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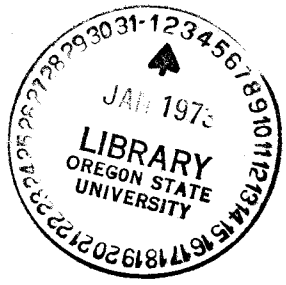
Endangered Plants and Animals of Oregon
IV. Mammals



Special Report 364
December 1972

Agricultural Experiment Station
Oregon State University
Corvallis

FOREWORD

The problem of endangered species is effectively stated in Public Law 89-669 which finds that "one of the unfortunate consequences of growth and development in the United States has been the extermination of some native species of fish and wildlife; that serious losses in other species of native wild animals with educational, historical, recreational, and scientific value have occurred and are occurring; and that the United States has pledged itself, pursuant to migratory bird treaties with Canada and Mexico and the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, to conserve and protect, where practicable, the various species of native fish and wildlife, including game and non-game migratory birds, that are threatened with extinction."

The Special Reports in the *Endangered Plants and Animals of Oregon* series list and locate plants and animals that represent "endangered species" —ones which can be eliminated from the state and possibly the nation, unless recognized and protected. Such species are usually found in relatively limited areas. They can be eliminated or seriously reduced in numbers through man's manipulation of the environment. Habitat essential to their survival is and can be altered through man's activities, including the introduction of pesticides, toxic materials, or other environmental pollutants.

Those responsible for planning and carrying out operations which may destroy or modify natural habitat or pollute it with toxic materials need objective information to alert them to undesirable or unanticipated effects of their activities on endangered species. Through these reports, it is hoped that wherever possible, alternatives will be selected to insure the preservation of Oregon's rare plants and animals.

This series of special reports was approved at the June 15, 1965, meeting of the Oregon Interagency Pesticide Council. Oregon State University, through its Agricultural Experiment Station, was committed to provide the leadership needed in compiling and publishing the reports. Oregon State University is recognized in the Charter of the Oregon Interagency Pesticide Council as being in the position of supplying such "source material."

Previous Special Reports in the *Endangered Plants and Animals of Oregon* series are:

C. E. Bond, 1966. Endangered plants and animals of Oregon.
I. Fishes. Special Report 205, Agricultural Experiment Station, Oregon State University, Corvallis.

R. M. Storm, 1966. Endangered plants and animals of Oregon.
II. Amphibians and Reptiles. Special Report 206, Agricultural Experiment Station, Oregon State University, Corvallis.

D. B. Marshall, 1969. Endangered plants and animals of Oregon.
III. Birds, Special Report 278, Agricultural Experiment Station, Oregon State University, Corvallis.

Another publication useful to those concerned about the effects of man's activities on wildlife is:

E. T. Juntunen and L. A. Norris, 1972. Field applications of herbicides—avoiding danger to fish. Special Report 354, Agricultural Experiment Station, Oregon State University, Corvallis.

Copies of the above listed reports are available upon request from the Department of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon 97331.

This special report deals with endangered mammals and with mammals which could conceivably become endangered. Careful consideration of the possibilities for assembling this report led to the conclusion that the task should be assigned to James H. Olterman, a graduate research assistant in the Department of Fisheries and Wildlife, in partial fulfillment of requirements leading to a M.S. degree. The junior author, Dr. B. J. Verts, an associate professor of wildlife ecology in the Department of Fisheries and Wildlife, assisted with the planning, provided the needed supervision, and participated in the preparation of the report.

Thomas G. Scott, *Former Head*
Department of Fisheries and Wildlife

CONTENTS

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Endangered Plants and Animals of Oregon

IV. Mammals

JAMES H. OLTERMAN AND B. J. VERTS

INTRODUCTION

The purpose of this study was to determine the distribution and abundance of those species of native Oregon mammals which should be considered to be rare, endangered, or recently extirpated from the state. Pelagic mammals were excluded from this study.

Since 1600, at least 36 species of mammals have become extinct worldwide, and at least 120 species are now in danger of extinction. An estimated 75 percent of these disappeared as a direct result of man's activities (Fisher et al., 1969).

An awareness of the need for collective action to prevent the extinction of animals developed on an international scale in the late 1800's and early 1900's (Hayden, 1942; Street, 1961; Coolidge, 1968). Although numerous conferences and conventions were held, it was not until 1928 that conservation committees from several nations merged to form what came to be known as the International Union for the Conservation of Nature (IUCN). The constitution of the IUCN charged the organization with a responsibility for "the preservation of species threatened with extinction" (Coolidge, 1968).

The American Committee for International Wildlife Protection was established in 1931, and sponsored the publication of two volumes (Allen, 1942; Harper, 1945) which provided a basis for formulation of programs for the protection of endangered species (Coolidge, 1968). The Survival Service Commission of the IUCN, formed as a result of a 1949 conference, was directed "to work effectively towards assembling, evaluating, and disseminating information on all living species of fauna and flora that appear to be gravely threatened with extinction." To that end, in 1966, the first of a proposed series of volumes known as the Red Data Books was published. This publication was an abstract of all available data concerning species considered to be in danger of extinction. The information is updated at six-month intervals (Coolidge, 1968).

The first major publication dealing with rare and endangered species of wildlife in the United States was that by Hornaday (1913). He listed the status of several species of animals and called for stringent laws and closed hunting seasons to protect them.

Linduska (1967:41) reported that the federal government gave consideration to endangered species of wildlife as early as 1903. However, efforts were directed primarily toward legislative action and, until recently, little was done to further the understanding of their ecological needs. Dr. Stanley Cain, assistant secretary for fish, wildlife, and parks, U.S. Bureau of Sport Fisheries and Wildlife, in a December 1966 address to the Philadelphia Academy of Natural Sciences, stated, "The growing public interest in rare and endangered species has caught the scientists short. They know scarcely anything about their ecological requirements."

The Endangered Wildlife Research Station was established by the U.S. Bureau of Sport Fisheries and Wildlife in 1965. Objectives of this station were:

1. "to obtain needed information on the distributional, behavioral, ecological, physio-

logical, genetic, and pathological characteristics of threatened species in the wild so as to identify and evaluate limiting factors and find means of correcting them,

2. "to maintain captive populations of these wildlife species for study and for the production of suitable stock needed to restore or bolster populations in the wild (Erickson, 1968:418)."

A publication entitled "Rare and Endangered Fish and Wildlife of the United States" was completed by the U.S. Bureau of Sport Fisheries and Wildlife in 1966. It was an abstract of information dealing with rare and endangered forms of wildlife obtained from biologists across the United States. However, attention was focused primarily on the United States as a whole and changes occurring in smaller areas could escape detection. The Advisory Committee on Predator Control (1972:14) stated:

> "From a federal point of view a species is classified as rare and endangered when its entire population is reduced everywhere throughout its range. This position, which is proper for the federal government, needs to be supplemented by state action when a species population is approaching extirpation locally."

An indication of the distribution and abundance of some species of mammals in Oregon as early as the late 1700's is available in the records of early fur traders (Ogden, 1941; Howay, 1944). Many explorers kept excellent records of fauna encountered in their explorations of the northwestern United States (Coues, 1877; Murphy, 1879; Murphy, 1880; Thwaites, 1905; Elliot, 1910; Douglas, 1914).

Bailey (1936) compiled the first comprehensive body of knowledge concerning mammals in Oregon. Ingles (1965) published a textbook in which general descriptions of the distributions of mammals of the Pacific Northwest were presented. Most other work has been in the form of brief articles such as that by Pearson and Verts (1970) or species accounts such as that by Coggins (1969). Knowledge of the biology of mammals in Oregon, especially those considered of lesser economic importance, appears to be incongruous with their diversity and abundance. We believe that it is essential that this knowledge be expanded and that it is imperative that priority be given species that are most easily affected by man's activities.

METHODS

A working list of species to be investigated in detail was compiled from the literature and from conversations with individuals who have worked with mammals in Oregon (Table A, Appendix). Any species that was in any way referred to as "uncommon, scarce, not abundant, or rare" was included.

Interviews with mammalogists, game biologists, naturalists, and outdoorsmen having a knowledge of Oregon mammals were conducted (Table B, Appendix). These individuals were asked to comment on the distribution and abundance of species with which they were familiar. Citations of names not accompanied by dates in the text of this paper indicate that the information was obtained during personal interviews.

Museum and personal collections containing specimens of species under investigation were visited, or in a few cases, data were gathered by mail. In the cases of distant collections containing specimens of interest, the curator or owner was asked for loan of the specimens for examination. In all cases, date and collection site of each specimen were recorded. Collections and the number of specimens on deposit in each were listed by Olterman and Verts (1972).

Collection data were used to denote the distribution of each species in the form of range maps. Information from all sources was used to formulate criteria for placement of species into one of the following categories:

Recently Extirpated—A recently extirpated species was defined as one which inhabited Oregon in the recent past (since 1600), but no longer occurs in the wild within the state.

Endangered—An endangered species was defined as one which was in immediate danger of extirpation in Oregon. A species may be endangered as a result of habitat loss, over-exploitation, or a combination of many causes. These species should be closely observed and afforded the considerations necessary to insure their retention in the fauna of Oregon.

Rare—A rare species was defined as one which was very uncommon in Oregon, but was not in immediate danger of extirpation. A species may be rare as a result of man's activities, or it may be rare under natural conditions.

Status Undetermined—Species for which relatively little information was available, and for which information obtained provided grossly conflicting evidence regarding their present status, were assigned to a category designated "status undetermined."

Not Presently Rare or Endangered—Species that were included in the working list (Table A, Appendix) for detailed investigation, but that subsequently were not placed into one of the above categories, were not considered rare or endangered at the present time.

Criteria for categorization were established independently for each species. Numbers and density of individuals that placed one species in one category were, in some cases, sufficient to place another species in another category.

Mammals were considered at the species level with two exceptions. The bighorn sheep (*Ovis canadensis*) and the white-tailed deer (*Odocoileus virginianus*) were considered at the subspecies level.

Such factors as the cyclic nature of some mammalian populations, the degree to which species lend themselves to observation or collection, and the necessary use of such imprecise terms as "very uncommon" and "small or limited amount" in defining categories, inject a certain degree of subjectivity into the proposed classification. However, we believe that this study consolidates existing knowledge and that it provides a basis for future, more detailed studies which may reveal basic ecological requirements of rare and endangered forms of mammals in Oregon. This knowledge is essential if management practices are to be implemented on behalf of these mammals.

RESULTS AND CONCLUSIONS

Of 41 species that were included for detailed evaluation, 3 were considered to be extirpated; 6 endangered; 9 rare; 19 not presently rare, endangered, or extirpated; and the status of 4 was not determined (Table 1). Species accounts, including information regarding distribution, relative abundance, and other evidence used to establish the present status, are provided for each species evaluated.

Mammals Recently Extirpated from Oregon

1. WOLF (*Canis lupus*)
Museum Records—*Baker County:* North Powder, 1. *Clackamas County:* 28 mi. above Cazadero, 2; Source of Mollala River, 2; Upper Clackamas River, 35 mi. E. Estacada, 1; Coffin Creek, near Estacada, 1; Buckeye Creek, near Estacada, 1; Clackamas Lake, 1. *Deschutes County:* Crane Prairie, 1. *Douglas County:* Hoaglin (Idleyld Park) 2, 1; Umpqua Nat'l. Forest (not shown on map), 1; Anchor, 1; Tiller, 2; Glide, 7; Drew, 1; Devil's Knobs, 4 mi. from Drew, 3; Head of Days Creek, 1; 20 mi. N.E. Glide, 1; Rock Creek, 14 mi. above Glide, 1; Near Riddle, 1. *Jackson County:* 15 mi. S.E. Tiller, 2. *Josephine County:* Peavine Mtn., 20. *Klamath County:* Crescent Lake, 2. *Lake County:* South Ice Cave, 40 mi. S. Bend, 1; Sycan Marsh, 30 mi. S. Silver Lake, 1. *Lane County:* Little Fall Creek, 3; Fall Creek, 1; Headwaters of Big Fall Creek, 4; Leaburg, 1; Oakridge, 3; 20 mi. S. Oakridge, 1; Willamette River, 6 mi. above Oakridge, 1. *Linn County:* Moose Creek, near Cascadia, 2; Canyon Creek, near Cascadia, 3; Foster, 3; 6 mi. N.E. Foster, 2.

Wolves were present in most timbered areas of Oregon in the early 1800's, but were most common from the western foothills of the Cascade Mountains to the Coast (Bailey, 1936:272). The species was regarded as a detriment to man at the onset of white settlement, and wolves were trapped, poisoned, or shot indiscriminately at every opportunity (Rymon, 1969:268-269).

The Oregon State Game Commission was organized in 1912, and began offering bounty pay-

Table 1. PRESENT STATUS OF SPECIES OF MAMMALS THAT IN THE PAST WERE CONSIDERED TO BE UNCOMMON IN OREGON BY VARIOUS AUTHORITIES.

Mammals Extirpated from Oregon

Canis lupus—Wolf
Ursus arctos—Grizzly Bear
Bison bison—Bison

Endangered Mammals in Oregon

Spermophilus richardsoni—Richardson Ground Squirrel
Vulpes macrotis—Kit Fox
Gulo luscus—Wolverine
Enhydra lutris—Sea Otter
Lynx canadensis—Lynx
Odocoileus virginianus leucurus—Columbian White-tailed Deer

Rare Mammals in Oregon

Sorex preblei—Malheur Shrew
Sorex trigonirostris—Ashland Shrew
Sorex merriami—Merriam Shrew
Tadarida brasiliensis—Brazilian Free-tailed Bat
Aborimus (Phenacomys) albipes—White-footed Vole
Bassariscus astutus—Ringtail
Martes pennanti—Fisher
Mirounga angustirostris—Northern Elephant Seal
Ovis canadensis—Bighorn Sheep

Mammals of Undetermined Status

Myotis thysanodes—Fringed Myotis
Pipistrellus hesperus—Western Pipistrelle
Spermophilus washingtoni—Washington Ground Squirrel
Perognathus longimembris—Little Pocket Mouse

Mammals Not Presently Rare or Endangered in Oregon

Lasiurus cinereus—Hoary Bat
Sylvilagus idahoensis—Pigmy Rabbit
Lepus townsendii—White-tailed Hare
Ammosphermophilus leucurus—Antelope Ground Squirrel
Thomomys bottae—Bottae Pocket Gopher
Microdipodops megacephalus—Dark Kangaroo Mouse
Dipodomys heermanni—Heerman Kangaroo Rat
Phenacomys intermedius—Heather Vole
Arborimus (Phenacomys) longicaudus—Red Tree Mouse
Microtus californicus—California Meadow Mouse
Lagurus curtatus—Sagebrush Vole
Martes americana—Marten
Taxidea taxus—Badger
Lutra canadensis—River Otter
Felis concolor—Mountain Lion
Phoca vitulina—Harbor Seal
Eumetopias jubata—Northern Sea Lion
Zalophus californicus—California Sea Lion
Odocoileus virginianus ochrourus—Idaho White-tailed Deer

ments for wolves in 1913. During the period 1913-1946, 393 wolves were presented for bounty payments; however, most animals were taken in the portion of the period prior to the mid-1930's. No more than 2 wolves per year were taken after 1937 (Oregon State Game Commission, unpublished data) and the last known animal killed in Oregon was submitted for bounty payment in 1946 (Oregon State Game Commission, 1947:56).

We located 80 specimens of wolves that were collected in Oregon; most were collected from the western slope of the Cascade Mountains (Fig. 1). However, this distribution is not representative of the range originally occupied by the wolf in the state because the species probably was eliminated from some areas before 1913 when specimens were first preserved.

Although occasional reports of wolves are received by the Oregon State Game Commission, most appear to be misidentified coyotes or dogs (Mace, 1970:47; C. E. Kebbe). No populations of wolves are known to occur near Oregon. The species was considered to be nearly extinct in Washington in 1948 (Dalquest, 1948:233) and only one confirmed record exists for California since 1924 (Ingles, 1963: 109-110).

We believe that the species was extirpated from Oregon and that the absence of reservoir populations in adjoining states probably precludes natural reintroduction.

2. Grizzly Bear (*Ursus arctos*)

Museum Records—*Harney County:* Malheur Lake, 1. *Wallowa County:* Enterprise [Chesnimnus Creek], 1; Wallowa Mountains, 1; Wallowa Nat'l. Forest, near Billy Meadows, 1; Near head of Joseph Creek, 1.

Records indicate that grizzly bears were once common in many areas of Oregon, although few specimens were preserved (Fig. 2). The species was reported to inhabit all areas of the Cascade, Siskiyou, Blue, and Wallowa mountains, as well as the Klamath Lakes area, the Rogue, Umpqua, and Willamette valleys (Bailey, 1936:324-329; Rymon, 1969:20). In addition, Bailey (1936:329) reported that a single grizzly bear skull was found on Malheur Lake bed in 1930.

At the time of white settlement, grizzly bears represented a threat to livestock and to man. For these reasons, the bears were persecuted in Oregon until, apparently, they were extirpated in the early 1930's. The last verified report of a grizzly bear in Oregon was of an animal killed on Chesnimnus Creek in Wallowa County on September 14, 1931. The skull of this animal was deposited in the U.S. National Museum (No. 250124).

No populations of grizzly bears are known to occur near Oregon. The last known specimen from California was killed in 1922 (Ingles, 1965:354), and in Washington the species was reported to

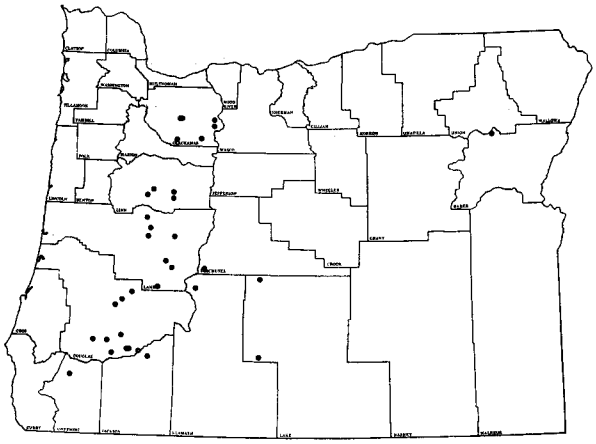

Figure 1. Sites at which specimens of *Canis lupus*, deposited in museums and private collections, were collected in Oregon.

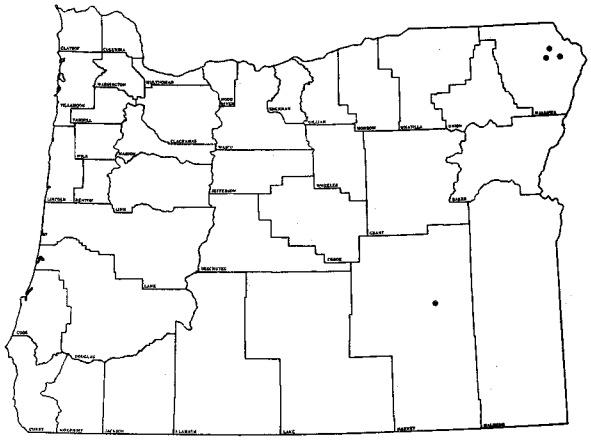

Figure 2. Sites at which specimens of *Ursus arctos*, deposited in museums and private collections, were collected in Oregon.

occur only in the extreme northern portion of the state (Lauckhart, 1970:3).

