

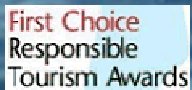


EXPEDITION REPORT

Expedition dates: 2 April –5 May 2012

Report published: November 2012

Photo-identification and surveys of cetaceans in the central group of the Azores islands



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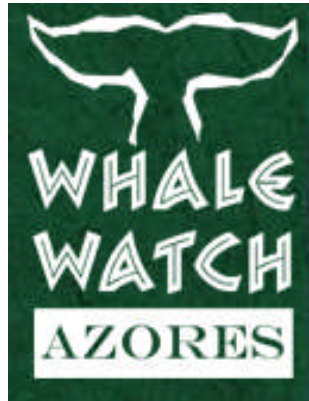
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Photo-identification and surveys of cetaceans in the central group of the Azores islands

Expedition dates:
2 April – 5 May 2012

Report published:
November 2012

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Matthias Hammer and Adam Stickler (editors)
Biosphere Expeditions

Abstract

In 2012 Biosphere Expeditions concluded its ninth successful year of cetacean photo-identification and distribution studies in the Azores. The expedition was based in Horta on the island of Faial and work was conducted around the three islands of Faial, Pico and São Jorge. The expedition ran from 2 April to 5 May 2012 and concentrated on six main projects.

Sightings of all cetacean species were recorded. 182 sightings of 10 different species of cetacean and 2 species of turtle were recorded during the expedition period. Photo-identification of sperm whales, baleen whales and bottlenose and Risso's dolphin continued.

Sperm whale photo-ID

Sperm whale photo-identification, which has been ongoing since 1987 in the Azores, continued, with 34 identifiable individuals photographed from 67 encounters, including 13 animals seen in previous years.

Baleen whale photo-ID

Baleen whales, including blue, fin, sei and humpback, have been seen with increased frequency over the last few years. This year there were many encounters with baleen whales. Several blue, fin and sei whales were encountered as well as a minke whale. ID photos were taken during all encounters and will be analysed at a later date. Two of the blue whales observed had been seen previously in the Azores, one in 2006 and the other in 2010.

Dolphin photo-ID

Dolphin photo-identification, which began in 1987, continued. 6 groups of bottlenose dolphin and 10 groups of Risso's dolphin were photographed. These photographs will be analysed at a later date.

Europhlukes

Europhlukes is a European-wide project that brings together different researchers from several countries to share data and photo-identification pictures of various species. All photo identification photographs taken during the expedition were forwarded to the database. Sperm whale fluke extractions were made from the photos taken during the expedition and compared with sperm whales sighted in previous years and in other areas of the Atlantic. No matches were found to any other regions.

POPA

Data collection for the Department of Oceanography and Fisheries (DOP) of the University of the Azores, for the Tuna Boat Observer program, POPA, were successfully collected for a ninth year. The expedition vessel "Physeter" is the only non-fishing vessel in the programme. Information was collected for random cetacean sightings along transects, as well as designated turtle and bird counts and environmental parameters.

Turtles

Loggerhead turtles have been collected and tagged in the Azores since 1988 for a joint venture between the University of Florida and the University of the Azores. During this expedition, 17 loggerhead turtles were seen; 1 was caught and tagged. A single leatherback turtle was also sighted.

Sumário

A Biosphere Expeditions 2012 concluiu com sucesso o seu nono ano de recolha de dados sobre distribuição de cetáceos nos Açores, com recurso a observações visuais e foto-identificação. A expedição teve a sua base na Horta, ilha do Faial e o trabalho foi conduzido em torno das três ilhas do Faial, Pico e São Jorge. Esta expedição ocorreu entre 2 Abril-5 Maio e concentrou-se em seis projectos principais.

Foram registadas um total de 182 avistamentos de 10 espécies diferentes de cetáceos e 2 espécies de tartarugas. Deu-se continuidade à foto-identificação de cachalotes, baleias de barbas, golfinhos roazes e golfinhos de Risso.

Foto-identificação de Cachalotes

Desde 1987 que está em curso nos Açores um programa de foto-identificação de cachalotes, com 34 indivíduos identificados e fotografados em 67 encontros, incluindo reavistamentos de 13 animais observados em anos anteriores.

Foto-identificação das baleias de Barbas

Os registos de baleias de barbas, incluindo baleia azul, baleia comum, sardinheira e baleia de bossas, foram mais frequentes nos últimos anos. Este ano foram comuns os encontros com baleias azuis, baleias comuns e sardinheiras tendo sido observada também uma baleia-anã. Duas das baleias azuis observadas tinham sido vista anteriormente nos Açores, em 2006 e 2010. As restantes fotos serão analisadas no futuro.

Foto-identificação dos Golfinhos Roazes e Rissos

Continuámos a foto-identificação de roazes, que começou em 1987. Até ao momento conhecem-se 6 grupos de roazes e 10 grupos de Rissos que foram fotografados. Estas fotografias serão analisadas num futuro próximo.

EUROPHLUKES

Europhlukes é um projecto Europeu que reúne investigadores de diversos países para partilhar dados de foto-identificação de várias espécies. Todas as fotografias recolhidas no âmbito desta expedição serão enviadas para esta base de dados.

As extracções das caudas dos cachalotes fotografados durante a expedição serão comparadas com fotografias obtidas em anos anteriores e noutras áreas do Atlântico. Até ao momento nenhum dos cachalotes fotografado nos Açores foi reavistado noutras áreas.

POPA

Pelo nono ano foram recolhidos dados para o Programa de Observação dos Pescas nos Açores (POPA) coordenado pelo Centro do Instituto do Mar da Universidade dos Açores. O "Physeter" é a única embarcação que não se dedica à pesca comercial que contribui o POPA. A informação foi recolhida aleatoriamente ao longo de transectos de observação de cetáceos. Foram também efectuadas contagens de tartarugas, aves marinhas e recolhidos parâmetros ambientais.

Tartarugas

As tartarugas *Caretta* são capturadas e marcadas nos Açores desde 1988, para um projecto conjunto entre a Universidade da Florida e a Universidade dos Açores. Durante esta expedição, 17 tartarugas boba e uma tartaruga de couro foram avistadas, tendo-se marcado uma tartaruga boba.

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Please note: Each expedition report is written as a stand-alone document that can be read without having to refer back to previous reports. As such, much of this section, which remains valid and relevant, is a repetition from previous reports, copied here to provide the reader with an uninterrupted flow of argument and rationale.

1. Expedition review

M. Hammer and A. Stickler (editors)
Biosphere Expeditions

1.1. Background

Biosphere Expeditions runs wildlife conservation research expeditions to all corners of the Earth. Our projects are not tours, photographic safaris or excursions, but genuine research expeditions placing ordinary people with no research experience alongside scientists who are at the forefront of conservation work. Our expeditions are open to all and there are no special skills (biological or otherwise) required to join. Our expedition team members are people from all walks of life, of all ages, looking for an adventure with a conscience and a sense of purpose. More information about Biosphere Expeditions and its research expeditions can be found at www.biosphere-expeditions.org.

This expedition report deals with an expedition to the Azores that ran from 2 April to 5 May 2012. The expedition was part of a long-term research project to elucidate the life histories and migration patterns of whales, dolphins and turtles across the oceans and assist with the formulation of effective conservation strategies.

The Azores archipelago, which sits near the middle of the Atlantic Ocean, about 1400 kilometres off the coast of Portugal, is one of the prime whale and dolphin hotspots in the world and around 30% of the world's known cetacean species have been recorded there. For management purposes the International Whaling Commission (IWC) has included the Azores archipelago in the East Greenland and Iceland stocks, but there is little evidence to support this.

In 2004 the expedition initiated the first long term concerted study on baleen whales in the Azores. These animals in particular have not been studied around the Azores. Accurate knowledge of the origins of the baleen whales passing the archipelago from March to May, which coincides with the migration of baleen whales past the archipelago, will help to determine which stocks they come from and assess more accurately their true numbers (which are often inflated in efforts to set hunting quotas).

The expedition also continued existing sperm whale, bottlenose and Risso's dolphin studies. The sperm whale study is part of a larger migration and social study, and the dolphin study is in the early stages of assessing animal numbers and migratory behaviour around the archipelago. Loggerhead turtles were also studied and tagged as part of an international research project studying their life history and migration around the Atlantic.

1.2. Research area

The Azores Archipelago, Europe's westernmost point, is a group of nine distinct islands, lying on the same latitude as New York and Lisbon, around 1400 kilometres off the coast of Portugal (of which they are part). Lying on the mid-Atlantic ridge, the islands display spectacular volcanic scenery, with large blue-green crater lakes, impressive black lava sea cliffs, and, towering above them all, the highest mountain in Portugal on Pico.



Figure 1.2a. Map of the Azores. An overview of Biosphere Expeditions' research sites, assembly points, base camp and office locations is at [Google Maps](#).

The Azores were discovered in 1427 by Portuguese explorers and colonised shortly after by people of mainly Portuguese and Flemish descent. During the 20th century the islands were an important stopover point for undersea communications cables, trans-Atlantic flights and yachtsmen. The islands' main income is from agriculture and fishing, tourism has all but passed by the islands.

1.3. Dates

The expedition ran over three periods totalling three ten-day groups.

