# AUSTRALIA. PROGRESS REPORT ON CETACEAN RESEARCH, JANUARY 1997 TO DECEMBER 1997, WITH STATISTICAL DATA FOR THE CALENDAR YEAR 1997

Compiled by Rebecca Pirzl and Cate Coddington

*Wildlife Management, Environment Australia, GPO Box 636, CANBERRA, ACT: 2601.*

This report summarises information obtained from: Australian Fisheries Management Authority (AFMA), ACT; Australocetus Research, NSW/TAS; Biodiversity Group (BG); Centre for Whale Research (WA) Inc, WA; Curtin University, WA; Dolphin Research Institute, VIC; Eubalaena Pty Ltd, SA; James Cook University (JCU), QLD; Museum of Tropical Queensland, QLD; Museum of Victoria (MoV), VIC; New South Wales Fisheries, NSW; New South Wales National Parks and Wildlife Service (NSW NPWS), NSW; Pacific Whale Foundation (PWF), Hawaii; Parks and Wildlife Service Tasmania, TAS; Queensland Department of Environment (Qld DoE), QLD; Queensland Department of Primary Industries (Qld DPI), QLD; Royal Melbourne Institute of Technology (RMIT), VIC; South Australian Museum (SA Museum), SA; University of Sydney (Uni Syd), NSW; University of Tasmania (Uni Tas), TAS; WA Museum, WA; Western Australian Department of Conservation and Land Management (CALM), W A;

Note abbreviations used for Australian States/Territory: Victoria (VIC), New South Wales (NSW), Queensland (QLD), Tasmania (TAS), South Australia (SA), Western Australia (W A), Northern Territory (NT), Australian Capital Territory (ACT).

## 1. Species and stocks studied

**Table 1. Cetacean species and stocks studied, Australia 1997.**

| Common name | Scientific name | Area/stock(s) | Items referred to |
|---|---|---|---|
| MYSTICETI | | | |
| Southern right whale | *Eubalaena australis* | Southern coastline | 2.1.1, 2.1.2, 3.1.1, 11.1, 11.2 |
| Minke whale (dwarf form) | *Balaenoptera acutorostrata* | northeastern | 9 |
| Humpback whale | *Megaptera novaeangliae* | Area IV | 2.1.1, 2.1.2, 2.2, 3.1.1, 3.2,4.3 9, 11.1, 11.2 |
| | | Area V | 2.1.1, 2.1.2, 2.1.3, 2.2, 3.1.1, 3.2, 4.3, 6.2, 11.1, 11.2 |
| ODONTOCETI | | | |
| Indo-Pacific humpback dolphin | *Sousa chinensis* | QLD | 3.1.1, 4.1, 4.3, 7.1, 11.1 |
| Bottlenose dolphin | *Tursiops truncatus* | VIC | 2.1.1, 3.1.1, 9 |
| | | SA | 4.2., 4.3, 7.1, 9, 11.1 |
| | | QLD | 2.1.1; 3.1.1, 3.1.2, 3.1.3, 4.3, 7.1, 11.1 |
| | | | 3.1.2, 3.1.3, 4.1, 4.3, 7.1 |
| | | WA | 2.1.2, 4.1, 4.3, 7.1 |
| Common dolphin | *Delphinus delphis* | SA | 4.2, 4.3, 7.1, 9 |
| Killer whale | *Orcinus orca* | Macquarie Island, Tas | 2.1.2, 2.2, 3.1.1, 9, 11.2 |
| Irrawaddy dolphin | *Orcaella brevirostris* | QLD | 2.1.1, 4.3 |

Entanglement and sampling details for species not the subject of systematic studies are listed in sections 4.3 and 7.1. (ie. pygmy right, minke, Bryde's, blue, sperm, pygmy sperm, strap-toothed, Hector's beaked, Cuvier's beaked, southern bottlenose, melon-headed, pygmy killer, false killer, killer, and longfinned pilot whales; pantropical spotted, spinner, and common dolphins ; spectacled porpoise)

## 2. Sightings data

### 2.1 *Field work*

#### 2.1.1 SYSTEMATIC

The Head of the Great Australian Bight is one of the largest and most consistent aggregation areas for right whales on the Australian coast. 1997 represented the seventh consecutive year of data collection there with approximately six weeks of observation between early July and mid October (S Burnell, Eubalaena Pty Ltd). Daily surveys were made of the number of whales within the aggregation area and whale positions plotted. Photo-identification of individual whales was apriority.

Aerial surveys of southern right whales were again conducted off the south western coast of Australia (J Bannister, W A Museum). Seventy identification photographs were collected and two records provided the first evidence of a direct link between whales feeding in summer feeding grounds and the coastal breeding grounds of southern Australia.

Surveys of humpback whales (Area IV) were conducted between Fremantle and the Kimberley, W A, April to November 1997 (C & M Jenner, Centre for Whale Research). A total of 1215 whales were observed and 497 photographed during 670.99 hours of observation. Of these, 311 whales (101 photoidentified) were observed between Broome and Fremantle (23/9-21/11/97, 83.46 observation hours) and 904 (394 photo identified) in the Kimberley region (28/6-17/9/97, 452.7 observation hours). Twenty song recordings were made in the Kimberley region.

