

ARGENTINA. PROGRESS REPORT ON CETACEAN RESEARCH, MAY 2003 TO APRIL 2004, WITH STATISTICAL DATA FOR THE SEASON 2003/4

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1. Species and stocks studied

AQUAMARINA

Common name	Scientific name	Area/stock(s)	Items referred to
Franciscana dolphin	<i>Pontoporia blainvillei</i>	Buenos Aires coast	2.1.1; 2.1.2; 3.1.1; 3.1.3; 3.2; 4.2; 4.3; 4.4; 7.1; 7.2; 8; 9; 11.2
Burmeister's porpoise	<i>Phocoena spinipinnis</i>	Buenos Aires coast	2.1.2; 4.2; 4.3; 7.1; 8
Bottlenose dolphin	<i>Tursiops truncatus</i>	Buenos Aires coast	2.1.2
Killer whale	<i>Orcinus orca</i>	Buenos Aires coast	2.1.2

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Common name	Scientific name	Area / stock	Items referred to
Dusky dolphin	<i>Lagenorhynchus obscurus</i>	Northern Patagonia	2.1.1, 2.2, 4.2, 9
Common dolphin	<i>Delphinus delphis</i>	Northern Patagonia	7.1, 4.2, 9
Commerson's dolphin	<i>Cephalorhynchus commersonii</i>	Northern, central and southern Patagonia	2.1.1, 2.2, 3.1.1, 4.2, 7.1, 9.
Peale's dolphin	<i>L. australis</i>	Central Patagonia	2.1.1, 2.2, 3.1.1, 9
Fraser's dolphin	<i>Lagenodelphis hosei</i>	Erratic individuals not distributed in the area	4.3, 8.
Bottlenose dolphin	<i>T. truncatus</i>	Northern Patagonia	4.3, 8, 9.
False killer whale	<i>Pseudorca crassidens</i>	Southern Patagonia	9.
Gray's beaked whale	<i>Mesoplodon grayi</i>	Northern Patagonia	8.
Franciscana	<i>Pontoporia blainvillei</i>	Distribution range	2.1.1, 9.
Shepherd's b w	<i>Tasmacetus shepherdi</i>	Southern Patagonia	8.
Hector's b w	<i>Mesoplodon hectori</i>	Northern Patagonia	8.
Southern bottlenose w	<i>Hyperoodon planifrons</i>	Northern Patagonia	8.
Cuvier's b w	<i>Ziphius cavirostris</i>	Northern Patagonia	8.

Cethus

Common name	Scientific name	Area / stock	Items referred to
Southern right whale	<i>Eubalaena australis</i>	Southern Patagonia	2.1, 11.1
Franciscana	<i>Pontoporia blainvillei</i>	Northern Patagonia	2.1.1., 4.3, 8, 11.1
Commerson's dolphin	<i>Cephalorhynchus commersonii</i>	Southern Patagonia	2.1.1, 2.2, 3.1.1, 3.2., 4.1, 4.4., 5, 7.1, 9, 11.1

Peale's dolphin	<i>Lagenorhynchus australis</i>	Southern Patagonia	2.1.1, 2.2, 3.1.1, 3.2., 9
Killer whale	<i>Orcinus orca</i>	Northern Patagonia	2.1.2., 3.1.1

ICB

Common name	Scientific name	Area/stock(s)	Items referred to
Southern right whale	<i>Eubalaena australis</i>	SW Atlantic, N Patagonia	2.1.1, 2.2, 3.1.1, 4.1, 4.3, 6.3, 8, 9, 10, 11.1, 11.2

2. Sightings data

2.1 Field work

2.1.1 SYSTEMATIC

AQUAMARINA

Systematic sightings of Franciscana dolphin were recorded from land stations in Bahía San Blas, Bahía Blanca, Cabo San Antonio, and Bahía Samborombon (Buenos Aires coastal areas) during 2003. Also, boat surveys were conducted at the same locations for recording Franciscana dolphin distribution and behaviour. Strip and line transects were used to evaluate Franciscana abundance in San Blas, Cabo San Antonio, and Bahía Samborombon areas. Additionally, point transects were tested to evaluate relative dolphin abundance in specific areas.

CENPAT

- Coastal aerial surveys for small cetaceans (franciscanas, dusky, common and Commerson's dolphins) in the coast of Buenos Aires Province and Chubut (Northern Patagonia).
- Sightings distribution of dusky dolphin groups from tourism boats at Golfo Nuevo (Northern Patagonia).
- Sightings distribution of Commerson's dolphin from tourism boats at Bahía Engaño (Northern Patagonia).
- Sightings from cliff-tops of Commerson's dolphin at Chubut River mouth area and theodolite tracking and southern Santa Cruz Province.
- Sightings distribution of Peale's dolphin groups at Bahía Camarones (Central Patagonia) and southern Santa Cruz Province.

