THE OSOYOOS-ARID BIOTIC AREA

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There are three unique natural areas in Canada that are endangered as a result of human settlement. These are (i) the Deciduous Forest (Beech-Maple Forest of Braun (1964)) with its Carolinean Fauna, in southern Ontario; (ii) the Tall Grass or True Prairie with its special fauna, in the southern part of Manitoba; and (iii) the semi-desert with its Upper Sonoran fauna, in the southern part of the Okanagan Valley in British Columbia (Scudder, 1979a). Biologists and conservationists should be involved in attempts to protect all three of these areas, but we are here engaged in a discussion of the habitat concerns in British Columbia.

The semi-desert area in the southern Okanagan Valley is the region called the Osoyoos-Arid Biotic Area by Munro and Cowan (1947). It is a narrow strip of territory, about 38 km (24 miles) long, running from Skaha Lake south to the international boundary (Fig. 1). It lies generally below 335 m (1100 ft.) and is characterized climatically by mild winters, hot summers and very little annual precipitation (less than 20 cm (8 inches)).

There is a riparian bottom land, and then a series of benches and hill slopes, with desert-like characteristics. The dominant plant is the Antelope-brush (Purshia tridentata (Pursh) DC). Otherwise Sagebrush (Artemisia tridentata Nutt.) and Rabbit-brush (Chrysothamnus nauseosus (Pall.) Britt.) are abundant, together with Prickly-pear Cactus (Opuntia fragilis (Nutt.) Haw.) and Bitter-root (Lewisia rediviva Pursh).

The area has a characteristic faunal assemblage, with a number of distinctive vertebrates and invertebrates. Among the mammals, the most characteristic are the Pallid Bat (Antrozous pallidus cantwelli Bailey), the Small-footed Bat (Myotis leibii melanorhinus (Merriam)), the White-tailed Jack Rabbit (Lepus townsendii townsendii Bachman), the Western Harvest Mouse (Reithrodontomys megalotis megalotis (Baird)) and Lord's Pocket Mouse (Perognathus parvus lordi (Gray)).

Characteristic birds are the Canyon Wren (Catherpes mexicanus (Swainson)), the Sage Thrasher (Oreoscoptes montanus)Townsend)), the Brewer's Sparrow (Spizella breweri breweri (Cassin)), as well as the Burrowing Owl (Athena cunicularia (Molina)) to be discussed later in this symposium under the endangered species list.

There are some characteristic reptiles and amphibians in the region. In the reptiles we should mention the Short-horned Lizard (Phrynosoma douglasii douglassii (Bell)) and the Western Skink (Eumeces skiltonianus (Baird & Girard). In the amphibia, the Tiger Salamander (Ambystoma tigrinum slateri Dunn) and the Great-basin Spadefoot Toad (Scaphiopus intermontanus Cope) should be mentioned.

The characteristic invertebrates in the Osoyoos-Arid Biotic Area are too numerous to list in this paper. Most noteworthy perhaps are the scorpion Paruroctonus boreus (Girard), the wind-scorpion or sun-spider Eremobates gladiolus Muma and the native mantid Litoneutria minor (Scudder). Other species virtually confined to this area in British Columbia include the lygaeid Phlegyas annulicrus Stål, the reduviid Fitchia spinosula Stål, the hebrid Merragata hebroides White, the butterflies Apodemia mormo (Felder & Felder) and Euchloa hyantus Edw., the apiocerid Apiocera haruspex O.S., the syrphids Asemosyrphus polygrammus (Lw.) and Copestylum caudatum (Cn.), the tiger beetle Cicindella parowana Wickham and the scarabs Euphoria inda rufobrunnea Csy. and Hoplia deserticola Bayar.

Furthermore, in some insects confined in British Columbia to the Osoyoos-Arid Biotic area, we find that the species was described from material taken from this area. Hence the area is famous as being the type locality for many insects, such as the agromyzids Agromyza oliverensis Spencer and Melanangromyza miranda Spencer (Spencer, 1969). There are also some subspecies described from and confined to this area. The grasshopper Psaloessa delicatula buckelli (Rehn) is an example.

Mantispids (Mantispidae), snake flies (Rhaphidiidae) and ant lions (Myrmeleontidae) are typical inhabitants of the area. The species diversity in the insects alone is impressive.

The Osoyoos-Arid Biotic Area has a distinctive faunal assemblage found nowhere else in Canada. Some of the species are found nowhere else in British Columbia. While they may not all be endangered, in that they occur to the south, the populations in British Columbia are peripheral ones.

I believe these peripheral populations should be protected. It is in just such peripheral populations that much of a species' adaptations and evolution occurs. Indeed, it is only in these that the scientist can most easily study the processes of environmental adjustment, natural selection and evolution in action today (Scudder, 1979b).

I think we should be concerned with these endangered marginal or peripheral populations. I do not agree with the suggestion to exclude these peripheral species from the Threatened or Endangered Species List in British Columbia (Munro and Low, 1979).

As mentioned above, the Osoyoos-Arid Biotic Area is endangered by human settlement. The tempo of this has increased again recently, and now there is little of the area left undisturbed. Indeed, most of it has been eliminated (Fig. 2).

Starting about 1860 when Haynes established a large ranch extending from Okanagan Falls to the United States border, the area has been heavily grazed, some might say overgrazed. Until 1919 there were only 5-6 families living south of Okanagan Falls, with just one orchard, that of Parham's at Vaseux Lake.

