

**PORTUGAL. PROGRESS REPORT ON CETACEAN RESEARCH, JANUARY 2003 TO DECEMBER 2006, WITH STATISTICAL DATA FOR THE CALENDAR YEAR 2003, 2004, 2005 and 2006.**

Compiled by M. Sequeira<sup>1</sup>, M. Silva<sup>2</sup>, M.J. Pitta-Grós<sup>3</sup> and L. Freitas<sup>4</sup>

<sup>1</sup>Instituto da Conservação da Natureza, Rua de Santa Marta 55, 1150-294 Lisboa

<sup>2</sup>Departamento de Oceanografia e Pescas, Universidade dos Açores, Cais de Santa Cruz, 9901-862 Horta

<sup>3</sup>Direcção Geral do Ambiente, Secretaria Regional do Ambiente, Rua Cônsul Dabney - Colónia Alemã, Apartado 140, 9900-014 Horta

<sup>4</sup>Museu da Baleia, 9200-033 Caniçal, Madeira

This report summarises information obtained from:

NAME OF AGENCY/INSTITUTE	ABBREVIATION (USE IN THE REPORT)	CONTACT E-MAIL ADDRESS
Instituto da Conservação da Natureza	ICN	<a href="mailto:sequeiram@icn.pt">sequeiram@icn.pt</a>
Associação Talassa. Espaço Talassa Lda	TALASSA	<a href="mailto:asso@espacotalassa.com">asso@espacotalassa.com</a>
HORTACETÁCEOS	HORTACETÁCEOS	<a href="mailto:info@hortacetaceos.com">info@hortacetaceos.com</a>
Centre of the Institute of Marine Research of the University of the Azores / Department of Oceanography and Fisheries of the University of the Azores	IMAR-DOP/UAÇ	<a href="mailto:monica@notes.horta.uac.pt">monica@notes.horta.uac.pt</a> <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a>
Nova Atlantis Foundation	NOVA ATLANTIS	<a href="mailto:oceanwatch@gmail.com">oceanwatch@gmail.com</a>
Whale Watch Azores	WW AZORES	<a href="mailto:wwa2@yahoo.com">wwa2@yahoo.com</a>
Museu da Baleia	MB	<a href="mailto:freitasluis@netmadeira.com">freitasluis@netmadeira.com</a>
Sociedade Portuguesa de Vida Selvagem	SPVS	<a href="mailto:spvs@socpvs.org">spvs@socpvs.org</a>
Projecto Delfim – Centro Português de Estudo dos Mamíferos Marinhos	PD	<a href="mailto:projecto.delfim@sapo.pt">projecto.delfim@sapo.pt</a>

## 1. SPECIES AND STOCKS STUDIED

IWC common name	IWC recommended scientific name	Area/stock(s)	Items referred to
Common minke whale	<i>Balaenoptera acutorostrata</i>	Azores, Mainland Portugal / E.N. Atlantic	3.1.1, 4.3, 6.3.2, 8
Sei whale	<i>Balaenoptera borealis</i>	Azores / E.N. Atlantic	2.1.1, 2.1.2, 3.1.1, 3.1.3, 3.2
Bryde's whale	<i>Balaenoptera edeni</i>	Azores, Madeira / E.N. Atlantic	2.1.1, 2.2, 3.1.1., 3.1.3, 4.1
Blue whale	<i>Balaenoptera musculus</i>	Azores / E.N. Atlantic	2.1.1, 2.1.2, 3.1.1, 3.1.3
Fin whale	<i>Balaenoptera physalus</i>	Azores, Mainland Portugal / E.N. Atlantic	2.1, 2.1.2, 3.1.1, 8
Humpback whale	<i>Megaptera novaeangliae</i>	Azores, Mainland Portugal / E.N. Atlantic São Tomé and Príncipe / W Africa, Gulf of Guinea	2.1.1, 2.1.2, 3.1.1, 3.2, 4.1, 4.4, 6.3.2
Sperm whale	<i>Physeter macrocephalus</i>	Azores, Madeira, Mainland Portugal / E.N. Atlantic	2.1.1, 2.1.2, 2.2, 3.1.1, 3.1.3, 3.2, 4.1, 4.3, 4.4, 8
Pigmy sperm whale	<i>Kogia breviceps</i>	Mainland Portugal / NE Atlantic	8
Rough-tooth dolphin	<i>Steno bredanensis</i>	Azores / E.N. Atlantic	3.1.1
Risso's dolphin	<i>Grampus griseus</i>	Azores, Mainland Portugal / E.N. Atlantic	2.1.1, 2.1.2, 2.2, 3.1.1, 3.2, 8
Harbour porpoise	<i>Phocoena phocoena</i>	Mainland Portugal / NE Atlantic	2.1.2, 2.2., 4.3, 7.3.2., 8
Common bottlenose dolphin	<i>Tursiops truncatus</i>	Azores, Madeira, Mainland Portugal / E.N. Atlantic São Tomé and Príncipe / W Africa, Gulf of Guinea	2.1.1, 2.1.2, 2.2, 3.1.1, 3.1.3, 3.2, 4.1, 4.3, 4.4, 8
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Azores, Madeira / E.N. Atlantic	2.1.1, 2.1.2, 2.2, 3.1.1, 3.1.3, 4.1, 4.3, 4.4, 8
Striped dolphin	<i>Stenella coeruleoalba</i>	Azores, Mainland Portugal / E.N. Atlantic	2.1.1, 2.1.2, 4.3, 8
Pantropical spotted dolphin	<i>Stenella attenuate</i>	São Tomé and Príncipe / W Africa, Gulf of Guinea	2.1.2
Common dolphin	<i>Delphinus delphis</i>	Azores, Madeira, Mainland Portugal / E.N. Atlantic	2.1.1, 2.1.2, 2.2, 3.1.1, 3.1.3, 4.1, 4.3, 4.4, 7.3.2, 8
False killer whale	<i>Pseudorca crassidens</i>	Azores / E.N. Atlantic	3.1.1, 3.1.3
Killer whale	<i>Orcinus orca</i>	Azores / E.N. Atlantic São Tomé and Príncipe / W Africa, Gulf of Guinea	2.1.2, 2.2., 3.1.1
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	Azores, Madeira / E.N. Atlantic	2.1.1, 2.1.2, 2.2, 3.1.1, 3.1.3, 4.1
Long-finned pilot whale	<i>Globicephala melas</i>	Mainland Portugal / E.N. Atlantic	8
Sowerby's Beaked Whale	<i>Mesoplodon bidens</i>	Azores / E.N. Atlantic	3.1.1, 4.3
True's beaked whale	<i>Mesoplodon mirus</i>	Azores / E.N. Atlantic	4.3
Cuvier's Beaked Whale	<i>Ziphius cavirostris</i>	Azores, Mainland Portugal / E.N. Atlantic	3.1.1, 8

Northern bottlenose whale	<i>Hyperoodon ampullatus</i>	Azores / E.N. Atlantic	2.1.2, 3.1.1
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## 2. SIGHTINGS DATA

### 2.1 Field work

#### 2.1.1 Systematic

#### ACORES

**IMAR-DOP/UAç** Dedicated shipboard surveys are carried out since 1999 around all the islands of the Archipelago of the Azores and around offshore seamounts, under the scope of different research projects (Quérouil *et al.*, 2006; Silva, 2007; Silva *et al.*, 2003). Methodology, geographic location and spatial coverage of the survey and information collected changes between years depending on the target species and primary goal of each project. During surveys, photo-identification, behavioural and acoustics data are collected systematically for almost every species sighted. Biopsy sampling and attachment of time-depth recorders and satellite tags are only used on target species of specific projects. Target species are common bottlenose dolphins, sperm whales, Atlantic spotted dolphins, common dolphins, Risso's dolphins, short-finned pilot whales, sei whales, fin whales, and blue whales.