Cethus

Ecology and behaviour of Franciscana dolphin at Río Negro Province. The Ad libitum and Animal Group Focal methodology are used. Surveys are made from shore and from vessels. (Fundación Cethus)

Population numbers, group distribution, use of habitat, socioecology, behaviour, interaction between mother-calf of Commerson's dolphins at Bahía San Julián. Studies are carried out from land and vessel. The Ad libitum and Animal Group Focal methodology are used. Photoidentification technique is being developed, using marks, scars, and pigmentation patterns. (Fundación Cethus)

Studies on Commerson's dolphins to estimate the number of individuals in the population, groups distribution alongside the study area and their movements and behaviour are carried out on the population that inhabits Ría Santa Cruz, Santa Cruz Province, Argentina. The Ad libitum and Animal Group Focal methodology are used. Photoidentification technique is being developed. Surveys are made from shore and from vessels. (Fundación Cethus)

Movements and behaviour of Southern Right Whales along the coast of Santa Cruz province. Field work consist of shore observation and boat observation. Data is taken in daily sheets with information about time, tide, Beaufort scale, number of animals, behaviour and movements in the study area using *Ad Libitum* and *focal sampling techniques*. (Fundación Cethus)

Sightings of Peale's dolphins are carried out since January 2001 at Ría Santa Cruz. The general goal of this project is to study the behaviour, ecology and biology of Peale's dolphin. The main objectives are to estimate the number of individuals in the population, and to determine their movements in the study area, in order to compare the different populations studied. Observations are made from shore and from vessels. Photoidentification technique is being developed. (Fundación Cethus)

Studies of Peale's dolphin at La Mina, Santa Cruz, are being carried out since 1996, studying behaviour, patterns of movements, group size and main activities of Peale's dolphin in the area. Fieldwork consists of shore and vessel observation (Fundación Cethus).

Studies of Peale's dolphins at Cabo Vírgenes are being carried out since 1992. During this season, registration of specific data about foraging strategies and its association with kelp beds (*Macrocystis pyrifera*) were done mainly. Monitoring activities of petrel activities in the study area were followed in order to estimate the impact of these activities on Peale's dolphins habitat. (Fundación Cethus)

New observations of Peale's dolphin were done at the south of the mouth of Ría Gallegos. Data of group size and composition, movements, and behaviour were recorded in order to increase the knowledge about Peale's dolphins

and to compare these data with studies carried out at Cabo Vírgenes. Observations were made from shore and from vessels. (Fundación Cethus)

In all areas, the observations on Peale's dolphins were made according to Ad libitum and Animal Group Focal methodology. (Fundación Cethus)

ICB

Aerial survey of southern right whales off the coast of Peninsula Valdes, Argentina, September 23 to 25, 2003. Purpose of the survey: photoidentification of the callosity patterns of all right whales encountered along the perimeter of the Peninsula.

Total whales counted: 495 (including 154 calves).

Final results of photoidentification not yet available.

2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY

AQUAMARINA

Sightings of Franciscana dolphin, Burmeister's porpoise, Bottlenose dolphin and Killer whale were recorded at Bahia Samborombon, and Cabo San Antonio areas from artisanal and commercial fishing boats, including trawlers operating between 5 to 15 nautical miles from the coast.

CENPAT

Sightings records from fishing vessels

Cethus

Sightings records from coast and vessels were carried out along Santa Cruz Province.

Data on killer whales sightings were obtained during March - April 2004 through observations carried out at Peninsula Valdés.

Species	Area/stock	Calendar year/ season no. Collected	No. reported	Contact person/institute
Southern Right Whale	Santa Cruz coast	July 2003 – April 2004	21	Fundación Cethus

2.2 Analyses/development of techniques

AQUAMARINA

The SPUE (sightings per unit effort), encounter rate, and individuals/km² were estimated for Franciscana dolphins at each study area. Sightings of all species studied were plotted on marine charts to evaluate distribution.

CENPAT

a) Aerial surveys are being used in density / abundance estimations by means of distance sampling methods for dusky dolphins, Commerson's dolphins, Peale's dolphins and common dolphins (see Schiavini et al., 1999 and Pedraza et al in review, Crespo et al., submitted).

b) Habitat use and seasonal local abundance are being evaluated from data gathered onboard tourism boats for dusky and Commerson's dolphins.