2012: 2 - 11 April | 14 - 23 April | 26 April – 5 May (9 nights).

Team members can join for multiple slots (within the periods specified). Dates are chosen to coincide with the migration of baleen whales past the archipelago.

1.4. Local conditions & support

Expedition base

The expedition team was based on the island of Faial, near the harbour in a guesthouse consisting of modern en suite, twin and double rooms. Dinner was eaten at local bistros/restaurants, a breakfast buffet was served by participants on a rota and each participant prepared a lunch pack from the buffet. Vegetarians and some special diets were catered for. Accommodation was on a twin-share basis.

Weather

The climate is mild maritime Mediterranean with average temperatures during the expedition months from 15° to 22°C. Extremes are usually buffered by the Gulf Stream passing by, but it can get quite cold, especially on the boat, with the wind chill factor.

Field communications

The boat carried two radios for communication with other boats. Mobile phones did work on the island and within a few kilometres out at sea. There was also wireless internet access at base. The expedition leader also posted a [diary with multimedia content on Wordpress](#) and excerpts of this were mirrored on Biosphere Expeditions' social media sites such as [Facebook](#) and [Google+](#).

Transport, vehicles & research vessel

Team members made their own way to the Horta assembly point. From there onwards and back to the assembly point all transport, vehicles and boats were provided for the expedition team for expedition support and emergency evacuations.

Our research vessel, the Phyceter (after the Latin name for sperm whale), was a modern offshore motor catamaran with large fore and aft decks and equipped with life raft, lifejackets, emergency beacon, two radios, radar, fish finder and other safety features.

Medical support & insurance

The expedition leader was a trained first aider, and the expedition carried a comprehensive medical kit. The standard of medical care in the Azores is high and further medical support was available at a hospital in town. All team members were required to carry adequate travel insurance covering emergency medical evacuation and repatriation. Emergency evacuation procedures were in place, but did not have to be invoked because there were no medical or other emergencies.

1.5. Expedition scientist

Biosphere Expeditions works on this project with Lisa Steiner of Whale Watch Azores. Lisa graduated in Marine Science in 1988 at the University of Miami and joined the IFAW (International Fund for Animal Welfare) cetacean research vessel “Song of the Whale” two weeks later, which at the time was based in the Azores. Since then Lisa has spent all her summers working on cetaceans around the Azores and at other times has also studied them in Alabama, Hawaii, Cape Verdes, Bermuda, Scotland and Madeira. She has published numerous research papers on cetaceans.

1.6. Expedition leaders

This the first group of this expedition was led by Malika Fattak who trained up Alisa Clickenger. Malika is half Algerian, but was born and educated in Germany. She majored in Marketing & Communication at the University of Frankfurt, which led her to jobs in PR & Communications. She has travelled widely, especially in Africa and Northern Europe. Her love of nature and the outdoors, and taking part in a few Biosphere expeditions, persuaded her that a change of career was in order and here she is since 2008, leading expeditions and desperately trying to make herself useful around the office :) Malika is a keen sportswoman - triathlon, skiing, volleyball, etc. and enjoys the outdoors.

Alisa Clickenger led groups 2 and 3. Alisa was born in the United States and educated at Bennington College in Vermont. After many successful years in the corporate world, she fell in love with the path less travelled. She now lives a life of travel and adventure, and writes about it for several magazines. An experienced overlander on two and four wheels, in 2009 Alisa's love of nature and foreign cultures brought her on a seven month solo journey through Central and South America seeking wildlife and wild places. An experienced tour guide in the adventure travel field, at Biosphere Expeditions Alisa realises a dream - that of combining her love of people with her love of wildlife and conservation.

1.7. Expedition team

The expedition team was recruited by Biosphere Expeditions and consisted of a mixture of all ages, nationalities and backgrounds. They were (with country of residence):

2 – 11 April 2012: Elmar Blume (Germany), Anita de Jong (The Netherlands), Evelyn Eggert (Germany), Axel Forrester (UK), Sarah Gigandet (Switzerland), Tim Moore (UK), Martin Talmage (UK), Irina Tarasenkova (Russia).

14 – 23 April 2012: Katie Dahl (USA), Kathrin Doute (Germany), Mariam Fazlollahi (UAE), Cornelia Huwyler (Switzerland), Sylvia Köppen (Germany), Nigel Luhman (Germany), Matthias Schley (Germany), Yvonne Schley (Germany).

24 April – 5 May 2012: Michelle Brana (placement*, Portugal), Valerie Chardon (France), Miriam Elisabete De Jesus Pecas (UK), Ricardo Fernandes (placement*, Portugal), Yvonne Gerschwitz (Germany), Olga Goddard (UK), Sadie McNaughton (placement*, UK), Mafalda Monteiro (placement*, Portugal) Irène Storm (The Netherlands).

*Placements were kindly supported by the Friends of Biosphere Expeditions.

1.8. Partners

Our main partner on this project is Whale Watch Azores, a whale watching and research group founded by our local scientists and operating from Faial Island. Other partners include Europhlukes (a European cetacean photo-ID system and research database), the University of the Azores, POPA (the Observer Programme for the Fisheries of the Azores), the University of Florida (for research into turtles) as well as the local community of whale spotters (vigias).

1.9. Expedition budget

Each team member paid towards expedition costs a contribution of £1,220 per person per 10 day slot. The contribution covered accommodation and meals, supervision and induction, special non-personal equipment, all transport from and to the team assembly point. It did not cover excess luggage charges, travel insurance, personal expenses such as telephone bills, souvenirs etc., as well as visa and other travel expenses to and from the assembly point (e.g. international flights). Details on how this contribution was spent are given below.

Income	£
Expedition contributions	25,778
Expenditure	
Base camp and food includes all board & lodging, base camp equipment	6,799
Research vessel & transport Includes fuel, oils, wear & tear for research vessel, taxis on land	4,363
Equipment and hardware includes research materials & gear, etc.	685
Biosphere Expeditions staff includes salaries, travel and expenses to Azores	3,456
Local staff includes local scientist, whale lookout and other locally-staffed services	3,125
Administration includes registration fees, sundries, etc.	488
Team recruitment Azores as estimated % of PR costs for Biosphere Expeditions	5,109
Income – Expenditure	1,753
Total percentage spent directly on project	93%

1.10. Acknowledgements

This study was conducted by Biosphere Expeditions which runs wildlife conservation expeditions all over the globe. Without our expedition team members (who are listed above) who provided an expedition contribution and gave up their spare time to work as research assistants, none of this research would have been possible. The support team and staff (also mentioned above) were central to making it all work on the ground. Thank you to all of you and the ones we have not managed to mention by name (you know who you are) for making it all come true. Biosphere Expeditions would also like to thank members of the Friends of Biosphere Expeditions, as well as donors and grant-givers.

We would also like to thank our partners Europhlukes, the University of the Azores, POPA, the University of Florida, as well as the local community of whale spotters (vigias) as well as our skipper, Nuno.

1.11. Further information & enquiries

More background information on Biosphere Expeditions in general and on this expedition in particular including pictures, diary excerpts and a copy of this report can be found on the Biosphere Expeditions website www.biosphere-expeditions.org.

Enquires should be addressed to Biosphere Expeditions at the address given below.

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2. Whale, dolphin & turtle study

Lisa Steiner
Whale Watch Azores

Matthias Hammer and Adam Stickler (editors)
Biosphere Expeditions

2.1. Introduction

The Azores is a group of 9 islands located about 900 nm off the coast of Portugal. 28 species of cetacean have been seen in the islands over the last 20 years. Sperm whales were commercially hunted here until 1985. With the cessation of whaling, whale watching was a natural successor, but did not begin in earnest until the late 1990s. Little work has been done around the archipelago before June, which is why the expedition usually takes place in April and May.

Baleen whales have been seen fairly regularly migrating past the islands from March to June over the last several years, but it is unknown where they have come from or where they are migrating. It is thought that they are travelling north to feed in the waters around Iceland, Greenland, Norway or even Nova Scotia for the summer (Aguilar 1985). Photo-identification of the animals passing the Azores enables us to match photos with photos taken elsewhere to hopefully determine some of these migration routes. So far, there has been one match between a blue whale photo taken in the Azores to one taken in Iceland and two humpback whales have been observed in the Azores and the Cape Verdes.

Although sperm whales were caught in the Azores all year round, it has been thought that there are not many female sperm whales and calves around during the winter months. (Avilo de Melo and Martin 1985). Working in April has given us the opportunity to see that females and calves are present at this time of year. In future, we would like to expand the effort to include the winter months to see if some females and calves are present in the archipelago all year round.

Photo-identification of sperm whales began in the Azores in 1987 and over 3000 individuals have been identified since then. The Europhlukes matching program makes matching individuals much faster than it was manually.

Some bottlenose and Risso's dolphin are resident in the islands year round. By photographing individuals we can start to see patterns of habitat use by different groups of dolphin at different times of year and compare id photos to existing catalogues to determine what home ranges might exist for these resident individuals. This requires a lot of time spent matching id photos on the computer to identify individuals and their groups. Most of this work will be done in the future by MSc or PhD students.

