

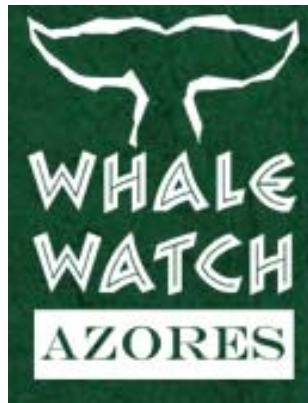


EXPEDITION REPORT

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:
9 April - 19 May 2007**

**Report published:
September 2007**

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**Matthias Hammer (editor)
Biosphere Expeditions**

Abstract

In 2007 Biosphere Expeditions concluded its fourth 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 9 April until 19 May and concentrated on six main projects.

Sightings of all cetacean species were recorded. 324 sightings of 10 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 Whales Photo-identification that has been ongoing since 1987 in the Azores, continued, with 96 identifiable individuals photographed, including 22 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 expedition photographed all baleen whales encountered, where possible, identifying 12 blue, 38 fin and 23 sei whales. These will be compared to photographs taken around the Atlantic over the winter months to see if any animals have been sighted in any other regions.

Dolphin photo-ID

Dolphin photo-identification, which began in 1987 continued. 12 groups of bottlenose dolphin and 13 groups of Risso's dolphin were photographed. In addition a group of pilot whales was photographed two days in a row. Most of these photographs will be analysed at a later date, but some of the Risso's photos were sorted during the expedition on shore days, showing some re-sighted groups of resident Risso's dolphins.

Europhlukes

Europhlukes is a European-wide project that has brought 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 Boat Observer program, POPA, was successfully collected for a fourth 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 3 loggerhead turtles were caught and measured but only one turtle was large enough to be tagged. Several others were sighted but not captured. No other species of turtle was observed.

Sumário

No 2007 Biosphere Expedições concluíram seu quarto ano bem sucedido de estudos cetacean da foto-identificação e da distribuição nos Açores. A expedição foi baseada em Horta no ilha de Faial e o trabalho foi conduzido em torno de 3 ilhas de Faial, de Pico e de Sao Jorge. A expedição funcionou de 9 Abril até 19 Maio e concentrou em 6 projetos principais. Os vistas de todas as espécies cetacean foram gravados. 324 vistas de 10 espécies diferentes do cetacean e de 1 espécie da tartaruga foram gravados durante o período da expedição. A foto-identificação de cachalots, baleias de barbes e golfinhos de roaz e de moleiros continuado.

Cachalot foto-ID

Foto-identificação das baleias de Sperm que foi ongoing desde 1987 nos Açores, continuados, com os 96 indivíduos identificable fotografados, including 22 animais vistos em anos precedentes.

Baleia de barbe foto-ID

As baleias de Barbe, including baleias azul, baleias comum, sardinheira, baleia de bosse e baleia ana, foram vistas com freqüência aumentada sobre o último poucos anos. Esta expedição fotografou toda baleen das barbes encontradas, assim distante identificando 12 baleias azul, 38 baleias comum e 23 sardinheiras. Estes estarão comparados às fotografias feitas exame em torno do Atlântico sobre meses do inverno para ver se algum animal for avistado em quaisquer outras regiões.

Golfinho foto-ID

A Foto-identificação do golfinhos, que começou em 1987 continuou. 12 grupos do roaz e 13 grupos do moleiros foram fotografados. Além um grupo das baleias piloto foi fotografado no dois dias seguinte. A maioria destas fotografias serão analisadas em um outro dia, mas algumas das fotos do Risso foram classificadas durante a expedição nos dias em terra, mostrando alguns grupos re-avistados de moleiros residente.

Europhlukes

Europhlukes é um projeto europeu que trouxe junto os investigadores diferentes de diversos países compartilhar de dados e de retratos da foto-identificação de várias espécies. Todas as fotografias da identificação da foto serão enviadas à base de dados. As extrações da rabo da cachalots foram feitas das fotos feitas durante o expedição e comparadas com as cachalots avistadas em anos precedentes e em outras áreas do Atlântico. Nenhum fósforo foi encontrado a todas as outras regiões.

POPA

O levantamento de dados para o departamento do Oceanography e dos Pescas (DOP) da universidade dos Açores, para o programa do observador do barco do atum, de POPA, foi coletado com sucesso por um terceiro ano. A embarcação "Physeter" da expedição é a única embarcação non pescando no programa. A informação foi coletada para sightings cetacean aleatórios ao longo dos transects, além contagens designadas da tartaruga e do pássaro e parâmetros ambientais.

Tartarugas

As tartarugas vulgar foram coletadas e etiquetadas nos Açores desde 1988 para um colaboração entre a Universidade de Florida e a Universidade dos Açores. Durante este expedição 3 as tartarugas vulgar foram travadas e medidas mas somente uma era grande bastante ser etiquetada. Diversos outros foram avistados mas não capturados. Nenhuma outra espécie da tartaruga foi observada.

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1. Expedition Review

M. Hammer (editor)
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 9 April to 19 May 2007. 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.

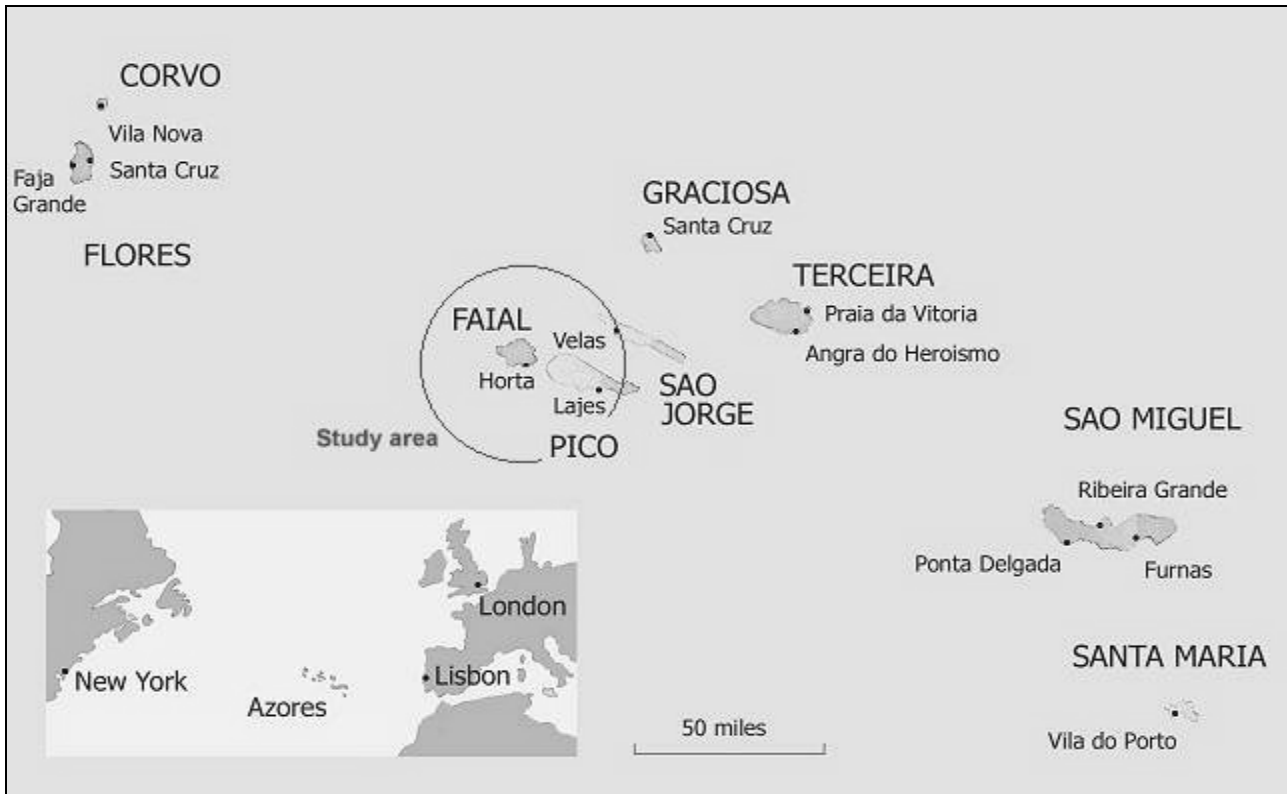
The Azores archipelago, which sits near the middle of the Atlantic Ocean, about 1400 kilometres off the coast of Portugal, is one of the prime whale and dolphin hotspots in the world and around 30% of the world's known cetacean species have been recorded there. For management purposes the International 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 and accurate knowledge of the origins of the baleen whales passing the archipelago 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 1600 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.



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

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

1.3. Dates

The expedition ran over a period of six weeks divided into three two-week slots, each composed of a team of international research assistants, scientists and an expedition leader. Slot dates were:

9 April - 21 April | 23 April - 5 May | 7 May - 19 May 2007.

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. Base was near the harbour in an urban ecolodge and consists of modern en suite, single and twin rooms, in a guesthouse style building. Breakfast and lunch were self-catering and a local restaurant provided dinner. Vegetarians were catered for.

Field communications

The boat carried two radios for communication with other boats. There were telephones at base and mobile phone coverage on the island and for a few kilometres out to sea.

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 liferaft, 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. There were no serious medical incidents, just a few minor cases of sea-sickness.

1.5. Local Scientists

Biosphere Expeditions was working with Lisa Steiner and Chris Beer of Whale Watch Azores on this project.

Lisa Steiner graduated in Marine Science in 1988 at 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.

Chris Beer, Lisa's husband, is a marine engineer and qualified yachtmaster. He has worked on square rig ships with Operation Raleigh (now Raleigh International) and on the "Song of the Whale", where he met Lisa. Chris has also worked for Encounter Overland, leading expeditions from London to Kathmandu and back, around India, Tibet and the Middle East. He has also published research papers together with Lisa.

1.6. Expedition Leader

Clare Fothergill graduated from the University of Wales, Aberystwyth, with an MSc in Environmental Impact Assessment. She has led groups into the field to places such as Lesotho, South Africa and Zimbabwe, working for organisations such as Outward Bound. Clare's experience in co-ordinating logistics in remote locations is drawn from her involvement in organising a major international adventure challenge in the South Pacific. Her interest in the natural environment means she is happiest when being active in the outdoors, be it mountaineering, mountain biking or climbing. She has travelled extensively in Europe, Africa, India and the South Pacific and has led expeditions to Peru and Namibia for Biosphere Expeditions.

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:

9 - 21 April

Janine Hierzig (Luxembourg), Janice Thompson (UK), Kevin Telfer (UK), Samantha Lilley (UK), Steve Southey (UK).

23 April - 5 May

Sven Strohschein (Germany), Julia Young (UK), Verena Thuerey (The Netherlands), Stefan Thuerey (The Netherlands), Daniel Dobson (UK), Sandro Jakob (Switzerland), Kerstin Schlingmann (Germany), Thomas Hintz (Switzerland).

7 - 19 May

Petra Schneider (Germany), Brigitte Angehrn (Switzerland), Mario Angehrn (Switzerland), Gabriele Tepelmann (Germany), Baerbel Biste (Germany), Adriana Heinze (Germany), Pavan Chodha (UK), Natasha Fernando (Canada), Alison Dooley (UK), Sigrid Egert-Merkle (Germany).

Also: Melanie Schröder, trainee expedition leader, 7 – 12 May.

