/kg, while in live animals the range was estimated between 124 and 346 mg/kg (combined data from this study and data from previous published studies to form a regression between liver and blubber levels, $n=7$, $R^2=0.194$, $p<0.05$, liver level = $57.06 \times$ blubber level + 106.0). This study has found that mercury levels fall within a range (between 100 to 400mg/kg) whereby there are negative health effects for small cetaceans and gives strong evidence that the concentrations of mercury could compromise the health and survival of these genetically unique coastal dolphin populations.

Heavy metal and PCB levels in South Australia dolphins. The study (reported in the 2007 report) conducted by Trish Lavery (Flinders University) and Ikuko Tomo (SAM) on PCBs, heavy metals, bone structure and lung nematode infections in SA dolphins did not reveal any conclusive relationships. This is likely due to the small sample sizes and complex nature of toxic contaminants and other variables.

An Honour's student at Flinders University (Lailie Maloney) is undertaking a study of PCBs and bone structure in SA dolphins. The results of this are not yet known. The South Australian Museum and Trish Lavery would like to continue studies of PCBs on the hundreds of samples archived, provided sufficient funding is available. The results of Trish Lavery and the SAM's research on bone structure and heavy metals in Indo-Pacific Bottlenose Dolphins were published during 2008 (Lavery et al., 2009).

Persistent organic pollutants in southern ocean food webs-- Dr. Susan Bengtson Nash & Courtney Waugh (EnTox, UO). This research aims to: examine levels of a persistent and toxic organochlorine (OC) compound found in humpback whales; examine the relationship between OC compound levels and migration-based weight (blubber) loss and; & examine the relationship between OC compound concentrations throughout different layers of blubber. Research methods involve the taking of deep-core biopsy samples from the dorsal surface of humpback whales and tissue and muscle samples (approximately 10cm x cm) from stranded whale carcasses.

6. STATISTICS FOR LARGE CETACEANS

6.1 Corrections to earlier years' statistics for large whales

Nil

6.2 Direct catches of large whales (commercial, aboriginal and scientific permits) for the calendar year 2008 or the season 2007/08

Nil

6.3 Anthropogenic mortality of large whales for the calendar year 2008 or the season 2007/08

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

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

Whale species	Sex	No.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/ institute and refs
S. Right whale	F (& calf)	1	21/8/08	34:18S 115:13E	U	U	X	M	D. Coughran DEC-WA
Pygmy Right Whale	M	1	12/1/08	Lincoln National Park. 34 48 27 S, 135 52 29 E	U	U	D	SAM post mortem	C. Kemper, SAM
Humpback Whale	M	1	20/09/08	20nm East Coffs Harbour	U	U	D	DA	Geoffrey Ross
Humpback Whale	U	1	26/10/08	Byron Coast, NSW	U	U	D	DA	Geoffrey Ross
Humpback Whale	U	1	26/10/08	Richard River, NSW	U	U	D	DA	Geoffrey Ross
Sperm whale (*1)	U	1	<6/10/08	12 Apostles, Great Ocean Rd, Western Victoria	U	U	D	O	Mandy Watson, DSE
Unid. whale (*2)	U	1	16/08/2008	Between Hayman Island and mainland -20.0779 148.8903	Large commercial vessel	~30Kn	U	Public	DERM Whitsundays office 07 49677355
Unid. whale	U	2	17/08/2008	Fraser Isl. -24.6525 153.2515	Yacht	U	X	Crew on yacht	Col Limpus, Jenny Greenland, EPA-QLD
Unid. whale(*3)	U	1	07/10/2008	Off Gladstone, -23.8871 151.5167	MSQ Pilot Boat	U	U	Crew on boat	Col Limpus, Jenny Greenland, EPA-QLD
Humpback Whale (*4)	U	1	08/09.2008	19.3227°S / 147.5917°E	9m Rib	U	X.		DERM Townsville office 07 47225224

(*1) DSE reported a beach washed sperm whale believed to have died as result of ship strike based on photographs of injuries and discussions with Cath Kemper. Not possible to access whale due to location. Photographs available

(*2) Another whale was seen nudging the injured whale shortly after strike. A lot a blood in the water.