2.2. Methods

Physeter (Latin for sperm whale), a 12 m motor catamaran, was used to go to sea on days when weather conditions permitted this. Vigias, local lookouts, were located on the cliffs about 150 m above sea level. They would begin to look for whales at around 07:30 to be able to direct the boat on departure at 09:00. If the lookouts did not sight any whales, the boat was equipped with a towed hydrophone to locate sperm whales acoustically. The boat also had up to four additional lookouts onboard, three on the bow and one in the stern searching for cetaceans. Two expedition members were usually dedicated to filling in POPA forms (transects and bird and turtle surveys). Other crew were on camera duty, data sheets (Figure 2.2a), hydrophone monitoring (Figure 2.2b), filling in the log or collecting water temperatures when required (Figure 2.2c). On occasion crew members may have had to do more than one job.



Figure 2.2a. Data sheet duty.

Sperm whales were approached from behind in order to obtain fluke photographs. The baleen whales were also approached from behind, but moving further forward to obtain photographs of dorsal fins as well as chevron (fin whale) and mottling (blue whale) patterns. Bottlenose and Risso's dolphin were also paralleled in order to obtain dorsal fin photographs for identification of individuals. Two cameras were used to obtain the ID photographs: a Canon 50D with a Canon 100-400 mm lens and a Nikon F70 with a 70-300 mm lens.



Figure 2.2b. Hydrophone and top deck duties.



Figure 2.2c. Water temperature reading.

Other dolphins sighted were approached for species identification and then the boat would usually move on to look for other animals if they were not one of the main target species. Data collected for non-sperm whale sightings included: start and end time of the encounter, position of the sighting as well as number of animals, presence or absence of calves and general behavioural state (milling, feeding, bowriding or travelling).

Only four categories of behaviours were differentiated because generally not enough time was spent with the animals to break them down further. If the animals were travelling, a direction of travel was noted. In addition, environmental information was also recorded, including: water temperature, wind speed and direction, sea state (Beaufort scale), and visibility. The number and behaviour of birds associating with the dolphins or whales was also recorded as was the presence of other whale watching vessels.

Data collected for sperm whale sightings included: date, start and end time, number of whales, number of calves (the calves also count in the whale column), if the calf was suckling, visible callous (a growth on the top of the dorsal fin which indicates the whale is female) or, if the whale was male, position, fluke heading, defecation, or recordings made and the presence of other whale watching boats.

When loggerhead turtles were sighted, their position was recorded on the POPA forms. If the animal was caught, it was measured and tagged (Figure 2.2d) for the University of Florida/University of the Azores turtle tagging programme, as well as positional data recorded.



Figure 2.2d. Turtle tagging.

When the boat returned to port, there was a debriefing on board to show where the boat had been during the day (Figure 2.2e) and later sperm whale photos could be matched to the catalogue.



Figure 2.2e. Daily debrief.

Results were analysed using EXCEL data analysis tools: summary statistics to obtain average group sizes and ranges.

2.3. Results

2.3.1. Effort

Physeter would normally leave the harbour around 09:00 and return around 16:00, weather permitting. The boat went to sea for 18 days during the expedition and spent between 3 and 7.25 hours per day on the water, an average of 6.1 hr. A total of 109.75 hr with sea conditions less than sea state 5 were recorded. A comparison of the yearly effort since 2004 is presented in Figure 2.3a. It should be noted that prior to 2009 expedition slots were 13 days and have since been reduced to 10 days. Also note that in 2009 and 2011 there were no expedition slots in May.

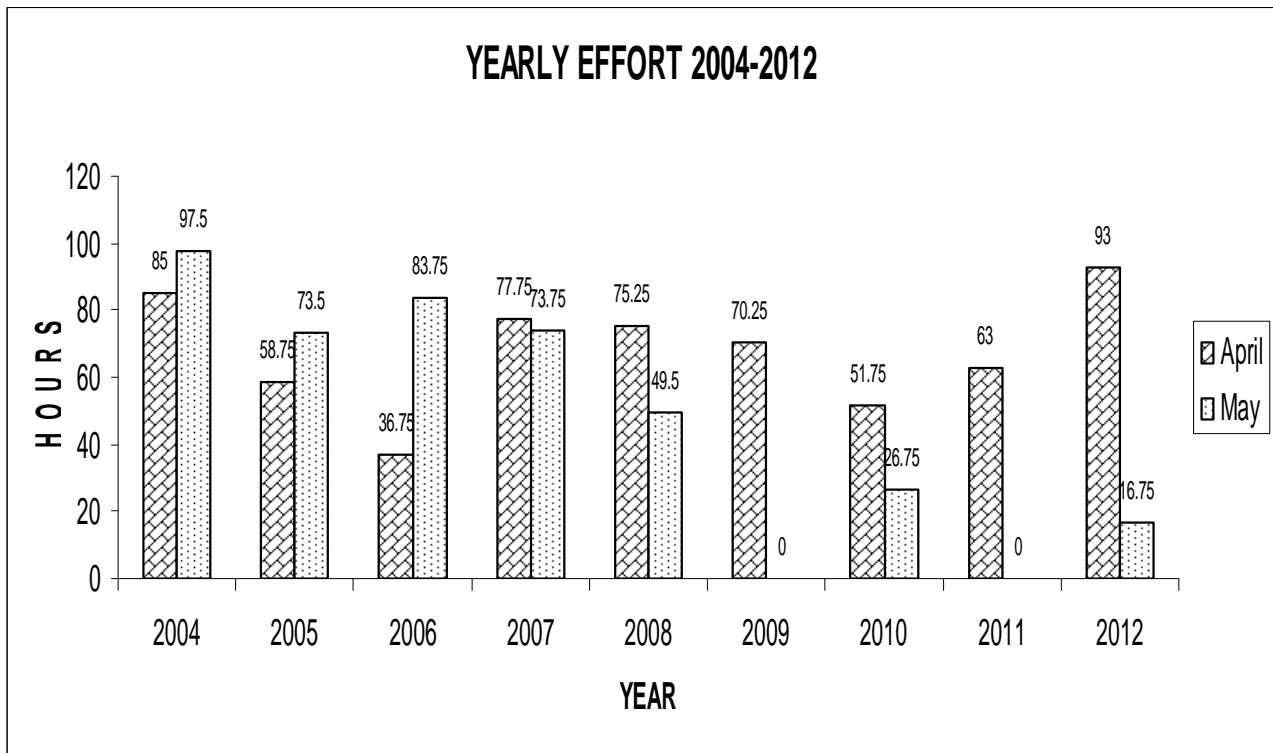


Figure 2.3a. Yearly effort.

2.3.2. Encounters

During the expedition 115 groups of non-sperm whales and 67 sperm whale groups were encountered (Table 2.3a.).

Table 2.3a. Species encountered.

COMMON DOLPHIN, <i>Delphinus delphis</i>	54
BOTTLENOSE DOLPHIN, <i>Tursiops truncatus</i>	6
RISSE'S DOLPHIN, <i>Grampus griseus</i>	10
STRIPED DOLPHIN, <i>Stenella coeruleoalba</i>	4
FALSE KILLER WHALE, <i>Pseudorca crassidens</i>	1
BLUE WHALE, <i>Balaenoptera musculus</i>	8
FIN WHALE, <i>Balaenoptera physalus</i>	21
SEI WHALE, <i>Balaenoptera borealis</i>	7
MINKE WHALE, <i>Balaenoptera acutorostrata</i>	4
SPERM, <i>Physeter macrocephalus</i>	67

These encounters resulted in a relative sightings frequency as shown in Figure 2.3b. Sperm whales were the species encountered most at 36.8%, followed by common dolphin (29.7) and fin whales (11.5). These three species accounted for 78% of all sightings.

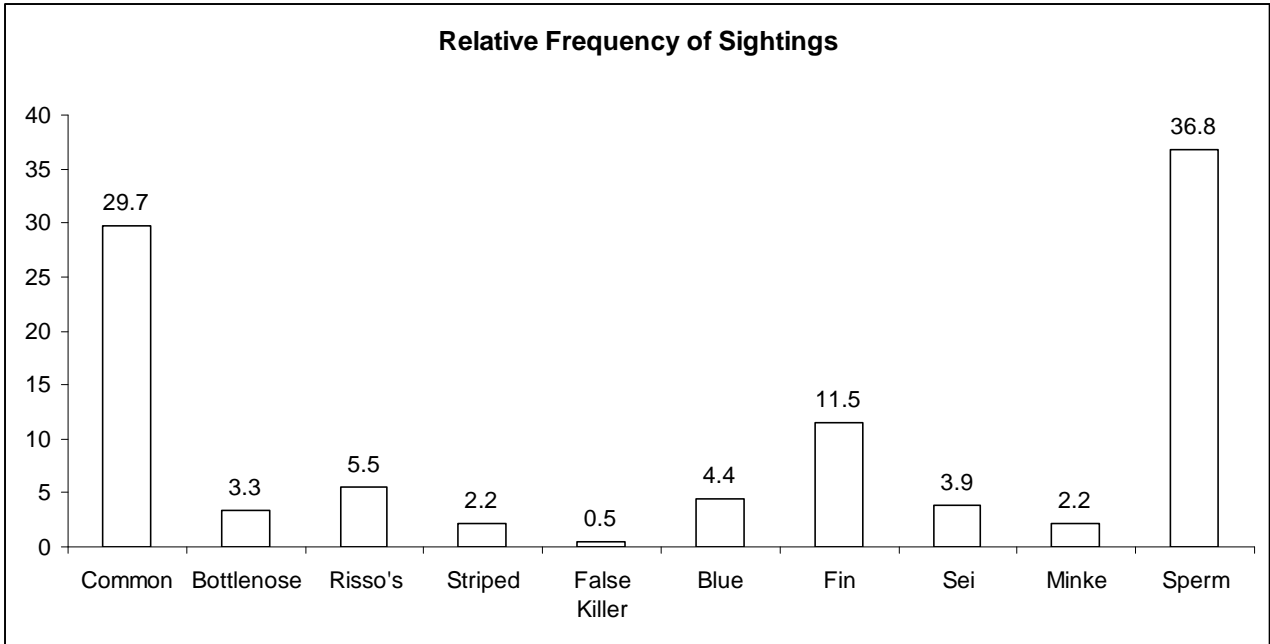


Figure 2.3b. Species sightings frequency.

