The Ascension Island Cetacean-monitoring program

This project aims to assess the abundance and distribution of cetacean species around Ascension Island. To date, very little has been documented on the species which inhabit the island's waters; what little is known has come from casual observations alone which are undoubtedly affected by variation in observer effort through time. The aim of this research therefore, is to develop some consistency to sightings recordings, so that a more reliable assessment of Ascension's cetacean population can be established.
As the monitoring program progresses, it is intended that a sufficient amount of data will become available for detailed analysis; more specifically, the project aims to identify or assess:

- Species diversity- How many different cetacean species inhabit Ascension's waters?
- Population density- What is the population size of each of the different cetacean species which inhabit Ascension's waters?
- Short-term (i.e. daily) movement and distribution- Do the observed animals make daily migrations? If so, where to and at what time of day?
- Long-term (i.e. annual/seasonal) movement and distribution- Do the movements of the observed animals vary depending on the time of year? And can this be linked to environmental parameters?

Building a better understanding of cetacean behaviour will enable us to more accurately assess the conservation status of the local whale and dolphin populations and to understand the significance of any potential threats that could arise and threaten them. Ultimately, we will be better equipped to make informed and accurate decisions regarding the management and protection of these animals; a consideration which undoubtedly will become a heightening issue in the future.

October-December 2006 field work report

Dedicated surveys:
37 land-based and 5 boat-based cetacean-monitoring surveys were carried out between the 30th October and the 9th December, equating to a total of 126 hours of surveying.

Field work:
Land surveys were carried out from one of four sites. The four sites are situated approximately equal distances apart (on the north-east, SE, SW and NW points of the island, at the Ariane Site, Cocoanut Bay, Rocket Pad and Comfortless Cove, respectively) to provide coverage of different areas of the island. Each survey site has been chosen specifically as it provides a good lookout over the sea and is relatively accessible.
Monitoring occurred for a minimum period of three hours. This is a recommended duration which will give sufficient time to detect whether there is anything present in the survey area as it covers a number of dive cycles thus giving sufficient time

to say, with confidence, that if you saw nothing there, then it was highly likely that nothing was present.
Surveying methods were basic; field equipment included binoculars and a compass, and a GPS was taken on the boat trips to record the track taken by the boat and to mark the exact location of a sighting; the environmental conditions and cetacean presence were recorded every fifteen minutes. (*See Appendix I & II for the survey forms used and an index to the field headings*.)

Data input and analysis:
The data collected in the field was put into an Access database and into an Excel file for analysis. The limited survey period meant that insufficient data was available to conduct detailed statistical analyses; however, basic graphs and maps could be produced, and comments and interpretations of observations could be made.

Study results and interpretation:
During the study period (30/10/06 to 9/12/06) bottlenose dolphins, *Tursiops truncatus,* were the only cetacean species observed. The bottlenose dolphins were seen from all the land survey sites, and on 3 of 5 boat surveys (*see fig.1*). Individuals were always seen close to shore (range = 1 - 300 m).
The highest frequency of encounters occurred at Cocoanut Bay (situated on the south coast of the island) with animals seen 28 % of the time. Rocket pad and Ariane sites (on south west and east of the island respectively) recorded then the same amount of sightings with 19 % and 18 % respectively. Comfortless Cove (on the west coast) presented the lowest rate of encounters with bottlenose dolphins seen only 9 % of the time (*see fig.2*).

