

# New Zealand Progress Report on cetacean research April 2008 to April 2009

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This report summarises information obtained from:

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Australian Antarctic Division	AAD	simon.childerhouse@aad.gov.au

## 1. SPECIES AND STOCKS STUDIED

IWC common name	IWC recommended scientific name	Area/stock(s)	Items referred to
Southern right whale	<i>Eubalaena australis</i>	NZ subantarctic and mainland	2.1.1; 3.1.1; 4.1
Humpback whale	<i>Megaptera novaeangliae</i>	Group E	2.1.1; 2.1.2; 4.1
Common dolphin	<i>Delphinus delphis</i>	NZ	2.1.1; 2.1.2; 2.2; 3.1.1; 4.4; 5; 7.3.2; 8; 9; 11
Hector's dolphin	<i>Cephalorynchus hectori hectori</i>	NZ	2.1.1; 2.1.2; 2.2; 3.1.1; 4.3; 5; 8; 9
Maui's dolphin	<i>Cephalorynchus hectori maui</i>	NZ	2.1.1; 5
Bottlenose dolphin	<i>Tursiops truncatus</i>	NZ	2.1.1; 3.1.1; 4.3; 7.3.2; 8; 9; 11.1
Gray's beaked whale	<i>Mesoplodon grayi</i>	NZ	4.3; 8
Long-finned pilot whale	<i>Globicephala melas</i>	NZ	4.3; 7.3.2; 8; 9
Bryde's whale	<i>Balaenoptera brydei</i>	NZ	2.1.1; 2.1.2; 3.1.1; 6.3.1; 11.1
Sperm whale	<i>Physeter macrocephalus</i>	Kaikoura, NZ	2.2

## 2. SIGHTINGS DATA

### 2.1 Field work

#### 2.1.1 Systematic

Give brief details of **systematic** surveys, when and where held and references to cruise reports if applicable. A summary table of sightings may be included (e.g. see below).

Target species	Date	Area	No. of sightings	Contact person/institute and references
Southern right whale	July/August 2008	Auckland Islands and mainland New Zealand	213	S. Childerhouse (AAD)
Bryde's whales	Jan 2008-Feb 2009	Hauraki Gulf	5 whales	R. Constantine, S. Behrens (UA)
Bottlenose dolphin	Jan-April 2008	Bay of Islands	c.150 dolphins	R. Constantine (UA)
Humpback whale	14 June-11 July 2008	Cook Strait	37	N.Bott (DOC)
Blue whale	14 June-11 July 2008	Cook Strait	4	N.Bott (DOC)
Maui's dolphin	9 -28 May 2008	West coast, North Island NZ	6	E. Slooten (OU)
Maui's dolphin	6-16 January 2009	West coast, North Island NZ	2	E. Slooten (OU)

Common dolphin	29 Feb 2008 – March 2009	Hauraki Gulf	28 groups of 5 to 50 dolphins	K. Stockin, V. Petrella (MU-A)
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S. Childerhouse, in association with the University of Auckland (C.S. Baker and E. Carroll) and Australian Antarctic Division (G. Dunshea), led a 20-day trip in July and August 2008 to the Auckland Islands aboard R/V "Evohe". This was the third year of a four year research programme involving winter field surveys to the Auckland Islands. Large numbers of Southern right whales (SRWs) were found in Port Ross and around the northern end of the Auckland Islands. A total of 202 biopsies and a similar number of individual identification photos were collected. These will be matched with the existing material collected from the Auckland Islands in 1995-98 and 2006-2007, and more recently, around mainland New Zealand (under collaborative agreement between Department of Conservation and University of Auckland). A systematic survey of Port Ross and the northern end of the Auckland Islands was undertaken on 29 July and a total of 213 whales was counted, including 57 cow-calf pairs. A similar survey was also undertaken in 1998 and 2006 when a total of 146 (including 18 cow-calf pairs) and 208 SRWs (including 34 cow-calf pairs) were counted respectively. Charter costs for the Expedition were generously supported by the Department of Conservation (Southland Conservancy and Marine Conservation Unit), the Marine Conservation Action Fund, and Blue Planet Marine NZ Ltd.