Aerial surveys of humpback whales (Area V) were conducted in the Whitsunday region, Qld, using a fixed survey pattern with eight replicate belt transects. A total of 63 whales were observed and density was calculated at 1.1 whales (SE:!: 0.3) per 100 square kilometres (Qld DoE). PWF conducted small boat humpback whale surveys in the Whitsunday Islands (25/6-7/8/97), Hervey Bay (12/8-6/10/97) and Eden (14/10-14/11/97) in 1997, focusing on fluke and lateral body photoidentification and documenting the location, size and composition, date and time of observation, general activity and sea surface temperature for each pod observed.

A yacht based survey off southeastern Tasmanian waters (Hobart to Maria Island) in November 1997 was conducted to continue investigation of feeding humpback whales (Area V) observed in the vicinity in November 1996 (P Gill, Australocetus). No whales were seen on this occasion, with an unseasonably early southward intrusion of warm surface water evidently displacing the zooplankton prey to the south.

M Noad (Uni Syd) conducted a composite visual and acoustic survey and behavioural study of humpback whales (Area V) during southern migration along the Australian east coast. Data will be used to examine the role/s of humpback song and the use of other behaviours commonly associated with courtship during migration. A visual land based survey was conducted concurrently with an acoustic survey using a three element hydrophone. 1000 hours of monitoring gave about 400 hours of recordings. This information will be used to make recommendations concerning the management of humpback whales along their migratory paths particularly with respect to whale watching. Data will also be used to determine the possibility of using stand alone acoustic surveys for population abundance estimates.

An ongoing research project on humpback whales entitled "Cape Byron Whale Research Project" has been underway since 1995. The project is a collaborative effort between the NSW NPWS and Southern Cross University. The project involves: positioning and tracking of humpback whales as they migrate past the NSW coast; vessel transects from Cape Byron to the continental shelf to determine Humpback whale distribution; and, photo-identification to identify individual animals using fluke and lateral body colouration and markings.

The behavioural patterns of an inshore population of bottlenose dolphins in Port Phillip Bay were observed over 349 hours 35 minutes offield time over 66 days throughout 1997 with a total of 102 pod sightings (C Scarpaci, RMIT). Data on pod geometry, orientation, size, subpods, distance offshore, surface behaviour, boat traffic, tour operator approaches were collected using a focal pod sampling technique and vocalisations recorded. Results indicate that the pod use the bay year round, calves are present in all seasons with the majority during summer, and there is seasonal variation in use of areas within the bay. Five distinctive whistle contours have been identified from recorded vocalisations. The duration, start, end, minimum, maximum and mid-point frequencies have been identified for each whistle and analysis of behaviour and whistle production is in progress.

The Dolphin Research Institute recorded 139 bottlenose dolphin sightings events January-February 1997 in Port Phillip Bay, Vic. The most common pod size was 6, average 11, and largest 30. Ten calves were sighted during the season, a least 6 of which were foetal fold calves. Seals were frequently observed feeding with dolphins and one or more seals were present on 11% of occasions.

Sightings of bottlenose and Irrawaddy dolphins were recorded during an aerial survey in the Gulf of Carpentaria, December 1997 (P Corkeron, JCU).

The Southern Ocean Cetacean Program was conducted on all Antarctic and sub Antarctic voyages of the 'Aurora Australis' in the 1997/1998 season (D Thiele BG). Voyages for 1997 season commenced in September. All Southern Ocean cetacean species were recorded. Four voyages were completed in 1997. Three voyages occurring in 1998 will not be included in this report but will be reported in the IWC progress report next year. 1997 sightings data, number of observers and the route of the voyage are summarised in table 2.1.1a.

**Table 2.1.1a: Cetacean sighting and effort summary 1997 (EA)**

| Voyage # | Total sightings | observers | Route of Voyage |
|---|---|---|---|
| 1 | 3 | 2 | return trip<br>Hobart to Macquarie Island |
| 2 &4 combined | 39 | APIS seal survey cetacean sightings | 2-Hobart to Davis Base, Antarctica and return<br>4-Davis Base, Antarctica to Hobart and return |
| 3 | 4 | 2 | return trip<br>Hobart to Macquarie Island |
| Total | 46 | | |

**2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY**

1997 was the third year of a study of the relative abundance and distribution of southern right whales off southeastern Australia (S Burnell, Eubalaena Pty Ltd). Sightings data and aerial identification photographs were collected from southern right whales off New South Wales, Tasmania, Victoria and eastern South Australia.

The Tasmanian Parks & Wildlife Service continued its monitoring program of southern right whales and humpback whales. Sightings of southern right whales were reported 31 times, pods ranged in size from one to four animals. One sighting was recorded on the north coast, all others from the east coast. Recently born calves were sighted twice. Sightings of humpback whales were reported 16 times, two of these cow-calf pairs, presumably on southward migration along Tasmania's east coast.

Killer whale sightings have been recorded on an opportunistic basis by ANARE expeditioners on Macquarie Island since 1948. A more detailed sighting program was developed in 1994 with the aim of collecting baseline data for a previously unknown population (M Morrice, Uni Tas). Sightings have been collected and compiled into a database with over 250 records in the period from 1989 to 1998. Records include the sighting date, time, location, observer and details on the pod size, pod structure, weather and general behavioural activities. A total of 59 sightings were recorded in 1997.

