



# EXPEDITION REPORT

Expedition dates: 6 – 27 April 2015

Report published: December 2015

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





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

**Expedition dates:**  
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December 2015

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Biosphere Expeditions

# Abstract

In 2015 Biosphere Expeditions concluded its twelfth 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 6 to 27 April 2015 and concentrated on six main projects.

Sightings of all cetacean species were recorded. In total, 138 sightings of eight different species of cetacean and two species of turtle were recorded during the expedition period. Photo-identification of sperm whales, baleen whales and bottlenose and Risso's dolphins continued.

## Sperm whale photo-ID

Sperm whale photo-identification that has been ongoing since 1987 in the Azores continued, with 37 identifiable individuals photographed from 68 encounters, including eight animals seen in previous years.

## Baleen whale photo-ID

Baleen whales, including blue, fin, sei and humpback, were seen with increased frequency over the last few years. This year there were quite a few encounters with baleen whales. Blue and fin whales were encountered, as well as a single humpback whales. ID photos were taken during all encounters and most of these will be analysed at a later date.

## Dolphin photo-ID

Dolphin photo-identification, which began in 1987, continued. Five groups of bottlenose dolphin and three groups of Risso's dolphin were photographed, as well as a group of false killer whales. 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 will be 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 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 twelfth 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 25 loggerhead turtles were seen; one of which was captured, tagged and released. A single leatherback turtle was also sighted, but not captured.

# Sumário

A Biosphere Expeditions 2015 concluiu com sucesso o seu décimo segundo 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 6 - 27 Abril 2015 e concentrou-se em seis projectos principais.

Foram registadas um total de 138 avistamentos de 8 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 37 indivíduos identificados e fotografados em 68 encontros, incluindo reavistamentos de 8 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 e baleias comuns tendo sido observada também uma baleia de bossas. 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 5 grupos de roazes e 3 grupos de Rissos que foram fotografados também um grupo de falsas orcas. 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 décimo segundo 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 para 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, 25 tartarugas boba e uma tartaruga de couro foram avistadas, tendo-se marcado 1 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](http://www.biosphere-expeditions.org).

This expedition report deals with an expedition to the Azores that ran from 6 to 27 April 2015. 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 1,400 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 on their migration from March to May 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 1,400 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, transatlantic 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 two ten-day groups.

6 – 15 April | 18 – 27 April 2015

Team members can join for multiple slots (within the periods specified). Dates were 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 daytime temperatures during the expedition months from 12° 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 Physeter (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 procedures were in place, but did not have to be invoked as 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 leader

Craig Turner was born in Oxford, England. He studied biology, ecology and environmental management at Southampton, Aberdeen and London universities. Soon after graduating from his first degree, he left the UK for expedition life in Tanzania. Since then, he has continued to combine his interest in travel and passion for conservation, working with a wide range of organisations on projects and expedition sites in the Americas, Africa, Asia and the Pacific. He has managed expedition grant programmes for the Zoological Society of London, been a frequent contributor to the 'Explore' conference held by the Royal Geographical Society, and is an active member of the British Ecological Society Review College. Having visited and/or worked in more countries than years have passed, he is ever keen to share his exploits, writing for several magazines and is a published photographer.

## 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):

6 – 15 April 2015

Denise & Roger Bullock (UK), Simon Dite (UK), Wilf Doherty (UK), Annabel Marriott (UK), Anne Schroedter (Germany), Juan Valdivia (USA).

18 – 27 April 2015

Bob & Sofia Carter (UK), Nicholas Hall (UK), Christine Harms (Germany), Alexandra Klemisch (Germany), Diane Lever (UK), John Mcilroy (UK), Sonja Verhoek (Germany), Birgit Werner (Germany), Kaela White (USA).

## 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 £1,290 per person per 10-day slot. The contribution covered accommodation and meals, supervision and induction, special non-personal equipment, and 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., or 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.

<b>Income</b>	<b>£</b>
Expedition contributions	26,137
<b>Expenditure</b>	
<b>Base camp and food</b> includes all board & lodging, base camp equipment	5,062
<b>Research vessel &amp; transport</b> includes fuel, oils, wear & tear for research vessel, taxis on land	3,033
<b>Equipment and hardware</b> includes research materials & gear, etc.	59
<b>Staff</b> includes local and Biosphere Expeditions staff & expenses	6,743
<b>Administration</b> includes registration fees, sundries, etc.	39
<b>Team recruitment Azores</b> as estimated % of PR costs for Biosphere Expeditions	6,525
<b>Income – Expenditure</b>	<b>4,676</b>
<b>Total percentage spent directly on project</b>	<b>82%</b>

## 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 happen. Biosphere Expeditions would also like to thank the Friends of Biosphere Expeditions for their sponsorship and/or in-kind support.

We would also like to thank our partners Europhlukes, the University of the Azores, POPA, the University of Florida, and the local community of whale spotters (vigias). A final thanks goes to skippers Gyro & Nuno, as well as James Rosa and Claudia Steube, our excellent hosts at Banana Manor.

## 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](http://www.biosphere-expeditions.org).

Enquires should be addressed to Biosphere Expeditions at [info@biosphere-expeditions.org](mailto:info@biosphere-expeditions.org).