2.3.3. Species sightings

Common dolphin

This species was encountered 54 times. The group size ranged from 1-200 and the average group size was 29.6 (Figure 2.3c). This group size is smaller to the average group size from existing data for June-September. Calves were first observed on 5 April and seen 15 times in total during the expedition. Several calves were observed with the foetal folds visible on their flanks, a sign that the animal is not more than a few months old. There was no significant difference in group size when calves were seen in the group: an average of 36 versus 27 when no calves were present in the group (t-test $p > .05$). This is a different result than that found in most other years, but the same as in 2010. It is most likely due to the relatively small size of groups observed this year as compared to other years.

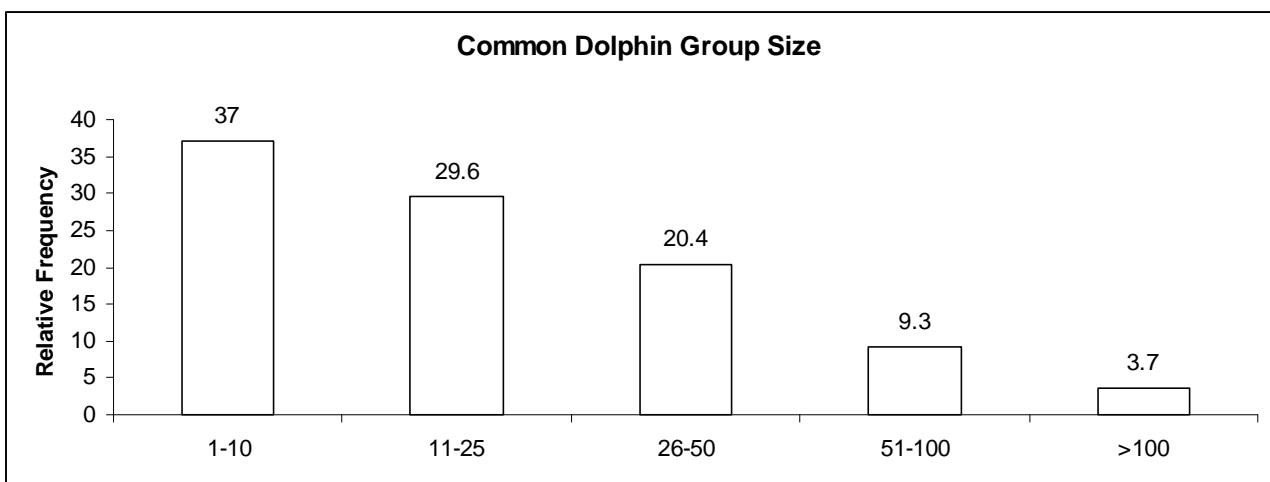


Figure 2.3c. Common dolphin group size.

The most common behaviour observed for the common dolphin was bowriding, followed by travelling then milling. They were not seen feeding (Figure 2.3d).

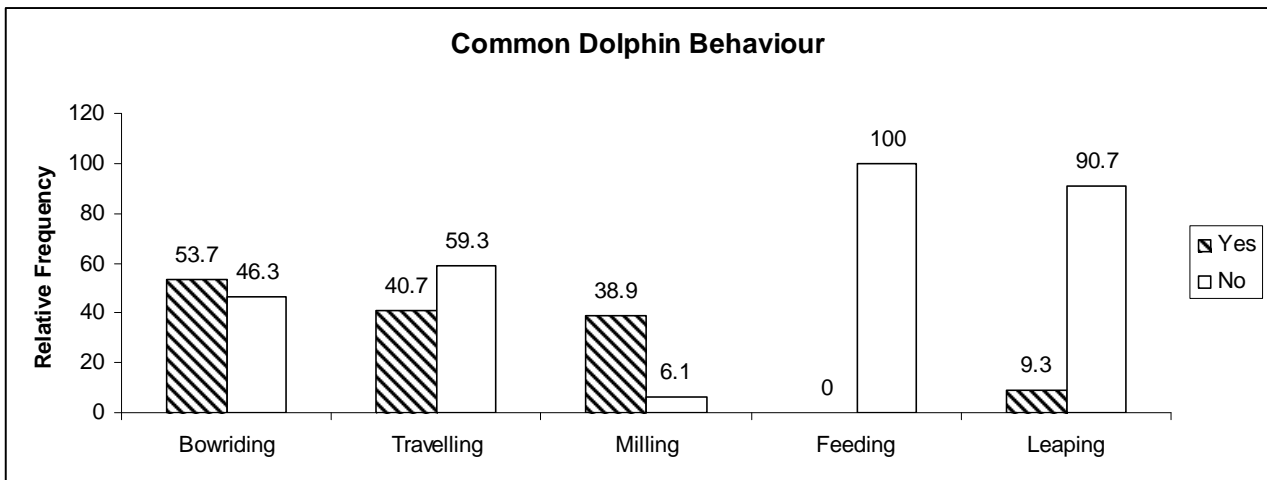


Figure 2.3d. Common dolphin behaviour.

Bottlenose dolphin

This species was observed 6 times. The group size ranged from 2-100 and average group size was 40.7. This is higher than the average of 27.3 seen when considering previously collected data. Calves were seen twice during the expedition.

Bottlenose dolphins were most frequently observed bowriding and travelling (Figure 2.3e). No feeding was observed.

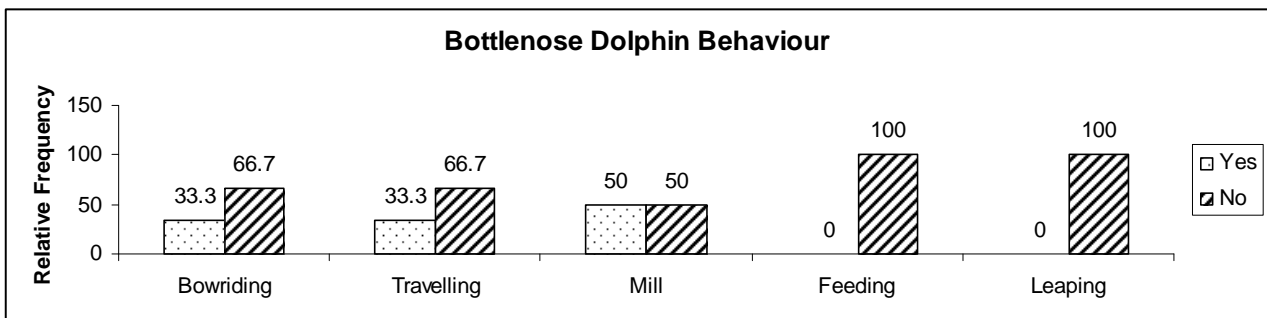


Figure 2.3e. Bottlenose dolphin behaviour.

Photo identification pictures were taken for the groups observed and some of the resident animals were seen (Figure 2.3f). Photos will be analysed in detail at a later date.



Figure 2.3f. Bottlenose dolphin photo ID pictures.

Risso's dolphin

This species was observed 10 times. Average group size was 5.6 ranging from 1 to 20. Most of the group sizes were small, with 90% of groups having fewer than 10 individuals. Calves were seen 4 times. Only a few of the usual resident animals were seen during this expedition. "Naked Lady" popular with past expeditions, was not seen during this year's expedition. We saw 4 groups with calves. From the top right photo it is easy to see how few scratch markings are present on a calf compared to the other individuals (Figure 2.3g). Risso's dolphin become whiter as they age and most of the animals observed were in the 3rd or 4th age categories out of 4, adult-marbled or adult-white apart from the calves.



Figure 2.3g. Risso's dolphin dorsal fin photo ID pictures.

Behaviour of Risso's during 6 of the 10 encounters was milling, on the remaining 2 encounters the group was travelling. No feeding was observed and Risso's dolphin do not generally bowride (Figure 2.3h).