A total of 307 opportunistic sightings records were provided to Centre for Whale Research by Woodside Offshore Petroleum, fishing, and charter vessels. Sightings returns from the commercial whale watching industry in Hervey Bay, Moreton Bay and the Whitsunday region are being compiled (Qld DoE). Returns from the Hervey Bay industry have been plotted on a geographic information system. Cetacean sightings reports continue to be provided through the Australian Fisheries Management Authority observer program.

Sightings events reported to the NSW NPWS during 1997 (Atlas of Wildlife) included minke (1), humpback (18) and killer whales (2), bottlenose (2) and common dolphins (5). Compilation of opportunistic sightings and photographic activities of bottlenose dolphins, humpback whales, and southern right whales on the NSW coast have yet to be completed for 1997 (NSW NPWS).

The Southern Ocean cetacean sighting program (D Thiele BG) utilises dedicated cetacean observers on voyages of the 'Aurora Australis' as a platform of opportunity for multidisciplinery ecosystem monitoring of cetaceans in the Southern Ocean.

2.2 *Analyses/development of techniques*

Surveys of the Kimberley region humpback (Area IV) calving area (C & M Jenner, Centre for Whale Research) have shown a higher relative abundance of calves later in the season (Table 2.2a).

**Table 2.2a. Humpback whale Area IV - sightings and effort summary 1997 (Centre for Whale Research).**

| Dates | Location | Total | No. adults | No. subadults | No. calves | Obs hours | ID photos |
|---|---|---|---|---|---|---|---|
| 28/6-17/9/97 | Kimberley | 904 | 814 (90%) | 7 (1%) | 83 (9%) | 452.7 | 394 |
| 13/9-6/10/97 | Broome-Exmouth | 40 | 31 (74%) | 0 (0%) | 9 (22%) | 37.27 | 4 |
| 6/10-1/11/97 | Exmouth | 239 | 190 (79%) | 0 (0%) | 49 (21%) | 55.48 | 97 |
| 2/11-21/11/97 | Exmouth-Fremantle | 32 | 24 (75%) | 0 (0%) | 8 (25%) | 42.08 | 0 |

PWF 1997 sightings data, photo identification and observation hours are summarised in table 2.2b

**Table 2.2b. Humpback whale Area V - sightings and effort summary 1997 (PWF).**

| Dates | Location | Total no. whales | Obs hours | ID photos |
|---|---|---|---|---|
| 15/6-7/11/97 | Whitsunday Islands | 52 | 83.87 | 25 |
| 12/8-17/9/97 | Hervey Bay | 368 | 199.08 | 212 |
| 14/10-14/11 | Eden | 241 | 144.88 | 131 |

Killer whale sightings off Macquarie Island were analysed with the aim of assessing trends in the population and activities around the island due to biases caused from the data being collected opportunistically and by generally inexperienced observers (M Morrice, Uni Tas). Data from 1989-98 shows killer whales are sighted through most of the year except May, with a peak from October to December (Table 2.2c). This indicates a seasonal pattern of activity, as described by Copson 1994. The majority of sightings were on the east coast (lee side) of the island with the west coast sightings being in the very NW or SW regions. Pod sizes ranged from 1 to 20 (1997: 1 to 8) with an average of3 (1997: 4) whales. The most common pod composition was a single adult male with two females/juveniles. Calves or small juveniles were observed throughout the year. The average distance of whales offshore was 420 metres (1997: 490 m). Locations of whales observed close inshore correlated to principal breeding colonies of southern elephant seals, fur seals, and king and royal penguins. See the table below for distance offshore statistics.

**Table 2.2c. Summary of killer whale sightings, Macquarie Island, Tasmania, 1997 (M Morrice, Uni Tas)**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location (East/West coast)** | E | | | E | | E | E, W | W | E | E | E | E |
| **No. sightings** | 1 | | | 2 | | 1 | 3 | 2 | 11 | 21 | 7 | 12 |
| **Distance offshore (m)** | 50 | | | 300-500 | | 200 | 20-100 | 100 | 10-1000 | 30-2000 | 100-1500 | 10-1500 |

Work is continuing with the UK Sea Mammal Research Unit to refine satellite telemetry for delphinids (P Corkeron, JCU). P Corkeron is also continuing work developing VHF telemetry for inshore delphinids. Development of software and techniques for near real time tracking of singing whales in the field was conducted (M Noad, Uni Syd), as was development of a technique for transcribing pattern of song in real time in the field.

The Southern Ocean cetacean sighting program (D Thiele BG) has introduced the use of 'big-eye' binoculars to survey methodology for cetacean pelagic monitoring cruises.