Cethus

Data analysis consist in studying the proportion of time sighted related to sampling effort, the proportion of time dedicated to each main behaviour, and the use of habitat by Commerson's dolphins at Ría Santa Cruz. Photo-identification technique is also being carried out, using marks, scars, and pigmentation patterns.

Study of Peale's Dolphin at La Mina, Santa Cruz. Data analysis is intended to show the proportion of real sighting time related to sampling effort, activity patterns, associated behaviors and use of habitat in the study area according to its features.

Data analysis consists in studying the proportion of time sighted related to sampling effort, the proportion of time dedicated to each main behaviour, and the use of habitat by Peale's dolphins at Ría Santa Cruz. Photo-identification technique is being developed, using marks, scars, and pigmentation patterns.

ICB

Analysis of behavioral data of juvenile southern right whales collected between 1997 and 2001 was completed in January 2004 (Sironi 2004).

3. Marking data

3.1 Field work

3.1.1 NATURAL MARKING DATA

AQUAMARINA

Natural marks on dorsal fins from entangled franciscana dolphins were evaluated as a way to identify individuals. Results showed that there are not enough marks or natural scars or any colour pattern to identify individuals, even no differences in dorsal fin shape was found between females and males or age classes.

CENPAT

Species	Feature	Area/stock	Calendar year / season / no. Photographed	Catalogued Y/N	Catalogue total	Contact person / institute
Commerson's dolphin	Dorsal fin scars and anomalous coloration patterns	Northern and Central Patagonia	1998 – 2001 / year round/ 50	Y	140	E.A.Crespo (CENPAT)
Peale's dolphin	Dorsal fin and body scars	Central Patagonia	December 2002	Y	10	E.A. Crespo (CENPAT)

Cethus

Species	Feature	Area/stock	Calendar year / season / no. Photographed	Catalogued Y/N	Catalogue total	Contact person / institute
Commerson's dolphin	dorsal fin and along the back and sides of the body	Santa Cruz Coast	1996 and 1997 (summer time); 1998-2004/year round	Y	64	Fundación Cethus
Peale's dolphin	Dorsal fin and body scars	Santa Cruz Coast	January 1996 – April 2004	Y	12	Fundación Cethus
Killer whale	Dorsal fin, body scars	Península Valdés	1985-2002	Y	18	Fundación Cethus

ICB

Species	Feature	Area/stock	Calendar year/season/no, photographed	Catalogued (Y/N)	Catalogue total	Contact person/institute
Southern right whale	callosity pattern	SW Atlantic, N Patagonia	2003	Y	Approx. 1,800 individuals, currently under analysis	V. Rowntree / ICB-WCI/OA and University of Utah

3.1.3 TELEMETRY DATA

AQUAMARINA

A proposal for radio tagging was developed, and fieldwork activities including potential capture areas, dolphin capture methods and handling evaluation.

3.2 Analyses/development of techniques

AQUAMARINA

Over 60 dorsal fins from entangled Franciscana dolphins (2002-2004) were photographed, and shape by sex, scars and marks were analyzed with specific software.

CENPAT

Photo ID by means of dorsal fin scars is being used to study the capture / recapture history of the individuals identified. This data are providing information to develop capture recapture models for the estimation of population parameters such as abundance, birth, mortality and emigration-immigration rates; as well as social structure and group dynamic.

Cethus

Use of habitat at different months, tide and times of the day by Commerson's dolphins are studied at Bahía San Julián using GIS software are plotted to determine the habitat use.

Photo - identification technique is being developed for both species Commerson's dolphins and Peale's dolphins in the different study areas, using marks, scars, and pigmentation patterns.

4. Tissue/biological samples collected

4.1 Biopsy samples

Cethus

Species	Area/stock	Calendar year/season no. collected	Archived (Y/N)	No. analyzed	Total holdings	Contact person/institute
Commerson's dolphin	San Julián	2003/2004	Y	6	6	Fundación Cethus

ICB

Species	Area/stock	Calendar year/season no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Southern Right Whale	SW Atlantic, N Patagonia	2003 / 50 skin and blubber samples	Y	0	0	Luciano Valenzuela / Instituto de Conservación de Ballenas and University of Utah

4.2 Samples from directed catches or bycatches

AQUAMARINA

Species	Area/stock	Calendar year/season total	Archived (Y/N)	Tissue type(s)	Contact person/institute
Franciscana	Buenos Aires	35	Y	Muscle, several organs, tooth, skeleton	P. Bordino, M. Mendez / AquaMarina-CECIM
Burmeister's porpoise	Buenos Aires	5	Y	Muscle, several organs, tooth, skeleton	P. Bordino, M. Mendez / AquaMarina-CECIM

