AN ANALYSIS OF FOUR LARGE ACCUMULATIONS OF SPERM WHALES OBSERVED IN THE MODERN WHALING ERA

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ABSTRACT

The phenomenon of large accumulations of sperm whales has been reported only occasionally in the modern whaling era. This paper details four such observations and it is suggested that the available evidence does not strongly support the previously advanced explanations viz. that the accumulations are due to migrations towards feeding or breeding grounds or are the result of social disruption arising from whaling operations.

INTRODUCTION

The occasional occurrence of large numbers of sperm whales was reported by open-boat whalers in the sailing era and was termed "making a passage" (Bennett, 1840; Bullen, 1902). Colnett (1798) considered that sperm whales, observed "making a passage" towards the Galapagos, were going there to breed. This paper discusses four sightings of large numbers of sperm whales made in this century. In view of the relative rarity of such reports it is considered opportune to detail them in full.

REPORTS

Tomilin (1936) noted that he had received a report from Otto Kraul who, in 1912–13 between latitudes 42°–50°S off the Patagonian coast, encountered a colossal herd of sperm whales. They numbered 3,000–4,000, were of both sexes and included calves and juveniles. Kraul, who said this herd was the largest he had ever seen, had extensive whaling experience both as a gunner and expedition manager in both hemispheres and was one of the founders of modern German whaling (Tønnessen and Johnsen, 1982).

The following letter, from William D. Boyer, the third officer of the steamer *Daulton Mann*, was published in *Natural History* (Boyer, 1946):

> During a recent voyage along the west coast of South America this vessel encountered an unusually large school of sperm whales. They seemed to

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be, as far as we could determine, in some sort of mass migration. At the suggestion of the ship's Captain, who has sailed this coast for many years and has seen nothing that could compare with this, I shall describe what we observed.

On the morning of August 28, 1945, we were northbound off Aguja Cape, Peru approximately 6°S, 82°W. Shortly before 9.00 a.m. individual groups of from two to six sperm whales were seen dotting the visible surface of the ocean. They were all travelling south. A short while later the number of groups increased until the entire ocean, to all visible limits of the horizon, seemed spotted with them. The sum total was a school of gigantic proportions – all headed south. It took the vessel nearly an hour to travel through the main body of the school, and the ship was proceeding north at full speed. Several times a collision with a whale was narrowly averted, as they apparently held little fear of the ship and as often as not would stay on the surface rather than sound. This afforded close inspection and positive identification of the whales.

During the remainder of the morning small groups or single straggling whales were seen, the last of them being sighted shortly after noon. It is impossible to estimate the number of whales in the school, because the east and west limits could not be ascertained. However, approximately 400 to 600 whales were to be seen at one time from the centre of the school and it can safely be assumed that the entire school consisted of well over 1,000 whales.

I hope that this information may be of interest to you.

I might add that among all the professional seamen aboard, no one had ever seen a similar sight.

During whaling operations off Durban, South Africa in July 1972 aerial searchers reported:

A most unusual trek of sperm whales was encountered on the 29th of this month. At 0650 that day, two big sperm were found by W26. Searching to the east of the catchers chasing, the aircraft at 0735 found 14 medium sized sperm 15 miles from the catchers, at 105 degrees from Cooper light, 60 miles. Minutes later, the aircraft saw three big sperm 5 miles south of that position. After directing the catchers, the aircraft began a systematic search in the vicinity and soon found three flocks of small sperm. All the whales were trekking between 020 and 045 degrees at speed.

During the following two hours, the aircraft found sperm all along a line running almost parallel to the shelf and extending 40 nautical miles from the position of the aircraft sighting at 0735. This fantastic line of whales comprised 19 separate sightings, with some of the small sperm herds consisting of over 50 whales. In nearly every large flock there were from one to three big bulls, while most flocks included cows with calves.

Our estimate of the total number of whales in this trek is 600, of which 100 were considered to be under catchable size. These figures have been

TABLE 1. COMPARATIVE DETAILS OF THE FOUR SPERM WHALE SIGHTINGS

Location	Patagonia	Aguja Cape	Durban	Tasman Sea
Date	1912–13	28 August 1945	29 July 1972	25 February 1978
Lunar phase	Unknown	5 days after full moon	3 days after full moon	2 days after full moon
Observation method	Ship	Ship	Aerial	Ship
Effect of observation method on whale behaviour	Not recorded	None	None	None
Relation to whaling operations	Unknown	No	Yes	No
Directional uniformity	Not recorded	Yes	Yes	Yes (with exception of one individual)
Estimated numbers	3,000–4,000	1,000	600–700	Not estimated

confirmed by the catch Leader. In this connection, we feel it is relevant to draw attention to the fact that on many occasions up to 20 percent more whales than the number sighted by the aircraft come to the surface when the catchers reach the whales and start chasing. This applies particularly to herds of small sperm, so that the estimated 600 whales seen on the 29th could represent an actual total of over 700.

