

TERRESTRIAL AND FRESHWATER ECOLOGY : INTERIM NOTES

I. THE DISTRIBUTION OF *Limnaea truncatula*

During the spring of 1950, Mr Gade informed me by letter that infestations of liver flukes were being found in bullocks and sheep when they were slaughtered. He added that at one time before the war the parasite was relatively common on the island, but that vigorous drenching of the sheep had reduced it to negligible numbers. This practice having been abandoned for some years now, the parasite was apparently becoming common once more. Specimens of the fluke were sent to me and proved to be the common species, *Fasciola hepatica*, a worm which can only complete its life history by passing through a very complicated series of larval generations within amphibious snails. After this the final stage larva emerges, settles on the herbage and awaits being eaten by its final host, when it settles in the bile ducts of the liver and grows to adult size. As a full grown fluke it can infest sheep and cattle, probably deer, rabbits and even man. The snail which serves as intermediate host is usually *Limnaea truncatula*, but other species of *Limnaea*, and even of other genera of aquatic or amphibious snails have been known to be used. It was already known that freshwater snails are comparatively sparse on Lundy, and it therefore seemed worth while to investigate the distribution on the island, with a view to the possibility of attempting to dress the ground on which they live and so kill off the greater part of the population. By this means the life cycle of the fluke might be broken at a critical point and infestations reduced to a minimum, if not totally eliminated. Opportunity was therefore taken to make such a survey when I visited Lundy with a party of students during Easter 1950.

It seemed unlikely that the snail would be prevalent, if present at all, in the peaty bogs and streams on the granite. These waters are distinctly acid in reaction and few species of snail are able to tolerate such conditions. Nevertheless this was checked, and the survey covered all important possible habitats over the southern half of the island, as far north as Ponds bury. Unlike most other members of its genus, *L. truncatula* is amphibious rather than aquatic. That is to say it lives on the surface of damp mud, rather than in the water, and is to be found at the margins of pools and streams, and in the pock-holes left by sheep and cattle in damp, soft ground. Attention was therefore concentrated on habitats such as these. The results obtained may be summarized very briefly :

- i. No snails were found on any ground examined north of the Old Light.
- ii. None were found near the Rocket Pond nor at the Golden Well.

iii. Half an hour of intensive search by three people produced only a single snail from the area of St Helen's Well.

iv. Small numbers of snails were present :

a. Round the reservoir pond in the S.E. corner of the Lighthouse Field.

b. Round the pond in the centre of the same field.

c. At the margins of the drainage stream flowing from the neighbourhood of the Friar's Garden to the cliffs south of Pilot's Quay.

v. Snails were common :

a. On the watercress bed immediately below Millcombe Gardens.

b. In pock-holes, etc., throughout St John's Valley.

c. In pock-holes beside the stream at the roadside just below St Helen's Church.

vi. The hayfield, behind St Helen's Church, and Bulls' Paradise were not examined at Easter, but in August when they were searched no snails were found.

It may be concluded therefore that it is the St John's Valley and Millcombe area which is the main habitat of the snail, this being without doubt associated with the fact that this offers the largest area of boggy ground over the slate of the south-east corner of the island, where the pH of the water is sufficiently high to be tolerable by the animals. Elsewhere on the slate, or near the slate-granite junction, as far north as the level of the Old Light, a few snails may occur, while the acidity of the waters north of this precludes its presence.

It is fitting to express a word of thanks to Miss Diana Heron, Miss Rosemary Manwaring and R. B. Clark, who shared the labours of this survey, mostly in cold, wet conditions which made most unpleasant the slow, foot by foot creeping and probing in the mud.

2. THE DISTRIBUTION OF *Leptophyes punctatissima*

As recorded in our last report, this little longhorn grasshopper was found during the summer of 1949 on the bracken at two points on the eastern slopes of the island. This habitat seemed so unusual as to warrant further investigation, and during August 1950, Miss M. A. Harvey and Miss P. Dyer examined a number of different habitats, seeking the animal. Despite weather unpropitious for both workers and insects, enough grasshoppers were found to make it clear that the species extends along the east side of the island from the Landing Beach at least as far north as Gannets Rock, living, some in the trees of Millcombe, where they were found by beating, and others in low shrubs, e.g., gorse, grass and bracken. Few stations on the west side were worked specifically for *Leptophyes*, but during the course of intensive operations on shorthorn grasshoppers here no specimen of the longhorn was seen. It appears therefore to be absent from the west sidings, and this may be

correlated with the shortness of the ground cover over most of them. The species appears therefore to be present in some numbers along most of the east coast, although never conspicuous. It has not been found in the dense rhododendron coverts, but is certainly present among trees and shrubs elsewhere, and has also become widespread among the bracken cover of the treeless northern half of the island.

