

**AUSTRALIA. PROGRESS REPORT ON CETACEAN RESEARCH, JANUARY 2004 TO
DECEMBER 2004, WITH STATISTICAL DATA FOR THE CALENDAR YEAR 2004**

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This report summarises information obtained from: Australian Fisheries Management Authority (AFMA), Canberra—ACT; The Department of Environment and Conservation—NSW; The Australian Museum—NSW; NSW Fisheries—NSW; Taronga Zoo—NSW; Southern Cross University Whale Research Centre (SCUWRC)—NSW; ORRCA—NSW; University of New South Wales—NSW; the Department of Sustainability & Environment—VIC; Dolphin Research Institute Limited—VIC; Australocetus Research, Whale Ecology Group, Deakin University—VIC; Museum of Victoria—VIC; Deakin University, Warrnambool—VIC; Wildlife Ecology Unit, Environmental Sciences Division, Queensland Environmental Protection Agency—QLD; Great Barrier Reef Marine Park Authority (GBRMPA)—QLD; James Cook University (JCU)—QLD; Museum of Tropical Queensland (MTQ)—QLD; The Oceania Project—NSW; Queensland Department of Primary Industries and Fisheries (DPI&F)—QLD; Queensland Environmental Protection Agency (EPA)—QLD; the University of Queensland (UQ)—QLD; Antarctic Wildlife Research Unit, School of Zoology, University of Tasmania—TAS; Nature Conservation Branch, Department of Primary Industries Water and Environment (DPIWE)—TAS; Applied Marine Mammal Ecology Unit, Australian Antarctic Division—TAS; South Australian Museum (SA Museum)—SA; Department for Environment and Heritage, Primary Industries SA (Fisheries)—SA; Murdoch University—WA; Western Australian Department of Conservation and Land Management—WA; Western Australian Museum—WA; Western Whale Research Pty Ltd—WA; Centre for Whale Research (CWR), Western Australia—WA; The International Fund for Animal Welfare (IFAW); Pacific Whale Foundation (PWF); Institute of Marine Research, Tromsø, Norway; Georgetown University, USA

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

1. Species and stocks studied

Common name	Scientific name	Area/stock(s)	Items referred to
MYSTICETI			
Blue whale	<i>Balaenoptera musculus</i>	S Coast; S Hemisphere; WA; California, USA	2.1.1, 2.1.2, 2.2, 3.1.1, 3.1.3, 4.1, 9, 11.1, 11.2
Pygmy blue whale	<i>Balaenoptera musculus breviceuda</i>	S Hemisphere	2.1.1, 3.1.1, 3.1.3, 4.1, 9
Southern right whale	<i>Eubalaena australis</i>	E Australia; TAS; S coastline; SA	2.1.1, 2.1.2, 2.2, 3.1.1, 9, 11.1, 11.2
Pygmy right whale	<i>Caperea marginata</i>	SA	4.3, 6.2
Humpback whale	<i>Megaptera novaeangliae</i>	E coast; TAS; WA; Area V; Groups B and C; California, USA	2.1.1, 2.1.2, 2.2, 3.1.1, 3.1.3, 3.2, 4.1, 4.3, 4.4, 5, 6.2.1, 6.2.2, 6.2.3, 9, 10, 11.1, 11.2
Bryde's whale	<i>Balaenoptera edeni</i>	E Coast	3.1.1, 4.3, 6.2.1
Common minke whale	<i>Balaenoptera acutorostrata</i>	E Coast	2.1.1, 4.3, 6.2.1
Antarctic minke whale	<i>Balaenoptera bonaerensis sp.</i>	East Antarctica	2.1.1, 2.2, 10, 11.2
Dwarf minke whale	<i>Balaenoptera acutorostrata</i>	S Hemisphere; E Coast	2.1.1, 2.1.2, 2.2, 3.1.1, 3.2, 4.1, 9, 11.1, 11.2
ODONTOCETI			
Sperm whale	<i>Physeter macrocephalus</i>	S Coast; TAS; QLD Coast; S Hemisphere; SA	2.1.2, 4.1, 6.2, 6.2.1, 8, 10, 11.1, 11.2
Pygmy sperm whale	<i>Kogia breviceps</i>	VIC; TAS, SA	4.3, 6.2.1, 8
Pygmy/Dwarf sperm whale	<i>Kogia sp.</i>	NSW Coast	6.2.1
Pilot whale	<i>Globicephala sp.</i>	SA	2.1.1, 2.1.2
Long-finned pilot whale	<i>Globicephala melas</i>	VIC; TAS; SA	4.3, 8, 11.2

Common name	Scientific name	Area/stock(s)	Items referred to
Killer Whale	<i>Orcinus orca</i>	S Coast; E Antarctica; SA	2.1.1, 2.1.2, 4.3, 9, 11.1
False killer whale	<i>Feresa attenuata</i>	WA Coast	2.1.2
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	NSW Coast; VIC; TAS	4.3, 6.2.1
Gray's beaked whale	<i>Mesoplodon grayi</i>	S hemisphere	4.3, 6.2.1
Hector's beaked whale	<i>Mesoplodon hectori</i>	S hemisphere	4.3, 6.2.1
Andrew's beaked whale	<i>Mesoplodon bowdoini</i>	SA	4.3, 6.2.1
Strap-toothed whale	<i>Mesoplodon layardi</i>	QLD Coast	4.3, 6.2.1, 8
Melon headed whale	<i>Peponocephala electra</i>	NSW Coast	4.3, 7.1
Common dolphin	<i>Delphinus delphis</i>	NSW; VIC; TAS	2.1.1, 2.2, 3.1.1, 4.2 4.3, 7.1, 7.2
Short-beaked common dolphin	<i>Delphinus delphis</i>	SA	4.2, 4.3, 7.1
Long-beaked common dolphin	<i>Delphinus capensis</i>	QLD	7.1
Bottlenose dolphin sp.	<i>Tursiops sp</i>	VIC; QLD; WA; SA	4.3, 9, 11.1
Indo-Pacific bottlenose dolphin	<i>Tursiops aduncus</i>	SA; NSW Coast	2.1.2, 4.2, 4.3, 7.1
Common bottlenose dolphin	<i>Tursiops truncatus</i>	NSW Coast; TAS; SA; Australian	2.1.1, 2.1.2, 3.1.1, 3.1.2, 3.2, 4.1, 4.2, 4.3, 7.1, 8, 9, 11.1, 11.2
Irrawaddy dolphin	<i>Orcaella brevirostris</i>	WA Coast; QLD	2.1.2, 7.1, 11.1
Indo-Pacific humpback dolphin	<i>Sousa chinensis</i>	NSW Coast; QLD Coast; Indian Ocean	2.1.1, 2.1.2, 2.2, 3.1.1, 4.3, 7.1, 9, 11.1
Risso's dolphin	<i>Grampus griseus</i>	VIC	4.3
S Right Whale Dolphin	<i>Lissodelphis peronii</i>	SA	4.3, 8
Dolphin sp.		QLD	4.3, 7.1
Whale sp	<i>Incertae sedis</i>	VIC	4.3
Whale sp.		QLD	6.2.2

2. Sightings data

2.1 Field work

2.1.1 SYSTEMATIC

Various Cetaceans—Southern Ocean

A cetacean sighting and passive acoustic (sonobuoy deployment) survey was conducted by a joint Southern Ocean Cetacean Ecosystem (SOCEP)/Scripps Institute of Oceanography (SIO) team during ANARE Voyage 1 (5 October – 14 November 2004) on the *RV Aurora Australis*. Voyage 1 made a return journey from Hobart to Casey station, Antarctica. Visual survey effort was 117 hours, ASPeCT sea ice data were collected, and eight sonobuoys were deployed. Cruise reports from this voyage are held by D Thiele and the Australian Antarctic Division.

Twenty-three sightings were made of 48 animals, including ordinary minke whales (16 sightings /23 animals), 'like' minke whales (1/1), killer whales (1/8), 'like' killer whales (1/1), a 'like' sei whale (1/1), an unidentified large baleen whale (1/1), a 'like' pilot whale (1/1), and common dolphins (1/12).

Humpback Whales—Cape Byron, NSW

The Cape Byron Whale Research Project (Dave Paton SCU WRC) studying the migration patterns, distribution, abundance, and behaviour of humpback whales (*Megaptera novaeangliae*) took place from and off Cape Byron, northern New South Wales between the 19th June and the 11th July 2004. The research project was divided into two aspects: i.) Land based survey using a theodolite interfaced with a lap top computer to position and track whales as they migrate past the coast and ii.) Photo-identification from a small vessel to identify individual animals from fluke and lateral body colouration patterns and markings. Sloughed skin samples were also collected opportunistically for DNA analysis.

Land based survey summary

Observation hours	# whales observed	# pods observed	Avg. pod size	Avg. # pods/day	Avg. # humpbacks/day
148 hrs 33 min	844 (including 7 calves)	417	2.02	26 (range 15-42)	53 (range 29-79)

Vessel survey summary

Hrs on water/ Hrs with whales	# pods encountered	# whales observed	Avg. pod size	# whale photo identified	# sloughed skin samples
107hrs 43min/ 47hrs 35min	102	255	2.5	170 (66.7% of all approached)	118

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

Humpback whale—Ballina, NSW

The Ballina Whale Research Project (Dan Burns, SCUWRC) is aimed at determining population characteristics of humpback whales (*Megaptera novaeangliae*) migrating along the east coast of Australia, including timing and speed of migration, association patterns, and pod characteristics. Fieldwork was conducted between the dates of the 1st September and the 6th November 2004. The project involved vessel-based photographic identification of individual whales passing Ballina / Lennox Head during their southern migration 2004, as well as opportunistic sloughed skin sampling for genetic analysis. Land-based observers were also utilized during the project, conducting counts of whales passing Lennox Head and radioing locations of pods to the research vessel.