Because no grizzly bears were reported in Oregon for over 40 years, we consider the species to be extirpated from the state.

3. Bison, Buffalo (*Bison bison*)

Museum Records—*Grant County:* Izee, 1. *Harney County:* Malheur Lake, 16; 20 mi. E. Malheur Lake, 1; Cow Creek Lake, 1. *Wallowa County:* Near Joseph, 1.

Although no wild bison are known from Oregon since white man arrived (about 1800), nonfossilized bones from scattered locations in eastern Oregon (Fig. 3) are an indication that the species occurred in the state in the recent past. Bailey (1936:60) was told by an Indian that his grandfather remembered when bison were present in the Malheur Valley.

The reasons for the early disappearance of the bison from Oregon are not known. The species was at the extreme western extent of its geographical range in eastern Oregon (Hall and Kelson, 1959: 1025), and probably existed under marginal conditions in that area. Bailey (1936:60) speculated that the increased proficiency of Indian hunters after they acquired horses was responsible for extirpation of the species.

The large expanses of open grassland required to maintain wild populations of bison no longer exist in Oregon, and it is unlikely that the species will occur under wild conditions in the future.

1. Richardson Ground Squirrel (*Spermophilus richardsonii*)

Museum Records—*Malheur County:* Between headwaters of Quin and Rattlesnake rivers, 3; Near McDermitt, Nevada, 4.

The Richardson ground squirrel reaches the western extent of its range in southeastern Oregon (Hall and Kelson, 1959:339). Only seven specimens have been collected in Oregon, none since 1927 (Fig. 4).

Durrant and Hansen (1954:85) speculated that the subspecies of Richardson ground squirrel which was collected in Oregon, *S. r. nevadensis* "is a relict and is on the way out throughout its range." They believed that the Belding ground squirrel, *Spermophilus beldingi,* was able to outcompete the Richardson ground squirrel for the wet habitat situations, and the Townsend ground squirrel, *Spermophilus townsendii,* could outcompete it for the dry situations.

In early June of 1971, L. W. Turner visited the sites from which the species was reported. He observed no Richardson ground squirrels; however, he reported that Belding ground squirrels were abundant in the area. These observations appear to support the hypothesis of Durrant and Hansen (1954).

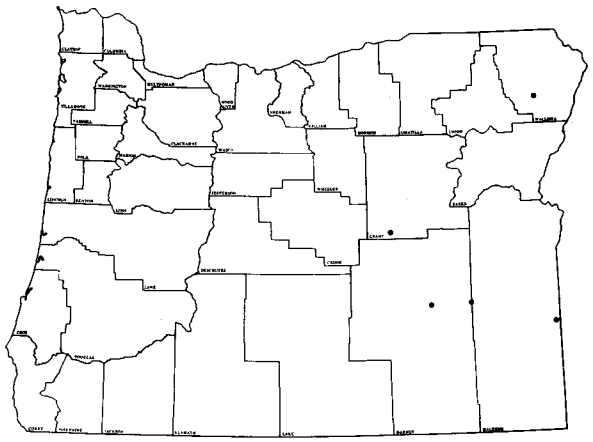

Figure 3. Sites at which specimens of *Bison bison,* deposited in museums and private collections, were collected in Oregon.

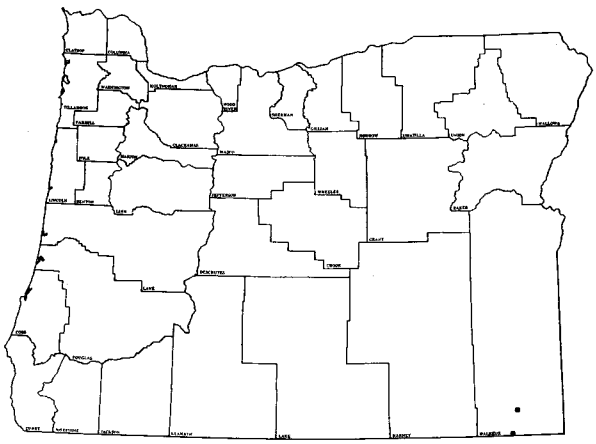

Figure 4. Sites at which specimens of *Spermophilus richardsonii,* deposited in museums and private collections, were collected in Oregon.

The present status of the Richardson ground squirrel in Oregon is uncertain; however, available information indicates that the species probably is endangered if present in the state.

2. Kit Fox (*Vulpes macrotis*)
Museum Records—*Malheur County:* Pollick, 1; 20 mi. S. Pollick, between Pollick and Rome, 1.

The kit fox reaches the northern extent of its geographical range in southeastern Oregon (Hall and Kelson, 1959:859) and apparently never was abundant in that area (Bailey, 1936:285; Mace, 1970:57). We were able to locate only two museum specimens from Oregon (Fig. 5), but several other kit foxes were reported. W. E. Nelson provided the following records in a letter of February 11, 1971:

1. "John Penland trapped a kit fox October 17, 1968, on the Warren McLean sheep range near Fields, Oregon. Neither the skin nor skull was saved.

2. "Darrell Gretz, District Supervisor, Division of Wildlife Services, saw a kit fox on Highway 78 southeast of Burns at the Folly farm junction in August, 1964.

3. "On August 21, 1962, the Oregon State Game Commission reported that their employee, Boyd Claggett, had sighted a kit fox in Malheur County within the last few months.

4. "At the same time, our employee, Robert Long, reported there had been a den four years earlier (1958) in the cut on Highway 95 at the Burns Junction."

C. R. Langdon saw a kit fox in about 1967 near an emergency air strip south of Burns Junction. He believed that "a few" might still be present in the area.

The kit fox reportedly is unsuspicious of man (Bailey, 1936:286). They may be easily approached to within rifle range and are not wary of poisons or traps (Escogue, 1956:356). These characteristics render the species very susceptible to coyote (*Canis latrans*) control programs which Mace (1970:57) believed was a factor in reducing populations of kit foxes "to the verge of extinction."

We consider the kit fox to be an endangered species in Oregon, but it is possible that the species already has been extirpated.

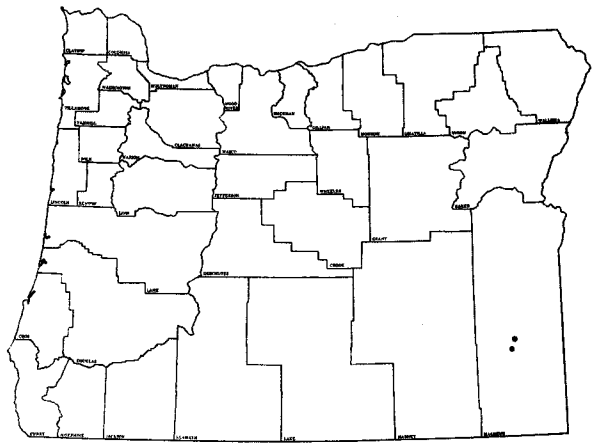

Figure 5. Sites at which specimens of *Vulpes macrotis*, deposited in museums and private collections, were collected in Oregon.

3. Wolverine (*Gulo luscus*)
Museum Records—None.
Other Records—*Deschutes County:* E. Slope Broken Top Mountain, near Todd Lake, 1 (Oregon State Game Commission, 1970a:7). *Lane County:* Upper McKenzie Valley, W. Three Sisters Peaks, 1 (Bailey, 1936:300). *Linn County:* N. Slope Three-Fingered Jack Mountain, 1 (Kebbe, 1966:65). *Mount Hood Section:* Unknown number (Bailey, 1936:300).

Wolverines were reported to occur in the "Mount Hood Section in 1896" and one was caught "in the upper McKenzie Valley west of the Three Sisters Peaks, Oreg., in 1912" (Bailey, 1936:300). No additional verified reports of the species in Oregon were made until September 11, 1965, when a wolverine was shot on the north slope of Three-Fingered Jack Mountain in Linn County (Kebbe, 1966:65). Kebbe (1966:65) noted that several wolverines reportedly were observed in recent years, and believed that a small population of the animals may exist in Oregon. Another wolverine was caught on the east slope of Broken Top Mountain, near Todd Lake in Deschutes County, during the winter of 1969 (Fig. 6). A taxidermy mount was made of the specimen and it is now on display at the Oregon State Game Commission office in Portland (Oregon State Game Commission, 1970a:7).

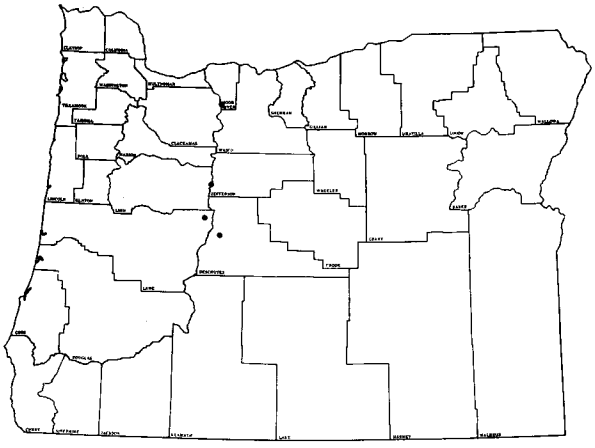

Figure 6. Sites at which specimens of *Gulo luscus*, deposited in museums and private collections, were collected in Oregon.

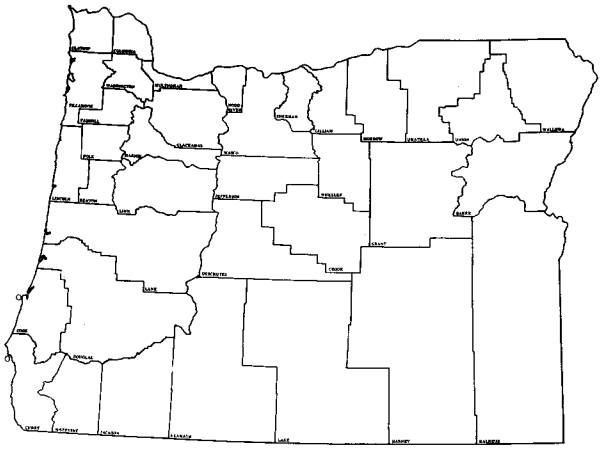

Figure 7. Sites at which *Enhydra lutris* were released in Oregon.

All biologists, trappers, and naturalists asked to comment on the status of wolverines in Oregon believed that the species was extremely rare. E. H. Rosborough reported seeing their sign on "one or two" occasions in over 30 years of "high-country trapping."

It is possible that no breeding populations of wolverines have existed in Oregon in recent years and that recent records of the species in Oregon are of wandering animals from other areas. The species is classified as "very rare" in California (Ingles, 1965:376), and Patterson and Bowhay (1968:12-13) suggested that four recent records in Washington were of individuals that dispersed from Canadian populations. If wolverines exist in Oregon at the present time, they are extremely rare and probably on the verge of extirpation.

Probably the greatest threat to the continued existence of the species in Oregon is man's encroachment into the wilderness habitat that appears essential to survival of the species (Mace, 1970:19). Direct killing by man has not been a significant factor in limiting wolverine populations, and the fact that the species is now protected in California, Oregon, and Washington (Ingles, 1965:377; Lauckhart, 1970:4; Oregon State Game Commission, 1970b:2) probably will not stimulate significant increases in populations in these areas.

We consider the wolverine to be endangered in Oregon.

4. Sea Otter (*Enhydra lutris*)

Museum Records—None located.

Sea otters once inhabited the coastal waters of Oregon in considerable numbers (Scammon, 1847: 69; Allen, 1898:356; Bailey, 1936:304; Kenyon, 1969:185). Unregulated killing for fur occurred over a period of 170 years (Lensink, 1960:172-173; Kenyon, 1969:1) and the species was almost extinct by 1911, when it was afforded protection under international treaty (Kenyon, 1969:135). The sea otter was extirpated from Oregon during the late 1800's or possibly just after the turn of the 20th century. Bailey, (1936:304) listed no records after 1876; however, two were reported killed at the mouth of the Rogue River in 1888 (Sherrell, 1970:105), and Kenyon, (1969:185) noted an unconfirmed report that a sea otter was killed near Otter Rock in 1906. No published records of the occurrence of sea otters in Oregon during the period 1906 to 1961 were found. In August 1961, a sea otter was observed near Neahkahnie and other sightings of what was believed to be the same animal were made in November 1961, and again in February 1962 (Pederson and Stout, 1963:415). Kenyon (1969:185) speculated that these sightings were of a wandering animal from either Prince William Sound, Alaska, or from California.

On July 18, 1970, 31 sea otters were transported by air from near Amchitka Island, Alaska,

to Port Orford, Oregon. Two animals died shortly after their arrival, but the remaining 29 otters (20 females and 9 males) were released to the wild, in good physical condition, on July 20, 1970, after being held for 2 days in pens anchored offshore from Port Orford (Fig. 7) (Oregon State Game Commission, 1970c:4). Fourteen of the animals were observed at various points along the coast October 19 and 20, 1970, and all except one otter, which was sighted in Coos Bay, appeared to be in excellent physical condition (C. E. Kebbe).

A second transplant was made on June 24, 1971. Sixty-four sea otters were flown from Amchika Island, Alaska, to Charleston, Oregon. The animals were divided into two groups: one group of 24 (6 males and 18 females) was flown to Port Orford, and another group of 40 (12 males and 28 females) remained at Charleston (Fig. 7). The animals were released directly to the wild and five animals were known to have died during the next few days. In spite of these mortalities, at least some of the otters are known to have survived the initial stress of the transplant. R. J. Jameson repeatedly observed a group of eight animals at Simpson's Reef in December 1971 and January 1972. During the same period, four additional animals were observed in the vicinity of Orford Reef. In February 1972, Jameson observed a group of 20 otters, including one recently born pup, at Simpson's Reef.

The pelage of sea otters must be kept clean in order to insure that the insulating characteristics are not lost (Kenyon, 1969:281). For this reason, probably the greatest threat to reestablishment of the animals in Oregon's waters is that of environmental pollution in the form of petroleum discharged from ships. This threat is of particular importance in the Simpson's Reef area because it is situated approximately 2 miles south of one of Oregon's major shipping ports at Coos Bay. It is conceivable that an oil slick released offshore under the proper conditions, could eliminate sea otters from that area.

A second threat to the continued existence of sea otters in Oregon is direct persecution by shooting. One of the transplanted animals was believed to have been shot in Coos Bay after the 1971 release (B. R. Mate).

Kenyon (1969:192-193) concluded that "an isolated population having ample unused habitat may grow through local reproduction (no immigration) at a rate of about 10 to 12 percent per year." With no more than 90 animals, it is mandatory that the detrimental influences of man upon the population of sea otters in Oregon be held to a minimum if survival and growth of the population is to occur.

Because of the paucity of information regarding the current status of the transplanted animals, and the susceptibility of the species to environmental pollutants, we believe the sea otter should be classified as endangered in Oregon.

5. Canada Lynx (*Lynx canadensis*)
Museum Records—*Deschutes County:* Bend, 1. *Grant County:* Granite, 3. *Harney County:* Diamond, 1. *Klamath County:* Ft. Klamath, 1. *Umatilla County:* 2 mi. W. Van Sycle, 1; Lehman, 2.
Other Records—*Wallowa County:* 5 mi. N. Imnaha, 1. (Coggins, 1969:16).

The Canada lynx apparently was never common in Oregon, at least since settlement of the state by white man. We were able to locate nine specimens from the state, only one of which was collected after 1935. Specimens were taken in widely scattered locations in the Blue, Wallowa, Steens, and Cascade mountains (Fig. 8). The most recent specimen was shot 5 miles north of Imnaha, Wallowa County, in March 1964 (Coggins, 1969: 16). The tanned skin of that animal is in the possession of Wendle Weaver of Wallowa. In addition, there were unconfirmed reports of Canada lynxes from western Oregon (Bailey, 1936:271).

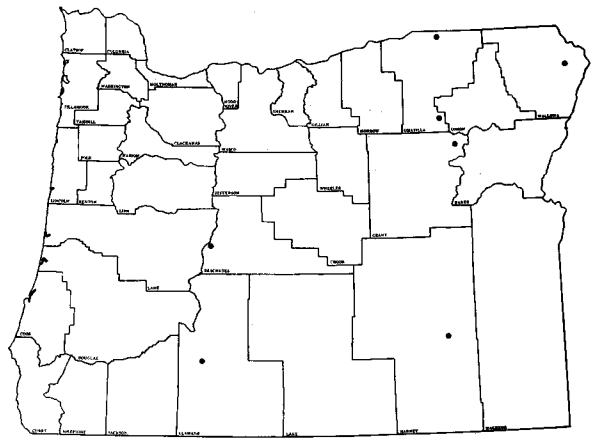

Figure 8. Sites at which specimens of *Lynx canadensis*, deposited in museums and private collections, were collected in Oregon.

A breeding population of Canada lynxes may exist in Oregon; however, records of occurrence were so uncommon that it is more likely that occasionally an individual wanders into Oregon from another state. The lynx was classified as a rare mammal in Washington by Lauckhart (1970:3) who reported it to occur ". . . in localized areas of the Cascade Mountains and in the northern portion of eastern Washington." Fur trappers were reported to take an average of 10 lynxes per year from an estimated population of 300 animals in Washington (Lauckhart, 1970:3).

If a breeding population of lynxes exists in Oregon, its density is extremely low and we believe the species should be considered to be endangered in Oregon.

6. Columbian White-tailed Deer (*Odocoileus virginianus leucurus*)

Museum Records—*Clatsop County:* 2½-3 mi. E. Westport, 2. *Columbia County:* 5-10 mi. W.N.W. Clatskanie, 3; Clatskanie, 1. *Douglas County:* Roseburg, 7; Roseburg, near Oak Creek, 1; Roseburg-Winchester area, 2; 8 mi. N.E. Roseburg, 1. *Lane County:* Cottage Grove [specimen not located], 1.

The Columbian white-tailed deer (*Odocoileus virginianus leucurus*) was reported to occur throughout the Willamette and Umpqua River Valleys, as well as along the lower portion of the Columbia River and possibly in the valleys of the Coast Range (Bailey, 1936:91). Many of the accounts presented by Bailey (1936) were based upon unsupported verbal descriptions which may be questionable. We verified specimens collected from two localities in western Oregon, and these were from areas where the subspecies was reported to occur at the present time (Fig. 9). A specimen listed in the card file of the University of Oregon, Museum of Natural History, as being collected at Cottage Grove was not located.

An estimated 300-400 animals occupy the low lands on both sides of the lower Columbia River near Clatskanie, Oregon, and Cathlamet, Washington (Committee on Rare and Endangered Wildlife Species, 1968:M-25), and a second population estimated by Crews (1939:40) to include approximately 200-300 animals occurs near Roseburg, Oregon. K. R. Cochrun reported that the white-tailed deer in the vicinity of Roseburg occupied an area bounded by a line from Roseburg to Glide to

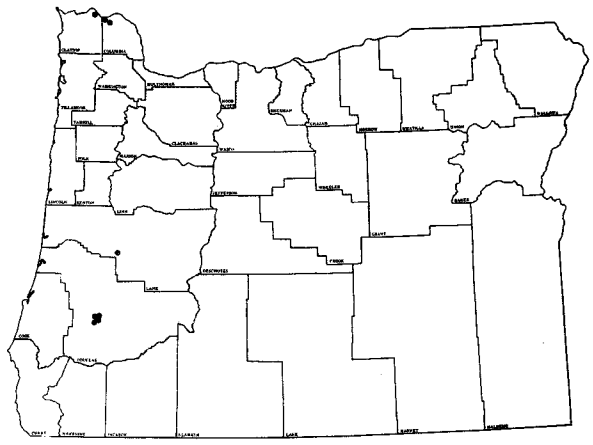

Figure 9. Sites at which specimens of *Odocoileus virginianus leucurus*, deposited in museums and private collections, were collected in Oregon.