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## 2. Whale, dolphin & turtle study

Lisa Steiner  
Whale Watch Azores

### 2.1. Introduction

The Azores is a group of nine islands located about 900 nm off the coast of Portugal. Twenty-eight species of cetacean have been seen around 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 cetacean research 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 to. It is thought that they are travelling north to feed in the waters around Iceland, Greenland, Norway or even Nova Scotia for the summer. Photo-identification of the animals passing the Azores enables us to match photos with those taken elsewhere, hopefully to determine some of these migration routes. So far, there have been three matches between blue whales: one between Western Iceland in the 1990s and the Azores in 2006, another individual seen in the Azores in 2012 & 2013 matched to Spitzbergen in 2014, and in 2014 a blue whale that had been seen in the Gulf of St. Lawrence (Canada) in 1984 was seen off the south coast of Pico in June. Also, seven humpback whales have been observed in both 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. Working in April has enabled us to show 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 3,000 individuals have been identified since then. The [Europhlukes](#) matching programme makes matching individuals much faster than it was manually.

Some bottlenose and Risso's dolphins are resident around 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, 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 began 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 on board, three on the bow and one in the stern, searching for cetaceans. Two expedition citizen scientists were usually dedicated to filling in POPA forms (transects and bird and turtle surveys) (Figure 2.2a). Other expedition participants were on camera (Figure 2.2b), data sheets, hydrophone monitoring (Figure 2.2c), filling in the log or collecting water temperatures when required. On occasion participants had to do more than one job.



Figure 2.2a. POPA sheet duty.



Figure 2.2b. Camera duty.



**Figure 2.2c.** Retrieving the hydrophone.

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 dolphins 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 7D Mark II with a Canon 100-400 mm lens and a Nikon D300 with a 70-300 mm lens.

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, recordings made and the presence of other whale watching boats.

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



**Figure 2.2d.** Turtle being tagged.

When the boat returned to Horta harbour, 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 2.2f).



**Figure 2.2e.** Daily debrief.



Figure 2.2f. Matching flukes & fins.

Results were analysed using Excel data analysis tools such as 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 11 days during the expedition and spent between 3.5 and 7.5 hours per day on the water, with an average of 5.8 h. A total of 64.25 h with sea conditions below sea state 5 were recorded. A comparison of the yearly effort since 2004 is presented in Fig 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, 2011, 2013 and 2015 there were no expedition slots in May.



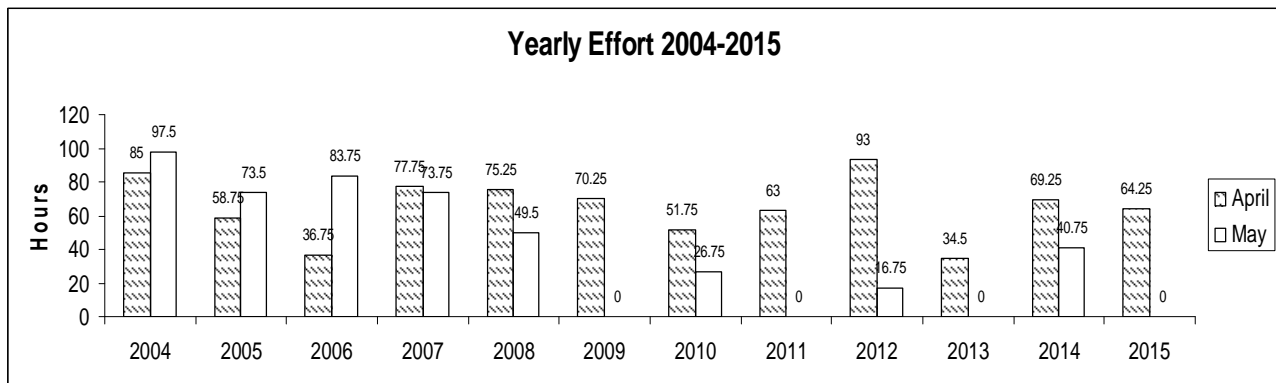


Figure 2.3a. Yearly effort.

### 2.3.2. Encounters

During the expedition 69 groups of non-sperm whales and 68 sperm whale groups were encountered (Table 2.3a.).

Table 2.3a. Species encountered.

COMMON DOLPHIN, <i>Delphinus delphis</i>	37
BOTTLENOSE DOLPHIN, <i>Tursiops truncatus</i>	5
RISSO'S DOLPHIN, <i>Grampus griseus</i>	3
STRIPED DOLPHIN, <i>Stenella coeruleoalba</i>	1
FALSE KILLER WHALE, <i>Pseudorca crassidens</i>	1
BLUE WHALE, <i>Balaenoptera musculus</i>	6
FIN WHALE, <i>Balaenoptera physalus</i>	15
HUMPBACK WHALE, <i>Megaptera novaeangliae</i>	1
SPERM WHALE, <i>Physeter macrocephalus</i>	68

These encounters resulted in a relative sightings frequency as shown in Fig 2.3b. Sperm whales were the species encountered most at 49.3%, then common dolphin (27.5%), followed by fin (10.8%) and blue whales (4.3%) and bottlenose dolphin (3.6%). These five species accounted for over 95% of all sightings.

