

**SOUTH AFRICA. PROGRESS REPORT ON CETACEAN RESEARCH, JANUARY 2001 TO
DECEMBER 2001, WITH STATISTICAL DATA FOR THE CALENDER YEAR 2001**

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This report summarizes information obtained from: Mammal Research Institute Whale Unit, University of Pretoria; Natal Sharks Board (NSB); Centre for Dolphin Studies (CDS); Department of Mathematics and Applied Mathematics, University of Cape Town; Port Elizabeth Museum (PEM); Branch Marine and Coastal Management, Department of Environmental Affairs and Tourism (DEAT); Richards Bay Humpback Dolphin Project, Endangered Wildlife Trust (EWT) and Department of Entomology and Zoology, University of Pretoria.

1. Species and stocks studied

Common name	Scientific name	Area/stock(s)	Items referred to
Humpback whale	<i>Megaptera novaeangliae</i>	Southeast and West coasts, Areas IV & V	2.1.1;3.1.1;4.1;4.3;9
Southern right whale	<i>Eubalaena australis</i>	Southeast coast	2.1.1;3.1.1;3.1.3;4.1;4.3;9;11.1
Bryde's whale	<i>Balaenoptera edeni</i>	Southeast coast	2.1.1;3.1.1;11.1
Sei whale	<i>Balaenoptera borealis</i>	Southern hemisphere	11.1
Dwarf minke whale	<i>Balaenoptera acutorostrata subsp</i>	South Africa	2.1.1
Antarctic minke whale	<i>Balaenoptera bonaerensis</i>	Areas I, II, III, IV, V & VI	9;11.1
Northern Hemisphere minke whale	<i>Balaenoptera acutorostrata</i>	Western North Pacific J, O and postulated W stocks	9
True blue whale	<i>Balaenoptera musculus intermedia</i>	Areas I, II, III, IV, V & VI	9
Fin whale	<i>Balaenoptera physalus</i>	Southern hemisphere	9
Southern bottlenose whale	<i>Hyperoodon planifrons</i>	Southern hemisphere	2.1.1;9
Sperm whale	<i>Physeter macrocephalus</i>	South Africa	2.1.1;4.3;9
Pygmy sperm whale	<i>Kogia breviceps</i>	South Africa	4.3
Layard's beaked whale	<i>Mesoplodon layardii</i>	South Africa	4.3
Longman's beaked whale	<i>Indopacetus pacificus</i>		11.1
Beaked whale	<i>Mesoplodon spp</i>	East coast	2.1.1;4.3
Shortfin pilot whale	<i>Globicephala macrorhynchus</i>	East coast	4.3
Longfin pilot whale	<i>Globicephala melaena</i>	Southern hemisphere	2.1.1
Killer whale	<i>Orcinus orca</i>	Marion Island	2.1.1;2.1.2;3.1.1;9;11.1
Pygmy Killer whale	<i>Feresa attenuata</i>	East Coast	4.3
Melon-headed whale	<i>Peponocephala electra</i>	South Africa	4.4
Heaviside's dolphin	<i>Cephalorhynchus heavisidii</i>	West coast	2.1.1;3.1.1;4.1;4.3
Dusky dolphin	<i>Lagenorhynchus obscurus</i>	West coast	2.1.1;4.1;4.3
Risso's dolphin	<i>Grampus griseus</i>	South Africa	2.1.1;4.3
Indian Ocean bottlenose dolphin	<i>Tursiops aduncus</i>	South Africa	2.1.1;2.1.2;3.1.1;3.2;4.2;4.3;4.4;7.1
Indo-pacific humpback dolphin	<i>Sousa chinensis</i>	Southeast and East coasts	2.1.1;2.2;3.1.1;3.2;4.2;4.4;7.1;11.1
Striped dolphin	<i>Stenella coeruleoalba</i>	South Africa	4.3
Long-beaked	<i>Delphinus capensis</i>	South Africa	2.1.1;3.1.1;4.2;4.3;7.1

common dolphin			
Common dolphin	<i>Delphinus spp.</i>	South Africa	2.1.1;3.1.1;4.3;4.4
Pan-tropical spotted dolphin	<i>Stenella attenuata</i>	South Africa	4.3
Rough-toothed dolphin	<i>Steno bredanensis</i>	South Africa	4.4
Hourglass dolphin	<i>Lagenorhynchus cruciger</i>	Southern hemisphere	2.1.1