Sutherlin and back to Roseburg. The population near Roseburg was reported to be "genetically impure from inbreeding with the black-tailed deer" (Committee on Rare and Endangered Wildlife Species, 1968:M-25); however, no evidence was presented to support this claim.

Scheffer (1940:280) reported the presence of the population on the lower Columbia River, and attributed their survival to 3 factors:

1. "Lack of competition for range with black-tailed deer;
2. "absence of predatory animals; and
3. "freedom from excessive hunting because of isolation from large cities."

He believed that clearing and more intensive use of the land could prove detrimental to the deer. He recommended that some of the area be set aside for a deer refuge. At the present time, the U. S. Bureau of Sport Fisheries and Wildlife has options to buy lands in the area, and intends to establish a refuge (A. C. Bonsack). The deer in this area now are protected from hunting on both the Oregon and Washington sides of the Columbia River (P. W. Ebert).

The Committee on Rare and Endangered Wildlife Species (1968:M-25) stated, "A few [Columbian white-tailed deer] are left of a transplant to an area near Roseburg, Oregon." This indication that

the Roseburg population possibly was introduced was not supported by any other information that we were able to obtain. Oregon State Game Commission personnel in Roseburg and Portland knew of no such transplant and felt that none had taken place (K. R. Cochrun, C. E. Kebbe). Bailey (1936:91) stated that Jewett, in 1915, reported, ". . . a few [Columbian white-tailed deer] on the oak covered hills along the Umpqua, a few miles northeast of Roseburg . . . ." This supports the contention that the white-tailed deer in that area are native.

A refuge area of 19,500 acres was established northeast of Roseburg in 1927 for white-tailed deer, but was later opened to hunting. The animals in that area now are not protected, but K. R. Cochrun reported that landowners there seldom allowed hunters access to their farms.

The Columbian white-tailed deer is considered to be an endangered subspecies by the Committee on Rare and Endangered Wildlife Species (1968: M-25) and we consider the subspecies to be endangered in Oregon.

Rare Mammals in Oregon

1. MALHEUR SHREW (*Sorex preblei*)
Museum Records—*Harney County:* Diamond, 1; 1½ mi. S. of center patrol road station, Malheur Nat'l Wildlife Refuge, 1. *Malheur County:* Jordan Valley, 1. *Wallowa County:* Enterprise, 1.
Other Records—*Harney County:* Steens Mountain, 8.

The Malheur shrew appears to be restricted to eastern Oregon. We located only four specimens from Oregon and found reference to eight others in the literature (Fig. 10) (Hansen 1956:126). These few records indicate that the species may be extremely rare.

Most references suggested that *S. preblei* usually was found in association with marsh-type habitat in the Upper Sonoran and Transition life zones (Bailey, 1936:368; Ingles, 1965:87). However, Hansen (1956:126-127) found the species "not difficult to collect" in sub-alpine dry bunchgrass habitat at elevations as high as 9,200 feet on Steens Mountain. The latter information indicates that many efforts to collect this species may have been concentrated in areas that do not provide the most suitable habitat.

Although Malheur shrews may be found to be more common than the 12 records indicate, we consider the species to be rare in Oregon at the present time.

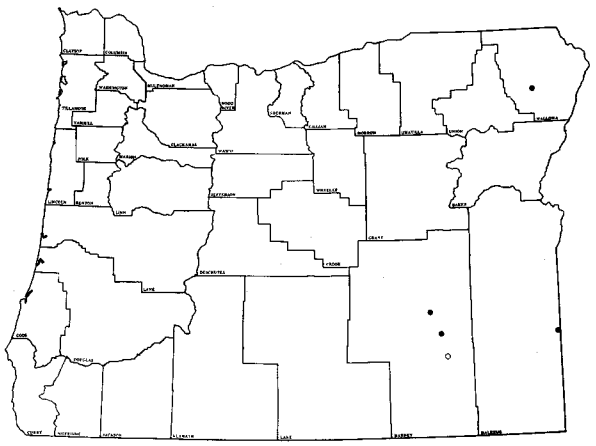

Figure 10. Solid symbols depict sites at which specimens of *Sorex preblei*, deposited in museums and private collections, were collected in Oregon. Open symbol depicts literature citation.

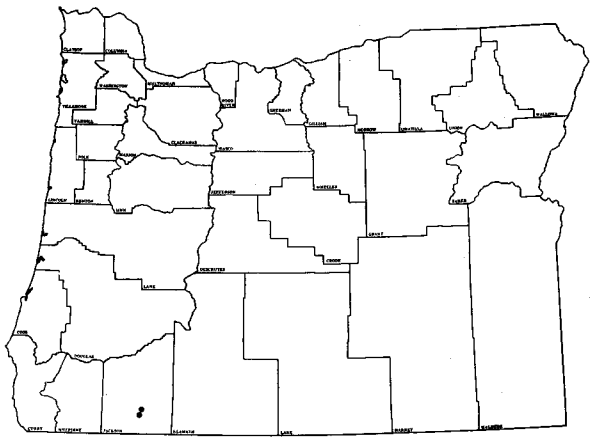

Figure 11. Sites at which specimens of *Sorex trigonirostris*, deposited in museums and private collections, were collected in Oregon.

2. Ashland Shrew (*Sorex trigonirostris*)[1]
Museum Records—*Jackson County:* Ashland, 11; W. Slope Grizzly Peak, 1.

The Ashland shrew was first reported in 1914 when L. J. Goldman caught two specimens near Ashland, Oregon. Ten additional specimens were collected by W. E. Sherwood near Ashland in 1924 (Fig. 11). We were able to locate only these 12 specimens, and could find no reference to any additional collection attempts. The small number of specimens collected probably does not reflect the true abundance of the species; however, until additional information is gathered to clarify the status of the animal, we believe that it should be classified as rare in Oregon.

3. Merriam's Shrew (*Sorex merriami*)
Museum Records—*Wasco County:* Antelope, 1.

A single specimen of *Sorex merriami* is known from Oregon. It was collected about 7 miles southeast of Antelope in June of 1896 by Vernon Bailey (Fig. 12) (Bailey, 1936:367).

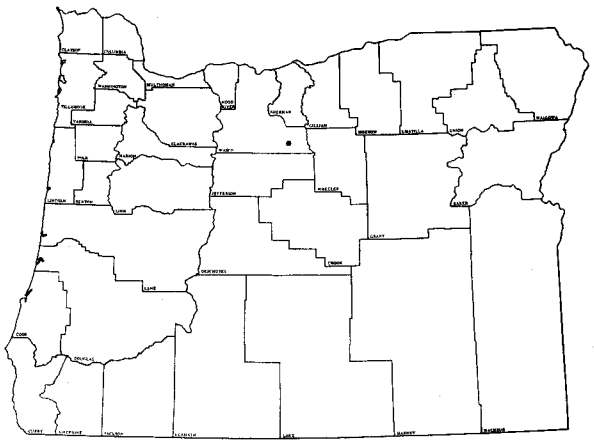

Figure 12. Site at which a museum specimen of *Sorex merriami* was collected in Oregon.

Merriam's shrews were recorded from drier habitat types in 12 western states (Armstrong and Jones, 1971:1), but do not appear to be abundant anywhere. Clanton collected 46 specimens in Washington where he found them in association with the sagebrush vole, *Lagurus curtatus* (Johnson and Clanton, 1954:1).

Although efforts to collect the species probably have not been great in Oregon, the single known occurrence is the only indicator of abundance available. Until further studies reveal more about the ecology of *Sorex merriami,* we feel that it should be regarded as rare in Oregon.

4. Brazilian Free-tailed Bat (*Tadarida brasiliensis*)
Museum Records—*Jackson County:* Ashland, Southern Oregon College Campus, 7; Ashland, 3; Medford, 5.

The Brazilian free-tailed bat was not known to occur in Oregon until September of 1940 when a specimen was collected in Medford (Stager, 1945: 196). In 1954, three specimens were taken from a "large colony" that was occupying a building in Ashland (Jewett, 1955:458). Eleven specimens on deposit at Southern Oregon College were collected

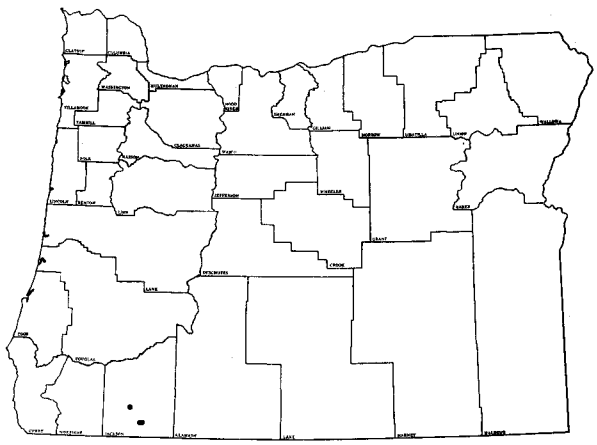

Figure 13. Sites at which specimens of *Tadarida brasiliensis,* deposited in museums and private collections, were collected in Oregon.

during all seasons of the year indicating a possible lack of migratory behavior. This evidence supports the findings of Barbour and Davis (1969:199) that the winter and summer ranges of the species are essentially the same in the western United States. S. P. Cross reported that a colony of free-tailed

[1] Some mammalogists consider the Ashland shrew to be a race of the ornate shrew, *Sorex ornatus* (Bailey, 1936:336; Ingles, 1965:89).

bats presently utilizes the tile roof of the Southern Oregon College Administration Building as a daytime roosting area, and that others were observed roosting in a barn near Ashland. Cross termed the species "fairly common" in the Ashland area. The species has been recorded only from Ashland and Medford.

T. brasiliensis reaches the northern extent of its range in southern Oregon (Hall and Kelson, 1959:206; Barbour and Davis, 1969:199). However, to our knowledge, no studies have been conducted to obtain quantitative information on the abundance, distribution, or behavior of this bat in the state. Although the species may be locally common at the present time, its colonial roosting behavior makes it possible for entire colonies to be eliminated through a single act of vandalism or persecution.

The range of the free-tailed bat is very restricted in Oregon (Fig. 13) and we consider the animal to be rare within the state.

5. WHITE-FOOTED VOLE (*Arborimus [Phenacomys] albipes*)[2]

Museum Records—*Benton County:* Marys Peak Campground, 1; Conner's Campground, 1; 7 mi. W., 1 mi. S. Philomath, Marys Peak, 1; 8 mi. W., 3 mi. S. Philomath, Marys Peak, 1. *Clatsop County:* Old Fort Clatsop, 2; Nehalem Summit, Hwy. 53, 1. *Columbia County:* 7 mi. S.E. Rainier, 2. *Coos County:* 1¾ mi. E. Bandon, 3; 4 mi. S.E. Bandon, 3. *Curry County:* S. side Rogue River, 3 mi. above Gold Beach, 1. *Douglas County:* Gardiner, 1; Oxbow Burn, 1. *Lane County:* Near S. Fork McKenzie River (T18S, R5E), 1; Neptune State Park, 4 mi. E. Yachats, 1; 2 mi. W. Vida, 1; 23 mi. S.E. Vida, 2. *Lincoln County:* Cascade Head Exp. Forest (T6S, R10W, SW ¼ Sec. 21), 3; Rose Lodge, 1; 1 mi. E. Newport, 2; Head of Alsea Bay, up Shad Creek, 1. *Tillamook County:* 2 mi. up Miami River, 5; Netarts, 3; Netarts, near Whiskey Creek, 1; 1 mi. N. Bay City, 2; 6½ mi. S.W. Tillamook, 3; 7 mi. S.W. Tillamook, 1; Blaine, 1; 2¾ mi. N. Hebo, 1.

The range of the white-footed vole includes only western Oregon and northeastern California. Collection records indicate that the species is extremely uncommon over its entire range and it has been termed "the rarest microtine rodent in North America" (Maser and Johnson, 1967:24).

[2] Maser and Storm (1970:69) applied the generic name *Arborimus* to this species.

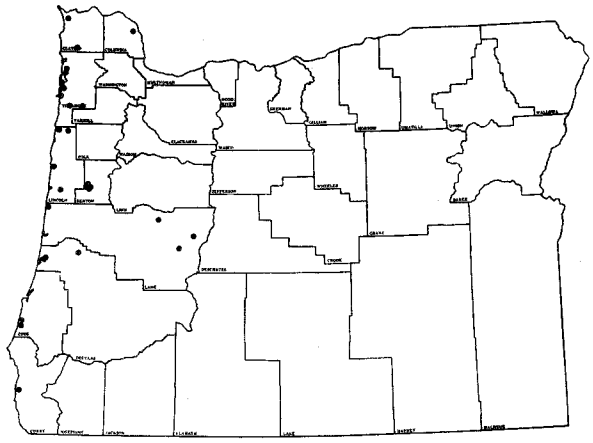

Figure 14. Sites at which specimens of *Arborimus* (*Phenacomys*) *albipes*, deposited in museums and private collections, were collected in Oregon.

We located only 46 specimens of the white-footed vole that were collected in Oregon (Fig. 14). Some investigators indicated that they believed the species ultimately will be shown to be more common than is presently believed (Bailey, 1936:200; Maser, 1966:217a; E. F. Hooven).

The animal was collected in an extensive portion of western Oregon (Fig. 14) and was taken in logged and burned areas dominated by seral vegetation as well as in mature coniferous forests. These data indicated that requirements of the species are compatible with present land-use practices, and further suggested that the species was not presently endangered. However, we believe that the animal should be considered to be rare at the present time.

6. RINGTAIL (*Bassariscus astutus*)

Museum Records—*Curry County:* Port Orford, 2. *Douglas County:* Riddle, 2; Tiller, 1; 25 mi. S.E. Glide, 1. *Jackson County:* Beagle, 3; Evans Creek, 1; Prospect, 1; China Gulch (Rogue River), 1. *Josephine County:* Galice, 1.

Other Records—*Coos County:* Bandon, 1 (*Western World*, 1971:5). *Curry County:* Gold Beach, 1 (Bailey, 1936:318).

Ringtails were reported as "common in Rogue River Canyon" in 1909, "well known to hunters and trappers" near Grants Pass in 1914, and "common on the west side of the Cascades" in 1914 (Bailey,

TABLE 2. RINGTAIL FUR-CATCH REPORTS FOR 1955-1970 TRAPPING SEASONS.[1]

Season	County of Capture							Total	Average price per Pelt
	Coos	Curry	Douglas	Jackson	Josephine	Lane	Marion		
1955-56	None Reported							0	-----
1956-57		4						4	$ .50
1957-58	7							7	$ .71
1958-59		4	1	1				6	$ .76
1959-60		6	2					8	$ .43
1960-61		2		1				3	$1.13
1961-62	1		1					2	$ .50
1962-63		5	13	2				20	$ .88
1963-64	None Reported							0	-----
1964-65						1	1	2	$1.25
1965-66	4		1					5	$1.50
1966-67					1			1	$1.25
1967-68			2	1				3	$1.50
1968-69	Listed as Miscellaneous. 3 Reported.							3	$1.25
1969-70	None Reported							0	-----
Total	12	21	20	5	1	1	1	64	
Average (All Years)									$ .97

[1] Data condensed from Oregon State Game Commission, Annual Reports 1956-1970.

1936:318). In addition to the records that can be substantiated by specimens (Fig. 15), reports of ringtails from east of Steens Mountain and from the west side of Klamath Lake were received by Bailey (1936:318). Bailey (1936:318) regarded the Steens Mountain account as questionable, but the reports from Upper Klamath Lake were considered valid.

The ringtail was reported as "not common" in the vicinity of Oregon Caves in 1949 (Roest, 1949: 34). D. L. Hammer reported seeing ringtails between Powers and Bandon in Coos County, but he felt that they were not abundant in that area. Sherrell (1970:90) was told of specimens being trapped "along Euchre Creek; at Whale's Head Cove, T40S, R14W, Sec. 3; and around old cabins on the Pistol River" in Curry County. He believed the animals to be presently less abundant than they were in the past. D. L. Eastman neither saw nor received reports of ringtails around Upper Klamath Lake. F. H. Fick trapped ringtails along the Illinois River in Josephine County and considered them to be "locally abundant" in that area.

Fur-catch reports (Table 2) indicated that 64 ringtails were taken by trappers in Oregon during the period 1955-1970, and all except two were from counties in the southwestern portion of the state. One animal was reported from Marion County. However, that report was regarded by C. E. Kebbe to be either a case of misidentification on the part of the reporting trapper, or more likely, an error in transcribing data from report cards to tally sheets. The Lane County report may be valid, but records that would identify the reporting trapper were destroyed.

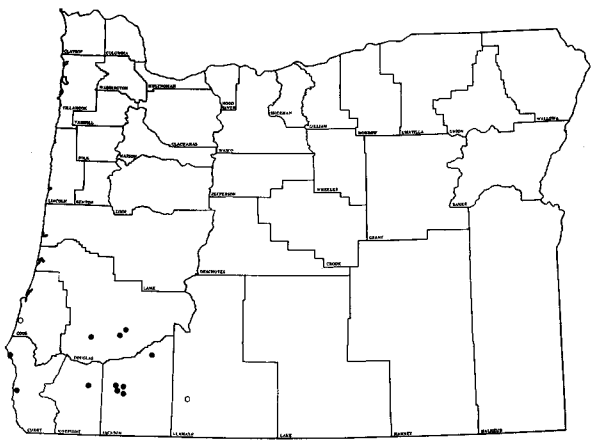

Figure 15. Sites at which specimens of *Bassariscus astutus*, deposited in museums and private collections, were collected in Oregon. Open symbols depict literature citations.

Trappers reported that practically all ringtails trapped in Oregon were caught incidental to other trapping efforts, and that most of them were released or discarded because of the low value of their fur (Table 3). For this reason, fur-catch reports probably did not reflect the actual number of ringtails caught.

Ringtails were protected in Oregon since 1970 (Oregon State Game Commission, 1970b:2). Populations are probably not greatly affected by man's activities; however, the animal is at the northern extent of its geographical range in the state and ecological conditions are probably less than optimal for the species.

At present, the ringtail does not appear to be in danger of extirpation, but we believe that it should be classified as a rare species in Oregon.

7. FISHER (*Martes pennanti*)

Museum Records—*Douglas County:* Glendale, 1. *Lane County:* Oak Ridge, 2. *Wallowa County:* Near Duck Lake [specimen at Oregon State Game Commission Regional Office, La Grande], 1.

Other Records (Reintroductions) — *Klamath County:* Buck Lake, 25 mi. W. Klamath Falls, 11. *Union County:* Mouth of Little Minam River, 6. *Wallowa County:* Big Burn [not located], 7.

