# A TRANSECT DIAGRAM FOR OCEANIC BIRDS RECORDED BETWEEN McMURDO SOUND, ANTARCTICA, AND NEW ZEALAND, FEBRUARY - MARCH 1973

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At the conclusion of a summer season appointment by the DSIR (Antarctic Division) to the New Zealand Antarctic Research Programme 1972-73 I was fortunate to make the return passage in the United Sates Coast Guard Icebreaker *Northwind*. The ship departed from McMurdo (77°51'S) at 1145 on 23 February and arrived at Lyttleton (43°33'S) at 0830 on 4 March, the passage time including an eight hour mail stop at Campbell Island (52°31'S) on 1 March. Although the distribution of southern oceanic seabirds has been very well documented over many years for the period December to February, the late departure of the *Northwind* (due to an icebreaking commitment in McMurdo Sound) on this occasion provided an opportunity to record seabirds unusually late in the season.

Bird observations were carried out from the ship's bridge for periods of one hour at intervals throughout the day (one hour at the cruising speed of 15 knots corresponds to ¼° of latitude) and the number of individuals of each species seen plotted diagramatically against latitude to produce a transect diagram (see Fig. 1). A key to the species shown in Fig. 1 is given in Table 1, and a summary of the distribution and density peaks of other species recorded is given in Table 2.

| | | |
|---|---|---|
| A | Antarctic Skua | *Stercorarius skua maccormicki* |
| B | Snow Petrel | *Pagodroma nivea* |
| C | Light-mantled Sooty Albatross | *Phoebetria palpebrata* |
| D | Antarctic Petrel | *Thalassoica antarctica* |
| E | Mottled Petrel | *Pterodroma inexpectata* |
| F | Black-browed Mollymawk | *Diomedea melanophris* |
| G | White-headed Petrel | *Pterodroma lessoni* |
| H | Antarctic Prion | *Pachyptila desolata* |
| I | Sooty Shearwater | *Puffinus griseus* |
| J | White-chinned Petrel | *Procellaria aequinoctialis* |

*Table 1. Key to the species shown in the Transect Diagram, Fig. 1*

The type of transect diagram shown in Fig. 1 may be more familiar to plant ecologists than to ornithologists, but nevertheless it may usefully be applied to depict density and distribution of birds recorded on sea passages in which changes in direction are small in relation to distance travelled, and may therefore be ignored.