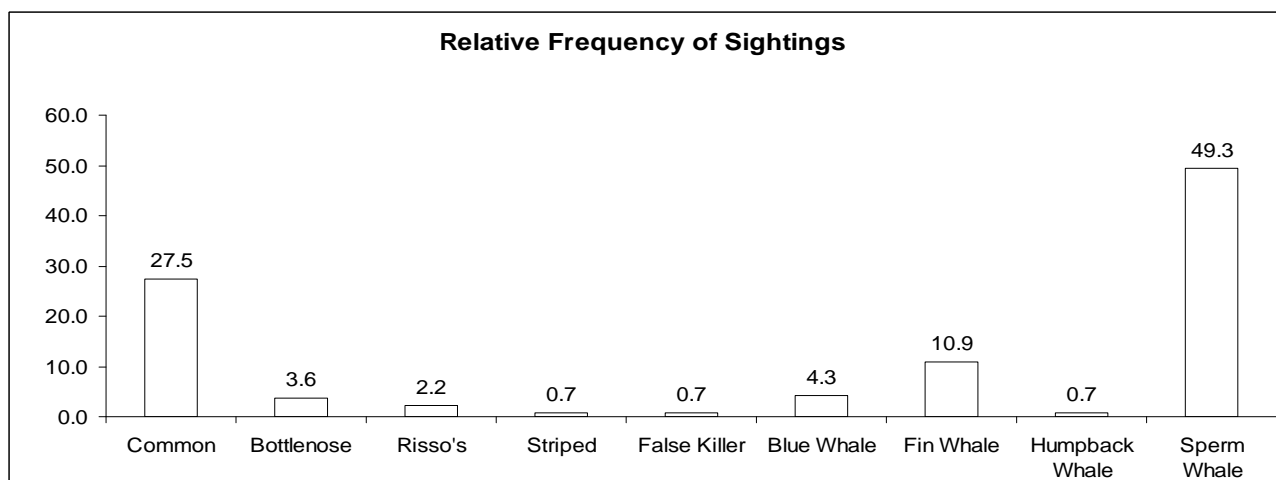


Figure 2.3b. Species sightings frequency.

### 2.3.3. Species sightings

#### Common dolphin

This species was encountered 38 times. The group size ranged from 2 to 80 individuals and the average group size was 17.86 (Fig 2.3c). This group size is smaller than the average group size from existing data for June-September. Calves were first observed on 9 April and seen three times in total during the expedition. Some of the calves were observed with 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 32 versus 16 when no calves were present in the group (t-test  $t > .05$ ). This is a different result than that found in most other years, but the same as 2010, 2012 and 2014. It is most likely due to the relatively small size of groups observed in these years as compared to other years.

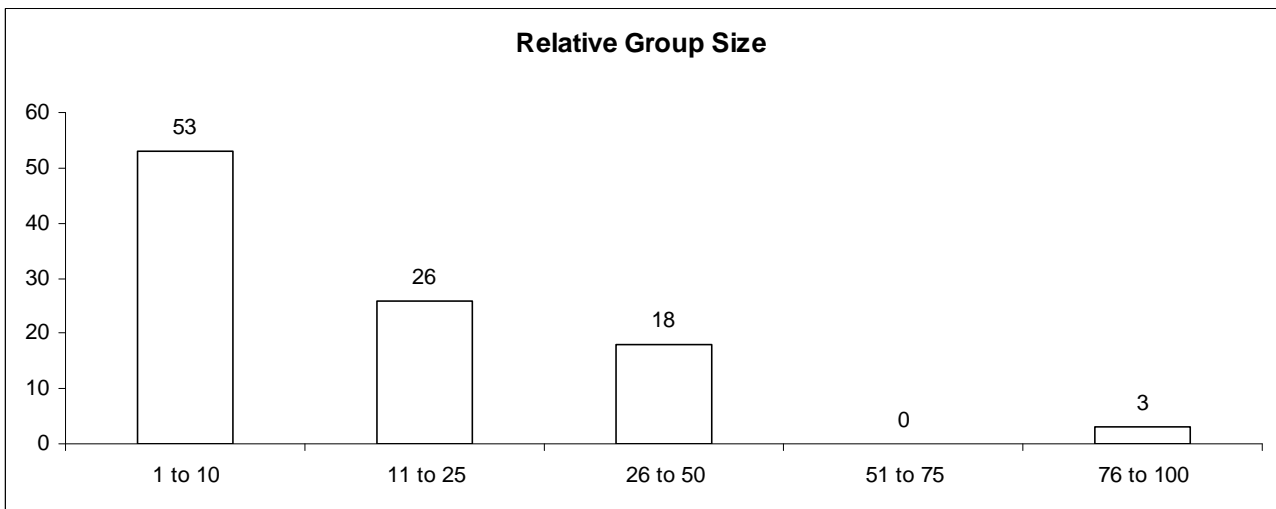


Figure 2.3c. Common dolphin group size.

The most common behaviour observed by common dolphin was travelling followed by bowriding then milling. Animals were not seen feeding or leaping (Fig. 2.3d).