Land based survey summary

Observation hours	# whales observed	# pods observed	Avg. pod size	Avg. # pods/day	Avg. # humpbacks/day
156 hrs 58 min	510	319	1.59	12 (range 0-27)	19 (range 0-55)

Vessel survey summary

Hrs on water/ Hrs with whales	# pods encountered	# whales observed	Avg. pod size	# whale photo identified	# sloughed skin samples
117hrs 24min/ 50 hrs 06 min	93	210	2.26	Currently being analyzed	74*

*NB. This includes skin samples from the white whale 'Migaloo'

Identification photos have not yet been sorted and entered into the SCUWRC humpback whale database for comparison and full life history analysis. This work is currently underway. All sloughed skin samples will be individually identified (using 14 micro-satellite loci and d-loop) and sexed. Individual identification results will be entered into the new SCUWRC humpback whale database for comparison and full life history analysis. Skin samples from the white whale 'Migaloo' have been sexed and genotyped, and will be compared to all other samples held at SCU for relationship information. The samples will also be analysed for the presence and/or type of albinism exhibited.

Humpback whale—Cape Solander, NSW

An ongoing study of the migration patterns, distribution and abundance of humpback whales (*Megaptera novaeangliae*) undertaken from Cape Solander, New South Wales since 1998. This project involves daily counts of humpback whales from a land based platform during daylight hours from late May until the end of July. This year 41 volunteers logged 2487 observation hours between 24 May and 31 July. A total of 1094 whales were counted over 66 days in 2004.

Humpback whale—SE QLD

Dedicated land-based visual surveys of humpback whales were undertaken during northward and southward migrations along the coast of south-eastern Queensland (Dr Michael Noad—University of

Queensland).

Humpback whale—Hervey Bay, QLD, The Oceania Project

The Oceania Project conducted the 13th year of fieldwork of a long-term survey of humpback whales in Hervey Bay. Boundaries of the survey area are Rooneys Point, Fairway Buoy, Coongul Creek and west coast of Fraser Island within the Whale Management and Monitoring Area of the Hervey Bay Marine Park. The survey is being undertaken in conjunction and collaboration with the Queensland Environmental Protection Agency.

The 2004 survey was undertaken from a 12 m vessel for 59 days between August 8th and October 15th involving a total of 472 hours of effort. Observations were made on 953 individual humpback whales in 418 pods. A total of 5629 photo-identification photographs were obtained, 5 hours of behavioural DV video and 2 hours of DAT whale song recordings. Two faecal samples and 229 sloughed skin samples were obtained.

Systematic observational data of pods included date, time, GPS positions, number of individuals, composition and behaviour. Photography of ventral flukes, lateral body colouration patterns and left and right dorsals were obtained as well as behavioural video and samples of whale song. A comprehensive field report is submitted to the Queensland Environmental Protection Agency entitled 'The Oceania Research Project - A Long Term Survey (1992-2004) to study Ecology and Behaviour of Humpback Whales in the Hervey Bay Marine Park, Queensland Australia - Field Report Year 15 – 2004'.

Humpback whale, Hervey Bay, QLD, Pacific Whale Foundation (PWF)

Aerial surveys comparable to those flown by PWF in 1992 (Forestell *et al.*, 1993) were undertaken in order to determine the extent of change in relative abundance and distribution of humpback whales in Hervey Bay. In addition, an estimate of the relative number of boats within 0.5 km of pods with or without calves will help clarify the extent of cumulative impact of commercial and private whale watching activity.

Nearly 33 flight hours provided 23.57 hours on survey transect. A total of 203 pods were observed, comprised of 388 whales, of which 342 were adults, seven were sub-adults and 39 (11.4%) were calves. A total of 216 vessels were recorded within 0.5 km of the 203 observed pods. Other marine mammals observed included dugongs (135), dolphins (748 groups, species undetermined) and minke whales (1). Analysis is currently underway comparing 2004 Hervey Bay aerial data to survey data collected in 1992 by PWF.

Humpback whale—Northwest Cape, WA

Vessel and aerial surveys were carried out by the Centre for Whale Research (CRW), WA (Curt and Micheline Jenner and Vanessa Sturrock)

Vessel Surveys—Small boat surveys were carried out over the late-June to late-October periods of 2004. A control and an experimental survey were conducted every 10 days in an effort to identify the temporal and geographic dispersal patterns of humpback whales and other “mega fauna” in relation to BHP Billiton Petroleum’s and Woodside Energy’s petroleum leases northwest of North West Cape. A total of 1285 humpback whales were sighted in 29 passing mode surveys during the northern, transition and southern migrations

Aerial Surveys—Aerial surveys (n=4) were carried out over Exmouth Gulf during the peak of the humpback whale cow/calf southern migration in October, 2004 on behalf of Straits Salt Pty Ltd who propose to mine and export salt from this area. A total of 330 whales were sighted in 10.6 hours of surveying. A significant proportion of the pods sighted contained cow/calf pairs (37%, 79/213) confirming the areas importance as a resting area for Group IV cow/calf pods.

Humpback whale—NSW coastline (ORRCA)

The volunteer group ORRCA conducted an annual count of Humpback Whales *Megaptera novaeangliae*. The survey is conducted off a number of prominent headlands along the NSW coastline (10 standard sites replicated annually), and data is gathered on an annual basis. No data analysis or directed research is conducted, but information includes number of sightings, time-bearing-distance, social group size, interspecies interactions, behaviours, etc.

Blue whale—Bonney upwelling region off VIC and SA

The Whale Ecology Group made 158 sightings of blue whales, totalling 220 whales sighted. Many whales were presumed to have been re-sighted on more than one survey day. Maximum number sighted (without re-sights) during a single aerial survey was 50. Sightings occurred in waters adjacent to both Victorian and South Australian coasts.

Summary of sightings from various sources

Source	# of sightings	# of whales
Aerial surveys	133	181
Vessel surveys	23	36
Fishers' network	2	3
Totals	158	220

Blue Whale—Geographe Bay and Perth Canyon, WA, Chris Burton (Western Whale Research Pty Ltd)

Geographe Bay

Blue whales were observed using two methods of survey in Geographe Bay, south-western Australia, over a 6-week period, from November to mid December 2004. A combined total of 122 sightings of blue whales were made: 85 during land-based surveys and 37 from vessel-based surveys, being similar to results of 2003. Humpback whales and bottlenose dolphins were also observed and photographed.

Land-based sightings from a small rocky headland approximately 6 metres above sea level on Cape Naturaliste, showed a similar wide temporal distribution previously recorded from surveys conducted in 2003. Blue whales were observed close to land during early morning and evening as well as in the middle of the day, moving predominantly from east to west, outside of the Bay. Blow rates of several pods were recorded during their transit past the sighting location. Photo-identification was undertaken on some pods transiting very close to the Cape.

Thirty two vessel-based surveys from whale watching and research vessels recorded 37 sightings of blue whales in 19 pods of blue whales, including 2 calves, close to the Cape. Approximately 70% of sighted blue whales were observed from the research vessel, as sighting data was not continued from the whale-watching operator after November 18. Possibly twenty five sets of identification photos of blue whales were obtained.

Perth Canyon

In continuation of work since 1999, aerial surveys in the Perth Canyon area, south-western Australia, (ca 32°S, 115°W) were conducted during January-May 2004. Two transect designs were adopted, running alternatively. The dedicated Perth Canyon transects continued, as in past years, in tandem with a 'northern extended area' survey consisting of 3 parallel transects commencing north of Rottneest Island at 31° 00'S near Lancelin and terminating south near Mandurah at 32 30°S.

Five flights were flown in the Canyon survey area and six in the 'northern extended area' from January to April 2004. Significantly higher numbers of blue whales were reported in the Canyon area with ninety blue whale sightings in 79 pods consisting of 11 pairs and 68 singles were recorded (Table 1). The highest number of sightings (40) was made during the flight in March. 50 sightings of blue whales were made from transects flown in the 'northern extended area' during the same period, with an interesting aggregation of animals reported from the deeper waters off Lancelin, with evidence of feeding behaviour.

Blue whale—Perth Canyon, WA

Vessel surveys were carried out by CWR, WA (Curt and Micheline Jenner and Vanessa Sturrock). Over the January to April period of 2004, a series of 39 vessel surveys were carried out in the Perth Canyon to observe pygmy blue whale activity in this area. Work included: photo-identification, behavioural observations, genetic sampling, echo-sounder logging and deployment of satellite tags. A total of 208 blue whales were observed in 2004, with photo-identifications of 110 animals and biopsy samples of 30 being obtained. These studies constituted part of the Western Australian Exercise Area Blue Whale Project.

