

SHORT COMMUNICATION

AN ATLANTIC CETACEAN SURVEY USING YACHTSMEN: A PILOT STUDY

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In the summer of 1998, yachtsmen sailing from the Caribbean to the Azores were encouraged to take part in an Atlantic cetacean survey. The principle aim of this project was to evaluate the potential of using regular seafarers as sources of data on cetacean distribution. Identification guides and sighting forms were distributed and participants were asked to record any cetacean sightings as well as to conduct routine set-effort watches. A secondary aim of the project was to investigate reports of illegal whaling in the Atlantic. Data collected from the yachtsmen reveal a concentration of sightings along the mid-Atlantic ridge, perhaps corresponding to an increase in productivity in this area. No further reports of whaling activity were made. Although this work only involves a small data set, it illustrates how useful yachtsmen can be in assisting research in otherwise inaccessible regions. Future involvement of yachtsmen in cetacean surveying should be encouraged, as long-term data sets gathered in this way can be invaluable in revealing offshore trends.

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Durante o verão de 1998, pediu-se a iatistas que iam fazer a travessia entre o Caraíbas e os Açores para tomarem parte num levantamento de cetáceos no Atlântico. O objectivo principal deste projecto foi avaliar a potencial utilização de velejadores regulares como fonte de dados sobre a distribuição de cetáceos. Foram distribuídos guias de identificação e formulários e pediu-se aos participantes para registarem qualquer avistamento de cetáceos e para fazerem turnos regulares de observação dedicada. Um objectivo secundário deste projecto foi investigar relatos de baleação ilegal no Atlântico. Os dados recolhidos pelos iatistas revelam uma concentração de observações ao longo da crista médio-Atlântica, talvez correspondendo a um aumento da produtividade nessa área. Não houve relatos de baleação ilegal. Embora este trabalho envolva um conjunto de dados reduzido, ilustra a utilidade que os iatistas podem ter como apoio à investigação em regiões de difícil acesso. O seu envolvimento em estudos de distribuição de cetáceos deverá ser encorajado, uma vez que os dados acumulados a longo prazo podem ser valiosos na identificação de padrões em mar alto.

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INTRODUCTION

Yachtsmen spend large amounts of time at sea, often in areas rarely visited or inaccessible to field scientists.

They have the potential to provide valuable data on both offshore cetacean distributions (BROWN 1975, MCBREARTY et al. 1986) and human activities in these areas that might affect the marine environment. Yachtsmen, however, can have difficulty in identifying cetaceans at sea (BROWN 1975). They also need to be motivated and made aware of the importance of their contributions to conservation. To overcome some of these obstacles, yachtsmen were encouraged to participate in a sighting exercise on one specific trip from the Caribbean to the Azores during the early summer of 1998. They were to be met at their destination by experienced scientists who could debrief them and provide help with species identification. A secondary aim of this survey was to investigate rumours of an illegal whaling operation in the mid-Atlantic, first reported by yachtsmen crossing the Atlantic in the early summer of 1997. Although these reports remain unsubstantiated, any 'pirate' whaling that might have been occurring would have been unregulated, with the potential to deplete threatened whale stocks.

MATERIAL AND METHODS

The International Fund for Animal Welfare (IFAW), the Department of Oceanography and Fisheries of the University of the Azores (DOP) and the Eastern Caribbean Cetacean Network (ECCN) collaborated to enlist the help of yachtsmen crossing the Atlantic from the Caribbean to the Azores. Identification guides and keys detailing the most common Atlantic cetacean species were designed and distributed to participants in Antigua during 'race week', prior to their departure. General advice on data recording and species identification were also provided at this time. Yachtsmen were asked to complete dedicated watches and keep records of all cetacean species they encountered during their crossings. They were also asked to record any interactions they observed between vessels and

cetaceans, as well as any 'unusual' vessels or objects seen. They were encouraged to contact members of DOP upon arrival in the Azores to return completed data forms and discuss any problems or unusual sightings.

RESULTS

Of the 50 yachts that took cetacean sightings packages, only two returned data. No injured whales or suspicious activities were observed, providing no further evidence of illegal whaling. During eight dedicated watches, only one cetacean sighting was made (of 2 unidentified dolphins). Outside of these watches, however, 25 encounters with cetacean groups of at least six different species were recorded (Table 1). Figure 1 shows a plot of the tracks of the two vessels that returned forms, along with all cetacean sightings made during the crossings. Figure 2 is a more detailed plot of all the sightings made showing the bathymetry of the mid-Atlantic ridge. No cetaceans were sighted to the west of a longitude of 43°W or south of a latitude of 32°N. Weather conditions, especially sea state, can affect the probability of sighting cetaceans. Comparing sea states between watches south of 32°N to those north of 32°N using the Mann-Whitney *U*-test reveals no significant difference ($U = 54.0, P > 0.05$) suggesting that differences between sea conditions could not explain the absence of sightings south of 32°N. Figure 3 compares results of this survey with those made by a veteran captain of many Atlantic crossings (MÖRZER BRUYNS 1971), showing a similar trend in sightings densities.