## 3. Marking data

### *3.1 Field work*

#### 3.1.1 NATURAL MARKING DATA

**Table 3.1.1. Summary of cetacean natural marking data, Australia 1997.**

| Species | Feature | Stock | 1997 total | Catalogued (Y/N) | Catalogue total | Contact |
|---|---|---|---|---|---|---|
| Southern right whale | callosity | southern Australia | ~ 100 | tbc | >350 | S Burnell, Eubalaena PL |
| | | | 70 | tbc | ? | J Bannister, WA Museum |
| Humpback whale | fluke | Area IV | 212 | tbc | 648* | C & M Jenner, Centre for Whale Research |
| | fluke | Area V | 321 | Y | 1600 | PWF |
| | lateral body | Area V | 47 | Y | | PWF |
| | fluke, lat body | Area V | 79 | tbc | ? | D Paton, NSW NPWS |
| Indo-pacific humpback dolphin | dorsal fin | Moreton Bay, Qld | ~25 | N | 50 | P Corkeron, JCU |
| Bottlenose dolphin | dorsal fin | Moreton Bay, Qld | many | Y | >350 | P Corkeron, JCU |
| Killer whale | dorsal fin | Macquarie Isl, Tas | 2 | N | 10 | M Morrice, Uni Tas |

tbc = to be completed
* figures for 1990-95, there are still 121 photographs from 1996 and 212 from 1997 to be matched/checked for resightings and added to the catalogue

Opportunistic photoidentification of Group IV humpback whales was conducted off the Perth coast during commercial whale watch season with data supplied to J Bannister, WA Museum (CALM). Attempts are being made to identify individual bottlenose dolphins in the Port Phillip Bay population by signature whistle (C Scarpaci, RMIT).

#### 3.1.2. ARTIFICIAL MARKING DATA

**Table 3.1.2. Summary of cetacean artificial marking data, Australia 1997.**

| Species | Tag type | No. branded | Location | Brand no. | Contact |
|---|---|---|---|---|---|
| Bottlenose dolphin | freeze brand | 5 (including 1 rebranded) | Mandurah, WA | rebrand 17, then 20, 21, 22,23 | CALM, WA |
| Bottlenose dolphin | freeze brand | 5 | Moreton Bay, QLD | | P Corkeron, JCU |

#### 3.1.3 TELEMETRY DATA

**Table 3.1.3. Summary of cetacean telemetry data, Australia 1997.**

| Species | Tag type | No. successfully deployed | Maximum time transmitting | Contact person/institute |
|---|---|---|---|---|
| Bottlenose dolphin | radio (archival) | nil | attachment unsuccessful | P Berggren, Monkey Mia Dolphin Research Group |
| Bottlenose dolphin | satellite | 1 | 5 months | P Corkeron, JCU |
| Bottlenose dolphin | VHF | 4 | 2 months | P Corkeron, JCU |

3.2 *Analyses/development of techniques*

Information on humpback whale (Area IV) residence times in the Kimberley, W A and movements along the northwest coast was obtained in 1997 (C & M Jenner, Centre for Whale Research). Matching of photo identification data for 1997 has been completed with 21 within season resights and full analysis of the 1997 photo identification, migratory paths and geographic area utilisation by age class currently underway. Comparison between existing catalogue holdings for the Area IV population has yet to be completed. Song recordings are to be analysed and compared with song from Tonga and eastern Australia (Area V). Work on the development of a computerised photoidentification matching system continued.

Photoidentification data was used to examine the interchange of humpback whales (Area V) between the Whitsunday Islands and Hervey Bay, Qld during the southern migration (PWF). Within season interchange was found to be minimal, but a trend of individuals being first observed in Hervey Bay and two years later in the Whitsundays was apparent.

## 4. Tissue/biological samples collected

*4.1 Biopsy samples*

**Table 4.1. Summary of cetacean biopsy sample data, Australia 1997.**

| Species | Area/stock | 1997 total | Archived (Y/N) | No. analysed | Total holdings | Contact person/institute |
|---|---|---|---|---|---|---|
| Indo-pacific humpback dolphin | NW WA | in progress | ? | ? | ? | P Hale, Uni Qld |
| Bottlenose dolphin | Shark Bay, WA | 79 | Y | 30% | 79 | M Kruetzen/B Sherwin, Uni NSW |
| Bottlenose dolphin | NSW coast | 3 | ? | ? | unavailable | G Dutton, Uni Syd |

*4.2 Samples from directed catches or bycatches*

**Table 4.2. Summary of directed catches or bycatches of cetaceans, Australia 1997.**

| Species | Area/stock | 1997 total | Archived (Y/N) | Tissue type(s)* | Contact person/institute |
|---|---|---|---|---|---|
| Bottlenose dolphin | SA | 1 | Y | stomach | C Kemper, SA Museum |
| Common dolphin | SA | 3 | Y | genetic, toxin, reproductive, stomach | C Kemper, SA Museum |

*4.3 Samples from stranded animals*

A summary of samples collected from stranded cetaceans throughout Australia is summarised in Table 4.3.

Marine mammals stranded between Hervey Bay and Townsville (QLD) are being autopsied to determine cause of death as part of a pathology study (Qld DoE and Qld DPI).