Southern Right Whale—southern Australia (WA and SA)

John Bannister (WA Museum) continued close inshore southern right whale aerial surveys off southern Australia between Cape Leeuwin (WA) and Ceduna (SA) in winter/spring 2004. Two 'short' flights, on

16-18 July, and 14-16 October, between C Leeuwin and Twilight Cove, WA, maintained the series of annual flights on the southern WA coast since 1976. A 'long' flight, between C Leeuwin, WA and Ceduna, SA on 29 August-2 September, continued the series extended along the coast into South Australia annually from 1993, and was used for yearly comparison of the 'Australian' population. The number recorded on the 'long' flight in 2004 (371 animals including 106 calves) was not as high as expected given the previous strength of that 3-year cohort in 2001 (414 animals including 133 calves). Nevertheless, significant positive increase rates were obtained for 'all' animals and cow/calf pairs in that data series. For cow/calf pairs the increase rate for the period 1993-2004 is 6.47% ($p=0.004$). But the 95% CI remains wide (1.71-11.23%) in line with a 1997 power analysis indicating the need for a time series to 2007 to provide a reliable result.

Southern right whales—SA

Dr DJ Needham continues aerial survey and photographic identification of Southern Right Whales (*Eubalaena australis*) in SA. Aerial survey August 25 2004 = Females + calves =33, Adults = 17; Southern right whale (*Eubalaena australis*) Head of Bight, 0900 hours to 0946 hours.

Bottlenose Dolphin—northern NSW

Surveys of behavioural and acoustical observations of the inshore bottlenose dolphins and common dolphins have been conducted for the past two years (Bottlenose Dolphin Project—SCU) along the coast of northern New South Wales between Brunswick Heads and Ballina to 5 nautical miles offshore. Behaviour and acoustic recordings were made to investigate the influence of vessel activities on the group cohesion and communication of inshore bottlenose dolphins (*Tursiops aduncus*). These surveys also aimed to gather population data of small cetacean species within the newly established Cape Byron Marine Park. Observations were made from a number of different vessel types (i.e. powerboat, yacht and kayak) and from land stations positioned along the coastline of the survey area. During vessel surveys, acoustic recordings were made using both a single hydrophone system and a two channel towed hydrophone array, in addition to behavioural and photo identification footage. Observations are made on a seasonal basis (summer, autumn, winter, spring) to obtain seasonal comparisons of behaviour and abundance of animals. Approximately 773 hours of observations have been conducted to date. With a total of 2769 individual dolphin sightings that compiled 218 individual pods. Of these individual dolphins, 214 were individually catalogued using individually distinct markings from the dorsal fin.

Bottlenose Dolphin—Port Phillip, VIC

The Dolphin Research Institute conducted surveys on the bottlenose dolphin population in southern Port Phillip from January to December 2004. Surveys were conducted in the Gippsland Lakes region in the month of July, August and October 2004. During 2004, the Institute collected dorsal fin photographs for use in photo-identification of individuals, and collected behavioural data. Shore based observations, primarily concerned with dolphin movements and behaviours were also collected in southern Port Phillip. Researchers conducted 13 shore-based surveys and 33 surveys from the Institute's vessel, resulting in approximately 141.25 field hours. A total of 49 sightings of dolphins were made over this period.

Indo-Pacific humpback dolphin surveys—Moreton Bay, QLD

Brenda Healey (EPA) carried out surveys (weather and operations permitting) 1-2 times per month for approximately 4-5 hours each. Surveys are conducted in southern Moreton Bay. Any sightings are recorded and photo identification of dorsal fins is taken for the southern bay catalogue and comparison to Peter Hale's (UQ) northern bay catalogue. Behaviour and pod composition are also recorded. The surveys are also trying to identify critical habitat.

Various odontocetes—Bonney Upwelling off VIC

The Antarctic Wildlife Research Unit recorded data on the species assemblage and distribution of cetaceans over a total of nine aerial surveys and one boat survey conducted throughout the offshore (> 200 m depth) region of the Bonney coast, south-western Victoria between 141°E and 142.5°E during the months December 2003 – May 2004. A total of seven species groupings with a minimum of 76 individuals were identified on six of the ten surveys throughout the region, all of which were odontocetes including *Globicephala* sp., *Physeter macrocephalus*, *Delphinus delphis*, *Orcinus Orca*, unidentified small cetaceans, unidentified dolphins, and unidentified beaked whales.. Full details of the surveys can be referred to in Evans (2004).

2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY

New South Wales

Opportunistic surveys of Bottlenose Dolphin (*Tursiops aduncus*) were conducted by local (Hastings River) commercial “dolphin watch” tour operators (in consultation with DEC staff) as an adjunct to tour activities. Survey data includes habitat use (location based), group size, reproductive success of group(s) by calf survival, etc. Data is not currently used in analysis or directed research. (see also 3.1.1 below)

Based on network of informal community contacts, DEC staff opportunistically attend all reports of Southern Right Whale, to obtain photo documentation of callosity patterns, and record calving events in a current northward expansion of contemporary accepted calving range. Data (including photography and callosity sketches) is forwarded to Mandy Watson (Victorian Dept of Sustainability and Environment) who is co-ordinating a National SRW Photo Id catalogue. (see also 3.1.1 below)

Victoria

The Dolphin Research Institute continued building its community dolphin-sighting network which has resulted in the recording of regular dolphin sightings within most of Victoria’s coastal waters including Port Phillip, Western Port and the Gippsland Lakes, resulting in approximately 147 sightings of cetaceans being reported throughout the year. Most reports are of bottlenose dolphins, but some other species reported included blue whales (*Balaenoptera musculus*) and killer whales (*Orcinus orca*), as well as several unidentified whales.

Tasmania

Most sighting (including strandings) are reported to Nature Conservation Branch, (NCB), Tasmania by members of the public. A whale hotline phone (staffed 24 hrs a day) has been used successfully since 2002 to enhance public participation in the reporting of cetacean occurrences. All sightings are entered into the Tasmanian Cetacean Database. Since its introduction, reporting of cetacean sightings (excluding common and bottlenose dolphins has increased to 144) has significantly increased. NCB staff followed up reports as soon as possible and every effort is made to confirm sightings. Cetacean identification brochures describing most frequently observed species have been produced and circulated to the public to assist in the confirmation of sightings.

Cetacean sightings/observations for 2004: Southern right whales (46 events, n=110), Humpbacks whales (56 events, n=107), Killer whales (9 reports, n=17), Sperm whales (2 events, n=21), Unidentified beaked whale (2 n=2), Unidentified cetaceans (35 reports n=170), unidentified pilot whale (2 events, n=18) and a false killer whale (1 event, n=1).

NCB staff undertook 4 aerial surveys in response to public reports of sightings in 2004. Aerial surveys totalled 3 hrs 45 mins, July-August. Three of these identified and photographed Southern right whales – Derwent estuary (2 whales on 25/8/04), Marion Bay/Hellfire Bluff (5 whales on 15/7/04, 3 whales on 20/7/04).

West Australia

An opportunistic survey of the North West Coast of Western Australia (Kimberley Coast) for Irrawaddy dolphins was carried out during a yacht cruise from Darwin to Broome (4 – 18 September 2004). There was a survey effort of 125 hours in nearshore coastal and riverine habitats resulting in 7/ 36 sightings/animals of Irrawaddy dolphins from Cape Londonderry to Broome. Other cetacean species were also sighted, including blue whales (1/1), humpback whales (52/82), bottlenose dolphins (2/11), false killer whales (1/40), unidentified dolphins (10/32), and unidentified whale/dolphins (1/1). Other wildlife and habitat also recorded. Irrawaddy sighting network initiated in Broome (September 2004) with local fishers and recreational boat users. Cruise reports of this survey are held by D Thiele and WDCS.

Queensland

In N QLD, Dr R.A. Birtles and Dr P.W. Arnold continued dwarf minke whale observations from the *Undersea Explorer*, a 25 m-long commercial live-aboard dive vessel, during six weeks of six-day dedicated minke whale trips (June 5-July 16, 2004). Additional whales were seen in later weeks (when the vessel covered a different route including Osprey Reef in the Coral Sea); these were reported on sighting sheets (see below).

Substantially the same route was covered in each of the six core weeks - from Port Douglas to the Outer Barrier Reef Ribbon Reefs east of Lizard Island with a watch maintained throughout daylight hours. There were 70 encounters with dwarf minke whales, of which 39 included an underwater interaction. The total number of whales seen in these encounters was 216-241, of which 168-187 were seen underwater. Surface and underwater observations were routinely made during encounters, concentrating on recognising individual whales and documenting whale-swimmer interactions. Sighting sheets were received from all live-aboard dive vessels running swim-with-whale programs (the return of these has been a permit requirement since the 2003 season). Those returns are being analysed (217 encounters/ 187 dwarf minke whales, 30 incidental humpback whale sightings) from 14 vessels.

In South Queensland, PWF conducted vessel-based research activities to document the use of Hervey Bay Marine Park by humpback whale mothers with calf. Research was undertaken from 9 August 2004 until 22 October 2004 to conduct non-invasive boat-based research to photographically identify humpback whales. In addition, songs of humpback whales (when detected) were recorded. Observations were conducted from a 15 m private sailing vessel *Pennant* from 9 August - 16 September, and from commercial whale watch vessels (*Volante IV*, *Spirit of Hervey Bay*, *Kingfisher*, *Tasman Venture* and *Blue Dolphin*) departing Urangan Boat Harbour from 19 September - 22 October. Data were collected opportunistically in the form of digital photographs, audio tape recordings and real time observations. A total of 969 whales (369 pods) were observed during 375 hours of vessel effort (conducted during 53 days of field effort). Fluke and lateral body identification images were collected on all pods, and analysis is currently underway comparing within season sightings to PWF's Australian Humpback Whale Catalogue.