DISCUSSION

The six cetacean species sighted during the crossings are all typical members of the Atlantic cetacean community. The lack of sightings in the south-west Atlantic was striking and followed the trend for low sighting rates in this region revealed in data from MÖRZER BRUYNS (1971). Sightings were made as the Mid-Atlantic Ridge region was approached. Productivity in the open ocean can be very low but the underwater mountain range of

the ridge may cause upwelling of nutrients, increasing productivity in this area. To the south of the main islands lies the "Azores Front", a weak thermohaline front which is thought to delimit a return flow of the Gulf Stream (ANGEL 1989). This front is present in the vicinity of 33 to 35°N and 15 to 35°W and is characterised by slighter cooler, more productive waters to the north and a strong eastward flow running at depths of up to 250 m (FERNANDEZ & PINIGREE 1996). The influence of the Azores front could be another factor leading to higher sighting rates in this area. Although the amount of data available is small, it is beginning to reveal trends that are in line with data from other sources (such as MÖRZER BRUYNs 1971). If surveys of this kind could be made annually, the resulting time series of data might prove useful in tracking general population trends.

Of 50 survey packs distributed, two responses were made. Although this represents a disappointing return rate of only 4%, the information provided in these replies was of a sufficiently high standard to be of use. Clearly, yachtsmen are a potential source of valuable data for investigating trends in cetacean distribution and abundance on the high seas, but more needs to be done to motivate them to participate in surveys such as this. If this survey became an established component of the Atlantic crossings, the response rate should improve. It is important that participants receive feedback and updates on how their data is being used.

The identification guides and sighting forms needed for this survey have already been designed, only the printing, distribution and analysis costs remain to be covered. The

encouraging results of this pilot study shows that conducting surveys using yachtsmen is a viable and useful tool for investigating cetacean distributions offshore.

ACKNOWLEDGEMENTS

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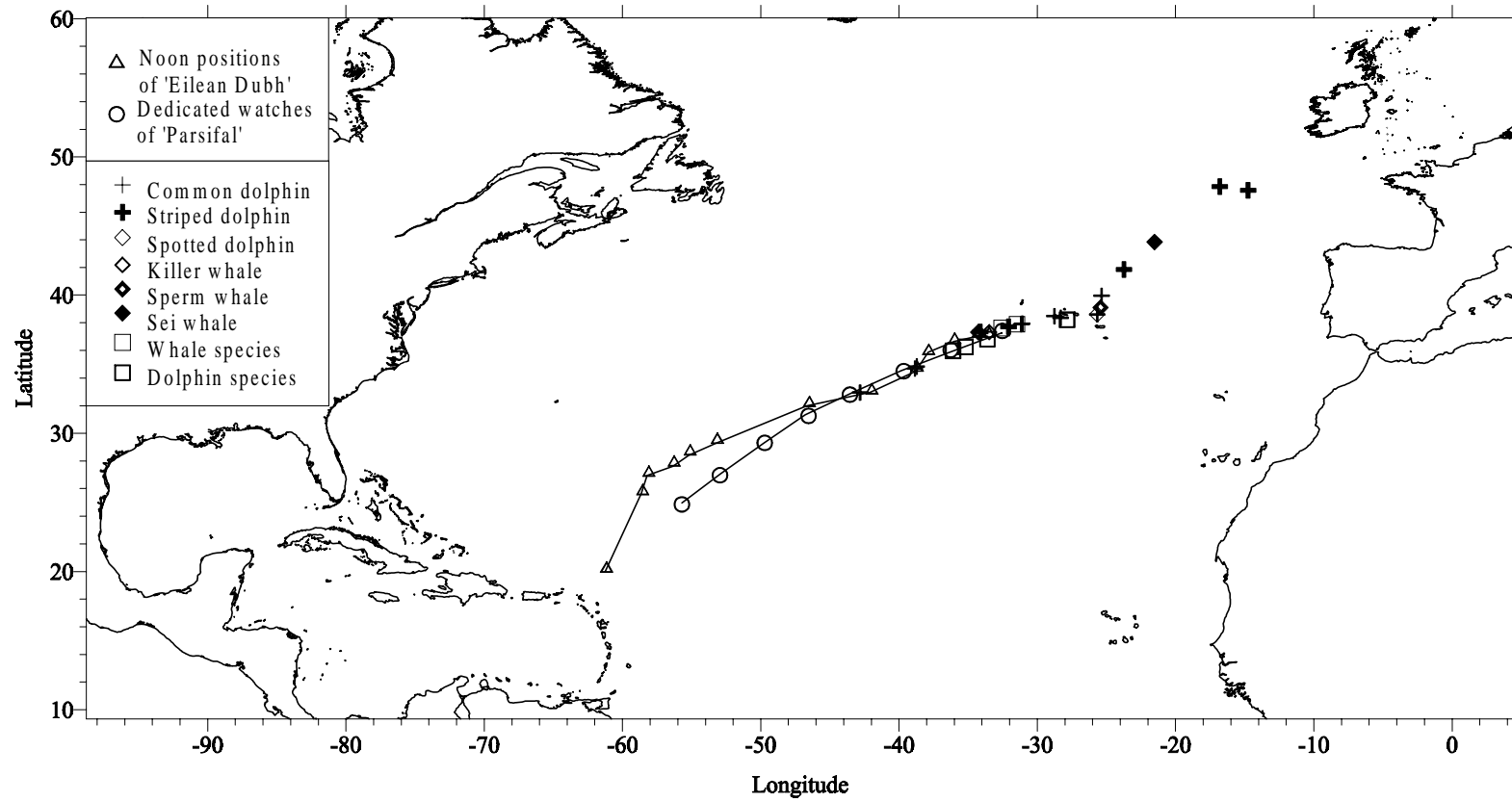


