ON THE NORTHERN EXTREME OF THE PACK-ICE EDGE OBSERVED BY WHALING VESSELS IN THE SUMMER OF THE ANTARCTIC SEASONS 1957/58–1962/63

AKITO KAWAMURA*
Whales Research Institute, Tokyo
AND
TERUHIKO FURUNO
Nippon Kyodo Hogei K.K., Tokyo

During the cruise of exploratory fishing and scouting for sei whales by the freezer, Eihō Maru of Hōkoku Suisan K.K. in 1971/72 Antarctic season, one of the authors (A.K.) got acquaintance with Teruhiko Furuno, skipper of one of the whale catchers belonging to Nippon Suisan K.K. that has been sending a couple of whaling fleets to the Antarctic for many years since 1946. Furuno, one of present authors is a well experienced captain in the Antarctic whaling operation, and is very skillful as the skipper of scouting boat. While we had been on high seas in the Southern Ocean, Furuno kindly permitted me to see and reproduce his important data on the northern extreme of the drifting pack-ice which have been observed during the whaling seasons in some Antarctic regions where the whaling has been most intensively conducted through the past several seasons. The present material is solely based on the data recorded by Furuno.

Since its re-establishment of the pelagic whaling operation to the Antarctic Ocean in 1946/47 season onward, Japan has successively sent thirty-one times of whaling expeditions to date. Each expedition during the seasons of 1957/58 to 1962/63 was operated by using six to seven mother ships, each of which usually accompanied about nine to ten catcher boats. In the whaling grounds those catcher boats are generally dispersed widely over the region to be harvested in order to locate the best place as the whaling ground. They scout about the region by looking for the school of whales, and they also try to locate the position of the pack-ice edge as much as possible along the steaming course since it is one of the most important sea conditions for the stable whaling operation.

It may be easy to suppose that each whaling company keeps such kind of data under their control, and usually those data are placed beyond the public use by reason of confidential material only be opened within the companies. Under these circumstances the figures shown in this report are considered one of those ' exhumed ' material showing the location of northernmost extreme of retreating pack-ice during the austral summer. The figures are based on day-by-day reports exchanged between whale catchers worked out for the corresponding seasons. Although the behaviour of the pack-ice in the high Antarctic Ocean is observed rather

* *Present address: Faculty of Fisheries, Hokkaido University, Hakodate, Hokkaido.*

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easily at present by using the artificial satellite systems, the material provided in this report may be of interests for many purposes as the evidence of past years.

Although the material provides only a fraction of knowledge on the movement of pack-ice in time and space, one of distinctions be noted may be found in their simultaneousness in obtaining the positions of the pack-ice at the different localities, *i.e.*, they were located within a relatively short intervals of the days, and this would make ones enable to estimate how fast the pack-ice as indicated by the location of northernmost extreme shifts back and forth. Still more, the material would be helpful for estimating the area of ice coverage as to the environmental conditions for the marine life in the regions such as the figures given by Mackintosh (1970). Apart from these the present data may provide a reference in checking the monthly mean position of the pack-ice edge that was reported previously (e.g. Mackintosh