In 1919 major changes in the area were initiated with the commencement of the South Okanagan Lands Project (SOLP). This was a project under the Soldiers' Land Act and was concerned with the rehabilitation of returned veterans of the First World War. The project involved the irrigation of much of the valley floor, with flumes carrying the water from the Okanagan River at Vaseux Lake. Officially opened in 1921 by Premier Oliver, the project was completed in 1927. It led to the survey and development of lots in the Oliver townsite and the placement of these on the market in 1922: those in the present village of Osoyoos were offered for sale in 1935.

After initial tobacco planting in the SOLP area in the mid 1920s, many orchards were established, with acreage increasing over the years, eventually occupying most of the valley floor above the marshland. A flood control canal was completed in 1957 and this changed the topography of the bottom lands, lowered the water table several feet, and further increased the available arable land.

Since 1965, there has been additional land alienation with the planting of grapes on the terraces. Vineyards were established in the late 1960s and early 1970s, and planting continues today.

In the SOLP, of an estimated total area of some 8900 ha (22,000 acres), about 810 ha (3,000 acres) is bottom land, about 3240 ha (8,000 acres) is irrigated, with some 80-120 ha (200-300 acres) still capable of some development. This development, and that in adjacent areas to the north and south, has drastically reduced the natural areas of the Osoyoos-Arid Biotic Area. It has seriously affected the fauna. Cowan & Guiguet (1956) noted that the White-tailed Jack Rabbit was "formerly abundant but cultivation has reduced its numbers": it has reduced the numbers to such an extent that many believe the species may now be extirpated from British Columbia. There seems little doubt that the Sage Grouse (Centrocercus urophasianus (Bonaparte)) is now extinct in British Columbia (Munro & Cowan, 1947). There have been attempts to reintroduce the latter, but these have not been successful. In contrast, the European Mantid (Mantis religiosa L.) was released in the area in 1937 and 1938 for biological control (McLeod, 1962) and has survived, no doubt with some impact on the native insects.

In the fall of 1964, the Interpretation Section of the B.C. Parks Branch undertook a survey of this biotic area. At that time eleven areas of this unique habitat were documented as worthy of preservation (Edwards, 1965). The survey suggested that there was a last chance then of preserving some of the area for the future. Numerous letters of support were obtained. Nothing much happened.

The establishment of the "Field's Lease" as an ecological reserve (E.R. 33) in March 1972, saved just 4.2 ha (10.48 acres). This reserve, fenced since 1964, protects a small area from grazing. It may serve to preserve a few individuals of the rare Bitter-root (Lewisia rediviva), Evening Primrose (Oenothera pallida Lindl.) and Rabbit-brush (Chrysothamnus viscidiflorus (Hook.)), but it does nothing for the rare, threatened and endangered fauna, especially

the b[illegible]s and the mammals. The Haynes Point Provincial Park at Osoyoos has not protected much of the area, as most of it is now blacktop.

The largest area of unspoiled Osoyoos-Arid habitat left in British Columbia is on the Inkaneep Indian Reserve, but this is not available for official preservation under the provincial Ecological Reserves Act. For some time, there was an additional natural area in the SOLP area, to the west of the Indian Reserve, but in the past few years most of this has been turned into vineyards.

All that is left now, is the unsubdivided portion of District Lot 2450S, an area generally referred to as the Haynes Lease. The South Okanagan and Similkameen Parks Society has been trying to preserve this area for some 20 years. An application for a 300 ha (738 acre) ecological reserve was eventually filed before the British Columbia Ecological Reserves Committee in 1971. Since then it has been under constant bureaucratic examination and attack. As a result of a series of compromises, the Thompson-Okanagan Regional Resources Management Committee has now recommended an ecological reserve much smaller than that originally proposed (Fig. 3). The reduced area of this proposed reserve will not suffice for such threatened and endangered animals as the White-tailed Jack Rabbit and the Burrowing Owl: it is too small. It seems to make no difference that the Burrowing Owl was officially designated in 1979 as a threatened species in Canada by the Committee of the Status of Endangered Wildlife in Canada (see Wedgwood, 1978).

No doubt commercial interests will prevail and more of this unique area will be destroyed and the biota exterminated. If there was a "last chance" to preserve some of the area in 1964, now must be the very last chance.

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Legends to Figures

Fig. 1 Map showing extent of Osoyoos-Arid Biotic Area in the Southern Okanagan Valley of British Columbia (heavy outline); major highways indicated by broken line and numbered; IR = Inkaneep Indian Reserve; scale like = 5 km.

Fig. 2 Map showing alienation of most of the Osoyoos-Arid Biotic Area in the southern part; outline of biotic area and highways as in Fig. 1; ER33 = Ecological Reserve 33; ER = proposed new ecological reserve (Reduced size); IR = Inkaneep Indian Reserve; coarse stipple = orchards; fine stipple with "v" = vineyards; scale line = 3 km.

Fig. 3 Map showing proposed new ecological reserve in the southern part of the Osoyoos-Arid Biotic Area; broken line = highway; hatched line = railway; ER = proposed new ecological reserve (reduced size) - area deleted from original proposal shaded; IR = Inkaneep Indian Reserve; scale line = 1 km.