The coastal coniferous forests, as well as the Cascade and Blue Mountains, were listed as the range of the fisher in Oregon (Bailey, 1936:298-299; Hall and Kelson, 1959:903). The animals apparently were never abundant in any area of the state. Incomplete fur-catch reports indicated that fishers were taken in small numbers before complete protection was afforded the species in 1937. Nine fishers were reported from six Oregon counties in 1913-14 (Bailey, 1936:299). C. E. Kebbe provided the following reported catches of fishers: 1924-25, 13; 1925-26, 9; 1926-27, 6; 1927-28, 9; 1928-29, 5; 1929-30, 6; 1930-31, 7; 1931-32, 2; 1935-36, 11; 1937-present, closed season. No information was available to indicate localities in which fishers were captured by trappers.

The fisher was considered to be "almost extinct" in 1938 (State Parks Commission, 1938:89), and Mace (1970:16) stated that "few, if any, remained after the 1940's." However, reports of fishers being seen and trapped after these dates indicated that native populations never were eliminated completely from the state. D. L. Hammer reported seeing a fisher east of Oakridge about 1955 and Sherrell (1970:94) was told that a fisher was trapped in Curry County about 1957-1958.

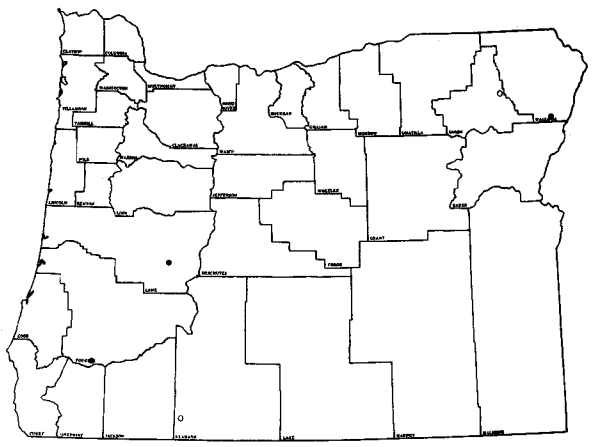

Figure 16. Sites at which specimens of *Martes pennanti*, deposited in museums and private collections, were collected in Oregon.

In January of 1961, 5 male and 6 female fishers were obtained from British Columbia by the Oregon State Game Commission and transported to Oregon. The animals were released near Buck Lake, 25 miles west of Klamath Falls (Fig. 16). In March of 1961, 13 additional fishers (5 males and 8 females) were obtained from the same source and liberated in the Minam watershed of Wallowa and Union counties (Fig. 16) (Kebbe 1961:6). Two fishers were sighted during the remainder of 1961; one relatively near each release site (Kebbe, 1961:7).

D. L. Eastman received many reports of fishers being seen in the mountains of Klamath County since the 1961 release, and records of animal sightings kept at Crater Lake National Park show that 12 fishers were reported in the park between 1955 and 1969. A. M. Anderson told us that he observed a fisher within ⅛ mile of Diamond Lake, Douglas County, in July 1971, and another in the same area in September 1971. A trapper reported that he knew of two fishers that were accidentally caught in Curry County in 1968. The tail of a fisher that was shot by a hunter near Duck Lake in Wallowa County in 1967 is kept at the Oregon State Game Commission regional office in La Grande.

Accidental trapping and poisoning are probably the greatest threats to fishers in Oregon. It is not likely that marten trapping has a significant effect on fisher populations because the No. 1 or No. 1½ traps usually used for marten probably do not hold fishers (E. H. Rosborough). However, we believe that poison bait stations and larger steel traps used for coyote control could be detrimental to fisher populations, and that these activities should be prohibited in areas inhabited by fishers.

The fisher apparently occurs in very limited numbers over much of its original range in Oregon and probably is not endangered at the present time. However, the animals are not abundant in any area in the state and we consider the species to be rare.

8. Northern Elephant Seal (*Mirounga angustirostris*)

Museum Records—None.

Other Records—Simpson's Reef, 4 (Mate, 1969: 639; Mate, 1970:137).

The northern elephant seal breeds in California and Mexico and occasionally enters Oregon waters. The species was not known from Oregon until 1952 when a dead animal washed ashore 4 miles south of Bandon in Coos County (Freiburg and Dumas, 1954:129). The first observation of live elephant seals in Oregon was of two animals seen on Simpson's Reef, offshore from Cape Arago State Park, on September 10, 1968 (Mate, 1969: 639) (Fig. 17). In July 1969, two additional elephant seals were observed at the same location (Mate, 1970:137). One of these animals carried a tag that had been placed on it in California, 460 miles south of Simpson's Reef. B. R. Mate reported that at least 12 additional observations of elephant seals were made since 1969 at Gold Beach, Simpson's Reef, and at the mouth of Coos Bay. Furthermore, he indicated that all sightings were of male animals.

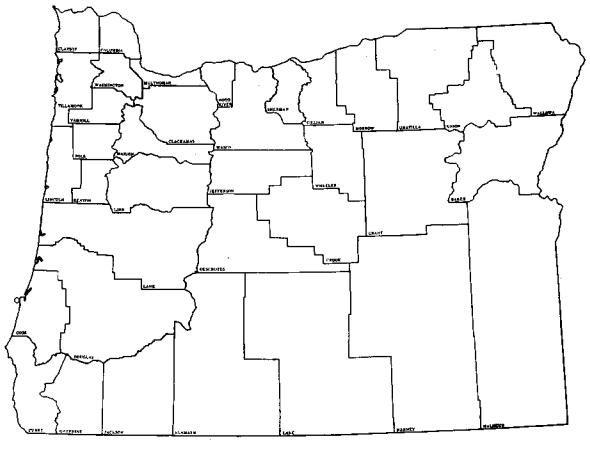

Figure 17. Sight record, from the literature, of *Mirounga angustirostris* in Oregon.

The northern elephant seal was slaughtered for its oil and blubber during the 1800's and was almost exterminated by 1890 (Kenyon and Scheffer, 1953:20). However, a remnant population of about 100 animals on Guadalupe Island, off the coast of Mexico, was protected and increased to approximately 15,000 animals by 1964 (King, 1964:82). With a reservoir population of this size in waters near Oregon, the animals probably will continue to be observed occasionally along the coast. However, the animals probably will never be abundant in the state.

We classified the northern elephant seal as a rare species in Oregon.

9. Bighorn Sheep (*Ovis canadensis*)

Museum Records—*Deschutes County:* Pine Mountain, 1. *Harney County:* Steens Mountain, 1. *Lake County:* Adel, 1; Hart Mountain, 1; Near Lakeview, 1.

Other Records (Reintroductions)—*Grant County:* Strawberry Mountains, 21. *Harney County:* Steens Mountain, 11. *Lake County:* Hart Mountain, 20, *Malheur County:* Leslie Gulch (Owyhee Canyon), 17. *Wallowa County:* Hell's Canyon on Short Creek, 20; Lostine River, 20.

Two subspecies of bighorn sheep were originally native to Oregon (Bailey, 1936:63-64). The Rocky Mountain bighorn, *Ovis canadensis canadensis,* occurred in the Wallowa and Blue mountains, and the California bighorn, *Ovis canadensis californiana,* occupied most of the remaining portion of eastern and central Oregon. Bailey (1936: 65) stated, "Originally mountain sheep inhabited every canyon, cliff and lava butte as well as many of the rough lava beds of Oregon east of the Cascade Mountains." Reports indicated that bighorn sheep were very common in Oregon in the mid-1800's. It was generally agreed (Bailey, 1936:68; Rymon, 1969:241; Mace, 1969:3) that the California bighorn was extirpated from Oregon by 1916, and that the Rocky Mountain bighorn dis-

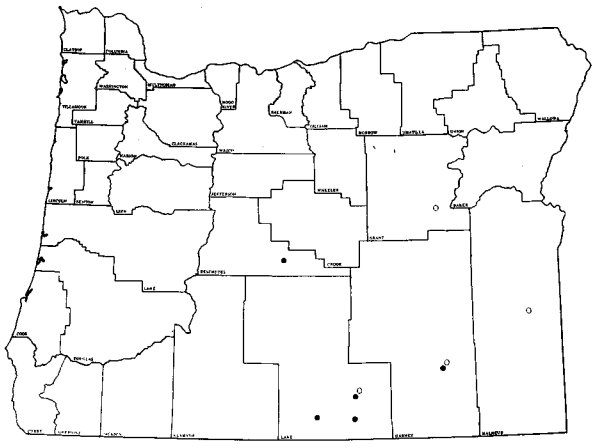

Figure 18. Solid symbols depict sites at which specimens of *Ovis canadensis californiana,* deposited in museums, were collected in Oregon. Open symbols depict reintroduction sites.

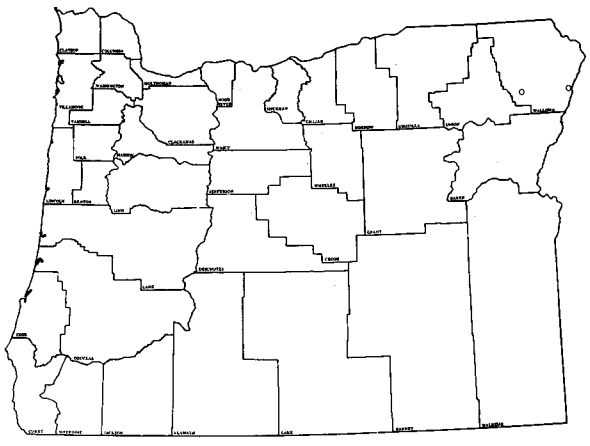

Figure 19. Sites at which *Ovis canadensis canadensis* was reintroduced in Oregon.

appeared by the mid-1930's (Mace, 1969:3). Bailey (1936:69) was certain that "scabies, the disease commonly known as scab among domestic sheep" caused the precipitous decline in wild sheep populations.

In 1939, 23 Rocky Mountain bighorn sheep were obtained from the National Bison Range in Montana and released on the west side of Hart Mountain (Mace, 1969:3). This reintroduction ultimately proved to be unsuccessful. The last observation of an animal from this release was made in 1947 (Oregon State Game Commission, 1969b: 5).

On November 5, 1954, 20 California bighorn sheep were captured in British Columbia, and transported to Hart Mountain National Antelope Refuge (Oregon State Game Commission, 1969:5). The animals were contained within fenced pastures until June of 1957 when 18 animals were released to the wild on the west side of Hart Mountain. In 1960 and 1961, 11 sheep from the Hart Mountain pasture were released on Steens Mountain, and in 1965, 17 animals were released in Leslie Gulch at the head of Owyhee Reservoir (Mace, 1969:4). On August 23, 1971, 21 California bighorns were captured on Hart Mountain and released on Berry Creek in the Strawberry Mountains (P. W. Ebert).

At present, approximately 225 California bighorn sheep occur in Oregon; 60-75 on Steens Mountain, 55-80 on Hart Mountain, approximately 55 in the Leslie Gulch area, and 21 in the Strawberry Mountains (Fig. 18) (W. D. Carter; P. W. Ebert; F. B. Grogan; C. R. Langdon; W. V. Masson; Oregon State Game Commission, 1971a:12; Spalding and Mitchell, 1970:474). It is generally believed that numbers of sheep on Hart Mountain are now at a maximum sustainable level (W. D. Carter; F. B. Grogan; W. V. Masson), and additional suitable habitat in other areas of the state is limited (Mace, 1969:5). Populations of California bighorns probably will never greatly exceed present numbers unless land use practices change significantly. Sugden (1961:52) stated, "Protection of bighorn ranges from excessive human influences and use by domestic livestock must become a major part of California bighorn management."

On April 2, 1971, 20 Rocky Mountain bighorn sheep were transported to Oregon from Jasper National Park, Alberta, Canada, and were released on Short Creek in the Hell's Canyon area of the Snake River (P. W. Ebert, Oregon State Game Commission, 1971b:6). These sheep were observed on several occasions during the summer of 1971 and, although some were as much as 45 miles from the release site, they appeared to be in good physical

condition (R. R. Bartels, Oregon State Game Commission, 1971c:12). On November 19, 1971, an additional 20 Rocky Mountain bighorn sheep were obtained from Jasper National Park and released on the Lostine River in Wallowa County, Oregon (Fig. 19) (P. W. Ebert).

Presently, the California bighorn sheep is classified as a "rare" subspecies by the Committee on Rare and Endangered Wildlife Species (1968:M-27). We consider both the California and Rocky Mountain subspecies to be rare in Oregon.

Oregon Mammals of Undetermined Status

1. Fringed Myotis (*Myotis thysanodes*)
Museum Records—*Clackamas County:* Carver, 1. *Jackson County:* 6.8 mi. S. Hwy. 66 on Copro Rd., 1; 3 mi. S. Ashland, 1. *Lincoln County:* Cascade Head Exp. Forest (T6S R10W, S.W. ¼ Sec. 21), 2. *Tillamook County:* Cascade Head Exp. Forest (T6S, R10W, N.E. ¼ Sec. 21), 1; Tillamook, 1.

The fringed myotis occurs from southern Mexico north to British Columbia (Hall and Kelson, 1959:170). The species was reported to be "irregular, local, and usually scarce" in the northern portion of its range (Barbour and Davis, 1969:85). Hall and Kelson (1959:170) considered the species to be uncommon throughout its range.

S. P. Cross banded "a number" of *Myotis thysanodes* in the vicinity of Ashland and did not believe the species to be rare in that area. He indicated that approximately 1 of each 30 bats that he captured in mist nets was a fringed myotis. Twenty-nine fringed myotis were captured at Oregon Caves in August of 1958 (Albright, 1959:26-27).

This information indicates that the fringed myotis may be common in local areas of southwestern Oregon. However, no information concerning the status of the species from other areas of the state was available. Specimens were collected only in western Oregon (Fig. 20).

We do not believe sufficient data are available to assess the status of the fringed myotis in Oregon at the present time.

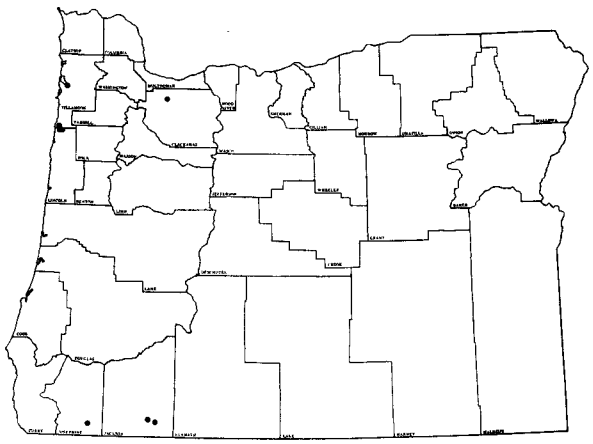

Figure 20. Sites at which specimens of *Myotis thysanodes*, deposited in museums and private collections, were collected in Oregon.

2. Western Pipistrelle (*Pipistrellus hesperus*)
Museum records—*Harney County:* Windy Point, 4 mi. N. Princeton, 5; 20 mi. E. Fields, 1. *Malheur County:* Watson, 13; 2 mi. N.W. Riverside, 1; Cow Creek Lake, 1. *Sherman County:* Miller, 1; Moody, 1.

Bailey (1936:383) stated, ". . . these tiny bats [*Pipistrellus hesperus*] come into the valleys of eastern and northern Oregon in rather limited numbers." The species was described as abundant in the Owyhee Canyon in 1915 and "considerable numbers" were seen in the Alvord Valley in 1930 (Bailey, 1936:384).

The status and distribution of the western pipistrelle is not completely known (Barbour and Davis, 1969:111). The species was classified as "casual" in Washington where it was observed only along the Snake and Columbia rivers (Dalquest, 1948:165).

Only 23 specimens were found to have been taken in Oregon (Fig. 21). The small number of specimens taken may be a function of the difficulty with which the animals were captured and relatively few attempts to collect them, rather than of a low density of animals. Until additional information can be obtained, the present status of the western pipistrelle in Oregon cannot be determined with certainty.

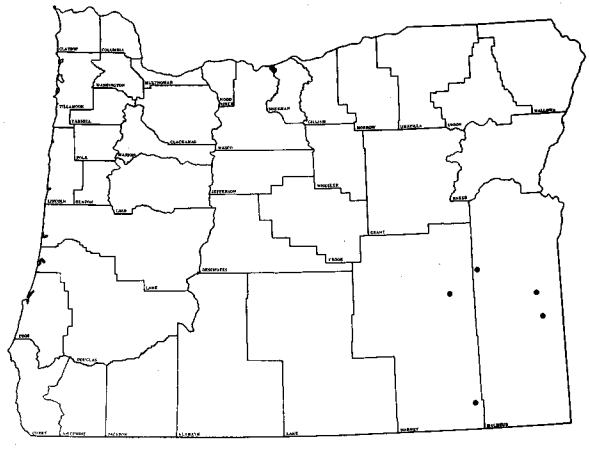

Figure 21. Sites at which specimens of *Pipistrellus hesperus*, deposited in museums and private collections, were collected in Oregon.

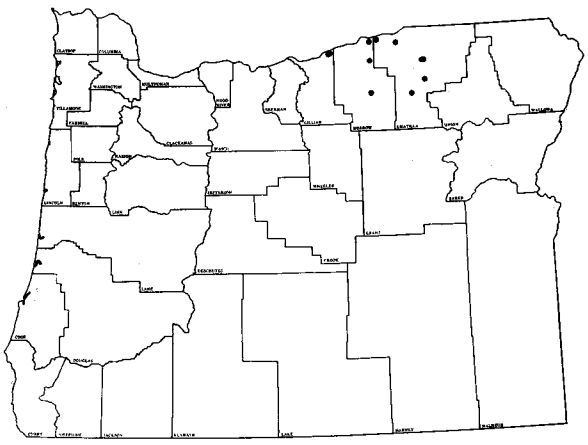

Figure 22. Sites at which specimens of *Spermophilus washingtoni*, deposited in museums and private collections, were collected in Oregon.

3. Washington Ground Squirrel (*Spermophilus washingtoni*)[3]

Museum Records—*Gilliam County:* Willows, 6; Willow Junction, 1. *Morrow County:* Heppner, 9; 18 mi. S. Irrigon, 5. *Umatilla County:* Pendleton, 19; 2 mi. W. Pendleton, 1; Pilot Rock, 3; Cold Springs, 1; Umatilla, 1; Vinson, 30 mi. E. Heppner, 2.

In 1936, the Washington ground squirrel was considered to be "abundant in the hot, dry, sandy, Upper Sonoran Zone bottom of the valley south and east of the Columbia River from near the mouth of the John Day River to Walla Walla" (Bailey, 1936:152). The species was reported to be locally abundant in Washington and densities of 50 or more individuals per acre occurred in some areas of that state (Dalquest, 1948:271). Prior to 1935, 48 specimens were collected in Gilliam, Morrow, and Umatilla counties in Oregon (Fig. 22).

L. W. Turner conducted a search of the northern parts of Umatilla and Morrow counties in May of 1971. He visited cultivated croplands and uncultivated areas along the Columbia River in Oregon and Washington, including specific areas described by Howell (1938:69) as localities in which Washington ground squirrels were collected in Oregon. He found no Washington ground squirrels in any area. However, he found Belding ground squirrels in the valley bottoms. Turner believed that irrigation changed the habitat significantly, and possibly rendered it uninhabitable by Washington ground squirrels. In addition, he believed annual plowing of fields in other areas may have produced habitat more favorable to Belding ground squirrels than to Washington ground squirrels. He considered the Washington ground squirrel to be "rare" in Oregon.