Fig. 1. Position of all watches and sightings made during Atlantic crossings.

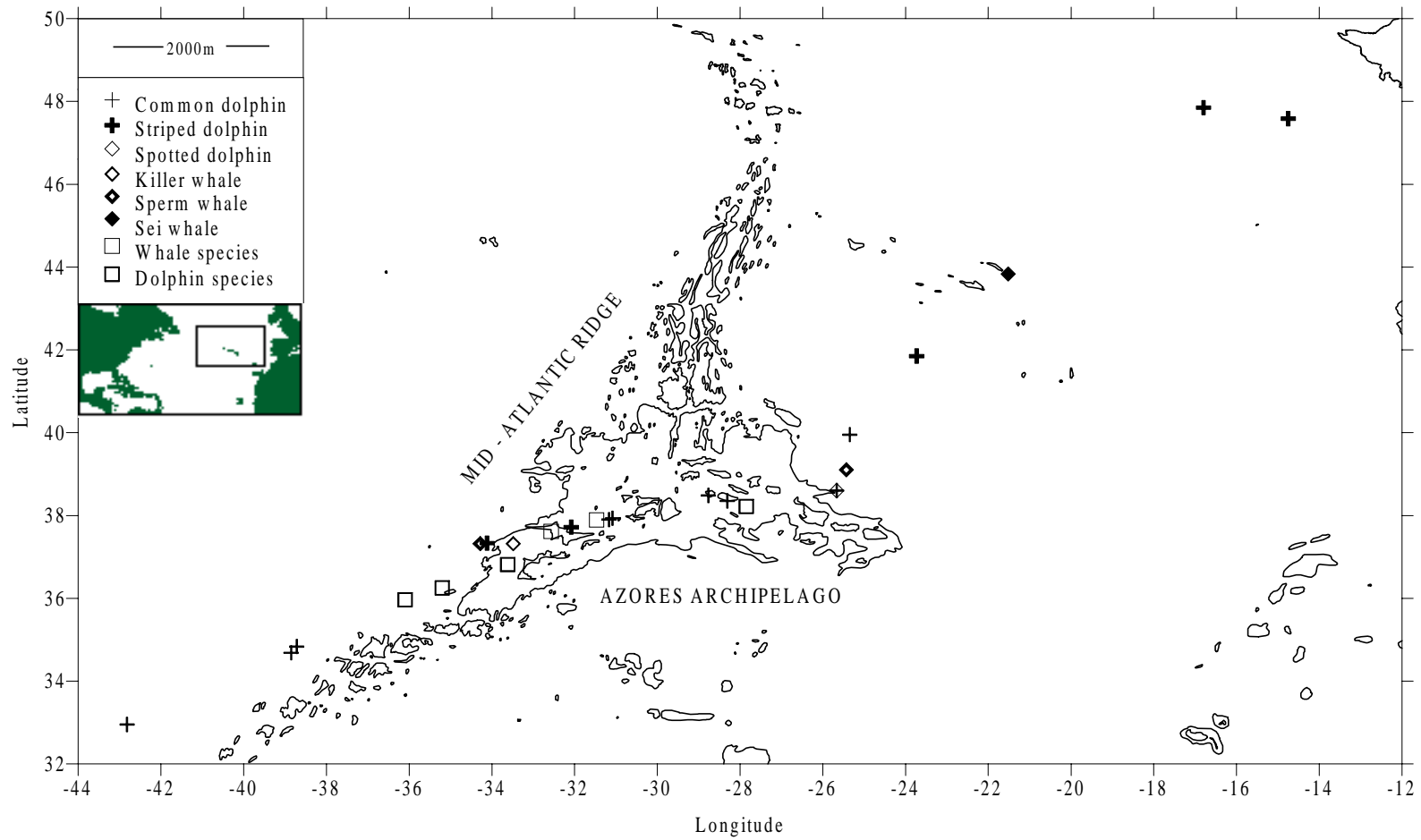


Fig. 2. Position of all sightings made during Atlantic crossings. Contours represent depths of 2000 metres.