Between July and September 2005, 42 daily surveys were performed in the central group of islands and around seamounts situated 80 km from the coast. Total duration of surveys was 264 hours and total distance covered was 4186 km. Cetaceans were seen on 209 occasions: 81 sightings of common dolphins, 61 Atlantic spotted dolphins, 32 common bottlenose dolphins, 17 Risso's dolphins, 10 sperm whales, 3 striped dolphins, and 5 other species. From May to September 2006, 48 daily surveys were performed in all three groups of islands. Total duration of surveys was 279 hours and total distance covered was 4469 km. Cetaceans were seen on 225 occasions: 43 sightings of common dolphins, 68 Atlantic spotted dolphins, 31 common bottlenose dolphins, 24 Risso's dolphins, 24 sperm whales, 17 striped dolphins, and 18 other species.

Target species	Date	Area	No. of sightings	Contact person/institute and references
Sperm whale	7-9/05	Central group of islands	10	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2005
	5-9/06	Azores	24	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006
Common bottlenose dolphin	7-9/05	Central group of islands	32	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2005
	5-9/06	Azores	31	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006
Atlantic spotted dolphin	7-9/05	Central group of islands	61	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2005
	5-9/06	Azores	68	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006
Striped dolphin	7-9/05	Central group of islands	3	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2005
	5-9/06	Azores	17	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006
Common dolphin	7-9/05	Central group of islands	81	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2005
	5-9/06	Azores	43	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006
Risso's dolphin	7-9/05	Central group of islands	17	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2005

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Date	No. of sightings of target species						Area	Contact person / Institute; Project reference
	Sperm whale	Short-finned pilot whale	Bottlenose dolphin	Atlantic spotted dolphin	Short-beaked common dolphin	Bryde's whale		
29-Jun-04				3			Madeira	L. Freitas / MB; MAC/42/M10
30-Jun-04	1	1	1	4			Madeira	L. Freitas / MB; MAC/42/M10
1-Jul-04	3		1	4			Madeira	L. Freitas / MB; MAC/42/M10
2-Jul-04	1			3			Madeira	L. Freitas / MB; MAC/42/M10
3-Jul-04			1				Madeira	L. Freitas / MB; MAC/42/M10
1-Sep-04			1			1	Madeira	L. Freitas / MB; MAC/42/M10
3-Sep-04							Madeira	L. Freitas / MB; MAC/42/M10
6-Sep-04		1	1	1			Madeira	L. Freitas / MB; MAC/42/M10
7-Sep-04			2				Madeira	L. Freitas / MB; MAC/42/M10
8-Sep-04		3	3			1	Madeira	L. Freitas / MB; MAC/42/M10
9-Sep-04			1			1	Madeira	L. Freitas / MB; MAC/42/M10

Date	No. of sightings of target species						Area	Contact person / Institute; Project reference
	Sperm whale	Short-finned pilot whale	Bottlenose dolphin	Atlantic spotted dolphin	Short-beaked common dolphin	Bryde's whale		
10-Sep-04							Madeira	L. Freitas / MB; MAC/42/M10
25-Oct-04		2	2				Madeira	L. Freitas / MB; MAC/42/M10
3-Nov-04	1	1	1				Madeira	L. Freitas / MB; MAC/42/M10
17-Nov-04				1			Madeira	L. Freitas / MB; MAC/42/M10
22-Nov-04		3	1	1			Madeira	L. Freitas / MB; MAC/42/M10
23-Nov-04	1	1		1			Madeira	L. Freitas / MB; MAC/42/M10
24-Nov-04							Madeira	L. Freitas / MB; MAC/42/M10
3-Dec-04							Madeira	L. Freitas / MB; MAC/42/M10
7-Dec-04				1			Madeira	L. Freitas / MB; MAC/42/M10
9-Dec-04		2	1				Madeira	L. Freitas / MB; MAC/42/M10
12-Jan-05				1	3		Madeira	L. Freitas / MB; MAC/42/M10
26-Jan-05			1		2		Madeira	L. Freitas / MB; MAC/42/M10
22-Feb-05		2	3				Madeira	L. Freitas / MB; MAC/42/M10
25-Feb-05					1		Madeira	L. Freitas / MB; MAC/42/M10
1-Mar-05					1		Madeira	L. Freitas / MB; MAC/42/M10
10-Mar-05					1		Madeira	L. Freitas / MB; MAC/42/M10
11-Mar-05					4		Madeira	L. Freitas / MB; MAC/42/M10
18-Apr-05							Madeira	L. Freitas / MB; MAC/42/M10
20-Apr-05			1		1		Madeira	L. Freitas / MB; MAC/42/M10
26-Apr-05							Madeira	L. Freitas / MB; MAC/42/M10
27-Apr-05			1				Madeira	L. Freitas / MB; MAC/42/M10
28-Apr-05			1		2		Madeira	L. Freitas / MB; MAC/42/M10
29-Apr-05					1		Madeira	L. Freitas / MB; MAC/42/M10
13-May-05			1				Madeira	L. Freitas / MB; MAC/42/M10
24-May-05					1		Madeira	L. Freitas / MB; MAC/42/M10
1-Jun-05				2			Madeira	L. Freitas / MB; MAC/42/M10
2-Jun-05				2			Madeira	L. Freitas / MB; MAC/42/M10
3-Jun-05				3			Madeira	L. Freitas / MB; MAC/42/M10
7-Jun-05	1		1	1	1		Madeira	L. Freitas / MB; MAC/42/M10
9-Jun-05				1			Madeira	L. Freitas / MB; MAC/42/M10
13-Jun-05		2	1	2			Madeira	L. Freitas / MB; MAC/42/M10
14-Jun-05			1	3			Madeira	L. Freitas / MB; MAC/42/M10
15-Jun-05				1			Madeira	L. Freitas / MB; MAC/42/M10
22-Jun-05				2		1	Madeira	L. Freitas / MB; MAC/42/M10
23-Jun-05	3			3		1	Madeira	L. Freitas / MB; MAC/42/M10
29-Jun-05	1			3		1	Madeira	L. Freitas / MB; MAC/42/M10
30-Jun-05				3			Madeira	L. Freitas / MB; MAC/42/M10
1-Jul-05				1		2	Madeira	L. Freitas / MB; MAC/42/M10
12-Jul-05	2	1	2	1			Madeira	L. Freitas / MB; MAC/42/M10
13-Jul-05	1			4		2	Madeira	L. Freitas / MB; MAC/42/M10
14-Jul-05	2			4		4	Madeira	L. Freitas / MB; MAC/42/M10
15-Jul-05			1	2		1	Madeira	L. Freitas / MB; MAC/42/M10
19-Sep-05		2					Madeira	L. Freitas / MB; MAC/42/M10
20-Sep-05		1	1			1	Madeira	L. Freitas / MB; MAC/42/M10
21-Sep-05		1	4			2	Madeira	L. Freitas / MB; MAC/42/M10
22-Sep-05							Madeira	L. Freitas / MB; MAC/42/M10
27-Sep-05				1			Madeira	L. Freitas / MB; MAC/42/M10
29-Sep-05			1	2			Madeira	L. Freitas / MB; MAC/42/M10
4-Oct-05				1			Madeira	L. Freitas / MB; MAC/42/M10
6-Oct-05	1	1	1	1			Madeira	L. Freitas / MB; MAC/42/M10