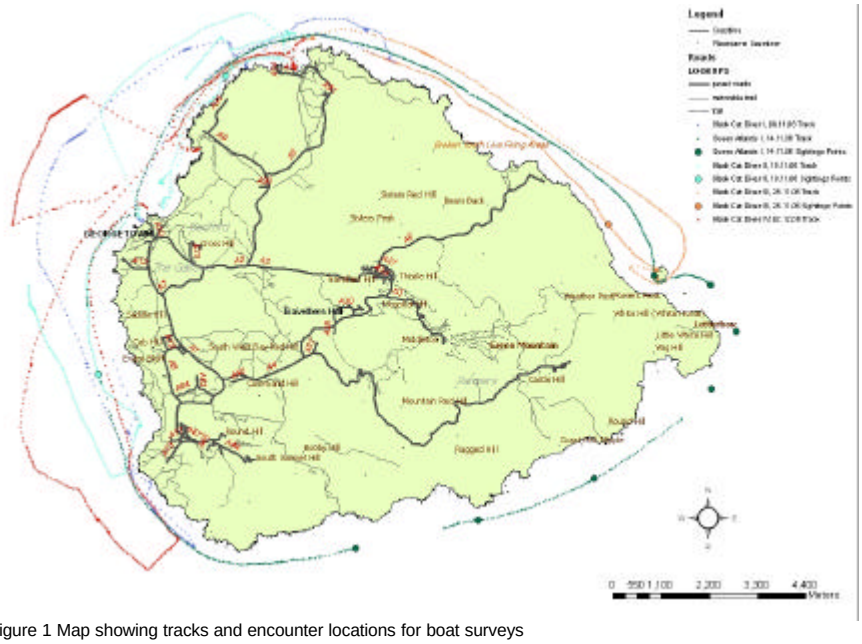

Figure 1 Map showing tracks and encounter locations for boat surveys

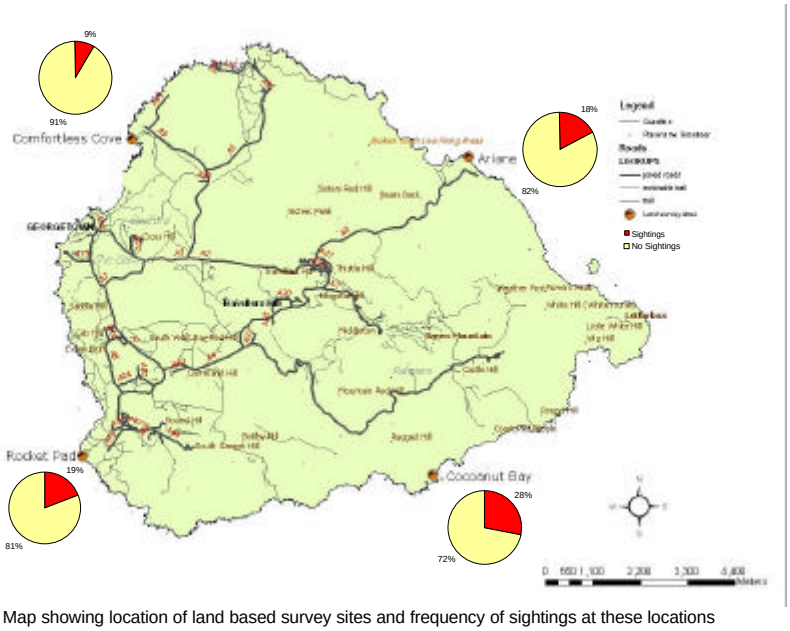

Figure 2 Map showing location of land based survey sites and frequency of sightings at these locations

At Cocoanut Bay the dolphins have been seen from the morning (after 09 h 30) until late afternoon (17 h 45) with the highest frequency of sightings occurring between 15 h 15 and 16 h 30. The average encounter duration was 15 ± 11 minutes with encounter length varying from 1 to 37 minutes. The animals appeared in groups of one to 10 individuals (5 ± 3) at a distance of 5 to 100 metres from shore (44 ± 35). In terms of behaviour, the bottlenose dolphins seen from Cocoanut Bay predominantly exhibited slow directional movement in a west to easterly direction and during this time social behaviour would often occur, with animals jumping and surfing in the waves.
At Rocket Pad the bottlenose dolphins were observed during all hours of the day from 08 h 15 to 17 h 45 with the highest frequency of sightings occurring between 09 h 15 and 10 h 15. Groups were composed of between 1 and 14 individuals (5 ± 4) and encounters lasted from 5 to 21 minutes (8 ± 4). They were generally seen travelling from north west to south east at a distance between 10 and 80 metres from shore (28 ± 17) and appeared to be foraging at the same time.
At Ariane Site, encounters were recorded from 08 h00 to 18 h 00 but the maximum of sightings occurred in the early morning (08 h 00 to 10 h 15). The dolphins appeared in small groups (4 ± 1 individuals) at varying distances from shore (84 ±70 metres). Encounter duration ranged from 1 to 28 minutes. The most commonly observed behaviour was travel in a slow directional movement, although social behaviour (leaping, splashing) and foraging was frequently observed at the same time.
At Comfortless Cove, bottlenose dolphins were seen from morning (09 h 00) to mid afternoon (15 h 15) and the encounter duration varied from 1 to 41 minutes (14 ± 14 minutes). Individuals appeared in smaller groups (3 ± 2 individuals) close to shore (15 metres), although one group was seen travelling further off shore at 300 m. In the first case the animals were resting and milling, and in the second, they were travelling in slow directional movement.