(*3) Not seen after collision

(*4) Vessel's bow struck glancing blow to whale while vessel was coming down the face of a wave.

6.3.2 Fishery bycatch of large whales

Fate of whale: R = released alive, D = discarded dead or seriously injured, K = kept for sale or specimen. How observed: M = records collected as part of a planned cetacean monitoring programme, F = records collected by onboard fishery monitoring scheme, V = records collected by fishermen through vessel logbooks, A = anecdotal reports from any reliable source, with a further distinction of DA if the latter were documented (e.g. photos, rescue teams). Internationally recognised standard gear description codes from FAO are used where possible.

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Bryde's whale		1	20/3/08	30°31'S 114°45'E	R	Lobster	FPO	M	D. Coughran DEC-WA
Humpback Whale	U Sub-adult	1	11/08/2008	Gold Coast	R*	U	Rope, >20m, 6-8mm diam., green	Spotted by Sea World whale watching boat.	Sea World 07 55882218
Humpback Whale	U Immature	1	27/09/2008	Currumbin Beach, Gold Coast, -27.1273 153.4946	R	Shark	NSC	Shark Control Contractor	QDPI&F
Humpback whale		1	27/7/08	Off Darcy Island	R	Pearl	MIS	F	D. Coughran DEC-WA
Humpback whale		1	29/7/08	24:42S 113:06E	R	Lobster	FPO	M	D. Coughran DEC-WA
Humpback whale		1 (with calf)	25/8/08	23:02S 113:46	U	Lobster	FPO	M	D. Coughran DEC-WA
Humpback Whale	U	1	23/06/08	Sydney, NSW	U	U	FIX	A	G. Ross DECC-NSW
Humpback Whale	U	1	15/03/08	Point Plomer, NSW	U	U	FIX	A	G. Ross DECC-NSW
Humpback Whale	U	1	24/07/08	Dead Cow Beach, NSW	D	U	FIX	DA	G. Ross DECC-NSW
Humpback Whale	U	1	30/08/08	Lennox Head, NSW	D	U	FIX	DA	G. Ross DECC-NSW
Humpback Whale	U	1	01/09/08	Mid North Coast, NSW	R	U	FIX	DA	G. Ross DECC-NSW
Humpback Whale	U	1	13/09/08	Smokey Cape, NSW	R	U	FIX	DA	G. Ross DECC-NSW
Humpback Whale	U	1	7/10/08	Tweed, NSW	U	U	FIX	A	G. Ross DECC-NSW
Humpback Whale	U	1	11/10/08	Scotts Head, NSW	U	U	FIX	DA	G. Ross DECC-NSW
Humpback Whale	U	1	18/10/08	Point Plomer, NSW	U	U	FIX	DA	G. Ross DECC-NSW
Humpback Whale	U	1	8/11/08	Green Cape, NSW	U	U	FIX	DA	G. Ross DECC-NSW
Humpback Whale	U	1	30/08/08	Sydney South, NSW	U	U	FIX	DA	G. Ross DECC-NSW
Southern Right whale		1	2/6/08	31:49S 115:43	R	Amateur	FPO	M	D. Coughran DEC-WA

*. Rope entangled around tail stock and right fluke. Fluke end had been severed off entirely, plus fluke was cut 90% thru a further ~30cm in toward stock. Rope was cut from whale. Freed whale headed north

7. STATISTICS FOR SMALL CETACEANS

It was first agreed to include this information in a Commission resolution in 1976 (IWC, 1977, p.31)). Furthermore, in 2005 (IWC, 2006, Annex J) it was agreed that these data should be brought into line with those reported for large cetaceans. **Therefore, this Section should be completed using the same guidelines as given in Section 6 above, Statistics for large cetaceans.**

7.1 Corrections to earlier years' statistics for small cetaceans

Nil

7.2 Direct catches of small cetaceans for the calendar year 2008 or the season 2007/08

Nil

7.3 Anthropogenic mortality of small cetaceans for the calendar year 2008 or the season 2007/08

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
Bottlenose dolphin	U	1	30/10/2008	Bunbury, WA	Small runabout, outboard motor	U	X	Boat survey during line transect	Holly Smith/MUCRU