S. Behrens and R. Constantine (UA) completed a study on the Bryde's whales of the Hauraki Gulf. Twelve aerial surveys of the northern Hauraki Gulf, covering 1,350 nautical miles were completed during the warm-water months, showed a low sighting rate of whales in this area. Boat-based surveys showed a high sighting rate from Bryde's whales in the inner Hauraki Gulf area; consistent with previous research. These whales were present year round and photo-ID work resulted in a catalogue of 74 whales; six whales were resights to previous years and two new whales were added to the catalogue. A GIS was created showing no differences in seasonal use or behaviour occurs by Bryde's whales in the Hauraki Gulf. These findings are important for recommending mitigation actions to minimise vessel strike mortality of whales in the Hauraki Gulf. A paper was presented to the Scientific Committee at IWC 60 that outlined the extent of Bryde's whale mortality in this region.

R. Constantine (UA) continues to work on the effects of commercial and recreational dolphin-watch vessels in the Bay of Islands. The main aim of this study, to be completed in October 2009, is to evaluate the efficacy of the permit changes made by Department of Conservation. Focal group follows and photo-ID work continues and the study allows comparison to previous work.

L. Hartel and R. Constantine (UA) are studying the micro-scale habitat use by bottlenose dolphins in the Bay of Islands and Hauraki Gulf. By creating a GIS of current habitat use and comparing to historical data. The research will facilitate long-term habitat use by these dolphins. Age-class and individual differences in habitat use are being examined. This research will be completed in Feb 2010.

E. Carroll, a PhD student at the University of Auckland, is conducting genetic profiling of New Zealand southern right whales. The dataset comprises samples collected from southern right whales from the Auckland Islands during winter field surveys 1995-1998 (N=354) and 2006-2008 (N=580) and also from whales opportunistically sampled from around the New Zealand mainland from 2003 onwards (N=32). The genetic profile of these samples, comprising microsatellite genotype and mitochondrial haplotypes, is currently being constructed and will be the basis of a genetic mark-recapture estimate of abundance. The data generated will be used to examine the relationship between whale samples around the Auckland Islands and around the New Zealand mainland, and to investigate paternity and mating systems.

N. Bott (nee Gibbs) (DOC) with the support of volunteers including ex-whalers, undertook a land and vessel-based survey of migrating whales (mainly humpbacks) in Cook Strait for four weeks in June and July 2008. This was the fifth year of a dedicated humpback whale survey in New Zealand since whaling finished in 1964. From 216 hours of land based observation, 32 pods of 37 humpback whales were observed. Eight photo-IDs and 14 genetic samples were obtained. Four blue whales were also encountered during the survey and two genetic samples were collected.

K. Russell, R. Constantine and K. Thompson conducted research in Vava'u, Tonga from September – October resulting in 12 humpback whales being photo-identified; two of which had been seen in previous years. A total of eight skin samples were collected and these are currently being analysed.

R. Currey, S. Dawson and E. Slooten (OU) completed research on the conservation biology of bottlenose dolphins in Fiordland. They determined that the Fiordland bottlenose dolphins met the IUCN Red List criteria for classification as a Critically Endangered regional population on the basis of small population size and the projected rate of population decline (Criteria A3 and C1).

K. Stockin (MU-A) continues to investigate the behaviour and ecology of common dolphins in the Hauraki Gulf, Auckland. Photo-identification is being extended for population analysis. In conjunction with G. Machovsky (MU-A) and D. Raubenheimer (MU-A), behavioural interactions between common dolphins and Australasian gannets are also being assessed.

V. Petrella (MU-A) in association with K. Stockin (MU-A) and D. Brunton (MU-A) continues a doctorate study investigating the vocal repertoire of common dolphins in the Hauraki Gulf, Auckland. This study aims to describe whistle characteristics of New Zealand common dolphins and assess vocal behaviour in relation to the presence of associated species and boat traffic within the region.

Simon Childerhouse (AAD), William Rayment (OU), Trudi Webster (OU) and Silvia Scali (OU) conducted a series of aerial line transect surveys between the 9th and 28th May 2008 to examine distribution of Maui's dolphin (*Cephalorhynchus hectori maui*) on the northern west coast of the North Island. 89 survey lines were completed during seven survey flights totaling 32 hours flight time. A total of six Maui's dolphin sightings were made while on survey effort. These sightings comprised six single individuals and one group of two (mean group size = 1.2, SD = 0.4). The furthest offshore sighting was 4.30 n.mi. from the coast. All sightings were made in water depths less than 50 m. In addition to the survey sightings, three sightings of Maui's dolphins (all single individuals) were made while off-effort between transect lines.