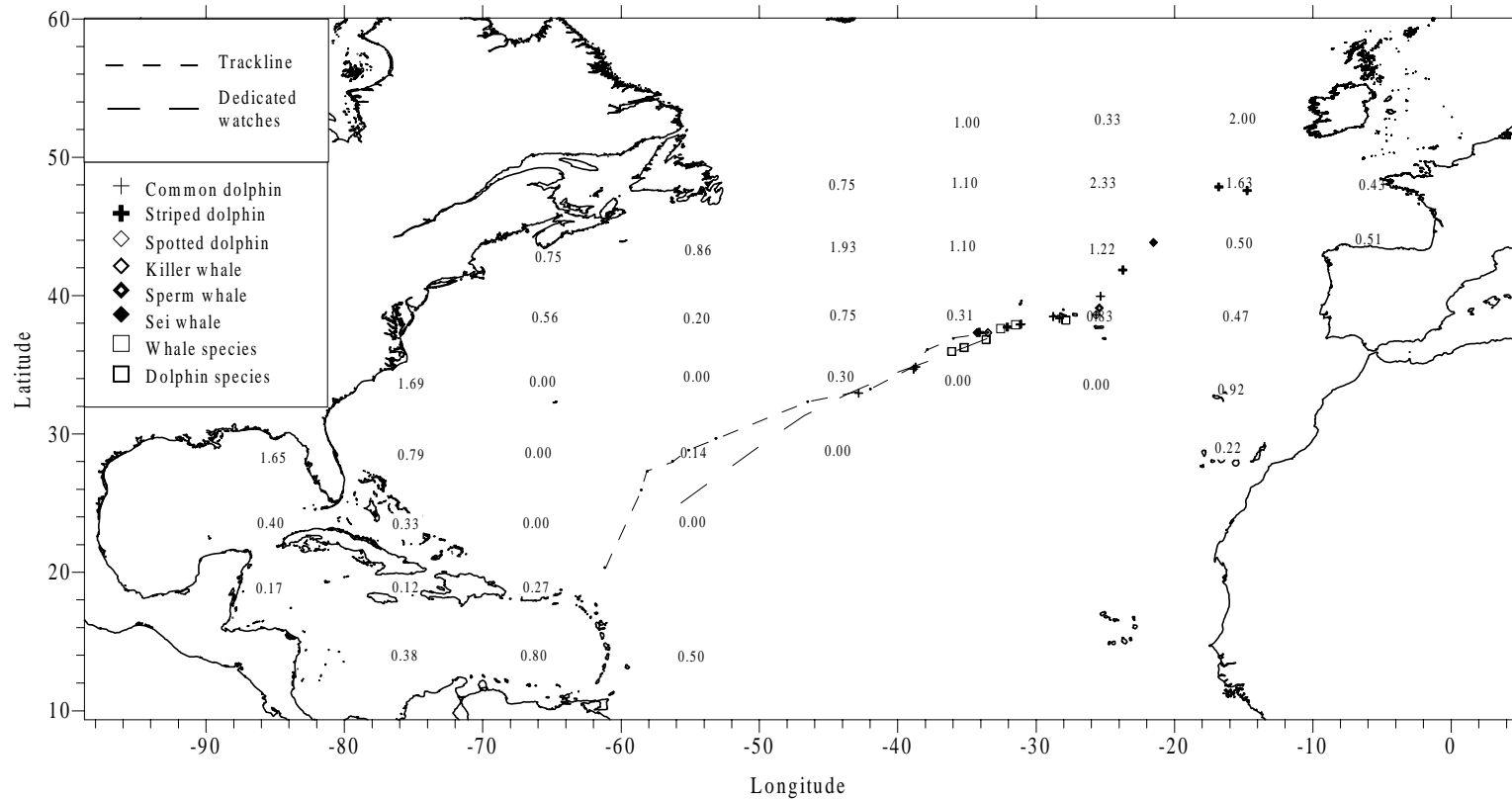


Fig. 3. Chart comparing data from Atlantic survey with MORZER BRUYNS' (1971) data. Figures represent number of cetacean groups sighted per crossing.

Table 1

Summary of all cetacean sightings made during Atlantic crossing. T = travelling, M = milling, F = feeding and B = bow-riding.

Sighting	Date	Time	Latitude	Longitude	Species	Confidence	Number	Young?	Behaviour	Sea state	Notes
CL 01	28/04/98	08:00	35 56 N	36 04 W	Dolphin	Definite	2		T	1	Sighting made during dedicated watch.
CL 03	28/04/98	14:00	36 15 N	35 12 W	Dolphin	Definite	10		T	1	
CL 05	28/04/98	23:20	36 49 N	33 37 W	Dolphins	Definite	5		B	1	Bowriding at night.
CL 06	29/04/98	13:20	37 48 N	31 27 W	Whale		1		T	3	Whale blowing but unable to define species.
CL 07	29/04/98	15:50	37 54 N	31 10 W	Common	Definite	2	N	T	2	
CL 08	30/04/98	07:10	38 29 N	28 46 W	Common	Definite	1		T	3	
GC 01	18/05/98	07:30	32 57 N	42 49 W	Common	Definite	8	N	T, B	4.5	
GC 02	20/05/98	06:00	34 41 N	38 51 W	Common	Definite	10	Y	T, B	1	
GC 03	20/05/98	08:30	34 50 N	38 43 W	Common	Definite	6	N	T, B	1.5	
GC 04	23/05/98	10:00	37 19 N	34 17 W	Sperm	Possible	2		T	1	Three cables from vessel. No marks seen.
GC 05	23/05/98	13:30	37 20 N	34 07 W	Striped	Definite	20		T	1	Very active, leaping along out of the water.