Lastly, in Moreton Bay Marine Park, log books are kept on all Queensland Environmental Protection Agency marine park vessels for recording incidental sightings of Indo-Pacific humpback dolphin (contact Brenda Healey—EPA for details)

South Australia

Sightings for 2004 have not been catalogued on the computer yet. Mike Bossley continues his series of opportunistic sightings of dolphins from tour boats in Gulf St Vincent.

Commonwealth Waters

In 2004, AFMA fisheries observers were present on board: 124 fishing trips to the Eastern Tuna and Billfish Fishery, seven fishing trips to the Southern and Western Tuna and Billfish Fishery, six fishing trips to the South East Trawl Fishery, all fishing trips to the Heard, McDonald and Macquarie Island Fisheries, two trips to the Purse Seine Fishery, one trip to the North West Slope Trawl Fishery, three trips to the Gillnet, Hook and Trap Fishery, two trips to the Coral Sea Fishery, and nine trips to the Small Pelagic Fishery. The following are sightings made by AFMA fisheries observers, from commercial fishing vessels between 1 January 2004 and 31 December 2004: humpback whales (5 sightings/11 animals), pilot whales (8/82+), Southern right whale (1:1), sperm whales (11/91-101), and an unidentified cetacean (1/1). Contact Cate Coddington (AFMA) for details.

During the year 2004, in the Eastern and Western Tuna and Billfish Fishery logbooks, there were 89 reported incidences of depredation on fish by pilot whales from longline fishing operations. These occurrences were assumed to be pilot whales due to the physical characteristics of the damage evident on fish heads which remain on the hooks.

2.2 Analyses/development of techniques

Antarctic cetacean survey analysis

All data from SOCEP and other Antarctic cetacean cruises conducted under IWC SO Collaboration are being archived into a single database – the Southern Ocean Cetacean Database. All sighting, effort, sea ice and image data are being collated for 32 cruises from 1995/96 to 2004/05. These data are being analysed under a number of Australian and international spatial analysis and modelling project collaborations to investigate circumpolar distributions, relationships with sea ice and other physical and biological variables. Minke whale habitat in sea ice: fuzzy coded classification and multiple correspondence analysis were conducted to investigate the relationship between minke whale distribution and sea ice characteristics (Thiele et al IWC 56/SC/E23)

East coast humpback whale count surveys

Dr. Michael Noad collected north-bound migration count data as part of the regular east coast humpback whale survey program funded by the Commonwealth Department of the Environment and Heritage. Data were collated, and double-count data were checked for matches and collated. Detailed analysis is to occur in 2005. Southward migration data were collected as part of the Humpback whale Acoustic Research Collaboration (HARC). This was the last year of a three-year program of fieldwork. All visual data were consolidated for all field seasons. Detailed analysis is to occur in 2005-06.

Photo identification of humpback whales

The Oceania Project's photography in Hervey Bay for 2004 has been recorded in the field notes log, analysed and archived on CD. The catalogue total for the period 1992-2004 is 2442 flukes.

In continuation of work since 1989, vessel based surveys of humpback whales in the inshore coastal waters off Perth and Rottnest Island, south-western Australia, (ca 31° 50'S, 115° 30' W) were conducted during September to November 2004. Observations, GPS locations and photo- identification were made aboard two vessels during whale watching operations from Hillarys Boat Harbour, on the northern coastal suburbs of Perth. To date no analysis of the collected data has been attempted, however from all accounts the season was typical of previous years. Many photographs were again taken in 2004 to be added to the previous 16 years data for inclusion into the WA humpback photo-id catalogue. Contact Chris Burton (Western Whale Research Pty Ltd) for details.

Photo identification of humpback and Southern right whales, Flinders Bay, WA

In continuation of work conducted since 1995, Chris Burton (Western Whale Research Pty Ltd) reports on vessel based surveys in the inshore coastal waters of Flinders Bay near Augusta, south-western Australia, (ca 34° 20'S, 115° 15' W) were conducted from late May to August 2004. Observations, gps locations and photo-identification were made aboard two whale watching vessels operating from Augusta, near Cape Leeuwin. Humpback and southern right whales were observed on most trips. A pair of westward moving blue whales was also observed during the second trip in early June, a similar time to two animals observed in 2003. To date no analysis of the collected data has been attempted, however the season was typical of previous years, with large numbers of humpback reported in July and an increase in the sightings of southern right whales with new-born calves from August. Many photographs were again taken in 2004 to be added to the previous 16 years data for inclusion into the WA humpback photo-id catalogue.

Underwater measurements—Dwarf minke whale

Working with Andrew Dunstan (*Undersea Explorer*), Dr. Alastair Birtles, Dr. Peter Arnold, and Susan Sobtzick used underwater videogrammetry to measure dwarf minke whales. Results are being prepared for a Diploma thesis at the University of Rostock (see 11.2) and publication, based on replicate measurements of 24 individual whales in five encounters during 2003 and 60 individual whales from 29 encounters in 2004.

Identification of Indo-Pacific humpback dolphins

Data have not been analysed as yet; however, one individual identified in the southern bay has previously been identified by Dr Peter Hale's (UQ) studies in the northern bay. At least two new individuals have also been identified. Contact Brenda Healey (EPA) for details.

Integration of remotely sensed data with sightings surveys

The Antarctic Wildlife Research Unit *in-situ* collected and remotely sensed oceanographic data and integrated this with sightings data collected from the surveys detailed above. Full details of the data analyses carried part as part of this study can be referred to in Evans (2004).

Necropsy and histopathology

Australian Registry of Wildlife Pathology case number 4389.1. Animal was one (1) adult male common dolphin found stranded on Blacksmiths Beach, Newcastle, NSW. Animal rescued by NSW Department of Environment and Conservation and subsequently died. Referred to Taronga Zoo for necropsy and histopathology by DEC on 26/10/2004.

3. Marking data

3.1 Field work

3.1.1 NATURAL MARKING DATA

3.1.1 Species	Feature	Area/stock	2004 no. photographed	Catalogued (Y/N)	Catalogue total	Contact person/institute
Blue whale	Lateral pigment	Southern Australia	8	Y	30	P.Gill, M.Morrice Deakin University
	Lateral body	WA	2004/50	N	0	C Burton/Western Whale Research
Pygmy blue whale	Fluke	WA	2000-2004	Y	43	Jenner/CWR
	Left Lateral Body	WA	2000-2004	Y	174	Jenner/CWR
	Right Lateral Body	WA	2000-2004	Y	181	Jenner/CWR
	Sex ID	WA	2000-2004	Y	0	Jenner/CWR
	ID'd Cow/calf pairs	WA	2000-2004	Y	3	C&M Jenner/CWR
Southern right whale	Callosity	E Australia	2 adults and partial 2 calves	Y		Andy Marshall (NSW DEC) Mandy Watson (Vic DSE)
	Callosities	Tasmania	8	Y - To be forwarded to Mandy Watson	see Mandy Watson	Aleks Terauds, DPIWE
	Head callosities	Southern Australia	Ca 150	N	2830 images; 489 individuals	JL Bannister/WA Museum
	Callosity pattern	WA	2004/10 estimated	N	0	C Burton/Western Whale Research
Humpback whale	fluke	Group/Area V	170	Y	846	David Paton/Dan Burns SCUWRC
	Fluke	Group/Area V	Still under analysis	N	212 (2003 only)	Dan Burns SCUWRC
	Lateral Body	WA	9	N	NA	D. Thiele Whale Ecology Group. Deakin University
	Ventral fluke	East Australia	125	Y	272	J. Smith/ M. Noad, UQ
	Lateral body	East Australia	11	Y	33	J. Smith/ M. Noad, UQ
	Flukes/ L-R dorsal/ Body marks	Area V, Hervey Bay	953	Y	2442	Trish Franklin, The Oceania Project
	Flukes, Lateral body	Hervey Bay, E Australia	729	N (comparison underway)	2600+	Greg Kaufman, PWF
	Fluke	WA	1990/2004	Y 1990-1998, 2003,2004	1496	C&M Jenner/CWR
	Left Lateral Body	WA	1990/2004	Y	1988	C&M Jenner/CWR
	Right Lateral Body	WA	1990/2004	Y	2000	C&M Jenner/CWR
	Sex ID (including biopsy results)	WA	1990/2004	Y	411	C&M Jenner/CWR
	ID'd Cow/calf pairs	WA	1990/2004	Y	285	C&M Jenner/CWR
	Lateral body+flukes	WA	2004/100 estimated	N	0	C Burton/Western Whale Research
Bryde's whale	Dorsal fin	Ballina	3	Y	3	Liz Hawkins, SCUWRC
Indo-Pacific humpback dolphin	Dorsal fin	Moreton Bay	>2 new animals in addition to UQ catalogue	Y	>100	Peter Hale, UQ/Brenda Healey, EPA
<i>Tursiops aduncus</i>	dorsal fin	Port River estuary, SA	Photographed: 17 (new)	Y	256	Dr Mike Bossley, The Australian Dolphin Research Foundation. (ADRF)

3.1.1 Species	Feature	Area/stock	2004 no. photographed	Catalogued (Y/N)	Catalogue total	Contact person/institute
Bottlenose dolphin	Dorsal fin	Port Phillip & Gippsland lakes	~70	Y	~110	A Goldsworthy, Dolphin Research Institute
	Dorsal fin	Northern NSW	308	Y	308	Liz Hawkins, SCUWRC
	Dorsal fin, body, etc	NSW–Hastings River	approx. 30	Y		Andy Marshall (NSW DEC) John Fowler (Port Macquarie Cruise Adventures)
Common dolphins	Dorsal fin	Northern NSW	~100	Y	50	Liz Hawkins, SCUWRC

Southern right whale photo-identification

Nature Conservation Branch (TAS) is working in collaboration with Mandy Watson of the Department of Sustainability and Environment (VIC) to assist in the formation of the SRW photo ID catalogue.