**Table 4.3. Summary of samples collected from stranded cetaceans, Australia 1997.**

| Species | Area/stock | 1997 total | Archived (Y/N) | Tissue type(s)* | Contact person/institute |
|---|---|---|---|---|---|
| Pygmy right whale | VIC | 1 | ? | blubber | G Dutton, Uni Syd |
| Minke whale | QLD | 1 | Y | ** | G Byron, Qld DoE |
| Bryde's whale | VIC | 1 | ? | blubber | G Dutton, Uni Syd |
| Blue whale | VIC | 1 | ? | blubber | G Dutton, Uni Syd |
| Humpback whale | Area IV | 1 | ? | skin | P Hale, Uni Qld |
| | | 1 | Y | blubber | D Mell, WA CALM |
| | Area V | 1 | N | larynx | M Noad, Uni Syd |
| Sperm whale | SA | 2 | Y | genetic | C Kemper, SA Museum |
| Pygmy sperm whale | QLD | 3 | Y | ** | G Byron, Qld DoE |
| | VIC | 1 | Y | teeth, stomach contents | J Dixon, MoV |
| | | 1 | ? | blubber | G Dutton, Uni Syd |
| | NSW | 1 | ? | blubber | G Dutton, Uni Syd |
| Strap-toothed whale | SA | 2 | Y | genetic, toxin, reproductive, stomach | C Kemper, SA Museum |
| | NSW | 1 | ? | blubber | G Dutton, Uni Syd |
| Hector's beaked whale | TAS | 1 | Y | *** | K Evans, Uni Tas |
| Cuvier's beaked whale | VIC | 1 | ? | blubber | G Dutton, Uni Syd |
| Southern bottlenose whale | VIC | 1 | ? | blubber | G Dutton, Uni Syd |
| Indo-Pacific humpback dolphin | QLD | 1 | Y | ** | G Byron, Qld DoE |
| Bottlenose dolphin | SA | 8 | Y | genetic, toxin, reproductive, stomach | C Kemper, SA Museum |
| | QLD | 4 | Y | ** | G Byron, Qld DoE |
| | WA | 4 | ? | skin | P Hale, Uni Qld |
| | | 3 | Y | blubber | D Mell, WA CALM |
| | NSW | 1 | ? | blubber | G Dutton, Uni Syd |
| | TAS | 6 | Y | *** | K Evans Uni Tas |
| Pantropical spotted dolphin | WA | 1 | ? | skin | P Hale, Uni Qld |
| Pantropical spotted dolphin | NSW | 1 | ? | blubber | G Dutton, Uni Syd |
| Common dolphin | SA | 10 | Y | genetic, toxin, reproductive, stomach | C Kemper, SA Museum |
| | VIC | 1 | Y | skull | J Dixon, MoV |
| | NSW | 2 | ? | blubber, reproductive/ blubber | G Dutton, Uni Syd |
| Melon-headed whale | QLD | 2 | Y | ** | G Byron, Qld DoE |
| Pygmy killer whale | NSW | 1 | ? | blubber | G Dutton, Uni Syd |
| False killer whale | NSW | 1 | ? | blubber | G Dutton, Uni Syd |
| Killer whale | WA | 1 | ? | skin | P Hale, Uni Qld |
| | VIC | 1 | ? | blubber | G Dutton, Uni Syd |
| Long finned pilot whale | VIC | 2 | Y | teeth/teeth and ribs | J Dixon, MoV |
| Irrawaddy dolphin | QLD | 1 | Y | ** | G Byron, Qld DoE |
| Spectacled porpoise | SA | 1 | Y | genetic, toxin, reproductive, stomach | C Kemper, SA Museum |
| | TAS | 1 | Y | *** | K Evans, Uni Tas |

A range of tissues were collected from animals depending on the carcass freshness and intended purpose (C Kemper, SA Museum). For toxic contaminants - blubber, muscle, kidney and liver; for genetics -skin, liver, muscle, kidney, blood; for reproductive -ovaries, uterus, mammary glands, testes. Skeletal material (skull and/or postcranial) was collected from all specimens lodged with SA Museum.

** For each specimen heart, lungs, liver, kidney, blubber, skin, intestine, brain, eyes, skeletal, intestine collected, and reproductive organs of some

*** For each specimen liver, stomach/small intestine/large intestine, reproductive organs, lung, heart, muscle, skin, blubber were collected and teeth skull, kidney, spleen, internal parasites, mammary gland, colonial algae, skeleton, posterior vertebra sulchi of some.

4.4 *Analyses/development of techniques*

Analysis of samples collected by Qld DoE (section 4.3) indicated that a large number of the animals died as a result of disease or high parasite loading. Infection found in dolphins included encephalitis and meningitis.

## 5. Pollution studies

Samples are routinely collected from almost all stranded or entangled animals in South Australia (C Kemper, SA Museum). Samples were collected from stranded cetaceans, are being analysed for pollution levels (K Evans, Uni Tas).

## 6. Statistics for large cetaceans

6.1 *Direct catches (commercial, aboriginal and scientific permits) for the calendar year* 1997

No direct catches are permitted in Australia.

6.2 *Other non-natural mortality for the calendar year* 1997

**Table 6.2. Summary of non-natural large cetacean mortality, Australia 1997.**

| Species | Area/stock | Males | Females | Total | Death (Y/N) | Cause | Methodology |
|---|---|---|---|---|---|---|---|
| Humpback whale | Area V | ? | ? | 1 (juvenile) | N | shark mesh entanglement | freed alive |
| Humpback whale* | Area V | ? | ? | 1 (adult) | N | commercial fishing trap rope and buoys | cut free using small boat |

* adult humpback (15m) trailing 7 metres of fishing rope and 4 buoys, incapable of diving, moving very slowly, accompanied by another whale.

