

Opportunities for Field Studies in Britain

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How an American studied bird life in Britain is the subject of this paper, offering ideas for other biology teachers.

An American biology teacher interested in natural history can easily arrange an inexpensive trip to Britain, sampling British natural history, visiting reserves and talking with people who know the area. During May of 1966, the month of most sunshine, I visited a few centers and learned enough to know that I must return to see many more.

*The Royal Society for the Protection of Birds*¹ has acquired more than 20 areas it has designated as reserves. Some of these are owned by the R. S. P. B. while others are managed "by agreement with the owner." The list comprises a sampling of most of the major habitats of the British Isles, thus contributing toward a continuation of breeding opportunity for the spectrum of British bird species. Access to many of the reserves is restricted and the traveler should start planning his trip well in advance and ask for ad-

vice concerning the best places to visit during the season when he will be in Britain. It is unlikely that he will have time to visit all the reserves during one tour, for each area is so interesting that there is a reluctance to rush.

The Field Studies Council² is the central organization for the seven field centers in England and Wales. The Scottish Field Studies Association³ works with the English group but is administered separately. Although these centers are independent, they serve the schools and colleges by offering one and two week field courses in biology, geology, and geography. Announcements are sent to schools and the group of 50 or 60 students arriving at the center will include about four students from each of ten or fifteen schools. Occasionally one school will reserve a week and bring its own instructors

¹The Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire. Dues: £ 1 11s 6d (approx. \$4.50).

²The Field Studies Council, 9 Devereux Court, Strand, London W. C. 2. Annual dues, including journal; one pound 10 shillings (approx. \$4.25).

³The Scottish Field Studies Association, Ltd., 141 Bath St., Glasgow C. 2.

to assist. If there is space, individual adult students may stay and pursue research projects or explore the area. I was privileged to spend a few days at both the Dale Fort and Kindrogan Field Centers.

The high spot of my trip was a week on Skokholm Island, a 262 acre island, three and one-half miles off the coast of Dale Parish, Pembrokeshire, in southwest Wales. It is a reserve administered by the Dale Fort Field Center, with ornithological research directed by David Lack of the Edward Gray Institute at Oxford. I was one of a party of ten members of the Royal Society for the Protection of Birds spending a week on the island learning about the research program and participating in a small way in the collecting of data.

A visitor to the island is immediately impressed by the abundance of rabbits (*Oryctolagus cuniculus*). The island is honeycombed with their burrows. While I sat in a blind at the top of a cliff, I counted more than 20 rabbits grazing on the slope.

Skokholm Island has supported a population of grazing mammals for at least 600 years. Records show rabbit farming here in 1324, and that it continued during the nineteenth century. The rabbit population multiplied with no human interference when the farm was abandoned. In 1938-40, it was reduced to 400 with the use of cyanogas, but has been allowed to multiply unchecked since 1946. In 1953, the population was estimated to be about 10,000, and it is believed that this may be a maximum, controlled by food supply, burrow flooding, and disease. Cattle are gone from the island now, and the only other mammals are a few goats, many house mice (*Mus musculus*) and a small, varying population of people who import nearly all of their food.

Natural populations of grazing mammals are not constant. Large populations of one species alter the vegetation and soils of the land they inhabit to an extent which may ultimately make the area untenable for that species. Mary E. Gillham (1955) compared the vegetation of Skokholm, a rabbit-grazed island, with that of Grassholm, which has no rabbits. Many of the differences can be attributed to the presence or absence of rabbits. Now that these islands are protected

reserves, continuing studies will undoubtedly show the effects of grazing on both the rabbit population and the composition of the vegetation. F. Fraser Darling (1956) discussed the effects of grazing on the vegetation and soils of the Scottish highlands. Gillham's findings are consistent with Darling's conclusions, and the implications for man's need to understand and manage his resources are clear. The ecologist-naturalist visitor to the British Isles, which have been inhabited by agrarian cultures for well over 3000 years, inevitably becomes interested in the effects of human activities on the land. British ecologists have pursued this interest for many years and a study of their work can be rewarding.

The Skokholm observatory keeps a record of all nesting birds and rings (bands) all young before they leave the nest. This requires locating nests and marking them with stakes. Visitors participate if they can. I was assigned to skylarks, because these birds are easily identified by an observer unfamiliar with British species. The males rise high above their territories and sing, so it is easy to determine the nest area.

To locate a nest, I would lie on the bank of a wall and watch through my binoculars. When a male landed after a period of song, he might walk around feeding, or merely walk or stand in no apparent purposeful activity. Sometimes the female was visible nearby, and the two would move about together, within a relatively small area. Occasionally, the male would sing, before he left the ground or after he returned, thus refuting the popular idea that skylarks never sing on the ground. Finally, one of the birds would enter a clump of vegetation and not emerge. When I walked swiftly toward the spot and flushed the bird, I usually found the nest. It was a rather deep cup, set in a depression (perhaps the remains of an old burrow), and was usually under the leaves of a bluebell. Dense patches of bluebells and bracken occur in hollows and on slopes protected from the strongest winds; here is where most of the island's skylarks nest. The island's breeding population of skylarks seems to be increasing. Where, other than among bluebells and bracken, will they nest? How large are their territories and to what

extent does territory size vary? How long do males stay aloft in one song session? One reference says "two to five minutes," but my observations indicated that longer songs are more frequent than supposed. Thus, interesting research awaits some investigator.