Trudi Webster (OU), S. Behrens (AU) and G. Soljak (DOC) carried out alongshore surveys to assess the distribution of Maui's dolphin (*Cephalorhynchus hectori maui*) in relation to the southern boundary of the protected area on the west coast of the North Island. Seven alongshore distribution surveys were carried out between 6th and 16th January 2009. A total of 2674.89 n.mi were flown on effort along the coast between the Sugar Loaf Islands and the entrance to Raglan Harbour. Four transects (300 m, 600 m, 900 m and 1200 m) were flown on each of the seven survey days. Only two on-effort sightings of Maui's dolphins were made during the alongshore surveys. One group was a single individual and the other group consisted of a mother-calf pair. The sighting of the single animal occurred off Raglan and the mother-calf pair were observed off Tirua Point. No sightings of Maui's dolphins were made whilst off-effort.

E. Martinez (MU-A) in association with M. Orams (AUT); D. Brunton (MU-A); D. Clement (Cawthron Institute) and E. Slooten (OU) are analysing data collected over the past three consecutive austral summers (15 months in total). The aim of this research is to examine the impacts of vessel activity on the behaviour of Hector's dolphins in Akaroa Harbour, Banks Peninsula. This study aims to determine and quantify the current level of vessel activity; identify whether such impacts are significant for the local Hector's dolphin population; and assess whether these can be mitigated by appropriate changes to the dolphin-watching permit conditions. The research utilises theodolite tracking and three-minute focal group scan sampling methodology from both land- and vessel-based platforms. The PhD thesis and a final report to the Department of Conservation are scheduled to be submitted in 2010.

E. Martinez (MU-A) in association with M. Orams (AUT) conducted a pilot study for the Department of Conservation to assess whether the use of stones by swimmers to attract dolphins during swim-with-dolphin encounters in Akaroa, is inducing a change in the Hector's dolphins' behaviour. Data were collected between 01/11/08 and 07/12/08 from commercial swim-with-dolphin vessels. A report to the Department of Conservation is scheduled for submission in 2009. N. de la Brosse (MU-A) in association with K. Stockin (MU-A) commenced fieldwork in the Hauraki Gulf, Auckland in order to assess the role of mother-offspring pairs in foraging common dolphin groups.

### 2.1.2 Opportunistic, platforms of opportunity

Primary species	Area	Data type/method	Collected by	Platform	Location of archive (if applicable)	Contact person/institute and refs
Bryde's whale	Hauraki Gulf	Location, group size & composition, Photo-ID*	S Behrens	Dolphin watching vessel	University of Auckland	R.Constantine (UA)
Humpback whale	Queen Charlotte Sound	Genetic*, Photo-ID*, sightings	Dan Englehaupt	Dolphin watching vessel	DOC	N.Bott (DOC)
Humpback whale	Kaikoura	Photo-ID*, sightings	Dennis Buurman	Dolphin watching vessel	DOC	N.Bott (DOC)
Humpback whale	Akaroa	Sightings	Black Cat Akaroa	Dolphin watching vessel	DOC	N.Bott (DOC)
Common dolphin	Hauraki Gulf	Location, group sizes, dorsal fin photos	KS (MU-A)	Eco-tour vessel	MU-A	Karen Stockin
Hector's dolphin	Banks Peninsula	Location, group sizes, dorsal fin photos	EM (MU-A)	Eco-tour vessel	MU-A	E. Martinez

E. Martinez (MU-A) is analysing data collected during opportunistic surveys on board dolphin watching/swimming vessels in Akaroa Harbour as part of her doctorate research. Data collection focused on the behavioural ecology of Hector's dolphins in the presence of vessels and/or swimmers in Akaroa Harbour. Individual photo-IDs of Hector's dolphins encountered around dolphin-watching and dolphin-swimming operations were also opportunistically collected. A photo-id catalogue is being compiled and has been compared with the University of Otago photo-id catalogue (curated by E. Slooten and S. Dawson). The PhD thesis and a report to DoC are scheduled for submission in 2009 and 2010, respectively.