## 7. Statistics for small cetaceans

*7.1 For the calendar year 1997*

**Table 7.1. Summary of non-natural small cetacean mortality, Australia 1997.**

| | | Directed catch | | Incidental mortality | | | Live-capture |
|---|---|---|---|---|---|---|---|
| Species | Area/stock | Reported | Est. total | Reported | Est. total | Source | Reported |
| Indo-pacific humpback | QLD | 0 | 0 | 2 | ? | gill net | 0 |
| | | 0 | 0 | 4 | ? | shark meshing | 0 |
| Bottlenose dolphin | SA | 0 | 0 | 1 | ? | ? | 0 |
| | QLD | 0 | 0 | 5 | ? | gill net | 0 |
| | | 0 | 0 | 5 | ? | shark meshing | |
| | WA | 0 | 0 | 2 | ? | hook ingested, monofil. line entanglement | 0 |
| | NSW | 0 | 0 | 1 | ? | shark meshing | 0 |
| Spinner dolphin | QLD | 0 | 0 | 1 | ? | gill net | 0 |
| | | 0 | 0 | 2 | ? | shark meshing | 0 |
| Common dolphin | SA | 0 | 0 | 3 | ? | ? | 0 |
| | QLD | 0 | 0 | 4 | ? | shark meshing | 0 |
| Unidentified delphinid species | Southeastern Australia | 0 | 0 | 1 | ? | shark meshing | 0 |

No cetaceans were reported as being entangled in tuna farm nets near Port Lincoln but circumstantial evidence suggests that entanglements are still occurring (C Kemper, SA Museum). An informal group of government and non-government advisers was formed by the SA Department of Primary Industries to consider marine vertebrate entanglements and issues of tuna aquaculture. This group has met infrequently and has made some progress in tightening up the procedure for reporting. To our knowledge, little headway has been made in ensuring that predator nets are of a sufficiently small size to reduce entanglements or that tuna feeding practices have reduced the amount of waste (and therefore attraction for other fish species) around the cages. The report to Environment Australia by Kemper and Gibbs (1997) determined that incidental captures accounted for 38% of all South Australian dolphins whose circumstance of death was known.

## 8. Strandings

**Table 8. Key contacts for strandings information, Australia 1997.**

| Relevant Area | Contact Institution | Contact Individual | Address |
|---|---|---|---|
| New South Wales | New South Whales National Parks and Wildlife Service | F. Mandelc | Wildlife Management<br>PO Box 1967<br>HURSTVILLE NSW 2220 |
| Northern Territory | Parks and Wildlife Commission of the Northern Territory | K. Saafeld | PO Box 496<br>PALMERSTON NT 0831 |
| Queensland | Department of Environment | L. Macedo | Marine Parks<br>PO Box 155<br>Albert Street<br>BRISBANE QLD 4002 |
| South Australia | South Australian Museum | C. Kemper | North Terrace<br>ADELAIDE SA 5000 |
| Tasmania | Tasmanian Parks and Wildlife Service | H. Wapstra | Department of Environment and Land Management<br>GPO Box 44A<br>HOBART TAS 7001 |
| | University of Tasmania | M. Morrice,<br>K. Evans &<br>M. Hindell | Zoology Department<br>GPO Box 252C<br>HOBART TAS 7001 |
| Victoria | Museum of Victoria | J Dixon | Department of Mammalogy<br>71 Victoria Crescent<br>ABBOTSFORD VIC 3067 |
| Western Australia | Conservation and Land Management | P. Mawson | Locked Bag 104<br>BENTLEY DELIVERY CENTRE WA 6983 |

Other contributors of strandings information include: H Goodall, Pet Porpoise Pool; S Adam; M Noad, Uni Syd; J Dixon, MoV; S Barripp, ORRCA.

**9. Other studies and analyses**

Studies on swimmer-dwarf minke whale interactions in far North Queensland are continuing (P Arnold, Museum of TropIcal Queensland & A Birtles, JCU). Detailed surface and underwater observations of whale behaviour in the presence of snorkellers have been recorded. Individuals are identified by both surface and underwater photographs and videos. Perceptions of divers before and after swimming with minke whales and their reactions to a Code of Practice being developed to manage swimmer-whale interactions is being studied (F O'Neill & A Birtles, JCU). Vocalisations were recorded in July 1997 by D Costa and J Gedamke (University of California, USA) using both a single and an array of hydrophones.

Studies by the Centre for Whale Research will continue with the objectives of contributing to long-term data collection to address recent population trends (use by particular age classes), productivity (calving intervals etc.), stock identity (photo-id and song recordings), effects of seismic surveys on Area IV humpback whales (seismic exposure trials) and assessing the value of the Kimberley as a marine sanctuary.

A dedicated study of the response of humpback whales to seismic survey noise was conducted off the NW coast of Australia (Area IV) (R McCauley, Curtin University). Whales approaching the operating seismic vessel began avoidance manoeuvres at 5-8km and mostly maintained a standoff range of 3-4 km, however some approached closer. Based on observations made from the seismic vessel no gross changes in the migratory path of whales was observed, with overall sightings rates in guns-on and gunsoff periods similar. Analysis by sightings range, however, shows that sightings within 1.5 km of the vessel were considerably higher during guns-off periods than sightings in this range during the guns-on period. Possible biases in sighting availability between guns-on and guns-off periods were identified. A total of 16 trials have now been run, 9 in 1997, using dedicated vessels to deploy experimental airguns and to observe whale behavioural responses (R McCauley, Curtin University with C & M Jenner, Centre for Whale Research). These trials indicated that humpback pods, in general, consistently avoided the single operating airgun from 1-2 km.