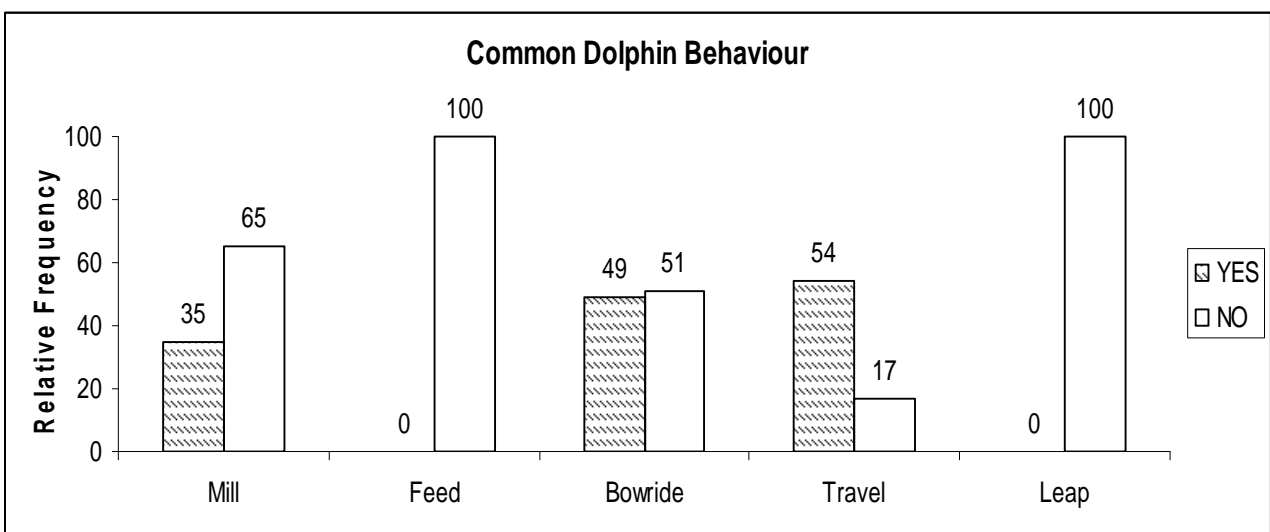


Figure 2.3d. Common dolphin behaviour.

## Bottlenose dolphin

This species was observed five times. The group size ranged from two to 150 individuals and average group size was 39. This is slightly higher than previously seen, most likely due to one very large group of 150. Calves were only seen once during the expedition.

Bottlenose dolphins were observed travelling during all encounters and rode the bow once. The large group of 150 was travelling with a group of 150 false killer whales.

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



**Figure 2.3e.** Bottlenose dolphin ID photos.

## Risso's dolphin

This species was observed three times. Average group size was nine ranging from five to twelve individuals. Calves were seen once.

One group of the usual resident animals was seen during this expedition, including some of the same individuals seen in 2014 (Fig. 2.3f). Note how few scratch markings are present on the juvenile (left) compared to the older individuals. As they age, Risso's dolphins become whiter (Fig. 2.3g).



**Figure 2.3f.** Risso's dolphin dorsal fin photo ID match.



**Figure 2.3g.** Risso's dolphin ID photos.

Behaviour of Risso's during two of the three encounters was travelling. On the remaining encounter the group was milling. No feeding was observed and Risso's dolphin do not generally bowride.

#### Striped dolphin

Striped dolphins were seen once. A group of 150 adults and calves were seen travelling on 19 April 2015.

#### False killer whale

False killer whales were seen for the second time during an expedition on 13 April 2015. A group of 150 adults and calves was travelling with a large group of bottlenose dolphin. ID photographs were taken of the dorsal fins to be matched with other false killer whales (Fig. 2.3h).



**Figure 2.3h.** False killer whale ID photos.

## Blue whale

Blue whales were observed on six occasions. The average group size was 1.2 individuals with a range of one to two. Calves were not seen. Travelling was seen during four of the sightings and milling twice. No feeding was observed.

Identification photos (Fig. 2.3i) were taken of all the animals and sent to Richard Sears of the [Mingan Island Cetacean Study](#) for matching to the Atlantic catalogue. No matches are reported at the time of writing.



Figure 2.3i. Blue whale ID photos.

## Fin whale

Fin whales were seen 15 times during the expedition. Group size ranged from one to five individuals with an average size of 2.3. Calves were not seen. The behaviour of the animals was mainly travelling, with milling seen in five encounters. Animals were not observed feeding.

Photo identification pictures of the chevrons and dorsal fins were obtained (Fig. 2.3j) and these photos were sent to the College of the Atlantic for matching to their Atlantic catalogue. No matches were found so far.



Figure 2.3j. Fin whale ID photos.

## Humpback whale

A single humpback whale was sighted on 8 April 2015. ID photos were taken of the fluke and sent to the North Atlantic Humpback Whale Catalogue, with no match found (Fig. 2.3k).



**Figure 2.3k.** Humpback whale ID photo.

## Sperm whale

Sperm whales are one of the main target species of the expedition. They were encountered 69 times comprising 114 animals (not all different individuals). The average group size was 1.6, ranging from one to eight individuals, which is similar to that encountered during other parts of the summer. Three different large males were seen and females with calves were observed twelve 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. Thirty-three individuals were identified in total, with ten unidentifiable due to poor photo quality. Twenty-five new and eight re-sighted individuals from previous years were seen. We had a few outstanding sperm whale days with eleven individuals identified on two different days. This year's IDs include 2622, 2726 and 3010 first seen in 2003, 2004 & 2005 respectively (Fig. 2.3l).



2622 in 2015



2622 in 2003



2726 in 2015



2726 in 2004



3010 in 2015



3010 in 2005

Figure 2.31. Sperm whale ID photos.

## Miscellaneous sightings

During the expedition loggerhead turtles were observed 25 times. One individual was captured and tagged. In addition, a leatherback turtle was also sighted (Fig. 2.3m).