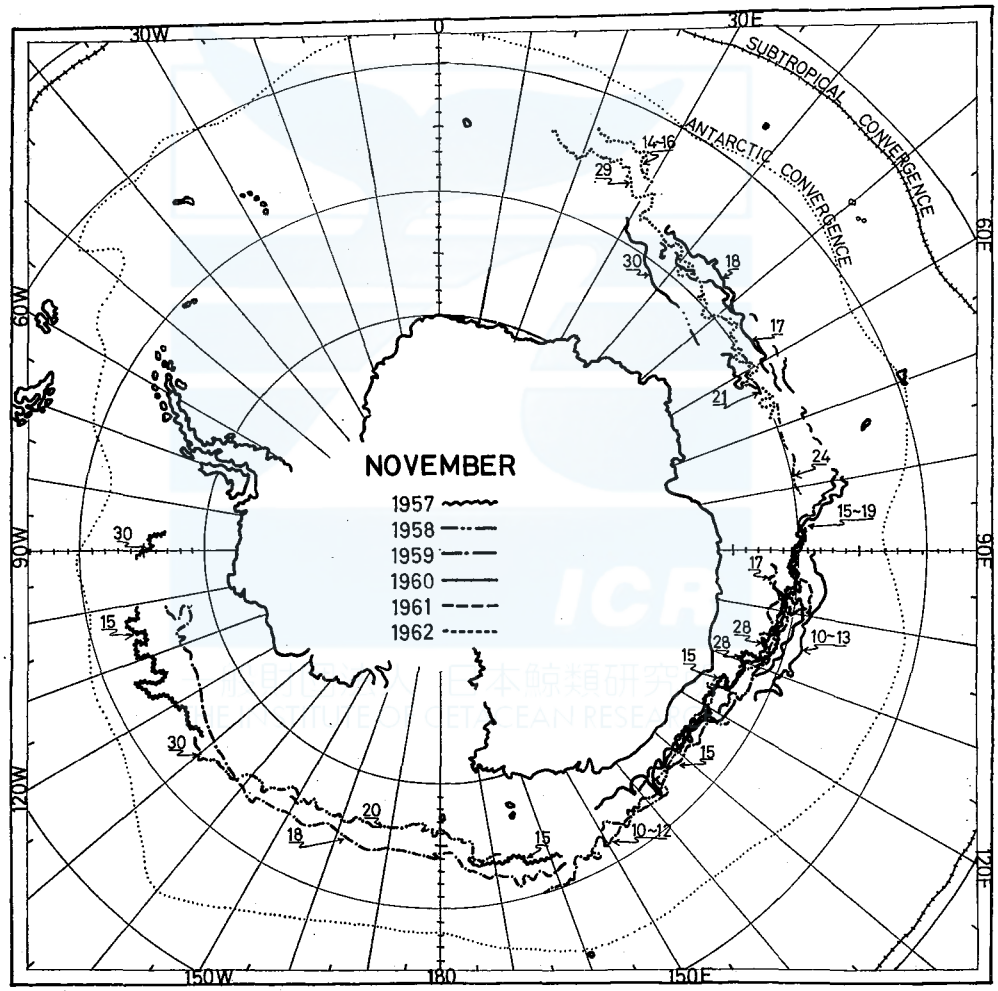

Fig. 1. Northern extreme of the pack-ice edge in November. Numeral in the figure denotes the date of observations.

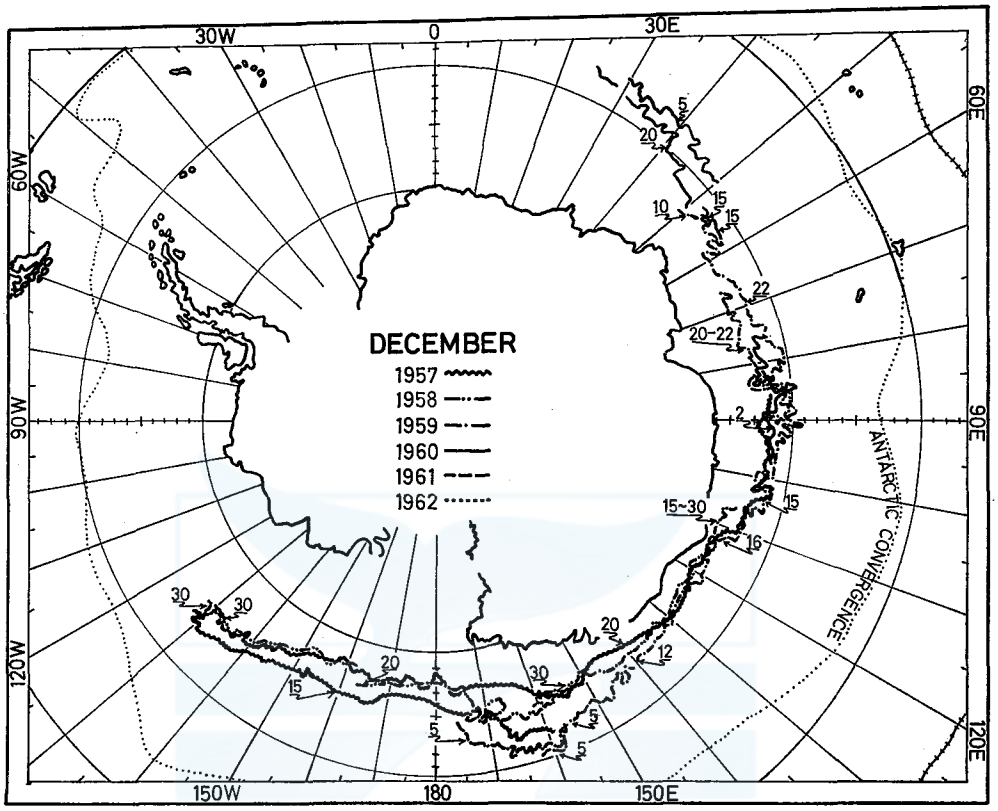

Fig. 2. Northern extreme of the pack-ice edge in December. Numeral in the figure denotes the date of observations.