1.8. Expedition Budget

Each team member paid towards expedition costs a contribution of £1200 per person per two week slot. The contribution covered accommodation and meals, supervision and induction, special non-personal equipment, all transport from and to the team assembly point. It did not cover excess luggage charges, travel insurance, personal expenses like 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	29,440
 Expenditure	
Base camp and food includes all board & lodging, base camp equipment	5,519
Transport Includes boat fuel & oils, taxis	5,097
Equipment and hardware includes research materials & gear etc purchased in UK & Azores	93
Biosphere Expeditions staff includes salaries, travel and expenses to Azores	3,432
Local staff includes whale lookout and other locally staffed services	922
Administration includes registration fees, sundries etc	276
Scientific services & logistics organisation Payment to Whale Watch Azores including boat wear & tear allowance	5,244
Team recruitment Azores as estimated % of PR costs for Biosphere Expeditions	4,900
 Income – Expenditure	 3,958
 Total percentage spent directly on project	 87%

1.9. Acknowledgements

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

1.10. Further Information & Enquiries

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

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

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 & Chris Beer
Whale Watch Azores

2.1. Introduction

The Azores is a group of 9 islands located about 900 nm off the coast of Portugal. 24 species of cetacean have been seen in the islands over the last 15 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 takes place in April and May.

Baleen whales have been seen fairly regularly migrating past the islands in April, May and June, 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 determining some of these migration routes.

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 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 roughly 2500 individuals have been identified since then. The Europhlukes matching program makes matching individuals much faster than it was manually.

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

2.2. Methods

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



Fig. 2.2a. Camera duty.

Sperm whales and humpbacks were approached from behind in order to obtain fluke photographs. Blue, fin and sei whales were also approached from behind but moving further forward to obtain photographs of chevrons (white markings below and behind the blow hole) and dorsal fins. Bottlenose and Risso's dolphin were also paralleled in order to obtain dorsal fin photographs for identification of individuals. Two cameras were used to obtain the ID photographs: a Canon 30D with a Tamron 28-30mm lens and a Nikon F70 with a 70-300mm lens.



Fig. 2.2b. Listening for whales.

Other dolphin sighted would be 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 it 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, cue, number of whales, number of calves (the calves also count in the whale column), visible callous or if the whale was male, position, fluke heading, defecation, if any skin was collected 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, then it would be measured and tagged for the University of Florida/University of the Azores turtle tagging programme, as well as positional data being recorded.



Fig. 2.2c. POPA duty.

Results were analysed using EXCEL data analysis tools: summary statistics to obtain average group sizes and t-tests to compare group sizes in different months or in the presence or absence of calves.

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 25 days during the expedition and spent between 1.5 and 8.25 hr per day on the water, with an average of 6 hr. A total of 151.5 hr (77.75 hr in April and 73.75 hr in May) with sea conditions less than sea state 5 were recorded. A comparison of the yearly effort since 2004 is presented in Fig.2.3a.

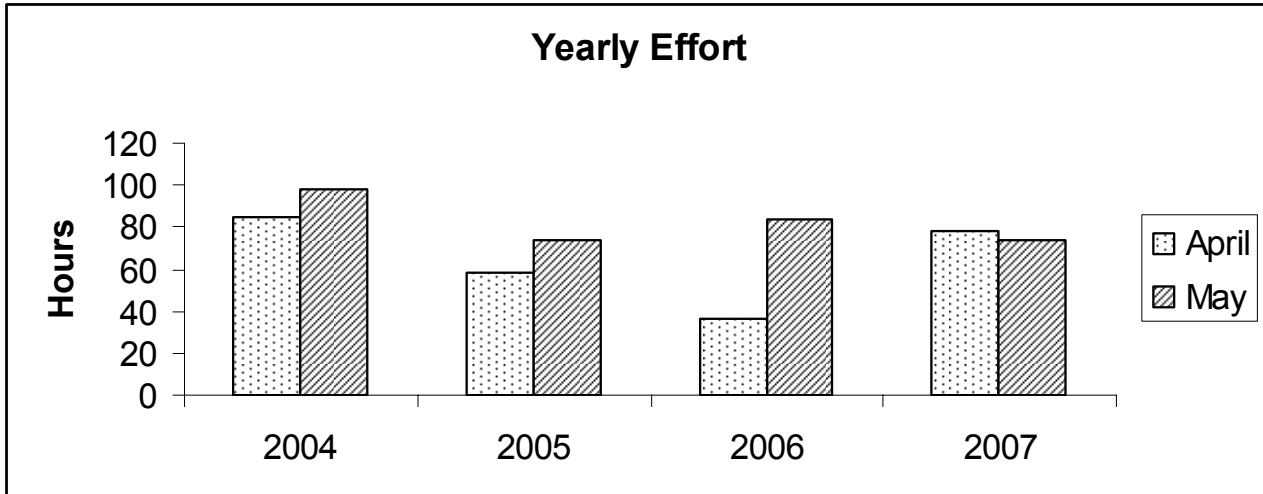


Fig. 2.3a. Yearly effort.

2.3.2. Encounters

During the expedition 157 groups of non-sperm whales and 167 sperm whale groups were encountered (Table 2.3a.).

Table 2.3a. Species encountered.

COMMON, <i>Delphinus delphis</i>	69
BOTTLENOSE, <i>Tursiops truncatus</i>	12
RISSO'S, <i>Grampus griseus</i>	13
STRIPED, <i>Stenella coeruleoalba</i>	11
PILOT WHALE, <i>Globicephala machrorhynchus</i>	2
BLUE, <i>Balaenoptera musculus</i>	19
FIN, <i>Balaenoptera physalus</i>	22
SEI, <i>Balaenoptera borealis</i>	16
HUMPBACK, <i>Megaptera novangliae</i>	1
SPERM, <i>Physeter macrocephalus</i>	167

These encounters resulted in a relative sightings frequency as shown in Fig 2.3b. Sperm whales were the species encountered most often followed by common dolphin, fin whales, blue whales, and sei whales; accounting for 88.2% of all sightings.

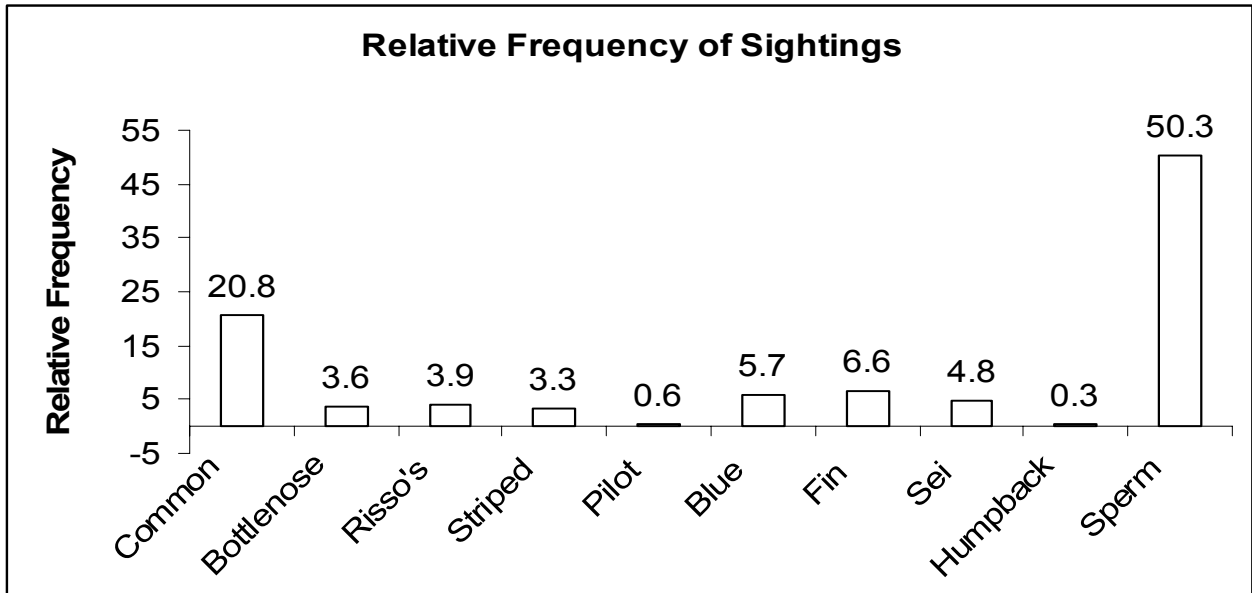


Fig. 2.3b. Species sightings frequency.

2.3.3. Species sightings

Common dolphin

This species was encountered 69 times. The group size ranged from 2-400 and the average group size was 83.8 (Fig 2.3c). This group size is only slightly lower than the average group size of 108 for existing data from June-September, Calves were first observed on 10 April and seen 47 times in total during the expedition. Several calves were observed with the foetal folds visible on their flanks, a sign that the animal is not more than a month old. Group size with calves present was significantly larger than when there were none, but there was no significant difference between group sizes observed in April and May.

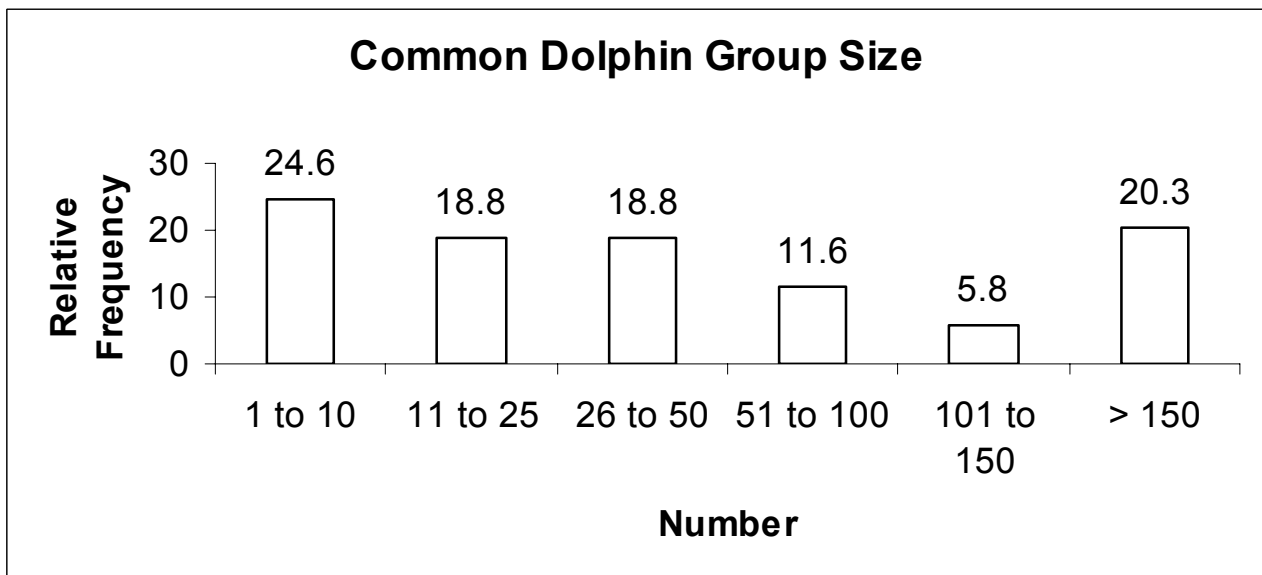


Fig. 2.3c. Common dolphin group size.

The most common behaviour observed by common dolphin was bowriding followed closely by travelling then milling. They were seen feeding 5 times (Fig. 2.3d).