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	23/12/08	-26.4237 153.0843	R	<i>Shark</i>	NSC	F	QDPI&F
Australian Snubfin dolphin	F	1	15/07/08	-26.3798 153.0626	R	<i>Shark</i>	NSC	F	QDPI&F
Australian Snubfin dolphin	M	1	28/07/08	-26.3992 153.0675	D	<i>Shark</i>	NSC	F	QDPI&F
Bottlenose dolphin	F	1	22/03/08	-28.0097 153.4382	R	<i>Shark</i>	NSC	F	QDPI&F
Bottlenose dolphin	U	1	24/01/08	-28.0017 153.4387	D	<i>Shark</i>	NSC	F	QDPI&F
Bottlenose dolphin	U	1	24/03/08	-28.0265 153.4411	D	<i>Shark</i>	NSC	F	QDPI&F
Bottlenose dolphin	M	1	20/05/08	-26.3923 153.0655	D	<i>Shark</i>	NSC	F	QDPI&F
Bottlenose dolphin	F	1	26/05/08	-26.3923 153.0655	D	<i>Shark</i>	NSC	F	QDPI&F
Bottlenose dolphin	F	1	25/04/08	-25.8949 153.0954	D	<i>Shark</i>	NSC	F	QDPI&F
Bottlenose dolphin	U	1	21/05/08	-25.8987 153.0977	D	<i>Shark</i>	NSC	F	QDPI&F
Bottlenose Dolphin	M	1	26/2/08	Arno Bay, SA 33 55 S, 136 35E	D	Kingfish aquaculture	MIS (aquaculture cage)	F, SAM post mortem	C. Kemper, SAM
Bottlenose dolphin	1M/1F	2	Oct 08	Pilbara	D	<i>Large finfish</i>	Otter trawl	Observer/researcher	Simon Allen/MUCRU
Common Dolphin	U	1	27/10/08	Sydney	D	Sharks	NSC	A	Geoffrey Ross DEC-NSW
Pantropical spotted dolphin	U	3	24/01/08	-28.0017 153.4387	D	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	F	1	30/09/08	-27.9633 153.4357	R	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	F	1	11/10/08	-28.0564 153.4486	R	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	1XF 1XM	2	11/01/08	-26.3815 153.0891	D	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	U	1	06/03/08	-27.9734 153.4360	D	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	U	1	04/04/2008	-26.3939 153.0657	D	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	M	1	04/04/08	-26.3505 153.0612	D	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	U	1	30/04/08/	-25.8987 153.0977	D	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	F	1	01/05/08	-27.9734 153.4360	D	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	F	1	05/05/08	-28.0017 153.4387	D	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	F	2	22/09/08	-26.3939 153.0657	1XD 1XR	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	F	1	05/10/08	-26.3939 153.0657	D	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	F	1	13/11/08	-28.0498 153.2758	D	<i>Shark</i>	NSC	F	QDPI&F
Common dolphin	M	1	14/11/08	-27.9734 153.4360	D	<i>Shark</i>	NSC	F	QDPI&F

Common dolphin	M	1	09/12/08	-27.9734 153.4360	D	Shark	NSC	F	QDPI&F
Common dolphin	F	1	23/12/08	-28.0498 153.2758	D	Shark	NSC	F	QDPI&F
Common dolphin	F	1	22/01/08	-28.1511 153.5100	D	Shark	NSC	F	QDPI&F
Common dolphin	F	1	20/10/08	-26.8086 153.1460	D	Shark	NSC	F	QDPI&F
Dolphin	F	1	18/1	32°07'S; 131°50'E	D	Shark	GNS	V	AFMA Justin Johnston
Dolphin	U	1	7/2	36° 12'S; 136° 76'E	D	Shark	GNS	V, F	AFMA Justin Johnston
Dolphin	U	1	9/2	41° 07'S; 148° 56'E	D	Finfish	PTB	V, F	AFMA Justin Johnston
Dolphin	U	1	15/03	36°152'S; 138°007'E	R	Shark	GNS	F	AFMA Justin Johnston
Dolphin	U	1	19/4	34°11'S; 135°09'E	D	Shark	GNS	V	AFMA Justin Johnston
Dolphin	U	1	22/6	35°44'S; 138°35'E	D	Shark	GNS	V	AFMA Justin Johnston
Melon headed whale	U	1	26/6	25°41'S; 155°37'E	D	Tuna	LL	V	AFMA Justin Johnston
Short-beaked Common Dolphin	4M, 4 F	8	2008	Lower Spencer Gulf	D	SA Sardine Fishery	PS1/PS2	F, SAM post mortem	C. Kemper, SAM; D. Hamer, SARDI
Straptooth Beaked Whale	F	1	8/4/08	7.0 km WNW Salt Creek, SA	D	Southern Rock Lobster	7 buoys and rope	SAM post mortem	C. Kemper, SAM