## **2.2 Analyses/development of techniques**

K. Stockin (MU-A) in association with J. Cockrem (MU-P) is developing a technique for the extraction of progesterone from blubber samples recovered from stranded and/or bycaught marine mammals. Laboratory work is currently underway to extract and examine blubber progesterone levels in common dolphin carcasses which have undergone a systematic necropsy. This initial phase of the research aims to identify threshold levels in pregnant and non-pregnant females, which may later be applied to animals for which examination of the reproductive tract is not possible.

B. Miller, S.M. Dawson, R. Vennell, and E. Slooten (OU) have developed a passive sonar array for localising sperm whales in 3D. The system was used from a 6m boat in the Kaikoura canyon throughout 2008 to measure acoustics and behaviour of diving sperm whales. A minimum of three free floating hydrophones at depths of 20-30m were deployed around each whale in addition to a boat based stereo hydrophone array at a depth of 100m. Audio tracks from all hydrophones were time-synchronized using GPS timing signals and relevant acoustic information extracted using custom software written in Matlab. Sequential Monte-Carlo localization software was implemented to reconstruct the underwater tracks of the whales.

M. van der Linde (OU) is continuing research on an ongoing study of sperm whales in Kaikoura. A digital database has been compiled containing sighting data from 4,845 encounters across 26 field seasons spanning from 1990 to 2007. A mark-recapture framework is being used to model long term trends in sperm whale abundance, survival and population growth rate. Preliminary modelling incorporating photographic effort suggests a decline in the number of sperm whales from 1990 to 2007, with the greatest decline attributed to resident whales. Survival rates and population growth rates will be analysed in an attempt to identify the main demographic process contributing to the apparent decline in abundance.

E. Hutchison, S. Dawson and E. Slooten (OU) are conducting research on Hector's dolphin fine-scale habitat selection at Banks Peninsula. Stomach content and stable isotope analyses are being completed to indicate important prey species. Dolphin and prey surveys will be carried out to examine habitat overlap across different seasons.

E Slooten and S Dawson (OU) continued the long-term research programme on Hector's dolphins at Banks Peninsula. Analysis of a 12-month acoustic monitoring data from Akaroa Harbour using Porpoise Detection Devices (PODs) showed that Hector's dolphins make much more continuous use of the harbour than expected from visual surveys alone. For example, they are still found in the shallow, inshore parts of Akaroa Harbour in the middle of winter when gillnetting is allowed there (including unattended nets overnight). In the area where gillnetting is allowed during winter, Hector's dolphins were detected on approximately 41% of days when gillnets were permitted. More than 30 gillnets were observed in the water in this area during April 2009.

E Slooten (OU) and S Dawson (OU) used a stochastic population model to evaluate the effectiveness of new protection measures for Hector's dolphin announced in 2008. The analysis indicates that the new fisheries regulations would slow but not quite halt the population decline. Estimates of catch rates in commercial gillnets from an observer programme (there are no quantitative estimates of bycatch by amateur gillnetters or in trawl fisheries) were used to predict the level of bycatch under the new regulations. Uncertainty in estimates of population size and growth rate, number of dolphins caught and other model inputs are explicitly included in the analysis. The current Hector's dolphin population is estimated at 27% of the estimated 1970 population. Under the new protection measures the total population is predicted to continue to decline, although at a slower rate than before. This decline is driven mainly by continuing bycatch due to the much weaker protection measures on the South Island west coast. In the absence of fisheries bycatch all populations are expected to increase, with the total population approximately doubling by 2050 and reaching half of its 1970 population size in just under 40 years. Under the new protection measures some populations would continue to decline and some would recover but would take several hundred years to reach half of their 1970 population size and more than a thousand years to fully recover from past fishing impacts.

Despite using a very different approach, an independent analysis by scientists from the fishing industry and National Institute of Water and Atmosphere (Davies et al. 2008) resulted in very similar predictions. For example, both models predict population declines if past management were continued for the next 50 years, to 5,467 individuals (CV 0.20, Slooten and Dawson 2008) or 5,631 (range: 4,656-7,592, Davies et al. 2008). Both

analyses predict substantial population recovery under zero fisheries mortality over 50 years, to 15,411 (CV 0.16, Slooten and Dawson 2008) or 14,650 (range 12,313-19,250, Davies et al. 2008).