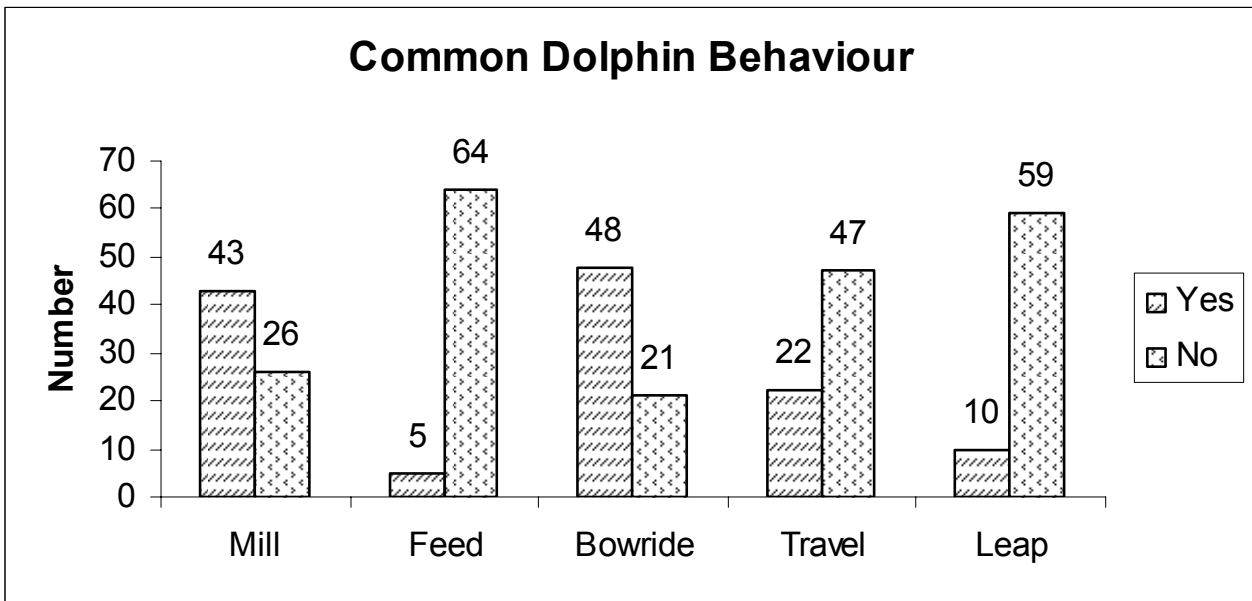


Fig. 2.3d. Common dolphin behaviour.

Bottlenose dolphin

This species was observed 12 times. The group size ranged from 1-30 and average group size was 19.2 (Fig. 2.3e). This is slightly smaller than the average of 27.3 seen when considering previously collected data. Calves were seen on just below 50% of sightings from both April and May. Group size was not significantly larger when calves were present and there was also no significant difference in group size between April and May.

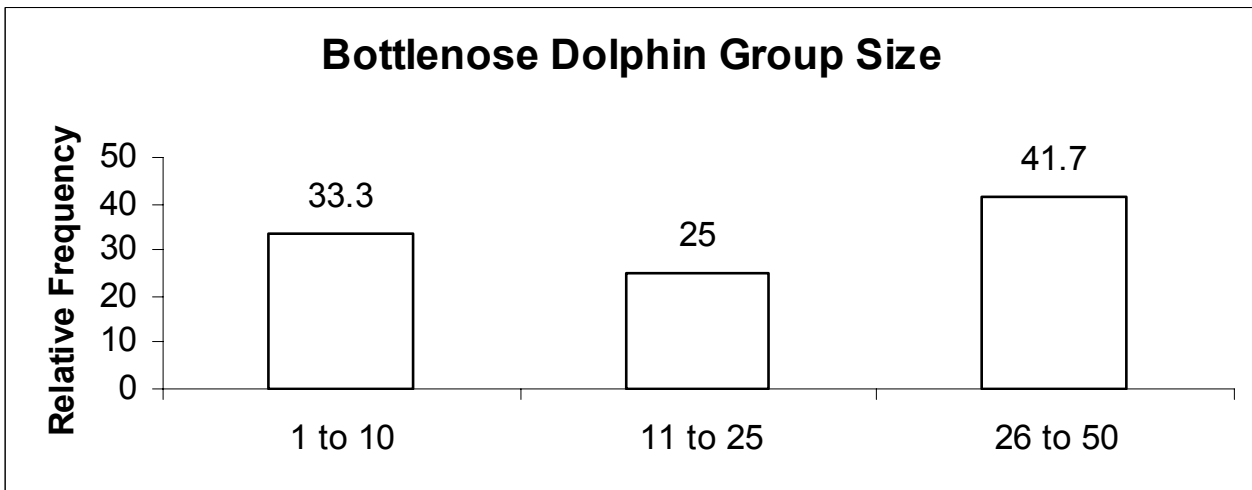


Fig. 2.3e. Bottlenose dolphin group size.

Bottlenose dolphin were most frequently observed milling, followed by bowriding (Fig. 2.3f).

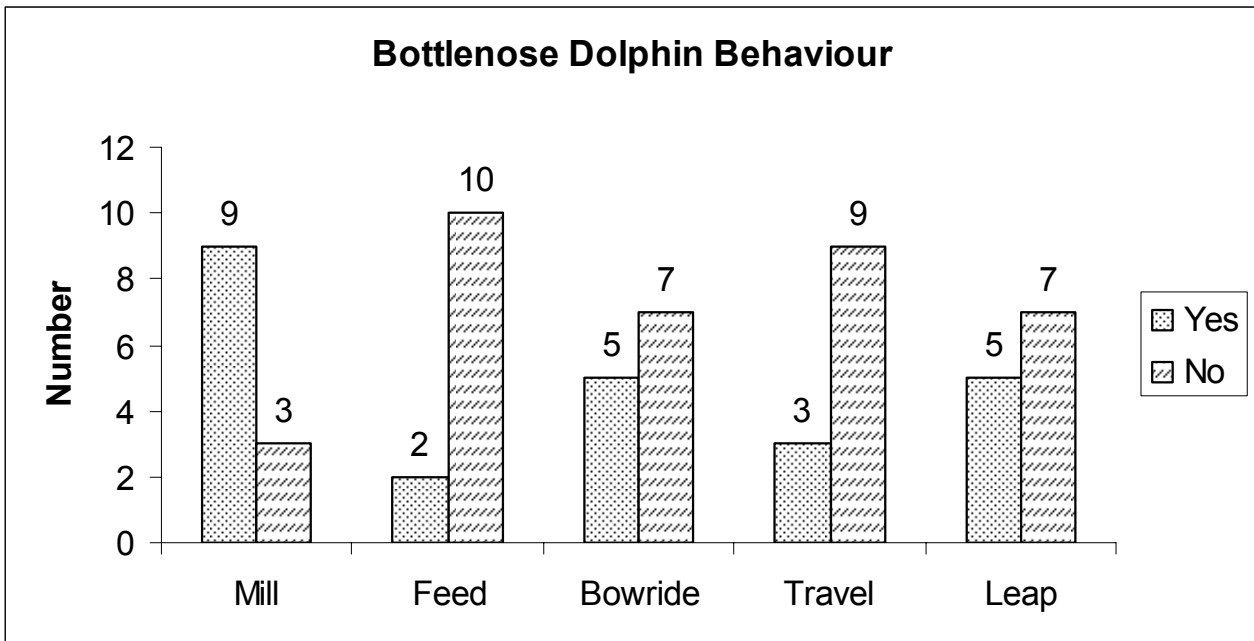


Fig. 2.3f. Bottlenose dolphin behaviour.

Photo identification pictures were taken for all groups observed. These photos will be analysed at a later date.

Risso's dolphin

Observed 13 times, group size ranged from 2-30 with an average of 12.7, which is similar to the average group size of 15 observed for other months of the summer (Fig. 2.3g). Calves were seen in both April and May signifying an earlier calving period than for bottlenose dolphin. There was no significant difference between group size when calves were present or not, there was also no significant difference between group size observed in April and May.

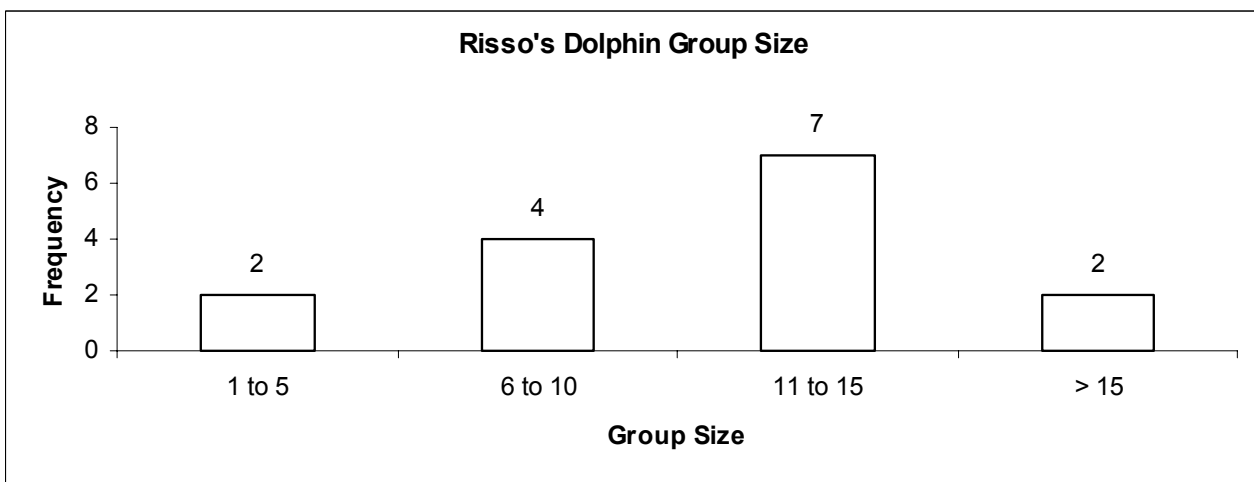


Fig. 2.3g. Risso's dolphin group size.

Several animals were seen from previous years, including “Naked Lady” and “F-Nick”, confirming residency of this species (Fig. 2.3h). In addition the white calf observed last year was seen again, now just over 1 year old, still swimming fairly close to its mother, but a bit more independent this year. Risso’s dolphin calves are normally dark coloured with white heads, so a white calf is unusual.



“Naked Lady” - right



“Naked Lady” - left



“F-Nick” - right



“F-Nick” - left

Fig. 2.3h. Resident Risso’s dolphins.

Behaviour of Risso’s during encounters varied between milling and travelling (Fig. 2.3i). Feeding for this species is difficult to determine, and was not recorded although torpedoes were observed, which can indicate feeding (Fig. 2.3j). Some socialising was also observed, along with some spectacular leaps (Fig. 2.3k).

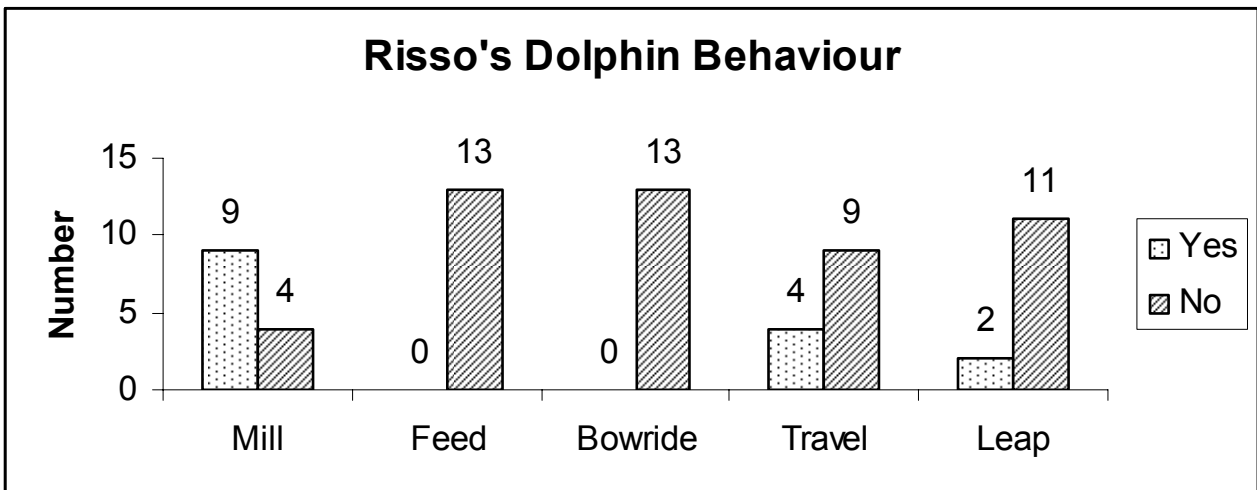


Fig. 2.3i. Risso’s dolphin behaviour.