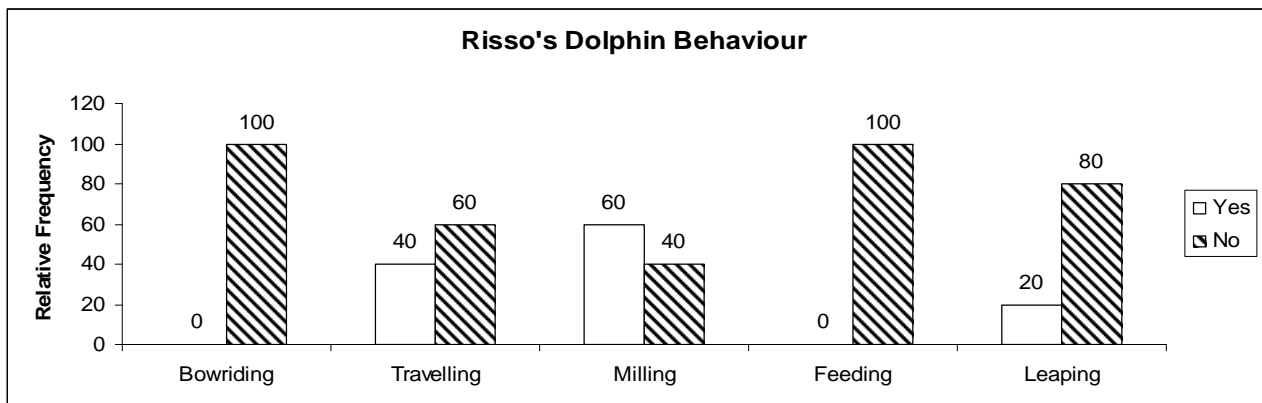


Figure 2.3h. Risso's dolphin behaviour.

Striped dolphin

Striped dolphins were seen 4 times. Average group size was 71.25 ranging from 15-150. Calves were seen during 2 of the encounters. Two groups were milling, one of those also bowrode and the other 2 were travelling. No feeding was observed.



Figure 2.3i. Striped dolphin passing a sperm whale.

False Killer Whales

A group of 4 individuals was observed briefly on 10 of April (Figure 2.3j).



Figure 2.3j. False killer whales.

Blue whale

Blue whales were observed on 8 occasions. Eight sightings were of single individuals travelling, one of 2 individuals and another of 3. No calves were observed. Identification photos (Figure 2.3k.) were taken of all the animals and sent to Richard Sears for matching to the Atlantic catalogue. Two matches were found to previous sightings in the Azores; one from 2006 and the other from 2010.



Fig 2.3k. Blue whale photo ID pictures.

Fin whale

Fin whales were seen 21 times during the expedition. Group size was either 1 or 2. No calves were seen in any of the groups. The behaviour of the animals was milling except for 2 occasions when they were travelling. Feeding was thought to be taking place during 5 of the encounters, although no lunges or prey species were seen.

Photo identification pictures of the chevrons and dorsal fins were obtained (Figure 2.3I) and sent to the College of the Atlantic for matching to their Atlantic catalogue. No matches were found.



Fig 2.3I. Fin whales photo ID pictures.

Sei whale

Sei whales were encountered on 7 occasions. Group size ranged from 1-7. No calves were observed. All of the animals were travelling towards the W or NW. ID photos were taken of the dorsal fins (Figure 2.3m). Sei whales do not have the “chevron” markings that appear on fin whales. These photos will be analysed at a later date.



Figure 2.3m. Sei whale photo ID pictures.

Table 2.3a. Summary of species encountered.

Species	Number of encounters	Group size (min-max)	Calves seen	Behaviour*	Average water temperature (°C)
Bottlenose	6	1-200	Twice	M, B, T	17.7
Common	54	1-200	15	M, B, T, L	17.8
Risso's	10	1-20	4	M, T, L	18.1
Striped	4	15-150	Twice	M, B, T, L	17.9
False Killer	1	4	0	?	17.5
Minke	4	1	0	M, T	18.4
Sei	7	1-7	0	T	17.6
Fin	21	1-2	0	M, F, T	17.7
Blue	8	1-3	0	M, T	18.2

				Males	Re-sighted individuals
Sperm whale	67	1-14	21	11	13

* M = milling, F = feeding, B = bowriding, T = travelling, L = leaping.

Minke whale

Minke whales were sighted 4 times. In 3 out of the 4 sightings the individuals were travelling. ID photos were taken of the dorsal fins and will be analysed at a later date. Minke whales usually lift their heads higher out of the water than other baleen whales and also have white markings on the pectoral fins (Figure 2.3n).



Figure 2.3n. Minke whale ID photos.

Sperm whale

Sperm whales are one of the main target species of the expedition. They were encountered 67 times comprising 127 animals (not all different individuals). The average group size was 1.9, ranging from 1-14, which is similar to that encountered during other parts of the summer. 11 different large males were seen and females with calves were observed 21 times. Photographs were taken of all whales which fluked up. Individuals can be recognised by the nicks and scallops formed on the trailing edge of the tail due mainly to wear and tear as the flukes beat through the water. 34 individuals were identified in total, 21 new animals and 13 from previous years. There were a few outstanding sperm whale days with 7 individuals identified on 1 day and 6 on another day! This year's IDs included "3666", one of the few male sperm whales to be re-identified in the Azores, previously seen in 2008, "2774" previously observed in 2004 and 2011, as well as "2924" seen in 2005 and 2007 (Figure 2.3p).

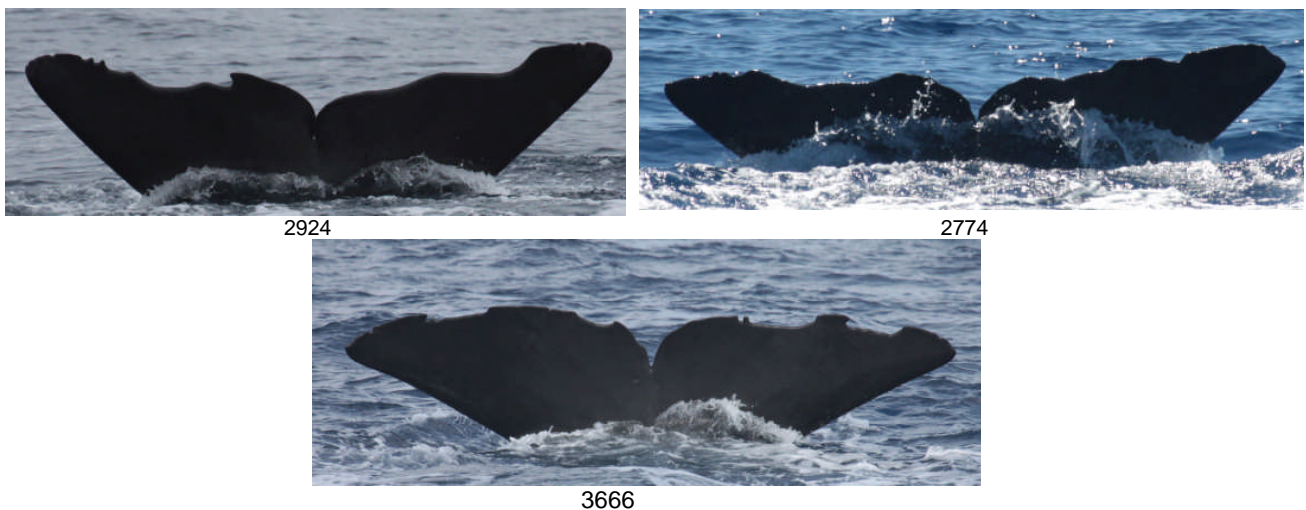


Figure 2.3p. Sperm whale ID photos.

Miscellaneous sightings

During the expedition loggerhead turtles were observed 17 times, with one of those caught and tagged. In addition, a leatherback turtle was also sighted. A sunfish was sighted on 16 April. These fish eat the same types of jellyfish that the turtles are feeding on (Figure 2.3q).



Figure 2.3q. Loggerhead turtle and sunfish

Sightings during the expedition.