2. Sightings data

2.1 Field work

2.1.1 Systematic

MRI, Whale Unit

Between 21 January and 8 April, 2001, the Whale Unit of the Mammal Research Institute, University of Pretoria (MRI Whale Unit) undertook photo-identification surveys for Heaviside's dolphin on 43 days using the Unit's inflatable *Balaena*, on the west coast of South Africa between Rooiduinpunt, Lamberts Bay, and Bok Point. A total of 2 006 Heaviside's dolphins, 814 dusky dolphins, 3 humpback whales and 42 southern right whales was seen. As part of the same project, a shore-based watch for Heaviside's dolphins was run from Britannia Bay Minor between 11 February and 8 April 2001, for a total of 212.5 hours, during which time 768 mins were spent tracking dolphins and 259 mins recording behaviour.

Between 24 July and 20 December, 2001, the MRI Whale Unit maintained a shore-based watch for migrating humpback and right whales from North Head, Saldanha Bay. In 681.39 hours of watch on 102 days, 95 sightings of 233 humpback whales, 217 sightings of 354 southern right whales, 5 sightings of 235 dusky dolphins and 1 sighting of 100 common dolphins were made. Over the same period, the Unit's 6 m inflatable *Balaena* spent 52 sea-days off Saldanha Bay, in which a total of 42 groups of 100 humpback whales, 63 groups of 152 southern right whales, and 2 groups of 2 dwarf minke whales were intercepted for photo-identification, biopsy and confirmation of group size.

Between 9 and 18 October 2001, the MRI Whale Unit undertook a photo-identification survey for right whales along the south coast from Nature's Valley to Muizenberg, and up the west coast from Muizenberg to Elands Bay, using a chartered Jet Ranger helicopter. This was a continuation of the annual survey series started in 1979. In 31 hours 28 minutes of flying, 827 right whales, 9 humpback and 2 Bryde's whales were encountered, and approximately 1 800 frames of right whales were exposed from an altitude of 100 m for individual identification purposes.

DEAT

Between 12 December and 30 December Marine and Coastal Management of the Department of Environmental Affairs and Tourism undertook two cetacean sighting surveys. During transit legs between the Prince Edward Islands and South Africa systematic observations of cetaceans were recorded in passing and closing mode. Observations were made from the monkey island during hours of good visibility. Records were kept of weather, SST and effort. All mammals were counted and distances and bearings measured from the ships course. Due to time constraints deviations to sightings in order to confirm accurate group sizes and species were not always possible and the number of unidentified animals in the sample was therefore, large. Confirmed sightings during 85.9 hours observation were 6 Bryde, 9 Humpback, 16 Killer, 60 Longfin Pilot, 2 Minke (spp), 10 Sperm, 1 Southern Bottlenose and 3 unidentified beak whales. Dolphins seen were 58 bottlenose spp, 25 common, 4 hourglass, 3 dusky and 7 Risso's.

Between 24 June and 1 July, DEAT undertook the 30th Marine mammal cruise on the west coast of South Africa. Cetaceans seen during 27.13 hours of observation included 42 Heaviside dolphins, 100 Dusky dolphins, 1 Bryde whale and 1 Humpback whale.

Department of Entomology and Zoology, University of Pretoria

Occasional dedicated sightings of killer whales to estimate abundance in nearshore waters of Marion Island.