Opportunistic surveys:
Between the 30th October and the 9th December, 3 sightings reports were received from the general public.

Interpretations and conclusions drawn from opportunistic sightings:
Sightings recorded by the general public offer a useful indication as to the species which may be present in Ascension's waters and may even provide some evidence for seasonal patterns in abundance; however, little more can be drawn from them: The uncertainty with which we can be assured that a cetacean has been correctly identified provides the first issue; the inevitable variation in observer effort, both spatially and temporally, provides another. The limited amount of data also means that statistical analyses are unfeasible. It is therefore recommended that opportunistic information be used as a guide only. In this way, the information will still prove valuable and may be used in the future to develop the methods for the dedicated surveying. It is suggested that public awareness and interest is kept up in order for this data to continue to be collected, and as

such, new, updated opportunistic survey forms have been created. (*See appendix III for the opportunistic survey forms.*)

Setting up for the future:
It is anticipated that dedicated monitoring will be continued; every effort has been made to try and re-establish this project so that it can successfully persist:

- By raising the local public's attention to this study, we hoped to have also raised interest in the work we have been doing. During our study we had three members of the public come out into the field with us and as a result, have successfully found a volunteer to continue the land-based surveying for the project. Sue Kelly has volunteered to do three land-based surveys a week.
- Contacts made overseas raise the potential for volunteers to come in from abroad. Links with volunteers on the MARMAM mailing list and Exeter University have been established.
- By updating the Ascension Conservation website with information on the methods, results and future of the cetacean-monitoring project we hope that the profile of the project will be raised, and by adding a volunteer section, it is anticipated that additional volunteers from overseas will be attracted.
- A volunteer training pack has been created which contains all the information that a new volunteer should need in order to carry out the field work. The pack includes sections on how to generate a scientifically sound timetable for data collection, equipment-use guides, risk assessment sheets, a list of contact details, and indices for various terms and field methods. By creating this pack, we have hopefully ensured that the same methods will continue to be used as the project progresses and so the data that is ultimately analysed will be consistent and reliable.
- Links have been established with Colin MacLeod from the University of Aberdeen, through whom the project results have been passed. The intention is to ultimately produce an article for publication.

Land Effort Sheet

Date: _____ Location: _____ GPS position: _____

Height above sea level: _____ Observers: _____ Start time: _____ End time: _____

Binoculars used: _____ Survey number: _____ Page number: _____

Time	Cloud cover (/8)	Visibility	Seastate	Swell (m)	Sun glare	Cetaceans present?	Encounter number

Land Sightings Sheet

Date: _____ Location: _____ GPS position: _____

Height above sea level: _____ Observers: _____ Start time: _____ End time: _____

Binoculars used: _____ Survey number: _____ Page number: _____

Start time	End time	Angle	Distance (m)	Species	Group size	Group size range	Calves?	Activity	Comments on behaviour	Other comments