The Manx shearwater (*Procellaria puffinus*) breeds in abundance on Skokholm Island—over 10,000 pairs in 1949. There has been no published census since then (Barrett, 1959). Dense colonies of their burrows occur on cliff tops and are scattered on slopes over the island. The female lays one large white egg, and the mates take turns incubating it. A "turn" may last seven to ten days. While one mate stays in the burrow, the other is feeding out at sea. Changing "burrow duty" occurs at night, a time when the island's prime predator, the greater black backed gull, is not about. Shearwaters are very awkward on land, and those individuals which might be out at dusk or dawn will almost certainly be captured by the gulls. Here, perhaps, is a fine illustration of natural selection. Is the night time return to the burrow an inherited habit? If so, the evolution of this behavior seems easily explained. Where do these birds travel to feed on sardines, which do not occur in British waters? This, too, is a mystery which might be solved by Skokholm's banding program. Occasionally, a banded individual is picked up by fishermen off the coast of Spain.

The first migrant shearwaters arrive in February and the last young leave the island in October. During this time, the wardens and visitors to Skokholm collect information. One night, between midnight and 2 A. M., our party assisted in gathering data in a large colony on the bank at the top of a cliff. The air was filled with shearwater cries and many birds were sitting at the entrances to their burrows. The warden instructed us to pick up birds, look for a band and bring all banded individuals to him for recording. The technique was to spot a bird in the dim beam of a flashlight, place a firm hand on its back, and pick it up with both hands in a way to avoid being pecked by the strong bill or scratched by the powerful feet. We delivered 120 banded birds to the recorders.

One hundred thousand shearwaters have been banded on Skokholm Island since 1946.

Of the 120 we checked that night, thirty-nine had been banded as nestlings between 1955 and 1965, and eighty-one were banded as adults between 1952 and 1966. The warden gave us a detailed accounting of these 120 birds, and it was easy to understand that an accumulation of data such as these would permit estimates of initial breeding age, production, and life span.

One may think that there is nothing left to learn about sea gulls; they are abundant, well known and have been well studied. But nothing is completely known, and challenge for research is everywhere—including sea gulls.

The British herring gull (*Larus argentatus argenteus*) and the lesser black backed gull (*Larus fuscus*) are among several animals which form chains of intergrading species around portions of the earth. These two gulls in Britain are thought to be the terminal links of a single such chain circling the north temperate zone. They breed in the same colonies along the British coast (there is a large mixed colony on Skokholm), but do not interbreed. Are they subspecies or must they continue to be considered as different species? Except for the variation of light to dark grey on the back, they are nearly, if not completely, identical in appearance. However, their behavioral differences may account for their not interbreeding. The herring gull migrates only short distances if at all, while the black back travels as far as southern Europe and the west coast of Africa. Skokholm's warden, Christopher Britton, under Dr. Lack's direction, has begun an investigation to determine whether the migrating habit is learned or inherited behavior. He exchanges clutches of eggs of the two species and dyes the eggs with a dye which will penetrate the shells and color the chicks. After the chicks have hatched, he bands them. If enough individuals are marked, there will be retrievals which will suggest answers to the question. There is increasing interest in investigations of animal behavior patterns, for these are important factors in natural selection and speciation.

The oyster catcher (*Haematopus ostralegus*) is another interesting bird which has attracted much attention from field research-

ers, but still offers unanswered questions. British oystercatchers rarely, if ever, eat oysters. British oysters live in waters too deep for the bird, whereas on the east coast of America, low tides do uncover some oysters on which American oyster catchers feed. Birds of the shores of both continents have a varied diet—crabs, small mollusks, and worms. As is the case with many animals, they probably eat whatever is available. Uriel Safriel, an Israeli student at the Edward Gray Institute, is studying the ecology of Skokholm's breeding population of oyster catchers. When a nest is located, it is marked, the adults trapped and banded, and the young banded before they leave the nest. Through a telescope, Safriel watched behavior and feeding. (Worms are a major part of the diet of the Skokholm birds).

We visitors also had time to browse and explore at leisure, without the pressure to collect data. I watched lapwings feeding in the shallow ponds, and as I walked through the meadow where hundreds of gulls were nesting, they rose and circled above me crying loudly. I saw puffins perched on points of rock on the cliffs and watched grey seals cruising in the coves. Razor bills crowded the ledges of a cliff in an apparent competition for space and mates. This was a busy week "away from it all." It was leisurely and peaceful, but time did not hang heavily.

Between visits to reserves and field studies centers, the traveler can rent a car and sample other rural and natural areas: moors, fens, downs, shingle (pebble) beaches, highlands and lowlands. One could make a study

of stone walls and hedgerows to see how their patterns, uses and vegetation vary from one region to another. A delightful semi-professional holiday is available to the professional or amateur naturalist who wants to see the British Isles as few tourists see them.

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Editor's Note: E. M. Nicholson's, *Science Out of Doors* (Longmans, Green and Co., Ltd., London, 1963) may be of particular interest to persons planning a similar trip. It describes the nature conservancy program and teaching programs as well as providing information on various nature preserves.

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