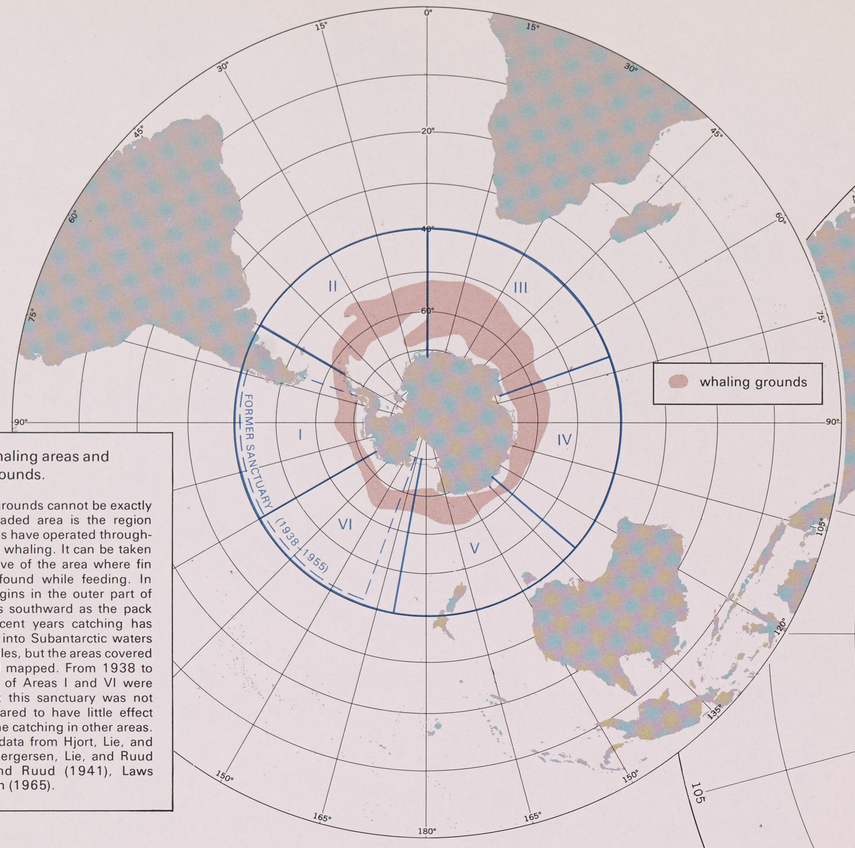
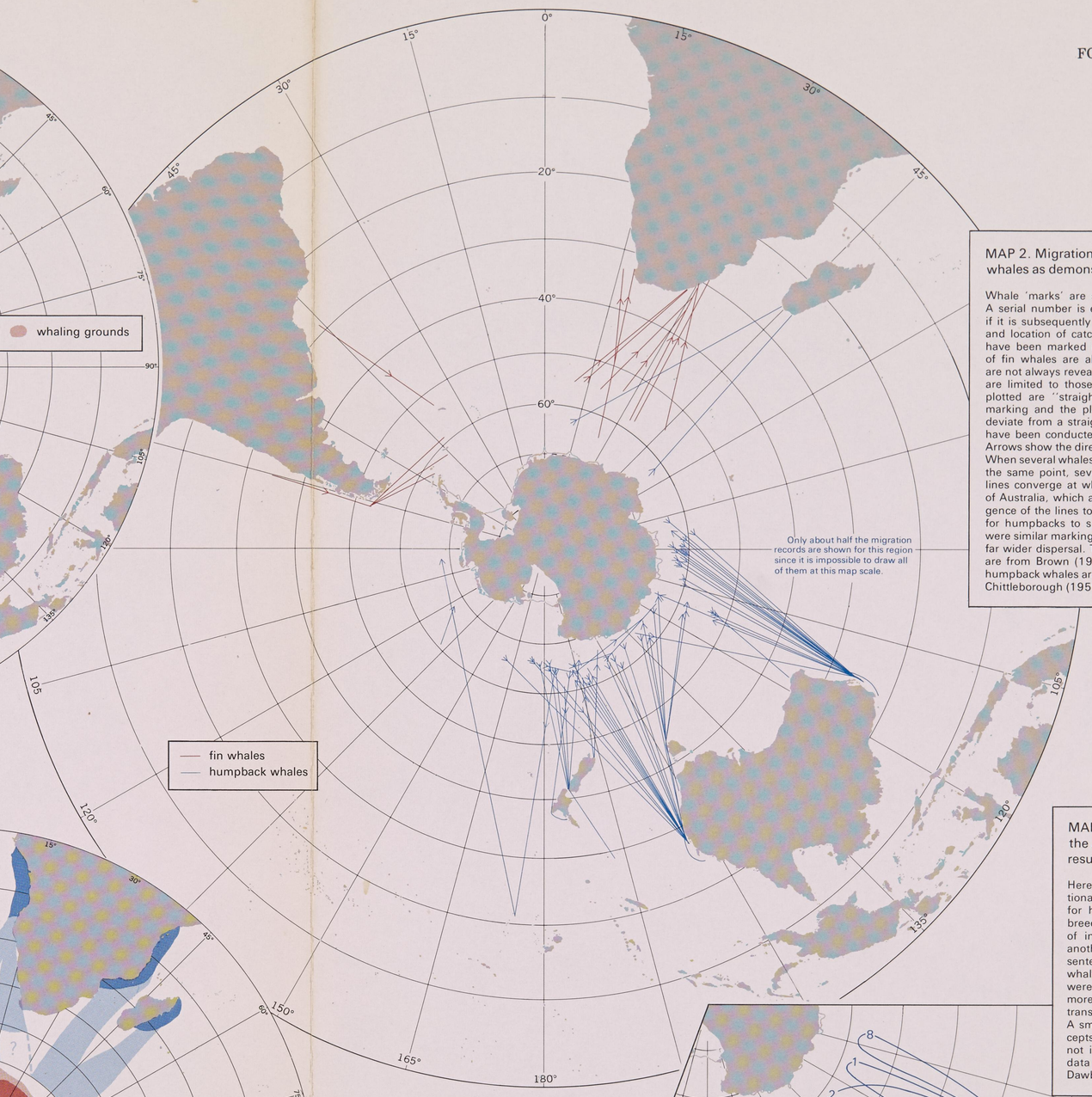
WHALES