NSB

Natal Sharks Board (NSB) undertook 17 long-shore aerial surveys along the coast of KwaZulu-Natal south from Durban to Port St. Johns, Eastern Cape, for investigating into Indian Ocean bottlenose and long-beaked common dolphin distribution and abundance patterns associated with the winter migrations of sardines (*Sardinops*

sagax). They also undertook three long-shore aerial surveys along the coast of KwaZulu-Natal north of Durban to Kosi Bay (Mozambique border) recording cetacean sightings during a whale shark survey starting October 2001.

EWT

Endangered Wildlife Trust (EWT) scientists undertook boat-based surveys for Indo-pacific humpback dolphins at Richards Bay in KwaZulu-Natal.

2.1.2 Opportunistic, platforms of opportunity

Department of Entomology and Zoology, University of Pretoria

Fieldworkers of the Department of Entomology and Zoology, University of Pretoria keep opportunistic shore-based records of killer whales sightings in the near shore waters of Marion Island.

NSB

Sighting records are collected from the NSB net meshing boats (see Cockcroft, V.G., Ross, G.J.B. and V.M. Peddemors.1990b. Bottlenose dolphin *Tursiops truncatus* distribution in Natal's coastal waters. *S. Afr. J. mar. Sci.*, 9:1-10). Sighting records are also collected from the Natal Sharks Board tourist boat.

2.2 Analyses/development of techniques

NSB

Aerial surveys are being used to estimate abundance and distribution of cetaceans in association with the movement of sardines into KwaZulu-Natal during the austral winter months. The time-area closure of the shark net fishery relies on this data.

Aerial surveys are being used to estimate abundance and seasonal changes in nearshore distribution of cetaceans in the previously under-researched northern KwaZulu-Natal.

EWT

Boat-based surveys for humpback dolphins in the region of Richards Bay are designed to estimate abundance and distribution for calculation of population parameters. These parameters are then used to determine the impact of humpback dolphin bycatch in shark nets.

3. Marking data

3.1 Field work

3.1.1 Natural marking data

Species	Feature	Area/ stock	Number photographed	Catalog ued (Y/N)	Cat. Total	Contact person/institute
Southern right whale	Callosity pattern	South Africa	186 cow-calf pairs	N	640 cows	MRI Whale Unit
Southern right whale	Callosity pattern	Southeast coast	100	Y	>150	CDS
Southern right whale	Callosity pattern	South coast	9	N	9	DEAT
Humpback whale	Dorsal fin, fukes	West coast	100	N	?	MRI Whale Unit
Humpback whale	Dorsal fin, flukes	Southeast coast	? (120)	Y	?	CDS
Humpback whale	Dorsal fin, flukes	East coast	198	N	198	DEAT
Bryde's whale	Dorsal fin	Southeast coast	? (27)	N	>150	CDS
Killer whale	Dorsal fin, body scarring	Marion Island	26	Y	26	University of Pretoria
Heaviside's dolphin	Dorsal fin	South Africa	7 250*	N	?	MRI Whale Unit
Indian Ocean bottlenose	Dorsal fin	Southeast coast	547	Y	>3500	CDS

dolphin						
Indian Ocean bottlenose dolphin	Dorsal fin	Durban	>700	N	>250	NSB
Indo-pacific humpback dolphin	Dorsal fin	Southeast coast	156	Y	>443	CDS
Indo-pacific humpback dolphin	Dorsal fin and hump	Richards Bay	?	Y	91	EWT
Common dolphin	Dorsal fin	Southeast coast	? (700)	N	?	CDS

- Number of frames exposed

3.1.2 Artificial marking data

None

3.1.3 Telemetry data

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute
Southern right whale	Satellite	21	4 - 5 months	Oregon State University/ MRI Whale Unit

3.2 Analyses/development of techniques

NSB and EWT

Photo-ID studies of Indian Ocean bottlenose dolphins and Indo-pacific humpback dolphins in the Durban and Richards Bay regions, respectively, are being used to establish population size and dynamics, with particular reference to determining impact of bycatch in shark nets.