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Common dolphin	Ongoing	NZ	Extract blubber progesterone	Progesterone level in blubber	K.Stockin : MU-A
Hector's dolphin	Ongoing	Banks Peninsula, NZ	Stomach contents and stable isotope analyses	Diet	E. Slooten (OU)
Hector's dolphin	Ongoing	Banks Peninsula, NZ	Acoustic detection with PODs	Presence/absence of vocalising dolphins	E. Slooten (OU)
Hector's dolphin		NZ	Population modelling	Predicted effectiveness of protection measures	E. Slooten (OU)
Sperm whale	Ongoing	Kaikoura, NZ	Passive sonar array	Acoustics and diving behaviour	E. Slooten (OU)

### 3. MARKING DATA

#### 3.1 Field work

##### 3.1.1 Natural marking data

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

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Southern right whale	Callosities	Auckland Islands	~200	Y	>400	S. Childerhouse/G. Dunshea
Southern right whale	Head callosities	Mainland NZ	~26 (2007 and 2008)	Y	85	S.M. Smith, DOC
Bottlenose dolphin	Dorsal fin	Bay of Islands & Hauraki Gulf	tba	Y	~450	R. Constantine (UA)
Bryde's whale	Dorsal fin	Hauraki Gulf	9	Y	74	R. Constantine (UA)
Humpback whale	Fluke	Cook Strait	12	Y	60	N. Bott (DOC)
Common dolphin	Dorsal fin	Hauraki Gulf	30	Y	>650	K. Stockin (MU-A)
Hector's dolphin	Dorsal fin/body	Banks Peninsula	>50	Y	>100	E. Martinez (MU-A)
Hector's dolphin	Dorsal fin/body	Banks Peninsula	65+	Y	891	T.Webster (OU)

S.Smith (DOC) coordinated the collection of opportunistic sightings of southern right whales around the NZ mainland provided by researchers, the public and DOC staff. In addition to opportunistic sightings, genetic sample collection (n=4) was also undertaken around NZ. These were analysed along with existing archived samples to determine whether individuals seen around the main two islands of NZ are genetically or geographically isolated from our sub-Antarctic populations. Twenty-six new individuals were added to the NZ mainland photo-identification catalogue, but there were no matches with the Auckland Islands catalogue, although there were some matches within the Mainland catalogue.

##### 3.1.2. Artificial marking data

Nil

##### 3.1.3 Telemetry data

Nil

#### 3.2 Analyses/development of techniques

Nil

#### 4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

##### 4.1 Biopsy samples (summary only)

Species	Area/stock	Calendar year/ season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Humpback whale	Group V	2008/16	Y			N Bott(DOC) / R.Constantine (UA)
Southern right whale	NZ- mainland	2008/4	Y	2	32+	R.Constantine / S.Baker (UA)
Southern right whale	Auckland Islands	2008/3	Y	202	950+	S.Baker/ E. Carroll (UA)