A paper will be given on the morphological differentiation of South Australian bottlenose dolphins at the Australian Mammal Society meeting in July 1998 (C Kemper, SA Museum). Research continues on the pygmy right whale and funds are being sought for taxonomic research (genetic and morphological) on common dolphins in southern Australia (C Kemper, SA Museum).

A shore based behavioural study has been incorporated into the bottlenose dolphin studies conducted by the Dolphin Research Institute in Port Phillip Bay. The study will assist to investigate the effects of boat traffic on dolphin behaviour, with particular reference to dolphin tour operators. An investigation of the compliance of operators with an established code of practice found an overall compliance rate of 47% with most breaches relating to approach distances and interactions with the same group of dolphins.

In addition to opportunistic collection of killer whale sightings and photographic identifications there are records of be havioura 1 observations (M Morrice, Uni Tas). Of particular interest are feeding observations which include records of the whales feeding on southern elephant seals (adults and juveniles), fur seals, and royal and king penguins.

Biological samples were collected from cetaceans stranded in Tasmania (Southern Ocean Sanctuary) during 1996/97 (K Evans, Uni Tas). Information was collected on parasites, histopathology, diet, reproductive functioning, morphology, disease, genetics, the effects of pollution, contaminants, fisheries interactions, vessel collisions, entanglement and basic biological and ecological data. Stable isotope analysis and dietary analysis were carried out on samples collected.

There were three mass strandings of 112 total (66, 35, 11) sperm whales on the west coast of Tasmania within 1 month in early 1998. These will be reported in the progress report next year.

Other studies for which details were unavailable for this report are listed in Table 9.

**Table 9. Other cetacean studies, Australia 1997.**

| Species | Stock/Area | Principal Researcher | Study |
|---|---|---|---|
| Humpback whale | Area V | Paul Hodda, Australian Whale Conservation Society, Qld | sightings survey of migrating humpback whales off Cape Byron |
| Bottlenose dolphin | Cockburn Sound, WA | Rebecca Donaldson Murdoch University, WA | Ecology of bottlenose dolphins in Cockburn Sound |
| Bottlenose dolphin | Shark Bay, WA | Dr Per Berggren, Monkey Mia Dolphin Research Group, WA | Interactions between dolphins and tiger sharks (calf mortality) |
| Bottlenose dolphin | Shark Bay, WA | M Heithaus, WA | Importance of benthic fish communities to bottlenose dolphin diet |

## 10. Literature cited


Cops on, G. R. (1994). Cetacean sightings and strandings at subantarctic Macquarie Island 1968 to 1990. *ANARE Research Notes 91.* Antarctic Division. 15 pp.

Kemper, C. and Gibbs, S. (1997). A study of dolphins and seals entangled in tuna farms near Port Lincoln. *Waves* 4: 4.


## 11. Publications

*11.1 Published or 'In Press' papers only*


Bannister, J. L., Burnell, S., Burton, C. L. K., and Kato, H. (in press). Right whales off southern Australia: direct evidence for a link between onshore breeding grounds and offshore probable feeding grounds. *Rep. into Whal. Commn* 1998

Burnell, SR and Bryden, MM. (1997) Coastal residence periods and reproductive timing in southern right whales, *Eubalaena australis.* .I: *Zool. (Lond.)* 241(4): 613-621.

Corkeron P. J. (1997). Bottlenose dolphins, *Tursiops truncatus,* in southeast Queensland waters: social structure and conservation biology. pp I-lOin Hindell M. and Kemper C. (eds) *Marine mammal research in the southern hemisphere. Volume I. Status, ecology and medicine.* Surrey Beatty and Sons. Chipping Norton.

Corkeron P. J. (1997) The status of cetaceans in the Great Barrier Reef Marine Park. pp 283-287 In Wachenfe1d D., Oliver J. and. Davis K. (eds) *The state of the GBR World Heritage Area report.*

Corkeron P. J., Leh *C.,* Andau P., and Leatherwood S. (in press) Cetaceans of Northern Borneo. *Brun. Mus. J.*

Corkeron P. J., Morissette N. M., Porter L. J., and Marsh H. (in press) Distribution and status of humpback dolphins, *Sousa chinensis,* in Australian waters. *Asian Marine Biology* (special issue)

Gill, P. C. and Thiele, D. (1997). A winter sighting of killer whales *(Orcinus orca)* in Antarctic sea ice. *Polar Biol.* 17: 401-404

Kemper, C. M., Mole, J., Warneke, R. M., Ling, J. K., Needham, D. J. and Wapstra, J. E. (1997) Southern right whales in southeastern Australia -aerial surveys during 1991-93 and incidental information from 1904. Pp 40-55 In: by M. Hindell and C. Kemper (eds). *Marine mammal research in the southern hemisphere Volume* 1: *Status, ecology and medicine* Surrey Beatty and Sons: Chipping Norton.