4. Tissue/biological samples collected

4.1 Biopsy samples

Species	Area/stock	Number collected	Archived(Y/N)	No. analysed	Total holdings	Contact person/institute
Humpback whale	West coast	43	Y	?	67	MRI Whale Unit/AMNH
Southern right whale	South Africa	4	Y	?	631	MRI Whale Unit/AMNH
Heaviside's dolphin	West coast	42	N	?	110	DEAT
Dusky dolphin	West coast	15	N	?	89	DEAT

4.2 Samples from directed catches or bycatches

Species	Area/stock	Calendar year / Season total	Archived	Tissue types	Contact person
Indian Ocean bottlenose dolphin	KwaZulu-Natal	22	Y	S,G,T,ST	NSB
Indo-pacific humpback dolphin	KwaZulu-Natal	2	Y	S,G,T,ST	NSB
Long-beaked common dolphin	KwaZulu-Natal	13	Y	S,G,T,ST	NSB

S=skin, B=blubber, T=teeth, W=baleen, G=gonads, C=ext parasites, P=internal parasites, K=skeletal remains, A=pathology samples, CV=cardiovascular systems, ST=Stomach

4.3 Samples from stranded animals

Species	Area/stock	No.	Archived	Tissue tyoe	Contact person/inst.
Humpback whale	West coast	1	Y	S,B,L,C	MRI Whale Unit
Southern right whale	South Africa	1	Y	B,C,L	MRI Whale Unit
Southern right whale	South Africa	1	Y	B,C,G,A	MRI Whale Unit
Southern right whale	South Africa	1	Y	S,B,C,A	MRI Whale Unit
Southern right whale	South Africa	1	Y	S	MRI Whale Unit
Southern right whale	South Africa	1	Y	C,A	MRI Whale Unit
Sperm whale	South Africa	1	Y	B,G,T	MRI Whale Unit
Pygmy sperm whale	South Africa	2	Y	G,K,P	MRI Whale Unit
Shortfin pilot whale	East Coast	1	Y	K,T,G	PEM
Pygmy killer whale	East Coast	1	Y	K,T,G	PEM
Mesoplodon spp	East Coast	5	Y	K,T,G	PEM
Layard's beaked whale	South Africa	1	Y	S,B,C,G,K	MRI Whale Unit
Risso's dolphin	South Africa	1	Y	B,G,K	MRI Whale Unit
Common dolphin	South Africa	1	N		MRI Whale Unit
Common dolphin	South Africa	1	N		MRI Whale Unit
Common dolphin	South Africa	1	?	K,S	CDS
Common dolphin	South Africa	1	N	CV	DEAT
Common dolphin	South Africa	1	N	S,T,K,CV	DEAT
Common dolphin	South Africa	1	N	S,B,T,G,K,	DEAT
Long-beaked common dolphin	KwaZulu-Natal	1	Y	S,G,T,ST	NSB
Heaviside's dolphin	South Africa	1	N		MRI Whale Unit
Dusky dolphin	South Africa	1	N		MRI Whale Unit
Dusky dolphin	South Africa	1	Y	T	MRI Whale Unit
Striped dolphin	South Africa	1	Y	K	MRI Whale Unit
Striped dolphin	KwaZulu-Natal	1	Y	S,K,G,T,ST	NSB
Indian Ocean bottlenose dolphin	KwaZulu-Natal	1	Y	S,G,T,ST	NSB
Pan-tropical spotted dolphin	KwaZulu-Natal	2	Y	S,K,G,T,ST	NSB

S=skin, B=blubber, T=teeth, W=baleen, G=gonads, C=ext parasites, P=internal parasites, K=skeletal remains, A=pathology samples, CV=cardiovascular systems, ST= stomach

4.4 Analyses/development of techniques

NSB

Skin samples of bottlenose dolphins are being analysed for genetic studies at the University of Durham, U.K., by Dr. R. Hoelzel and A. Natoli. Skin samples of humpback dolphins are being analysed as part of a worldwide genetic analysis of Sousa at the American Museum of Natural History, U.S.A., by Dr. H. Rosenbaum. Stomach samples of two melon-headed whales and a rough-toothed dolphin have been analysed by Dr. N. Klages, Port Elizabeth Museum. Biological samples for all species have been accessioned into the marine mammal collection of the Port Elizabeth Museum.

