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CURRENT STATUS OF THE MINKE WHALES AND CONFLICTS OF INTEREST

K. V. Singarajah

ABSTRACT. *Minke whales – the rorqual group of the family Balaenopteridae – are widely distributed and constitute an important major harvestable living resource of the sea. Recently, the Antarctic minke whale population has been estimated to be between 150,000 and 300,000. Populations being dynamic entities, the size of the minke whale population has been changing. Currently , the minke whale population in the Antarctic has been claimed to have increased considerably. However, the minke whale stock arriving off Brazil could be regarded as only a small discrete unit of breeding stock and an integral part of the Brazilian natural resource. Data analysis based on the past 21 years shows that this stock is relatively in a steady state, but with only a few annual fluctuations which are around a constant mean value; and these departures are attributable both to environmental conditions and the local operational parameters. Further, the analysis of overall data does not suggest any decline in the Brazilian stock and a MSY at about 58.5% can be taken without depleting the stock, provided no dramatic changes occur in the native Antarctic habitat where the minke whales return to feed. This would allow Brazil a carefully controlled rational utilization of this potentially valuable sea resource since enough exploitable numbers of minke whales have been estimated to be available for Area II. The current arguments of the conflicts between the Pro – and Anti-whaling groups are also briefly discussed.*

Laboratório de Biologia Marinha e Fisiologia Comparada, Departamento de Sistemática e Ecologia, CCEN, Universidade Federal da Paraíba, João Pessoa, Pb

INTRODUCTION

Whales are an important renewable living resource of the sea. Like other Cetaceans, minke whales are wholly aquatic and of considerable biological interest. They belong to the rorqual group of the family Balaenopteridae and live in widely divergent habitats. With the decline of the larger species of whales, the minke whales have now become the potential source of protein rich food and useful oil, and for the development of many new industrial enterprises. This paper brifly deals with the current status of minke whales, particularly in relation to Brazil.

CURRENT STATUS

Populations are dynamic entities and have been constantly changing in size. Minke whales in the Antarctic have been claimed to be increasing and are now more abundant as they were in 1910 (FAO, 1981). On the other hand, no accurate assessment is available on the total population of minke whales. A fundermental difficulty has been the lack of adequate data. However, since the sixties, many sophisticated mathematical models have been applied to predict the populations, but they have been mostly based on insufficient biological parameters and could hardly correspond with the real situations. Recently, minke whale population has been estimated by a number of authorities (Ohsumi et at, 1970; Ohsumi, 1980; Williamson, 1975; Best, 1979; Chapman, 1979; Holt, 1980; Gambell, 1981) and the best estimates for the Southern Hemisphere seem to be between 150,000 and 300,000 (Watson & Ritche, 1981). The catch statistics for the minke whales in the Southern Hemisphere show that, on an average, about 7124 animals per year were taken; of which Brazil took only 11,9% (Table 1). Along the criteria adopted by IWC, the more recent estimates based on sightings data suggest that there are 34,306 (standard error 3,568) exploitable minke whales available for AREA II (Butterworth & Best, 1982).

STATUS OF MINKE WHALES OFF BRAZIL

Despite Brazil's long sea coast, just over 7,400 km, the continental shelf is rather limited by tophographical and other features and the sea fishery is no longer expanding. The whaling grounds off Brazil constitute relatively a small part of the AREA II (IWC) and covers some $< 15{,}000$ n miles (Singarajah, 1983 a). Since many countries claim their 200 mile economic and strategic zones, the whales off Brazil can be regarded as an integral part of the natural resource and, therefore, more practical to achieve the objectives of management.

However, the minke whales arriving off Brazil can be treated as a discrete unit of the breeding stock. Data analysis based on the past 21 years shows that this stock has remained relatively in a steady state (Singarajah, 1984), but with only a few annual fluctuations which had been around a constant mean value; and these departures are attributable to both environmental conditions and a number of other local pa-

rameters (Singarajah, 1983 b). Further, the overall analysis of the data does not indicate any evidence to suggest that the minke whale population off Brazil has declined. A MSY can be taken around 58.5% (Singarajah, 1984) without depleting the stock, provided that no dramatic changes occur in their native Antarctic habitat where they return to feed. This would allow Brazil a carefully controlled rational utilization of this potentially valuable sea resource since enough numbers of exploitable minke whales are already available for Area II (Fig. 1) as reported recently (Butterworth & Best, 1982).

CONFLICTS OF INTERESTS

PRO–AND ANTI-WHALING FEELINGS: at present two major forces manifest; the proponents who support the continuity of whaling and the opponents who strongly advogate the cessation of whaling altogether. Despite their opposing viewpoints and wide differences, both groups have their own merits and values which must be respected as such. Nevertheless, their basic interests and objectives are in conflict.