CENPAT

Species	Area / stock	Calendar / year Season total	Archived Y/N	Tissue types	Contact person Institute
Commerson's Dolphins **	Central and southern Patagonia	1999 / 2004	Y	Gastrointestinal helminths	E.A. Crespo CENPAT
Common dolphin	Northern Patagonia	1999 / 2004	Y	Gastrointestinal helminths	E.A. Crespo CENPAT

**See references Berón Vera et al (accepted for publication).

4.3 Samples from stranded animals

AQUAMARINA

Species	Area/stock	Calendar year/season total	Archived (Y/N)	Tissue type(s)*	Contact person/institute
Franciscana	Buenos Aires	9	Y	Muscle	P. Bordino, M. Mendez / AquaMarina
Burmeister's porpoise	Buenos Aires	2	Y	Muscle	P. Bordino, M. Mendez / AquaMarina

CENPAT

Species	Area / stock	Calendar / year Season total	Archived Y/N	Tissue types	Contact person Institute
Tasmacetus shepherdii	Southern Patagonia	2003	Y	skin samples	E.A. Crespo CENPAT
Mesoplodon hectori	Northern Patagonia	2002 - 2003	Y	Skin samples	E.A. Crespo CENPAT
Hyperoodon planifrons	Northern Patagonia	2002 - 2003	Y	Skin samples	E.A. Crespo CENPAT
Ziphius cavirostris	Northern Patagonia	2002 - 2003	Y	Skin samples	E.A. Crespo CENPAT

Cethus

Species	Area / stock	Calendar / year Season total	Archived Y/N	Tissue types	Contact person Institute
Franciscana	Northern Patagonia	3	Y	Muscle, skin, blubber, skeleton, teeth	Fundación Cethus

ICB

The following samples were obtained from a total of 31 southern right whales that stranded dead along the shores of Península Valdés between June 22 and November 15, 2003:

Baleen plates: 5
Skin / Blubber: 23
Muscle: 10
Bone: 1
Eye ball: 1
Internal organs: 6
Urine: 1
Cyamids: 2

4.4 Analyses/development of techniques

AQUAMARINA

Several tissue samples from Franciscana dolphins were analyzed for histopathology studies. DNA analysis was used on muscle samples to identify Franciscana dolphin stocks. Tooth were collected for each entangled and stranded Franciscana dolphin to determine age classes.

CENPAT

a) Samples of Commerson's, common, dusky and Peale's dolphins for genetic studies are being analysed at the University of Durham UK by Dr. A. Rus Hoelzel

Cethus

Diet of Commerson's dolphins captured in gillnets in Santa Cruz Province.

Studies on skull measurements of Commerson's dolphins from La Angelina and Ría Santa Cruz.

Genetic assessment on population structure of Commerson's dolphins in Santa Cruz Province is being carried out (Fundación Cethus & Conservation Genetics Laboratory, San Francisco State University)

ICB

Biopsy samples will be used for the following analyses:

Genetics: Sequencing of mtDNA control region to reveal different haplotypes and estimate genetic diversity, population genetic structure and gene flow. DNA fingerprinting using microsatellite loci for individual identification, paternity assessment, estimation of population structure, gene flow and assessment of social systems.
Stable Isotopes analyses: ^{13}C and ^{15}N isotope ratios of the skin to estimate trophic level and geographic location of feeding areas.

Samples from necropsies will be used to assess the health condition of the Península Valdés right whale population.

5. Pollution studies

Cethus

Fundación Cethus stores samples of blubber from Franciscana for pollution studies.

6. Statistics for large cetaceans

6.3 Earlier years' statistics

ICB

Cooke, J.G., Rowntree, V.J. and R. Payne. 2001. Estimates of demographic parameters for southern right whales (*Eubalaena australis*) observed off Península Valdés, Argentina. J. Cetacean Res. Manage. (Special Issue)2:125-132.

7. Statistics for small cetaceans

7.1 For the calendar year 2003

AQUAMARINA

Species	Area/stock	Directed catch		Incidental mortality			Live-capture
		Reported	Est. total	Reported	Est. total	Source	Reported
Franciscana	Buenos Aires	0	0	102	893	Gillnet	2
Burmeister's porpoise	Buenos Aires	0	0	9	—	Gillnet	0

7.2 Earlier years' statistics

AQUAMARINA

Earlier bycatch studies were done through interviews with fishermen. Data reported here were obtained with observers on board, and results shows that earlier statistic was underestimated. No comparisons between CPUE are possible. Time series of data were not analyzed.

