

Phalarope (*Phalaropus fulicarius* (Linn.)) collected on 20th June had apparently been feeding almost exclusively on small spiders. Spider fragments were also present in the stomachs of a Turnstone and a Sanderling (*Crocethia alba* Pallas) collected on 28th June.

No traces of Collembola were found in any of these samples (they would probably have been too small to be selected by the birds), although a pair of Snow Buntings (*Plectrophenax nivalis* (Linn.)) were seen feeding on the Collembola on a remaining patch of snow on 30th June. The amount of plant material in the samples was negligible.

These few observations suggest that several species of birds may be able to exploit 'concealed' food resources in this habitat. That they do so efficiently is indicated by the long search by entomologists which had proved necessary to discover relatively few individuals of the species on which the birds had fed. Insect species such as these occurring in low densities seem to be characteristic of Arctic habitats (Downes 1962, p. 148). Furthermore, many species—in Arctic localities with a richer fauna—appear to select exposed areas free of snow for hibernation, rather than lower lying ground which is subject to spring flooding (Deichmann 1896; Johansen 1911, p. 40; 1921, p. 8).

The ability of unrelated bird species (jaeger, shore-birds) to utilize such a source of food may indicate that arthropods which have overwintered on the ridges are important to arctic migrants in the period before their normal summer food becomes available with the exposure of the valleys.

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A Recent Introduction of Frogs to Newfoundland

It is generally established that the island of Newfoundland has no native anurans and that the only species previously recorded, the Green Frog, *Rana clamitans*, was introduced at St. John's about 1850 (Johanson 1926; Bleakney 1958; Cameron and Tomlinson 1962). Bleakney (1958: 43-44, 47) has concluded that cold salt water has barred the spread of both amphibians and reptiles to this island and that there has been no land connection with the mainland at least since the last Wisconsin glaciation. It is apparent from the survival of the Green Frog and from data contained in Bleakney (1958) that neither climate nor available habitat would exclude all northerly ranging species from the entire island.

Cook (1965: 148; and personal communication) although cautioning against introductions generally because our knowledge of amphibians and reptiles in Canada is far from complete as yet and introductions could obscure scientifically important natural variation and distribution patterns forever, has stressed that when introductions are made, for whatever reason, this information should at least be forwarded to a museum where a permanent record of it can be kept. In addition it should be published. Such a record will allow future assessment of the success or failure and other effects of the introduction to be studied as well as preventing erroneous conclusions being

drawn from the later discovery of these animals if they are successful. It should include the source of the introduced animals, the number originally introduced and the date of introduction.

This report is based on introductions between 1960 and 1967 of four species not previously recorded from Newfoundland. They were made in the hope that these amphibians would find the area suitable for survival and contribute to the control of the large numbers of insects and other invertebrates which thrive in the area, particularly sow bugs and slugs which appear to grow to a larger size and occur in greater abundance here than I have observed in regions where frogs are abundant. I once counted 60 slugs while standing in one spot in the summer of 1966. During fifteen summers in the area from the time I was 10 to 25 years old, I did not observe amphibians of any species, although the country appears ideal for them and my searching was quite thorough.

The area where the introductions were made is in the vicinity of Corner Brook on the western side of Newfoundland. The species involved were the Wood Frog, Leopard Frog, Western Chorus Frog and the American Toad, all originally collected in the Toronto, Ontario, region and introduced as tadpoles, juveniles, or adults depending on the species, during the period 1960-1966. The individual introductions, including numbers of individuals and subsequent observations of their success or apparent lack of it are discussed below by species.

Studies on the long-term results and possible spread of the successfully introduced species in this area are being continued.

WOOD FROG, *Rana sylvatica*.

On May 16, 1963, 60 or 70 Wood Frog tadpoles were collected from a small creek about 0.2 miles north of Highway 7 beside Keel Street, Toronto, Ontario. These were kept in an aquarium until leaving for Corner Brook (by car) on June 8. They were transported in gallon bottles, about 20 to bottle. Unfortunately, at Sackville, New Brunswick, June 9 I used tap water in one of the bottles and killed 10 or 12, but fresh pond water was used in the other jars. After arrival in Corner Brook the weather was cold during June 11-19, and the tadpoles were kept at my father's home. Approximately 50-55 survived until they were liberated on June 15. The site was a small pool in the ditch on the north side of the Trans-Canada Highway (between the highway and the Humber

