

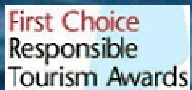


EXPEDITION REPORT

Expedition dates: 8 – 29 April 2013

Report published: December 2013

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



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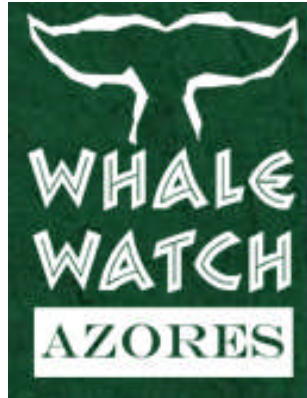
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Germany



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Expedition dates:
8 – 29 April 2013

Report published:
December 2013

Authors:
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Whale Watch Azores

Miguel Machete
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Matthias Hammer (editor)
Biosphere Expeditions

Abstract

In 2013 Biosphere Expeditions concluded its tenth 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 8 to 29 April 2013 and concentrated on six main projects. The wet and windy weather during this expedition greatly limited time spent out at sea and sightings during this expedition.

Sightings of all cetacean species were recorded. Thirty-two sightings of 5 different species of cetacean and 1 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 that has been ongoing since 1987 in the Azores continued, with 17 identifiable individuals photographed from 20 encounters, including 2 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 was only one blue whale encountered. No useable ID photos were obtained during the encounter.

Dolphin photo-ID: Dolphin photo-identification, which began in 1987, continued. Two groups of bottlenose dolphin and three 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 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 collection for the Department of Oceanography and Fisheries (DOP) of the University of the Azores, for the Tuna Fisheries Boat Observer programme, POPA, was successfully collected for a tenth 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 captured 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 two loggerhead turtles were seen, although neither was captured or tagged.

Sumário

A Biosphere Expeditions 2013 concluiu o seu décimo ano de recolha de dados sobre a distribuição de cetáceos nos Açores, com recurso a observações visuais e foto-identificação. A expedição teve 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 8 e 29 de Abril e concentrou-se em seis projectos principais. A precipitação e o vento que se fez sentir durante a expedição limitaram as visualizações durante as saídas de mar.

Foram registados um total de 32 avistamentos de 5 espécies diferentes de cetáceos e 1 espécie de tartaruga. 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 17 indivíduos identificados e fotografados em 20 encontros, incluindo reavistamentos de 2 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 apenas tivemos um encontro com uma baleia azul. No entanto não conseguimos registos de foto-identificação.

Foto-identificação dos golfinhos roazes e Rissos: Continuámos a foto-identificação de roazes, que começou em 1987. Até ao momento conhecem-se dois grupos de roazes e três grupos de Rissos, grupos estes 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 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 fotografados nos Açores foi reavistado noutras áreas.

POPA: Pelo décimo ano consecutivo 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 cabeçudas 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, dois tartarugas boba foi avistada, no entanto, não foi possível efectuar nenhuma marcação.

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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 8 to 29 April 2013. 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 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 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, 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 two periods totalling two ten-day groups.

2013: 8 – 17 April | 20 – 29 April (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 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 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

Alisa Clickenger 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, Alisa has a love of nature and foreign cultures which in 2009 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):

8 – 17 April 2013

Rita Cariço* (placement, Portugal), Joris Drubbel (Netherlands), Neil Goodall (UK), Lutz Graupner (Germany), Kerstin Graupner-Mayer (Germany), Birgit Haeussler (Germany), Vera Menges (Biosphere Expeditions scientist Namibia), Catharina Pieper* (placement, Portugal), Annette Schumann (Germany), Christina Stehl (Switzerland)

20 – 29 April 2012

Dominika Adamiec (Ireland), Barbara Buchter (Germany), Branko Budisin (Canada), Margot Coulter (Canada), Sara Dawson (UK), Sabine Dietershagen (Germany), Dan Jenner (UK), Peter Stenberg (Sweden), Gordon Thomson (UK)

*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 £1240 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., 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	19,984
Expenditure	
Base camp and food includes all board & lodging, base camp equipment	4,719
Research vessel & transport includes fuel, oils, wear & tear for research vessel, taxis on land	2,730
Equipment and hardware includes research materials & gear, etc.	66
Staff includes local and Biosphere Expeditions staff & expenses	5,989
Administration includes registration fees, sundries, etc.	90
Team recruitment Azores as estimated % of PR costs for Biosphere Expeditions	6,400
Income – Expenditure	-10
Total percentage spent directly on project	100%

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 Swarovski Optik and 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), 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 info@biosphere-expeditions.org.

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.

2. Whale, dolphin & turtle study

Lisa Steiner
Whale Watch Azores

2.1. Introduction

The Azores is a group of 9 islands located about 900 nm off the coast of Portugal. Twenty-eight 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 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 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 last year two blue whales were seen for the second year passing the islands. 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 had been thought that there were not many female sperm whales and calves around during the winter months. 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 dolphins 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 on board, three on the bow and one in the stern, searching for cetaceans (Fig. 2.2a). Two expedition members were usually dedicated to filling in POPA forms (transects and bird and turtle surveys) (Fig. 2.2b). Other crew were on camera duty, filling in data sheets for hydrophone monitoring (Fig. 2.2c), filling in the log or collecting water temperatures when required. On occasion crew members may have had to do more than one job.



Figure 2.2a. Observer duty.