Figure 2.3m. Leatherback turtle.

## Sightings during the expedition.

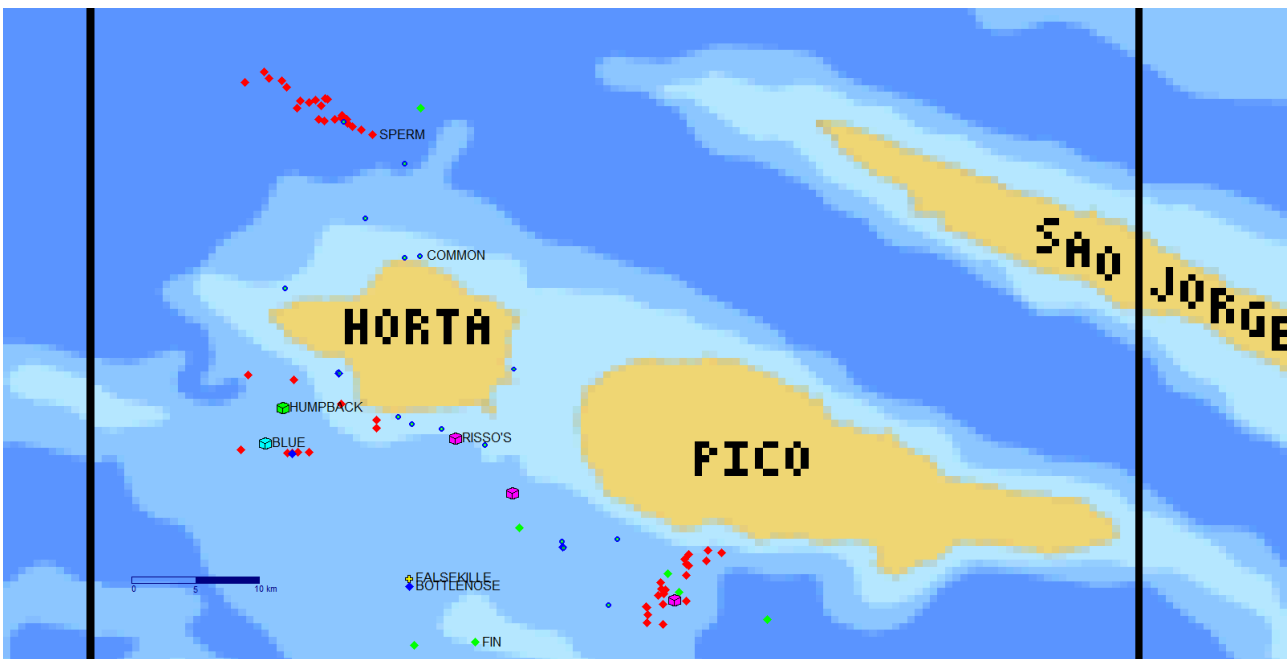


Figure 2.3n. Sightings during slot 1.



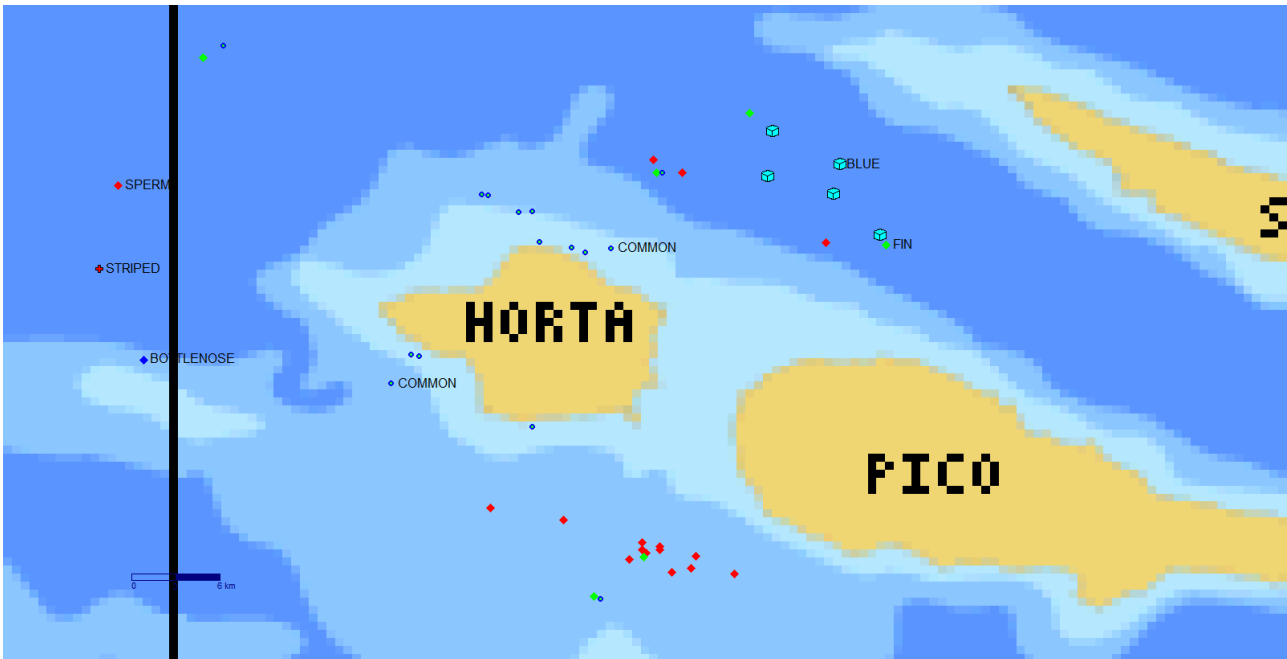


Figure 2.3o. Sightings during slot 2.