Date	No. of sightings of target species						Area	Contact person / Institute; Project reference
	Sperm whale	Short-finned pilot whale	Bottlenose dolphin	Atlantic spotted dolphin	Short-beaked common dolphin	Bryde's whale		
20-Oct-05		1		1		2	Madeira	L. Freitas / MB; MAC/42/M10
21-Oct-05	1	1	1	1		2	Madeira	L. Freitas / MB; MAC/42/M10
22-Oct-05		2	2			2	Madeira	L. Freitas / MB; MAC/42/M10
17-Feb-06					5		Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2066
20-Feb-06					1		Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
22-Feb-06	1		1	1	1		Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
23-Feb-06					2		Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
02-Mar-06					2		Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
14-Mar-06					1		Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
11-Mai-06			1		2		Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
12-Mai-06				1	5		Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
01-Jun-06	1		1				Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
02-Jun-06	1						Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
26-Jun-06				3	1		Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
27-Jun-06						1	Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
28-Jun-06				1		1	Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
30-Jun-06		1	1	2		1	Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
04-Jul-06				1			Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
19-Jul-06		1	1	4			Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
20-Jul-06							Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
07-Ago-06				2			Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
10-Ago-06			1	4		4	Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
17-Ago-06		2	1				Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
19-Set-06		1	1	2			Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
27-Set-06	1	1		2			Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
28-Set-06				1		1	Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
29-Set-06		1		3		1	Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
08-Nov-06		1					Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067
14-Nov-06	1	1					Madeira	L. Freitas / MB; POC/BIA-BDE/61009/2067

## MAINLAND PORTUGAL

**PD** Photo-identification and behaviour (specially acoustics) studies of resident population of bottlenose dolphins have been conducted on the Sado estuary (38°27'N; 08°43'W), Portugal. (Contact person: Manuel Eduardo dos Santos / PD).

Photo-identification, behavioural ecology and biopsy sampling of humpback whales have been carried out from onboard surveys around São Tomé and Príncipe island (between 1°42'N and 0°01'S), São Tomé and Príncipe (Gulf of Guinea) (Contac person: Inês Carvalho / PD).

### *2.1.2 Opportunistic, platforms of opportunity*

## ACORES

**TALASSA** Between May and September 2003 and 2004, data on opportunistic sightings made by undergraduate students working as crew members on whale watching vessels were collected in the area south of Pico island, Archipelago of the Azores. Behavioural and photo-identification data were systematically collected for the target species: sperm whale and Risso's dolphin. Other species also photo-identified are: humpback whale, sei whale, fin whale, blue whale, northern bottlenose whale, common bottlenose dolphin, and short-finned pilot whale.

**HORTACETÁCEOS** Between May and September 2005 and 2006, a marine biologist working as a crew member in a whale watching vessel collected photo-identification data during opportunistic sightings made around the island of Faial, Azores. Species included in the catalogue are: humpback whale, sei whale, fin whale, blue whale, sperm whale, northern bottlenose whale, common bottlenose dolphin, Risso's dolphin, killer whale, and short-finned pilot whale.

**IMAR-DOP/UAç** The Azores Fisheries Observer Program (POPA) was created in 1998 to guarantee the “dolphin safe” certification to the tuna fishery and its products. Trained observers collect information on the activity of the vessel, fishing effort and captures, sightings of cetaceans, seabirds and turtles, and interaction of these animals with fishing activity. Observers are required to conduct concentrated lookouts for each taxonomic group separately, outside the fishing periods. Cetacean surveying is only done when the vessel is travelling or searching for tunas. POPA’s database contains over 4500 sightings comprising 20 cetacean species made during more than 150,000km of transects on-effort.

In summer 2006, an undergraduate student was placed on board whale watching boats working in the island of São Miguel, Azores, to collect sighting and photo-identification data. Sighting location was given by land-based observers, thus no information was collected on searching effort. In 95 whale watching trips (approximate duration of a trip was 3-3.5 hours), cetaceans were seen on 217 occasions: 71 sightings of common dolphins, 55 Atlantic spotted dolphins, 38 common bottlenose dolphins, 10 Risso’s dolphins, 29 sperm whales, 5 striped dolphins, and 9 other species.

**NOVA ATLANTIS** conducts daily land observations from their research station south of Pico island since 1999. Additionally, since 2003, land observations have been extended to 12 fixed look-outs posts along the coast of Pico island, together covering the total coastal waters of the island. Land observations are composed of two parts: a survey of the research area recording species’ presence and the geographical location (theodolite), size, composition, heading and behaviour of cetacean groups (point sampling); and focal follows of cetacean groups (continuous recording of behavioural parameters). Boat based observations are usually guided by an observer from land. Depending on the species sighted, a variety of methods is used at sea: photo-identification, focal group and individual follow, above and under water video recordings of behaviour (pole camera) and hydrophone recordings.

**WW AZORES** makes daily whalewatching trips (9 am – 4 pm) around the islands of Faial and Pico. Location of the whales is given by land-based observers (*vigias*). If the *vigias* have not observed any whales, the vessel will usually head towards an area not covered by the *vigias* and using a towed hydrophone attempt to locate sperm whales. Main objective is to photo identify sperm whales and to record Coda vocalisations (social noises) using our towed hydrophone. Common bottlenose dolphins and Risso’s dolphins are photographed on a regular basis. Other species are photographed opportunistically.

Primary species	Area	Data type/method	Collected by	Platform	Contact person/institute and refs
Sperm whale	Pico Island	Photo-id; sightings	crew/scientist	whalewatching vessel	M. C. Fernandes (HORTACETACEOS); Fernandes (2004)
	S. Miguel Island	Photo-id; sightings	scientist	whalewatching vessel	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006
	Pico, Faial and S. Jorge islands	Photo-id; sightings; acoustics	scientist	whalewatching vessel	L. Steiner (WW AZORES)
Common dolphin	S. Miguel Island	Photo-id; sightings	scientist	whalewatching vessel	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006
Atlantic spotted dolphin	S. Miguel Island	Photo-id; sightings	scientist	whalewatching vessel	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006
Common bottlenose dolphin	S. Miguel Island	Photo-id; sightings	scientist	whalewatching vessel	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006
	Pico, Faial and S. Jorge islands	Photo-id; sightings; acoustics	scientist	whalewatching vessel	L. Steiner (WW AZORES)
Risso’s dolphin	Pico Island	Photo-id; sightings	crew/scientist	whalewatching vessel	J.N. Pereira (TALASSA); Pereira (2006)
	S. Miguel Island	Photo-id; sightings	scientist	whalewatching vessel	I. Cascão (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006
	Pico Island	Land-based observations; focal group and animal follows; Photo-id; underwater video; acoustics	Scientist; volunteers	research vessel	K. Hartman (NOVA ATLANTIS)
	Pico, Faial and S. Jorge islands	Photo-id; sightings	scientist	whalewatching vessel	L. Steiner (WW AZORES)
All species	Azorean EEZ	sightings	Trained observers	Fishing boats	M. Machete (IMAR-DOP/UAç); annual reports available at <a href="http://www.horta.uac.pt/projectos/popa/info.htm">http://www.horta.uac.pt/projectos/popa/info.htm</a>

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Primary species	Area	Data type/method	Collected by	Platform	Contact person/institute and project refs.
Sperm Whale	Madeira	Photo-id; sightings;	Crew	whalewatching vessel	L. Freitas / MB; MAC/42/M10
Short-finned pilot whale	Madeira	Photo-id; sightings;	Crew	whalewatching vessel	L. Freitas / MB; MAC/42/M10
Bottlenose dolphin	Madeira	Photo-id; sightings;	Crew	whalewatching vessel	L. Freitas / MB; MAC/42/M10
Atlantic spotted dolphin	Madeira	Sightings	Crew	whalewatching vessel	L. Freitas / MB; MAC/42/M10; POC/BIA-BDE/61009/2004
Short-beaked common dolphin	Madeira	Sightings	Crew	whalewatching vessel	L. Freitas / MB; POC/BIA-BDE/61009/2004

**MAINLAND PORTUGAL**

**SPVS** During the summer months SPVS conducts regular surveys using fishing vessels and sailing boats in coastal waters of northern Portugal collecting data on numbers and distribution of common dolphins and harbour porpoises.