Sperm whales were approached from behind in order to obtain fluke photographs. The blue whale was also approached from behind before attempting to move further forward to obtain photographs of its mottling patterns. Bottlenose and Risso's dolphins were 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 100-400mm lens and a Nikon F70 with a 70-300mm lens.

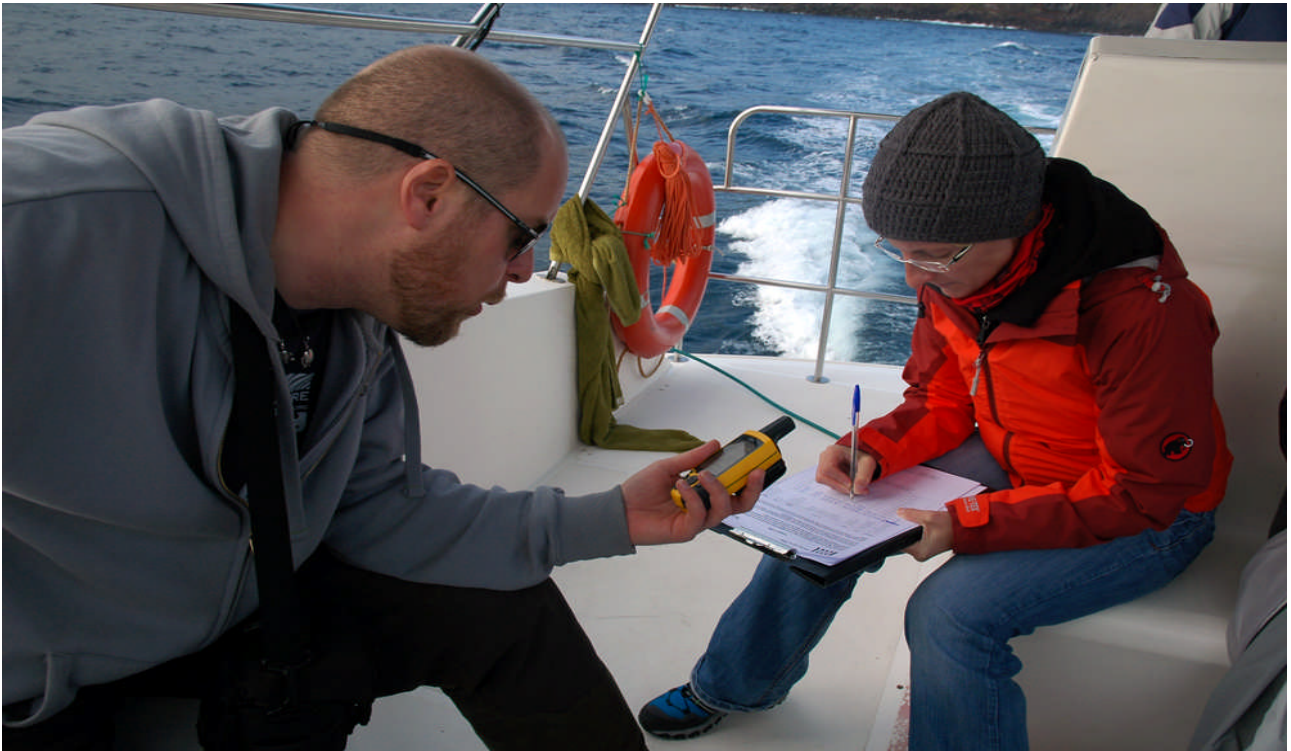


Figure 2.2b. POPA data collection.



Figure 2.2c. Hydrophone monitoring.

Other dolphins sighted were approached for species identification and then the boat usually moved 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 behaviours down further. If the animals were travelling, a direction of travel was noted. In addition, environmental information was 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), 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 for the University of Florida/University of the Azores turtle tagging programme. Positional data was also recorded.

