

OBSERVATIONS OF FIN WHALES (*BALAENOPTERA PHYSALUS* L., 1758) AROUND THE CENTRAL NORTH ATLANTIC ISLANDS OF THE AZORES AND MADEIRA

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ARQUIPÉLAGO



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Observations of fin whales made from a research boat and by land-based whaling look-outs around the Azorean and Madeiran islands are reported. Fin whales are present in the Azores during the early part of the year April-June, but seem to be rare; they are absent from July to October. No information is available on their occurrence between October and April. Less information is available on fin whale abundance from Madeira, however some interesting observations of a concentration of feeding fin whales encountered there during May are presented.

GORDON, JONATHAN C.D., LISA STEINER & HELEN R. MARTINS 1995. Observação de rorqual comum (*Balaenoptera physalus* L., 1758) ao largo das ilhas dos Açores e Madeira (centro do Atlântico Norte). *Arquipélago*. Ciências Biológicas e Marinhas 13A: 79-84. Angra do Heroísmo. ISSN 0870-6581.

Referem-se os avistamentos de rorquais comuns a partir de um navio de investigação e vigias em terra ao largo das ilhas dos Açores e Madeira. Apesar de raros, os rorquais comuns estão presentes nas águas dos Açores entre Abril e Junho, e ausentes de Julho a Outubro. Não existe informação disponível acerca da sua ocorrência entre Outubro e Abril. Para a Madeira a informação sobre a abundância desta espécie é ainda mais escassa. Contudo apresentam-se algumas observações interessantes sobre uma concentração de rorquais em alimentação no mês de Maio.

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INTRODUCTION

For the purpose of management, the International Whaling Commission considers there to be seven different stocks of fin whales within the North Atlantic. Under this scheme the Azores are included within the East Greenland-Iceland stock, though in fact there are few data to support this division as most observations of the

behaviour and biology of this species in the central and eastern North Atlantic are restricted to the whaling grounds. Large scale sightings surveys have been conducted in the North Atlantic during the summer months by countries recently involved in fin whaling (Norway, Iceland, Faeroes and Spain). Examples include the NASS-87 and NASS-89 surveys (SIGURJÓNSSON et al. 1991; SANPERA & JOVER

1989). The coverage of these surveys has been well to the north and east of the Azores. French sightings surveys for cetaceans were conducted during the Summer of 1993 to assess the impact on cetaceans of the bycatch from the driftnet fishery for albacore tuna. The area covered extended from a point approximately 43°N 20°W to the north and east, into the Bay of Biscay. Fin whales were found to be widely distributed with an abundance of 0.037 whales per n.mile² (GOUJON et al. 1995). To the east of the Azores, off the Iberian peninsular, fin whales were hunted in the past by Spanish and to a lesser extent by Portuguese whalers (SANPERA & AGUILAR 1992), and also during the 1970s by illegal "pirate" whalers (BEST 1992). Catches by Spanish and Portuguese shore based whalers were mainly made east of 11°W while the pelagic "pirate whalers" made catches as far west as 13°W. There seems to be a summer feeding aggregation of fin whales in these waters which the IWC considers to be part of a Spanish-Portuguese-British Isles stock. Studies of both morphological differences (JOVER 1992), and enzyme and DNA variation (ARNASON et al. 1992) suggest that there is a significant degree of reproductive isolation between Icelandic and Iberian fin whales.

To the west of the Azores fin whales were hunted commercially off both Newfoundland and Nova Scotia earlier in the century. Large scale sightings surveys along the N.E. seaboard of the United States, undertaken as part of the CETAP program, show fin whales to be widely distributed. They were particularly abundant in the region around Cape Cod, and were most common during the summer months (HAIN et al. 1992).

CLARKE (1981) concluded that fin whales are rare in the Azores; he cites two earlier authors who considered them uncommon and mentions only two sightings by one of the land based lookouts (vigias) in ten years of watching. We are not aware of any previous published reports of fin whales from Madeira.

In recent years the International Fund for Animal Welfare has conducted a number of

research cruises in the waters around the islands of the Azores and Madeira. Data have been collected for all cetacean sightings and these have included some observations of fin whales from this region which may be an area into which the fin whales, found in the higher North Atlantic latitudes during the summer months, migrate in the winter. The vigias who spotted sperm whales for the Azorean whaling industry also sighted and recorded fin whales. Data from records kept by vigias during the last years of whaling are presented here.