DEAT

In collaboration with the Departments of Anatomy at Stellenbosch and Vrije Universities (Amsterdam) two common dolphins were dissected to investigate the structural-functional relations and developmental aspects of specific vascular circulatory routes. This forms part of a more comprehensive study investigating vascular circulatory systems in seabirds, pinnipeds and cetacea. The objective of the study is to describe and compare the development, morphology and variations of different vascular circulatory routes (e.g. vertebral venous- and azygos systems, pulmonary-, hepatic portal-, fetal-, cerebral- and coronary circulation) and to relate these findings to the function/physiology of the particular system and organism.

5. Pollution studies

NSB

The NSB stores samples of blubber from all bycatch and stranded animals for pollution studies.

6. Statistics for large cetaceans

6.1 Direct catches

None

6.2 Other non-natural mortality for the calendar year 2001

None

7. Statistics for small cetaceans

7.1 For the calendar year 2001

Species	Area/stock	Directed catch		Incidental mortality			Live-capture
		Reported	Est. total	Reported	Est. total	Source*	Reported
Indian Ocean bottlenose dolphin	KwaZulu-Natal	0		22	22	Shark nets	
Indian humpback dolphin	KwaZulu-Natal	0		2	2	Shark nets	
Longbeaked common dolphin	KwaZulu-Natal	0		13	13	Shark nets	

8. Strandings

The MRI Whale Unit, c/o South African Museum, Box 61, Cape Town, and the Department of Environmental Affairs and Tourism, P. Bag X2, Cape Town, attend strandings in the Western and Northern Cape; the Port Elizabeth Museum and Centre for Dolphin Studies attend strandings in the Eastern Cape; and Natal Sharks Board, P. Bag 2, Umhlanga Rocks, and Durban Sea World, P.O. Box 10712, Marine Parade, attend strandings in Kwa-Zulu Natal.

9. Other studies and analyses

MRI Whale Unit

Studies under way -

Structure, development and composition of the integument of the southern right whale, *Eubalaena australis* - Ph D dissertation, Desray Reeb

Environmental factors influencing the distribution of southern right whales (*Eubalaena australis*) on the Southern African coast - M Sc dissertation, Simon Elwen

Migratory characteristics of humpback (*Megaptera novaeangliae*) and southern right whales (*Eubalaena australis*) on the west coast of South Africa - Ph D dissertation, Jaco Barendse

Identification of individual southern right whales *Eubalaena australis* using vocal characteristics - Ph D dissertation, Leonie Hofmeyr-Juritz

Department of Mathematics and Applied Mathematics, University of Cape Town

a) Standardised abundance estimates from the IDCR-SOWER sightings surveys over 1978/79 to 1997/98, based upon DESS, has been developed for Antarctic minke whales, blue, fin, sperm, humpback, killer and southern bottlenose whales (Branch and Butterworth).

b) Work continues on investigating possible sources of bias in Antarctic minke whales estimates in the third relative to the second circumpolar set of IDCR-SOWER surveys (Butterworth, Brandao, Rademeyer).

c) Population models assessing the status of Southern Hemisphere humpback populations have been further refined (Johnston, Butterworth).

d) Contributions have been made to the processes of developing RMP Implementation Simulation Trials for North Pacific minke whales (Butterworth) and of developing Aboriginal Whaling Management Procedures (Butterworth, Johnston).

NSB

Studies under way -

The Natal Sharks Board is experimenting with active acoustic devices (pingers), ellipsoidal air-filled floats (sonar reflectors), time-area closure of the fishery and drum-lines (baited hooks) as bycatch mitigation measures to reduce cetacean captures.

Anatomical study of dolphin dorsal fins with T. Lingham-Soliar, University of Durban-Westville, R.S.A.