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

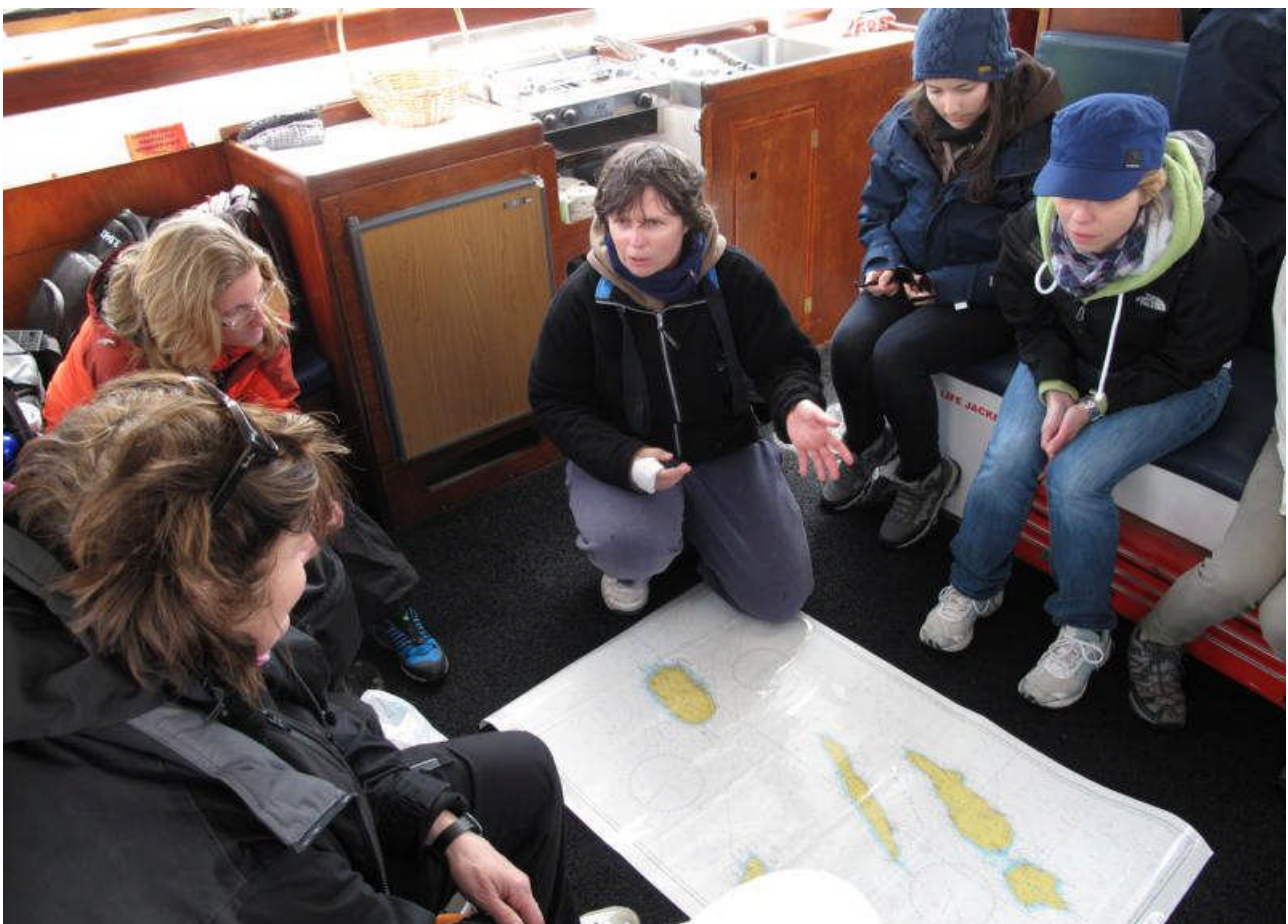


Figure 2.2d. Daily debrief.

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



Figure 2.2e. Matching sperm whale flukes & data entry.

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 on 7 days during the expedition and spent between 3 and 7.5 hours per day on the water, with an average of 5.1 hr. A total of 34.5 hr with sea conditions less than 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 and 2013 there were no expedition slots in May.

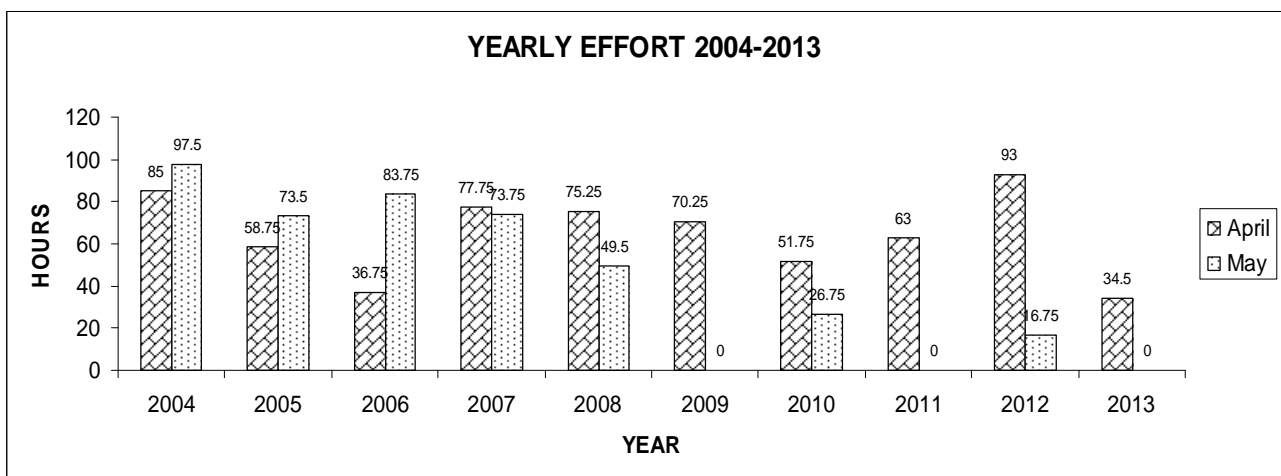


Figure 2.3a. Yearly effort.

2.3.2. Encounters

During the 2013 expedition 12 groups of non-sperm whales and 20 sperm whale groups were encountered (Table 2.3a).

Table 2.3a. Species encountered.

COMMON DOLPHIN, <i>Delphinus delphis</i>	6
BOTTLENOSE DOLPHIN, <i>Tursiops truncatus</i>	2
RISSEO'S DOLPHIN, <i>Grampus griseus</i>	3
BLUE WHALE, <i>Balaenoptera musculus</i>	1
SPERM WHALE, <i>Physeter macrocephalus</i>	20

These encounters resulted in a relative sightings frequency as shown in Fig. 2.3b. Sperm whales were the species encountered most at 63% of all sightings, followed by common dolphin at 19%. These 2 species accounted for 82% of all sightings.