Primary species	Area	Data type/method	Collected by	Platform	Contact person/institute and refs
Common dolphin	Portuguese coastal area between 39°46' N 09°02' W and 40°52' N 08°41' W	Sightings and acoustic detection	trained observers	fishing vessels and sail boats	Marisa Ferreira (SPVS) <a href="mailto:marina.ferreira@socpvs.org">marina.ferreira@socpvs.org</a>
Harbour porpoise					

**PD** Opportunistic sightings and photo-identification of bottlenose dolphins, pantropical spotted dolphins and killer whales have been made from boat surveys during the humpback whale study in São Tomé and Príncipe. Occasional sightings of sperm whales, short-finned pilot whales have also been recorded. (Contact person: Inês Carvalho / PD)

**2.2 Analyses/development of techniques****ACORES**

**IMAR-DOP/UAç** Sighting and effort data collected from 1999 to 2004 during dedicated and opportunistic surveys was used to analyse distribution, relative abundance and habitat preferences of common bottlenose dolphins and sperm whales in the Azores. Generalized linear models were used to examine the relationship between dolphin and whale sighting rate and water depth, slope, slope aspect and distance to shore. Common bottlenose dolphins were sighted in all the islands during all months and years of the study. The species preferentially used shallow areas (between 100 and 600 m) with high bottom relief (Silva, 2007). In the Azores, the absence of a continental shelf limits this kind of physiography to a narrow stretch around the islands and to shallow seamounts. Preference for areas with these characteristics was maintained across years and seasons indicating persistence of dolphin-habitat associations (Silva, 2007). Sperm whales were seen throughout the archipelago in all years and seasons but were more abundant during the summer months. The species preferentially used areas around 1000-1500m and 3000m depth (Seabra, 2007). Analysis of sighting and effort data are under way to determine relative abundance and develop habitat preference models for common dolphins and Atlantic spotted dolphins to investigate habitat segregation between the two species.

**NOVA ATLANTIS** Data collected during land and boat-based observations will be used to determine habitat functionality of the Azorean waters for cetaceans. Spatial and temporal patterns of cetacean presence and abundance are being analysed using ArcGis. Target species are Risso's dolphins, as well as common bottlenose dolphins, sperm whales, pilot whales, killer whales, beaked whale species and baleen whale species.

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Common bottlenose dolphin	1999-2004	Azores	Systematic surveys/131683km	Distribution; relative abundance; habitat modelling	M.A. Silva (IMAR-DOP/UAç); Silva, 2007
Sperm whale	1999-2004	Azores	Systematic surveys/131683km	Distribution; relative abundance; habitat modelling	M.A. Silva (IMAR-DOP/UAç); Seabra, 2007
Common dolphin	Jul-Sept/05	Central group islands, Azores	Systematic survey/4186 km	Distribution; sighting frequency; habitat modelling	S. Quérouil (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2005

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
	May-Sept/06	Azores	Systematic survey/4469 km	Distribution; sighting frequency; habitat modelling	S. Quérouil (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2005
Atlantic spotted dolphin	Jul-Sept/05	Central group islands, Azores	Systematic survey/4186 km	Distribution; sighting frequency; habitat modelling	S. Quérouil (IMAR-DOP/UAç); Quérouil <i>et al.</i> , 2006

### MADEIRA

Target species	Date	Area	Methods / effort	Parameters / factors measured	Contact person / Institute; Project reference
Sperm whale	see Table 2.1.1	Madeira	Random transect / dedicated effort	Photo-identification; radio-tagging; genetic	L. Freitas / MB; MAC/42/M10
Short-finned pilot whale	see Table 2.1.1	Madeira	Random transect / dedicated effort	Photo-identification; radio-tagging; genetic	L. Freitas / MB; MAC/42/M10
Bottlenose dolphin	see Table 2.1.1	Madeira	Random transect / dedicated effort	Photo-identification; radio-tagging; genetic	L. Freitas / MB; MAC/42/M10
Atlantic spotted dolphin	see Table 2.1.1	Madeira	Random transect / dedicated effort	radio-tagging; genetic	L. Freitas / MB; MAC/42/M10 and POC/BIA-BDE/61009/2004
Short-beaked common dolphin	see Table 2.1.1	Madeira	Random transect / dedicated effort	radio-tagging; genetic	L. Freitas / MB; POC/BIA-BDE/61009/2004
Bryde's whale	see Table 2.1.1	Madeira	Random transect / dedicated effort	Photo-identification; radio-tagging; genetic	L. Freitas / MB

### 3. MARKING DATA

#### 3.1 Field work

##### 3.1.1 Natural marking data

### ACORES

Species	Feature	Area/stock	Calendar year / No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Risso's dolphin	Dorsal fin	Pico and Faial Islands	+240 (2003/Summer)	Y	+240	J. N.Pereira (TALASSA)
			(2004-2006/Summer)	N		M. C. Fernandes
		Central group of islands	129 (2005/Summer)	N		I. Cascão (IMAR-DOP/UAç)
		Azores	175 (2006/Summer)	N		I. Cascão (IMAR-DOP/UAç)
		Pico Island	(2000-2006/Spring-Summer)	Y	1032	K. Hartman (NOVA ATLANTIS)
		Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	N	+1000	L. Steiner (WW AZORES)
		Azores	(1999-2004)	Y	+189	M.A. Silva (IMAR-DOP/UAç)
Sperm whale	Fluke / dorsal fin	Pico and Faial Islands	340 (2003-2004/Summer)	Y	340	M. C. Fernandes
			(2005-2006/Summer)	N		M. C. Fernandes
		Pico Island	(2000-2006/Spring-Summer)	Y	120	K. Hartman (NOVA ATLANTIS)
		Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	Y	1850	L. Steiner (WW AZORES)