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

Nil

##### 4.3 Samples from stranded (and captive) animals

Species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Hector's dolphin	New Zealand	formalin fixed	19	Y	ongoing	W Roe, Massey University
Hector's dolphin	New Zealand	frozen tissues	19	Y	ongoing	W Roe
Beaked whales	New Zealand	whole head	3	Y	ongoing	W Roe
Pygmy sperm whale	New Zealand	Stomach	9	Y	5	E.Beatson/AUT
Pygmy sperm whale	New Zealand	Skin, blubber,	1	Y	0	E.Beatson/AUT
Long-finned pilot	New Zealand	Stomach	4	Y	4	E.Beatson/AUT
Gray's beaked whale	New Zealand	Skin, blubber,	4	Y	0	E.Beatson/AUT
Strap-toothed beaked	New Zealand	Stomach	1	Y	1	E.Beatson/AUT
Hector's dolphin	New Zealand	Stomach	7	Y	7	E.Beatson/AUT
bottlenose dolphin	New Zealand	Skin, blubber	4	Y	3	Rochelle Constantine, UA
common dolphin	New Zealand	Skin, blubber	8	Y	0	Rochelle Constantine, UA
Cuvier's beaked whale	New Zealand	Skin, blubber	1	Y	1	Rochelle Constantine, UA
dusky dolphin	New Zealand	Skin, blubber	2	Y	0	Rochelle Constantine, UA
Gray's beaked whale	New Zealand	Skin, blubber	2	Y	1	Rochelle Constantine, UA
Hector's dolphin	New Zealand	Skin, blubber	9	Y	8	Rochelle Constantine, UA
killer whale	New Zealand	Skin, blubber	2	Y	1	Rochelle Constantine, UA
long-finned pilot	New Zealand	Skin, blubber	3	Y	0	Rochelle Constantine, UA
pygmy sperm whale	New Zealand	Skin, blubber	12	Y	0	Rochelle Constantine, UA
short-finned pilot	New Zealand	Skin, blubber	1	Y	0	Rochelle Constantine, UA
sperm whale	New Zealand	Skin, blubber	4	Y	3	Rochelle Constantine, UA
Strap-toothed beaked	New Zealand	Skin, blubber	2	Y	2	Rochelle Constantine, UA
Unknown	New Zealand	Skin, blubber	3	Y	0	Rochelle Constantine, UA
Common dolphin	NZ	Skin and	12 (+ 1)	Y	-	K. Stockin/ MU-A
Common dolphin	NZ	Skulls	10 (+ 1)	Y	-	K. Stockin/ MU-A
Common dolphin	NZ	Teeth	14 (+ 1)	Y	-	K. Stockin/ MU-A
Common dolphin	NZ	Stomachs	8 (+ 1)	Y	-	K. Stockin/ MU-A
Common dolphin	NZ	Reproductive	8 (+ 1)	Y	-	K. Stockin/ MU-A
Common dolphin	NZ	Liver, kidney,	8 (+ 1)	Y	-	K. Stockin/ MU-A
Common dolphin	NZ	Pectoral	8 (+ 1)	Y	8 (+ 1)	K.Stockin/ MU-A
Gray's beaked whale	NZ	Pectoral	1	Y	-	K.Stockin/ MU-A
Gray's beaked whale	NZ	Blubber,	1	Y	-	K.Stockin/ MU-A
Strap-toothed beaked	NZ	Pectoral	2	Y	-	K.Stockin/ MU-A
Strap-toothed beaked	NZ	Blubber,	1	Y	-	K.Stockin/ MU-A
Long-finned pilot	NZ	Pectoral	1	Y	-	K.Stockin/ MU-A
Long-finned pilot	NZ	Skull, blubber,	1	Y	-	K.Stockin/ MU-A

#### 4.4 Analyses/development of techniques

W. Roe (MU-P) continues to undertake necropsies on all beachcast Hector's dolphins. A cause of death is ascertained, where possible, on gross necropsy, and samples are collected and archived for genetic, histopathological, microbiological, toxicological, and dietary analysis.

W. Roe (MU-P) and A. van Helden (TP) in association with other collaborators have initiated a study using CT and other imaging techniques to assess lesions present in the heads of stranded beaked whales. W. Roe and K. Buckle (MU-P) are currently investigating the role of *Brucella sp.* in disease of Hector's dolphins.

#### 5. POLLUTION STUDIES

K. Stockin (MU-A) and collaborators are contracted by the Department of Conservation to investigate PCB and OC levels present in Hector's and Maui dolphins (genus *Cephalorhynchus*). Laboratory analyses are currently underway and initial results will be released in July 2009.

#### 6. STATISTICS FOR LARGE CETACEANS

##### 6.1 Corrections to earlier years' statistics for large whales

Nil

##### 6.2 Direct catches of large whales (commercial, aboriginal and scientific permits) for the calendar year 2008

Nil

##### 6.3 Anthropogenic mortality of large whales for the year 1 April 2008 – 31 March 2009

Whale species	Sex	No.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/ institute and refs
Bryde's whale	M	1	23/3/09	Approaches to Auckland Harbour, Hauraki Gulf	LC	14 knots	D	By crew	Martin Stanley, DOC <a href="mailto:mstanley@doc.govt.nz">mstanley@doc.govt.nz</a>