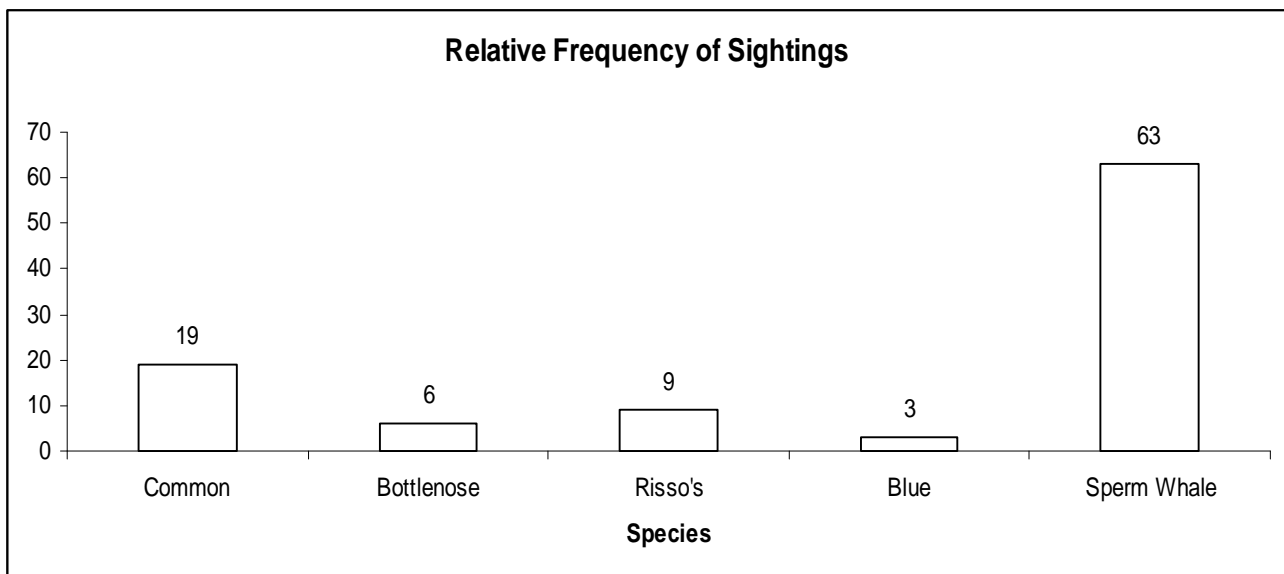


Figure 2.3b. Species sightings frequency.

2.3.3. Species sightings

Common dolphin

This species was encountered six times. The group size ranged from 2 to 80 and the average group size was 30 (Fig. 2.3c). This group size is smaller than the average group size from existing data for June–September. No calves were seen during the expedition.

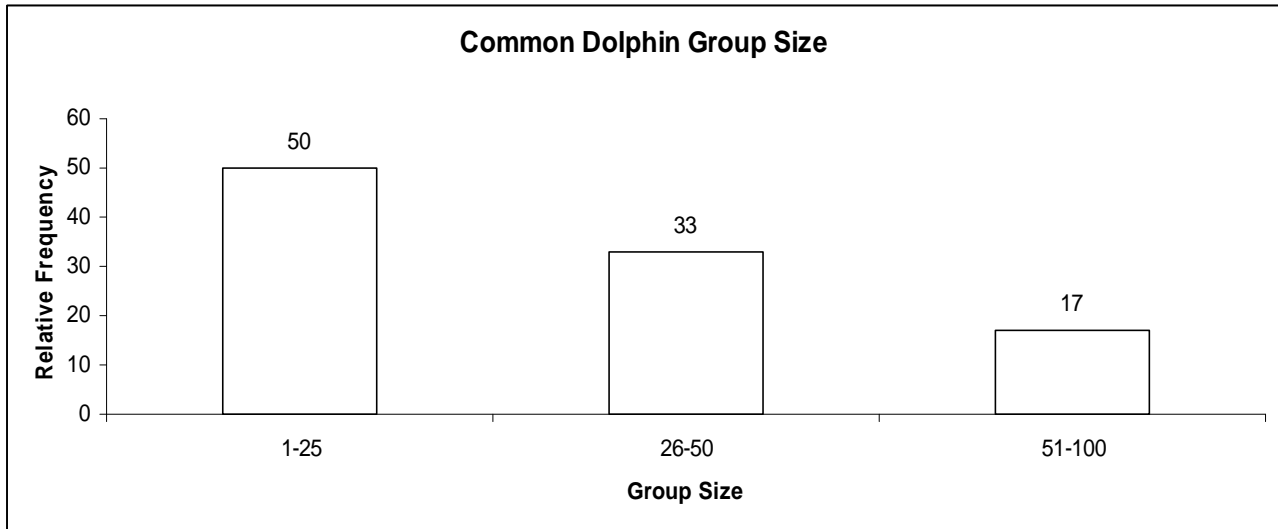


Figure 2.3c. Common dolphin group size.

The most common behaviour observed in the common dolphin was milling. Only 2 of the encounters were longer than 10 minutes, making it difficult to determine more specific behaviours.

Bottlenose dolphin

This species was observed two times. One group had 20 individuals and the other 30. Calves were not seen during the expedition. One of the groups of bottlenose dolphins was milling and the other travelling.

Photo-identification pictures were taken for both groups observed and some of the resident animals were seen (Fig. 2.3d). These photos will be analysed at a later date.



Figure 2.3d. Bottlenose dolphin photo-identification pictures.