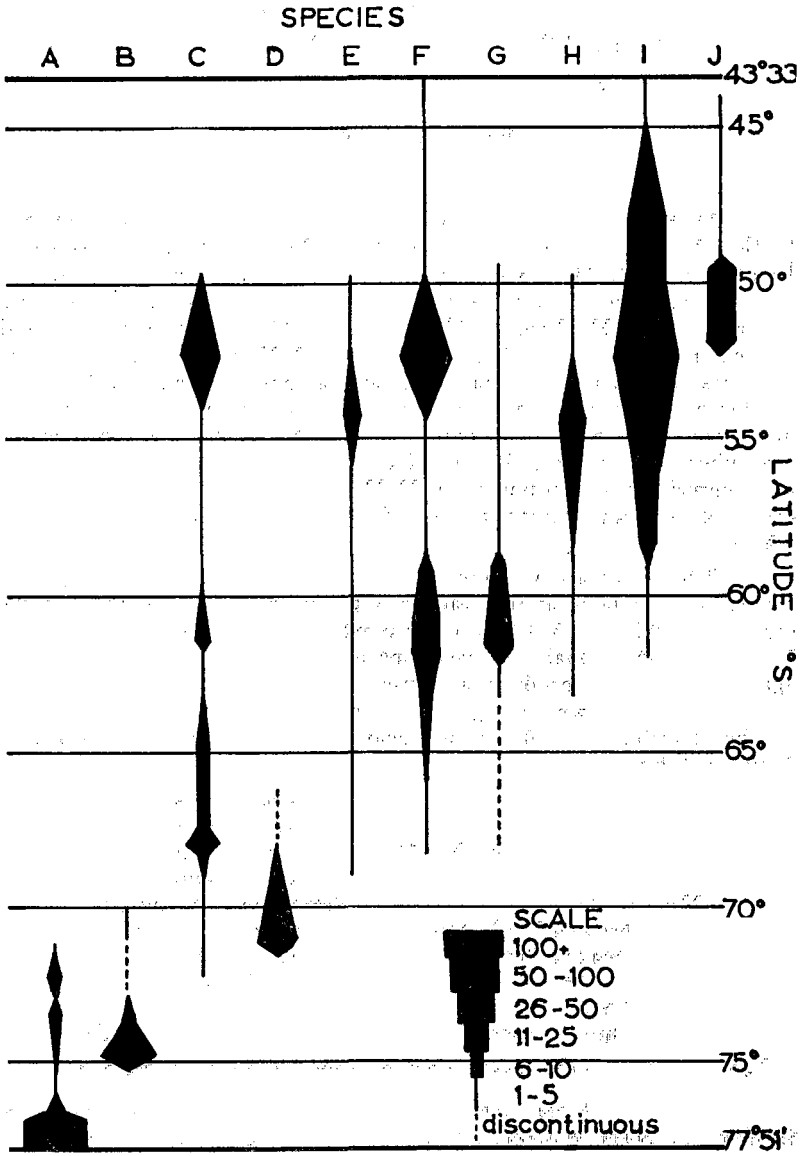


FIGURE1 — A transect diagram for certain seabird species recorded between McMurdo Sound (77°51'S) and New Zealand (43°33'S), 1973. See text for explanation and Table 1 for key to species.

| Species | Latitude first seen | Latitude last seen | Latitude of peak density |
|---|---|---|---|
| Emperor Penguin (*Aptenodytes forsteri*) | 77°51'S | 77°45'S | 77°51'S (50) |
| Giant Petrel (*Macronectes giganteus*) | 74°00'S | 43°33'S | 44°00'S (30) Discontinuous |
| Wilson's Storm Petrel (*Oceanites oceanicus*) | 72°20'S | 59°00'S | Even (3) |
| Cape Pigeon (*Daption capensis*) | 68°25'S | 43°33'S | 66°30' (50) Discontinuous |
| Silver-grey Fulmar (*Fulmarus glacialoides*) | 67°05'S | 66°00'S | Even (4) |
| Grey-headed Mollymawk (*Diomedia chrysostoma*) | 66°30'S | 49°20'S | Individuals Discontinuous |
| Royal Albatross (*Diomedia regia*) | 63°40'S | 48°25'S | 52°30'S (100) |
| Wandering Albatross (*Diomedia exulans*) | 59°10'S | 43°33'S | 44°35'S (30) Discontinuous |
| Diving Petrel (*Pelecanoides urinatrix*) | 57°30's | 52°30'S | 54°30'S (8). |
| Grey Petrel (*Procellaria cineria*) | 56°00'S | 54°30'S | Individuals |
| Black-bellied Storm Petrel (*Fregetta tropica*) | 52°30'S | 48°15'S | Individuals |
| Shy Mollymawk (*Diomedia cauta*) | 49°50'S | 43°33'S | Individuals |
| Buller's Shearwater (*Puffinus bulleri*) | 45°50'S | 43°33'S | Even (2) |
| Flesh-footed Shearwater (*Puffinus carneipes*) | 45°40'S | 43°33'S | 44°00'S (15) |

Table 2. Summary of seabirds recorded McMurdo - New Zealand not included in Figure 1. Figures in brackets in last column represent numbers of individuals seen per hour at latitude of peak density.

Observations from a directly North-South passage lend themselves particularly well to this type of presentation, but " diagonal " passages (e.g. from New Zealand to Panama) could receive the same treatment providing coordinates of starting point and destination are indicated. The transect diagram affords a semi-quantitative visual assessment of the zonation of species, and their densities at the time of observation; Fig. 1 shows, in particular, the increase in density of several species at latitude 53° - 52°S, in Campbell Island waters. The date at any point on the transect may be determined by interpolation from the base lines, assuming, of course, uniform cruising speed.

A transect diagram of this kind for birds differs from one for plants in an important way — the densities of birds may alter significantly during the time taken to cross the transect, and the zone of one species may have altered in relation to another near the Southern part of the transect while recordings are still being made in the North. Confidence in interpretation will be increased, however, by combining the records from a number of passages.

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