Humpback whale photo-identification

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

PWF made observations from various whale watch vessels operating from Urangan Harbour, Hervey Bay (see 2.1.2). Photo-identification was undertaken using established procedures (Kaufman *et al.*, 1986, 1993; Garrigue *et al.*, 2000; Forestell *et al.*, 2003) that have led to the identification of over 2600 humpback whales along the east coast of Australia.

Dwarf minke whale studies

Dr Alastair Birtles (JCU) and Dr Peter Arnold (MTQ) continued identification studies of the dwarf minke whale. During the 2004 season, recognition of individual dwarf minke whales based on scar and colour pattern variations, as well as length measurements, were priorities. Approximately twelve hours of video and 3900 still images were taken for photo-identification.

Pygmy blue whale photo-identification

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

Bottlenose dolphin photo-identification

Janet Mann (Georgetown University) work continues to digitally trace bottlenose dolphin dorsal fins and update their catalogue of about 900 animals.

3.1.2. ARTIFICIAL MARKING DATA

3.1.2 Species	Date tagged	Release location		Tag Number	Contact person/institute
		Latitude	Longitude		
Bottlenose Dolphin	18/06/2004	-41.1408	146.541	W00-048	R. Gales/DPIWE
	09/08/2004	-42.9198	147.4746	W00-250	R. Gales/DPIWE
Common dolphin	21/09/2004	-40.7984	145.259	W00-200	R. Gales/DPIWE

Note: No re-sight information to date. All tags are external

3.1.3 TELEMETRY DATA

3.1.3 Species	Tag type	# successfully deployed	Max. time transmitting	Contact person/institute
Pygmy blue whale	Satellite	4	0.5 days	C Jenner / CWR, N. Gales/AAD
	Satellite	1	7 days	C. Jenner / CWR, N. Gales/AAD
	Satellite	1	0 days	C. Jenner - CWR, N. Gales – AAD
Blue whale	Satellite	1	3 weeks	N. Gales – AAD, University of California, Santa Cruz
Humpback whale	Satellite	4	3 weeks	N. Gales – AAD, University of California, Santa Cruz
	Acoustic tag (DTAG)	20	0 transmitting (6 hour attachment)	N. Biassonni, Woods Hole Oceanographic Institution, USA; M. Noad, UQ

3.2 Analyses/development of techniques

Humpback whale fluke categorization

The SCUWRC Humpback Whale database has now been upgraded to include a new categorisation system for fluke matching. The system has undergone testing and will continue to be developed and updated as further testing is conducted.

Humpback whale acoustic tag (DTAG) studies

DTAGs are suction-cup tags designed to stay on the whales only for a few hours. They record depth, orientation in 3 axes, and acoustic data using a hydrophone. These were used to examine how the whales moved through the study area and how their movements and behaviours were correlated with the acoustic field. At this stage, minimal analyses have been conducted. All tags were deployed and recovered off the Sunshine Coast, Queensland.

Humpback whale studies

Trish and Wally Franklin, PhD candidates at Southern Cross University, are analysing data for the 11-year period 1994-2004 which was obtained during The Oceania Project's long-term humpback whale survey in Hervey Bay (2.2). The foci of their PhD work are 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'.

Humpback whale photo-identification

From the digital images, all the individual whales identified by fluke and lateral body markings are currently being compared to PWF's Australian Humpback Whale Catalogue. All images within that catalogue were checked for within-season sightings first. Analysis of the data will continue by comparing the identified whales from 2004 to PWF's Australian fluke ID catalogue. Efforts are further underway to compare PWF's Australian Humpback Whale Catalogue to the CWR West Australia Catalogue and the College of the Atlantic Antarctic Humpback Whale Catalogue. PWF is also working collaboratively with CWR and the newly created Australia Humpback Whale Research Group to develop a centralised, searchable data set of fluke identifications.

Dwarf minke whale studies

Analysis of data is still in progress by Dr Alastair Birtles (JCU) and Dr Peter Arnold (MTQ). To date, eight whales have been confirmed as within-season re-sightings. These included one animal that was seen in the same location 28 days later; one that travelled approximately 80 km north in two days or less and one that travelled 80 km south in 4 days or less. Nine between-year re-sightings included one animal that was seen twice in 2002 and another that was seen twice in both 2002 and 2003. Gender was determined for 31 individuals: 26 females and 5 males.

Humpback whale migratory patterns

Analysis of the CWR humpback whale database for migratory patterns continues (see Jenner et al. 2001).

Bottlenose dolphin photo-identification

The Dolphin Research Institute collected over 1,500 dorsal fin photographs throughout 2004. The Institute is still in the process of identifying all individuals.

4. Tissue/biological samples collected

4.1 Biopsy samples (sloughed skin samples)

4.1 Species	Area/stock	2004 no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Blue whale-presumed pygmy	WA (Perth Canyon)	30	N	In progress	50	JL Bannister/WA Museum
	WA (Perth Canyon)	30	Y	37	67	C. Jenner / CWR J. Bannister / WA Museum,
Humpback whale	Group/Area V	118	Yes	617	617	Megan Anderson SCUWRC
	Group/Area V	74*	yes	currently being analysed	103	Megan Anderson SCUWRC
	Area V	14 biopsy samples	Y	0	28	J. Smith/ M. Noad, UQ
	Area V	19 sloughed skin samples	?	?	60	J. Smith/ M. Noad, UQ
	Area V, Hervey Bay	229 sloughed skin samples	Y	1074	1075	W. Franklin, The Oceania Project
Group IV	2004 - 0	Y	256	256	C. Jenner / CWR, M. Brasseur, Edith Cowan University.	
Dwarf minke whale	N Great Barrier Reef	10 sloughed skin samples	?	?	?	A. Birtles, JCU/P. Arnold, MTQ
Bottlenose dolphin	Australian	2004 – 52	N	N	980	M. Krutzen / Univeristy of New South Wales

*this includes a skin sample from Migaloo (the white whale)

4.2 Samples from directed catches or bycatches

4.2 Species	Area/stock	2004 total	Archived	Tissue types	Contact person/institute
Common dolphin	TAS	2*	Y	Skin(2), blubber 2), muscle(2), lung(1), testis(1), jaw(1), stomach(2)	R. Gales/DPIWE
Bottlenose dolphin	TAS	3	Y	Skin	R. Gales/DPIWE
Indo-Pacific bottlenose dolphin	S.A.	3**	3Y	Genetic tissues, (blood, liver, kidney, muscle, skin) reproductives, stomach and intestines, toxic contaminants (liver, kidney, muscle, blubber)	C. Kemper/S.A.Museum
Short-beaked common dolphin	S.A.	2**	2Y	Genetic tissues, (blood, liver, kidney, muscle, skin) reproductives, stomach and intestines, toxic contaminants (liver, kidney, muscle, blubber)	C. Kemper/S.A.Museum

*note –samples not collected from all animals, number of individuals sampled is shown in brackets

**This list includes: entanglement possible/probable (e.g. animals with net marks/injuries and/or that have had flippers or flukes removed, and full stomachs and sometimes food in the oesophagus, suggesting a sudden death), entangled in tuna farm anti-predator net, entanglement in other types of net or line, accidental or intentional injury by humans for example, boat strike, shooting, stabbing.

4.3 Samples from stranded animals

4.3 Species	Area/stock	2004 total	Archived (Y/N)	Tissue type(s)	Contact person/institute
Bryde's whale	E Australia	1	N	Liver, kidney, muscle, blubber	Andy Marshall (NSW DEC)
Minke whale	Moreton Island	1	?	1. Head 2. Blubber, liver, skin, kidney, stomach contents,	1. Queensland Museum, 2. C. Limpus, EPA
Humpback whale	Group/Area V	2	Y	Skin, liver, lung	Megan Anderson SCUWRC
	E Australia	2		Blood samples	Shane Robinson (NSW DEC)
	E Australia, Northern NSW			Heart, liver, lungs, stomach, kidneys	Dr Peter Harrison/Christine Fury Whale Research Centre Southern Cross Whale Research Centre
	Group IV	2004/1	Y	Skin/Blubber	C.Jenner/CWR, Doug Coughran/ CALM
Pygmy right whale	Tasmania	3*	Y	skin (3), blubber (2)	R.Gales/DPIWE