Table. 1. Exploitation of minke whale resource; catch *data and the principal whaling nations in Southern Hemisphere.

Whaling season	Countries Brazil	Japan	USSR	TOTAL
1975	1,039			
1974/75		3,499	3,500	8,038
1976	776			
1975/76		3,017	3,017	6,810
1977	1,000			
1976/77		3,950	3,950	8,900
1978	690			
1977/78		2,400	2,576	5,666
1979	739			
1978/79		2,732	2,733	6,204
Total	4,224	15,598	15,776	35,618
Mean	849	3,120	3,156	7,124
%	11.9	43.8	44.3	

* Catch statistics based on BIWS

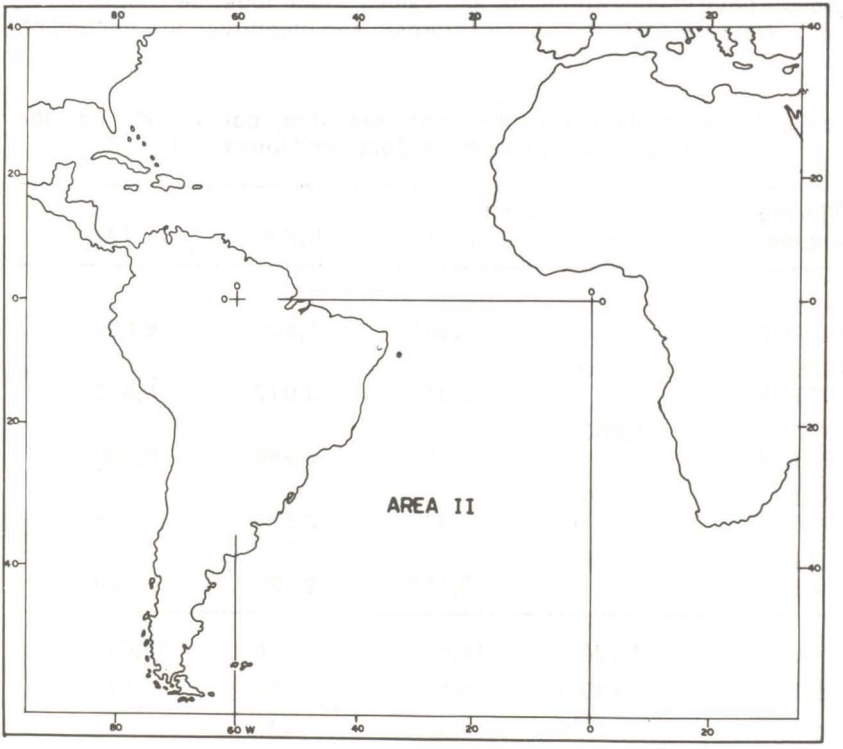

Fig. 1. IWC whaling Area II and the point indicates the whaling area and the distance from the land station.

CONFLICTS OF OBJETIVES

The objectives of pro-whaling group are essentially industrially and socio-economically oriented and represent the views that they have a responsiblity to provide protein rich food for the hungry part of the world and safeguard the employment prospects of the poorer sectors; and that the oil and spermaceti are merely bye-products to use in secondary techonological development as lubricants for the missiles, leather tanning and in the luxury items of lipsticks. Broadly speaking, these objectives fall well within the declared recommendations of the "objective of rational utilization" of marine mammal resources (FAO, 1983).

On the other hand, the pleas of the anti-whaling movement are that the whales are warm blooded aquatic mammals with great aesthetic and evolutionary values and killing them would be an act of cruelty and might lead to extinction of the species, and psychologically and morally wrong to hunt them. Therefore, conservation of ecosystems is necessary and the whales must be saved from extinction.

DISCUSSION

Man's wisdom perhaps had been overshadowed by his greed to indulge in overexploitation of marine mammals resource in the past and, consequently, led to the rapid decline of the larger blue and fin whales; they are now protected species and apparently recovering! Since the proposal by the delegates at the UN Conference on Human Environment at Stockholm in 1972 for a 10-year Moratorium or total ban on whaling, the IWC; wiftly adopted the new mamagement procedure and gradually reduced the quota systems for each species; i.e. that the expressed objective of IWC was to maintain the whales populations at levels of maximum sustained yield (MSY).

As revealed by a recent demographic survey, there are 4.5 billion people living today; every 30 seconds that there are 115 births, 45 deaths and the population grows by 70 people. (Cherfas, 1980). At this rate, it is not surprising, even with restraints, that the world population is likely to be double in 35 years and that science will have a bigger challenge to feed the future population than the progress in has made in putting the man in space.

Food habits are often refined by traditions; for example, there are surplus cattle stocks in India and yet, there are only afew meat eaters because of religious beliefs and cultural traditions. Conversely, Eskimos have depended for generations, since AD 800 (Bockstoce, 1976), on whales and seals for their very survival. Similarly, the Japanese and Russians, who of necessity, claim eating whale meat is the only way to supplement their dietary defficiency of animal proteins.