## 2.4. Discussion & conclusions

April and May are a productive time in the Azores for studies of cetaceans. Biosphere Expeditions is playing an important role in collecting vital information at that 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 difficult thing about planning the timing for the expedition, is “predicting” when the baleen whales will be passing. This year we did well, with the number of sightings of baleen whales increasing through the expedition.

This year’s baleen whale ID photographs were sent to the respective catalogues (apart from sei whales). This photo-ID project is important to continue, because as more photos are added to the catalogues from around the Atlantic, the pieces of the puzzle may finally start to come together and give us an idea of where the baleen whales are coming from and where they go to feed. Last year, after the expedition, a blue whale was seen on the South coast of Pico that had previously been seen in the Gulf of St. Lawrence, Canada in 1984, 30 years ago! It is unknown where it has been swimming for 30 years, showing how limited our knowledge of the life history of these animals is. The Azores blue whale catalogue is now up to 333 individuals, making up the majority of the North East Atlantic Blue Whale Catalogue (493). There have been three other long-distance matches from the Azores; two to Iceland and one to Spitzbergen for blue whales (although not the author’s photos) and a few inter-Azores photos as well as the matches between years. There is a 14% yearly re-sighting rate of blue whales from the Azores catalogue. The lack of matches between the East and West North Atlantic catalogues suggest that there are two largely discrete populations in the North Atlantic. One from West Greenland South along the North American coastline, centred in Eastern Canadian waters, the other from Denmark

Strait, Iceland and Jan Mayen, Spitzbergen, to the Barents Sea in the summer, South to the Northwest African coast in the winter (Sears 2015).

There have also been several humpback whales sighted in the Azores that have also been seen in the Cape Verde Islands, although not the humpback sighted during the expedition (Wenzel et al. 2009). Prior to the expedition, two humpbacks matched to Northern Norway (unpublished data). The main author always gets a big thank-you from the people responsible for the catalogues and they continue to tell her what an important contribution the expedition's baleen whale photos are, since the Azores may be a route marker for animals travelling north. In 2014 the [North Atlantic Humpback Whale Catalogue](#) reached 8,000 individuals and although the Azores photos are a very small part of this catalogue, they play an important role in discovering some long range matches. 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. This project, however, has the luxury of already being in place and with the vigia (lookout) network, if the animals are present, can take advantage of any opportunities that present themselves.

This year's sightings of the resident bottlenose and Risso's dolphin were in line with previous years. Resident individuals of both species were seen, although the Risso's dolphin observed were not the residents that have been seen on previous expeditions. This year the expedition came across two groups of males, as well as a group of females with calves. The ID photos of the Risso's were forwarded to a biologist who has just completed her PhD on Risso's around Pico for future analysis. The average group size of bottlenose dolphin, was larger than usual, but this was probably due to a sighting of a very large group of 150 individuals. This large group was swimming with a group of false killer whales. These two species have been seen together several times over the years. The bottlenose dolphins may be taking advantage of the hunting skills of the false killer whales, which mainly predate large tunas or other game fish.

Sperm whales were again sighted on several days, including females with suckling calves, as has been observed in previous expeditions, as well as a few big males. Before Biosphere Expeditions began its long-term research project, it was 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 there is indeed a tendency to see more males in the spring than the rest of the summer. Three different males were seen during this expedition. This year, as usual, most of the males were sighted alone at the surface. Once, a pair was observed together. It is normal for very large males to become more solitary, the older they get, but while they are "teenagers" they usually associate with other male "teenagers".

In October 2009, the lead 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). Three males seen in the Azores were matched to animals re-sighted in Norway in 2007 and 2008. This gave us the first indication of where the males the project observes may go when they are not in the Azores. The collaboration with biologists working in Norway is continuing, but none of the males from this year's expedition matched to Norway or elsewhere, although a male seen earlier in 2015 did match. This work has now been published (Steiner et al. 2012). In total seven males have now been matched from Norway to the South of Pico.

Data collected at this time of year are valuable to elucidate if some of the same individual sperm whales 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. Maybe 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 remain in 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. Two of the individuals seen this year, 2684 & 2726, have been seen during previous expeditions.

Biosphere Expeditions has been collaborating with two 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 some movement of the animals around the archipelago, although most animals have been observed in only one area. After this year’s expedition, a group of sperm whales, including six individuals, previously only seen in Saõ Miguel, were observed in the Central Group. The two groups of islands are only 125 nautical miles apart, so it is not surprising that there is movement between the two areas.

In 2011 collaboration began with [SECAC](#), a research organisation in the Canary Islands. This collaboration has already provided 13 matches between the areas. A few of these animals have been sighted in the Azores, re-sighted in the Canary Islands and returning to the Azores afterwards. This shows that some female sperm whales undertake at least a limited migration. One of those individuals, 1019, a whale identified in 1988 was observed with a calf in 2010. She was photographed 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 was again seen in the Canaries winter of 2011/2012 and in 2012 she was back in the Azores, with her calf, which was starting to make independent dives on its own. The calf has not been seen since 2012, so it looks like it has not survived independently. This work, on the female matches, will be presented at the Society for Marine Mammalogy Conference in San Francisco in December 2015 (with help from Friends of Biosphere) (Steiner 2015).