4.3 Species	Area/stock	2004 total	Archived (Y/N)	Tissue type(s)	Contact person/institute
Sperm whale	TAS	22*	Y	skin (17), blubber(17), muscle (2), jaw(13), head (1), stomach contents(1), parasite(2)	R.Gales/DPIWE
	QLD-Stradbroke Isl.	1	?	1. Skull, 2. Cartilage (DNA)	1. Queensland Museum, 2. C. Limpus, EPA
	WA			Teeth	Western Australian Museum
Pygmy Sperm Whale	VIC	1	Y	Muscle	Rory O'Brien / MV
Killer Whale	S.A.	1	1Y	**See below	C. Kemper/S.A.Museum
Long-finned pilot whale	VIC	5	Y	Muscle	Rory O'Brien / MV
	TAS	75*	Y	skin(75), blubber(19), head(10), foetus(1), stomach contents(15), parasite(1)	R.Gales/DPIWE
	S.A.	1	1Y	**See below	C. Kemper/S.A.Museum
Cuvier's Beaked Whale	E Australia, Northern NSW			Heart, liver, lungs, stomach, kidneys, skin. Note the whole head was sent to the Australian Museum.	Seaworld on the Gold Coast - Dr David Blyde. Australian Museum – Sandy Ingleby. Southern Cross University – Whale Research Centre/DNA Surveillance Auckland University New Zealand
	VIC	1	Y	muscle	Rory O'Brien / MV
Hector's beaked whale		2004		Head	Western Australian Museum
Gray's Beaked Whale	Perth WA	2004/1	Y	DNA/full necropsy	C.Jenner/CWR, Doug Coughran/ CALM
Andrews Beaked Whale	S.A.	1	1Y	**See below	C. Kemper/S.A.Museum
Strap-toothed beaked whale	TAS	2*	Y	skin(2), blubber(2), muscle(1), kidney(1), liver(1), head(1)	R.Gales/DPIWE
Common Dolphin	VIC	1	N	Nil	Rory O'Brien / MV
	VIC	1	Y	Muscle	Rory O'Brien / MV
	TAS	4*	Y	skin(4), blubber(4), muscle(4), kidney(3), liver(4), lung(1), testis(1), jaw(4), stomach contents(3), faeces(1), parasite(2)	R.Gales/DPIWE
	NSW	1	Y	Skin, liver, kidney, spleen, reproductive tissue, lungs, blubber, head	Dennis O'Meally (Australian Museum), Claire Dawson (VLA Weybridge, UK), Tracey Rogers (AMMRC)
Short-beaked Common Dolphin	S.A.	8	3Y 5N	**See below	C. Kemper/S.A.Museum
Common Bottlenose Dolphin	S.A.	3	2Y 1N	**See below	C. Kemper/S.A.Museum
<i>Tursiops</i> sp	SE Australia	3	Y	Blubber, skin, teeth (3); all major organs (2)	Verne' Dove (Univ. of Melbourne) has samples for two animals. Steve McKechnie (Monash Uni) has blubber and skin for all three. DRI has teeth for two.
Bottlenose dolphin	QLD	1	?	Samples taken	C. Limpus, EPA
	S.A.	13	6Y 7N	**See below	C. Kemper/S.A.Museum
	TAS	21*	Y	skin (21), head (2), foetus (1), stomach contents (1)	R.Gales/DPIWE
Dolphin sp.	Wurtulla, Sunshine Coast	1	?	Skin (DNA)	C. Limpus, EPA
Risso's Dolphin	VIC	3	Y	muscle	Rory O'Brien / MV
Southern right whale dolphin	TAS	1	Y	whole animal	R.Gales/DPIWE
	S.A.	1	1Y	**See below	C. Kemper/S.A.Museum

4.3 Species	Area/stock	2004 total	Archived (Y/N)	Tissue type(s)	Contact person/institute
Indo-Pacific humpback dolphin	Moreton Bay	1	?	1. Head, 2. Skin, blubber	1. The University of Queensland, 2. Duty Ranger – Moreton Bay/ Queensland Parks and Wildlife Service
Indo-Pacific Bottlenose Dolphin	S.A.	4	3Y 1N	**See below	C. Kemper/S.A.Museum
Melon Headed Whale	E Australia, Northern NSW			Lung, kidney, heart, liver, stomach, uterus and meta cestode	Dr Peter Harrison /Christine Fury Whale Research Centre Southern Cross Whale Research Centre
Strap-toothed whale	QLD	1	?	1. Skull, 2. Organ samples, blubber, brain	1. Queensland Museum, 2. C. Limpus, EPA
Whale sp	VIC	1	N	Nil	Rory O'Brien / MV
Whale sp	VIC	1	Y	muscle	Rory O'Brien / MV

*note –samples not collected from all animals, number of individuals sampled is shown in brackets

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

4.4 Analyses/development of techniques

Whale prey DNA analysis

DNA from animal prey was isolated and identified from the faeces of a Fin whale. The prey items identified were all krill. The method also identified DNA from platyhelminths most closely related to blood flukes in other mammals. This analysis was published as Jarman *et al.* (2004).

Two humpback whale faecal samples were obtained in Hervey Bay in 2004 by the Oceania Project. The samples are being analysed by Dr Nick Gales and Simon Jarman, of the Applied Marine Mammal Ecology Group, Australian Antarctic Division, Hobart. Analysis of the samples will be undertaken using DNA technology developed at AAD to study the diet of marine mammals using faecal samples.

Humpback whale DNA analysis

DNA analysis of sloughed skin samples from the Oceania Project is 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 the end of 2005. The following references on the development of technique are relevant: Anderson, Hinten, Paton and Baverstock (2001) and Elphinstone, Hinten, Anderson and Nock (2003).

5. Pollution studies

Tasmania

Blubber samples archived for future analysis of pollutants, most likely with Bill Symmons, AGAL

Queensland

During the 2003 humpback whale season, The Oceania Project undertook the 12th 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, Environmental Sciences Division, EPA, Brisbane. Weekly triplicate Chlorophyll A samples were obtained from six structured geographical areas within the Hervey Bay Marine Park between August 8th and October 15th 2004. Outcomes of the first five years of monitoring (1993/1997) were published in Queensland Department of Environment and Heritage (1998). A report covering monitoring in Hervey Bay for the ten years 1993-2002 is being prepared by Andrew Moss, Environmental Sciences Division, EPA, Brisbane.

South Australia

The Environment Protection Authority (EPA) contracted Nicole Butterfield to analyse heavy metals (particularly lead) in bone and soft tissues from more *Tursiops aduncus*, *T. truncatus* and *D. delphis* from

South Australia. The results of this and her Honours thesis will be made available in the near future in the form of a public report produced by the EPA. It is hoped that a scientific paper will also be submitted this year.

Trish Lavery is undertaking her Honours degree at Flinders University on the effects of lead on bone in *Tursiops aduncus* from South Australia. Her results are not available yet.

6. Statistics for large cetaceans

6.1 Direct catches (commercial, aboriginal and scientific permits) for the calendar year 2004

Nil to report. Under the *Environment Protection and Biodiversity Conservation Act 1999*, it is an offence to kill, injure, take, trade, keep, move or interfere with whales and other cetaceans.

6.2 Non-natural mortality for the calendar year 2004 or the season 2003/04

South Australia—A dead adult Sperm Whale was reported from Hanson Bay, Kangaroo Island. First seen on 23 March 2004 (not collected by SAM). A broken lower jaw suggested an entanglement in a long-line but this was not confirmed.

6.2.1 STRANDINGS OR DEAD WHALES ENCOUNTERED AT SEA

6.2.1 Whale species	Sex	Location	Cause of death	Det.	Source or contact institution, contact name and telephone and/or e-mail
Brydes Whale	U	Dunbogan Beach, NSW	U		Andy Marshall (NSW DEC) andy_marshall@environment.nsw.gov.au
Minke whale	F	Moreton Island, 27°9.770'S, 153°22.164'E	U	U	QPWS
Pygmy right whale	U	35°48'S, 137°47'E	Alive and refloated		C. Kemper/SA Museum
Humpback whale	U	Flat Rock, Ballina, NSW	U	Juvenile, stranded live died on beach	Shane Robinson (NSW DEC) Shane.robinson@environment.nsw.gov.au
	U	Patches Beach, Ballina, NSW	U	Juvenile, stranded live died on beach	Shane Robinson (NSW DEC) Shane.robinson@environment.nsw.gov.au
	M	Fraser Isl., 24°58.410'S, 153°21.420'E	U	N	Queensland Parks and Wildlife Service (QPWS)
	M	Mackay, -21.1009'S, 149.2250'E	U	N	QPWS
	M	Double Island Point, Sunshine Coast, 25°58'10"S, 153°10'10"E	U	N	QPWS/DPI&F/Noosa Veterinarian
	U	Fraser Isl.and, 24°46.590'S, 153°7.170'E	Rescued alive	V*	QPWS
	U**	Wonga Beach, Cairns, 16°21.500'S, 145°26.000'E	Alive- left to natural processes	V	Public report
	M neonate calf	30.0570'S, 114.9656'E Green Head	Live stranded but died	U, Photos taken	Dept. CALM Doug Coughran Tel. 61 8 9334 0224
	F-calf	21°48'S, 114°04'E Jurabi (Ningaloo Marine Park)	U		Dept. CALM Doug Coughran Tel. 61 8 9334 0224
	U	21.8531°S, 114.0230°E Jurabi (Ningaloo Marine Park)	Shark predation	Photos taken	Dept. CALM Doug Coughran Tel. 61 8 9334 0224
	U-2004 calf)	20°23' S, 116°34'E Mermaid Sound	Shark predation	Photos taken	Dept. CALM Contact: Doug Coughran Tel. 61 8 9334 0224
U-2004 calf	21°51' S, 114°11' E Bundegi Beach	Shark predation	Photos taken	Dept. CALM Doug Coughran Tel. 61 8 9334 0224	
Sperm whale	M	QLD- Gladstone, 24°0.407'S, 151°41.492'E	U	U	QPWS
	U	QLD-Stradbroke Island, 27.6628'S, 153.4602'E	U	U	QPWS/Queensland Museum