##### 6.3.2 Fishery bycatch of large whales

Nil

#### 7. STATISTICS FOR SMALL CETACEANS

##### 7.1 Corrections to earlier years' statistics for small cetaceans

Nil

##### 7.2 Direct catches of small cetaceans for the calendar year 20XX or the season 20XX/XX

Nil

##### 7.3 Anthropogenic mortality of small cetaceans for the calendar year 20XX or the season 20XX/XX

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

Nil

###### 7.3.2 Fishery bycatch of small cetaceans

The bycatch of small cetaceans in fishing operations reported to the Department of Conservation and the Ministry of Fisheries by observers for the period April 2008 – March 2009 was as follows:

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Unidentified cetacean		1	14/7/008	North Island East Coast	Alive	<i>Southern bluefin tuna</i>	Pelagic longline	Observer	
Bottlenose dolphin		1	11/9/08	North Island East Coast	Dead	<i>Snapper</i>	Bottom trawl	Observer	

Common dolphin		1	29/10/08	North Island West Coast	Dead	<i>Jack mackerel</i>	Mid-water trawl	Observer	
Pilot whale	M, F	2	26/12/08	North Island West Coast	Dead	<i>Jack mackerel</i>	Mid-water trawl	Observer	
Common dolphin		3	23/12/08	North Island West Coast	Dead	<i>Jack mackerel</i>	Mid-water trawl	Observer	
Common dolphin		3	23/12/08	North Island West Coast	Dead	<i>Jack mackerel</i>	Mid-water trawl	Observer	
Common dolphin		5	27/12/08	North Island West Coast	Dead	<i>Jack mackerel</i>	Mid-water trawl	Observer	
Common dolphin		2	28/12/08	North Island West Coast	Dead	<i>Jack mackerel</i>	Mid-water trawl	Observer	
Common dolphin		9	Jan-Mar 2009	South Island West Coast	Dead	<i>Rig</i>	Bottom trawl	Observer	

## 8. STRANDINGS

E. Beatson, S. O'Shea and colleagues (AUT) continue to investigate strandings of cetaceans in NZ, in particular, they continue to collect stomach and tissue samples of teuthophagous whales to investigate diet through a combination of stomach content, fatty acid and stable isotope analyses.

A. Bui, in association with S. O'Shea and J. Robertson, (AUT) has just completed a MAppSc thesis looking into the effects of cetacean carcass burial on New Zealand beaches. The primary objective of this research had been to determine the effects of cetacean burial on beach sediments, and evaluate potential health and safety risks associated with this practice. The effects of organic enrichment are presented over a six-month period for two sites at which animals were buried in 2008; the biological effects of this burial are reported for one of these sites, 12 months post burial. Nitrogen and phosphate concentrations in surface sands changed considerably following cetacean burial. During the six months these chemicals were monitored their concentrations were localized and elevated no further than 40 m from the site of whale burial.

Cores revealed nitrogen and phosphate concentrations at and in the immediate vicinity of cetacean burial six months post burial to be elevated at the water table, but elevated concentrations were not observed greater than 25 m from the site of burial. Twelve months post cetacean burial no significant differences in species richness or abundance were apparent in intertidal communities extending along transects proximal to and some distance from one site of whale burial.

Persistent enrichment of beach sediments with organic matter from decomposing whale carcasses could result in persistence of pathogens in beaches, causing unforeseen risks to human health and safety. Recommendations are made to minimize possible threats to public following burial of cetaceans in beaches, until the potential health risks of such burial are more fully understood.

The Department of Conservation (DoC), often in association with local Maori, has the statutory responsibility for managing cetacean stranding events, and maintains a comprehensive coverage of the New Zealand coastline through its area offices, field centres and local networks. All stranding events are reported to the Museum of New Zealand, *Te Papa Tongarewa*, which maintains a stranding database (dating back to 1840).

### NEW ZEALAND WHALE STRANDING SUMMARY REPORT FOR THE PERIOD 1 April 2008 TO 31 Mar-09

FROM: Anton van Helden, Museum of New Zealand, *Te Papa Tongarewa* ([antonvh@tepapa.govt.nz](mailto:antonvh@tepapa.govt.nz))

The total number of reported strandings for this period is 83 incidents involving 190 animals. This excludes those animals that have been reported but for which stranding data forms had not been received by the Museum of New Zealand, *Te Papa Tongarewa*, before the end of March 2009.