Antunes (2009) completed a PhD at St Andrews University using the Azores photo-ID database of individuals from 1987 to 2007. This was used to analyse 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. He showed that there are differences between the groups of sperm whales observed here to those in the Pacific. The groups of animals we observe 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 appear to provide protection to individuals from orca attacks (Whitehead et al. 2012).

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). Two abstracts have been submitted to the European Cetacean Society for the 2016 conference in Madeira.

In conclusion, this expedition was a success for the twelfth year. Sightings were good and encounters with baleen and sperm whales kept the project occupied collecting data. More sperm whales than baleen whales were observed and there were many dolphin sightings. The weather conditions during this year's expedition were not optimal with several days 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. This is also a very satisfying way to end a day's work of observations.

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 8 and 27 April 2015 in Faial Island (Azores, Portugal). Onboard of the vessel Phyceter, 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 (23 loggerhead and 1 leatherback turtles were sighted), 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 (Azores Fisheries Observer Program).

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 attributed 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 the “Friend of the Sea” tuna fishery certification.

## 3.2. Results

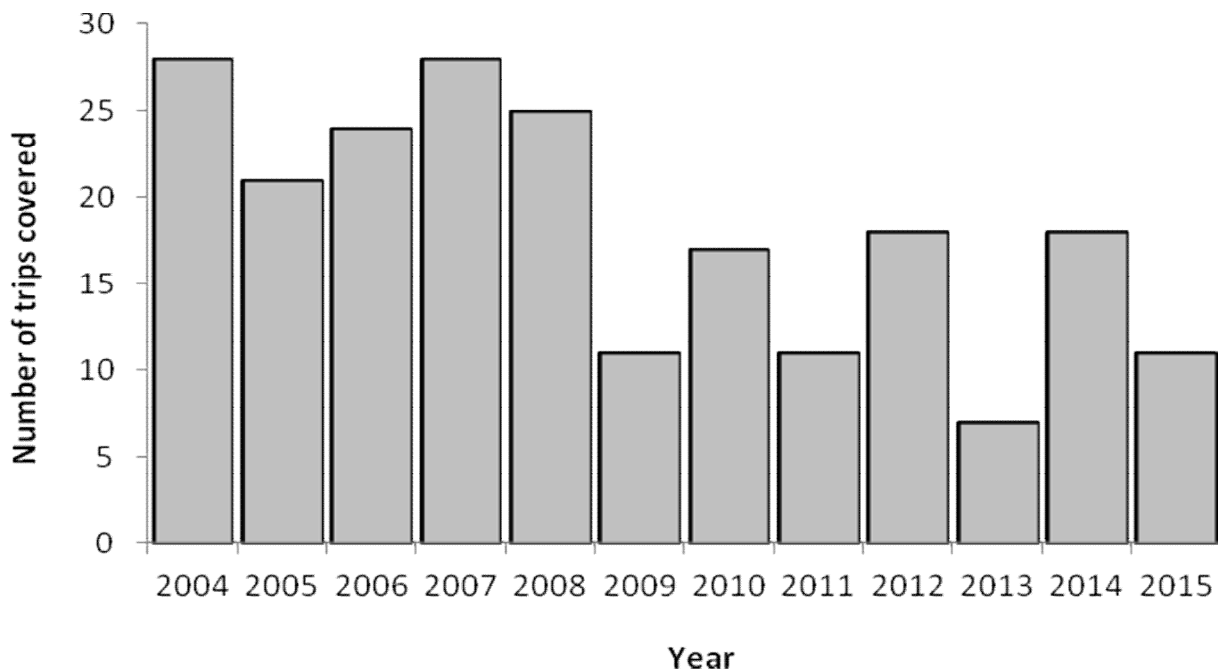


Figure 3.2a. Trip coverage during the 2004-2015 period.