No published information concerning the abundance of the species in Oregon since the work of Bailey (1936) was available. Wildlife biologists in the Pendleton area had no knowledge of Washington ground squirrels.

Because information concerning Washington ground squirrels was limited to museum specimens collected more than 35 years ago, and to the single unsuccessful survey conducted by L. W. Turner, it was impossible to assess the current status of the species in the state.

4. Little Pocket Mouse (*Perognathus longimembris*)

Museum Records—*Harney County:* Tumtum Lake, 3; 3 mi. N. Fields, 2; 12 mi. S.E. Fields, 1; 7 mi. S.

[3] Bailey (1936:151) applied the name *Citellus townsendii* to the species now designated as *Spermophilus washingtoni*. See Howell (1938:62) for explanation.

Andrews, 4. *Malheur County:* Rome, 1; 1½ mi. S. Rome, 2.

The little pocket mouse reaches the northern extent of its geographical range in southeastern Oregon (Fig. 23) (Hall and Kelson, 1959:485). We were able to locate only 13 specimens from the state.

In Nevada, Hall (1946:359) found marked seasonal and yearly fluctuations in numbers of *P. longimembris*. Populations in some areas were estimated to be as dense as 400 animals per acre at certain times, and ". . . at some places where it was found to be the most abundant mammalian species, traps set out at later dates took none, and the absence of signs (tracks and excavations made in search of food) of the species further attested to its scarcity" (Hall, 1946:359).

The few specimens from Oregon may reflect a true scarcity of animals. However, if large population fluctuations occur in little pocket mice in Oregon as they do in Nevada, it is possible that most attempts to collect them coincided with low populations. In addition, the range of the species in Oregon is relatively remote; probably there are few efforts to collect little pocket mice.

We do not believe the status of *P. longimembris* in Oregon can be assessed accurately until a long-term collecting program is conducted throughout southeastern Oregon.

Oregon Mammals Evaluated But Not Classified as Rare or Endangered

1. Hoary Bat (*Lasiurus cinereus*)

Museum Records—*Harney County:* Near Voltage, S. side Malheur Lake, 1. *Jackson County:* Near Ashland, 1. *Lane County:* 10 mi. E. McKenzie Bridge, 1. *Lincoln County:* Cascade Head Exp. Forest (T6S, R10W, Sec. 21), 1. *Malheur County:* E. slope Disaster Peak, 1; Crooked Creek, 22 mi. S.W. Rome, 1. *Marion County:* Salem, 1; Near Salem, 1. *Multnomah County:* Portland, 2. *Tillamook County:* Tillamook, 2. *Wallowa County:* 16 mi. S., 3 mi. E. Lostine (T3S, R43E, Sec. 36), 1. *Wheeler County:* Ochoco Nat'l. Forest, 12 mi. S.W. Mitchell, 1.

The hoary bat was first reported in Oregon in July 1914, when a specimen was collected 10 miles east of McKenzie Bridge in Lane County (Bailey, 1936:385). Since that time, specimens have been collected at widely scattered locations in the state (Fig. 24). The species is solitary and roosts in trees (Hall and Kelson, 1959:192). For this reason, collecting of the species is usually on an opportunistic basis.

The species is migratory and records from the Pacific Coast indicate that the animals winter along

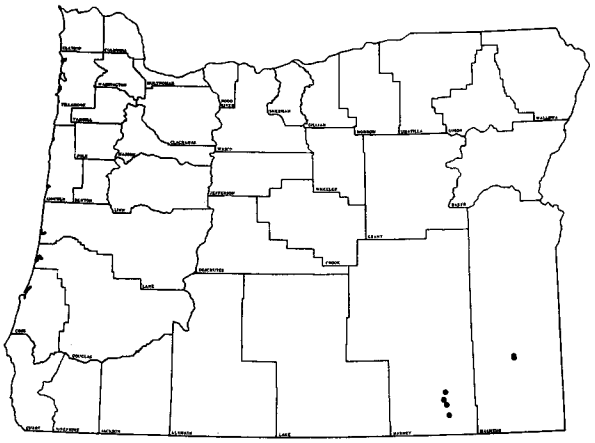

Figure 23. Sites at which specimens of *Perognathus longimembris,* deposited in museums and private collections, were collected in Oregon.

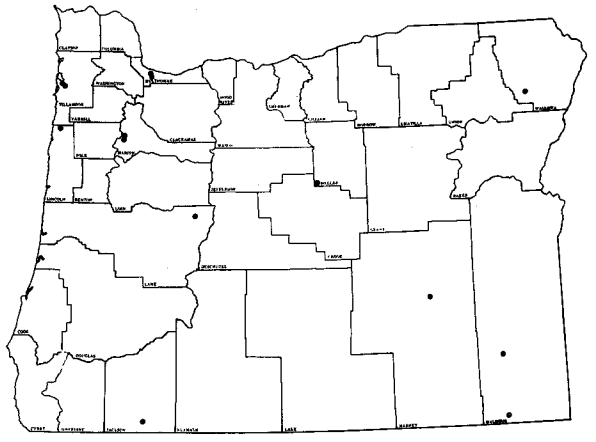

Figure 24. Sites at which specimens of *Lasiurus cinereus,* deposited in museums and private collections, were collected in Oregon.

the California coast from San Francisco southward. They apparently move north only in summer (Dalquest, 1943:21; Ingles, 1965:125).

S. P. Cross reported that he caught a hoary bat near Ashland. He believed them to be "not common" in that area; however, he did not consider the species to be rare. The small number of specimens known to have been collected in Oregon probably is a result of the solitary behavior of the species, and is not a reliable indication of abundance.

We do not consider the hoary bat to be rare or endangered in Oregon at the present time.

2. Pigmy Rabbit (*Sylvilagus idahoensis*)
Museum Records—*Baker County:* Baker, 1; 10 mi. N. Baker, 14. *Crook County:* 20 mi. S. Paulina, 1. *Deschutes County:* Redmond, 1. *Harney County:* Beakley (Beckley), 1; Beaties Butte, 1; Burns, 8; 10 mi. W. Burns, 12; 12 mi. S.E. Burns, 1; Catlow Valley, 3; Rock Creek Ranch, Catlow Valley, 2; Crane, 37; Drewsey, 1; Narrows, 2; Sageview, 3; 2 mi. S. Mud Lake, S. Harney Lake Rd., 1; Steens Mountain (T31S, R32½E, Sec. 23), 1; Voltage, 1; Waverly, S.E. Malheur Lake 4. *Klamath County:* Fremont, 7; Klamath Falls, 1. *Lake County:* 20 mi. N.E. Adel, 6; Ft. Rock, 3; Guano Creek, 2; Guano Valley, 1; 20 mi. N.W. Plush at Rabbit Creek, 1; Silver Lake, 2; 6 mi. from Nevada border (T41S, R25E, Sec. 5), 1. *Malheur County:* Cold Springs, 1; Cow Creek, near Cow Creek Lake, 1; Ironside, 26; 1 mi. W. Ironside, 2; S. base Mahogany Mountain, near Cow Creek, 1; Malheur, 1: McDermitt, 1; 6 mi. S. Riverside, 1; Rome, 2.

The pigmy rabbit occurs in small disjunct populations or "pockets" throughout southeastern Oregon (Fig. 25). The animal requires dense stands of sagebrush (*Artemisia sp.*) or rabbit brush (*Chrysothamnus sp.*) for cover in combination with soil soft enough for burrow construction (Bailey, 1936:111; Ingles, 1965:15).

Observations of biologists indicated that pigmy rabbits presently occur over the same area indicated by past collections (Fig. 25). W. V. Masson recently observed pigmy rabbits west of Hines, and west of Wagontire. He felt that "range improvement" practices may endanger their habitat in the future. C. R. Langdon said "a few" pigmy rabbits may be found near Arock and in the Cow Lakes area of Malheur County. W. D. Carter considered the species to be "fairly common in pockets" in the Lakeview and Hart Mountain National Antelope

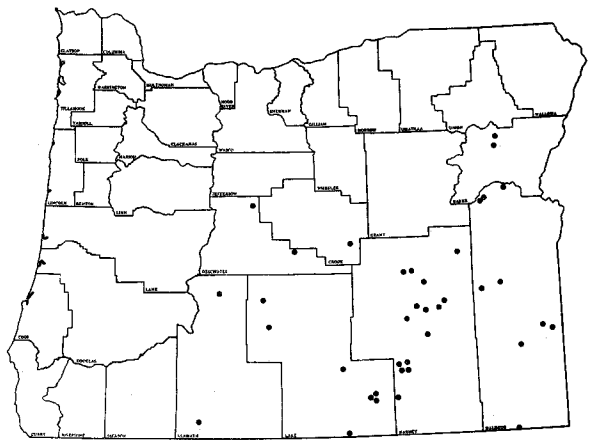

Figure 25. Sites at which specimens of *Sylvilagus idahoensis*, deposited in museums and private collections, were collected in Oregon.

Refuge areas. F. B. Grogan said, "The pigmy rabbit is spotty in distribution, but may be found on both the east and west sides of the Warner Valley." P. J. Bonn observed pigmy rabbits near Hampton. C. O. Maser reported seeing pigmy rabbits near Fort Rock, and their skulls were recovered from owl pellets at Lower Bridge in Deschutes County (Brodie and Maser, 1967:12).

These recent observations indicate that the pigmy rabbit is presently not rare or endangered in Oregon. Because of the specialized habitat requirements of the species, the current practice of sagebrush removal from some livestock ranges may pose a threat to the species in the future. The effects of changes in land use upon the species should be closely monitored.

3. White-tailed Hare (*Lepus townsendii*)
Museum Records—*Baker County:* Keating, 1. *Grant County:* 5½ mi. N.N.E. Long Creek, 1. *Klamath County:* Upper Klamath Lake, 4. *Lake County:* Lakeview, 3; 2 mi. N.E. Lakeview, 1; 3 mi. N. Lakeview, 1; Jacob's Ranch, 20 mi. N.E. Adel, 4; Guano Creek, 2 mi. N.E. Adel, 1; Mt. Warner, 3; 8 mi. W., 9 mi. S. Plush, 1. *Malheur County:* Ironside, 7; Cow Creek Lake, 1. *Morrow County:* Heppner, 1. *Sherman County:* 2⅛ mi. N., 1¼ mi. E. Kent, 1. *Umatilla County:* Umatilla, 1.

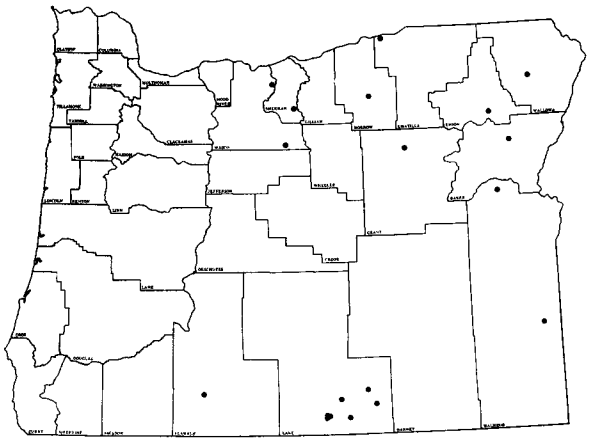

Figure 26. Sites at which specimens of *Lepus townsendii*, deposited in museums and private collections, were collected in Oregon.

Union County: Telocaset, 1. *Wallowa County:* 3 mi. N. Enterprise, 1. *Wasco County:* Antelope, 1; 12 mi. E. Dufer, W. side Deschutes River, 1.

The white-tailed hare occupies a large portion of Oregon east of the Cascade Mountains (Fig. 26). A single skull on deposit at the U. S. National Museum (No. 233211) is labeled "Philomath" [Benton County]. Because this specimen represents the only evidence of white-tailed hares occurring west of the Cascade Mountains in Oregon, it is probably a misidentified specimen or incorrectly labeled as to location of capture.

The white-tailed hare is apparently dependent upon bunchgrass habitat. In some areas of Washington, where grasses were replaced by sagebrush, white-tailed hares were displaced by black-tailed hares (*Lepus californicus*) (Couch, 1927:313-314). The species is now classified as rare in that state (Lauckhart, 1970:6). In Kansas, the white-tailed hare was also displaced by the black-tailed hare, but no reasons for the change were given (Carter, 1939:435).

In Oregon, the white-tailed hare apparently is relatively common at the present time. R. J. Pederson reported that these hares were commonly seen near Baker and Keating. R. S. Rohweder said the white-tailed hare is "fairly common" in the Grande Ronde Valley near La Grande. R. R. Bartels considered them to be common north of Enterprise. R. R. Denney reported white-tailed hares occurring in the vicinity of John Day, but he did not believe they were common there. W. V. Masson said they were present but uncommon in areas south of Juntura and near Lakeview. C. R. Langdon reported seeing white-tailed hares in the Antelope Flat area of Malheur County, approximately 20 miles north of McDermitt, Nevada. W. D. Carter and J. R. Good believed that the species was present but uncommon on Hart Mountain National Antelope Refuge. P. J. Bonn observed white-tailed hares in eastern Deschutes County. E. W. Hammer considered the species to be "not uncommon" in the vicinity of Pendleton. We observed six white-tailed hares on the west side of the Deschutes River Canyon, 12 miles east of Dufur, Wasco County, in January 1972.

These observations indicate that white-tailed hares are relatively common in Oregon; however, numbers may be expected to fluctuate from year to year, or possibly in 9-10 year cycles (Walker, et al., 1968:657).

We do not believe that the white-tailed hare is presently rare or endangered in Oregon.

4. Antelope Ground Squirrel (*Ammospermophilus leucurus*)

Museum Records—*Harney County:* 6 mi. N. Frenchglen, 2; S. side Harney Lake, 4; Steens Mountain (T35S, R35E, Sec. 21), 3; Steens Mountain (T31S, R32½E, Sec. 3), 1; Tumtum Lake, 6. *Lake County:* Adel, 11; Caulderwood Hot Springs, 10 mi. N.E. Adel, 5; 6 mi. S.E. Adel, 1; Fisher Hot Springs, Warner Valley, 4; 20 Mile Creek, Warner Valley, 2; E. of Plush, 2. *Malheur County:* Vale, 4; Watson, 10; Rome, 1; 4 mi. N. Rome, 4.

The antelope ground squirrel reaches the northern extent of its range in eastern Oregon (Hall and Kelson, 1959:333). Bailey (1936:144) stated, "In the Oregon part of their range, these little squirrels are so scarce as to do little harm . . . ."

Most biologists in southeastern Oregon were familiar with the animals and believed them to be common in dry areas. W. V. Masson said that antelope ground squirrels were common in the vicinity of Burns and near Lakeview. He observed the animals as much as 40 miles north of Vale. C. R. Langdon reported that antelope ground squirrels are "wide spread throughout the desert areas of Malheur County." W. D. Carter saw the

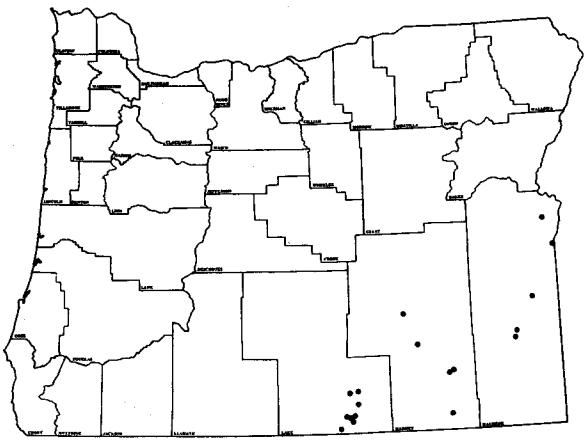

Figure 27. Sites at which specimens of *Ammospermophilus leucurus*, deposited in museums and private collections, were collected in Oregon.

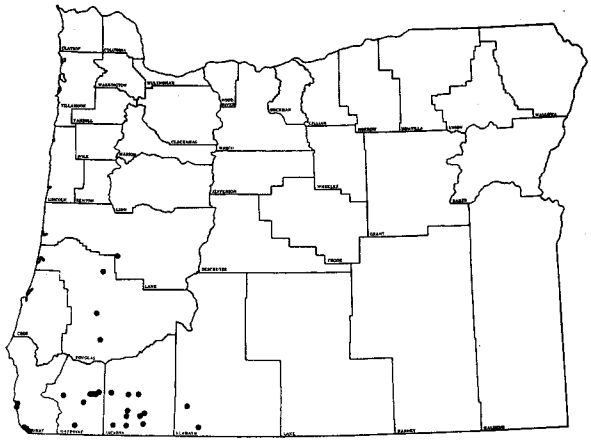

Figure 28. Sites at which specimens of *Thomomys bottae*, deposited in museums and private collections, were collected in Oregon.

ground squirrels in the Lakeview area, and F. B. Grogan considered them to be common throughout Lake County.

The antelope ground squirrel apparently is relatively common over a large portion of southeastern Oregon (Fig. 27), and we do not consider the animal to be rare or endangered in Oregon at the present time.

5. Bottae Pocket Gopher (*Thomomys bottae*)[4] Museum Records—*Curry County:* Brookings, 14; California state line, Pacific Coast, 5; Harbor, 1; ½ mi. S. Pistol River, 14; Pistol River, 1. *Douglas County:* Riddle, 4; Roseburg, 5; Yoncalla, 1. *Jackson County:* 10 mi. N. Medford, 2; Brownsboro, 1; Ashland, 2; Ashland, W. slope of Grizzly Peak, 7; 6 mi. S. Medford, 18; 7 mi. S. Medford, 8; 5 mi. N. Rogue River, 1; Big Applegate River, 1 mi. S. mouth of Beaver Creek, 5; Steinman, 1; Wagner Gap, 5. *Josephine County:* Grants Pass, 19; 3 mi. N.E. Grants Pass, 6; Junction of Rogue and Applegate rivers, 3; 2 mi. W. Grants Pass, N. side of Rogue River, 18; Ferren Ranger Station, 13 mi. S.W. Galice, 2; 5 mi. W. Grants Pass, N. side of Rogue River, 2; 3 mi. W. Grants Pass, near River Road, 4; Cave Junction, 7. *Klamath County:* Geary Ranch Hq., 1; Keno, 1. *Lane County:* Cottage Grove, 3.

The Bottae pocket gopher was included for more detailed study as a possible rare or endangered species because of the rather restricted range reported for the species in Oregon by Hall and Kelson (1959:414). However, museum specimens that were examined were collected in an area considerably larger than previously reported (Fig. 28). We located 161 specimens of *T. bottae* from Oregon.

Kenneth Walker obtained specimens from several areas south of the Pistol River in Curry County. Sherrell (1970:52-53) obtained 6 specimens of the species from an area ½ mile north of the Pistol River and an additional specimen from 2½ miles southeast of Brookings in Curry County. S. P. Cross termed the species "abundant" in the Rogue River Valley.

The Bottae pocket gopher apparently is common over most of its Oregon range, and we do not consider the animal to be either rare or endangered at the present time.

[4] *Thomomys bottae* is considered to be a race of *Thomomys umbrinus* by some mammalogists (Hall and Kelson, 1959:416).