Species	Feature	Area/stock	Calendar year / No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
		Azores	288 (1999-2004)	Y	307	M.A. Silva (IMAR-DOP/UAç)
Rough-tooth dolphin	Dorsal fin	Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	N	+30	L. Steiner (WW AZORES)
Common bottlenose dolphin	Dorsal fin	Pico and Faial Islands	(2003-2006/Summer)	N		M. C. Fernandes
		Central group of islands	48 (2005/Summer)	N		I. Cascão (IMAR-DOP/UAç)
		Azores	305 (2006/Summer)	N		I. Cascão (IMAR-DOP/UAç)
		Pico Island	(2000-2006/Spring-Summer)	Y	450	K. Hartman (NOVA ATLANTIS)
		Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	N	+1500	L. Steiner (WW AZORES)
		Azores	(1999-2004)	Y	966	M.A. Silva (IMAR-DOP/UAç)
Common dolphin	Dorsal fin	Central group of islands	22 (2005/Summer)	N		I. Cascão (IMAR-DOP/UAç)
		Azores	24 (2006/Summer)	N		I. Cascão (IMAR-DOP/UAç)
Atlantic spotted dolphin	Dorsal fin	Central group of islands	211 (2005/Summer)	N		I. Cascão (IMAR-DOP/UAç)
		Azores	482 (2006/Summer)	N		I. Cascão (IMAR-DOP/UAç)
Short-finned pilot whale	Dorsal fin	Pico and Faial Islands	(2003-2006/Summer)	N		M. C. Fernandes
		Pico Island	(2000-2006/Spring-Summer)	N	~200	K. Hartman (NOVA ATLANTIS)
		Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	N	+300	L. Steiner (WW AZORES)
		Azores	(1999-2004)	Y	+106	M.A. Silva (IMAR-DOP/UAç)
False killer whale	Dorsal fin	Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	N	+200	L. Steiner (WW AZORES)
Killer whale	Dorsal fin	Pico and Faial Islands	(2006/Summer)	N		Manuel C. Fernandes
		Pico Island	(2000-2006/Spring-Summer)	Y	7	K. Hartman (NOVA ATLANTIS)
		Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	N	10	L. Steiner (WW AZORES)
		Azores	1999-2004	N		M.A. Silva (IMAR-DOP/UAç)
Northern bottlenose Whale	Dorsal fin	Pico and Faial Islands	(2003-2004/Summer)	N		M. C. Fernandes
		Pico Island	(2000-2006/Spring-Summer)	Y	10	K. Hartman (NOVA ATLANTIS)
		Azores	1999-2004	N		M.A. Silva (IMAR-DOP/UAç)
Sowerby's beaked whale	Dorsal fin	Pico Island	(2000-2006/Spring-Summer)	Y	20	K. Hartman (NOVA ATLANTIS)
Cuvier's beaked whale	Dorsal fin	Pico Island	(2000-2006/Spring-Summer)	Y	2	K. Hartman (NOVA ATLANTIS)

Species	Feature	Area/stock	Calendar year / No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Common minke whale	Dorsal fin	Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	Y	5	L. Steiner (WW AZORES)
Humpback whale	Fluke / dorsal fin	Pico and Faial Islands	(2003;2006/Summer)	N		M. C. Fernandes
		Pico Island	(2000-2006/Spring-Summer)	Y	3	K. Hartman (NOVA ATLANTIS)
		Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	Y	10	L. Steiner (WW AZORES)
		Pico and Faial Islands	1999-2004	N		M.A. Silva (IMAR-DOP/UAç)
Sei whale	Pigmentation / Dorsal fin	Pico and Faial Islands	(2003-2006/Summer)	N		M. C. Fernandes
		Pico Island	(2000-2006/Spring-Summer)	Y	30	K. Hartman (NOVA ATLANTIS)
		Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	Y	+50	L. Steiner (WW AZORES)
		Pico and Faial Islands Azores	1999-2004	N		M.A. Silva (IMAR-DOP/UAç)
Bryde's whale	Pigmentation / Dorsal fin	Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	Y	7	L. Steiner (WW AZORES)
		Pico and Faial Islands	1999-2004	N		M.A. Silva (IMAR-DOP/UAç)
Fin whale	Pigmentation / Dorsal fin	Pico and Faial Islands	(2003-2006/Summer)	N		M. C. Fernandes
		Pico Island	(2000-2006/Spring-Summer)	Y	22	K. Hartman (NOVA ATLANTIS)
		Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	Y	+50	L. Steiner (WW AZORES)
		Pico and Faial Islands	1999-2004	N		M.A. Silva (IMAR-DOP/UAç)
Blue whale	Pigmentation / Dorsal fin	Pico and Faial Islands	(2003-2006/Summer)	N		M. C. Fernandes
		Pico Island	(2000-2006/Spring-Summer)	Y	18	K. Hartman (NOVA ATLANTIS)
		Pico, Faial and S. Jorge islands	(1993-2006 /Spring/Summer)	Y	+50	L. Steiner (WW AZORES)
		Pico and Faial Islands	1999-2004	N	9	M.A. Silva (IMAR-DOP/UAç)

**MADEIRA**

Species	Feature	Area/stock	Calendar year/ No. photo-id	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Sperm Whale	Fluke	Madeira	12	Y	34	L. Freitas / MB; MAC/42/M10
Short-finned pilot whale	Dorsal fin	Madeira	226	Y	264	L. Freitas / MB; MAC/42/M10
Bottlenose dolphins	Dorsal fin	Madeira	98	Y	139	L. Freitas / MB; MAC/42/M10
Bryde's whale	Dorsal fin	Madeira	11	Y	11	L. Freitas / MB

**MAINLAND PORTUGAL**

<b>Species</b>	<b>Feature</b>	<b>Area/stock</b>	<b>Calendar year / No. photo-id</b>	<b>Catalogue (Y/N)</b>	<b>Catalogue total</b>	<b>Contact person/institute; refs</b>
Bottlenose dolphin	Dorsal fin	Sado estuary, Portugal / NE Atlantic	2003-2006 (n=20)	Y	35	M.E. dos Santos / PD

**SÃO TOMÉ AND PRÍNCIPE (Gulf of Guinea)**

Species	Feature	Area/stock	Calendar year / No. photo-id	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Bottlenose dolphin	Dorsal fin	São Tomé and Príncipe	2003-2006 (n=49)	Y	--	I. Carvalho / PD
Humpback whale	Fluke	São Tomé and Príncipe	2003-2006 (n=5)	Y	7	I. Carvalho / PD
Humpback whale	Dorsal fin	São Tomé and Príncipe	2003-2006 (n=21)	Y	30	I. Carvalho / PD
Killer whale	Dorsal fin	São Tomé and Príncipe	2003-2006 (n=6)	Y	6	I. Carvalho / PD

**3.1.2. Artificial marking data**

None reported.

**3.1.3 Telemetry data****ACORES**

**IMAR-DOP/UAç** During 2005, there were 14 days of field work dedicated to tagging sperm whales with suction-cup attached VHF/TDR tags. Although the data was analyzed, due to the low number of samples more data is needed for good interpretation of results. In April 5-13 2005, researchers from IMAR-DOP/UAç attached satellite tags to 3 sei whales and 1 blue whale encountered south of Faial island, Azores, in collaboration with researchers from the Institute of Marine Research, Norway. The transmitters were attached using an ARTS airgun (Aerial Rocket Transmitter System) at 12 bar pressure at distances of ~10m. Three of the transmitters malfunctioned of unknown causes. In 2005, attempts were made to collect dive profiles of Atlantic spotted dolphins and common dolphins by means of Mk9-tags attached by suction cups. Four trips were dedicated to this purpose. A tag was placed on a common dolphin individual on 10 occasions, but the tag never stayed more than 1 minute. The effort was considered unsuccessful and was discontinued.

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute; refs
Sperm whale	Radio / TDR (MK9)	4	5,5 hours	R. Prieto (IMAR-DOP/UAç)
Sei whale	Satellite/ SPOT4, mold 197	1	43 days	R. Prieto (IMAR-DOP/UAç); (Olsen <i>et al.</i> , 2005)

**MADEIRA**

Species	Tag type	No. successfully deployed	Maximum time transmitting (hrs)	Contact person/institute; project refs.
Sperm whale	VHF Radio	2	6:40	L. Freitas / MB; MAC/42/M10
Short-finned pilot whale	VHF Radio	4	3:20	L. Freitas / MB; MAC/42/M10
Bottlenose dolphin	VHF Radio	1	0:17	L. Freitas / MB; MAC/42/M10
Atlantic spotted dolphin	VHF Radio	5	0:15	L. Freitas / MB; MAC/42/M10; POC/BIA-BDE/61009/2004
Short-beaked common dolphin	VHF Radio	1	0:03	L. Freitas / MB; POC/BIA-BDE/61009/2004
Bryde's whale	VHF Radio	2	14:26	L. Freitas / MB
False killer whale	VHF Radio	1	05:12	L. Freitas / MB

**3.2 Analyses/development of techniques****ACORES**

**TALASSA** Photo-identification data was used to study site fidelity of sperm whales (Fernandes, 2004) and Risso's dolphins (Pereira, 2006) to the study area and to estimate sperm whale's abundance based on mark-recapture methods (Fernandes, 2004).