Land Effort Sheets and Land Encounter Sheets Index	
You need to fill in the following at the top of the page:	
Date	
Location	give as a name (e.g. comfortless cove)
GPS position	eastings and northings taken from GPS reading
Height above sea level	taken from contour map (GPS reading is inaccurate)
Observers	your names (add new observers to 'cetacean project contact details.xls')
Start/end time	start/end time of survey
Binoculars used	the resolution of the binoculars you used on that day
Survey number	the reference number for this survey (assigned since the monitoring program was started in october 2006)
Page number	page number within this survey (if used more than one page- i.e. you had a sighting- it's useful to staple pages together!)
Land Effort Sheet	where you record the environmental conditions every 15 minutes of the survey
Time	make your recordings at 15 minute intervals
Cloud cover (/8)	the proportion of the sky covered by cloud; measured in eighths
Visibility	leave blank unless it is reduced; if reduced, say to what extent (e.g. reduced to 500m)
Seastate	measured on the Beaufort scale (0-12; see 'cetacean project beaufort scale.doc' if you are unsure of of the grading)
Swell	sea swell, measured in metres; look at the rocks to see by how much the water is rising and falling
Sun glare	give a percentage as to the extent which the sun's glare is reflecting off the water
Cetaceans present?	yes' or 'no'
Encounter number	assign a number to cetacean encounter to determine whether it was the first, second, third... time you saw something during this survey
Land Encounter Sheet	where you record the details of any encounters you make during the survey
Start time	time which you first made the sighting
End time	time at which you last saw the animal(s) in this same encounter
Angle	angle (from due north) at which you saw the cetacean(s)
Distance	the distance the cetaceans were from the shore; given in metres
Species	only assign a species name if you are certain of the ID, otherwise write 'dolphin sp.'/'whale sp.' etc
Group size	the number of individuals within this encounter
Group size range	the minimum to maximum number of animals there could have been (leave blank if you are certain of the number you saw)
Calves?	were there any calves with the group?
Activity	what were they doing? Give on a scale of 1-7; see 'cetacean project cetacean behaviour index.doc'
Comments on behaviour	any additional comments on behaviour
Other comments	any other comments; e.g. did you get photo ID? was there something unusual about the sighting?

Boat Effort Sheet

Date:_____ Area coverec:_____ Direction around island:_____ Observers:_____

Boat:_____ Boat speed:_____ Start time:_____ End time:_____

Binoculars used :_____ Survey number:_____ Page number:_____

Time	Cloud cover (/8)	Visibility	Seastate	Swell (m)	Sun glare	Cetaceans present?	Encounter number

Boat Sightings Sheet

Date: _____ Area covered: _____ Direct on around island _____ Observers: _____

Boat: _____ Boat speed: _____ Start time: _____ End time: _____

Binoculars used: _____ Survey number: _____ Page number: _____

Time	GPS position	Distance (m)	Species	Group size	Group size range	Calves?	Activity	Comments on behaviour	Other comments

Boat Effort and Boat Encounter Sheets Index	
You need to fill in the following at the top of the page:	
Date	
Area covered	give a description, e.g. 'northeast of island, clarence bay to english bay'
Direction around island	did you travel clockwise or anticlockwise around the island?
Observers	your names (add new observers to 'cetacean project contact details.xls')
Boat	the name of the boat
Boat speed	the speed at which the boat was travelling during the survey (max. 16kph is recommended)
Start/end time	start/end time of survey
Binoculars used	the resolution of the binoculars you used on that day
Survey number	give as a route code; initials of the name of the boat and number of survey i.e Queen Atlantis trip 1 would be QA I.
Page number	page number within this survey (if used more than one page- i.e. you had a sighting- it's useful to staple pages together!)
Boat Effort Sheet	where you record the environmental conditions every 15 minutes of the survey
Time	make your recordings at 15 minute intervals
Cloud cover (/8)	the proportion of the sky covered by cloud; measured in eighths
Visibility	leave blank unless it is reduced; if reduced say to what extent (e.g. reduced to 500m)
Seastate	measured on the Beaufort scale (0-12; see 'cetacean project beaufort scale.doc' if you are unsure of of the grading)
Swell	sea swell, measured in metres; look at the rocks to see by how much the water is rising and falling
Sun glare	give a percentage as to the extent which the sun's glare is reflecting off the water
Cetaceans present?	yes' or 'no'
Encounter number	assign a number to cetacean encounter to determine whether it was the first, second, third... time you saw something during this survey
Boat Encounter Sheet	where you record the details of any encounters you make during the survey
Start time	time which you first made the sighting
End time	time at which you last saw the animal(s) in this same encounter
GPS position	mark the point where you make a sighting on the GPS; give it a code e.g. for Queen Atlantis boat trip 2 on the third sighting: QA I 3s (add an angle and
	bearing too, if the cetaceans were at a distance from the boat)
Distance	the distance the cetaceans were from the boat; given in metres
Species	only assign a species name if you are certain of the ID, otherwise write 'dolphin sp.'/'whale sp.' etc
Group size	the number of individuals within this encounter
Group size range	the minimum to maximum number of animals there could have been (leave blank if you are certain of the number you saw)
Calves?	were there any calves with the group?
Activity	what were they doing? Give on a scale of 1-7: see 'cetacean project cetacean behaviour index.doc'
Comments on behaviour	any additional comments on behaviour
Other comments	any other comments; e.g. did you get photo ID? was there something unusual about the sighting?