6. Dark Kangaroo Mouse (*Microdipodops megacephalus*)

Museum Records—*Crook County:* Powell Butte, 1. *Harney County:* 7 mi. S. Andrews, 4; 2 mi. S. Borax Springs, S. end of Lake Alvord, 20; 1½ mi. E. Denio, 6; Lake Alvord, 16; Alvord Desert, 3; Beaties Butte, 1; Narrows, 8; 3 mi. E. Narrows, 5; 1 mi. S. Narrows, 3; 5 mi. S.W. Narrows, 24; 12 mi. S.E. Fields, 4; Tumtum Lake, 1. *Lake County:* N.E. edge Alkali Lake, 20; 2½ mi. N.E. Alkali Lake Ranch, 2. *Malheur County:* Head of Crooked Creek, Owyhee Desert, 6.

The dark kangaroo mouse occurs in dry, alkaline areas in southeastern Oregon (Fig. 29). The animals were considered to be difficult to collect, even in areas where they were abundant (Bailey, 1936:243).

We located 124 museum specimens of the dark kangaroo mouse from Oregon. A group of 35 specimens was collected in early August of 1930 in the Alvord Desert and southwest of Narrows in Harney County. A second group of 33 was taken in late July and early August of 1937 in Harney County, and a third group of 13 was taken at the north edge of Alkali Lake in Lake County in 1939. Eleven specimens deposited in museums were taken since 1954.

These data indicated that collectors were successful, at least on certain occasions, in securing large numbers of specimens of *M. megacephalus*. The sporadic nature of collections was probably a result of infrequent trips to the isolated desert habitat of the animals, although population fluctuations also may be a factor. Records as recent as September 1971, show that the species was still present, at least in Harney County, and that there was no reason to believe that the species does not occupy all of its originally known range.

We do not consider the dark kangaroo mouse to be either rare or endangered in Oregon at the present time.

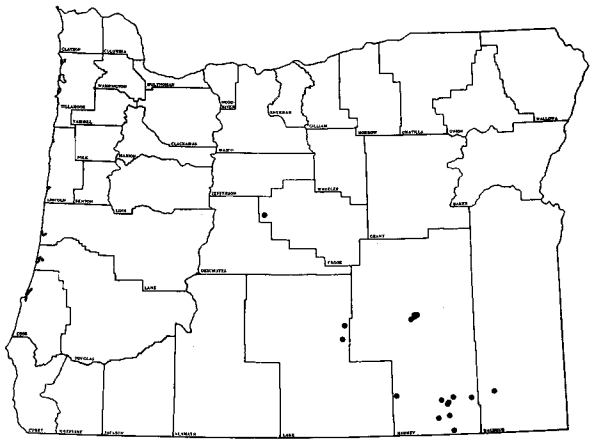

Figure 29. Sites at which specimens of *Microdipodops megacephalus*, deposited in museums and private collections, were collected in Oregon.

7. Heerman Kangaroo Rat (*Dipodomys heermanni*)

Museum Records—*Jackson County:* 9 mi. S., 5 mi. E. Ashland, 1; 10 mi. S., 2 mi. E. Ashland, 1; 11 mi. S. Ashland, 1; 12 mi. S. Ashland, ½ mi. E. Hwy. 5, 1; Ashland, 1; Brownsboro, 27; 3 mi. E. Brownsboro, 9; ¾ mi. W. Pinehurst, 1. *Klamath County:* 4.7 mi. S., 2.5 mi. E. Dairy, 5; Ft. Spring (not located), 1; Klamath Falls, 2; 5 mi. E. Lorella, Rd. #384, 2; Swan Lake Valley, 1; 3 mi. W. Swan Lake, 3; Tule Lake, 1. *Lake County:* Cache Creek, 1; Mid-Barnes Valley, border of *Klamath* and *Lake counties*, 2.

The Heerman kangaroo rat was said to be of "general scarcity" in Oregon in 1936 (Bailey, 1936: 240). The species was termed "not abundant" in the vicinity of Brownsboro in 1923 (Bailey, 1936: 241).

We located 60 specimens of *Dipodomys heermanni* from Oregon (Fig. 30). Eleven records since 1960 from Jackson and Klamath counties indicated that little, if any, change occurred in the range of the species since Bailey's (1936:235) investigation. S. P. Cross considered the Heerman kangaroo rat to be "reasonably common and locally abundant in the vicinity of Pilot Rock near Ashland."

At present, there is no evidence to indicate the animals are either rare or endangered in the state. However, there appears to be a general lack of information regarding the ecology of the species in Oregon.

8. Heather Vole (*Phenacomys intermedius*)

Museum Records—*Deschutes County:* Deschutes River at mouth of Davis Creek, 1; Tumalo Creek, 15 mi. W. Bend, 1; Three Sisters, 3; Little Three Creeks Lake, 1; T16S, R9E, Sec. 26, 1. *Douglas County:* Diamond Lake, 1. *Grant County:* N. Fork

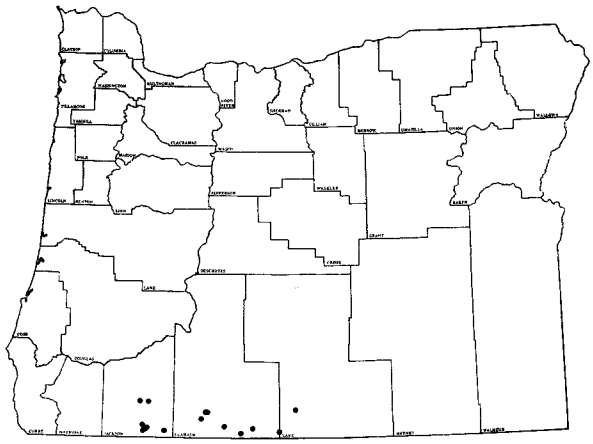

Figure 30. Sites at which specimens of *Dipodomys heermanni,* deposited in museums and private collections, were collected in Oregon.

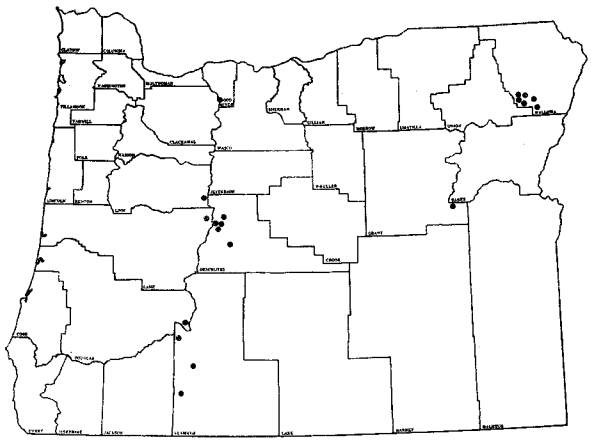

Figure 31. Sites at which specimens of *Phenacomys intermedius,* deposited in museums and private collections, were collected in Oregon.

Malheur River, 21 mi. S.E. Prairie City, 1. *Hood River County:* Mt. Hood, 1. *Klamath County:* 4 mi. N.W. Ft. Klamath, 3; Crater Lake, 2; 6 mi. N. Geary Ranch on Lake of the Woods Rd., 1. *Lane County:* N.W. slope of Three Sisters, 1. *Linn County:* Big Lake, 9. *Wallowa County:* Aneroid Lake, 4; 16 mi. S. Lostine, 1; 16 mi. S., 3 mi. E. Lostine, 1; 19 mi. S., 4 mi. E. Lostine, 2; 21 mi. S., 5 mi. E. Lostine, 8; Wallowa Lake, 1.

The heather vole occurs in the Cascade, Blue, and Wallowa mountains in Oregon (Fig. 31). We located 43 specimens of the species that were collected in the state. Bailey (1936:201) believed the animals to be "scarce," but he felt that they were more numerous than collection records indicated. Dalquest (1948:339) and Foster (1961:197) also believed that collection records did not accurately reflect the density of *P. intermedius* in nature. Edwards (1952:498) observed seven heather voles entrapped in an oil surfaced road in British Columbia. At the same time, he failed to capture a single specimen in 129 trap-nights using snap traps in the same area. He concluded that the use of snap traps for the capture of *Phenacomys intermedius* was relatively ineffective.

C. O. Maser trapped heather voles in the Cascade Mountains and did not consider them to be rare in that area. However, knowledge of their ecology was necessary in order to collect them successfully.

We do not consider the heather vole to be rare or endangered in Oregon at the present time.

9. Red Tree Mouse (*Arborimus [Phenacomys] longicaudus*)[5]

Museum Records—*Benton County:* 4 mi. S. Alpine, 1, Near Blodgett, 1; Corvallis, 1; S.W. Corvallis, 2; 6 mi. N. Corvallis, 9; 3-4 mi. W. Camp Adair, 8; MacDonald Forest, 6; 3 mi. S. Monroe, 1; 4½ mi. S. Monroe, 1; 4½ mi. S.W. Monroe, 36; 5¾ mi. W. Monroe, 1. *Clackamas County:* Schoenborns Ranch, 8 mi. S.E. Molalla, 43; Molalla, 1. *Coos County:* 8 mi. S.E. Bandon, 1; 1 mi. N.W. Bill's Peak, 1; Marshfield, 2. *Curry County:* N. side of Rogue River, 2 mi. E. Hwy. 101, 1; 20 mi. E. Gold Beach, 1; Mouth of Lobster Creek, 20 (8) mi. E. Gold Beach, 2; Rogue River, 20 miles above Gold Beach, 2; Gold Beach, 1; Agness, 8; Port Orford, 1. *Douglas County:* 3 mi. E. Elkton, 5; Near Roseburg, 1. *Hood River County:* 1 mi. E. Cascade Locks, 2. *Josephine County:* 23 mi. E. Gold Beach,

[5] The species *Phenacomys longicaudus* and *Phenacomys silvicola* have been combined to form the single species *Arborimus longicaudus* (Johnson, 1968:27).

1; Oregon Caves Nat'l Monument, 1. *Lane County:* 5 mi. S. Alpine, 1; 3 mi. W. Cheshire, 5; 5½ mi. S.W. Cheshire, 1; 5½-6 mi. N.W. Cheshire, 2; 6¾ mi. W.N.W. Cheshire, 1; 6 mi. N.N.E. Coburg, 1; 6 mi. N.E. Coburg, 4; 17 mi. S.E. Cottage Grove, 1; 2½ mi. S.W. Donna, 1; 7 mi. N.W. Elmira, 1; Eugene, 1; 2 mi. E. Lorane, 1; 5 mi. N. Lorane, 6; Meadows [Meadow, T18S, R8W], 1; 6 mi. S.W. Monroe, 1; 1½ mi. N.W. Noti, 1; 4.5 mi. W. Vida, 1; ¼ mi. N.E. Walterville, 1. *Lincoln County:* Near Nashville, 1. *Linn County:* 4½ mi. S. Sodaville, 1. *Polk County:* 2 1/6 mi. S.W. Airlie, 1; Near Falls City, 1; Stodt Mountain, between Grande Ronde and Valsetz, 1. *Tillamook County:* 8 mi. S.E. Hebo, 4; Cape Lookout, 1; Fall Creek at Netarts Bay, 1; Netarts, 3; Neskowin, 1; Oceanside, 7; Tillamook, 1. *Washington County:* 3 mi. E. Gaston, 3; 4 mi. E. Gaston, 3; 5 mi. E. Gaston, 2; 8 mi. E. Gaston, 2. *Yamhill County:* 9 mi. W. Carlton, 2; 4 mi. N. Newberg, 11; 7 mi. N.W. Newberg, 1.

The red tree mouse occurs from the Pacific Coast to the west slope of the Cascade Mountains in Oregon (Fig. 32). Bailey (1936:198) believed that *Phenacomys silvicola* was one of the rarest mammals in Oregon, but of *Phenacomys longicaudus* he said, " . . . when their tree dwelling habits became known, they were found to be common over a wide extent of country . . ." (Bailey, 1936: 195). Maser and Storm (1970:63) stated, "*Arborimus longicaudus*, long considered to be a rare species, is reasonably common though difficult to collect."

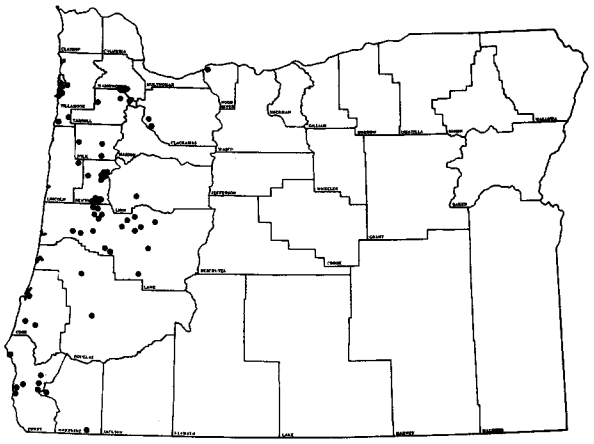

Figure 32. Sites at which specimens of *Arborimus* (*Phenacomys*) *longicaudus*, deposited in museums and private collections, were collected in Oregon.

Maser (1966:217a) noted that fire and logging may destroy large portions of tree mouse habitat. However, he believed that if a few "old growth" trees were left, a reservoir population of mice would be available to reestablish the species after regrowth attained suitable size. The nests of red tree mice were reported to be rare in trees smaller than 7 to 8 inches in diameter (Maser, 1966:46).

We located 233 specimens of the red tree mouse from Oregon, most of which were taken by a few collectors who were familiar with the ecology of the species. C. O. Maser and M. L. Johnson collected many specimens of the species and reported that they were relatively easily collected in many scattered localities.

The species occupies a large range in Oregon and we do not consider it to be either rare or endangered at the present time.

10. California Meadow Mouse (*Microtus californicus*)

Museum Records—*Douglas County:* 7 mi. N.W. Roseburg, 1; Drain, 10; Roseburg, 2. *Jackson County:* Rogue River Valley, 25; Ashland, 10; 6 mi. S. Medford, 12; 2 mi. E. Dark Hollow [not located], 2; 4 mi. E. Ashland, 1; Brownsboro, 3; Siskiyou, 4. *Josephine County:* Grants Pass, 9; Slate Creek, 20 mi. S.W. Grants Pass, 1; Ferren Ranger Station, 13 mi. S.W. Galice, 1. *Lane County:* Near Cottage Grove Reservoir (T21S, R3W, E ½ N.W. ¼ Sec. 29), 1.

The distribution of the California meadow mouse in Oregon is not well known (Maser and Storm, 1970:113). The 82 specimens that we located from the state were from Douglas, Jackson, Josephine, and Lane counties (Fig. 33).

We found little published information regarding the abundance of California meadow mice in Oregon. They were said to be "not very widely distributed nor generally very numerous . . ." in Oregon in 1936 (Bailey, 1936:208). However, S. P. Cross believed the species to be one of the most common in the Rogue River Valley at the present time.

Because of a relatively large range (Fig. 33), and the indication by Cross that the species is abundant in some areas, we do not believe the California meadow mouse should be considered to be rare or endangered at the present time.

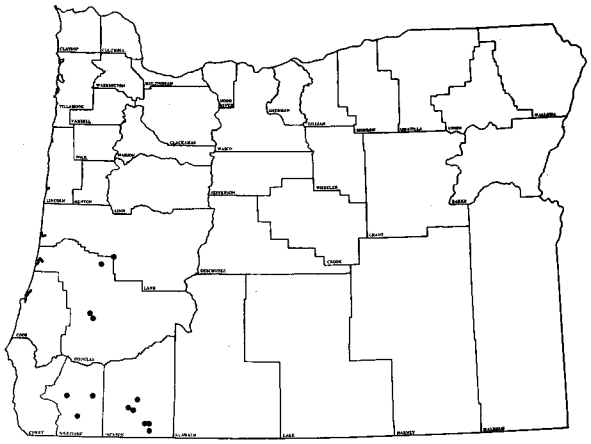

Figure 33. Sites at which specimens of *Microtus californicus*, deposited in museums and private collections, were collected in Oregon.

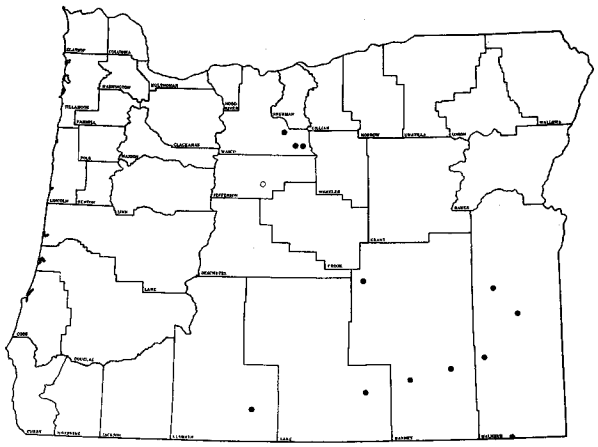

Figure 34. Solid symbols depict sites at which specimens of *Lagurus curtatus*, deposited in museums and private collections, were collected in Oregon. Open symbols depict literature citations.

11. Sagebrush Vole (*Lagurus curtatus*)
Museum Records—*Jefferson County:* ½ mi. E. Boyce Corral [not located], 5. *Harney County:* Squaw Butte, 41; Steens Mtn. (T32S, R32, 75 E, Sec. 20), 1; Blitzen, 1. *Klamath County:* T38S, R12E, Sec. 20, 1. *Lake County:* Rock Creek, Warner Mountain, 2. *Malheur County:* McDermitt, 1; Cedar Mountains, 4; Bone Springs Road, 25 mi. W. Rome, 1; Creston, 12 mi. W. Skull Springs, 1. *Wasco County:* Antelope, 4; 7 mi. E. Antelope, 1; 8 mi. N.W. Bake Oven, 1.
Other Records—*Jefferson County:* Crooked River National Grassland, 200 (Maser et al., 1972:2).

The sagebrush vole inhabits a large portion of central and southeastern Oregon (Fig. 34). Maser and Storm (1970:142) indicated that the species occurred between 3,000 and 5,000 feet. Hansen (1956:147), however, reported specimens from 9,400 feet on Steens Mountain.

Lagurus was considered to be an uncommon species until relatively recently. Bailey (1936:214-215) said the animals "are very irregular in distribution and abundance . . . these mice rarely attain even local abundance." The species was classified as "rare" in Washington in 1948 (Dalquest, 1948:359).

Other studies, however, have shown that the sagebrush vole is capable of attaining extreme abundance under certain conditions. Moore (1943:188) observed a dramatic increase in *Lagurus* numbers in the vicinity of Squaw Butte Experiment Station, 35 miles west of Burns. He stated:

> "Prior to trapping done in 1941, but one sage mouse was taken in approximately 3,500 trap nights that yielded conservatively 1,200 small rodents. However, about the middle of May, 1941, a heavy population of sage mice was noted in a number of locations on the stock ranges being studied and indications were that the population was rather common over an area embracing some 36 townships."

Two hundred forty-seven voles were taken on a single "study plot" of undescribed size (Moore, 1943:188). Moore (1943:188) was told that abnormally large numbers of sagebrush voles were present on Hart Mountain National Antelope Refuge in August of 1941.

Johnson et al. (1948:44) found the sagebrush vole to be abundant in areas of Washington where it previously had been considered to be one of the rarest mammals.