8. STRANDINGS

New South Wales

Cetaceans are brought to the Australian Registry of Wildlife Health for post mortem at the discretion of the appropriate NSW Coordinator for the Department of Environment and Climate Change.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Greys Beaked Whale	2	0	Geoffrey Ross, NSW DECC	geoff.ross@environment.nsw.gov.au
Sperm Whale	1	1	Geoffrey Ross, NSW DECC	geoff.ross@environment.nsw.gov.au
Humpback Whale	5	2	Geoffrey Ross, NSW DECC	geoff.ross@environment.nsw.gov.au
Common Dolphin	6	4	Geoffrey Ross, NSW DECC Jane Hall, ARWH/Mike Cannon, Cannon & Ball Veterinary Clinic	geoff.ross@environment.nsw.gov.au jhall@zoo.nsw.gov.au
Bottlenose Dolphin	5	1	Geoffrey Ross, NSW DECC Jane Hall, ARWH	geoff.ross@environment.nsw.gov.au jhall@zoo.nsw.gov.au
Indo pacific Bottlenose Dolphin	1	0	Geoffrey Ross, NSW DECC	geoff.ross@environment.nsw.gov.au

Queensland

The Queensland marine wildlife stranding and mortality database (“StrandNet”) summarises all records of sick, injured or dead marine wildlife reported to EPA.

Most records of individual strandings are supplied by EPA and Great Barrier Reef Marine Park Authority (GBRMPA) staff, including those reported via the statewide stranding hotline 1300 130 372. Other records are received directly via members of the public and organisations such as Sea World and Underwater World.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Humpback whale	8	0	Col Limpus	col.limpus@epa.qld.gov.au ; jenny.greenland@epa.qld.gov.au
Minke Whale	1	0	Col Limpus	As above
Blue Whale	1	0	Col Limpus	As above
Common dolphin	1	1	Col Limpus	As above
Unidentified dolphin	9	0	Col Limpus	As above
Short-Finned pilot whale	1	0	Col Limpus	As above
False killer whale	1	0	Col Limpus	As above

Indo-Pacific humpback dolphin	8	2	Col Limpus	As above
Bottlenose dolphin.	4	1	Col Limpus	As above
Unidentified whale	4	0	Col Limpus	As above

South Australia

The 2008 stranding list below does not include the records included in anthropogenic categories above. A network of DEH SA, PIRSA and community members report to SAM, even when carcasses are not collected. The contact person for this data is C. Kemper, SAM.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Large Whale	1	0	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Pygmy Right Whale	1	1	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Dolphin	1	0	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Bottlenose Dolphin	8	3	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Indo-Pacific Bottlenose Dolphin	8	7	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Short-beaked Common Dolphin	11	7	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Pilot Whale	1	0	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Short-finned Pilot Whale	1	0	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Long-finned Pilot Whale	1	0	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Pygmy Killer Whale	1	1	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Pygmy Sperm Whale	1	0	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Sperm Whale	2	0	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au
Beaked Whale	1	0	C. Kemper/S.A. Museum	Kemper.Cath@saugov.sa.gov.au