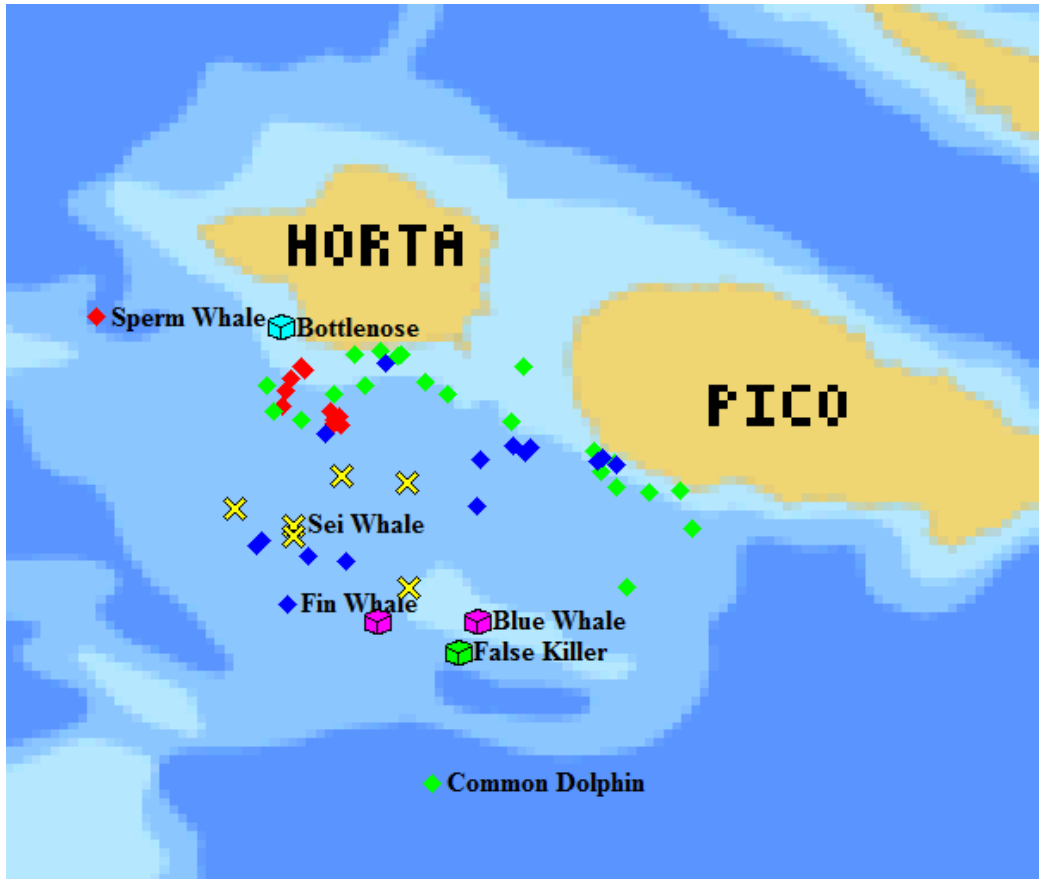


Figure 2.3r. Sightings in slot one.

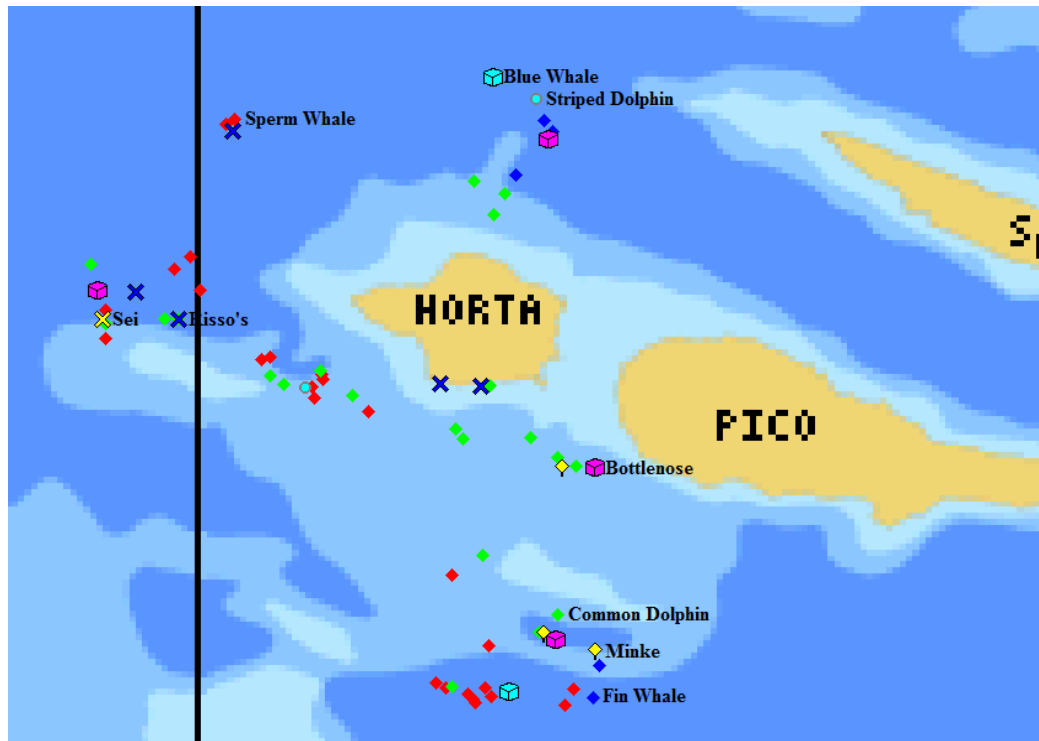


Figure 2.3s. Sightings in slot two.

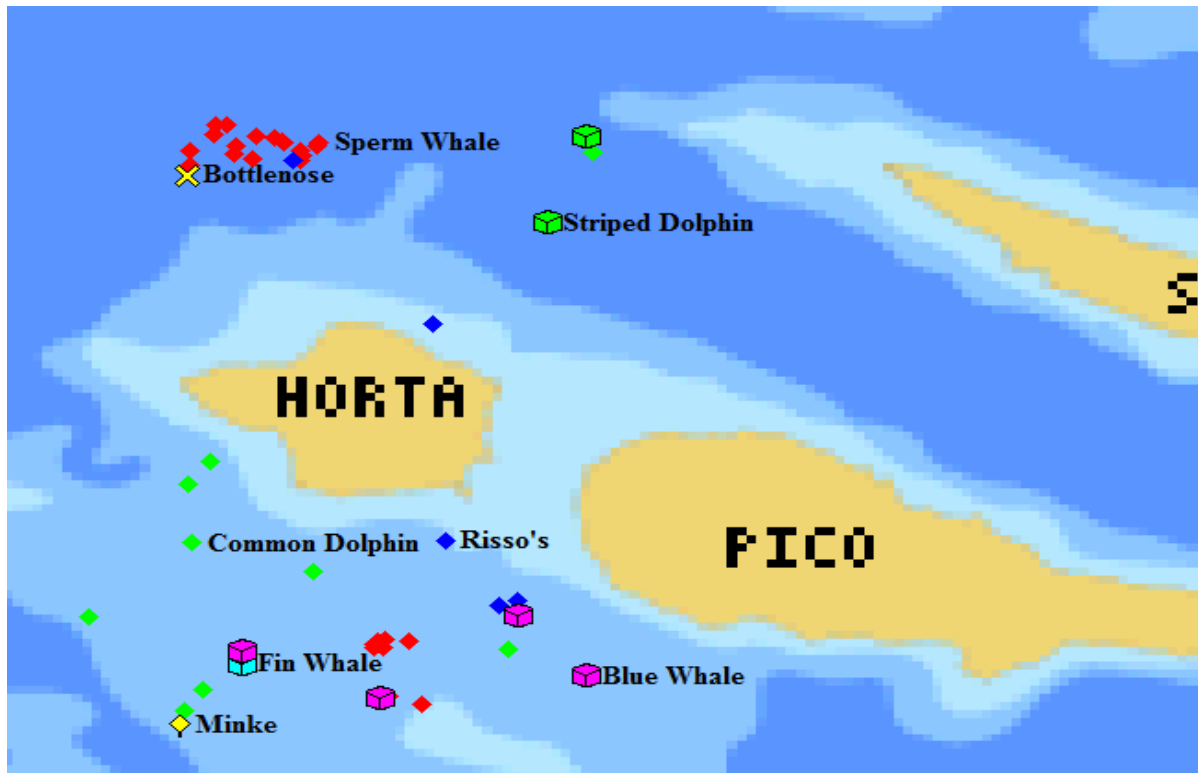


Figure 2.3t. Sightings in slot three.

2.4. Discussion & conclusions

April and May are a productive time in the Azores. Biosphere Expeditions are playing an important role in collecting vital information at a time of year when little or no work has been done in the past. Many species of cetacean can be observed in the archipelago. In fact, the variety of cetaceans is usually greater at this time of year than any other time of the summer. Sightings of baleen whales are unpredictable, but the use of lookouts (vigias) on the cliffs greatly enhances the chance of sighting them.

The sightings of baleen whales improved this year over last year's encounters. The difficult thing about planning the timing for the expedition, is "predicting" when the baleen whales will be passing. This year there were very few sightings of baleen whales after the expedition finished.

This year's baleen whale ID photographs were sent to the respective catalogues (apart from the sei whales). Two of the blue whales identified this year, had been photographed previously in the Azores, one in 2006 and the other in 2010. This shows that at least some of the animals are using the same route for migrating from their breeding ground to their feeding grounds. It is important that this photo-ID project continues. As more photos are added to the catalogues from around the Atlantic by the expeditions each year, it will help to elucidate where the baleen whales are arriving from and where they go to feed. This will help to differentiate populations, which in turn will be important data if the question of whaling should ever be put back on the table.

To date there has only been 1 match from the Azores to Iceland for a blue whale (Richard Sears, personal communication) as well as a few inter-Azores photos. There have also been 2 humpback whales sighted in the Azores that have also been seen in the Cape Verde Islands (Wenzel et al. 2009).

We always get a big thank-you from the people responsible for the catalogues and they continue to tell us what an important contribution our baleen whale photos are, since the Azores may be a route marker for animals travelling north. Most researchers will not risk coming to the Azores to find baleen whales because their migration patterns are just too unpredictable, as seen by our success or lack of success in finding them. They could come to the islands for a couple of months and not find a single animal. We have the luxury of already being in place and with the vigia (lookout) network. If the animals are present, we can take advantage of any opportunities that present themselves. In fact, after this year's expedition, Richard Sears, the biologist that keeps the catalogue of blue whales in the Atlantic, arrived on 5 May with his team for a blue whale expedition and they did not see any during the 3 weeks they were here.