CONCLUSIONS

In conclusion, the findings show no evidence of depletion of minke whale stock off Brazil rather than a positive growth rate (Singarajah, 1984). Perhaps, of some 76 whale species, the minke whale, *Balaenoptera acutorostrata*, is the least rare in our waters. As seen above, Brazil takes only a relatively samll number of minke whales (11.9%) compared with Japan and USSR. Enough exploitable numbers of minke whales are already available for Area II (Butterworth & Best, 1982). The International Convention of 1946 (Article V, 2, b) requires that regulations with respect to conservation and utilization of whale resource "shall be based on scientific findings". Therefore, there is no sound scientific basis for Brazil to abandon whaling. Furthermore, marine mammals should be regarded as useful food resource for mankind and utilization must be based on "scientific knowledge" without endangering the species (FAO, 1983). If a decision were to be taken for a 10-year moratorium by IWC, by consensus, which is unlikely by major whaling nations of Antarctic, Brazil will readily co-operate and stimulate the implementation of such decision. During this interim period, Brazil could develop a whale-watching tourist industry for recreational and educational purposes using the minke whale resource indirectly, and other alternatives are less likely to replace the whaling industry.

However, in the present state of knowledge about minke whales, perhaps, their population is increasing (FAO, 1981). But, from a population ecology viewpoint, if the population continues to increase, it will eventually reach the equilibrium level or the carrying capacity; and then, the environmental resistance will limit the size of the population to keep in dynamic equilibrium of the natural ecosystem through the density-dependent and density-independent forces. The grestest force that threatens the minke whales today is the commercial exploitation of krills in the Antarctic. Minke whales share the same food as do many other baleen whales. They may be smaller and have faster growth (May, 1976), but the exploitation of both the krills and minke minke are incompatible, and the interests of the two are in conflict. Is it not, therefore, wiser to restrain the top order consumer from competing for krills than consume the more valuable minke whales on a very rational basis ? (See Fig. 2).

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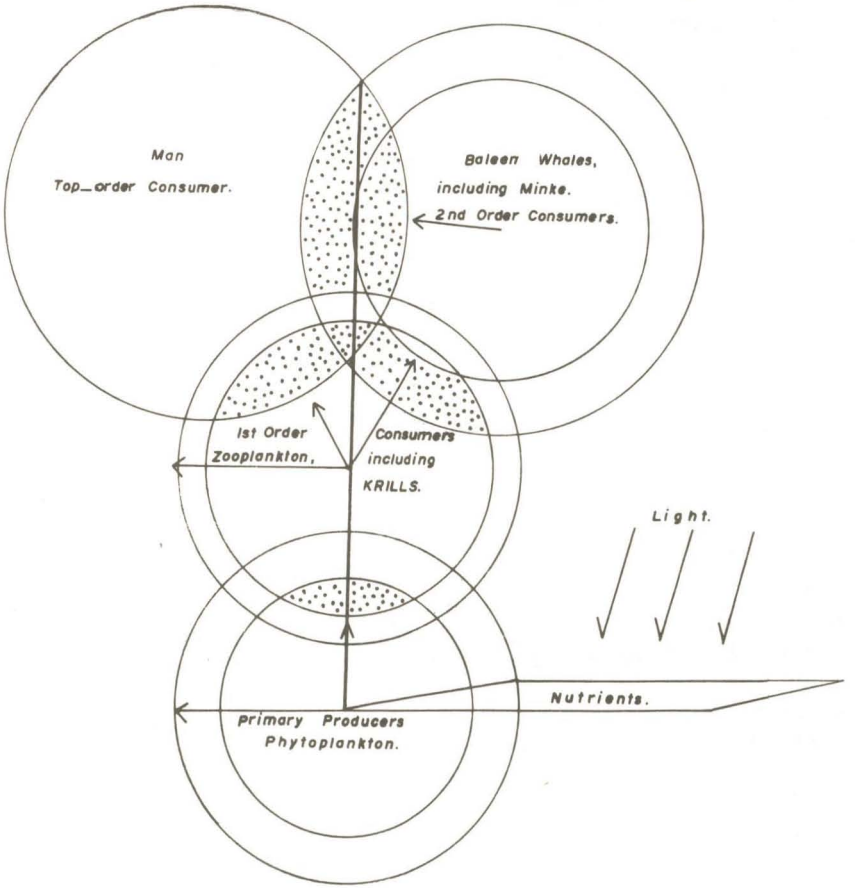

Fig. 2. Energy flow (arrows) and trophic levels in the Antartcic ecosystem in relation to baleen whales. Double circles suggest increased competition.

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