Tasmania

Due to the high incidences of strandings in Tasmania, DPIW have a 24hr / 7days week marine mammal hotline number (0427WHALES) for the public to report strandings and sightings of cetaceans. Strandings are joint managed by the Tasmanian Parks and Wildlife Service (incident control and operational) and DPIW (animal management, rescue and sample collection). The agencies are responsible for strandings throughout Tasmanian, covering 4,882 kms of coastline. No other “networks” are involved with stranding management as with other states. For more information please contact Rosemary Gales, DPIW.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Ziphius cavirostris (Cuvier's beaked whale)	1	1	R.Gales / DPIW	Rosemary.gales@dpiw.tas.gov.au
Unidentified dolphin	1	All released	R.Gales / DPIW	Rosemary.gales@dpiw.tas.gov.au
Tursiops truncatus (Bottlenose dolphin)	2	5	R.Gales / DPIW	Rosemary.gales@dpiw.tas.gov.au
Stenella coeruleoalba (Striped dolphin)	1	All released	R.Gales / DPIW	Rosemary.gales@dpiw.tas.gov.au
Balaenoptera acutorostrata (Minke whale)	2	1 (1 released)	R.Gales / DPIW	Rosemary.gales@dpiw.tas.gov.au
Delphinus delphis (Common dolphin)	5	4 (1 released)	R.Gales / DPIW	Rosemary.gales@dpiw.tas.gov.au
Globicephala melas (Long-finned pilot whale)	2	224 (43 released)	R.Gales / DPIW	Rosemary.gales@dpiw.tas.gov.au
Mesoplodon grayi (Gray's beaked whale)	1	1	R.Gales / DPIW	Rosemary.gales@dpiw.tas.gov.au
Physeter macrocephalus (Sperm whale)	1	1	R.Gales / DPIW	Rosemary.gales@dpiw.tas.gov.au
Caperea marginata (Pygmy right whale)	1	1	R.Gales / DPIW	Rosemary.gales@dpiw.tas.gov.au

Victoria

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

DSE provides opportunistic reports for Western Victoria during 2008. Photographs available.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Bottlenose dolphin	7	7 (gross post mortems only)	Kate Charlton-Robb/ Monash	Kate.charlton@sci.monash.edu.au
Unknown delphinid sp	1	1 (gross post mortems only)	Kate Charlton-Robb/ Monash	Kate.charlton@sci.monash.edu.au
Andrew's Beaked whale	2	2	Mandy Watson, DSE	Mandy.watson@dse.vic.gov.au
Cuvier's Beaked whale	1	0	Stan Williams, DSE	Stan.williams@dse.vic.gov.au
Pygmy Sperm whale	1	0	Steve, McDougall, DSE	Steve.mcdougall@dse.vic.gov.au

Western Australia

Opportunistic stranding reports are received by DEC-WA 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.

Murdoch University Cetacean Research Unit

Response is opportunistic and when individuals are recovered necropsy is performed at Murdoch University Veterinary School. If carcass is fresh, gross internal examination with pathology and histology analyses are performed. If carcass has advanced decomposition, then only morphometrics and genetic samples (skin/blubber) are taken according to DEC-WA and DEWHA protocols.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Bottlenose dolphin	4	1	D. Coughran, DEC-WA	douglas.coughran@dec.wa.gov.au
Dwarf Sperm whale	1		D. Coughran, DEC-WA	douglas.coughran@dec.wa.gov.au
Humpback whale	13(*1)	1	D. Coughran, DEC-WA	douglas.coughran@dec.wa.gov.au
Pygmy Sperm whale	2		D. Coughran, DEC-WA	douglas.coughran@dec.wa.gov.au
Sperm whale	1		D. Coughran, DEC-WA	douglas.coughran@dec.wa.gov.au
Spinner dolphin	1	1	D. Coughran, DEC-WA	douglas.coughran@dec.wa.gov.au
Bottlenose dolphin	4 (*2)	3	MUCRU	h.smith@murdoch.edu.au
Striped dolphin	1	0	MUCRU	h.smith@murdoch.edu.au
Shepherd's beaked whale	1	0	MUCRU	l.bejder@murdoch.edu.au

(*1) Two of the 13 humpback whales stranded were euthanased

(*2) details for 4 bottlenose dolphins as follows:

- January 4 year old calf was found Koombana Bay stranded with fatal shark bite wound, necropsy performed.
- April Adult female found Leschenault Estuary necropsy performed cause of death inconclusive, neonate found genetic sample taken no necropsy performed decomposition advanced.
- August juvenile/adult Male found Collie River necropsy performed death attributed to severe infection and lung abscess.
- December 2008 striped dolphin calf found Buffalo Beach north of Bunbury advanced decomposition, genetic samples and morphometrics taken no necropsy performed

Northern Territory

A major activity in 2008 in the Northern Territory was the establishment of Wildlife Watch (1800 453 941) by NRETAS which is a combination of a stranding hotline, wildlife interactions (eg fisheries in NT waters) and wildlife sightings reporting system. Ray Chatto is the lead person and can be contacted on the above number.