Fig. 2.3j. Risso's torpedo behaviour.

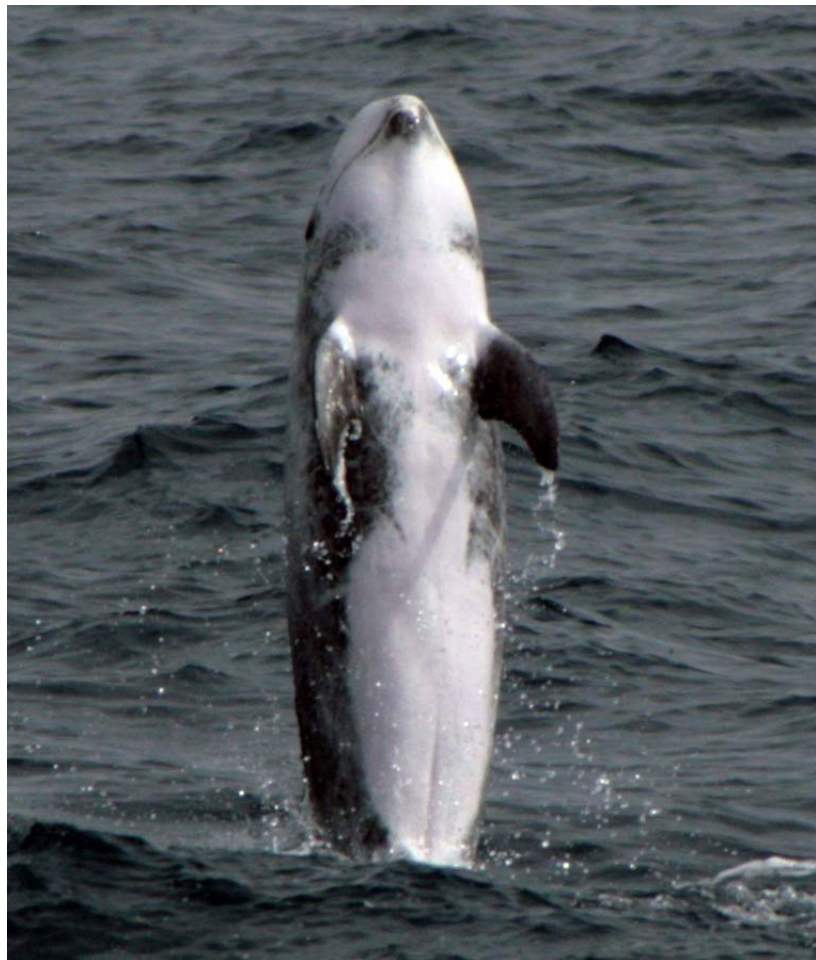


Fig. 2.3k. Risso's leaping.

Striped dolphin

Striped dolphins were observed 11 times, 3 times in April and eight in May. Average group size was 130, ranging from 40-200. This is close to the average of 118 that has been seen over the rest of the summer. Calves were seen on all occasions (Fig. 2.3l). The behaviour of the dolphin on each occasion was milling with leaps seen on 3 of the 4 sightings (Fig. 2.3m).



Fig. 2.3l. Striped dolphin mother and calf.

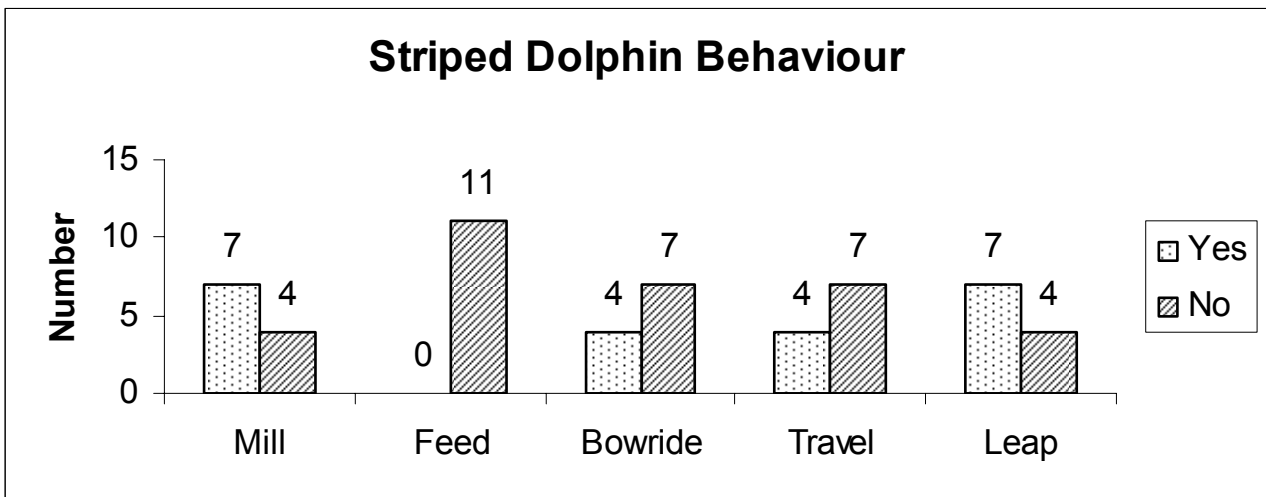


Fig. 2.3m. Striped dolphin behaviour.

Short-fin pilot whale

One group of 60 pilot whales was observed twice, once on 13 and again on 14 May. On both occasions the whales were milling. Calves were present in the group. Photo identification will be done using the dorsal fins of the whales at a later date (Fig. 2.3n).



Fig. 2.3m. Pilot whale ID photo.

Sperm whale

Sperm whales are one of the main target species of the expedition. They were encountered 166 times. The average group size was 1.61, ranging from 1-10, which is similar to that encountered during other parts of the summer. Calves were observed 41 times and seen in both April and May. 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. 96 individuals were identified. 74 new animals and 22 that had been seen in previous years, including 1035, first seen in 1988, 1598 first observed in 1991 and 1840 seen in several years since 1994 (Fig 2.3n).



1035



1598

Fig. 2.3n. Sperm whale ID photos.

Attempts at skin collection were unsuccessful due to a high number of jellyfish present and weather conditions that were not suitable for entering the water.

Fin whale

Fin whales were observed 22 times this year. Average group size was 1.68 ranging from 1-5 individuals (Fig. 2.3o). Calves were observed 3 times.

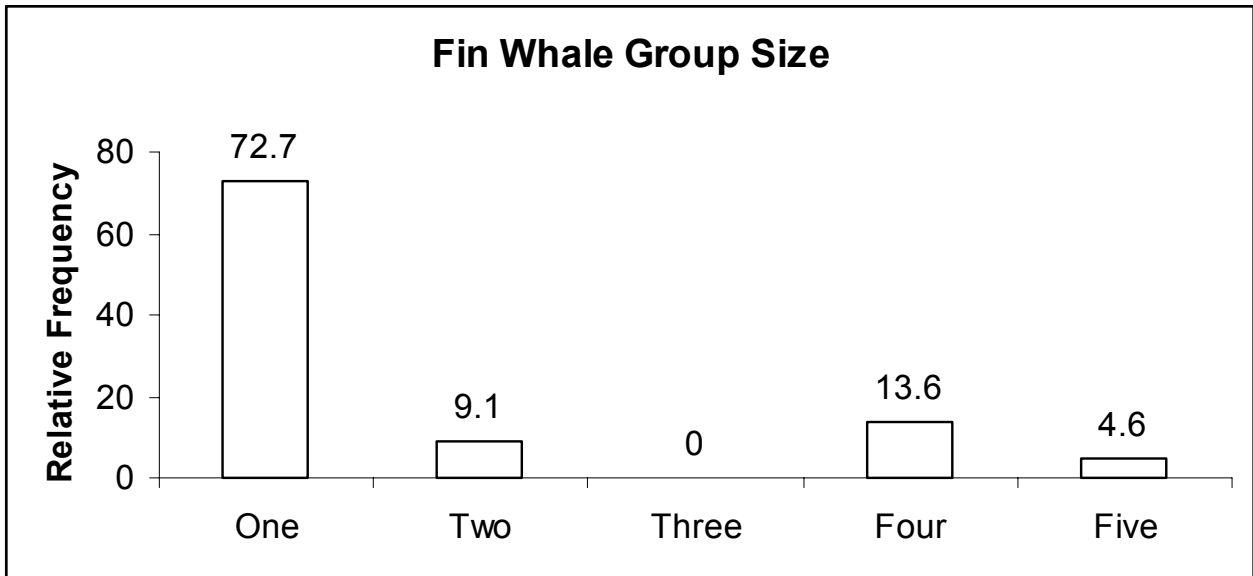


Fig. 2.3o. Fin whale group size.

Fin whale behaviour varied between milling/feeding and travelling (Fig. 2.3p). No obvious schools of fish or krill were observed.

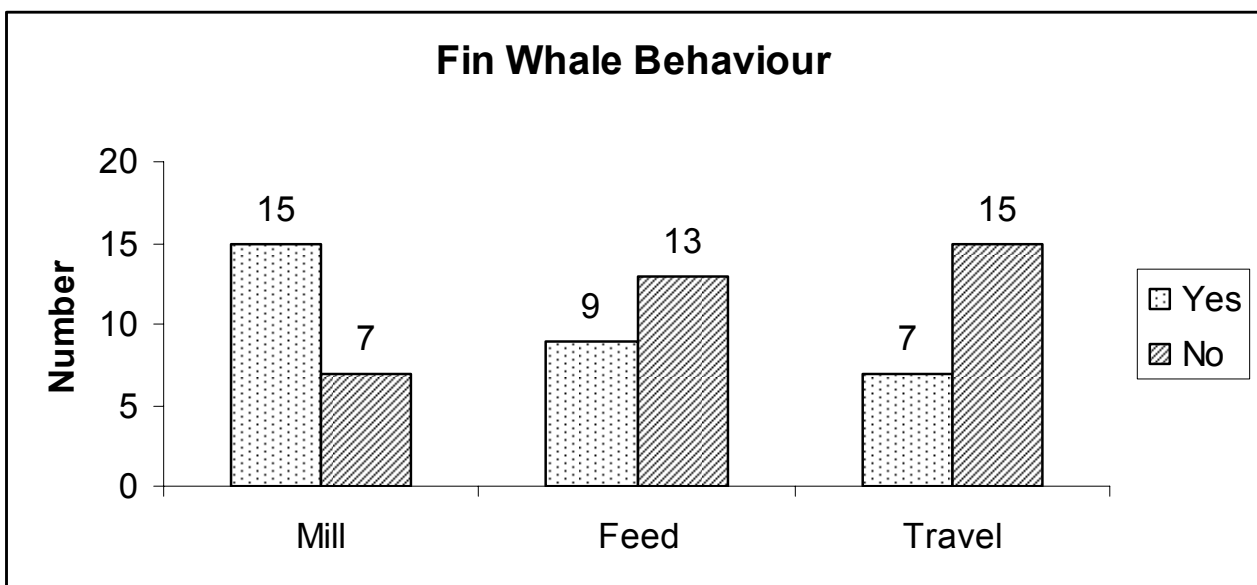


Fig. 2.3p. Fin whale behaviour.