6.2.1 Whale species	Sex	Location	Cause of death	Det.	Source or contact institution, contact name and telephone and/or e-mail
Sperm whale	M	Left Handers	U	U, advanced decomposition	Dept. CALM Doug Coughran Tel. 61 8 9334 0224
	M	32°20'S, 115°43'E Warnbro Sound	U	U, advanced decomposition	Dept. CALM Doug Coughran Tel. 61 8 9334 0224
	U	36°1'S, 136°52'E	U	Photos	C. Kemper/SA Museum
Pygmy sperm whale	U	31°28'S, 131°13'E	U	Photos	C. Kemper/SA Museum
Pygmy/dwarf sperm whale	U	Plomer Beach NSW	U		Andy Marshall (NSW DEC) andy.marshall@environment.nsw.gov.au
Strap-toothed whale	M	QLD-Yeppoon 23°3.688'S, 150°46.244'E	Shark attack	N and V	QPWS
Cuvier's beaked whale	U	The Pass, Byron Bay NSW	Kidney Failure	N	Shane Robinson (NSW DEC) Shane.robinson@environment.nsw.gov.au
Gray's Beaked Whale ***	F	32°38'S, 115°38'E Dawesville	Live stranded		Dept. CALM Doug Coughran Tel. 61 8 9334 0224
	F	Garden Island	Live, died on release	N	Dept. CALM Doug Coughran Tel. 61 8 9334 0224
Hector's Beaked Whale	F	34°48'S, 118°25'E Bluff Creek, Hassel Beach	U	U, Photos taken	Dept. CALM Doug Coughran Tel. 61 8 9334 0224
Andrew's beaked whale	M	33°33'S, 134°51'E	U	Dissection	C. Kemper/SA Museum
Comments: * Beached alive, dragged back into deep water, swam away. ** Calf, blood observed coming from bite to tail. ***Same whale re-stranded					

6.2.2 OBSERVED OR REPORTED SHIP STRIKES

6.2.2 Whale species	Sex	Date	Location	Vessel type	Speed	Fate	Source or contact
Unidentified cetacean*	U	12/11/04	TAS-East coast Bruny Island	6m Aluminium Dinghy	<10 knots	U	Rosemary Gales, DPIWE
Humpback whale	U	05/08/04	QLD-Port Douglas, 16°8.467'S, 145°36.890'E	PC (dive boat)	U	X	Dive boat
Whale sp.	U	02/08/04	QLD-Cleveland Bay, Townsville	U	U	U	Public report—Unconfirmed
* Animal not sighted again after strike, strike unlikely to have killed animal							

6.2.3 FISHERY BYCATCH

6.2.3 Whale species	Sex	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Humpback whale	U		Mid North Coast, NSW	R		8	A	Andy Marshall, NSW DEC
	U		Mid North Coast, NSW	U		8	A	Andy Marshall, NSW DEC
	U-6 whales	1/08/04	Byron Bay NSW	R	Crab	8	A	NSW DEC
	U	15/09/04	Byron Bay NSW	R		U	A	NSW DEC
	U	6/9/04	Byron Bay NSW	U	U	U	A	NSW DEC
	U	20/05/04	QLD- Currumbin, Gold Coast	R	Shark	0 – NSC	F	DPI&F

6.2.3 Whale species	Sex	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Humpback whale	F	19/07/04	QLD-Gold Coast, 28°2.353'S,153°26.6 92'E	D	Shark	0 – NSC	F	DPI&F/Sea World
	U	05/09/04	QLD-Surfers Paradise, Gold Coast	R	Shark	0 – NSC	F	DPI&F
	U	07/09/04	QLD-Kirra, Gold Coast	R	Shark	0 – NSC	F	DPI&F/QPWS
	U	25/09/04	QLD- Gold Coast	R	Shark	0 – NSC	F	DPI&F
	U	05/10/04	QLD-Maroochydore, Sunshine Coast	R	Shark	0 – NSC	F	DPI&F
	F	13/10/04	QLD-Rainbow Beach, Sunshine Coast	R	Shark	0 – NSC	F	DPI&F
	U	17/10/04	QLD- Rainbow Beach, Sunshine Coast	R	Shark	0 – NSC	A	Unconfirmed report
	U	16/08/04	QLD- Cairns area, 15°56.676'S,145°56. 151'E	R	Shark	7 – GEN	A	Fisher
	U	10/09/04	QLD-Gold Coast,	R	Spanner crab	8 – FPO	F	DPI&F
	U	09/09/04	QLD-Great Keppel Island	U	U	0 – NK	A	Unconfirmed report
	U	26/09/04	QLD-Mudjimba, Sunshine Coast	U	U	0 – NK	A	Unconfirmed report
	U	16/06/04	WA-27°35'S; 114°07'E 8nm NW of Kalbarri	R	Lobster	FPO	Boat search	Dept. CALM Doug Coughran Tel. 61 8 9334 0224
	F preg- nant	20/06/04	WA- 29°28'S, 114°43'E, 28km SW of Dongara	R	Lobster	FPO	Aerial search	Dept. CALM Doug Coughran Tel. 61 8 9334 0224
	U	23/06/04	WA- 30°56'S; 115°17'E North of Lancelin	R	Shark setline/drop line	LLS	Boat search	Dept. CALM Doug Coughran Tel. 61 8 9334 0224
	U	26/06/04	WA-West end of Rottnest Island	R	Lobster	FPO	Aerial search	Dept. CALM Doug Coughran Tel. 61 8 9334 0224
	U	13/07/04	WA- 31°52'S; 115°43'E Scarborough Beach	R	Lobster	FPO		Dept. CALM Doug Coughran Tel. 61 8 9334 0224
U	25/09/04	WA-15°29'S; 124°30'E, Darcy Island, Kuri Bay	R	Oysters (Pearling)	MIS	Pearling Crew	Dept. CALM Doug Coughran Tel. 61 8 9334 0224	

6.3 Earlier years' statistics

Nil to report.

7. Statistics for small cetaceans

7.1 For the calendar year 2004

7.1 Species	Area/stock	Directed catch		Incidental mortality			Live- capture
		Re- porte	Est. total	Reported	Est. total	Source	Reported
Bottlenose Dolphin	E. Australia Mid North Coast					shark proof netted swim enclosure – freed self	
	Northern NSW					Commercial Trawl	1*
	40°S; 149°E			3**	3	Trawl OTW	
	SE QLD, Fraser Island,			1	1	Boat strike	

7.1		Directed catch		Incidental mortality			Live-capture
Species	Area/stock	Re- porte	Est. total	Reported	Est. total	Source	Reported
Common Dolphin	NSW			1	1	Shark control net	
	TAS			1	1	fish farm net	
	TAS			1	1	washed up with tail flukes cut off	
	QLD-Kirra, Gold Coast			2	2	Shark Safety Program	
	QLD-Bilinga, Gold Coast			1	1	Shark Safety Program	
	QLD- Tallebudgera, Gold Coast			2	2	Shark Safety Program	
	QLD-Main Beach, Gold Coast			1	1	Shark Safety Program	
	QLD-Currumbin, Gold Coast			1	1	Shark Safety Program	
Long-beaked common dolphin	QLD-Surfers Paradise, Gold			1	1	Shark Safety Program	
	QLD- Main Beach, Gold Coast			1	1	Shark Safety Program	
Dolphin	QLD-Mermaid Beach, Gold Coast			1	1	Shark Safety Program	
	QLD-Wurtulla, Sunshine Coast			1	1	Shark Safety Program	
Indo-Pacific humpback dolphin	QLD-Rainbow Beach, Sunshine			1	1	Shark Safety Program	
Indo-Pacific Bottlenose Dolphin	S.A.	1 (shot)	U	2	U	possible entanglement, possible propeller strike	none
Short-beaked Common Dolphin	S.A.			2	U	possible entanglement, entanglement	none
Unidentified delphinidae	TAS			17	17	mid water trawler Ellidi T253	

*1 Live capture and successful release, no mortalities.

**Biological samples were taken by the Museum of Tasmania.

Note for QLD—A further 21 small cetaceans (3 Indo-Pacific humpback dolphins, 2 Irrawaddy dolphins, 8 bottlenose dolphins, 1 Fraser's dolphin, 2 melon-headed whales, 5 dolphin sp.) were recorded as having stranded during 2004 but the cause of death could not be determined for these.

7.2 Earlier years' statistics

Additional 2003 record:

		Directed catch		Incidental mortality			Live-capture
Species	Area/stock	Reported	Est. total	Reported	Est. total	Source	Reported
Common dolphin	QLD—Surfers Paradise, Gold Coast					Shark Safety Program	1 released alive from SSP net on 22/10/03

8. Strandings contact information

TAS

Contact Rosemary Gales or Aleks Terauds (Nature Conservation Branch, DPIWE, PO Box 44, Hobart, Tasmania, 7000) for strandings data from 33 events involving 197 animals in 2004. The dataset contains information on the date, location, responsible person and the action taken, for each event. The following species stranded in Tasmania in 2003: Sperm whale (3, n=25), Long-finned pilot whale (2, n=120), Pygmy sperm whale (n=1), Strap-toothed beaked whale (2, n=2), Pygmy right whale (2, n=2), Common dolphin (12, n=15), Bottlenose dolphin (2, n=22), Southern right whale dolphin (2, n=2), Unidentified dolphin (3, n=5), Unidentified cetacean (3, n=3).