METHODS

Boat Observations

Observations were made from "Song of the Whale" a 46' auxiliary-powered ketch. While at sea, the crew of "Song of the Whale" kept a good, though non-systematic, watch for cetaceans. Watch was most often kept from the deck (height of eye c 3 m) though in calm conditions this would be supplemented by an observer in a small crow's nest c 12 m above sea level. The team's reliance on acoustic techniques to find and follow sperm whales (which were the main subjects of the study) is likely to have resulted in reduced levels of visual effort compared to vessels conducting traditional visual surveys. Usually the boat would be diverted to investigate cetacean sightings. Photographs were taken if necessary to assist with species identification and notes of observed behaviours, and of various environmental variables were made. Positions were recorded from a satellite navigator.

Vigia Data

Vigias were the principal means of finding sperm whales for the Azorean whaling industry. Typically, a single look-out would keep watch, using powerful binoculars, from a permanent shelter at a vantage point. Watching would start early in the day and it was during the morning

hours that conditions for sightings were believed to be best. Watching was not attempted on days when conditions for sightings were particularly poor. Once sperm whales were sighted the vigia would alert the boat crews by radio and would help to guide them to the exact location of the whales and to predict their diving behaviour and movements (see MARTIN & ÁVILA de MELO 1983 and CLARKE 1954, for more detailed descriptions of traditional whaling activities). Towards the end of the whaling era in the Azores vigias were encouraged to fill in forms summarising each day on which they watched for whales. For this study 428 days of data recorded between April and October during 1982-84 at 5 vigia stations on the islands of Faial and Pico (Fig. 1) have been analysed.

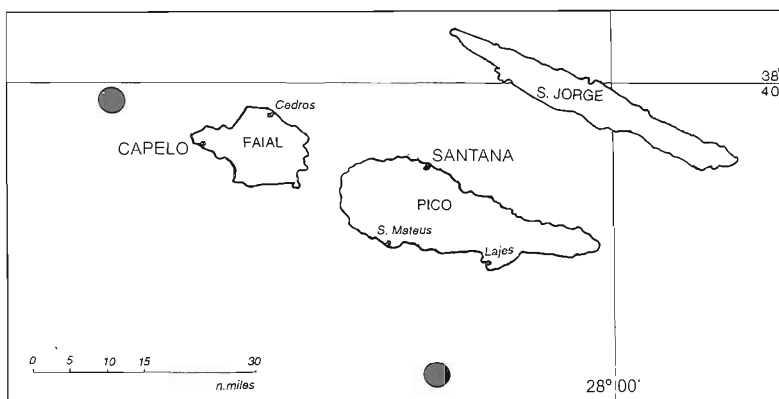


Fig. 1. Sightings of fin whales (●) around the central islands of the Azores made from "Song of the Whale" and the positions of vigia stations for which data is available.

Data recorded included the time of starting and finishing the watch, information on the weather and visibility, and on the species of whales seen. Vigias distinguished between sperm whales in various types of group, Risso's dolphins, pilot whales and fin whales. As these observations were typically made at ranges of several miles the possibility of confusion in identification, at least amongst the roquals, must exist. Minke whales, *Balaenoptera acutorostrata*, (CLARKE 1981), and sei whales, *Balaenoptera borealis* (GORDON et al. 1980) have been reported from the Azores.

RESULTS AND DISCUSSION

Azores

"Song of the Whale" was in the Azores from early June until September in 1988, 1989 and 1991. In 1990, 1993 and 1995 fieldwork in the Azores began later in the season. Table 1 shows that fin whales were often sighted in May and June during passages from UK to the Azores (Region AT in Table 1). Fin whales were not seen during return passages from the Azores to UK during September. In the Azores the greatest amount of research effort has been exerted in the months of July and August, and the best working

conditions also occurred in these summer months. However, the few observations of fin whales in the Azores were in June. This matches the experience of other knowledgeable yachtsmen in the Azores. For example the German yacht *Foftein* filmed whales in the Azores through the summers of 1990, 1991 and 1992 but the only sightings of fin whales were in June (Dieter Paulman, pers. commn)

This trend is also shown by the vigia data with sightings of fin whales per unit effort falling off later in the season and no fin whales at all being seen after the 9th of June. One index of sightings conditions is the average range at which sightings of sperm whales were made. The better the conditions the greater the average range should be. As can be seen from Table 2 these ranges were higher between July and October than between April and June, as might be expected from seasonal weather patterns. Thus poor sightings conditions could not have been a factor in the lack of fin whale sightings later in the year. All the sightings of fin whales were

made in 1984. However, in 1982 data were only collected from August onwards. Only the vigias at Capelo (Faial island) and S.Mateus (Pico island) recorded sighting fin whales. Vigias at Santa Anna and Lajes (both Pico) were not active during the early part of the year but the vigia at Cedros (Faial) was. The fact that he saw no fin whales may be indicative of a paucity of fin whales immediately to the north of the islands.