After preliminary analysis, 38 individuals were identified (Fig. 2.3q). No matches were found between years.



Fig. 2.3q. Chevron (above) and dorsal fin (below) ID photos.

Sei whale

Sei whales were sighted on 16 occasions. Average group size was 1.81 ranging from 1-3 (Fig 2.3r). Calves were seen during 4 of the encounters.

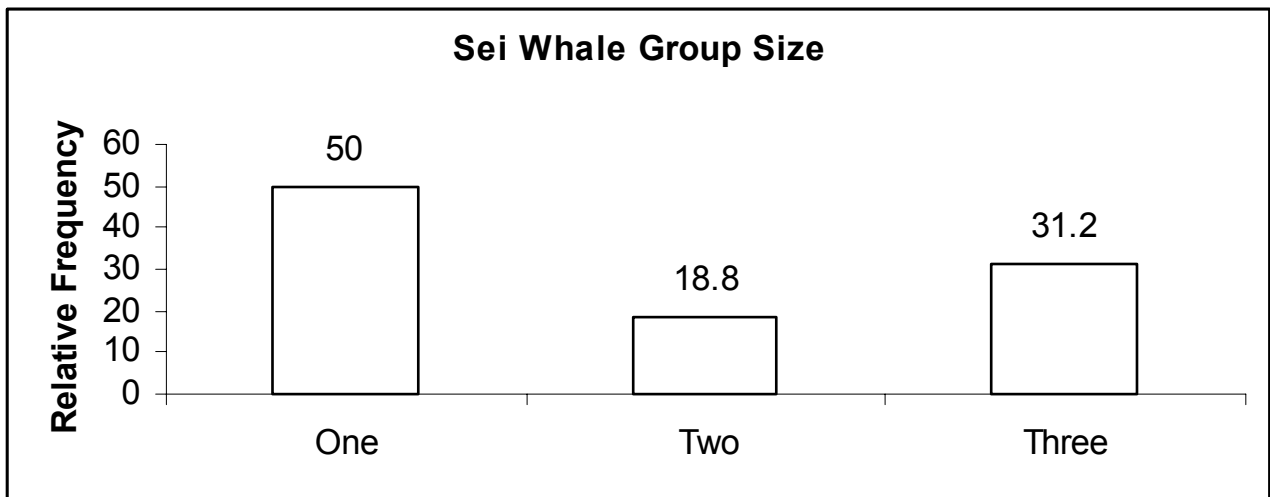


Fig. 2.3r. Sei whale group size.

As with the behaviour of fin whales, the observed sei whales behaviours were a mix of milling/feeding and travelling (Fig 2.3s).

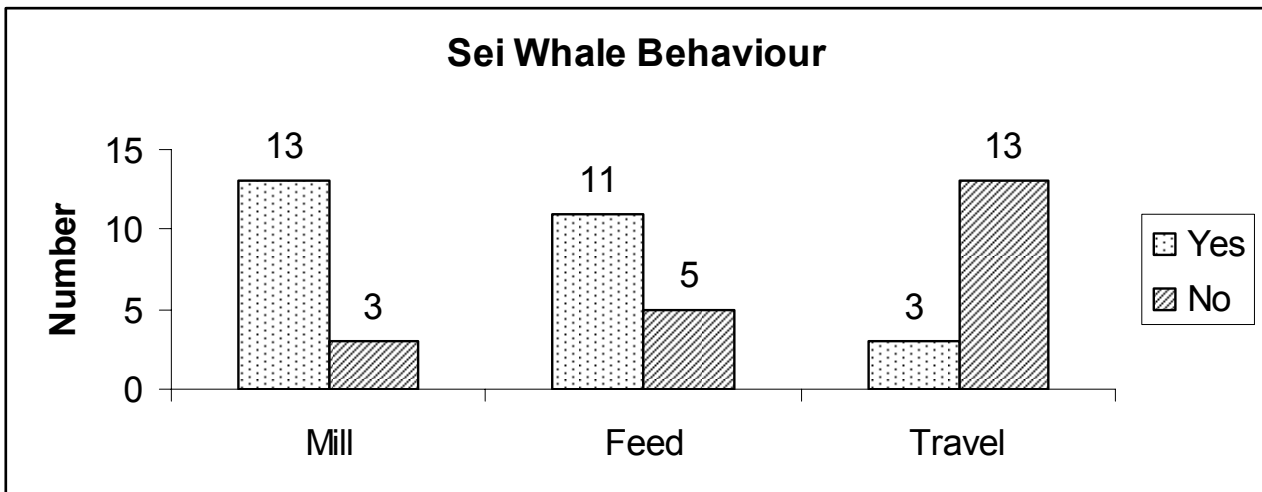


Fig. 2.3s. Sei whale behaviour.

23 individual sei whales were identified using dorsal fins or scarring (Fig. 2.3t). There were no re-sighted animals between years, however, three of the animals were observed on two consecutive days.



Fig. 2.3t. Sei whale ID photos.

Blue whale

Blue whales were seen 19 times throughout the expedition. Group size was predominantly 1 or with groups of 2 observed 3 times, giving an average group size of 1.16. Calves were not observed this year. Using the mottling along the side surrounding the dorsal fin, 12 individual whales were identified, including “Patch” an individual observed on 4 days during April (Fig. 2.3u). There were no re-sighted individuals between years.



Fig. 2.3u. “Patch”.

Blue whales were observed feeding and milling during most of the encounters (Fig. 2.3v)

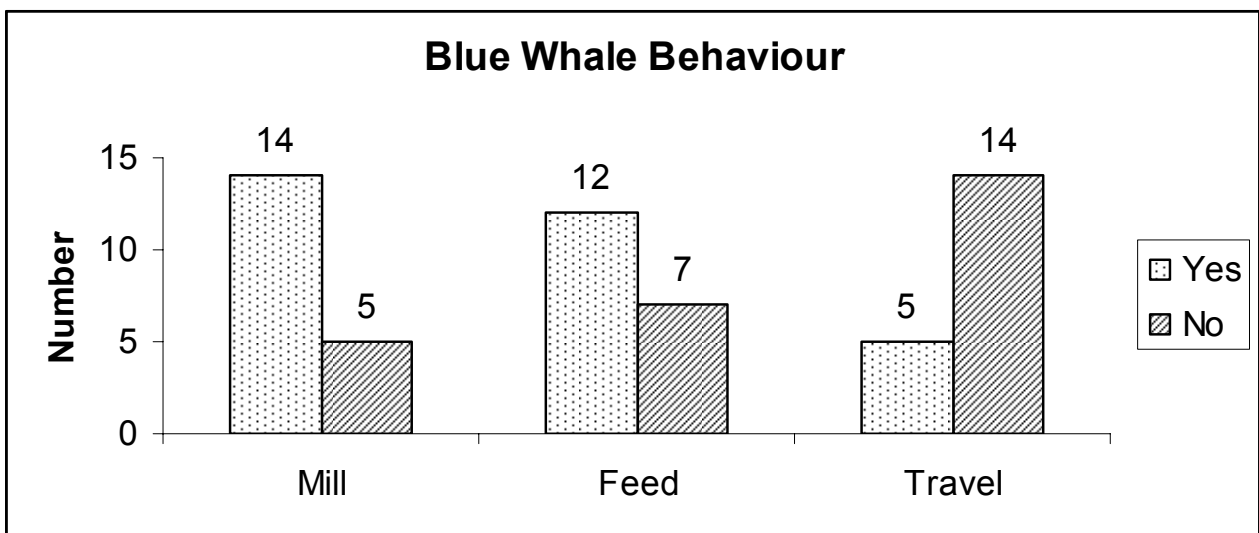


Fig. 2.3v. Blue whale behaviour.

Humpback whale

One individual humpback whale was observed very briefly on 25 April. No ID photo was obtained.

2.4. Discussion & conclusions

April and May are a productive time in the Azores. Biosphere Expeditions are playing an important role in collecting vital information for the investigation 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 greater at this time of year than any other time of the summer. Although sightings of baleen whales are unpredictable, the use of lookouts on the cliffs greatly enhances the chance of sighting them.

The number of baleen whales was slightly down from last year, probably due to a lower abundance of krill present in the area. Photo-ID of the baleen whales was extremely successful with quite a few blue and fin whales identified. The ID photograph of "Patch" will be easily recognisable if this whale appears elsewhere in the Atlantic or returns to the Azores next year. A preliminary analysis of the blue whale photos shows no matches to the Europhlukes catalogue, while work is ongoing with the fin and sei whales. The blue whale photos have been sent to Richard Sears, who has a large catalogue of North Atlantic blue and fin whales. He works out of Nova Scotia, Gulf of St. Lawrence where large numbers of blue and fin whales feed during the summer months. Group sizes of baleen whales observed here support what is generally known, i.e. that large baleen whales are usually seen singly or in small groups.

Sperm whales were again sighted frequently, including many females with suckling calves, as has been observed in previous expeditions. Before Biosphere Expeditions began, we expected that it would be mainly large males that would be encountered at this early part of the summer, but this has again proven not to be the case. Males were observed 27 times this year (not all different individuals). This year males were sighted alone or in pairs, which is normal for large males. 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.

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. 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. Currently all IDs from 1987 to present are being compiled for analysis of social structure of sperm whale groups found in the Azores with the University of St. Andrews in order to elucidate long term relationships between individuals and patterns of residency around the archipelago. We have already seen one individual in 2007 which was first identified in 1987!

Sightings in April and May of bottlenose and Risso's dolphin support the idea that at least some groups of these two species are resident in the islands and present year round. Some of the photographs have already been analysed and they confirm that a few of the groups seen are the same as those seen last year, as well as some of the same individuals being observed in April and May during the expedition. Risso's dolphin photo-ID pictures have once again been sent to the Risso's Project, on the south coast of Pico, for comparison with their catalogue of resident animals they see throughout the summer and have seen for the past four years, enabling us to obtain an idea of how far the Risso's dolphins range from their usual area and what other habitats might be important to them.

The sightings made earlier in the year also provide insights into calving times for bottlenose, common and Risso's dolphin that are seen in all months of the summer, indicating that Risso's dolphin appear to have the earliest calving period.

In conclusion, this expedition was a success for the fourth year. Sightings went beyond expectations and the weather was kind to us. Re-sighting individual sperm whales from previous years shows the value of the Europhlukes programme, as it enables us to match individuals sighted on the day they are seen, rather than waiting until the end of the summer to do the matching manually. Continued re-sightings of Risso's dolphin are also a positive outcome from the 2007 expedition, because they are not often seen and continued re-sightings enable us to recognise individuals when they are seen. Expedition members gained experience in recognising individual dolphins on the computers and could transfer that knowledge to the sea.

If there are extra shore days in future, a catalogue of the individual dolphins should be compiled and possibly be issued to expedition members prior to arrival (or one catalogue kept on the boat for comparison while at sea).

In future years matching of the baleen whales seen this year to new photographs will prove if it is the same individuals that are passing the islands each year or many different animals. If the same animals predictably visit the islands each spring, it may be possible for whale watching companies to lengthen their season thereby bringing further benefit to local communities. Also, an idea of interactions between animals over time can be obtained. If, on the other hand, different individuals are seen every year, this might indicate that the baleen whale sightings are not a predictable resource and rather depend on local conditions and food availability. In order to accomplish this, more analysis time is required on the computers comparing multiple photographs during the expedition. Future expeditions will continue to build on this valuable expanding database of baleen whale photo-IDs. Collaboration will be sought from other organisations working around the Atlantic, outside of Europhlukes, to obtain more photographs for comparison.