Peter S. Cosgrave a marine engineer of Sydney, Australia observed a large concentration of sperm whales in the Tasman Sea and his sighting was reported by Paterson (1981):

I was bringing a 60 foot twin-diesel vessel from New Zealand to Sydney. On the morning of 25 February 1978, in calm, clear conditions which gave perfect visibility, we sighted whales spouting from horizon to horizon. Distance of observation varied from 10 feet to the horizon and all but one appeared north-bound. The ones closest to us appeared to be mostly in the 25-35 feet range, their colour was a light mid-grey with the dorsal fin somewhat aft of amidships. We continued crossing this stream of whales for the greater part of the day and while I did not time this precisely it covered a period of some seven to eight hours.

Our course was from east to west and our position by observation was 36°S, 156°E. The sighting continued until after we had passed 155°E, indicating that the stream was some 70 miles in width. This position, as you will observe on a chart, is approximately 240–250 miles east of Jervis Bay. I have spent a good deal of time at sea around the world and never before or since have I seen such a concentration of whales. I could not attempt to estimate the numbers; while naturally they were not packed like cattle in a yard, I can only say that at any time one chose to make a 360° sweep one would sight 10 to 18 spouts simultaneously.

In each report, irrespective of the observer's occupation, the impression is conveyed that the sightings were a dramatic event. The sightings were widely separated in time and before discussing their possible significance it is useful to tabulate the comparative data (Table 1).

DISCUSSION

Reports of large accumulations of sperm whales, detailed by Caldwell Caldwell and Rice, (1966) have been relatively uncommon given the world-wide extent of sperm whaling in the last two hundred years. It is possible that details of such sightings have been recorded, but not published. In that regard, it is of note that two of the four reports listed above came from mariners unassociated with the whaling industry. The numerical estimates of open-boat whalers may have been limited because of their pre-occupation with whaling operations or attempts thereat in vessels whose courses were dictated in part by prevailing winds.

In samples of 766 and 1,397 schools of sperm whales, the maximum school sizes reported were 120 (Ohsumi, 1971) and 200 (Gambell, 1972) respectively, while Best (1979) noted that sightings on whaling grounds of school sizes in excess of 100 had become uncommon. It is necessary to consider if the large numbers in the four sightings in this paper represented an unusual aggregation of normal schools or the formation of a super-school, with loss of normal social organization. The sighting reports will be examined to see if they match earlier suggestions that such events were due to mass migration associated with breeding or feeding or to disruption of normal social groupings because of whaling operations.

The Durban sighting, recorded by aerial observers cooperating with whale chasers, is understandably the most detailed with regard to school composition. It appears that there was an accumulation of normal sized schools rather than the formation of a super-school. Comments by the observers such as "a most unusual trek" and "fantastic line of whales" suggest that the events were not those expected during whaling operations, even though sperm whales had been caught off Durban since 1912 and the spotter company had been operating there since 1954. There is no indication if the sighting off the Patagonian coast was associated with whaling operations but those off Aguja Cape and in the Tasman Sea were not. However, large catches of sperm whales, including almost 15,000 animals by pelagic fleets (Garrett, 1980), had been taken off the coast of Peru from 1936 to 1943. Nevertheless, the rarity of such sightings suggests that even if social disruption is the cause, its effects could only be short-lived.

The sightings occurred within latitudes where nursery and harem schools (Ohsumi, 1971) could be expected, although the three dated records occurred outside the peak of the breeding season (October to December) in the southern hemisphere (Best, Canham and Macleod, 1984). It is unlikely therefore that

the whales were massed for the purpose of migration to a breeding ground. Details of the observation time off the Patagonian coast are lacking but the whales in the other reports were observed for some hours only and their destinations were not determined.

Holm and Jonsgård (1959) analysed the extensive data available from Norwegian sperm whaling operations in Antarctic waters and noted that catches were greatest near oceanic banks at the phases of new and full moon when greater amounts of squid may have been available. Catches were lowest in the period of the waning moon. A daily catch was considered to be large if 30-40 whales were taken and there was no report of large schools seen by the Norwegians in Antarctic waters during the years 1950-1956.

In the three reports of known date in the present study the observations were made at intervals of two, three and five days after the day of full moon. (The phases of new and full moon comprise seven days, three days before the moon is new or full, the day of new or full moon and three days after.) The steady, uni-directional movement of the whales during the periods of observation suggests that they were not likely to be engaged in feeding.

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