Clanton et al. (1971:47) captured 13,367 specimens of *Lagurus* in Washington during the period 1948-1953. They believe that:

"Variation of precipitation appears to be one of the principal factors associated with variation in numbers of *Lagurus* . . . . An increased amount of precipitation, through its effect on vegetation, seems to result in an increase in numbers of voles" (Clanton et al., 1971:17). The sagebrush vole was found to be a major reservoir for sylvatic plague (*Pasturella pestis*) in that area.

Maser et al., (submitted to editor) conducted a 1-year study of *Lagurus* on the Crooked River National Grassland in Jefferson County, Oregon, from January 1969 to January 1970. During this period, approximately 200 voles were captured. The animals were found to occur in colonies "whenever there was adequate cover and food" (Maser et al., submitted to editor). Sagebrush was generally absent from the study area and the voles utilized bunchgrass habitat.

Although Maser et al. (submitted to editor) found no evidence of plague in the sagebrush vole population examined, annual surveys were planned for future years. These surveys should add to the present knowledge of *Lagurus* population dynamics. It appears that the species is subject to periodic fluctuations in numbers, and we believe the conclusions of early workers, that sagebrush voles were rare, probably resulted from failure to observe and collect animals during periods of peak abundance.

We do not consider the sagebrush vole to be rare or endangered in Oregon at the present time.

12. MARTEN (*Martes americana*)

Museum Records—*Baker County:* Cornucopia, 1. *Coos County:* 4 mi. S.W. Loon Lake, 3; Near Broadbent, 1; Remote, 1. *Curry County:* Port Orford, 8. *Deschutes County:* N. base Three Sisters, 1. *Douglas County:* 2¾ mi. S.W. Loon Lake, 1; 2½ mi. S.W. Loon Lake, 2; 1¼ mi. W. Loon Lake, 1. *Grant County:* Granite, 1; N. fork Malheur River, 21 mi. S.E. Prairie City, 1; Strawberry Mountains (Strawberry Butte). *Hood River County:* Mt. Hood, 4. *Jackson County:* Mt. Pitt, N.E. base, 4. *Jefferson County:* Mt. Jefferson, 4. *Klamath County:* Ft. Klamath, 8; Crater Lake Natl. Park (Mt. Mazama), 10; 3 mi. S. south entrance Crater Lake Nat'l. Park, 1; Odell Lake, 1. *Lake County:* Gearhart Mountain, 5. *Lane County:* Oakridge ,16; Reed, 14; Belle, 9. *Lincoln County:* Newport, 2. *Umatilla County:* Near Tollgate, 1. *Union County:* Eagle River [Creek], 1. *Wallowa County:* Aneroid Lake, 1; Lostine River, 1.

The marten is an animal of the Upper Transition, Canadian, and Hudsonian life zones (Cary, 1917:43-48; Grinnell and Storer, 1924:82; Bailey, 1936:296). In Oregon, the species occurs in all mountainous areas west of the east base of the Cascade Mountains and in the Blue, Wallowa, and Strawberry mountains.

Numbers of martens declined "in the past several centuries" (Hagmeier, 1956:150) and, in 1942, they were classified as a "vanishing species" (Allen, 1942:172). In 1936, the animals were considered to be "generally . . . scarce" in Oregon (Bailey, 1936:296) and, in 1970, they were said to be "rare in the north end of the Coast Range" and not abundant in other areas of Oregon (Mace, 1970: 13). Prices paid for marten fur have fluctuated greatly in the past. A total of 518 martens was trapped in the winter of 1913-1914 and sold for an average price of $25 per pelt (Bailey, 1936:297). However, 706 martens trapped in the period 1955-1969 sold for an average of only $4.98 per pelt (Oregon State Game Commission, 1956-1969). Most trappers who were interviewed believed that the current value of marten fur was too low to justify the time and effort that was required to catch the animals. They also indicated that they considered the marten a very easy animal to catch, and that they would trap for it if prices were higher.

R. J. Pederson reported seeing a marten north of Meachum in 1970 and had heard of several others being seen in the same area. R. S. Rohweder believed that martens were common in the Blue Mountains. R. R. Bartels reported seeing marten tracks often in the Wallowa Mountains and believed the species to be common in that area. R. R. Denney and W. V. Masson said martens were present in the Strawberry Mountains, but not numerous. F. B. Grogan said the animals were not abundant on the west side of the Warner Valley. D. A. Leckenby termed martens "fairly common" in the lodgepole pine (*Pinus contorta*) areas west of Silver Lake. P. J. Bonn considered martens to be relatively common in the high country west of Bend. L. W. Turner reported receiving numerous accounts of martens seen in the Diamond Lake area. D. L. Eastman knew of 21 martens trapped in Klamath County in 1970, but he felt they were not abundant in that area. C. O. Maser reported seeing a marten near Big Lake on Santiam Pass. E. H. Rosborough trapped martens for 30 years in Oregon and believed that populations were very high at the present time.

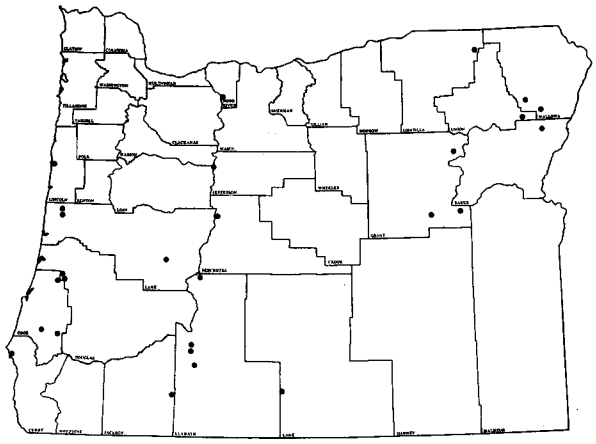

Figure 35. Sites at which specimens of *Martes americana*, deposited in museums and private collections, were collected in Oregon.

Available information indicated that martens were reasonably common over much of their potential range in Oregon (Fig. 35). However, if the price paid for marten fur should increase, it is conceivable that with easy and quick access to the high country with the aid of snow machines, the species could be overharvested. A 75 percent decline in the numbers of martens caught by trappers in California during the period 1920-1924 was attributed to over-exploitation (Grinnell et al., 1937:206).

We do not consider the marten to be either rare or endangered at the present time; however, we believe populations should be monitored closely if the demand for their fur increases.

13. Badger (*Taxidea taxus*)

Museum Records—*Crook County:* 4 mi. S.W. Prineville, 1; Suplee, 1. *Deschutes County:* Bend, 4; Hampton, 5; Lapine, 1. *Gilliam County:* Lone Rock, 3. *Grant County:* Izee, 1. *Harney County:* Fields, 13; Burns, 2; Alberson, 2; Venator, 7; Princeton, 3; Narrows, 1; Harriman, 2; Harney, 1; Vicinity of Denio, 1. *Jackson County:* Butte Falls, 2. *Jefferson County:* 7 mi. E. Hay Creek, 6; Trout Creek, 4; Hay Creek, 7. *Klamath County:* Fremont, 2; Ft. Klamath, 3; Yamsay Mountain, 1. *Lake County:* Adel, 1; Stauffer, 1; Mt. Warner, 3; Lakeview, 4; Drew's Valley, 1; Fish Hole Mountain, 1; Gearhart Mountain, near Finley Corral, 1. *Malheur County:* Sheephead Mountain, near Ironside Mountain, 1; Riverside, 1; Rattlesnake Creek, 1; Cord, 2; Cedar Mountains, 1; Beulah, 1; Ironside, 1. *Morrow County:* Lena, 10. *Umatilla County:* Juniper Ranger Station, 1; Juniper Canyon, 5 mi. S. Wallula, Wash., 6; Echo, 1. *Union County:* Thorn Creek [not located], 1. *Wallowa County:* Wallowa, 2; Chico, 1. *Wasco County:* Antelope, 1; Maupin, 1. *Wheeler County:* Fossil, 4; Spray, 12.

The badger occurs east of the Cascade Mountains in Oregon (Fig. 36). One record was located from each of Benton and Lane counties, but we believe these were mislabeled animals. In 1936, badger numbers were reported to be ". . . greatly reduced by wanton destruction . . ." Bailey (1936: 307). Trapping pressure may have contributed to population declines as badger fur was worth as much as $50 per pelt "before the depression" (Bailey, 1936:307). However, the average price per pelt of 418 badgers trapped in Oregon in the period 1955-1969 was $1.95 (Oregon State Game Commission 1956-1969).

Recent observations indicated that the species was common in eastern Oregon. R. J. Pederson reported seeing badgers dead on the highway between Pendleton and The Dalles frequently. R. S. Rohweder believed badgers to be common in the

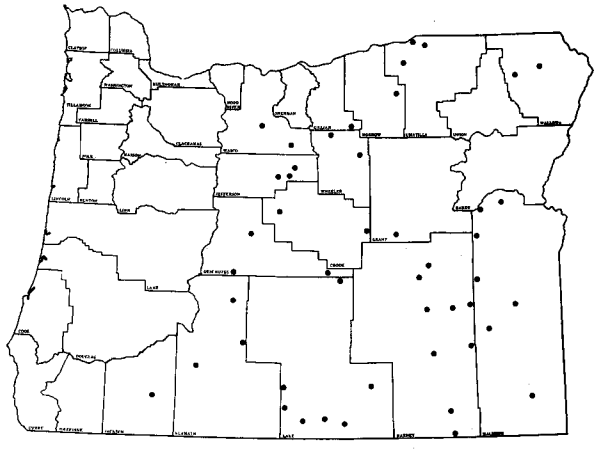

Figure 36. Sites at which specimens of *Taxidea taxus*, deposited in museums and private collections, were collected in Oregon.

vicinity of La Grande. R. R. Bartels considered badgers to be common in the grassland north of Enterprise. R. R. Denney reported seeing as many as eight badgers in one field and termed them "very common" in the vicinity of John Day. W. V. Masson considered the species to be common near Burns and Seneca. W. D. Carter considered badgers to be common on Hart Mountain Antelope Refuge. E. W. Styskel and D. A. Leckenby termed the species "common" in the vicinity of Silver Lake. C. R. Langdon said that badgers were abundant throughout Malheur County. D. L. Eastman felt that badgers were relatively common in Klamath County. L. W. Turner encountered many badgers in eastern Oregon and believed them to be "far from rare."

The badger ranges throughout an extensive area in Oregon and we do not consider it to be rare or endangered at present.

14. River Otter (*Lutra canadensis*)

Museum Records—*Clackamas County:* Near Molalla, 2; Upper Clackamas River, 1. *Clatsop County:* Nehalem River, 1. *Columbia County:* Deer Island Slough, 1; N. tip Sauvies Island, 1. *Coos County:* 1¾ mi. E. Bandon, 1; 1 mi. N.E. Broadbent, 1; 1.75 mi. N.E. Broadbent, 1; 2.5 mi. N.N.E. Broadbent, 1; Lakeside, Tenmile Creek, 2; Willanch Slough, ½ mi. above tidewater [not located], 2. *Curry County:* Gold Beach, 1. *Deschutes County:* Bend, 1; Deschutes, 1; Fall River, 1. *Douglas County:* Jct. Hwy. 38 and Scofield Rd., 1; Smith River near Gardiner, 1; Glendale, 1. *Josephine County:* Elk Creek, tributary of the Illinois River, 1. *Klamath County:* Ft. Klamath, 1; Irrigation canal S. Worden, 1; Wood River, 1. *Lane County:* Goodman Creek, near Eagle's Rest, S.E. Eugene, 1; Near Eugene, 2; Siltcoos Lake, 4; S. Fork McKenzie River, 1. *Lincoln County:* Devil's Lake, 1. *Linn County:* Cascadia, 1. *Malheur County:* 12 mi. W. Fairyland, Idaho, 1; Jordan Creek, 2; Owyhee River, near Rome, 5. *Polk County:* S. Fork, Little Nestucca River, 1. *Tillamook County:* S. Trask River, 1; Tillamook River tidewater, 2.

River otters were reported to occur "sparingly" in many of Oregon's permanent streams and lakes in 1936 (Bailey, 1936:301). The only indicators available for assessing the current status of the river otter in Oregon were fur-catch reports submitted by trappers, and opinions of those who have occasion to observe otters and their sign in the wild. Fur-catch reports during the period 1955-

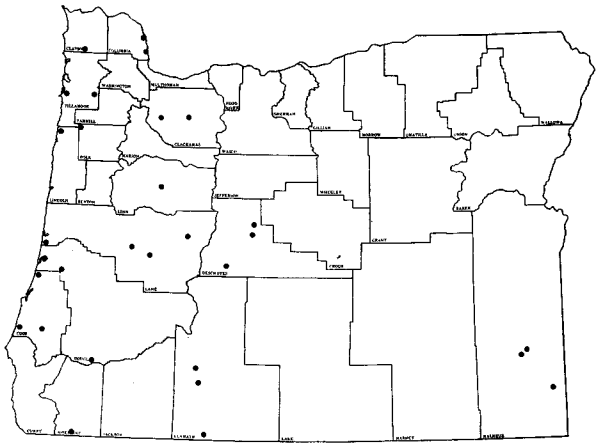

Figure 37. Sites at which specimens of *Lutra canadensis*, deposited in museums and private collections, were collected in Oregon.

1970 indicated a reasonably stable annual catch of otters. The reported catch ranged from 188 to 369 annually, with a mean of 310 (Oregon State Game Commission, 1956-1970). A total of 4,439 otters was taken since 1955. Otters reportedly were trapped in all Oregon counties except Wheeler County. Most trappers who were interviewed believed that stream conditions during trapping season influenced the number of otters caught annually. For this reason, reports of catch are probably a poor indication of the numbers of otters in Oregon. Specimens are mostly from the western one-half of Oregon (Fig. 37) and do not represent the entire distribution of the species in the state.

Robert Neiderer trapped 8 otters from Mill Creek and Kemp Creek near Loon Lake, Douglas County, during the 1970-71 season. He believed that otters were "holding their own" in that area. In 1969, 1970, and 1971, Richard Nordahl caught 8, 8, and 9 otters, respectively, from a lake in Lane County. He believed that numbers of otters were, at least, remaining stable, and possibly increasing in that area. Sherrell (1970:105) received reports of a "substantial population" of river otters along the Rogue River. R. S. Rohweder reported river otters to be common in the Snake River and said " a few" may be found along the Grande Ronde River. R. R. Bartels reported seeing

otters in Brownlee Reservoir in Baker County and considered them to be "very common" in the Middle Snake River below Hell's Canyon Dam. W. V. Masson felt that otters were common in the Owyhee River. F. B. Grogan reported seeing an abundance of otter sign in 1971 between Birch Creek and Rome on the Owyhee River. P. J. Bonn believed that the species was increasing in numbers in the area near Bend. D. L. Eastman said otters were "fairly numerous" in Upper Klamath Lake and along the Sprague River.

J. E. Tabor surveyed streams and lakes over most of western Oregon and portions of the Cascade Mountains for otters and reported that the species was present at some time during the year in almost all bodies of water.

Available information indicated that river otters occur in pratically all suitable habitats in Oregon. We do not consider the species to be either rare or endangered at the present time.

15. Mountain Lion, Cougar (*Felis concolor*)
Museum Records—*Clackamas County:* ½ mi. Carver, near Clackamas River, 1; Upper Clackamas River, 1; Oak Grove Butte, 3; Marmot, 1; Estacada, 5; Clackamas River, 50 mi. above Estacada, 1; Cold Springs near Estacada, 1. *Coos County:* Marshfield [Coos Bay], 1. *Curry County:* Marial, 1; Illahe, 2; Gold Beach, 1; Agness, 5; 15 mi. W. Selma, 1; 25 mi. W. Selma, 2; 40 mi. W. Selma, 2; Pine Creek, 29 mi. N.W. Selma, 1; Florence Creek, 30 mi. N.W. Selma, 1; Source of Pistol River, 2; Pistol River, 7. *Douglas County:* 63 mi. N.E. Grants Pass, 7; Quartz Creek, near Tiller, 1; Glide, 1; Glendale, 3; Ft. Umpqua, 1; 9 mi. S.E. Drew, 2. *Grant County:* Dayville, 8. *Jackson County:* Bald Mountain, 1; Rock Creek (T33S, R3W), 1; 43 mi. N.E. Grants Pass, 6. *Josephine County:* Diamond Peak, 15 mi. S.W. Grants Pass, 3; Centennial Creek, 20 mi. N.W. Grants Pass, 1; Grants Pass, 9; Kerby Peak, 10 mi. S.E. Selma ,6; Williams, 1; 15 mi. W. Waldo, 1; 10 mi. N.W. Horse Mountain [not located], 1; 10 mi. N.W. Selma, 1; Murphy Peak, 10 mi. S. Grants Pass, 3; Marble Mountain, 5 mi. S. Wilderville, 1; Galice, 1; 25 mi. W. Grants Pass, 1. *Lane County:* McKenzie Bridge, 2; Little Fall Creek, 1; Oak Ridge, 1; Sourgrass Mountain, N. Fork Willamette River, 1; Reed, 1. *Lincoln County:* Eddyville, 1. *Linn County:* Santiam River, above Cascadia, 1. *Tillamook County:* Niagra Creek, 1. *Wallowa County:* Imnaha River, 1.

The mountain lion occurs in almost all areas of Oregon not densely populated by man. Bounty payments were made for animals reportedly killed in all counties of Oregon (Rymon, 1969:275). Bailey (1936:261) stated, "Apparently they [mountain lions] have been common in Oregon since the earliest explorations . . . ." Mountain lions were reported to be "abundant throughout the Cascade Range" in 1884, "common along the Cascades" in 1896, "occasionally met with" along the Grande Ronde River Canyon in 1896, and "common on most of the national forests in western Oregon" in 1910 (Bailey, 1936:262-265). We located 109 mountain lion specimens from Oregon (Fig. 38).

The mountain lion has been considered a detriment to man's interests because of livestock depredations, since the onset of white settlement. In Oregon, bounty payments were authorized for the species in 1843 by the Territorial Government and continued in some form until 1961 when the state bounty system was repealed by the Oregon State Legislature (Oregon State Game Commission, 1962:142). Bounty payments were made on 6,718 mountain lions in Oregon between July 1, 1915, and August 8, 1961 (Rymon, 1969:275). In addition, government hunters took 442 lions during the same period (P. W. Ebert). Numbers of mountain lions submitted for bounty payment annually reached a peak of 337 in 1930 and declined sporadically to a low of 27 in 1961 (Ebert, 1971:1). Oregon State Game Commission personnel predicted that the species would become "extinct" in Oregon by 1973 if the bounty system had been continued (Ebert, 1971:69). During the period 1961-1968, 31 lions were killed by U. S. government hunters.

The mountain lion was declared a game species on September 25, 1967, and a closed season, with the provision that a landowner could kill an animal causing damage to his property, was established in 1968 (Ebert, 1971:69). The first cougar hunting season was held in 1970. Nine animals were legally killed and one lion was known to have been taken illegally. Only the northeastern portion of the state was open to hunting, and all animals were killed in that area (R. R. Bartels; Ebert, 1971:70). In 1971, a second season was held and 16 lions were killed (E. C. Meslow, unpublished data).

In general, mountain lions appear to be increasing in numbers in Oregon. R. J. Pederson reported seeing cougar tracks on Black Mountain, 15 miles north of Meachum. He believed the species to be common in the Blue Mountains. R. S.