At least 16 different species were recorded in the database for this period. The representation in the number of incidents of strandings for the different families that stranded in this period: *Balaenopteridae* 4.8%, *Ziphiidae* 13.3%, *Delphinidae* 60.2%, *Physeteridae* 2.4%, *Kogiidae* 15.7% and unknown represent unidentifiable whales, or parts of whales 3.6%. The representation in number of animals for the different families that stranded in this period are: *Balaenopteridae* 2.1%, *Ziphiidae* 5.8%, *Delphinidae* 81.1%, *Kogiidae* 8.4%, *Physeteridae* 1.1% and unknown 1.6%.

The species with the highest incidents of strandings were common dolphins *Delphinus delphis*, with 17 incidents. The largest number of animals of a species to strand was 110 for long-finned Pilot whales *Globicephala melas*.



The total number of animals refloated for this period was 14, 7 of which restranded and died, therefore 7 are presumed to have survived. This year had very few large mass stranding events, the largest was 104 long-finned pilot whales *G. melas*.

Species:	No. of strandings	No. of animals	No. refloated	No. restranded	No. animals rescued
<i>Balaenoptera acutorostra</i>	1	1	0	0	0
<i>Balaenoptera borealis</i>	1	1	0	0	0
<i>Balaenoptera edeni</i>	1	1	0	0	0
<i>Cephalorhynchus hectori</i>	15	15	0	0	0
<i>Delphinus delphis</i>	17	17	2	2	0
<i>Dolphin (unidentified sp)</i>	1	1	1	0	1
<i>Globicephala melas</i>	6	110	0	0	0
<i>Kogia breviceps</i>	13	16	4	2	2
<i>Lagenorhynchus obscurus</i>	4	4	2	1	1
<i>Megaptera novaeangliae</i>	1	1	0	0	0
<i>Mesoplodon grayi</i>	5	5	1	1	0
<i>Mesoplodon layardii</i>	4	4	1	1	0
<i>Mesoplodon sp</i>	1	1	0	0	0
<i>Orcinus orca</i>	3	3	3	0	3
<i>Physeter macrocephalus</i>	2	2	0	0	0
<i>Stenella coeruleoalba</i>	1	1	0	0	0
<i>Tursiops truncatus</i>	3	3	0	0	0
<i>Unknown</i>	3	3	0	0	0
<i>Ziphius cavirostris</i>	1	1	0	0	0
<b>Total:</b>	83	190	14	7	7

## 9. OTHER STUDIES AND ANALYSES

B. Bollard Breen and E. Beatson (AUT) continue to verify public sightings of Maui's dolphins and are developing a spatial database of public sightings of Maui's dolphins from 2000 to present. Every time a member of the public sees a Maui's dolphin and calls the Maui's dolphin sightings hotline, contact is made with the observer to verify whether or not the species was correctly identified, and how reliable the sighting is. Sighting information is then transferred onto GIS and provided to WWF-NZ and the Department of Conservation.

L. Meynier (MU-P) and K. Stockin (MU-A) continue to examine stomachs from stranded by-caught common dolphins to add to the published data available on common dolphin diet (Meynier et al 2008).

J. Berghan (Independent), K. Algie (Dolphin Explorer), K. Stockin (MU-A), N. Wiseman (AU), R. Constantine (AU), G. Tezanos-Pinto (AU) and F. Mourão analysed photo-identification data of bottlenose dolphins (*Tursiops truncatus*) collected in the Hauraki Gulf. Results revealed that over 40% of bottlenose dolphins observed in the Hauraki Gulf did not feature in the Bay of Islands catalogue, suggesting that the north-eastern North Island population may be larger than previously reported.

K. Stockin (MU-A) and colleagues continue research on the life history and skull morphometrics of common dolphins sampled from around NZ.

K. Stockin (MU-A) in collaboration with A. Watson (Oklahoma State University) and Anton Van Helden (Te Papa) is undertaking radiographic investigations into the anatomy of pectoral flippers in common dolphin and beaked whales, respectively.

## 10. LITERATURE CITED

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