Risso's dolphin

This species was observed three times. All of the groups seen were small, at two, three and five individuals. No calves were seen.

None of the usual resident animals were seen during this expedition. Only three photo-identification photos were obtained (Fig. 2.3e).



Figure 2.3e. Risso's dolphin dorsal fin photo-identification pictures.

Two of the groups of Risso's dolphins were travelling and the other was milling. No feeding was observed and Risso's dolphins do not generally bowride.

Blue whale

A single blue whale was observed travelling to the west on the 14 April. No usable identification photos were taken during the encounter.

Sperm whale

Sperm whales are one of the main target species of the expedition. They were encountered 20 times, totalling 68 animals (not all different individuals). The average group size was 3.4, ranging from 1 to 13, which is slightly larger than that encountered during other parts of the summer. Ten large males were seen and females with calves were observed 4 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. Eighteen individuals were identified in total, 16 new animals and 2 from previous years. We had one outstanding sperm whale day with 18 encounters during the day! This year's identification photographs include "2350", also seen during the 2008 expedition, and "3970", previously observed in 2006 and 2010 (Fig. 2.3f).



2350



3970

Figure 2.3f. Sperm whale photo-identification pictures.

Miscellaneous sightings

During the expedition loggerhead turtles were observed twice, but not captured or tagged.

Sightings during the expedition.



Figure 2.3g. Sightings during group 1.



Figure 2.3h. Sightings during group 2.

2.4. Discussion & conclusions

Sightings during the 2013 expedition were affected by windy and wet weather. We were only able to get out to sea for a limited time.

April and May are a productive time in the Azores. Biosphere Expeditions plays 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 and also reduces the “searching” time for sperm whales.

This year’s sightings of the resident bottlenose and Risso’s dolphins were lower than in previous years. We saw resident individuals of the bottlenose dolphin, but the Risso’s dolphins observed were not the usual resident animals.

Sperm whales were sighted on two days, including females with suckling calves, as has been observed in previous expeditions. Several big males were also seen. Before Biosphere Expeditions began in the Azores in 2004, 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. Males were observed during 10 encounters on this expedition. This year, unlike previous years, most of the males were sighted with groups of females socialising at the surface; they were only observed twice alone at the surface and then not far from the female groups. Up to three males were observed socialising with one of the female groups. It is normal for very large males to become more solitary the older they get. But occasionally, as here, a few males travel together.

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 Expeditions). Three 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 work has now been published (Steiner et al. 2012). An update on the male matching is that a fourth male, sighted by Espaco Talassa in Norway, has now been matched from Norway to the south of Pico. This collaboration with biologists working in Norway is continuing, but none of our males from this year’s expedition matched to Norway or elsewhere.

Data collected at this time of year are valuable to see if 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. 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. The “Winter Flukes Project” will begin this winter to take advantage of any weather windows to determine if there are individuals that are resident in the Azores during the winter.

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 possibly move around the archipelago all year round. 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 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 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 13 matches between the areas. Several 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 in the winter of 2011/2012 and she was back in the Azores with her calf in 2012 and again in 2013. This work will hopefully be published in the near future.

In 2009 a PhD by Ricardo Antunes was completed 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 and 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, 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 still 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 tenth year. Sightings were not as good as in previous years due to inclement weather that made spotting the animals, especially dolphins, difficult for observers on the boat as well as the vigias on land. The two expedition teams worked with computer-based projects when we were unable to go to sea. Data entry for the entire years of 2011 and 2012 was done as well as several years of log book entries! Re-sighting individual sperm whales from previous years continues to show the value of the Europhlukes matching program 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 and patience.

2.5. Literature cited

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3. A 10-year summary of the Azores expedition

Lisa Steiner
Whale Watch Azores

The first Biosphere Expedition in the Azores took place in 2004. It is hard to believe that 10 years have gone by. Below is a summary of the data that has been collected in that time.

In total 1058.5 hours have been spent at sea, 646 of those in April and 421.5 in May, in conditions lower than sea state 5. During that time we have recorded an incredible 1,871 encounters with 16 different species (see Table 3a).

Table 3a. Encounters 2004–2013.

COMMON DOLPHIN, <i>Delphinus delphis</i>	379
BOTTLENOSE DOLPHIN, <i>Tursiops truncatus</i>	117
RISSE'S DOLPHIN, <i>Grampus griseus</i>	78
STRIPED DOLPHIN, <i>Stenella coeruleoalba</i>	39
SHORT-FINNED PILOT WHALE, <i>Globicephala macrorhynchus</i>	7
FALSE KILLER WHALE, <i>Pseudorca crassidens</i>	1
PYGMY SPERM WHALE, <i>Kogia breviceps</i>	1
CUVIER'S BEAKED WHALE, <i>Ziphius cavirostris</i>	1
UNIDENTIFIED BEAKED WHALE, <i>Mesoplodon</i> sp.	5
BLUE WHALE, <i>Balaenoptera musculus</i>	67
FIN WHALE, <i>Balaenoptera physalus</i>	108
SEI WHALE, <i>Balaenoptera borealis</i>	50
HUMPBACK WHALE, <i>Megaptera novaeangliae</i>	12
MINKE WHALE, <i>Balaenoptera acutorostrata</i>	6
UNIDENTIFIED BALEEN WHALE	3
SPERM WHALE, <i>Physeter macrocephalus</i>	997