Work for the future should also include some GIS analysis, if funding for the software and training is available. This will allow all the sightings to be plotted onto digital charts of the islands and enable us to look at the habitat, which the whales and dolphins are utilising, for example: depth, water temperatures, slope of the bottom and currents that may indicate what parameters are used by the cetaceans in choosing an environment.

Thank you to all expedition members for your assistance.

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

Miguel Machete

Department of Oceanography and Fisheries of the University of the Azores / IMAR – Sea Institute

3.1. Introduction

The Biosphere Expeditions research project took place between 10 April and 18 May 2007 in Faial Island (Azores, Portugal). Onboard the vessel “Physeter”, several participants had the opportunity to collect some information on marine life of the Azores. During the expedition period, members of Biosphere Expeditions recorded the occurrence of several marine species such as marine turtles, baleen and toothed whales, dolphins and several species of seabirds (see Tables below). The information recorded during the expedition will be processed and included in the database of the POPA (Observer Programme for the Fisheries of the Azores). Some maps were produced using data from previous years, as shown below.

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.

3.2. Results

Table 3.2a. Species of marine birds spotted.

Birds	Approximated number of individuals observed
Cory's shearwater <i>Calonectris diomedea borealis</i>	2190
Common tern <i>Sterna hirundo</i>	4
Common gull <i>Larus cachinnans atlantis</i>	14

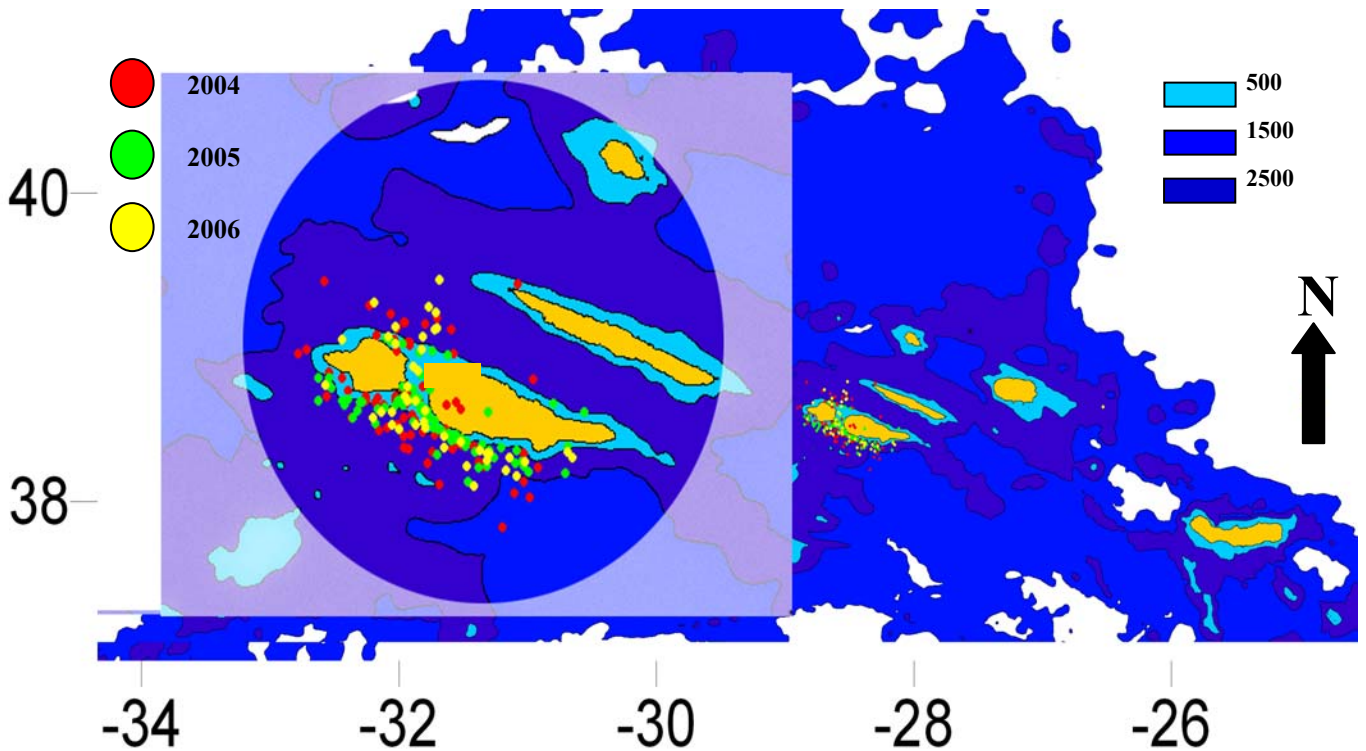
Table 3.2b. Species of whales and dolphins observed.

Whales	Apprx. N° ind	Dolphins	Apprx. n° ind
<i>Balaenoptera borealis</i> Sei whale	1	<i>Delphinus delphis</i> Common dolphin	3626
<i>Balaenoptera physalus</i> Fin whale	6	<i>Stenella coeruleoalba</i> Striped dolphin	1110
<i>Balaenoptera musculus</i> Blue whale	3	<i>Tursiops truncatus</i> Bottlenose dolphin	221
		<i>Grampus griseus</i> Risso's dolphin	132

Table 3.2c. Species of sea turtles observed

Turtles	Apprx. n° ind
<i>Caretta caretta</i> Loggerhead Turtle	11

Figure 2.2a. Cetacean sightings recorded by members of BE between 2004 and 2006



4. Expedition leaders' diary: Azores 2007 by Clare Fothergill

3 April

This is just a quick email to introduce myself as your expedition leader for this year's Biosphere Expedition in the Azores. I am currently in Germany with Matthias (Biosphere's Director) packing up some of the expedition cameras and laptops and other equipment that we will be using during our research. I will be arriving in the Azores tomorrow and meeting up with Lisa and Chris (the scientist and skipper) to get everything ready for the first team members arriving next Monday. Chris emailed me after taking out Phyceter (the boat we will be using) the other day saying that they had spotted three blue whales! Let's hope this is a good omen for the next few weeks! Looking forward to meeting you all soon.

Safe travels

Clare Fothergill
Expedition Leader

7 April

I am sitting in Horta marina in the sunshine watching a yacht race in the bay. It is a beautiful sunny day and although the sea looks calm close to the land, apparently the wind speeds are up to 20 knots and waves are above 2 metres high outside of the protection of the islands! However the weather forecast for Tuesday and Wednesday next week, when we will be starting our data collection looks good. But don't forget your sea sickness tablets just in case! Chris has been making a few last minute preparations on Phyceter and Lisa and I have been photocopying data sheets and making sure all the other kit is ready for the arrival of the first slot on Monday. We've also worked on our day-to-day plan and a copy of it is attached. Whilst this is a general plan in writing, please remember to stay flexible as things are very likely to change due to weather conditions and God-knows-what.

Everybody is excited about the start of this year's Biosphere Expedition in the Azores and all we need now are the team members!

Happy Easter & see you all soon.

10 April

It was a beautiful bright and sunny morning on Faial today for the team members to start their data collection. After a morning of safety talks and explanations of the data sheets, we set off in Phyceter, our trusty motorised catamaran. It was a perfect morning to start this year's research, with calm seas and little wind. There is always a lot of information to process in the first few days of a Biosphere Expedition but the team members were well rewarded for their concentration when the very first sighting of the day was a..... blue whale! Unbelievable...and in fact there was two of the gigantic beasts!

The spotters based on land had radioed in to say they had seen some 'blows' and Chris skillfully navigated the boat to where they were. It is difficult to get a true appreciation of just how large they are as we could only see the length of the animal from its blow hole to the tail. Even so this distance seemed pretty huge and we were able to stay with them for over half an hour. It was estimated that the largest animal was approx. 24 metres long! As they were feeding on krill it meant they would dive for 8-12 minutes before resurfacing and spending some time swimming and blowing spray where we could see them.

If this wasn't enough of an experience on our first day out on the boat we were then spoilt by a number of different schools of common dolphins which varied in number from about 30 individuals to over 100. At one point we had at least ten dolphins bow-riding in the clear blue waters and it was incredible to be able to hear their whistles and clicks just centimetres above them on the boat. There is something truly mesmerising about dolphins swimming so close, making such graceful and seemingly effortless twists, turns and leaps in and out of the water.

To top the day off we heard that a sperm whale had been spotted from the lookout on Faial. Lisa decided we should lower the hydrophone to see if we could pinpoint its location by listening to a series of clicking noises that a sperm whale makes when it is feeding. Sperm whales can stay underwater for up to 45 minutes so we really needed to have some idea of where it was going to surface. Chris managed to interpret the sounds well enough to position the boat just 90 metres away from where it came in. After following from what is considered to be a non stressful distance (50 metres) for the whale we were treated to a beautiful fluke as he went down to dive and feed again. The outline of the tail could be seen perfectly as it slipped into the water and enabled Sam and Lisa to be able to get some great shots which will be used to try to identify this whale against those in the database. So we had three successful photo identifications opportunities from the whales and two species of dolphins sighted all on the first day.

Well - I'm impressed!

13 April

Yesterday the team remained on shore as a weather front came in and drenched the island in torrential rain. Visibility out at sea was poor and in these conditions there is not much point venturing out in the boat. Everyone was busy, however, with preparing digital photographs of bottlenose & Risso's dolphins and pilot & fin whales so they can be entered into the database.

The dorsal fins of these species are so unique to each individual that it is possible to recognise specific animals and over time build up information on the areas these cetaceans visit year on year. The Risso's dolphins are particularly interesting to identify. They start off life dark grey in colour but as they get older gain numerous scratches and scars through social interaction. These scars leave large white lines all over the fins, back and sides of the adult animals and over time the skin generally becomes much lighter. The scars are so distinctive that some animals can literally be identified from the boat. On Tuesday we were lucky enough to spot approximately 30 Risso's which swam close to the boat and slowly enough for Lisa and Janine to take loads of photos for identification. Underwater these dolphins look quite ghostly as their pale bodies are such a contrast to the surrounding water.

This morning we set out in the rain into a choppy sea with waves of up to 3.5 metres high. Needless to say there were a few green faces and a general queasiness about the boat! We had an amazing sighting, however, of two blue whales. Directed by the lookouts on land we came across the animals in high waves which only enhanced the sighting. The whales were moving at approx 12 knots parallel to the boat and came as close as 30 metres to us. Moving along together only a few metres apart the whales seemed to surge to the surface of the sea exposing their heads and mouths as the waves crashed around them. Arching through the water we were able to see the entire length of the body a couple of metres at a time, until the dorsal fin was visible and in a couple of instances their tails before they disappeared in a dive. Lisa estimated that they were about 22 metres long. It is difficult to explain how exhilarating it was to be out at sea, in the wind and rain with two of the largest animals ever to have lived on the planet cruising along beside us. Totally brilliant!

16 April

The summit of Pico (the volcanic island opposite Faial and Portugal's highest mountain at 2,352 m) glistened with snow yesterday morning as we set out on a calm and almost windless day. Our first sighting was a feeding frenzy of common dolphins and Cory's shearwater. Anyone who has seen the series 'blue planet' will remember the bait ball sequence where the dolphins chased the mackerel to the surface whilst the birds dived down from the surface to take their fill. With over 250 dolphins spread out over a 500 m radius from the boat we watched the chaos of dolphins and birds consume as much fish as they could, leaving the surface of the water shining with fish oil. Then followed five hours of what Sam decided should be known as, the 'baleen bonanza'. We spent most of that day on the south side of Faial in extremely calm waters and had nine Sei whales (one calf), one blue whale, and four fin whales (one calf)! On our return journey we spotted two loggerhead turtles, one of which Chris netted and brought on board. Unfortunately it was too small to be tagged but at least we now know that they exist in these waters! The other turtle unfortunately took a deep dive before we could net it.