(SHEET 2)



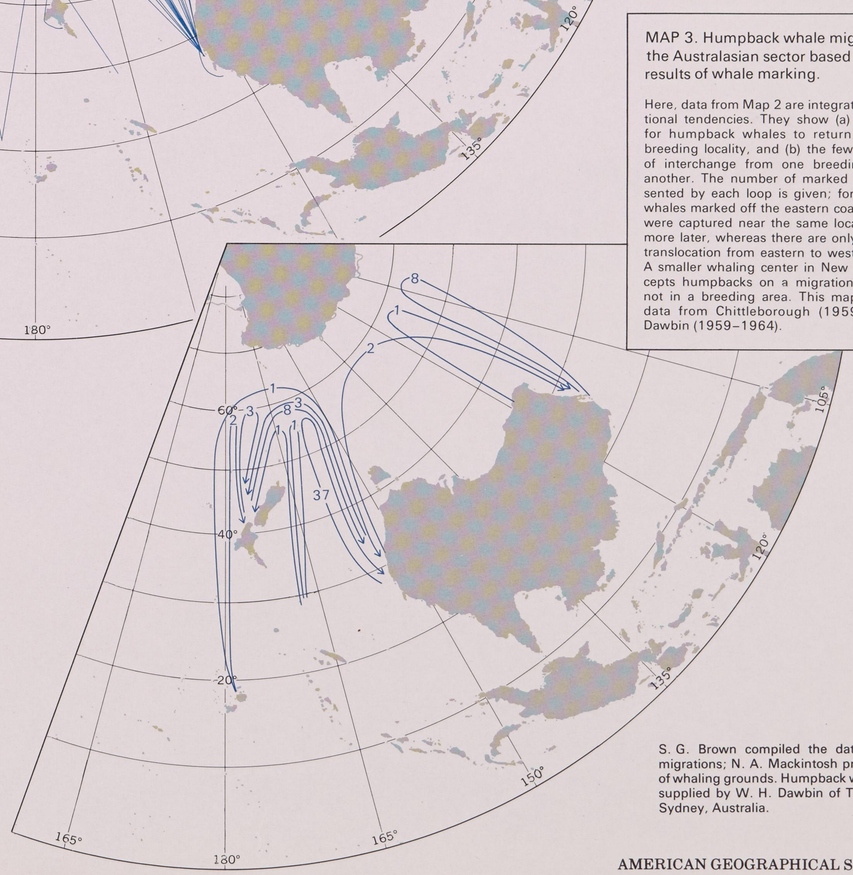
MAP 1. Antarctic whaling areas and principal whaling grounds.