Appendix III

Dolphin and Whale Land Sightings Form

Please complete as many fields as you can. Do not be discouraged if you can only complete a few fields. All data are helpful!

Name:_____ Telephone:_____ Email:_____

(Please give us your details whenever you submit a form. We may need to contact you for more information about your sighting.)

Date seen:_____ Time first seen:_____ Time last seen:_____

Location:_____

_____

(Please give locations in Latitude and Longitude, or Grid Reference. If these are not available, give a verbal description of the location, making reference to the nearest landmarks.)

Sea conditions:_____ Swell height (m):_____

Cloud cover (/8):_____ Sun glare:_____

(Weather and sea conditions at the time of observation are extremely important. Poor weather affects observer ability to see and identify whale and dolphin species. Recording the weather data helps us to assess the "sighting efficiency". If you can't give exact measurements, provide a best estimate.)

Species:_____ Possible Probable Definite

(Record what species you see and depending on how sure you are about the species, circle the degree of confidence you have in your identification. If you are unsure of the identification then you can record it as "dolphin species" for example.)

Please also provide relevant description details so that we can confirm your identification - there are a number of general categories which help verify the species. (Photos or drawings would also be helpful, including notes of any distinguishing features to help recognise individual animals.)

Body length (m):_____ Largest individual:_____ Smallest individual:_____

Head and beak shape:_____

(Note presence and relative length of beak, also prominence of 'forehead')

Head and flank markings:_____

(Note any stripes or patches of light and dark)

Other notes?_____

_____

(Photos available?)

Behaviour: (Please tick the relevant boxes)

? Fast directional travel (rapid surfacing) ? Slow directional travel (leisurely surfacing with no splash)

? Foraging (appear to be in pursuit of prey) ? Leap/splashing (leaping, tail or fin slapping)

? Resting/Milling (lying motionless at surface or very slow, synchronous surfacing)

? Sexual (males with erections, close body contact between animals)

Please return completed forms to the Conservation Centre, Georgetown. Thank you for helping us with our research.

Dolphin and Whale Boat Sightings Form

Please complete as many fields as you can. Do not be discouraged if you can only complete a few fields. All data are helpful!

Your name:_____ Telephone:_____ Email:_____

(Please give us your details whenever you submit a form. We may need to contact you for more information about your sighting.)

Date seen:_____ Time first seen:_____ Time last seen:_____

Location:_____

(Please give locations in Latitude and Longitude, or Grid Reference. If these are not available, give a verbal description of the location, making reference to the nearest landmarks.)

Name of boat:_____ Direction traveling:_____

Speed of boat:_____ Sea conditions:_____

Swell height (m):_____ Cloud cover (/8):_____ Sun glare:_____

(Weather and sea conditions at the time of observation are extremely important. Poor weather affects observer ability to see and identify whale and dolphin species. Recording the weather data helps us to assess the "sighting efficiency". If you can't give exact measurements, provide a best estimate.)

Species:_____ Possible Probable Definite

(Record what species you see and depending on how sure you are about the species, circle the degree of confidence you have in your identification. If you are unsure of the identification then you can record it as "dolphin species" for example.)

Please also provide relevant description details so that we can confirm your identification - there are a number of general categories which help verify the species. (Photos or drawings would also be helpful, including notes of any distinguishing features to help recognise individual animals.)

Body length (m):_____ Largest individual:_____ Smallest individual:_____

Head and beak shape:_____

(Note presence and relative length of beak, also prominence of 'forehead')

Head and flank markings:_____

(Note any stripes or patches of light and dark)

Other notes?_____

(Photos available?)

Behaviour: (Please tick the relevant boxes)

? Fast directional travel (rapid surfacing) ? Slow directional travel (leisurely surfacing with no splash)

? Foraging (appear to be in pursuit of prey) ? Leap/splashing (leaping, tail or fin slapping)

? Resting/Milling (lying motionless at surface or very slow, synchronous surfacing)

? Sexual (males with erections, close body contact between animals) ? Bow-riding (riding the boat's waves)

Please return completed forms to the Conservation Centre, Georgetown. Thank you for helping us with our research.