Everyone was feeling extremely satisfied with the day with a record number of data sheets filled in when we spotted a small group of common dolphins. The surface of the sea was so flat and glassy that we could clearly see into the turquoise waters and watch as seven calves only half a metre in length swam closely to their mothers. We could even see the stripes known as foetal folds, on their skin which show how they have been curled up inside the womb and indicated that they were less than a month old. This was the icing on the cake for a beautiful day out on *Physeter*.

17 April

Today has been named the 'sperm whale strike back!' With wind speeds up to force 6 we had a bouncy morning on the boat. We headed out to the northeast of Faial where the lookouts had spotted some blows. In choppy waters we put out the hydrophone to listen for the 'clicks' of any sperm whales and could hear many! It wasn't long before several surfaced from feeding and we were able to start monitoring blow rates and take photos of flukes. Mind you taking photos when the boat is lurching about on the waves is pretty difficult but Lisa and Janine were able to capture six different animals.

There were at least two calves in the group and one was only about 2.5 metres long – so pretty small in comparison to its mother which was approx 10 metres. The return journey to the harbour was exciting as the catamaran crashed through the waves coming at us from all directions. Kevin, Sam and Janine had a cool saltwater shower seated at the front of the boat and we all piled into Peter's Café Sport for hot coffee and chocolate when we got back to Horta!

19 April

A beautiful sunny morning greeted us today as we walked along the harbour to board *Physeter* where our skipper awaited with more amusing tales of life! It was to be a somewhat frustrating yet incredible day dominated by sperm whales and although many titles for today's activities have been suggested the only one printable is 'low sperm count!' This is, however, somewhat misleading as we actually had loads of sperm whale encounters, but very few flukes which are what we need to make identification of individual animals possible. When the sperm whales are feeding they surface for approximately 10 minutes breathing and therefore 'blowing' regularly before taking a deep dive which is usually marked by a fluke.

Today, however, the sperm whales were socialising and the normal pattern of breathing, fluking and diving was totally disrupted. Instead the whales, of which there were approximately 15, were just cruising around at the surface, sticking their heads up out of the water, shallow diving, side fluking and lob tailing (smacking the tail against the surface of the water). Janine was even lucky enough to see one whale breach when it propelled itself right out of the water! Without the usual predictability of their actions it was extremely difficult to position the boat close to a whale that was going to fluke and there seemed to be whales popping up everywhere. It was amazing to watch and quite mesmerising with the afternoon sun beating down on the calm waters. Despite the difficulties, Lisa and Kevin did manage to photograph a number of flukes and it was by no means a lazy day with a total of 29 different sightings recorded by the time we returned to the marina.

There is a tradition in Horta for sailors to paint murals on the harbour walls and Biosphere Expeditions is well represented with three murals from past years already in place. So this year's artwork was started today with the help of a few well earned beers which the team members and expedition leader drank whilst sitting in the early evening sunshine!

20 April

The last two weeks have flown by and no one could believe that today was the last day for the first slot. We had more awesome experiences, however, with seven different species sightings. Considering we have had a total of eight species over this slot that was extremely impressive for one day's data collection. The team members were really hoping for an encounter with bottle nose dolphins and they were not disappointed. We came across approximately 35 of them first thing in the morning and we saw the same group as we travelled back to the harbour this evening. Being between 2.5 - 4 metres long these dolphins seem to have even more presence about them than the common dolphins. We were treated to a fantastic show of acrobatics as they leapt clear of the water just metres from the boat. It was a stunning choreography of dolphins darting around the boat in synchronised jumps, leaps, somersaults and bow riding.

It was the calmest day of the expedition so far and we motored out more than 15 miles from shore. For part of the day the sea was like a mirror with hardly a ripple on the surface. We had sightings of blue, fin and sei whales as well as Risso's and striped dolphins in the afternoon. At one point saw the blow of a blue whale and then saw it dive, so we decided to wait until it resurfaced to photograph it for identification. Normally blue whales only dive for about 12 minutes so we thought we would get this one quite easily in the calm waters. We were hanging around for more than half an hour to get the photos as it was covering large distances whilst diving, which meant we were never quite close enough when it resurfaced. By the time we motored over to the whale it would dive again. Eventually we were in the right place at the right time and could not believe that it was 'patch' (which refers to the white mark on his fin). Patch was the blue whale we saw on the first day and have photographed him frequently over the two weeks!

21 April

So this morning the team members packed up and we all said our farewells. Thank you to everyone for all your hard work and enthusiasm over the past two weeks. You have been great to work with and always entertaining! It has been a great start to this year's expedition and we hope we have as much success with the data collection in the other slots. During our time at sea we have had the following sightings of cetaceans.

48 sperm whales
24 sei whales
14 blue whales
2,297 common dolphins
39 Risso's dolphins
290 striped dolphins
56 bottlenose dolphins

We now have a lot of work to do to establish exactly how many different individuals have actually seen!

I look forward to meeting the team members for slot 2 on Monday and hope we have the same good fortune of the past two weeks.

24 April

Yesterday TAP (Air Portugal) delivered all the team members for the second slot roughly on time and with all their luggage - which was a great bonus!

Today after a morning spent in the harbour going through safety procedures and explaining the data sheets, we headed out to sea.

We had fairly rough conditions especially for the first day of data collection with three metre waves at some points. Despite the fact we headed to the south side of Pico hoping for shelter we still found ourselves in 'confused and sloppy' waters according to our skipper! Nevertheless the team members threw themselves into data collection when we came across a number of sperm whales which the lookouts on land had directed us to. The high waves and wind made it difficult to spot the blows, but we were able to take photo identifications of six animals, two of which were calves. When we got back to base Lisa was able to match up three of the whales to a pod that had been seen in these waters in 2002 - so despite the difficult weather conditions it was a very successful first day.

We also had two encounters with common dolphins with over 200 individuals spotted, but again this was more tricky than usual because the sea was so choppy. A few of the team members were still finding their sea legs and the aft deck was relatively busy this afternoon with folks trying to throw off that desperate feeling of sea sickness! Hopefully the conditions will be better tomorrow and I am glad to say that none of the teams' enthusiasm has been lost.

25 April

The second day out at sea was given the title 'no puking but lots of fluking' by Julie! So as you can gather we did have a lot of sperm whale encounters - in fact we think we saw eight females and two calves, in a pod that were feeding in an area south of Pico. The ocean was calmer and everyone was able to get on with their tasks on board. The day was also great for dolphins with common, bottle and Risso's dolphins sighted in the morning.

There was a lot more boat activity around the island today than we have seen before, probably due to the fact it was a public holiday in Portugal. We were alone, however, when Chris spotted what he is sure was a humpback fluking! Sven, in jest had announced we were going to see a humpback today and apparently we did. Unfortunately we were unable to find him (the humpback that is) again to make a positive identification but one of the vigias (lookouts on land) also radioed in and said he had seen one humpback in the area we had been in. Apart from this sighting the baleen whales have been exceedingly quiet this week with only one blue whale blow seen in the distance. The giant must have been photo shy, however, as we never saw him again.

26 April

Today was another sperm whale success. We managed to find a bachelor group of whales, which is more unusual to see than a pod of females. When the males are approximately six years old they leave the matriarchy they have been born into and swim off to meet up with the 'boys'. Once the males are in their breeding prime and are more mature they tend to explore the oceans alone searching for females to mate with. The bachelor group we were trying to identify was made up of six quite large whales up to 16 metres in length.

We spent more than three hours with them taking photos of the tail flukes as they began their deep dives in an area where the sea floor was at least 1000 m deep. We monitored one whale that we named 'Bendy Boy' (because of his extremely floppy tail) who was diving for a fairly accurate 50 minutes each time and then spending roughly 10 minutes on the surface catching his breath before diving again. On checking the database of flukes Lisa found that this pod was 'new' and had not been identified before in the Azores, Norway, the Canaries or in the Caribbean.

With the wind blowing from the south we decided to come back to Horta a little bit earlier as the boat was getting bounced about all over the place in the 2-3 metre waves and so were we! The boat began to surf a little as the waves kept catching us from behind but Chris expertly drove us back to the safety of the harbour. It's all in a days work for super heroes!!

30 April

At last we have had a day of baleen whales! Having been a little spoilt with all the sperm whale sightings it was great to see some new baleen whales. The rough seas, however, have continued and the team members from this slot are beginning to think they are tougher than the previous slot who had much calmer days at sea!! We set out this morning towards a baleen whale that one of the vigias had spotted from the lookout. As we headed out from the harbour in the bright sunshine we had the magnificent sight of a 45 m long super yacht cruising through the channel between Pico and Faial with all of its three, 30 m high sails raised. These boats are highly automated and theoretically only require a crew of two to sail across the Atlantic! The marina often has a number of stunning square rigger tall ships moored along the walls and for me it is even more inspiring to see these boats rather than the new high tech computerised vessels.

Our first sighting of the day was a group of 25 common dolphins which bow rode with us for a short distance. Then, after a bit of searching, we found our baleen whales. Initially four fin whales, which seemed to be oblivious to our presence or were intrigued by us, swam within a couple of metres of the boat and underneath it. Despite the rough conditions we were still able to see the turquoise bodies of the animals in the water and one fin whale even swam upside down to reveal its white underbelly just a metre from the boat. As the 2-3 m waves sloshed about we had some great views of these creatures and unfortunately the wind direction allowed us to experience their bad baleen breath - which after years of chomping on krill you can imagine is pretty rancid! After some difficult but successful 'fin photography' we left these animals to try to identify two blows further west of us. As we came up close to the new blows we were pleasantly surprised to see that one of them was... a blue whale. Yes, the first proper sighting of one this slot!

He didn't hang around, however, and went into a dive almost as soon as we had found him. With the waves at Beaufort scale 4, it was difficult to spot him again and we thought we had lost him. Luckily he did reappear later and although the conditions were rough everyone did get a fairly good view and we were able to take some good identification photos. This whale was a new one for this year's expedition.

Everyone has been hassling me to include some of Chris' obscure jokes and stories in the diary, but I keep telling them that they just won't make any sense a second time round. How do you begin to retell a story about his mum holding the world record for 'keepie uppies' or how the local mayor dresses in a jelly fish outfit and eats grass? Exactly - best kept for the boat I think!

May 1

May Day was an on-shore day for the team and most people took the opportunity to relax. The local people of Horta celebrated Labour Day by organising a fiesta in the park, which included traditional dancing and singing, a brass band, poetry and free barbecued sardines. It was a beautiful hot afternoon and it was extremely relaxing sitting in the sunshine with a pint of lager or two watching the activities!

May 3

Who said it could never happen? A turtle sighted during turtle time? Impossible you said. Well, today it did happen. Thomas made a prediction this morning that today was the day for a turtle and although he believed it would appear at 10.55 it actually turned up bang on cue in turtle time at 11.10. For those of you who are confused, I will explain. Part of our research is conducted on behalf of the Azorean Fisheries to assist with conservation strategies in the area. Every two hours during the day we have to look for turtles for a specific 15 minutes. As you can imagine actually seeing a turtle is tricky enough (we have seen seven on the expedition so far) and seeing any at turtle time is rare, but not impossible. Lisa said she would buy everyone a beer on Friday as a reward - mine's a sagres please! In addition to the turtle surprise we had a brilliant day with sperm whales with 16 different encounters of nine different animals. We even had one whale lob-tailing right in front of the boat. His tail and three metres of his body was visible out of the water as if he was doing a headstand. It's not totally understood whether they do this for communication or social interaction, but it was an extra treat for us amidst all the incredible fluking that was going on.