Table 3b. Encounters 2004–2013, by years.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
COMMON	65	60	21	69	22	27	25	30	54	6
BOTTLENOSE	22	24	20	12	12	9	4	6	6	2
RISSEO'S	14	9	15	13	2	4	3	5	10	3
STRIPED	9	2	4	11	1	3	3	2	4	0
PILOT	1	0	1	2	2	1	0	0	0	0
FALSE KILLER	0	0	0	0	0	0	0	0	1	0
PYGMY	1	0	0	0	0	0	0	0	0	0
CUVIER'S	0	0	0	0	1	0	0	0	0	0
UKN BKD	2	0	0	0	2	0	0	1	0	0
BLUE	5	2	21	19	4	0	3	4	8	1
FIN	16	1	35	22	3	0	9	1	21	0
SEI	7	2	12	16	0	1	4	1	7	0
HUMPBACK	5	2	1	1	2	0	1	0	0	0
MINKE	2	0	0	0	0	0	0	0	4	0
UKN BALEEN	1	1	1	0	0	0	0	0	0	0
SPERM	117	124	98	167	133	101	92	78	67	20

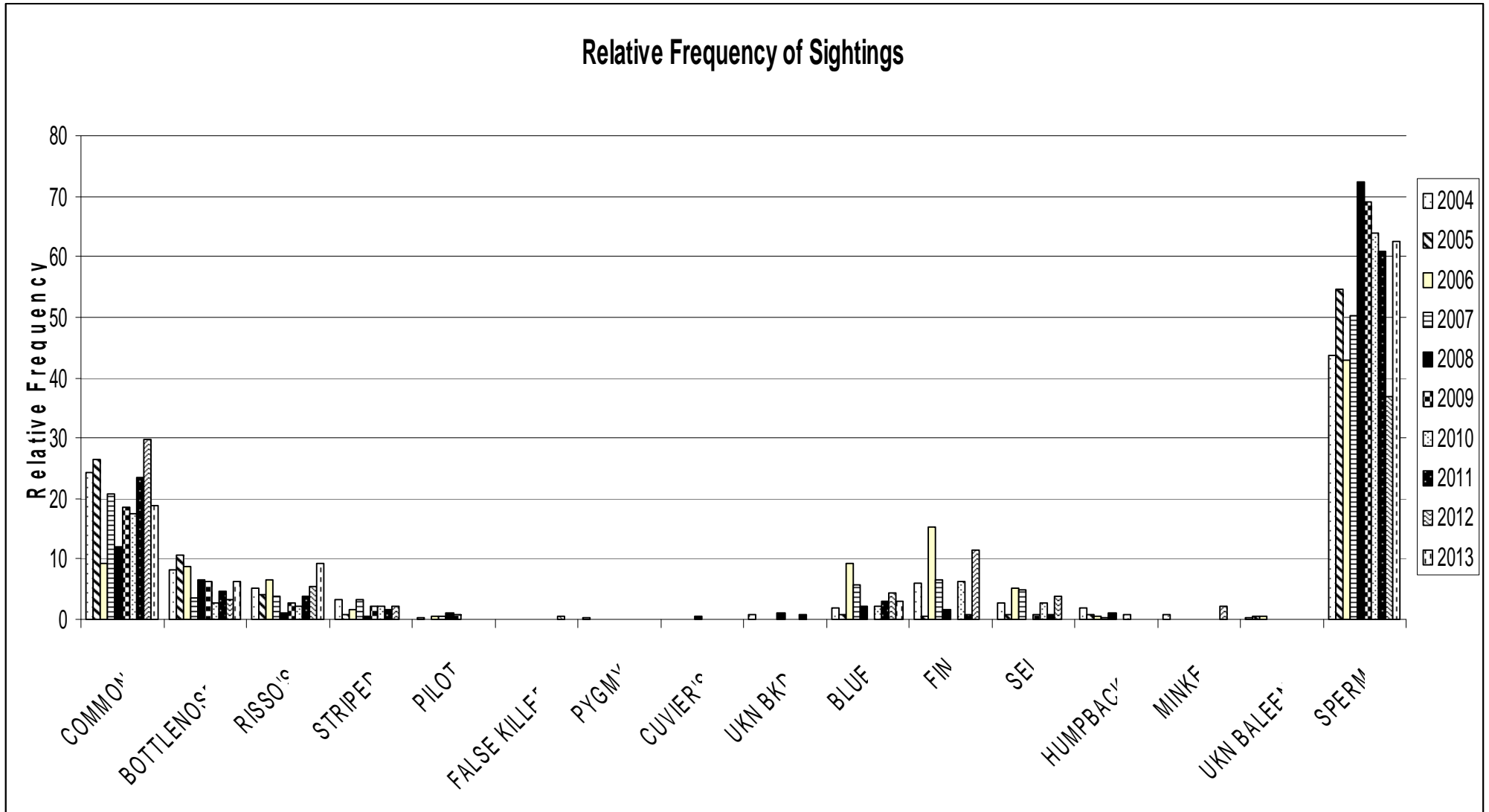


Figure 3a. Relative frequency of sightings 2004–2013.

Sperm whales and common dolphin are the most frequently observed species. Bottlenose and Risso's dolphin are also regularly seen. The baleen whale sightings are quite variable between years. These observations depend on the presence of krill and how close it is to the islands.