These data suggest that fin whales are present early in the year but are absent through the summer. There is no information on their presence during the winter months between October and April. Whether they remain in this area for any length of time or are simply passing through on migration is not known. The lack of any extensive continental shelf or known upwellings in this region does suggest that it would not be a profitable feeding area for them.

Madeira

"Song of the Whale" has visited Madeira only once, from May to July, 1990. On this occasion some observations of fin whales were made in an area between the main island of Madeira and Porto Santo, Fig. 2.

Fin whales were first encountered at $33^{\circ}1.9'N$; $16^{\circ}24.7'W$, on 19/5/90. 4 fin whales in two groups of two were observed at 15:40h and the main group of about 10 whales, mostly in groups of 2-3 and spread out over about two miles, was encountered at 16:30h and observed for 2 hours. These whales were evidently feeding. Surface skimming, side-swimming and lunge-feeding behaviours were observed. Whales in groups typically showed co-ordinated behaviour. Swimming in the same direction and at the same speed about 5 m apart. Their prey appeared to be patches of reddish-coloured euphausiid crustaceans which occurred in dense surface drifts 1-1.5 m wide and 100-400 m long. Patches were 5-100 m apart. Samples of crustaceans collected from these with a dip net were identified as *Meganyctiphanes norvegica* by Dr Steven Hay, DAFS Marine Lab, Aberdeen.

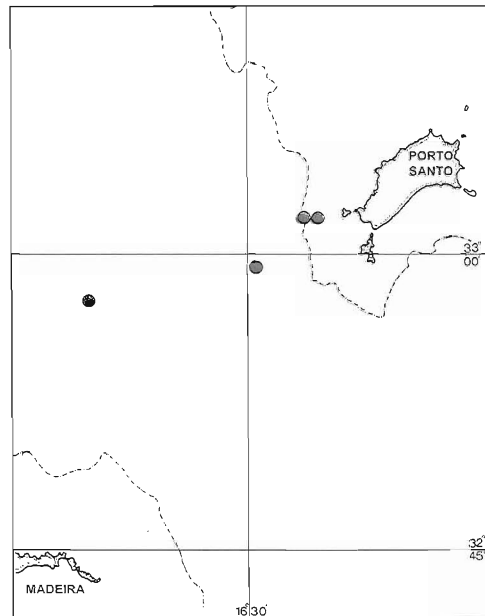


Fig. 2. Positions of sightings of fin whales (●) made from "Song of the Whale" during May 1990, between the main island of Madeira and the island of Porto Santo. (---) 1000 m depth contour.

Meganyctiphanes norvegica is a common prey species for N. Atlantic fin whales during the summer months (GASKIN, 1982). No substantial fish schools were seen although it is possible that fish attracted by these dense concentrations of crustaceans were also being taken by the whales.

Fin whales were encountered again twice, in much the same area, on 25/5/90. The first encounter at 9:16h ($33^{\circ}1.8'N$; $16^{\circ}26.4'W$) was with a group of three, one of which was recorded as being a calf on account of its size note that this is very close to the position at which the first sightings were made). This group was followed for 1h 15min. They were moving quickly and were not easy to approach. One individual breached twice in succession and was observed to completely clear the water and re-enter it head-first. The second group observed at 15:15h ($32^{\circ}57.7'N$; $16^{\circ}40.1'W$) also comprised three individuals and included one small animal thought to be a calf. No feeding behaviour were observed on either occasion.

Table 1

Observations of fin whales from "Song of the Whale" in the North Atlantic.

Date	Time	Latitude N	Longitude W	Reg'n	Group Size	Heading	Notes
17/5/88	19.00	42° 25'	21° 42'	AT	2		Swimming together ca. 5 m apart making shallow dives, 2-4 mins
5/6/88	18.16	38° 39'	29° 08'	AZ	3	240	Fast swimming (7 knots) side lunges and bell-roll observed.
21/6/88	18.57	38° 20'	28° 23'	AZ	2	280	
14/5/89	21.10	47° 01'	09° 09'	AT	2	180	One whale much smaller than other
16/5/90	07.00	39° 09'	13° 21'	AT	1	90	
16/5/90	15.40	38° 38'	13° 45'	AT	2	270	
18/5/90	11.45	35° 20'	14° 57'	AT	3		One whale smaller, poss. calf.
19.5.90	15.40	33° 02'	16° 25'	MA	2		4 whales in 2 groups of 2.
19.5.90	16.30	32° 59'	16° 30'	MA	10	var	Feeding in groups of 2/3.
24/5/90	19.16	33° 02'	16° 26'	MA	3	180	Rapid swimming and 2 breaches.
							One poss. calf
25/5/90	15.15	32° 58'	16° 40'	MA	3	150	One poss. calf.
31/5/91	13.15	43° 49'	20° 03'	AT	2		Swimming with pod of c10 orcas
2/6/91	16.10	41° 33'	24° 21'	AT	2	60	
27/6/91	16.10	41° 30'	22° 55'	AT	1	90	Seen with c10 pilot whales
27/6/91	19.00	41° 26'	23° 04'	AT	2	270	

Fin whales observed from "Song of the Whale". Regions are: AT Atlantic Ocean on passage to Azores or Madeira; AZ Azorean waters; MA Madeiran waters.