9. OTHER STUDIES AND ANALYSES-

Assessment of mortality of dolphins in North Spencer Gulf (Kemper, Tomo SAM, Hamer SARDI, Bossley and Warhurst WDCS, Miller Flinders University, Gibbs Macquarie University). The mortality of dolphins in North Spencer Gulf has been monitored since 1990. Since 2001 a substantial increase in deaths has been noted and some of these are known entanglements in kingfish aquaculture farms near Whyalla. A multidisciplinary research project is being planned that will involve assessing this mortality and the abundance of common and bottlenose dolphins in the region. The aquaculture industry will be approached to support this study.

Beaked whale conservation genetics and molecular systematics- Dalebout/UNSW. M. L. Dalebout (UNSW) continued her research on the molecular systematics and conservation genetics of beaked whales (Family

Ziphiidae). Sequences from seven non-coding nuclear genes (introns; 3348 base pairs) were used to construct a robust and highly resolved phylogeny for 13 of the 14 recognised *Mesoplodon* species (missing *M. traversii*), which was then used as a framework to test predictions from four hypotheses seeking to explain patterns of tusk morphology and/or the processes that have driven the diversification of this genus (Dalebout *et al.* 2008).

Work is also ongoing regarding the divergent mtDNA lineage identified by Dalebout *et al.* (2007) from specimens in the tropical Indo-Pacific; related to *M. ginkgodens* (ginkgo-toothed beaked whale), this lineage may represent a previously-unrecognised species. Molecular and morphological work are in progress determine the taxonomic status of the specimens concerned (Dalebout *et al.* In prep.).

For *Ziphius cavirostris* (Cuvier's beaked whale), a large-scale project expanding on the work of Dalebout *et al.* (2005) is in progress. Over 500 specimens have been sampled for the current study, representing populations throughout the worldwide distribution of this species (approx. 75% of samples are from museum collections). Mitochondrial DNA markers are being used to look at regional population structure with the aim of identifying appropriate units for conservation. DNA sequences have been obtained from the majority of samples and analyses are in progress (Dalebout *et al.* In prep.).

Bottlenose dolphin studies, WA.

- Dr J. Mann Behaviour and communication in bottlenose dolphins in Shark Bay
- K. Wenziker Ecology of Indo-pacific humpback dolphins and bottlenose dolphins in Ningaloo Marine Park. PhD project
- Dr. B. Sherwin Genetic study of bottlenose dolphins.
- H. Smith Behavioural variation in the bottlenose dolphin associated with managed eco-tourism interaction, Shark Bay and Bunbury, WA. PhD project

Cause/circumstance of death of SA cetaceans (Kemper, Tomo SAM, Byard University of Adelaide, Adelaide Mount Lofty NRM). The Dolphin Trauma Group continues to study dead dolphins from Gulf St Vincent Bioregion and has been awarded funding as part of a Caring For Our Country grant to study marine debris in Gulf St Vincent. This is due to start in mid 2009. The marine mammal component will be directed by C. Kemper, SAM and will entail studying the carcasses of dead cetaceans as well as summarizing samples and pathology collected during the last 18 years. Some toxic contaminant research may also be undertaken related to this project.

Climate variability and southern right whale reproduction (Rebecca Pirzl). Australian southern right whale annual calf output and anomalous (>3 year) calving intervals were analysed in relation to variability in summer and winter Southern Oscillation Index (SOI), Southern Annular Mode (SAM) and sea ice extent (SIE), with lags of up to 6 years. Warm (El Nino) events were associated with reduced calf production 2.5-3 years later and extended intervals between successful calving events were linked to variability in SAM.