QLD

Queensland Environmental Protection Agency, PO Box 15155, City East, QLD, 4002

Contact Officer: Dr Col Limpus - Queensland Marine Wildlife Stranding and Mortality Database.

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

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

Contact Officer: Dr P.W. Arnold.

The Queensland Environmental Protection Agency oversees the collection of stranded cetaceans in the state. Heads from cetaceans stranded in the central and northern Great Barrier Reef region have been deposited in the Museum of Tropical Queensland (70-102 Flinders Street, Townsville, QLD, 4810) for extraction and preparation of skulls. No material was deposited during 2004. Dr Peter Arnold can be contacted for details of specimens previously deposited.

Queensland Museum, PO Box 3300, South Brisbane, QLD, 4101

The Museum collects skeletal material from cetaceans found in Queensland for preparation.

VIC

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

Peter Gill from Whale Ecology Group, Deakin University recorded a female sperm whale stranded near Portland in January 2004.

WA

Contact Doug Coughran of West Australia Conservation and Land Management (Locked Bag 104, Bentley DC WA 6983, Tel. 9334 0224) for information regarding the WA strandings dataset.

SA

South Australian Museum: contact Catherine Kemper (North Terrace, Adelaide, SA 5000) for information from the SA Museum cetacean stranding database.

NSW

Department of Environment and Conservation: contact Andy Marshall or Kelly Waples (Department of Environment and Conservation—Parks and Wildlife Division, 43 Bridge Street, Hurstville, NSW 2220) for information from the NPWS strandings database.

9. Other studies and analyses

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

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

Blue whale ecology (Whale Ecology Group)

The Whale Ecology Group's analysis of blue whale ecology and preferred feeding habitat in the Bonney Upwelling continued during 2004, as part of Peter Gill's (Gill, 2004) and Margie Morrice's PhD studies. Indicated habitat descriptors include season, depth, shelf slope, distance from krill surface swarms, distance from surface fronts, and surface chl-*a* levels. During aerial surveys in April and December 2004, no blue whales were sighted in shelf-break waters west of Kangaroo Island, where many blue whales were found feeding during December 2003 (Morrice *et al.*, 2004).

Analysis of potential effects of seismic surveys on blue whales has continued, in collaboration with Santos Ltd. Whales were observed feeding on dense krill surface swarms to within 5km of operating seismic, suggesting that when sufficient food resources exist in relatively close proximity to seismic, blue whales may approach closer than expected in order to maximise their nutritional intake. However, acoustic exposure levels are not yet known, nor are long-term effects of such exposure (Morrice *et al.*, 2004).

Cetacean strandings (AWRU)

The Antarctic Wildlife Research Unit's time series analyses of the south-east Australian cetacean stranding record was conducted and related to oceanographic and climatology data. The results were presented at the Australian Marine Sciences Association conference in July 2004 and are currently in press (Biology Letters).

Humpback whale acoustic studies (Dr Michael Noad—UQ)

Controlled Exposure Experiments (CEEs): A small number of CEEs were carried out on humpback whales off the Sunshine Coast, Queensland, during the southward migration. Source levels were low, in the order of 155 dB re 1 μ Pa at 1m. Most experiments used some social sounds recorded from the whales in the previous year. Preliminary observations suggested that some pods were attracted to the sounds while others avoided them. The other sound type used was an artificial rising tone and preliminary observations suggested that there was little if any reaction to this sound. These results are preliminary however, and further analyses are required before real conclusions can be drawn.

Interactions between commercial fishers and dolphins (Dr David Neil—UQ)

Matrissse Watego (Honours student) and Dr David Neil (Supervisor) undertook an investigation of the interactions between commercial fishers and dolphins (*Tursiops* and *Sousa* sp.) in southeast Queensland waters. The research used mail questionnaires with follow-up telephone interviews. The purpose of the research was to catalogue commercial fishers' observations of dolphin behaviours, the nature of encounters between fishers and dolphins, and the attitude of fishers to those interactions. The findings extended the spatial extent of reported dolphin utilisation of trawler bycatch in the region into oceanic waters adjacent to Moreton Bay, and the spatial extent of particular behaviours associated with the trawler-dolphin interaction (e.g. dolphins untying cod-ends of trawl nets to access fish).

Indo-Pacific humpback dolphin surveys (Brenda Healey—EPA)

The main studies for this species (Indo-Pacific humpback dolphins) have been carried out by The University of Queensland (Dr Peter Hale), e.g. Hale, Long and Tapsall (1998). Population studies and photo identification catalogues estimate approximately 100 individuals in northern Moreton Bay.

Strandings workshop

DEH and IFAW ran a workshop titled 'Marine Mammal Strandings: Developing a National Approach' held in Sydney on 18-19 May 2004. Subsequently there has been progress in setting up an Establishment Committee to take forward the recommendations of the workshop. The proceedings for the workshop were also reported (see report by Ecolarge Consultants in 11.1).

Dwarf minke whale tourism monitoring (GBRMPA)

A second Dwarf Minke Whale Tourism Monitoring Program Research Contract began in the 2004 whale season (June-August). The project outcomes are: to analyse and evaluate whale sighting sheets supplied by permitted operators conducting swim-with-dwarf-minke-whale activities within the northern Great Barrier Reef Marine Park and provide such results to the tourism industry and the Authority to allow any changes that may be necessary in the monitoring program and/or management of the whale-swimmer interactions.

Bottlenose dolphin studies—West Australia

The following studies are taking place on bottlenose dolphins in 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: Behavioural ecology of juvenile bottlenose dolphins in Shark Bay
- H. Finn: Behaviour of bottlenose dolphins (PhD thesis). PhD almost completed.
- L. Bejder: Impact of boating and human activities on bottlenose dolphin in Shark Bay Marine Park (PhD thesis).
- Q. Gibson: Calf social development
- A. Coakes: Surveys of dolphins in Shark Bay and preparation of education materials.
- B. Sargeant: Conducted surveys to examine the relationship between habitat use and foraging type. Contributed to developing signage where beaching dolphins may be observed at Peron Point, Shark Bay.

Satellite tagging of humpback and pygmy blue whales—WA:

M. Jenner is conducting a study to attach satellite tags to humpback and pygmy blue whales

Western Australian Whale Watching Industry (CALM)

Licensed commercial whale watching in Western Australia (for southern right and humpback whales) for the 2004 season involved 113 licensed vessels. Data collected from whale watching operators regarding the number of passengers and whales seen during the 2003 and 2004 seasons are still being analysed. In 2002 a total of 595 reported whale watching trips were made with a total of 16,187 passengers participating in whale watching activities from licensed vessels. Ninety-five commercial dolphin watching licences were also issued during 2004.

Tursiops taxonomy (SAM—Kemper and Hale)

Hale and Kemper are preparing two manuscripts on *Tursiops* spp. population genetics. The results show that populations of *T. aduncus* are quite distinct between broad regions within Australia and when compared with other continents.

Kemper is studying the colour patterns of *T. aduncus* and *T. truncatus* in South Australia. Preliminary results show that it may be possible to distinguish these species on external characters.

Caperea skeleton (SAM—Kemper and Rommel)

Little progress has been made in describing the skeleton of this unique species.

Cause/circumstance of death of SA cetaceans (SAM—Kemper et al.)

A paper has been published summarising South Australian data (see below).

The Dolphin Trauma Unit continues to study dead dolphins from the eastern side of Gulf St Vincent. This is particularly relevant in light of the Port River Dolphin Sanctuary. Results are being summarised in an internal report and in part will be published in The Natural History of Gulf St Vincent due out in 2006.

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

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

Funding was received by Kemper, Harcourt, Gibbs and Ward to estimate population size of dolphins in Spencer Gulf. A trial flight in Gulf St Vincent has been completed and the main survey due to be flown during 16 and 26 April.

Southern right whale mortalities and entanglements in SA (SAM—Kemper et al.)

No progress was made on this research but it is hoped that a paper will be presented at the Australian Mammal Society meeting in Albany, WA in July.

Killer whales and human interactions in SA (Gibbs, Kemper and Byard)

A publication is now available on this topic. In addition, a killer whale collected from near Elliston in December 2004 showed evidence of human interactions but the cause of death could not be determined due to decomposition of the carcass.

Biology of *Tursiops aduncus* in the Adelaide region (SAM—Bossley and Kemper)

This long-term study is focussing on the behaviour, reproduction and movements of resident dolphins in the Port River of Adelaide. Bossley is at present summarising data and hopes to publish in the next year or two.

Kemper is summarising data on mortalities along the eastern shores of Gulf St Vincent and has made preliminary results available to DEH SA in relation to the Port River Dolphin Sanctuary. The summaries will include cause of death, trends in numbers of events over a 20-year period and life history parameters.

Southern right whales at Head of Bight (Needham, Pirzl)

Dr DJ Needham conducted aerial surveys at Head of Bight.

Surveys to examine southern right whale habitat use in coastal calving grounds off Australia were conducted July-October at Head of Bight (South Australia), Doubtful Island Bay (Western Australia) and Warrnambool, (Victoria). Aspects of right whale movements, distribution and behaviour were recorded and a range of environmental conditions sampled. Data were collected on 36 days at Head of Bight, 18 days at Doubtful Island Bay and 30 days at Warrnambool. Peak numbers of whales recorded were 94 including 37 calves, 37 including 12 calves, and 7 including 4 calves respectively. (R Pirzl, Deakin University)

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