**NOVA ATLANTIS** Main objectives are to study social structure, site fidelity, migration patterns and population parameters of target species. Photo-identification data of Risso's dolphin is analysed in SocProg. Behavioural characterisation and analysis (>600 hours of focal follow data) is conducted in RISSO, a database program

developed especially for the analysis of cetacean behaviour (cooperation with TNO, the Netherlands). Population parameters of bottlenose dolphin are analysed using MARK.

**WW AZORES** Photo-identification pictures of sperm whales are matched to other photos taken in the Atlantic, Mediterranean, Caribbean and Gulf of Mexico using the Europhlukes matching program (Beekmans *et al.*, 2005). Sperm whale data has been used to estimate movements, site fidelity, residence times and relative abundance in the Azores (Gordon *et al.*, 1999; Mathews *et al.*, 2001). At present, sperm whale data is being analysed with the collaboration of Jonathan Gordon and Ricardo Antunes (St Andrews University, UK) to study the social structure of the animals we observe in the Azores. Photo-id pictures of blue, fin, sei, common minke, Bryde's, and humpback whales are compared to others taken around the Atlantic to try to ascertain the movements of baleen whales. Humpback photos have been submitted to the College of the Atlantic catalogue, to date there have been no matches. The pictures of other species of baleen whales are partially analysed. They will be compared with the catalogue of Richard Sears once individuals have been identified here.

**IMAR-DOP/UAç** Photo-identification data collected from 1999 to 2004 were used to examine residence patterns, site fidelity, movements and home ranges, and to infer on the population structure of common bottlenose dolphins in the Azores. Home range size for bottlenose dolphins in the Azores was 3 times larger than that previously reported for this species. Long-distance movements (>100 km) between different groups of islands were frequently recorded. Photo-id data indicates dolphins in the Azores constitute a single and open population (Silva, 2007). Capture-recapture methods (open models and Pollock's robust design) were used to estimate population size, survival and temporary emigration rates of dolphins occurring around three islands of the Azores. Best estimates of population size was 312 (CV=0.11) adults and 300 (CV=0.13) subadults (Silva, 2007). Photo-id data of sperm whales was analysed with SOCPROG. Data was best described by an emigration-re-immigration model, with an average size of the population in the area of 47 individuals and an average residence time of 15 days. According to this mode, the estimated total population of sperm whales frequenting the Azores was 700 animals (Silva *et al.*, 2005).

The satellite transmitter deployed on the sei whale gave 112 positions over a period of 43 days from April 25 to June 7. Cumulative distance travelled was 4102 km, giving a mean swimming speed of 156 km d<sup>-1</sup>. From April 13 to May 8 the whale conducted a straight northward migration and apparently commenced feeding in the vicinity of the Charlie Gibbs Fracture Zone, along the Mid-Atlantic Ridge. From May 8 to June 7 the whale made an almost straight westward movement, interrupted by a few apparent feeding bouts before arriving at the Labrador Sea. Contact was lost when the whale was close to the Labrador shelf break (Olsen *et al.*, 2005).

#### 4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

##### 4.1 Biopsy samples

##### ACORES (summary only)

Species	Area/stock	Calendar year/ season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Common dolphin	Central group of islands	2005/Summer/ 54	Y	54	94 *	S. Quérouil (IMAR-DOP/UAç)
	Azores	2006/Summer/40	Y	40		
Atlantic spotted dolphin	Central group of islands	2005/Summer/ 71	Y	71	122 **	S. Quérouil (IMAR-DOP/UAç)
	Azores	2006/Summer/51	Y	51		
Common bottlenose dolphin	Azores	2002/Spring-Summer/38	Y	38	103	M.A. Silva (IMAR-DOP/UAç)
	Azores	2003/Spring-Summer/30	Y	29		
	Azores	2004/Spring-Summer/13	Y	11		
	Central group of islands	2005/Summer/ 7	Y	7		S. Quérouil (IMAR-DOP/UAç)
	Azores	2006/Summer/ 19	Y	19		
Sperm whale	Azores	2002/Spring-Summer/18	Y	18	50 ***	M.A. Silva (IMAR-DOP/UAç)
		2003/Spring-Summer/29	Y	29		
		2004/Spring-Summer/3	Y	3		
	Central group of islands	2006/Summer/1	N	1		1
Short-finned pilot whale	Azores	2003/Spring-Summer/4	Y	4	16	R. Prieto (IMAR-DOP/UAç)

Species	Area/stock	Calendar year/ season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
		2004/Spring- Summer/12	Y	11		
		2005/Spring- Summer/1	Y	1		

\* including 2 samples obtained by skin swabbing

\*\* including 21 samples obtained by skin swabbing

\*\*\* does not include 101 samples of sloughed skin collected between 2002-2004

### MADEIRA

Species	Area/stock	Calendar year/ season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Sperm whale	Madeira	55	Y	28	55	L. Freitas / MB
Short-finned pilot whale	Madeira	32	Y	32	32	L. Freitas / MB
Bottlenose dolphins	Madeira	30	Y	30	30	L. Freitas / MB
Atlantic spotted dolphin	Madeira	47	Y	47	47	L. Freitas / MB
Short-beaked common dolphin	Madeira	56	Y	56	56	L. Freitas / MB
Bryde's whale	Madeira	1	N	1	0	L. Freitas / MB

### MAINLAND PORTUGAL

No biopsy sampling took place during the period 2003-2006.

### SÃO TOMÉ AND PRINCIPE (Gulf of Guinea)

Species	Area/stock	Calendar year/ season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Humpback whale	São Tomé and Príncipe	2003-2006 (n=5)	Y	On going study	5	Inês Carvalho / PD

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

None

#### **4.3 Samples from stranded animals**

### ACORES

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Striped dolphin	Azores	Skin	1	Y	0	M.A. Silva (IMAR-DOP/UAç)
Sowerby's beaked whale	Azores	Skin	1	Y	0	M.A. Silva (IMAR-DOP/UAç)
True's beaked whale	Azores	Skin	1	Y	0	M.A. Silva (IMAR-DOP/UAç)

### MADEIRA

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	Contact person/institute
Common bottlenose dolphin	Madeira	Skin	3	Y	L. Freitas / MB
Atlantic spotted dolphin	Madeira	Skin	3	Y	L. Freitas / MB
Short-beaked common dolphin	Madeira	Skin	1	Y	L. Freitas / MB

**MAINLAND PORTUGAL**

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	Contact person/institute
Common dolphin	Portugal	Muscle	82	Y	M. Sequeira / ICN
		Blubber	76		
		Liver	61		
		Kidney	65		
		Skin	79		
		Teeth	79		
		Ovaries	23		
		Testicles	22		
Harbour porpoise	Portugal	Muscle	19	Y	M. Sequeira / ICN
		Blubber	20		
		Liver	12		
		Kidney	17		
		Skin	19		
		Teeth	23		
		Ovaries	11		
		Testicles	4		
Common bottlenose dolphin	Portugal	Muscle	7	Y	M. Sequeira / ICN
		Blubber	6		
		Liver	6		
		Kidney	5		
		Skin	6		
		Teeth	4		
		Ovaries	2		
		Testicles	2		
Stripped dolphin	Portugal	Muscle	10	Y	M. Sequeira / ICN
		Blubber	8		
		Liver	6		
		Kidney	7		
		Skin	9		
		Teeth	6		
		Ovaries	1		
		Testicles	3		
Common minke whale	Portugal	Muscle	8	Y	M. Sequeira / ICN
		Blubber	6		
		Liver	1		
		Kidney	2		
		Skin	8		
		Ovaries	1		
		Testicles	0		