May 4

It was the last day of data collection for slot 2 today and it was the calmest day so far. We headed out north of Faial and came across a pod of 10 sperm whales who were socialising. It was quite strange to watch as they all lined up in a row and slowly swam north before shallow diving without so much as a fluke amongst them. They would disappear for 15 minutes or so and then reappear on the surface, line up again and follow the same procedure. We put the hydrophone in the water but as the whales were silent there were no codas (sperm whale communications) to record. We were treated to a couple of brilliant breaches by a juvenile sperm whale, however, which made everyone's day.

The next few hours were strangely cetacean free. We motored out to the western point of São Jorge approx. 16 km from Faial accompanied only by flocks of Cory's shearwaters. Whilst heading back towards Pico in glorious sunshine another incredible thing occurred. Another turtle spotted in turtle time! In the commotion of the sighting and trying to manoeuvre the boat alongside it the loggerhead decided he did not want to be caught and swam off! But in the style of the day we were lucky enough to have the opportunity to catch another turtle half an hour later when Dan spotted one floating by the boat! This time we got him safely on board. Carrying a couple of crabs to assist with his general personal hygiene the turtle was too small to tag and after measuring his shell - 14 cm - Lisa returned him to the sea.

May 5

The last two weeks have been pretty spectacular in terms of sperm whale sightings. We had 65 encounters of 106 individuals! Just amazing. We were overwhelmed by common dolphins again with 19 encounters and over 1,600 individuals; two encounters of bottlenose dolphins with 60 animals; 25 Risso's dolphins seen in one encounter; three blue whale encounters and three individuals; one humpback whale; 20 fin whales divided over four different encounters; and 200 striped dolphins seen on one day. Again another incredible two weeks with so many cetaceans seen and recorded.

The team have now departed and I would like to say a massive thank you for all your hard work and good humour. A few reminders of this slot will be the close encounters with fin whales, breaching sperm whales, Dan's birthday cake, coffees in Peters' cafe, Chris' lost keys, lover boy, barbecued sardinhas, Thomas swimming in the sea and of course Sven and his amusing yet annoying'da dum da dum, santa baby'!

I look forward to meeting the last slot team members on Monday. Who knows what will be in store for us all!

9 May

The predominantly female team of this last slot is already turning heads in Horta! Some of the whale watching operators have been complaining that Chris is too lucky to have a boat full of women (apart from Mario of course)! Introductory briefings were completed yesterday and our first afternoon at sea enabled Sigi to test out her 'I think I might be scared of whales' theory. We headed out north to the more sheltered side of the island as the winds were blowing fairly hard from the south. As everyone was getting used to the motion of the boat and completing their individual tasks we spotted a fin whale that the vigias were directing us to. Pavan took some good photos and we were able to see the white chevron markings required for identification extremely clearly. We also had two encounters with small groups of common dolphins and their calves. The waves began to increase in size and outside of the shelter of Faial the sea was choppy giving everyone an idea of how hard it can be to fill in data sheets whilst the boat is lurching from side to side! Chris decided that we should stick close to the island to get as much shelter as possible on our return to the harbour.

Back on land the traditional introduction to Peter's café was made before we strolled back to the house in the hot afternoon sun. Today unfortunately the wind has increased to Beaufort 5, so the team members are working through the photos – cropping and matching dolphins and whales to be entered into the database. The weather forecast looks to improve in the next few days, so we hope for some quality time at sea tomorrow.

11 May

The first few days for the third slot were windy with choppy seas, which was a hard introduction to data collection for the team. Today however, was superb and it was the longest time spent at sea so far on the expedition. Most of the day was dominated by sperm whales with 22 encounters. We seemed to just travel from fluke to fluke - as soon as one whale dived another popped up. You could tell we were a boat full of 'ladies' (obviously excluding our very male Mario and skipper!) when we saw a mother and calf fluke together and a resounding 'aahhh' could be heard across the water!

We had spent most of the day south of Pico and on our return journey to Faial we came across Risso's, common and bottlenose dolphins. The Risso's encounter was brilliant as we spotted 'naked lady', a female dolphin with the markings on her fin that look like a drawing of a woman. (Named by a previous Biosphere team during fin identification - I'm not quite sure where the naked bit comes in??). Anyway (!) she had a calf with her and it was great to be able to identify an animal in the water that we know is already on the database. Another member of the Risso's group decided to give us an extra treat and breached 5 times - quite a rare thing to see with Risso's. Just as this encounter finished we virtually bumped into a feeding frenzy of common dolphins and Cory shearwaters! It was a non stop day of cetacean encounters which more than made up for earlier on in the week!

13 May

Yesterday was spent on shore due to high winds and waves up to three metres. Fortunately it was a gorgeous day on land and gave everyone an opportunity to appreciate just what a beautiful island Faial is. Flowers are really starting to bloom now and the contrast of green fields and blue skies just makes the island stunning! We were also treated to some great home cooking with pancakes and fresh bread served by Brigitte, Baerbel and Adriana.

Today has been another outstanding day - and dare I say it the best of the expedition so far! We had 14 sperm whale encounters, which turned out to be nine different individuals, three of which have been seen once before and the rest are all brand new to the database. There were sightings of four calves, another mother and calf fluke and one fantastic lob-tailing performance. Travelling to and from the sperm whales feeding ground we encountered all of the dolphin species seen on the expedition so far; common, Risso's, striped and bottlenose. If all this wasn't enough we had a new species sighting of pilot whales! Approximately 60 in number they could be distinguished by the broad base of the rounded dorsal fins and dark colouration of the skin. They can grow up to six metres in length but the calves, of which there were many, start life at just 1.5 metres long. The group were just 'milling' (that is a technical term!) around and being relatively slow in the water in comparison to the dolphins they were quite easy to photograph for identification. The pilot whales are only sighted around Faial and Pico about three times a year, so this sighting was pretty special.

With the wind so light and the sea calm (even down to Beaufort 0 at one point, totally flat calm water!) it was the perfect ending to the day when we saw a small group of Risso's near the entrance of the harbour. In such conditions the ghostly figures of the near white bodies looked incredible under the water and we saw 'naked lady' again! This time the group seemed extremely calm and inquisitive of the boat and one calf came right underneath the bow. Sigi and Lisa were able to get some great shots of the fins as the animals were only a couple of metres from the boat. It really was an amazing day and I haven't even mentioned the fin whale, leaping striped dolphins, the hundreds of common dolphins swimming alongside the boat, the flying fish or the thousands of Portuguese man-of-war jelly fish that we have seen today! I guess we have just been spoilt!

15 May

The days are flying by here in the Azores and some more fantastic sightings have been made. Today was a day of socialising behaviour from the sperm whales which meant that the all precious fluke photos were a little bit thin on the ground. There were plenty of whales around the boat, but they were more interested in each other than diving for squid. At one point a pod of Risso's dolphins turned up and began 'hassling' the sperm whales. You would think that 12 m and 24,000 kg of sperm whale would be enough of a deterrent for bullying dolphins, but apparently not. It was amazing to see the adult sperm whales gather around a calf to protect it from the bullies and at one point we had four 'head ups' where the whales are floating vertically with their heads sticking up out of the water. When the sperm whales did start to feed we were treated to some serious water splashing with a number of lob-tails performed by one whale in particular.

16 May

With the wind blowing from the south Chris decided we would be better off seeking shelter at the north of Faial today. In fairly choppy seas we began the morning with a group of sperm whales. Although we had a number of flukes, these whales (a different group to Tuesday's) were also acting strangely and did not follow the normal pattern of rafting at the surface and then diving. Instead we had one juvenile breaching and lob-tailing and a lot of shallow diving without any flukes. Great to watch but not so useful for data collection! In the middle of following the sperm whales we saw three fin whales. Two of which were feeding together and in between dives came close to the boat. They almost looked like they were posing as they surfaced for a few seconds and then slowly sank just under the surface of the water so we could easily see their bodies' right next to the boat. Lisa and Brigitte were able to get some stunning photos of the chevrons (white markings on the right hand side of the head) which are needed for identification.

With the waves throwing us around the boat a bit we headed for calmer waters near the coastline and travelled close to the north east of Faial where we could see the area of most recent volcanic activity - Capelinhos. Although it was windy, the sun was beating down and it was perfect to come across a group of bottlenose dolphins leaping across the sheltered bay. So, only two more days of data collection and all fingers are crossed for a blue whale sighting. Alison is so keen to see one that she has even named it...Eric!?

17 May

Today is Lisa's birthday and unbeknown to most of us, Chris had bought her a necklace with a little stone turtle on it. It must have brought us good luck because Lisa not only spotted a turtle, but managed to catch it in the net before it dived. It was the largest turtle we have seen on the expedition and its shell alone measured 40 cm in length. This was first turtle this expedition we were able to tag, so whilst Pavan stroked the back of its neck to keep the animal calm Lisa prepared the tags. The two little metal identity clips were attached to its flippers so that if someone else manages to catch the turtle again, they will be able to record exactly where it has been, over what period and how much it has grown. The lucky catch didn't occur during turtle time, but none the less everyone was so excited about having the animal on board. This was only the second turtle we have seen this slot!

We were also treated to some absolutely fantastic displays of acrobatics from hundreds of striped dolphins. The striped dolphins are not as gregarious as common or bottlenose and don't often come close the boat. But in line with the good luck we have had on this slot we had them bow riding and have also seen hundreds of them leaping out of the water in unison. It really is an amazing sight and you can't help but laughing and smiling!

18 May

The last day of the slot and the last day of this year's Biosphere expedition in the Azores. As we left the harbour this morning expectations were high.. we were still to see a blue whale. The sea was choppy, which made the photography of our first sighting of three Sei whales extremely difficult. Then it came over the radio from the lookouts on land that there was another baleen sighting - a blue whale. Did you hear the screams? A huge cheer went up from the boat as Chris drove us as quickly as possible to the location the vigias had described. Sure enough, there in all his glory was.... Eric! This blue whale must have known that he had a boat full of excited team members as he arched high before diving so that everyone could really see his mottled skin and get some idea of his massive size. We waited until he resurfaced for air - this time alongside the boat and then after a few tall blows he arched again preparing for another dive. This time, however, he really gave us all a special treat and lifted his tail in a fluke - a really rare sight to see with a blue whale. We must have been heard for miles around as everyone cheered and screamed with delight!!!

19 May

So the expedition has come to a spectacular end. The species sightings for the last two weeks are as follows. One, long awaited and very much adored blue whale! Eight fin whales and five Sei whales. We had 115 sperm whale encounters from which Lisa has identified 73 different individuals. (On the whole expedition we have identified 167 individual sperm whales!). We have had the pleasure of seeing 950 striped dolphins spread over 7 encounters. We spotted 170 common dolphins on 16 different occasions, 105 bottlenose seen on 5 separate days. Risso's numbered 101 spread over 8 different encounters and 120 pilot whales seen over two days! What can I say - I am overwhelmed by how much we have seen. I never realised how much life these little islands in the middle of the Atlantic attract and support.

I am now sitting in Lisbon airport - a place that all the team members have had the pleasure of visiting! Already it seems a long way away from bobbing about on the ocean in Phyceter. I would like to say a massive thank you to everyone who has participated in this year's successful expedition, for all your hard work, concentration, patience and laughter.

Don't forget to put your photos on the photo exchange site at <http://www.imagestation.com/album/pictures.html?id=2094214769> (there's nothing on there yet, so COME ON share nicely!). How to work the site is explained at www.biosphere-expeditions.org/pictureexchange.

Take care and safe travels

Clare :)