River) 1.4 miles northeast of where Steady Brook crosses the highway. On July 4, 1966, the site was revisited and Wood Frog tadpoles were abundant, some about ready to leave the water. Again, on June 13, 1967, the area was examined and tadpoles were numerous. At this time I was afraid that the pond would be filled in by the construction underway to widen the highway so I moved 42 tadpoles to a little pond just south of Corner Brook. On June 24 and 27, 1968, I found Wood Frog tadpoles in most of the pools as far as 0.5 miles from the original pond. In some of the pools they were abundant. During June 16-27, 1969, a careful check of 325 tadpoles showed them all to be Wood Frogs. At Steady Brook, June 24, I met a Hydro worker who had an adult Wood Frog in a milk carton. He had never seen a frog before and had found it while inspecting a transmission line. It appeared healthy and vigorous.

The 1967 transfer of 42 tadpoles from the original introduction site to a small pond near a high school (Herdman Collegiate) in Corner Brook has also proven successful. In June 1968 no tadpoles were seen during a careful inspection of the pond. However, on June 21, 1969, there were an estimated 5,000 to 10,000 tadpoles. A collection of about 100 of these proved to contain only Wood Frogs.

Interestingly enough there was one Green Frog calling at this pond on June 21, 1969. It appeared to be a much paler green than individuals of this species that I have observed in the Toronto region. The first introduction of this species apparently came from the Maritimes and it is now abundant in portions of the Avalon Peninsula of southeastern Newfoundland, the area of original introduction, as well as a few other scattered localities, apparently from secondary introductions (Cameron and Tomlinson 1962). I would guess that this particular individual had been released there by the school.

To date, the introduction of the Wood Frog has apparently been successful at Corner Brook and it seems well on its way to establishing permanent residence in this area.

WESTERN CHORUS FROG, *Pseudacris triseriata triseriata*

At the same time as the Wood Frog introduction was made, about 50-55 tadpoles of the chorus frog were also collected from the same area in Toronto and released in the Corner Brook area June 15, 1963. Because cannibalism had been

noted only about 18 were released in the original Wood Frog introduction site. Another 18 were liberated about half way back to the bridge, also on the north side, and the remainder in a roadside ditch 0.1 miles west of the bridge on the south side of the highway. On none of my subsequent visits have I identified any tadpoles of this species, although, particularly in 1969, a careful inspection was made for them. Unfortunately, I am not able to visit the area earlier in the year and listen for their calls, which would be certain verification of their presence or absence. In this area there are many pools in which the water is so dark and shaded that it is difficult to check positively for tadpoles. Next year screen traps will be placed in these pools to attempt to establish if this species has survived to reproduce in the area.

LEOPARD FROG, *Rana pipens*

On July 1, 1966, twenty-five adult Leopard Frogs were released in a swamp 0.4 miles south of Herdman Collegiate. Five more were kept in a wire box and released July 7 in a pond on the south side of the highway 3.9 miles northeast of the steady Brook bridge. On June 14, 1967, I saw one Leopard Frog at the swamp near Herdman Collegiate, but it quickly disappeared. I have not observed any Leopard Frogs at either place since. The water at the swamp is very cold, and it may be spring fed.

AMERICAN TOAD, *Bufo americanus*.

In June 1960 about 100 newly metamorphosed toads were released on the shore of a small pond one mile south of the three mile dam (a local landmark) on the east side of the Trans-Canada Highway. No trace of them was found on my visit in 1963, nor in 1969. Subsequently, additional small toads were sent by air mail to my father who released them in his yard at 23 Valley Road in Corner Brook. The years and numbers released were: 1963 (60), 1964 (45), 1965 (41), 1966 (55). My father found two toads in the summer of 1966, one about 2½ inches in length and the other 3 inches, and several each year since. Three of his neighbours have found at least one in their yards. Apparently they can overwinter successfully in the area. Because there are no suitable breeding areas on my father's property, on June 13, 1967, 3 adult toads collected in my father's yard and 29 one-year-olds from Toronto were moved to a site 1½ miles east of Steady Brook bridge on the south side of the highway. In 1968 and 1969 no toads or tadpoles were seen in this area.

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A Sight Record of the Curlew Sandpiper in Alberta

Birdlife in the Canadian prairies in spring is always interesting, especially to a native easterner. During three years in Alberta I became well acquainted with many western species and made some exciting observations.

The evening of June 18, 1969 was no exception. Early in the evening I drove out to the Chain Lakes, a group of small alkaline lakes lying between Dowling and Farrell Lakes northwest of Hanna, Alberta. A small colony of Baird's Sparrows were nesting in the short grass bordering these lakes. Locating a nest of this species as well



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