**SÃO TOMÉ AND PRINCIPE (Gulf of Guinea)**

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	No. analysed	Contact person / institute
Sperm whale	São Tomé and Príncipe	Teeth	1	Y	0	Inês Carvalho / PD

#### 4.4 Analyses/development of techniques

##### ACORES

IMAR-DOP/UAç investigated the genetic diversity and structure of the population of common bottlenose dolphins occurring in the Azores, using sequences of mtDNA and ten microsatellite loci. Results indicated a lack of population structure within the Azores, as well as between the Azores and the archipelago of Madeira and mainland Portugal. Comparison with published sequences revealed that samples from the Azores and Madeira were not significantly differentiated from samples of the pelagic population of the western North Atlantic (Quérouil *et al.*, 2007). Fatty acid analyses conducted on 70 blubber samples from bottlenose dolphins indicated there were no significant differences in profiles between animals sampled in different island groups, between sexes or between year of sampling (Walton *et al.*, 2007). Analysis of nine microsatellite loci suggested that sperm whales passing through the Azores come from the same population and that individuals travelling together were genetically related (Pinela *et al.*, 2005). Genetic analyses of samples from common dolphins and Atlantic spotted dolphins are still in progress but preliminary data indicates that there is only one population of each species in the Azores (Quérouil *et al.*, 2006). Fatty acid analyses on blubber samples of common and Atlantic spotted dolphins indicated a lack of difference in fatty acid profiles between genders in both species, no difference between the Azores and Madeira in the Atlantic spotted dolphin, some differences between archipelagos in the common dolphin, and important differences between the two species (Quérouil *et al.*, 2006). Stable isotope analyses based on the same biopsy samples of common and Atlantic spotted dolphins are still being carried out.

##### MADEIRA

All samples, except the ones from strandings, were collected by biopsy dart using a crossbow. Genetic analyses were made and samples were compared with the contiguous islands of the Azores and the Canaries.

##### SÃO TOMÉ AND PRINCIPE (Gulf of Guinea)

Genetic analysis, including mtDNA and nuclear markers of humpback whales of São Tomé and Príncipe are being conducted as part of a larger project on population structure of humpback whales in the Gulf of Guinea.

#### 5. POLLUTION STUDIES

During 2004 samples from cetaceans stranded on the Portuguese continental coast between 1998 and 2003 were analysed for mercury (total  $Hg_T$  and organic  $Hg_{org}$ ) at IPIMAR Laboratory, Lisbon. These comprised 12 common dolphins (*Delphinus delphis*) and 4 harbour porpoises (*Phocoena phocoena*). In both species the liver recorded the highest level of  $Hg_T$  (23 and 9.0  $\mu g g^{-1}$  respectively for *D. delphis* and *P. phocoena*) followed by kidney, muscle, skin and brain. The lowest values were recorded on blubber (0.23 and 0.15  $\mu g g^{-1}$  respectively). Organic mercury also showed a higher concentration on liver (2.8  $\mu g g^{-1}$  for the common dolphins and 2.5 for the harbour porpoise), followed by the muscle (Cecílio, 2004).

#### 6. STATISTICS FOR LARGE CETACEANS

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

Not applicable.

##### 6.2. Direct catches of large whales (commercial, aboriginal and scientific permits) for the calendar year 2003-2006

None.

##### 6.3. Anthropogenic mortality of large whales for the calendar year 2003-2006

###### 6.3.1 Observed or reported ship strikes of large whales (including non-fatal events)

No reported ship strikes for the period 2003-2006.

###### 6.3.2 Fishery bycatch of large whales

##### MAINLAND PORTUGAL

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed	Source or contact
Humpback whale	?	1	22 May 2003	40°10'N; 8°54'W	R	Unknown	GN	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed	Source or contact
<u>Comments:</u> Entangled in fishing gear but released alive. Followed for some time after release.									
Minke whale	?	2	25 Sept 2003	Unknown	R	<i>Sardina pilchardus</i>	SV	DA	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
<u>Comments:</u> Two animals were encircled by a purse-seine net and a third was sighted outside the net. Net was lowered and the animals were released alive									
Minke whale	F	1	13 Aug 2004	40°09'N; 8°53'W	D	Unknown	?	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
<u>Comments:</u> Animal stranded on the beach. Physical and physiological evidences of bycatch. (probably by trawlers).									
Minke whale	F	1	15 Apr 2005	40°12'N; 8°54'W	D	Unknown	?	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
<u>Comments:</u> Animal stranded on the beach. Physical and physiological evidences of bycatch. (probably by trawlers).									
Minke whale	M	1	28 Apr 2006	40°23'N; 8°51'W	D	Unknown	?	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
<u>Comments:</u> Animal stranded on the beach. Physical and physiological evidences of bycatch. (probably by trawlers).									

## 7. Statistics for small cetaceans

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

Not applicable.

### 7.2 Direct catches of small cetaceans for the calendar year 2003-2006.

None

### 7.3 Anthropogenic mortality of small cetaceans for the calendar year 2003-2006.

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

No observed or reported ship strikes of small cetaceans.

#### 7.3.2 Fishery bycatch of small cetaceans

## MAINLAND PORTUGAL

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Harbour porpoise	F	1	24 Feb 2003	40°19'N 8°51'W	D	<i>Trachurus trachurus</i>	SB	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
Harbour porpoise	M	1	13 Jun 2003	40°27'N 8°48'W	D	<i>Trachurus trachurus</i>	SB	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
Common dolphin	M/F	1 M 1 F 23 ?	5 Aug 2003	40°33'N 9°46'W	2 D 23 R	<i>Trachurus trachurus</i>	SB	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
<u>Comments:</u> At least 25 animals captured in a beach purse-seine net. 2 died and the others were released.									
Harbour porpoise	F	1	13 Jul 2004	40°03'N 8°54'W	D	<i>Trachurus trachurus</i>	SB	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
Common dolphin	M/F	3 M 2 F 10 ?	16 Aug 2004	40°29'N 8°48'W	5 D 10 R	<i>Trachurus trachurus</i>	SB	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
<u>Comments:</u> 15 animals captured in a beach purse-seine net. 10 released; 5 dead									
Common dolphin	?	8	26 Aug 2004	40°26'N 8°53'W	R	<i>Sardina pilchardus</i>	SV	F	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
Harbour porpoise	F	2	14 Jun 2005	40°27'N 8°48'W	D	<i>Trachurus trachurus</i>	SB	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>
Harbour porpoise	F	1	25 Jul 2005	40°27'N 8°48'W	D	<i>Trachurus trachurus</i>	SB	M	M. Ferreira, SPVS <a href="mailto:marisa.ferreira@socpvs.org">marisa.ferreira@socpvs.org</a>



## 8. STRANDINGS

**ACORES**

In the Azores archipelago the number of strandings is low probably due to the absence of continental shelf and to the rocky coast that may prevent the stranding of dead animals. The abundant high cliffs in these islands may also make the detection of stranded animals difficult. The results show that the most frequent event is the stranding of single dead animals and the majority of the strandings in the Azores involve small and unidentified dolphin species. These archipelagos also report deep diver's species (like sperm whales *Physeter macrocephalus*) and warm water cetaceans (spotted dolphin *Stenella frontalis*). Initially strandings data was collected opportunistically, mainly in the islands where the Azores University has research departments (Faial, Terceira and São Miguel). Recently, in 2006, a strandings network was officially created by the Azores Regional Government and stranding events descriptive data is collected in every island while biological sampling is restricted to on going research projects, mainly conducted by the Azores University departments.