Development of the computer-based fluke-matching software 'Fluke Matcher'. Dr Eric Kniest (University of Newcastle), Daniel Burns and Prof. Peter Harrison continued the development of the computer-based fluke-matching software 'Fluke Matcher'. This software increases the efficiency of matching humpback whale flukes and is based on the transformation of fluke images to scale and orientate each fluke using five standard control points. Each fluke is entered into the database and includes measurement of various characteristics of the fluke including the shape (angles and distances), percentage of black in various regions of the fluke, thickness of the black band along the trailing edge, and positions of various features on the fluke including spots, lines and scars to identify the individual. The database can be queried to search for matching flukes, with the results being displayed in order from most likely to least likely match. The system has been tested using 440 photographs of 194 whales collected in Hervey Bay (E Aust) from 1994-2006. Results showed the system greatly increases efficiency of matching humpback whale fluke photographs. The description and results of tests of the system have been included in a manuscript that has been submitted to a peer-reviewed journal for publication.

A grant from the Australian Marine Mammal Centre for 2009 to further increase efficiency and finalise the development of the program, as well as to produce a user manual, will result in 'Fluke Matcher' being made freely available to interested parties at the completion of the project.

Dwarf minke whale project (JCU). For details please contact Dr Alastair Birtles, Team Leader for the Minke Whale Project, James Cook University, Tourism Program, QLD 4811, tel: 07 4781 4736.

Impacts of vessels on Humpback Whale behaviour – Cape Solander, Sydney, NSW. Maryrose Gulesserian from the Marine Mammal Research Group, Macquarie University completed her third and final season of data collection, to assess the impacts of vessels on migratory humpback whale behaviour. Whales were 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 2008, 174 pods were tracked over a sampling period of 49 days. Data such as direction of travel, speed and pod size were also recorded.

The 2008 season also saw the addition of an extra component, as the construction of Sydney's desalination plant commenced within the study area. The positioning of the intake and outlet pipelines overlapped the main migratory corridor off the study site, raising concerns about the possible impacts that the underwater construction may have on the whales. Therefore, in addition to investigating whale-vessel interactions, all construction activities were monitored and tracked for separate analysis. The data will form the basis of a manuscript exploring the behavioural reactions of migrating humpback whales to underwater construction activities.

Investigating dolphin mortality in the South Australian Sardine Fishery (Hamer, Tomo, Kemper and Gibbs, SARDI). This project is assessing the injuries and biology of Short-beaked Common Dolphins that have died in the fishery and been collected for necropsy (n = 27). It will provide a forensic validation of known cause of death (e.g. entanglement in purse seine fishery) that can be used to establish cause of death for dolphin carcasses washed up in South Australia. This may give a more realistic minimum mortality rate associated with the industry. Carcasses are also being assessed for life history status, including aging by tooth structure. SARDI are also involved in monitoring the bycatch through an observer program.

Long term acoustic monitoring of South of Australia & Southern Ocean waters— J. Gedamke, AMMC: Long term acoustic records are being analysed to determine the seasonal presence of blue and fin whales. Data has been collected from acoustic recorders along a line of longitude south of Tasmania to offshore of Dumont D'Urville, on the Antarctic Continent, the Cape Leeuwin hydrophone array for Comprehensive Nuclear Test Ban Treaty Organization, and at locations off eastern Antarctica (Prydz Bay, Kerguelen Plateau). All instruments and will allow assessment of seasonal presence of vocal whales and seals along large north-south and east-west ranges.

Long term humpback whale monitoring (CWR). A long term monitoring programme to determine the risk of displacing resting humpback whales in Exmouth Gulf was begun in 2000 (Jenner and Jenner, 2005). A population modelling component using genetic and photo-id data was added in 2007. An ACAAMS grant was secured in 2008 to use Distance modelling to estimate population size for Breeding Population D whales. Calculations will be completed by August 2009.

Lung nematode epidemic in common dolphins (Tomo, Kemper SAM). A publication is nearing completion that summarizes this event and the long-term dataset on carcass studies. The event lasted about 2 years and involved the death of many calf and juvenile Short-beaked Common Dolphins from South Australia. This study has been discussed in past reports to the IWC.