The Antarctic whaling grounds cannot be exactly delineated, but the shaded area is the region where most factory ships have operated throughout the years of pelagic whaling. It can be taken as roughly representative of the area where fin and blue whales are found while feeding. In spring the catching begins in the outer part of the region and spreads southward as the pack ice retreats. Within recent years catching has extended farther north into Subantarctic waters in the search for sei whales, but the areas covered have not yet been well mapped. From 1938 to 1955 the greater part of Areas I and VI were closed to whaling, but this sanctuary was not maintained for it appeared to have little effect except to concentrate the catching in other areas. This map is based on data from Hjort, Lie, and Ruud (1932–1938), Bergersen, Lie, and Ruud (1939), Bergersen and Ruud (1941), Laws (1960), and Mackintosh (1965).



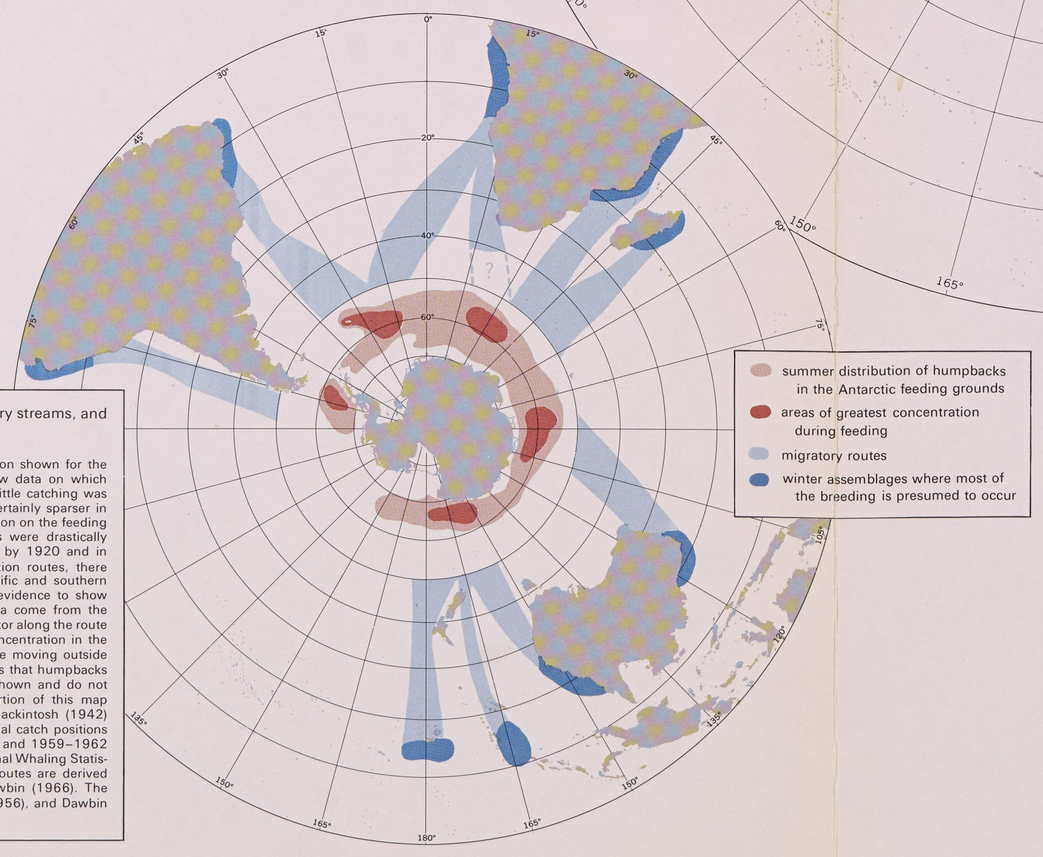
MAP 2. Migrations of individual fin and humpback whales as demonstrated by whale marking.