Study of the prevalence of pox-virus with M. van Bresseem, Peru.

Investigation into the 'theory of mind' for dolphins with A.J-P. Tschudin, Oxford University, U.K.

DEAT

DEAT has collated and analysed the data obtained from the mandatory logbooks filled in by 15 boat based whale watching operators. They have taken 17 155 tourists to sea observing 6 980 whales and 96 533 dolphins. Peak months for sighting of whale and dolphin species were calculated subdivided into geographical regions. Passenger profiles were analysed to determine the proportion of local, national and international tourists.

10. Literature cited

None

11. Publications

11.1 Published or Inpress papers only

Atkins, S., Pillay, N. and Peddemors, V.M. in press. Behavioral responses of humpback dolphins *Sousa chinensis* to pingers in shark nets (gillnets) at Richards Bay, South Africa. *Mar. Mamm. Sci.*

Best, P.B. 2001. Distribution and population separation of Bryde's whale *Balaenoptera edeni* off southern Africa. *Mar. Ecol. Progr. Ser.* 220: 277-289.

Best, P.B., Brandao, A. and Butterworth, D.S. 2001. Demographic parameters of southern right whales off South Africa. *J. Cet. Res. Mgmt* (Special Issue 2): 161-169.

Best, P.B., Peddemors, V.M., Cockcroft, V.G., and Rice, N. 2001. Mortalities in right whales and related anthropogenic factors in South African waters, 1963-1998. *J. Cet. Res. Mgmt* (Special Issue 2): 171-176.

Branch, T A and Butterworth, D S. 2001. Southern Hemisphere minke whales: standardised abundance estimates from the 1978/79 to 1997/98 IDCR-SOWER surveys. *J. Cet. Res. Mgmt.* 3:143-74.

Branch, T A and Butterworth, D S. 2002. Estimates of abundance south of 60oS for cetacean species sighted frequently on the 1978/79 to 1997/98 IWC/IDCR-SOWER sightings surveys. *J. Cet. Res. Mgmt.* 3:251-270.

Dalebout, M.L., Baker, C.S., Ross, G.J.B., Anderson, R.C., Best, P.B., Cockcroft, V.G., Hinsz, H.L., Peddemors, V. and Pitman, R.L. in press. New specimens of Longman's beaked whale *Indopacetus pacificus* (Cetacea: Ziphiidae).

Roux, J-P., Best, P.B., and Stander, P.E. 2001. Sightings of southern right whales (*Eubalaena australis*) in Namibian waters, 1971-1999. *J. Cet. Res. Mgmt* (Special Issue 2): 181-185.

Best, P.B., and Lockyer, C.H. In press. Reproduction, growth and migrations of sei whales *Balaenoptera borealis* off the west coast of South Africa. *S. Afr. J. mar. Sci.*

Keith, M., Bester, M.N., Bartlett, P.A. and Baker, D. 2001. Killer whales (*Orcinus orca*) at Marion Island, Southern Ocean. *African Zool.* 36:163-175.

Keith, M., Peddemors, V.M. and Bester, M. in press. Indo-Pacific humpback dolphin population characteristics at Richards Bay, South Africa, and implications for incidental capture in shark nets. *S. Afr. J. Wildl. Res.*

Pichler, F.B., Robineau, D., Goodall, R.N.P., Meyer, M.A., Olivari, S.C. and Baker, S.C. 2001. Origin and radiation of Southern Hemisphere coastal dolphins (genus *Cephalorhynchus*) *Molecular Ecology.* 10:2215-2223.

Van Bresseem, M-F, Van Waerebeek, K., Jepson, P., Raga, J.A., Di Benedetto, A.P., Siciliano, S., Ramos, R., Kant, W. Peddemors, V., Kinoshita, R., Ross, P.S., López-Fernández, A., Evans, K., Crespo, E. and Barrett, T. 2001. An insight into the epidemiology of dolphin morbillivirus worldwide. *Veterinary Microbiology*, 81: 287-304.