This year's sightings of the resident bottlenose and Risso's dolphin were in line with previous years. We saw resident individuals of both species, although the Risso's dolphin observed were not the residents that have been seen on previous expeditions. This year we came across groups of males as well as a few groups of females and calf nurseries that are not regularly sighted. The "regular" groups were sighted further down the south coast of Pico. The ID photos of the Risso's were forwarded to a biologist doing her PhD on Risso's around Pico for future analysis. The groups of bottlenose dolphin, apart from 1 very large group were smaller than usual. This may have been caused by lack of prey species. According to fishermen's reports, horse mackerel, one of the main prey species for many of the dolphin present in the Azores, were few and far between this year possibly causing smaller, dispersed groups of dolphins.

Sperm whales were again sighted frequently, including females with suckling calves, as has been observed in previous expeditions, as well as several big males. Before Biosphere Expeditions began, we expected that it would be mainly large males that would be encountered in this early part of the summer, but this has again proven not to be the case, although we do tend to see more males in the spring than the rest of the summer. 11 different males were observed during this expedition. This year, as usual, most of the males were sighted alone at the surface; only three times were males observed together in pairs. Other males may actually have been in larger groups since a few different males were seen on the same day. On one day, 4 different males were identified. It is normal for very large males, to become more solitary, the older they get. In October 2009, the author presented a poster on the movements of male sperm whales around the Atlantic, at the Marine Mammal Conference in Quebec (with assistance from the Friends of Biosphere). 3 males seen in the Azores were matched to animals re-sighted in Norway in 2007 and 2008. This has given us the first indication of where the males we observe may go when they are not in the Azores. This collaboration with biologists working in Norway is continuing, but none of our males from this year's expedition matched to Norway or elsewhere. This work has now been published (Steiner et al. 2012). An update on the male matching, a fourth male, sighted by Espaco Talassa, has now been matched from Norway to the South of Pico.

Data collected at this time of year are useful in elucidating whether some of the same individuals remain in the archipelago for long periods of time. There is some indication that more "unknown" individuals are present in the early part of the season with the "known" animals arriving later. It would be very interesting to see which individuals are present in the archipelago over the winter. Possibly some groups prefer to summer in the Azores and others prefer the winter. The weather in the winter is the main obstacle to investigating this theory.

Seeing re-sighted animals this early in the season shows that some of the sperm whales that return to the area do not have a seasonal preference and can be seen in all months or they possibly move around the archipelago all year round. The animals re-sighted again this year reinforce the idea that groups of sperm whale females remain together for long periods of time. Usually when one animal from a group has been seen before, the rest of the animals in the group have also been seen. Sometimes it is not possible to identify all the animals of a group on a given day, but repeated sightings of the same group over time give more chances to catalogue all of the individuals from that group. We have been collaborating with 2 whale watching companies that operate out of Saõ Miguel as well as one of the companies from the south of Pico for the last couple of years. Several matches exist between the catalogues, indicating that there is movement of the animals around the archipelago. In 2011 collaboration began with SEACAC, a research organisation in the Canary Islands. This collaboration has already provided 12 matches between the areas. 2 of these animals have been sighted in the Azores, seen in the Canary Islands and returned to the Azores. This shows that some female sperm whales undertake a limited migration. One of those individuals, "1019", a whale identified in 1988 was first observed with a calf in 2010. She was observed in the Canaries with the calf in the winter of 2010/2011 and returned to the Azores with the calf in the summer of 2011. She again returned to the Canaries during the winter of 2011/2012 and this summer she was back in the Azores, with her calf, which is now starting to make independent dives on its own. These findings will hopefully be published in the near future.

In 2009 R. Antunes (2009) completed his PhD thesis using the Azores photo-ID database of individuals from 1987 to 2007. The thesis analyses the social structure of sperm whale groups found in the Azores, looking at long-term relationships between individuals and patterns of residency around the archipelago. It showed that there are differences between the groups of sperm whales observed here to those in the Pacific. The groups of animals we observed in the Azores are more stable and associations of individuals last for a much longer period of time than they do in the Pacific. This is most likely due to food availability in the different areas. In addition, information on the difference in group sizes between the Atlantic (Azores/Caribbean) and the Pacific has been linked to a lack of orca predation in the Atlantic. The larger groups in the Pacific provide protection to individuals from orca attacks (Whitehead et al. 2011).

Two collaborative projects are currently underway with the University of the Azores looking at the sightings of the sperm whales as well as the baleen whales with respect to environmental data collected by the university (depth, slope and tide as a few examples).

In conclusion, this expedition was a success for the ninth year. Sightings were good and encounters with baleen and sperm whales kept us occupied collecting data. More sperm whales than baleen whales were observed and there were quite a few dolphin sightings. The weather conditions during this year's expedition were reasonable, only a few days were spent out at sea in sea-states of 3 or more, which makes spotting the animals, especially dolphins, difficult for observers on the boat as well as the vigias on land. Re-sighting individual sperm whales from previous years continues to show the value of the Europhlukes matching programme alongside digital cameras. We are able to identify individuals sighted on the day they are seen, rather than waiting until the end of the summer to do the matching manually.

Thank you to all expedition members for your assistance.

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3. Observer Programme for the Fisheries of the Azores (POPA)

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3.1. Introduction

The Biosphere Expeditions research project took place between 3 April 3 and 5 May 2012 in Faial Island (Azores, Portugal). Onboard of the vessel “Physeter”, several participants had the opportunity to collect some information on marine life of the Azores. During the expedition period, members of Biosphere Expeditions recorded the occurrence of several marine species such as marine turtles, baleen and toothed whales, dolphins and several species of seabirds (see figures below). The information recorded during the expedition will be processed and included in the database of the POPA (Observer Programme for the Fisheries of the Azores, see http://www.horta.uac.pt/projectos/popa/contactos_EN.htm).

POPA was launched in 1998 with the main goal of certifying the tuna caught around the Azores as a “Dolphin Safe” product. This label is awarded by the NGO *Earth Island Institute* to catches made without mortality of cetaceans. POPA has built an extensive database with information collected by the observers on board the tuna fishing vessels. This database includes information on tuna fisheries (e.g. location of fishing events, catches, and fishing effort), weather conditions (e.g. SST, wind and visibility), live bait fisheries (e.g. location of fishing events, catches, gears used), cetaceans (e.g. occurrences, interaction with fishing events and association with other species), birds and sea turtles (e.g. occurrences). POPA is also responsible for “Friend of the Sea” tuna fishery certification.

3.2. Results

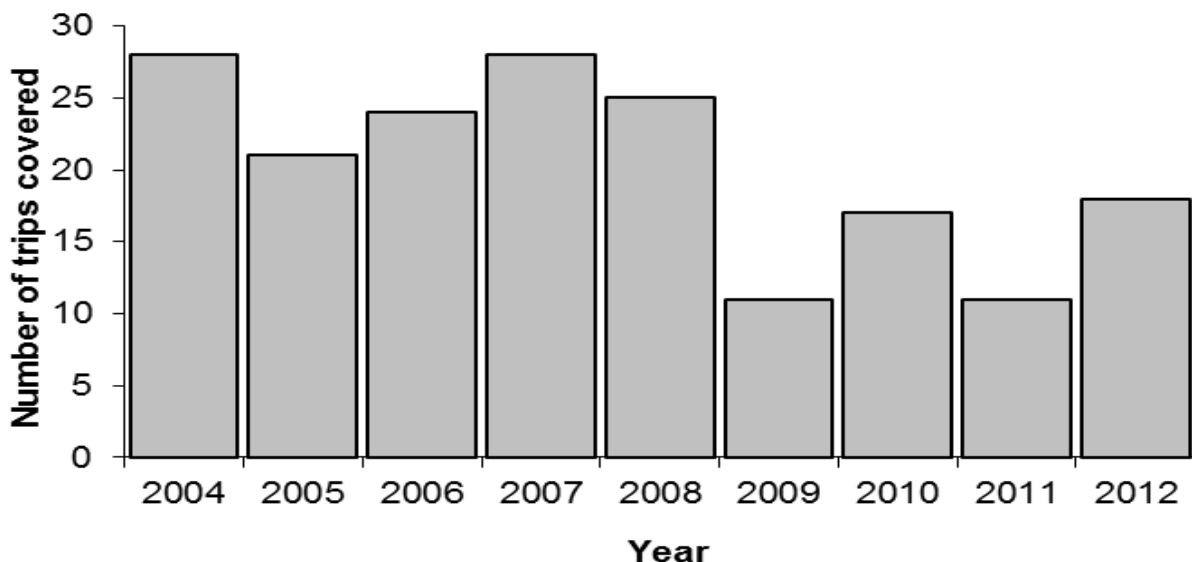


Figure 3.2a. Trip coverage 2004-2012.