Highlights over the 10 years to date:

- 2 humpback whales seen during an expedition matched to animals seen in the Cape Verde Islands
- 21 blue whale encounters during 1 expedition and 19 on another
- 2 blue whales have been seen in different years, showing that some animals appear to use the same migration route. I believe it is only a matter of time before we get a match to another area
- 35 fin whale encounters during 1 expedition, 22 and 21 encounters on others
- 167 sperm whale encounters during 1 expedition
- 400 new sperm whales identified
- 94 re-sighted sperm whales, 30 of them in 1 expedition
- 12 of the re-sighted sperm whales seen on 2 different expeditions and 4 of them observed in 3 different years since Biosphere Expeditions began working in the Azores
- Several loggerhead turtles caught and tagged, although none of them have been re-captured elsewhere
- Thousands of dolphins observed, as well as unusual sightings such as pygmy sperm whales, false killer whales and beaked whales
- Watching expedition team members arrive with little or no experience and gel into a team that gets the work done, sometimes in very challenging conditions

These highlights show how important the work of Biosphere Expeditions is to gathering information on the cetaceans around the Azores. Considering the short duration of the expedition in any given year, observing 16 of the same sperm whales at a similar time of year supports the theory that some sperm whales prefer the Azores during the spring and possibly the winter.

So once again, a big thank you to all of you that have participated over the years and made this possible.

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

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4.1. Introduction

The Biosphere Expeditions research project took place between 10 and 25 of April 2013 in Faial Island (Azores, Portugal). On board the vessel “Physeter”, several participants had the opportunity to collect some information on marine life of the Azores. During the expedition period (shorter this year due to weather conditions), members of Biosphere Expeditions recorded the occurrence of several marine species such as marine turtles (only two loggerhead 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 Programme).

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 “Friend of the Sea” tuna fishery certification.

4.2. Results

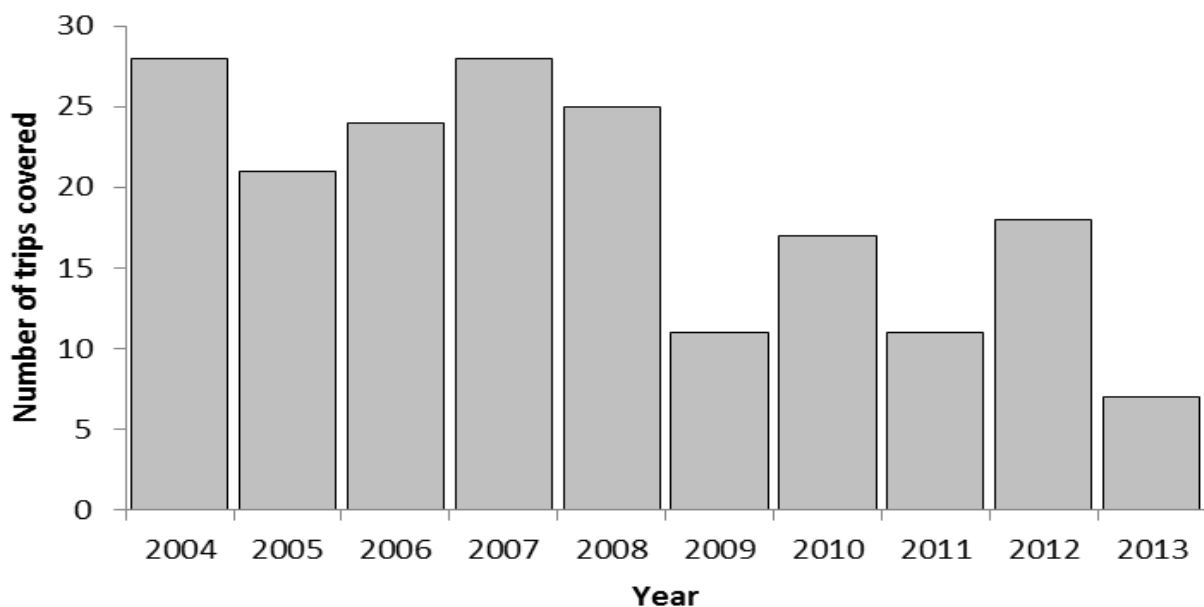


Figure 4.2a. Trip coverage 2004–2013.