3. SMALL MAMMALS

As most members may know, the small mammal population of Lundy is restricted to the indigenous pygmy shrew, *Sorex minutus*, and the accidentally introduced brown and black rats, *Rattus norvegicus* and *R. rattus*. There may also possibly be a few feral mice derived from individuals which escaped some years ago from a colony of tame animals kept by the late John Pennington Harman, for an old mouse nest was found quite recently in a disused beehive in Millcombe. But very little is known about the status of any of these animals. The brown rat is certainly very common, does a lot of damage to burrow-nesting birds, to buildings and to stores, and periodically strong measures have to be taken to reduce its numbers. But of the numbers and distribution of the black rat little is definitely known, while, so far as may be ascertained, no one has examined a series of specimens of the shrew in order to determine whether or no it exhibits local peculiarities such as characterize the island races of many small mammals on Skomer, St Kilda, Orkney and many others.

It is therefore very desirable to endeavour to examine material of these small mammals in order to determine these various points. Unfortunately the thirty odd rats picked up after the poisoning campaign of Easter 1948, all proved to be *R. norvegicus*, but during the course of live-trapping by Mr I. J. Linn in August 1950, two very fine young *R. rattus* were taken in Millcombe, thus establishing that the animal is still breeding and that as far south as Millcombe. At Easter of 1950 Mr R. B. Clark concentrated on trapping for shrews, at first on the sidings above St Helen's Valley, and later in Millcombe. Although shrews were seen and heard in the undergrowth they proved very difficult to entice into the traps and only one was taken. A few other specimens were picked up dead at various points on the island, and this material has been preserved and will be examined in due course. But more animals will be required before any very definite conclusions may be stated. Mr Linn's trapping campaign in August was directed largely towards establishing whether or no any voles exist, hitherto undetected, or whether the feral mice were still maintaining themselves. In this, after a fortnight of trapping over the east sidings from Millcombe as far north as the quarries, an entirely negative result was obtained. No voles or mice were obtained, nor could any trace of them be detected.

4. MOSSES

It is rather extraordinary that the mosses, which form so important an element of the vegetation of Lundy, seem never to have been examined, and to our knowledge, no list of the bryophytes of the island has been published. In view of their ecological importance, it was decided to make a survey of the group, and at Easter of this year Miss F. N. Williams made collections from various localities, Mrs Harvey, with the help of Miss M. M. Ward, Mr P. G. Adlard and Mr R. F. Price, extended them. The material collected has now been examined and submitted to Dr W. Watson of Taunton, who very kindly checked the identifications. At this juncture we can do little more than submit a total list of the species found. But it is our intention to devote still more attention to the group and to elucidate as far as possible the distribution of the different species and their relations to the physical and biological conditions of the various habitats they occupy.

The preliminary list is as follows:—

<i>Barbula convoluta</i>	<i>Frullania fragilifolia</i>
<i>B. cylindrica</i>	<i>Grimmia apocarpa</i>
<i>Brachythecium illecebrum</i>	<i>G. pulvinata</i>
<i>B. rutabulum</i>	<i>Heterocladium heteropterum</i>
<i>B. rivulare</i>	<i>Hypnum cupressiforme</i>
<i>Bryum alpinum</i>	<i>H. cuspidatum</i>
<i>B. alpinum var. viride</i>	<i>H. exannulatum</i>
<i>B. capillare</i>	<i>H. schreberi</i>
<i>B. pseudotriquetrum</i> (probably)	<i>Lejeunea planiuscula</i>
<i>Calyptogeia trichomonas</i>	<i>Lepidozia reptans</i>
<i>Camptothecium sericeum</i>	<i>Lophocolea cuspidata</i>
<i>Campylopus brevipilus</i>	<i>Mnium hornum</i>
<i>C. flexuosus</i>	<i>Plagiothecium denticulatum</i>
<i>C. fragilis</i>	<i>P. undulatum</i>
<i>Ceratodon purpureus</i>	<i>Pleuridium nitidum</i>
<i>Dicranum scoparium</i>	<i>Polytrichum juniperum</i>
<i>Dicranoweisia cirrata</i>	<i>Racomitrium aciculare</i>
<i>Eurhynchium myosuroides</i>	<i>Scapania gracilis</i>
<i>E. praelongum</i>	<i>Sphagnum auriculatum</i>
<i>E. stokesii</i>	<i>Thuidium tamariscinum</i>
<i>Fissidens rivularis</i>	<i>Trichostomum nitidum</i>
<i>Fontinalis antipyretica</i>	<i>Uloa phyllantha</i>