Long, M., Reid, R. J. and Kemper, C. M. (1997) Cadmium accumulation and toxicity in the bottlenose dolphin *Tursiops truncatus,* the common dolphin *Delphinus delphis,* and some dolphin prey species in South Australia. *Aust. Mammal.* 20: 25-33.

McCauley, R. D., Jenner, M-N. M., Jenner, K. C. S., McCabe, K. A. and Murdoch, J. (1998). The response of humpback whales *(Megaptera novaeangliae)* to offshore seismic survey noise: preliminary results of observations about a working vessel and experimental exposures. *Appea* J: 1998: 12-27.

Valsecchi E., Palsboll P., Hale P., Glockner-Ferrari D., Ferrari M., Clapham P., Larsen F., Mattila D., Sears R., Sigurjonsson J., Brown M., Corkeron P. and Amos B. (1997). Microsatellite genetic distances between oceanic populations of the humpback whale *(Megaptera novaeangliae). Mol. Biol. Evol.* 14: 355-362.

*11.2 Unpublished literature*

Bannister, J. L. (1997) *Aerial survey of southern right whales of Western and South Australia,* 1995 *and* 1996 *calving seasons: report on work undertaken to* 1 *March* 1997. Unpublished report to Biodiversity Group, Environment Australia, 29pp

Bannister, J. L. (1998). *Aerial survey of southern right whales, W A and SA,* 1997: *report on progress to* 31/12/97. Unpublished report to Biodiversity Group, Environment Australia

Burnell, SR. (1997). An *incidental flight network for the photo identification of southern right whales off southeastern Australia. A summary of research activities undertaken in the* 1995 *and* 1996 *seasons.* Rep. by Eubalaena Pty Ltd to BHP Petroleum Pty Ltd and Esso Australia Ltd.: 30pp

Databases: *Macquarie Island killer whale sightings; photo identification catalogue; feeding observations.* Contact Margie Morrice, Zoology Department, University of Tasmania, Hobart, Australia.

Draft Whitsunday humpback whale monitoring (1997). *Internal Queensland Department of Environment Technical Report.* Contact Liz Macedo, Queensland Department of Environment, Marine Parks Section, PO Box 155, Brisbane Albert Street, Queensland, 4002.

Evans, K., Thiele, D. and Davenport, S. (1997). *Tasmanian cetacean strandings -part of the ecosystem approach to studying cetaceans in the Southern Ocean.* Paper presented by K Evans at the 1997 Joint Meeting of the NZ Marine Sciences Society and the Australian Marine Sciences Association, Auckland New Zealand. Available from D Thiele, Biodiversity Group, Environment Australia, GPO Box 636, Canberra ACT 2601.

Gill, P. C., Evans, K. and Thiele, D. (1997). *Yacht-based ecosystem research in Australian waters of the Southern Ocean Sanctuary.* Paper presented by P Gill at the 1997 Joint Meeting of the NZ Marine Sciences Society and the Australian Marine Sciences Association, Auckland New Zealand. Available from D Thiele, Biodiversity Group, Environment Australia, GPO Box 636, Canberra ACT 2601.

Gill, P. C. and Thiele, D. (1997). *The Australian Southern Ocean Research and Monitoring Program for Cetaceans.* Paper presented by P Gill at the 1997 Joint Meeting of the NZ Marine Sciences Society and the Australian Marine Sciences Association, Auckland New Zealand. Available from D Thiele, Biodiversity Group, Environment Australia, GPO Box 636, Canberra ACT 2601.

Jenner, K. C. S., Jenner, M-N. M. & McCabe, K. A. (1998). 1997 *Earthwatch Field Report.* Available from Kathy White, Program Manager, Earthwatch, PO Box 403, Watertown, Massachusetts 02272.

McCauley, R. (1997). *Report of field activities, Exmouth Gulf October* 1997: *Humpback whale and fish air-gun exposure trials.* Available from Rob McCauley, Centre for Marine Science and Technology, Curtin University, Perth, W A.

Nicol, S., Bindoff, N., de la Mare, W. K., Gillespie, D., Pauly, T., Thiele, D., Woehler, E. and Wright, S. (1996). *An overview and some preliminary results of a biological/oceanographic survey off the coast of East Antarctica (80 - 150$^{o}$E) carried out in January - March* 1996. WG-EMM-96/29 Scientific Committee, CCAMLR Commission

Noad, M. J., Cato, D. H., & Bryden, M. M. (1997). *Data Summary Report: Humpback Whale (Megaptera novaeangliae)Acoustic Survey and Tracking Project. Point Lookout and Peregian Beach, Queensland, June to November* 1996. Report for the Queensland Department of the Environment..

Noad, M. J., Cato, D. H., & Bryden, M. M. (1997). *Progress Report: Humpback Whale (Megaptera novaeangliae)Acoustic Survey and Tracking Project. Point Lookout and Peregian Beach, Queensland; June to November* 1996. Report for the Queensland Department of the Environment..

Pacific Whale Foundation. (1997). *Humpback whale fluke identification project: Whitsunday and Hervey Bay Regions* 1993-1996 -*Historical resight analysis.* Available from Queensland Department of Environment, Marine Parks Section, PO Box 155, Brisbane Albert Street, Queensland, 4002.