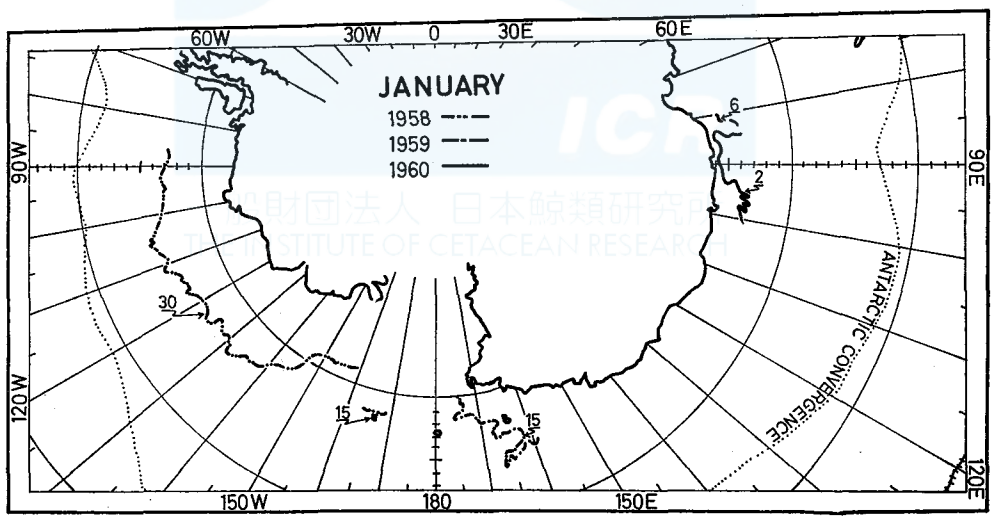

Fig. 3. Northern extreme of the pack-ice edge in January. Numeral in the figure denotes the date of observations.

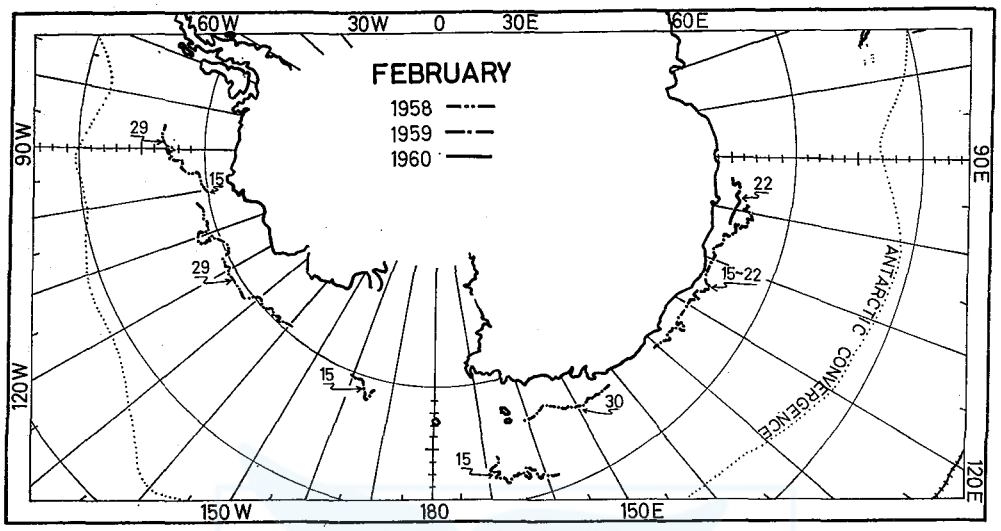

Fig. 4. Northern extreme of the pack-ice edge in February. Numeral in the figure denotes the date of observations.

and Herdman, 1940; Treshnikov, 1967).

Following are the notes based on the communications with Furuno, and these should be took in mind when one consults a matter with the figures demonstrated (Figs. 1–4):

1) The whole data for making those figures were obtained by all whaling boats participated to the Antarctic whaling seasons under the flag of the Nippon Suisan K.K. Two kinds of whaling boats may be distinguished by the purpose of their use; the first one is the whale chaser of actually catching the whales and the second one is the scouting boat which often heads for far distant region in search of possible whaling ground to be harvested in near future. Furuno has been worked out as one of the skippers of those scouting boats throughout the most of his Antarctic life.

2) It was very often or usual that the ship's position was hardly determined for several days or even more than a week due to ill conditioned weather, and therefore there were no other ways but find the ship's position temporarily by the so-called dead reckoning. However, the position was corrected as much as possible whenever the weather permitted to have sun shot.

3) It may be said empirically that the deviation of ship's position due to dead reckoning by rough weather would be usually somewhere around 5 to 6 nautical miles a day from the true position.

4) It was, however, very calm usually in the southern region close to the pack-ice edge, and most of the suggested positions in the figures could be considered correct enough for the purpose of general use.

5) A slight ocean current was noticed in the regions close to the pack-ice, but there was strong current at times when the ship positioned at some distance,

say, 10 to 20 miles off the ice limit though it varied considerably by the place and the seasons.

6) Although there seems to be considerable varieties in the state of pack-ice such as ' open ', ' close ', ' very close ' and so on, there were no specifications in the figures.

7) In the northernmost extreme of tongue-like projection as a shape of pack-ice distribution, the state of pack-ice was usually ' open ' or ' close ' ones. There observed no ' very close ' pack-ice in those above mentioned regions.

8) In the far more southerly region beyond the observed ice limit, it was very often to exist a large ice free waters, especially in the place where the northernmost extreme of the pack-ice greatly expands toward north and forms a tongue-like projection. In these regions there was a good deal of distance between the northernmost ice edge and the second one which lies considerably in the south.

We would like to express our appreciation to Nippon Suisan K.K. and to all personnel who had been participated to the Antarctic whaling operations during the seasons from which our data originated.

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