

VI. (b) BIRDS

Sea Birds:

The opportunity for work with sea birds is, of course, almost limitless. The principal breeding species of atolls are the Man-o'-War Birds, Tropic Birds, boobies and various burrowing or surface-nesting petrels. Not too much is known about the life history of any of these, particularly of the petrels. The ecological interrelations offer a broad field for study, partly in relation to the predatory habits of the Man-o'-War Birds. Even more important is a detailed quantitative study of any or all of these species. We know next to nothing about the seasonal succession of the petrels, for example, in relation to the rainy and dry seasons. We hardly know whether most of the resident species of sea birds breed continuously or have one or two nodes of maximum reproductive activity during the course of a calendar year.

The direction from the islands in which most birds go to feed is also extraordinarily important since this usually bears a direct relation to winds or currents, or both. The petrels and one species of the boobies seem to go much farther from the island than the other species in their regular, foraging, daily journeys. It has been suggested, but never proved, that the petrels are capable of carrying food in the throat and crop in an undigested state for a very long period, up to five or six hours. In the case of birds that feed as far as a hundred and twenty-five miles from a nesting station, this would seem to be a necessary physiological possibility, if the adult birds are going to be able to bring food back to their young, instead of having the process of digestion and assimilation go on within their own bodies during the return flight.

Very much needs to be learned about the migratory species from the northern hemisphere, particularly the shore birds, such as plovers, curlews, sandpipers, godwits, etc. With the exception of a few stations such as Hawaii, at the northern end of the winter range, and New Zealand, at the southern end, we know very little indeed about the movements of these birds and the climatic or other stimuli which mark the beginning of the return flight toward the north.

Still another opportunity is offered by the terns. Nobody knows yet where certain species go after the end of the nesting season. The Sooty Terns, for example, and, in some cases, the white Fairy Terns simply disappear into the immensity of the ocean. At least one Atlantic colony, the Sooty Terns have an interval of about nine months between their breeding periods so that the season of reproduction is constantly changing, or moving forward. Is this true of the same species in the Pacific? Nobody knows.

The eggs of many fish-eating species are perfectly palatable without any of the unpleasant flavor characteristic of the flesh of the same birds. It is possible, moreover, under proper management to take a regular harvest of eggs

from the breeding grounds of certain species, particularly the terns. This was done by the Polynesians over many, many successive generations without any reduction in the maximum numbers of the breeding birds, that is the largest numbers that the nesting areas are capable of supporting. White men, on the other hand, have seriously upset the balance and have even exterminated certain species at certain breeding stations. On the whole, perhaps, the worst of all dangers is offered by man's domestic animals, such as pigs, cats, dogs and, indirectly, of course goats and rats.

Robert Cushman Murphy

Land Birds:

Only very few species of land birds are found on coral atolls and even among these some are not strictly land birds, such as the Reef Heron, the Australian Gray Duck, and certain species of rails. The only real land birds found on some of the islands are fruit pigeons and warblers (Acrocephalus). As far as the fruit pigeons are concerned, we would like to know more about their seasonal movements, particularly from one island to the next and from one group of islands to the next. Are these movements large-scale and are they correlated with the seasonal appearance of certain fruits? What is the status of some of these species in view of the increased shooting on some of the islands? Is there any relation between time occurrence of rails and sea bird colonies?

Ernst Mayr

VI. (c) RATS

While I have not worked on atolls information available indicates that the Polynesian rat (Rattus exulans) is found on some. This rat is introduced by native methods of travel and able to maintain itself in habitats where little fresh water is available. It is not a destructive animal. On atolls where military supplies have been unloaded the destructive Mindanao rat (Rattus mindanensis) and even more destructive Norway rat (Rattus norvegicus) may have been introduced. The Norway rat cannot persist under usual conditions found on atolls but the Mindanao rat may. Since each of these three rats has different habitat requirements and different habits before control is attempted the species should be determined. Control measures for each species on atolls could be worked out without difficulty. Measures to prevent the introduction of the two non-native rats should be investigated.

Robert K. Enders