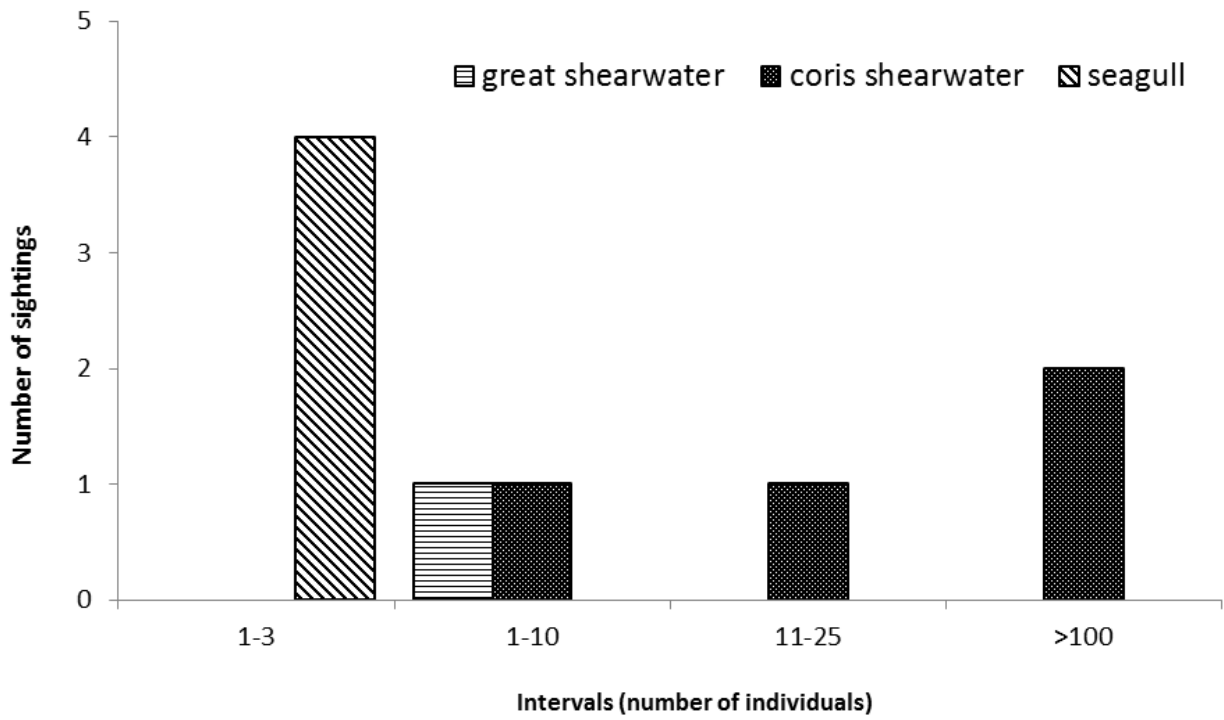


Figure 4.2b. Species of seabirds observed in 2013.

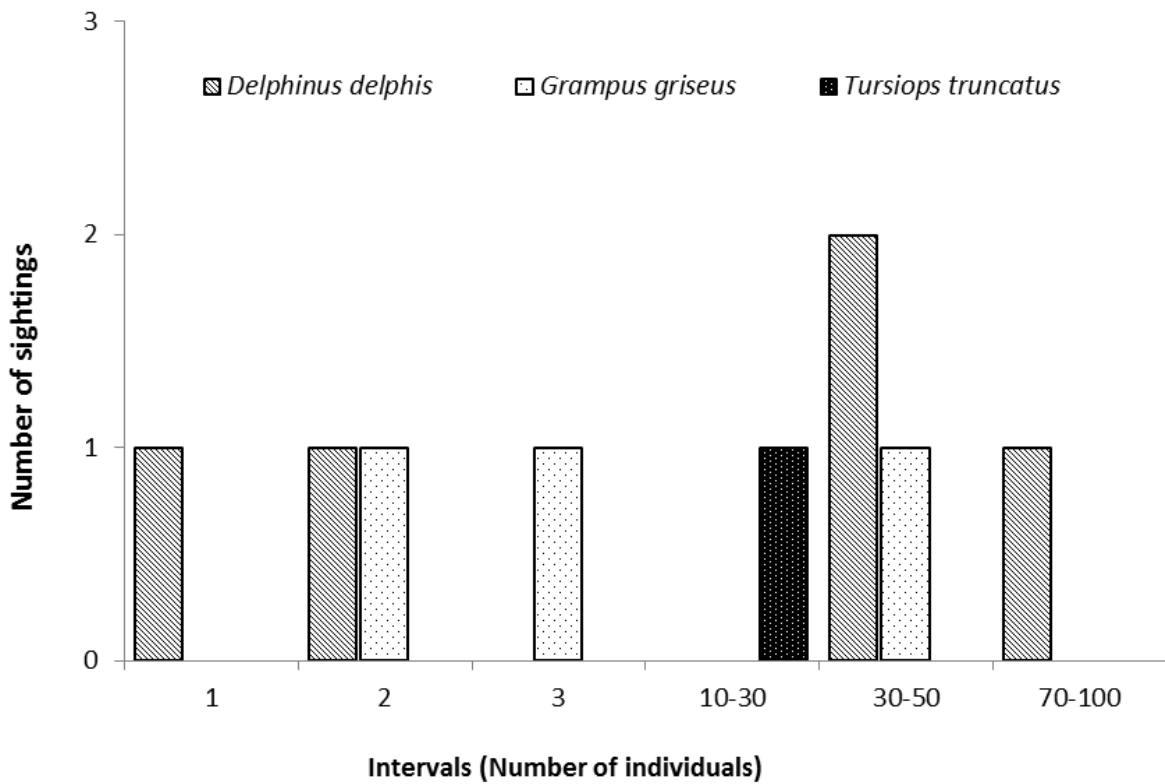


Figure 4.2c. Species of cetaceans observed in 2013.

4.3. 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 have ever been reported (Silva et al. 2002). But the programme has a much wider range than just the “dolphin safe” subject. In recent years the POPA dataset (which includes data collected by Biosphere Expeditions) has been requested frequently for research projects studying the ecology, biology and fisheries of target and associated species. Examples are the inclusion of POPA data in the OBIS-SEAMAP map database and the papers recently published regarding information on bottlenose dolphin distribution in 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, governments and the fisheries industry. Recently the “Friend of the Sea” (FoS) Organisation revalidated the eco-certification of three tuna species in the Azores based on information collected by POPA.

4.4. 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-2013/>.



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