8. Strandings

AQUAMARINA

Systematic beach surveys were done during 2003 at different locations in coastal Buenos Aires by AquaMarina CECIM staff (Calle 307 N560-7165 Villa Gesell, Buenos Aires, Argentina. 54 02255 456065. info@aquamarina.org)

Cethus

Species	Area/stock	Season total	Contact person
Franciscana	Northern Patagonia	3	Fundación Cethus

ICB

Between June 22 and November 15, 2003, 29 southern right whale calves, 1 adult and 1 adult or subadult stranded dead along the shores of Península Valdés.

9. Other studies and analyses

AQUAMARINA

a) A new double blind experiment in artisanal gillnet fisheries was conducted during 2002-2004 to determine the effectiveness of acoustic deterrents (Airmar 70kHz) at reducing bycatch of the Franciscana dolphin. A total of 43 dolphins were caught in the silent nets, and only 2 were caught in the active pinger nets, demonstrating a highly significant reduction in bycatch. No "dinnerbell" effect on south american sea lion behavior was recorded during the experiment. Although these acoustic devices show promise as a management tool in this fishery, long term effectiveness should be addressed, and other alternatives tested.

b) The Control Region of the mt-DNA of muscle tissue samples of Franciscana dolphin from Buenos Aires Province were analyzed and compared with samples from Brazil, seeking to investigate potential genetic structuring in our study area. Our results suggest the presence of at least two genetically distinct haplotype groups of Franciscana dolphins in Argentina; one that clusters with populations from southern Brazil, and another found only in the Buenos Aires Province, which shows the greatest genetic diversity. We propose the presence of at least three genetic stocks of the franciscana dolphin, one of them exclusive to Argentine waters. The genetic divergence between the sympatric haplotype groups from Argentina suggests that these dolphins share feeding grounds but may be from different breeding areas. The fact that different stocks have been found in this geographic area highlights the imperativeness of local conservation action, and emphasizes the need for studying in detail each possible habitat for the species.

c) Research was developed to investigate the use of bottom longlines as an alternative fishing practice in northern Buenos Aires in order to reduce Franciscana dolphin bycatch. Five local fishermen were randomly selected in 2003 to use longlines and gillnets, and landings of both fishing gear were compared. Fishing boats carried independent observers recording geographic position, depth, and biomass of fish categorized by species, sex and size. Landings of bottom longlines and gillnets were similar; however, longlines mainly targeted commercial species and marine mammal interactions and damage to fishing gear were substantially lower than that of gillnets. Bottom longlines use in the study area show promise to be effective fishing gear but a higher scale research is necessary.

CENPAT

Current: southern right whale, dusky dolphin, Commerson's dolphin, common dolphin and Peale's dolphin

Species	Area / stock	Calendar year	Studies	Contact person Insitute
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Dusky dolphin	Central Patagonia	2000 - 2004	stock size behaviour and short term reaction to whalewatching parasites	E:A: Crespo (CENPAT)
Commerson's dolphin	Central and southern Patagonia	2000 - 2004	stock size behaviour short term reaction to whalewatching parasites diet	E:A: Crespo (CENPAT)
Common dolphin	Northern Patagonia	2000 - 2004	Parasites diet age reproduction	E:A: Crespo (CENPAT)
Peale's dolphin	Central Patagonia	2000 - 2004	Stock size Photoidentification	E:A: Crespo (CENPAT)
Franciscana	Distribution range	1999/2004	Abundance and Conservation status	E:A: Crespo (CENPAT)

Cethus

Species	Area / stock	Calendar / year	Studies	Contact person Institute
Commerson's dolphin	Southern Patagonia	2003 2004	Stock size. Photoidentification (since 1996)	Fundación Cethus
Peale's dolphin	Southern Patagonia	2003 2004	Stock size. Photoidentification (since 1996)	Fundación Cethus
Southern Right Whale	Southern Patagonia	2003 2004	Stock size.	Fundación Cethus
Franciscana	Northern Patagonia	2003 2004	Stock size.	Fundación Cethus

ICB

The most recent model for the Valdés population of southern right whales (based on resightings of previously identified whales from 1971-90) makes the following estimates: population increase at 6.9% per year; mean calving interval of 3.35 years, mean age at first calving 9.1 years; adult female annual mortality rate 0.019 and reproductive female population size at 328 animals (Cooke et al. 2001).

10. Literature cited

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Sironi, M. 2004. Behavior and social development of juvenile southern right whales (*Eubalaena australis*) and interspecific interactions at Península Valdés, Argentina. Ph.D. Dissertation. University of Wisconsin, Madison, USA.

11. Publications

11.1 Published or 'In Press' papers only

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