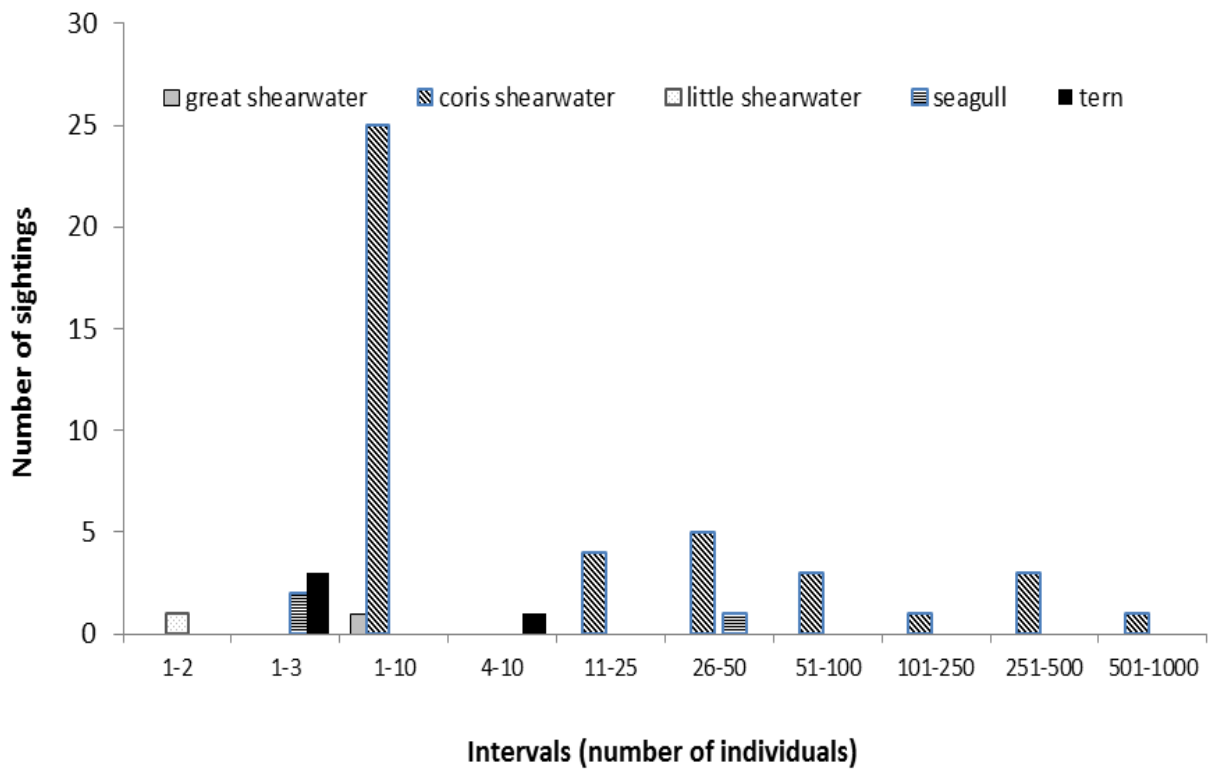


Figure 3.2b. Seabird species observed in 2012.

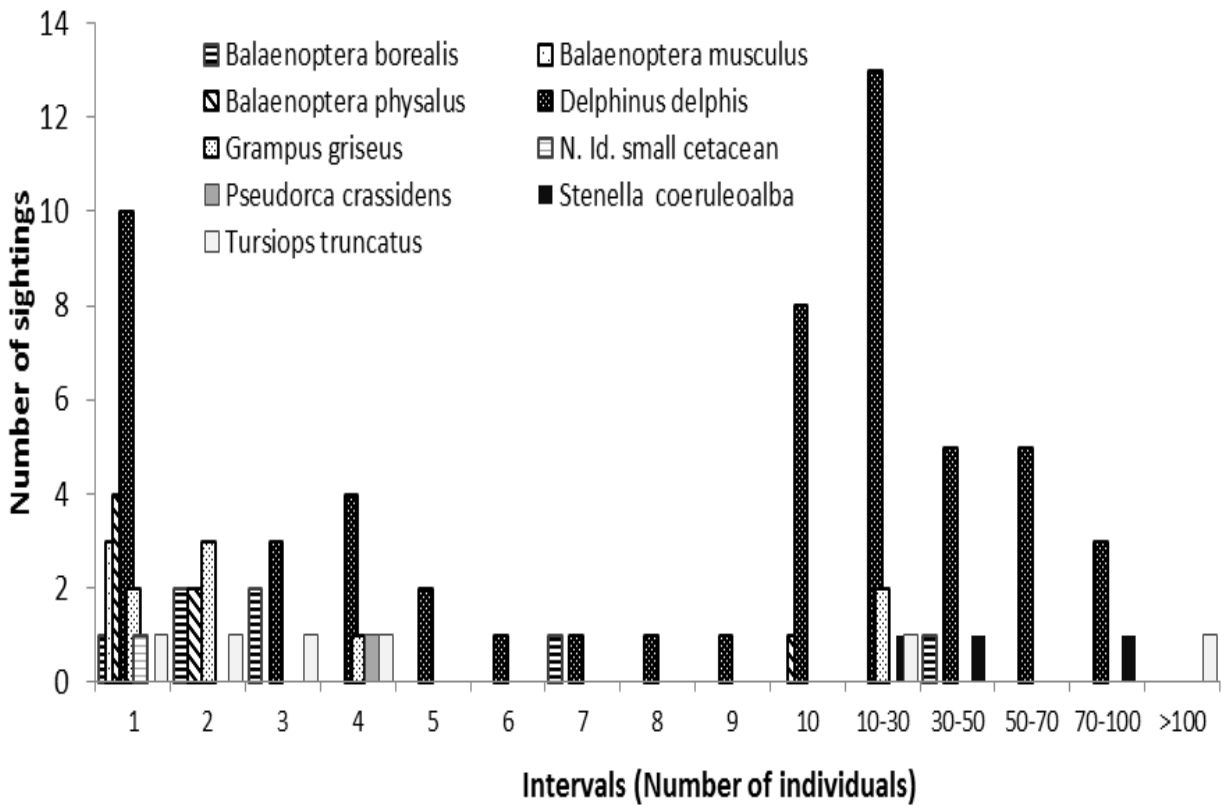


Figure 3.2c. Cetacean species observed in 2012.

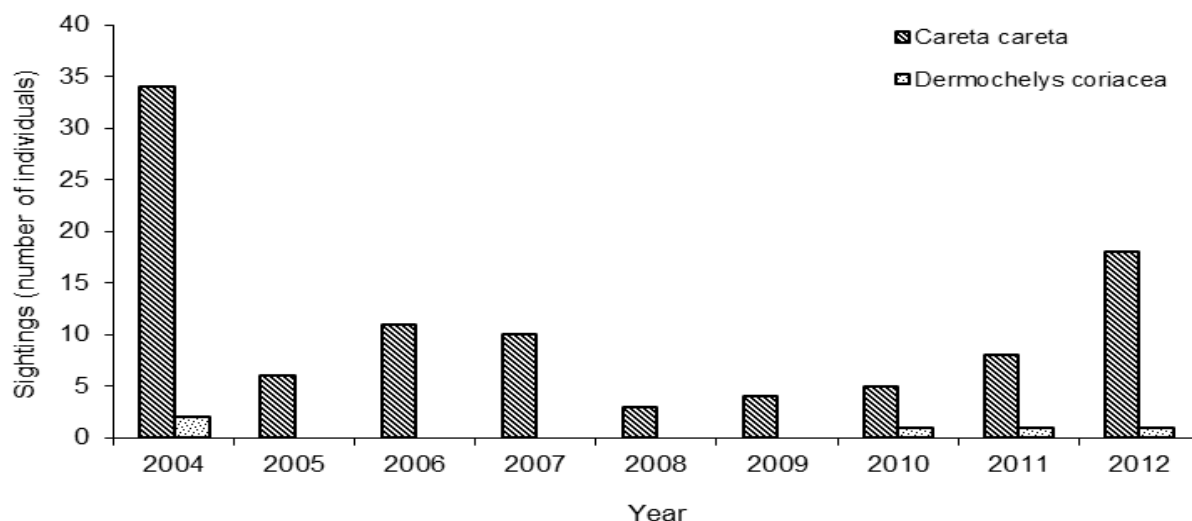


Figure 3.2d. Turtle species observed 2004-2012.

3.3. Discussion

POPA has proved that accidental capture of cetaceans in the tuna fishery in the Azores is highly insignificant and no records of mortality of cetaceans were ever reported (Silva et al. 2002). But the programme has a much wider scope, extending well beyond the “Dolphin Safe” issue. In recent years the POPA dataset (which includes data collected by Biosphere Expeditions) has been frequently requested for several research projects regarding the ecology, biology and fisheries of target and associated species. Examples are the inclusion of POPA data into the OBIS-SEAMAP map database and papers published on interactions between cetaceans and fisheries and information on bottlenose dolphin distribution for marine protected area design (Silva et al. 2011). Besides the scientific outputs, the data collected by POPA observers are also available for NGOs, government and to the fishery industry. Recently, the ‘Friend of the Sea’ (FoS) organisation has requested data to revalidate the eco-certification of three tuna species in Azorean waters.

3.4. Literature cited

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Appendix I: Expedition diary & reports



A multimedia expedition diary is available on <http://biosphereexpeditions.wordpress.com/category/expedition-blogs/azores-2012/>.



All expedition reports, including this and previous Azores expedition reports, are available on www.biosphere-expeditions.org/reports.