# LETTER

The Editor,
Sir,

## PARAKEET HYBRIDS

The natural hybrids between subspecies of the Red-fronted *(Cyanoramphus novaezelandiae)* and the Yellow-fronted Parakeet *(C. auriceps)* on the Chatham Islands reported by Taylor (*Notornis* 22: 110-121) caused him to pose possible causes for the hybridization and to wonder whether such hybrids would swamp-out one of the parent species ? May I comment from my own observations of captive individuals of the nominate species and from my examination of museum material ?

The reduction in the proportion of hybrids and the maintainance of the number of Yellow-fronted Parakeets in the three years from 1970 to 1973 is interesting. This may not be immediately evident from the way that the figures were presented; but if we disentangle the percentages then in 1970, from a population of sixty, 5 were Yellow-fronted, 19 were Red-fronted and 36 were intermediates. In 1973 (reducing the then estimated population of one hundred down to sixty) 4 were Yellow-fronted, 28 were Red-fronted and 28 were intermediates.

In England New Zealand parakeets will breed at any time of the year. Except for the tropics, where the food source is maintained at approximately the same level throughout the year, such reproductive licence is generally given to opportunist breeders such as the Budgerigar *(Melopsittacus undulatus)* and the Zebra Finch *(Poephila guttata)*, species whose gonad development is correlated with nourishment and not day-length. Perhaps the reproductive physiology of New Zealand parakeets is also linked with the availability of food ? Competition for food might be important. The different widths to the bill between sexes, and between the species, perhaps is best explained as being adaptations to reduce intra- and interspecific competition: enabling them to take a wider range of foods than would otherwise be available (Lack, D. 1971. Ecological Isolation in Birds). In all the species males are the larger sex and the Red-fronted is larger than the Yellow-fronted Parakeet. If we ignore species and plot, using all species, the width of the upper mandible against wing length this produces a straight line curve: showing that the width of the bill is directly proportionate to body size (pers. obs.). The greatest difference in size between individuals is, therefore, when a male Red-fronted is compared with a female Yellow-fronted. The least difference is between a female Red-fronted and a male Yellow-fronted Parakeet.

These differences in size are obstacles to successful hybridization (pers. obs.). In the first case, when the male is very much bigger than the female, fertility is low because one, or both, tend to topple over when treading. In the other case large females are unnaturally dominant over the males. Dominance is correlated with size. This is demonstrated, in the second case, by the female reversing the usual sexual pattern and she regurgitatory-feeds the male. The male further shows subservience by being excessively hesitant in responding to the sexually soliciting female. Fertility, not surprisingly, is again low. The pair-bond, which is partly maintained by regurgitatory-feeding and copulation (pers. obs.), is, therefore, not particularly strong in both cases and is easily disrupted by a more suitably-sized rival.

Taylor suggests that on the Chatham Islands the Yellow-fronted subspecies is about the same size as the Red-fronted; but is it ? The measurements of museum skins, given for Forshaw (1973, Parrots of the World) do not bear this out. If Taylor is correct, and they are now the same approximate size, perhaps because the altered habitat causes many Red-fronted to be stunted by an insufficiency of food during the rearing period, then being equal-sized, they would be more likely to form hybrids.

In the wild hybrids sometimes result from scarcity of one species relative to the other (e.g. Brown, R. G. B. 1967. *Ibis* 109: 310-318): this might also apply to the Chathams. But the argument that differences in feeding ecology in what are, after all, very similar species of parakeet would be a natural barrier to hybridization is debatable: if bill size is correlated to food source and to the manner of feeding (Lack, D. *loc. cit.*). The difference in feeding pattern between the two species is but a further extension of the, very probable, similar feeding distinctions between the different-sized sexes ?

It is more than likely that the parakeets identify possible mates because of their relative size, behaviour and, as we ourselves recognize the difference between species, by the different coloured fronts to the head and the ear coverts and, perhaps, by the pitch of the voice. If this is so then this explains how selection for a mate, were hybrids available, would not be indiscriminate but favour the more ' correct ' size and colour. In other words not only are there barriers to interspecific hybridization but these same barriers tend to eliminate hybrids from the population by ' mopping them up ' selectively with the appropriate ' pure ' species. Hence the reduction in the Chatham Island parakeets over the three year period of regeneration of natural vegetation.

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