5. TWO-WINGED FLIES

This is another group which seems to have been neglected on Lundy. Mr R. C. B. Hartland-Rowe, despite very poor weather during his visit in August, collected Diptera assiduously, and as a result we are able to present a short preliminary list of the flies of Lundy:—

Tipulidae

Tipula (*Tipula*) *oleracea* L., one female on a airstrip.
T. (*Tipula*) *paludosa* Mg. Common.

Limnophila (Phylidorea) weigeni Verrall, one male on *Juncus*, Pondsbury.

Molophilus sp., one female, in damp undergrowth, Gannets Combe.

Chironomidae

Anatopynia (Macropelopia) notata (Mg.), one female, in damp undergrowth, Gannets Combe.

A. (Psectrotanypus) varia (Fabr.), two males, in damp undergrowth, Gannets Combe.

Pseudochironomus prasinatus Stoeger, one female, in damp marsh, Gannets Combe.

Rhagionidae

Rhagio liveola Fabr. possibly var. *monticola* (Egger), one in the marsh, Gannets Combe.

Chrysopilus cristatus (Fabr.), one in the marsh, Gannets Combe.

Tabanidae

Haematopota fluvialis (L.), one biting, cliff near the Ugly.

Empididae

Hybos grossipes (L.), widespread on the bracken.

Dolichopodidae

Aphrosylus sp., one amongst seaweed stalks at low water, Gannets Rock.

Medeterus sp., females not uncommon in the laboratory.

Lonchopteridae

Lonchoptera lutea Panz., two on the cliff near the Ugly, in bracken and rhododendron.

Syrphidae

Tubifera arbustorum (L.), one on *Euonymus*, Millcombe.

T. pertinax (Scop.) do.

Melanostoma mellinum (L.) do.

Episyrphus balteatus (De G.) do.

Metasyrphus consisto (Harris), two do.

Syrphella lunulata (Mg.), one do.

Larvaeoridae

Linnaemya vulpina (Fallen), one female on bracken, Gannets Combe.

Larvaeora grossa (L.), several on cliffs near the Ugly and at Quarter Wall.

Calliphoridae

Calliphora erythrocephala (Mg.), widely distributed.

C. vomitoria (L.), two near Millcombe.

Lucilia caesar (L.), four males on cliffs near the Ugly.

L. sericata (Mg.), one male do.

Muscidae

Orthellia caesarion (Mg.), one near the Ugly on bracken, one near Half-way Wall, on west side.

Morellia simplex (Loew.), one on bracken, on cliff near the Ugly.

6. LEPIDOPTERA

The wet season precluded any serious work on the group, but a number of casual observations have been culled from the log :—

The Painted Lady butterfly, *Vanessa cardui* (L.), was never numerous during the season, but was present in small numbers fairly regularly. One was seen at the North End on the very early date of 12th April, while the latest date recorded was 14th October.

Only one Clouded Yellow, *Colias croceus* (Geoffr.), was seen, on 19th August.

The Humming Bird Hawk Moth, *Macroglossa stellatarum* (L.), was present throughout the season although in smaller numbers than last year.

A Convolvulus Hawk Moth, *Herse convolvuli* (L.), was seen on 31st August, at the South Quarry.

A full grown larva of the Puss Moth, *Cerura vinula* (L.), was taken on the Terraces by two lady visitors at the Hotel and, being given a bundle of sticks and leaves, it pupated that same evening, 21st August.