Table 2

Summary of Azorean vigia data

	April	May	June	July	Aug	Sept	Oct
Number of days of watching	12	62	85	43	116	87	22
Average estimated range to sperm whale sightings (miles)	11.0	10.7	13.6	10.6	13.3	13.1	11.6
Number of fin whales observed	2	7	2	0	0	0	0
Fin whales per day	0.17	0.11	0.023	0	0	0	0

Summary of observations by vigias from the central group of islands in the Azores during 1982-1984. Average estimated range to sperm whales sighted are given as an indicator of visibility.

"Song of the Whale" returned to this general area on 9/6/90 in good sightings conditions but no fin whales were observed.

Finding fin whales feeding in this area at this time of the year was unexpected. We were unable to learn of any regular sightings of fin whales by local seamen and the extent and regularity of utilisation of this area by fin whales remains unknown.

CONCLUSIONS

Fin whales have been observed in Azorean waters, though infrequently, from April until early-June. They seem have been totally absent later in the Summer. Fin whales may well be present earlier in the year but so far there has been little observational effort in the winter and spring months. Observations of a feeding concentration of fin whales off Madeira in May deserve further investigation. They may be indicative of a spring feeding area for fin whales.

REFERENCES

- ARNASON, A.J., A.K. DANÍELSDÓTTIR, R. SPILLAERT, J.H. SIGURDSSON, S. JÓMSDÓTTIR, A. PÁLSDÓTTIR, E.J. DUKE, P. JOYCE, V. GROVES & J. TROWSDALE 1992. A brief review of Protein and DNA marker studies in relation to the stock identity of fin whales (*Balaenoptera physalus*) from Iceland and Spain. *Report of the International Whaling Commission* 42: 701-705.
- BEST, P.B. 1992. Catches of fin whales in the North Atlantic by the M.V. Sierra (and associated vessels). *Report of the International Whaling Commission* 42: 697-700.
- CLARKE, R. 1954. Sperm whales in the Azores. *Discovery Report* 26: 281-354.
- CLARKE, R. 1981. Whales and dolphins of the Azores and their exploitation. *Report of the International Whaling Commission* 31: 607-615.
- GASKIN, D.E. 1982. *The Ecology of Whales and Dolphins*. Heinmann, London. 459pp.
- GORDON, J., L. STEINER, & J.M. GONCALVES 1990. Sei whales (*Balaenoptera borealis*) encountered in the Azores: a new record for the region. *Arquipélago. Life and Marine Sciences* 8: 97-100.
- GOIJON, M., J. FORCADA, & G. DESPORTES 1995. Fin whale abundance in the eastern temperate North Atlantic for 1993. *Report of the International Whaling Commission* 45: 287-290.
- HAIN, J.H.W, M.J. RATNASWAMY, R.D. KENNEY, & H.E. WINN 1992 The fin whale, *Balaenoptera physalus*, in waters of the Northeastern United States Continental Shelf. *Report of the International Whaling Commission* 42: 653-669.
- JOVER, L. 1992. Morphometric differences between Icelandic and Spanish fin whales (*Balaenoptera physalus*). *Report of the International Whaling Commission* 42: 747-750.
- MARTIN, A.R. & A.M. ÁVILA DE MELO 1983. The Azorean sperm whale fishery: a relic industry in decline. *Report of the International Whaling Commission* 33: 283-286.
- SANPERA, C. & A. AGUILAR 1992. Modern whaling off the Iberian Peninsula during the 20th Century. *Report of the International Whaling Commission* 42: 723-730.
- SANPERA, C. & L. JOVER 1989. Density estimate of fin whales in the North Atlantic from NASS-87 Spanish cruise data. *Report of the International Whaling Commission* 39: 427-429.
- SIGURJÓNSSON, J., T. GUNNLAUGSSON, P. ENSOR, M. NEWCOMER, & G. VÍKINGSSON 1991. North Atlantic Sightings Survey 1989 (NASS-89): Shipboard surveys in Icelandic and adjacent waters July-August 1989. *Report of the International Whaling Commission* 41: 559-571.

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