## A) For the calendar year 2003

Species	No. strandings	No. post mortems	Contact person(s)
<i>Kogia</i> sp.	2	2	J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
<i>Physeter macrocephalus</i>	4	2	J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a> R. Prieto Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a> J.P. Barreiros <a href="mailto:jpedro@mail.angra.uac.pt">jpedro@mail.angra.uac.pt</a>
Ziphiidae	1		J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
<i>Delphinus delphis</i>	1	1	J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
Delphinidae	1		J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
<i>Mesoplodon densirostris</i>	2	1	R. Prieto Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a>
<i>Grampus griseus</i>	1		J.P. Barreiros <a href="mailto:jpedro@mail.angra.uac.pt">jpedro@mail.angra.uac.pt</a>

## B) For the calendar year 2004

Species	No. strandings	No. post mortems	Contact person(s)
Delphinidae	1		J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
<i>Stenella coeruleoalba</i>	1	1	J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
<i>Physeter macrocephalus</i>	2		J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a> R.P. Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a>
<i>Mesoplodon mirus</i>	1	1	R.P. Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a>
<i>Mesoplodon</i> sp	1	1	R.P. Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a>

## C) For the calendar year 2005

Species	No. strandings	No. post mortems	Contact person(s)
<i>Tursiops truncatus</i>	2		J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
<i>Delphinus delphis</i>	3	3	R.P. Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a> J.P. Barreiros <a href="mailto:jpedro@mail.angra.uac.pt">jpedro@mail.angra.uac.pt</a>
<i>Kogia simus</i>	1	1	R.P. Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a>
<i>Ziphius cavirostris</i>	1	1	R.P. Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a>
<i>Mesoplodon bidens</i>	2		J.P. Barreiros <a href="mailto:jpedro@mail.angra.uac.pt">jpedro@mail.angra.uac.pt</a>

## D) For the calendar year 2006

Species	No. strandings	No. post mortems	Contact person(s)
<i>Kogia breviceps</i>	1	1	J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
<i>Stenella frontalis</i>	1		J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
<i>Delphinus delphis</i>	5	1	J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a> R.P. Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a> J.P. Barreiros <a href="mailto:jpedro@mail.angra.uac.pt">jpedro@mail.angra.uac.pt</a>
<i>Stenella coeruleoalba</i>	3	1	J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a> J.P. Barreiros <a href="mailto:jpedro@mail.angra.uac.pt">jpedro@mail.angra.uac.pt</a>
<i>Balaenoptera physalus</i>	1	3	J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
<i>Orcinus orca</i>	1		J. Azevedo <a href="mailto:azevedo@notes.uac.pt">azevedo@notes.uac.pt</a>
<i>Kogia</i> sp	1		R.P. Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a>
<i>Grampus griseus</i>	2		R.P. Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a>

<i>Physeter macrocephalus</i>	1		R.P. Silva <a href="mailto:rprieto@notes.horta.uac.pt">rprieto@notes.horta.uac.pt</a>
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**MADEIRA** – the Madeira stranding network, coordinated by the Whale Museum (Museu da Baleia – MB), collects information, on an opportunistic basis, on cetaceans stranding around the archipelago.

For the calendar year 2003-2006

Species	No. strandings	No. post mortems	Contact person(s)
<i>Stenella frontalis</i>	3	3	L. Freitas / MB <a href="mailto:freitasluis@netmadeira.com">freitasluis@netmadeira.com</a>
<i>Stenella coeruleoalba</i>	2	2	
<i>Tursiops truncatus</i>	1	-	
<i>Delphinus delphis</i>	7	6	
<i>Ziphius cavirostris</i>	1	-	
<i>Kogia</i> sp.	1	-	
<i>Balaenoptera edeni</i>	1	-	
<i>Balaenoptera</i> sp..	2	1	

### MAINLAND PORTUGAL

The Portuguese stranding network is coordinated by ICN and collects data on strandings along the entire coastline. The network involves marine mammal scientists (that are also responsible for the collection of biological samples), but main information, as species identification and biometrics, is also collected by the Navy, local NGO's and nature wardens, all of them having received basic training in species ID and collection of basic data.

A) For the calendar year 2003

Species	No. strandings	No. post mortems	Contact person(s)
<i>Delphinus delphis</i>	83		M. Sequeira, ICN, <a href="mailto:sequeiram@icn.pt">sequeiram@icn.pt</a>
<i>Phocoena phocoena</i>	22		
<i>Tursiops truncatus</i>	4		
<i>Stenella coeruleoalba</i>	4		
<i>Globicephala melaena</i>	3		
<i>Grampus griseus</i>	2		
<i>Delphinidae</i>	61		
<i>Physeter macrocephalus</i>	1		
<i>Balaenoptera acutorostrata</i>	8		
<i>Balaenoptera physalus</i>	1		

B) For the calendar year 2004

Species	No. strandings	No. post mortems	Contact person(s)
<i>Delphinus delphis</i>	110		M. Sequeira, ICN, <a href="mailto:sequeiram@icn.pt">sequeiram@icn.pt</a>
<i>Phocoena phocoena</i>	9		
<i>Tursiops truncatus</i>	6		
<i>Stenella coeruleoalba</i>	4		
<i>Globicephala melaena</i>	8		
<i>Grampus griseus</i>	2		
<i>Mesoplodon</i> sp.	1		
<i>Delphinidae</i>	21		
<i>Balaenoptera acutorostrata</i>	7		
<i>Balaenoptera physalus</i>	1		
Mysticeti	3		

C) For the calendar year 2005

Species	No. strandings	No. post mortems	Contact person(s)/
<i>Delphinus delphis</i>	132		M. Sequeira, ICN, <a href="mailto:sequeiram@icn.pt">sequeiram@icn.pt</a>
<i>Phocoena phocoena</i>	9		
<i>Tursiops truncatus</i>	7		
<i>Stenella coeruleoalba</i>	10		
<i>Globicephala melaena</i>	3		
<i>Grampus griseus</i>	1		
<i>Physeter macrocephalus</i>	1		
<i>Delphinidae</i>	68		
<i>Balaenoptera acutorostrata</i>	7		
<i>Balaenoptera physalus</i>	2		
Mysticeti	2		

D) For the calendar year 2006

Species	No. strandings	No. post mortems	Contact person(s)
<i>Delphinus delphis</i>	70		M. Sequeira, ICN, <a href="mailto:sequeiram@icn.pt">sequeiram@icn.pt</a>
<i>Phocoena phocoena</i>	18		
<i>Tursiops truncatus</i>	6		
<i>Stenella coeruleoalba</i>	7		
<i>Globicephala melaena</i>	5		
<i>Ziphius cavirostris</i>	1		
<i>Mesoplodon</i> sp.	3		
<i>Kogia breviceps</i>	2		
<i>Delphinidae</i>	37		
<i>Balaenoptera acutorostrata</i>	2		

## 9. OTHER STUDIES AND ANALYSES

### ACORES

IMAR-DOP/UAç is presently doing a social-economic characterization of the whale watching activity in the Azores as well as the acoustic description of its types of boats. Social-economic data is collected through inquiries to the whale watching tourists and enterprises. Acoustic data is collected through recordings and analysis of sounds produced by different types of boats, in terms of frequencies and sound levels.

MADEIRA - Aerial surveys were conducted between 2003-2006 on a monthly basis supported by Madeira government in order to determine indices of abundance and seasonality of all cetacean species sighted. Data is being processed and analysed.

### MAINLAND PORTUGAL

Legislation aimed at establishing the legal basis of whalewatching was published in January 2006.

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