GC 06	24/05/98	07:00	37 19 N	33 29 W	Orca	Definite	6	Y	T	1	
GC 07	25/05/98	01:30	37 37 N	32 34 W	Whale	Possible	10	N	M	0	With boat for 1.5 hrs. Speed 2 knots approx. From turbulence and noise, seemed like small whales.
GC 08	25/05/98	12:00	37 43 N	32 05 W	Striped	Probable	10		M, T	0	
GC 09	26/05/98	04:45	37 56 N	31 05 W	Common	Definite	10		T, B	0	
GC 10	02/06/98	12:15	38 21 N	28 19 W	Common	Definite	75		M, F	2	Many groups all along the Pico shore.
GC 11	02/06/98	19:00	38 13 N	27 51 W	Dolphin		8		T	4	Spotted - seemed bigger than common.
GC 12	13/06/98	03:45	38 36 N	25 40 W	Common	Definite	4	Y	M, B	0	Some brief bow-riding and leaping.
GC 13	13/06/98	06:00	38 36 N	25 40 W	Spotted	Definite	4	Y	M, B	0	Some bow-riding and leaping.
GC 14	13/06/98	11:45	39 06 N	25 26 W	Sperm	Definite	1		T	0	Passed 50-60 yards away during refuel.
GC 15	14/06/98	07:50	39 57 N	25 21 W	Common	Definite	9		M, B	1.5	
GC 16	15/06/98	11:45	41 51 N	23 44 W	Striped	Probable	9		T, B	3	Seemed very active, and noticeably fast.
GC 17	16/06/98	18:00	43 50 N	21 31 W	Sei	Possible	1		T	4	Blows and large areas of 'flattened' water seen. No actual whale seen.
GC 18	19/06/98	06:20	47 51 N	16 48 W	Striped	Probable	12		T, B	3	Very acrobatic and fast swimming.
GC 19	20/06/98	00:10	47 35 N	14 45 W	Striped	Possible	15		T, B	1.5	Very dark night. Either striped or common.