Whale 'marks' are stainless steel tubes fired from a shotgun. A serial number is engraved on each mark and a reward paid if it is subsequently found in a carcass and returned with date and location of catch. More fin whales than any other species have been marked in the Antarctic, but since most recoveries of fin whales are also in the Antarctic, their migratory habits are not always revealed. The marking records shown on the map are limited to those that do demonstrate migration. The lines plotted are "straight-line" connections between the place of marking and the place of recovery; the actual migration may deviate from a straight line. Most studies of humpback whales have been conducted in the Australia and New Zealand sector. Arrows show the direction in which a whale moved after marking. When several whales were marked and captured at approximately the same point, several arrowheads are used on one line. The lines converge at whaling centers on the west and east coasts of Australia, which are in the coastal breeding areas. The divergence of the lines toward the south indicates a limited tendency for humpbacks to spread out in the feeding grounds. If there were similar marking data for rorquals they would probably show far wider dispersal. The fin-whale data used in plotting this map are from Brown (1962a) and some unpublished data. Data on humpback whales are from Rayner (1940), Brown (1956–1961), Chittleborough (1959–1963), and Dawbin (1959–1964).



MAP 3. Humpback whale migrations in the Australasian sector based on the results of whale marking.

Here, data from Map 2 are integrated into migrational tendencies. They show (a) the tendency for humpback whales to return to the same breeding locality, and (b) the few known cases of interchange from one breeding locality to another. The number of marked whales represented by each loop is given; for example, 37 whales marked off the eastern coast of Australia were captured near the same locality a year or more later, whereas there are only two cases of translocation from eastern to western Australia. A smaller whaling center in New Zealand intercepts humpbacks on a migration route and is not in a breeding area. This map is based on data from Chittleborough (1959–1963) and Dawbin (1959–1964).



MAP 4. Feeding grounds, major migratory streams, and breeding areas of humpback whales.

The blank space in summer feeding distribution shown for the South Pacific may not be real. There are few data on which to base distribution in this region since very little catching was carried on there but humpbacks are almost certainly sparser in the South Pacific than elsewhere. The distribution on the feeding grounds is for the period before humpbacks were drastically depleted, as they were in the South Atlantic by 1920 and in the remaining areas by 1962. As for migration routes, there is little doubt that those indicated in the Pacific and southern Indian Ocean are real, but there is no firm evidence to show whether the animals breeding off West Africa come from the Antarctic concentration in the Indian Ocean sector along the route marked with a question mark, or from the concentration in the Atlantic sector. Naturally there would be some moving outside the tracks indicated, but the evidence suggests that humpbacks tend to concentrate along the major routes shown and do not migrate in diffuse random patterns. The portion of this map showing feeding areas was compiled from Mackintosh (1942) and Omura (1953) and from plotting the actual catch positions of 18,000 humpbacks caught in 1932–1939 and 1959–1962 from data provided by the Bureau of International Whaling Statistics. Data for breeding areas and migratory routes are derived from a large number of papers listed by Dawbin (1966). The main ones are Mackintosh (1942), Dawbin (1956), and Dawbin (1966).

S. G. Brown compiled the data on fin whale migrations; N. A. Mackintosh prepared the map of whaling grounds. Humpback whale maps were supplied by W. H. Dawbin of The University of Sydney, Australia.

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