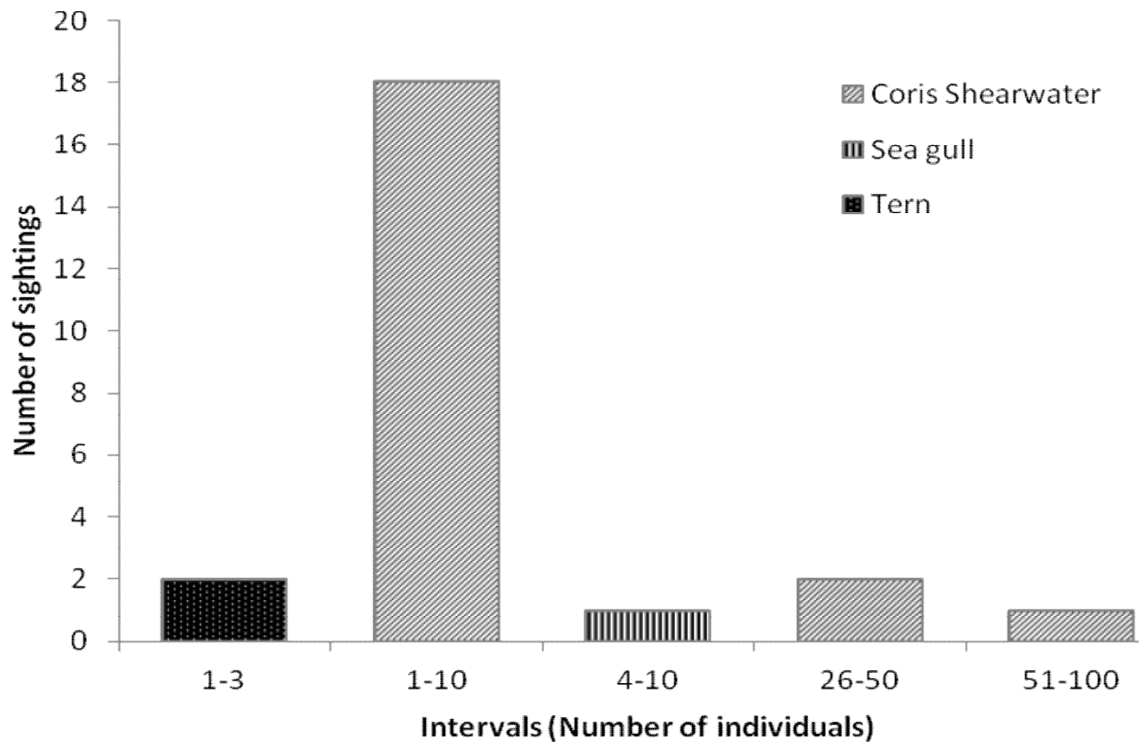


Figure 3.2b. Species of seabirds observed in 2015.

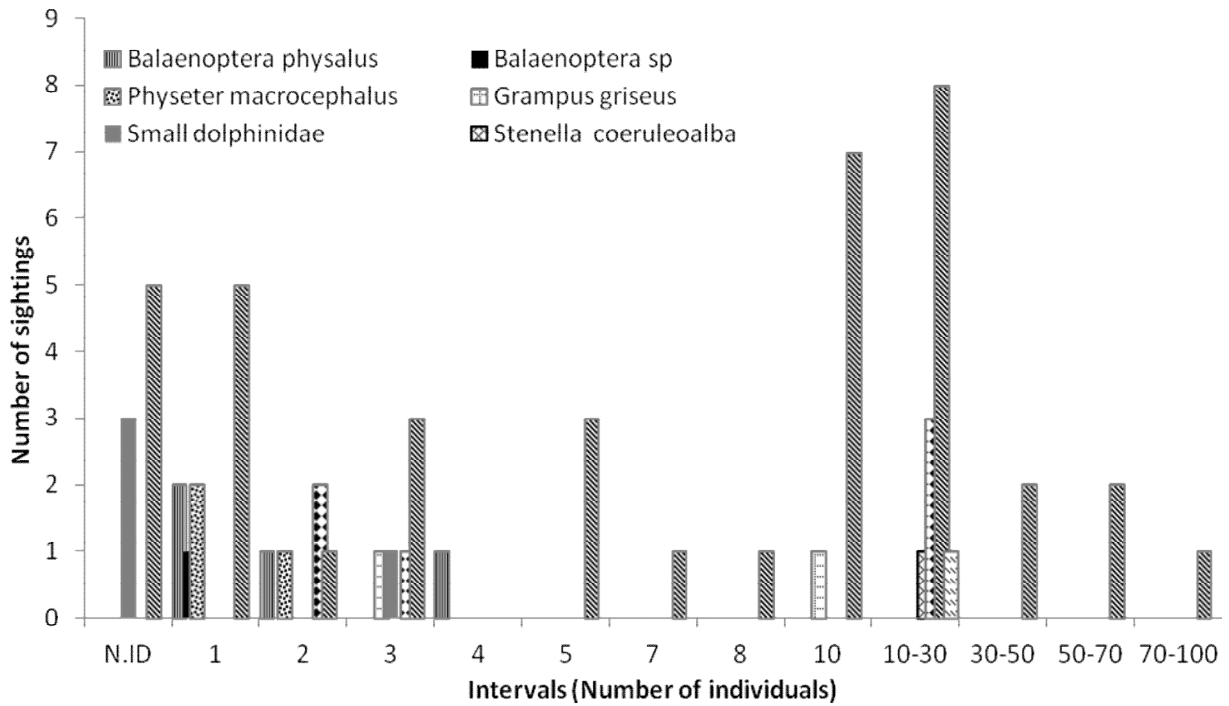


Figure 3.2c. Species of cetaceans observed in 2015.

### 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 range than just the “Dolphin safe” topic. 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 in the OBIS-SEAMAP and EMODnet map databases and the papers published regarding information on cetacean distribution into marine protected area design (Silva et al. 2012) and spatial and temporal distribution of cetaceans in the mid-Atlantic waters around the Azores (Silva et al. 2013). 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 revalidated the eco-certification of three tuna species in Azores based on information collected by POPA.

### 3.4. Literature cited

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## Appendix I: Expedition diary & reports



A multimedia expedition diary is available at <http://biosphereexpeditions.wordpress.com/category/expedition-blogs/azores-2015/>.



All expedition reports, including this and previous Azores expedition reports, are available at [www.biosphere-expeditions.org/reports](http://www.biosphere-expeditions.org/reports).