National Centre for Aging Marine Mammals- (SA Museum). An international student (Elena Trentin, Istituto di Biologia e Genetica Università Politecnica delle Marche, Italy) carried out a project that aged 76 *T. aduncus* from South Australia. All of the dolphins collected from the eastern side of Gulf St Vincent were aged, including 9 animals that had been individually identified in the study of the Port River dolphins by M. Bossley and one that was captive at Marineland of South Australia for 24 years. The oldest dolphins were 28 years, with many estimated to be 2 years or less. Elena also studied sexual maturity in males and concluded that males became mature after they reached 210 cm at 9 to 12 years of age. In general, testes greater than 170 mm long and 200 g were mature.

An Honour's student from La Trobe University, Kylie Owen, was trained at the facility in January 2009 for her study of isotopes in bottlenose dolphins from Victoria and Tasmania.

Oceanographic influences on the distribution of *Caperea marginata* (Kemper, Middleton and Van Ruth). This project was described in last year's report. It has progressed to draft manuscript stage.

Oceanographic influences on cetacean strandings and sightings in South Australia (Segawa, Kemper, Seuront, Flinders University). Tomo Segawa has commenced an Honours project that aims to analyse trends in the stranding and sighting record for South Australia and relate these to oceanographic variation. The Museum has about 1200 strandings records and 3000 sightings.

Optimising survey designs for Antarctic circumpolar cetacean abundance studies—(AMMC). This work builds on the survey design framework in Hedley *et al.* (2007b) and Peel *et al.* (2008), dealing with CVs of minke whale abundance that could potentially be obtained from future shipboard line transect surveys in the Antarctic (for example, but not restricted to, IDCR/SOWER). We use simplified spatial models to analyse the IDCR/SOWER CP2 and CP3 data, split by latitude band. We then use the results to infer what precision (CV) would be obtained from various modified survey designs in future, if the data were analysed using spatial

models. Improvements upon the analysis methods presented previous papers presented to the SCIWC (above) include more realistic representation of sea ice concentrations and edges and geometry of line transects upon a curved spherical surface.

Report on depredation mitigation devices (AFMA). Relevant research projects to which AFMA co-invested funds and administered include: PROJECT REPORT (R02/0923)-*Testing of acoustic tracking system for toothed whales around longline and gillnet fishing gear, and preliminary trials of depredation mitigation devices for longline fisheries (September 2003)*. This Report was produced for the Eastern Tuna Management Advisory Committee, Southern and Western Tuna and Billfish Management Committee and Australian Fisheries Management Authority.

Summary of cetacean permits current in 2008(GBRMPA). 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.

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 July 2010.
- 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 three species of cetaceans: Australian snubfin, Indo-Pacific humpback dolphins and Bottlenose dolphins in northeast Queensland waters – permit expires 31 May 2010.
- A six and final year of the Dwarf Minke Whale Tourism Monitoring Program Research Contract began in the 2008 dwarf minke whale season (June-August).

Acoustic and surface behaviour of coastal dolphins in Queensland- Alvare Berg (UO). The research aims to investigate schooling dynamics, social structure and spatial-use patterns; the relationship between the acoustic and surface behaviour of each species; and the response of dolphins to acoustic stimuli including acoustic alarms (pingers) used to reduce by-catch in gill nets and acoustic modems used by marine scientists. Research methods involve land based photographic identification and video monitoring and deployment of acoustic alarms and acoustic modems.

Taxonomy of Tursiops spp. in Australasia (Kemper, SA Museum). This study began with a morphological description of South Australian bottlenose dolphin skulls during the late 1990s and early 2000s. Specimens have now been measured from all other states and New Zealand. It is envisaged that the data analysis will begin in late 2009. There is an urgent need to resolve the species boundaries of this difficult genus, at least in the Australasian region, in light of recent genetic publications.

Whale Disentanglement workshop (DEC-WA & DEWHA). Western Australia co-hosted the Australian Large Whale National Disentanglement workshop with DEHWA at Hillarys 14-15 April 2008. D. Coughran also ran a National large whale disentanglement accreditation course at Port Macquarie 29-30 July 2008 for NSW NPWS.

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11. PUBLICATIONS

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11.2 Unpublished literature

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