Rohweder reported seeing cougar tracks often in the mountainous areas of Union County and considered them to be abundant there. R. R. Bartels believed that practically all available habitat for mountain lions in Wallowa County was occupied. R. R. Denney reported seeing much more cougar sign in recent years than in the past. He considered lions to be increasing in numbers in the John Day area. W. V. Masson recently received reports of mountain lions being sighted on Crane Mountain, on Steens Mountain, and in the Malheur National Forest. C. R. Langdon reported that "a few" cougars were present in Owyhee Canyon and possibly one or two were present in the vicinity of Ironside Mountain. W. D. Carter said mountain lions were observed on Hart Mountain National Antelope Refuge, but he considered them to be rare in that area. F. B. Grogan termed cougars rare in the Warner Mountains. E. W. Styskel and D. A. Leckenby reported seeing tracks and receiving reports of lions being seen in the vicinity of Silver Lake, but they believed lions were uncommon there. D. L. Eastman termed mountain lions "occasional" in Klamath County. Jim Anderson observed a female cougar with two young south of Sisters in 1964, and saw another female with two young in the same area in 1967. P. J. Bonn termed the cougar "rare" in the vicinity of Bend. D. L. Hammer said that mountain lions were present near Broadbent in Coos County, but were not abundant in that area. He recently treed one of the animals in that area with dogs and photographed it. C. O. Maser observed a mountain lion 4 miles southeast of Bandon in July 1970. He reported seeing lion tracks on Marys Peak and near Blodgett in Benton County. A cougar was shot near Elk City in Lincoln County in October 1971 (Newport *News*, 1971:5). Sherrell (1970:107) was told by a government trapper from Langlois in Curry County that mountain lions "are increasing in his area."

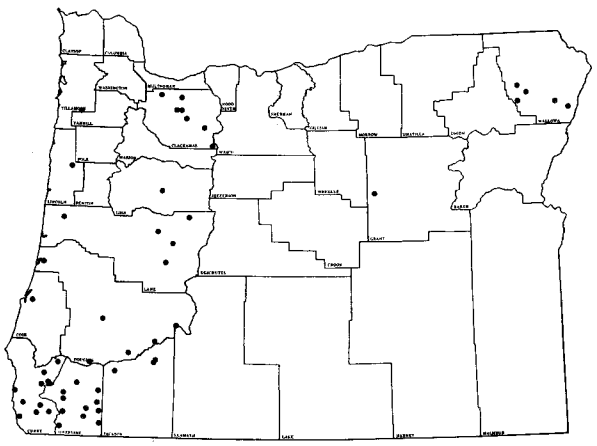

Figure 38. Sites at which specimens of *Felis concolor*, deposited in museums and private collections, were collected in Oregon.

Population density of the mountain lion appears to be limited by territorial behavior (Hornocker, 1969:464; Hornocker, 1970:17). Hornocker (1969: 460-461) found male lions in Idaho occupying winter ranges of approximately 25 square miles, and females occupying areas of from 5 to 20 square miles. Other animals of the same sex tended to avoid occupied areas. The density of animals within a population exhibiting these characteristics never will be great relative to most other mammalian species in Oregon.

Available evidence indicated that mountain lions currently occupy most of the suitable areas in Oregon and are increasing in numbers. The species should remain secure under the protection afforded by its status as a game animal, if existing laws are strictly enforced.

We do not consider the species to be either rare or endangered in Oregon at present.

16. Pacific Harbor Seal, Hair Seal (*Phoca vitulina*)

Museum Records[6]—*Clatsop County;* Near Astoria, 2.

The harbor seal occurs along the west coast of North America from Baja, California, northward to the Arctic Ocean (Hall and Kelson, 1959:980). No definite migratory behavior has been observed in the species (Fisher, 1952:20).

Harbor seals were regarded as a detriment to the commercial fishing industry in Oregon early in the state's history (Rymon, 1969: 284). In 1928, Scheffer (1928:10) stated:

> "The harbor seal (*Phoca richardii*) formerly occurring in large colonies in the coastal waters, bays, and inlets of the Pacific northwest, though still fairly common, is rapidly decreasing in numbers, owing to persistent persecution by commercial fishing interests."

[6] Ten specimens were to be deposited by B. R. Mate at the University of Puget Sound in the spring of 1972.

Bounty payments were offered for seals as early as 1900 in Oregon (Bailey, 1936:330). An average of more than 300 harbor seals per year was killed in the Columbia River during the period 1938-1942 (Pearson and Verts, 1970:2). The Fish Commission of Oregon (1967:74) is presently authorized to pay a bounty of not less than $5, nor more than $25, on seals killed in the Columbia River, but seals are now protected in all other areas of Oregon (Oregon State Game Commission, 1971:4).

Pearson and Verts (1970:1-3) surveyed the Oregon coast for harbor seals in 1967 and 1968. Concentrations of seals were observed near the mouth of Coos Bay, in the vicinity of Gold Beach, and near Cape Foulweather. Seals were also seen at Seal Rock, Tillamook Bay, Port Orford, Blanco Reefs, Netarts Bay, and the Columbia River. Pearson and Verts (1970:4-5) estimated that fewer than 500 harbor seals were present in Oregon waters in 1968 and concluded that the species may be endangered in the state.

B. R. Mate surveyed harbor seal populations along the Oregon coast as late as 1971. As many as 500 animals were observed at Simpson's Reef and an additional 300 at Garibaldi. Mate believed that a minimum of 1,200 harbor seals presently occur in the coastal waters of Oregon.

If current regulations designed to protect the harbor seal in Oregon (except in the Columbia River) can be strictly enforced, the species should be secure in the state. We do not consider the harbor seal to be either rare or endangered in Oregon at present.

17. Northern Sea Lion (*Eumetopias jubata*)
Museum Records—None Located.[7]

The northern sea lion occurs from California north to the Bering Sea (Bailey, 1936:330; Kenyon and Scheffer, 1953:9). The animals are migratory and tend to move northward in winter (King, 1964:9; B. R. Mate). For these reasons, numbers of northern sea lions in Oregon differ seasonally.

Because of alleged depredation on salmon, a bounty of $2.50 for each seal or sea lion killed in Oregon waters was authorized by the Oregon Legislature in 1900 (Bailey, 1936:330; Rymon, 1969:283). A total of 8,695 seal and sea lion scalps was presented for bounty in the period 1921 to 1926 (Scheffer, 1928:12). Bailey (1936:332) stated, ". . . they [northern sea lions] have been destroyed in such numbers as to greatly deplete the herds and wipe out many large breeding colonies." Food habits studies subsequently indicated that the effects of sea lions on numbers of salmon were negligible (Bonnot, 1930:191; Bailey, 1936:331-332; Dalquest, 1948:245). Sea lions now are protected in Oregon waters (Mace, 1971:4).

Pearson and Verts (1970:1-5) searched the entire Oregon coast between June 1967 and June 1968 for seals and sea lions. They located two northern sea lion rookeries: one on Orford Reef, consisting of approximately 475 animals, and another at Sea Lion Caves which included 100-200 animals. In addition to these breeding colonies, they observed northern sea lions on Rogue River Reef, Simpson's Reef, Three Arch Rock at Oceanside, Tillamook Head, and in Tillamook Bay. An estimated population of 1,078 northern sea lions in Oregon in June 1968, was thought to represent a considerable reduction from the numbers present in 1925, and they concluded that, "Populations of Pacific harbor seals and northern sea lions in Oregon [may] be endangered" (Pearson and Verts, 1970:5).

B. R. Mate surveyed the Oregon coast for all pinnipeds on "numerous occasions" and believed that northern sea lions were not rare or endangered in Oregon. Numbers of sea lions were found to differ from year-to-year as a result of variability in migratory behavior, but Mate said between 1,500 and 2,500 animals could be expected in a given year.

We do not regard the species to be rare or endangered at the present time.

18. California Sea Lion (*Zalophus californicus*)
Museum Records—None Located[8]

The California sea lion occurs in Oregon as a winter migrant (King, 1964:11). All breeding activities take place from the California channel islands southward (Kenyon and Scheffer, 1953:13).

No distinction was made between species of sea lions for bounty payment, and no data were located that indicate numbers of California sea lions taken. By 1928, numbers of seals and sea lions in Oregon had been severely reduced and Scheffer (1928:16) observed, ". . . it may be readily foreseen that complete destruction of the seal and sea lion colonies in our northwest coast and in the semi-enclosed coastal waters will be accomplished in a few more years if present policies are pursued."

Bailey (1936:332) noted that few records of the California sea lion existed for Oregon, but he

[7] Ten specimens were to be deposited by B. R. Mate at the University of Puget Sound in spring of 1972.

[8] Approximately 50 specimens collected by B. R. Mate were to be deposited at the University of Puget Sound in spring of 1972.

believed that some northern sea lion records could be attributed to that species. The species was classified as "rare or casual" in Washington in 1948 (Dalquest, 1948:244).

Sea lions were protected by law in California by 1928 (Scheffer, 1928:11) and now are protected along all of Oregon's coast (Mace, 1971:4).

B. R. Mate surveyed the Oregon coast for sea lions during all seasons of the years 1968-1971. He believed that a minimum of 1,500 California sea lions could be expected to move into Oregon's waters each winter, and he considered the species to be "seasonally abundant" in Oregon. King (1964:13) noted that the California sea lion was the most abundant of California pinnipeds and indicated that 50,000 or more animals may be found in the coastal waters of that state.

Because laws now prohibit killing sea lions along the Pacific Coast, and because large breeding populations exist in California, there is no reason to believe that the California sea lion will not continue to move into the waters off the Oregon coast each winter. We do not consider the species to be either rare or endangered in Oregon at the present time.

19. Idaho White-tailed Deer (*Odocoileus virginianus ochrourus*)

Museum Records—*Deschutes County:* Davis Creek (T22S, R8E), 3; Head of Davis Creek, 4. *Grant County:* Beech Creek, 2. *Lake County:* Willow Creek (T39S, R18E, Sec. 27), 1. *Wallowa County:* Flora Grade, 1.[9]

Bailey (1936:90) indicated that the Idaho white-tailed deer occurred in most of Oregon east of the Cascade Mountains and north of Malheur Lake. Specimens from Deschutes and Lake counties which Bailey (1936:92) referred to as white-tailed deer consist of antlers only. It is impossible to differentiate conclusively between white-tailed deer and mule deer (*Odocoileus hemionus*) by antler characteristics alone. White-tailed deer described in historical journals may have been mule deer because some races have "white tails."

The present distribution of the Idaho white-tailed deer in Oregon includes all of Umatilla County except along the north fork of the John Day River (J. F. Ely), and most of northern Wallowa County along the Wenaha River, in the Chesnimnus Creek drainage, and in the Grande Ronde Valley (R. R. Bartels, R. S. Rohweder). R. R. Bartels observed that eight white-tails wintered on the east moraine of Wallowa Lake in 1968-1969. The animals were reported as common in most areas in which they occur; they were believed to be increasing in numbers and expanding their range in many areas.

We do not consider the Idaho white-tailed deer to be either rare or endangered in Oregon at the present time.

[9] No map provided because of possible misidentification of all specimens except the Wallowa County specimen.

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Table A. Species of Mammals Reported to be Uncommon in Oregon, Terminology Suggesting Uncommon Status for Each Species, and Authorities Responsible for Making Each Report.

Species	Terminology suggesting uncommon status in Oregon	Authority
Ammospermophilus leucurus	"scarce"	Bailey (1936:144)
Bassariscus astutus	"nowhere numerous"	Mace (1970:37)
	Not common at Oregon Caves	Roest (1949:34)
Bison bison	". . . Oregon subspecies is extinct"	Bailey (1936:61)
Canis lupus	"Disappeared in mid-1940's"	Mace (1970:47)
Dipodomys heermanni	". . . general scarcity . . ."	Bailey (1936:240)
Enhydra lutris	None taken since 1876	Bailey (1936:304)
Eumetopias jubata	". . . [may] be endangered."	Pearson and Verts (1970:5)
Felis concolor	"a very rare occurrence in any area of the state"	Rymon (1969:247)
	"Confined to the remote areas . . ."	Mace (1970:66)
Gulo luscus	" . . . rare in the United States."	Bailey (1936:299)
	". . . first substantiated account . . . since 1912"	Kebbe (1966:65)
	". . . now very rare"	Ingles (1965:376)
	". . . considered a rarity"	Mace (1970:19)
Lagurus curtatus	". . . rarely attain even local abundance."	Bailey (1936:215)
Lasiurus cinereus	Few records for Oregon	Bailey (1936:385)
Lepus townsendii	Considered rare in Washington	Dalquest (1948:381)
Lutra canadensis	". . . found sparingly in many [streams and lakes]."	Bailey (1936:301)
Lynx canadensis	". . . scarce in Oregon."	Bailey (1936:271)
	". . . rare."	Mace (1970:64)
Martes americana	"rare [in Wallowa Mts]."	Bailey (1936:298)
	". . . cannot be considered aboundant anywhere in the state [Oregon]"	Mace (1970:13)
	Included as "vanishing species"	Allen (1942:172)
Martes pennanti	"Almost extinct"	States Parks Commission (1938:89)
	". . . the population probably never was large."	Ingles (1965:372)
Microdipodops megacephalus	Not abundant in the Alvord Desert.	Hansen (1956:142)
Microtus californicus	". . . not very widely distributed nor generally very numerous."	Bailey (1936:200)
Mirounga angustirostris	". . . first record of this species from Oregon."	Freidburg & Dumas (1954:129)
Myotis thysanodes	"Nowhere does it seem to be common."	Hall and Kelson (1959:170)
Odocoileus virginianus leucurus	Endangered	Committee on Rare and Endangered Wildlife Species (1968:M-25)
Ovis canadensis californiana	Rare	Committee on Rare and Endangered Wildlife Species (1968:M-27)
Arborimus (Phenacomys) albipes	". . . rare"	Bailey (1936:200)
	". . . rarest microtine rodent in North America."	Maser and Johnson (1967:24)
Phenacomys intermedius	Not common in collections	Maser (1970 Personal Communication)
Arborimus (Phenacomys) longicaudus	Populations are scattered	Maser (1970 Personal Communication)
Phenacomys silvicola	"One of the rarest . . . of Oregon's mammals."	Bailey (1936:193)
Phoca vitulina	". . . [may] be endangered."	Pearson and Verts (1970:5)
Pipistrellus hesperus	". . . in rather limited numbers."	Bailey (1936:383)
	Termed "casual" in Washington	Dalquest (1948:134)
Sorex merriami	". . . rare . . ."	Hall and Kelson (1959:47)
	Rare	Ingles (1965:91)
	"one of the rarest of the small mammals . . . in North America."	Dalquest (1948:134)

Species	Terminology suggesting uncommon status in Oregon	Authority
Sorex preblei	"rare" 3 known specimens	Ingles (1965:83) Bailey (1936:368)
Sorex trigonirostris	"known only from the type locality . . .	Bailey (1936:367)
Spermophilus richardsonii	". . . a relict and is on the way out."	Durrant and Hanson (1954:85)
Spermophilus washingtoni	occupies only a small portion of Northeastern Oregon.	Hall and Kelson (1959:339)
Sylvilagus idahoensis	"Over wide areas they do not occur."	Bailey (1936:111)
Tadarida brasiliensis	". . . the first unquestionable record for Oregon." ". . . three specimens collected."	Stager (1945:196) Jewett (1955:458)
Taxidea taxus	". . . rapidly decreasing in number."	Ingles (1965:378)
Thomomys bottae	Restricted in range	Ingles (1965:204)
Ursus horribilis	"In Oregon the grizzly seems to have disappeared about 1933." Rare	Ingles (1965:354) Committee on Rare and Endangered Fish and Wildlife of the United States (1968:M-14)
Vulpes macrotis	". . . tomorrow they will be gone." ". . . have become endangered . . ."	Bailey (1936:286) Rymon (1969:281)
Zalophus californianus	". . . no recent specimens . . ."	Bailey (1936:332)

Table B. Names, Addresses, and Occupation or Affiliation of Individuals Contributing Information Regarding Rare and Endangered Species of Mammals in Oregon, and Dates on Which Each Was Interviewed.

Name	Address	Occupation or Affiliation	Date of Interview
Anderson, Alan M.	1865 N. W. Polk St. Corvallis, Oregon	Oregon State University Department of Fisheries and Wildlife	February 5, 1972
Anderson, Jim	Sun River, Oregon	Naturalist	June 17, 1971
Bartels, Ronald R.	P. O. Box 121 Enterprise, Oregon	Biologist, Oregon State Game Commission	June 15, 1971
Been, Norman W.	P. O. Box 626 Pendleton, Oregon	Oregon State Game Commission	June 14, 1971
Bonn, Paul J.	674 E. Penn Ave. Bend, Oregon	Biologist, Oregon State Game Commission	June 17, 1971
Bonsack, Allan C.	Portland, Oregon	U. S. Bureau of Sport Fisheries and Wildlife	September 30, 1971
Carter, Bernie E.	Silver Lake, Oregon	U. S. Forest Service	June 17, 1971
Carter, W. D. (Pete)	1038 S. 4th Lakeview, Oregon	Refuge Manager, Hart Mtn. National Antelope Refuge	June 16, 1971
Cochrun, Kenneth R.	3140 N. E. Stephens St. Roseburg, Oregon	Biologist, Oregon State Game Commission	March 1, 1971
Coggins, Victor L.	Rt. 1, Box 220 Enterprise, Oregon	Biologist, Oregon State Game Commission	February 11, 1972
Cross, Stephen P.	760 Clay Ashland, Oregon	Southern Oregon College Department of Biology	September 7, 1971
Denney, Ralph R.	245 N. W. First John Day, Oregon	Biologist, Oregon State Game Commission	June 15, 1971
Driscoll, Ray	908 Lakeshore Dr. Klamath Falls, Oregon	Fur Buyer and Trapper	February 7, 1971
Eastman, Danny L.	4343 Miller Island Rd. Klamath Falls, Oregon	Biologist, Oregon State Game Commission	August 5, 1971

Name	Address	Occupation or Affiliation	Date of Interview
Ebert, Paul W.	19020 N. W. Dorena Portland, Oregon	Staff Biologist, Oregon State Game Commission	September 15, 1971
Ely, John F.	Pendleton, Oregon	Biologist, Oregon State Game Commission	June 14, 1971
Fick, Fred H.	Midland St. Keno, Oregon	Fur Trapper	February 2, 1971
Good, James R.	P. O. Box 21 Plush, Oregon	Asst. Manager, Hart Mtn. National Antelope Refuge	February 11, 1972
Grogan, Frank B.	919 N. 9th St. Lakeview, Oregon	Biologist, Oregon State Game Commission	June 16, 1971
Hammer, E. Wayne	Bonanza, Oregon	U. S. Government Trapper	May 29, 1971
Hammer, Dorland L.	Broadbent, Oregon	U. S. Government Trapper	June 24, 1971
Johnson, M. L.	501 N. Tacoma Ave. Tacoma, Washington	University of Puget Sound Department of Biology	March 20, 1971
Kebbe, Chester E.	5414 N. E. Emerson Portland, Oregon	Staff Biologist, Oregon State Game Commission	July 7, 1971
Langdon, Cecil R.	Route 1, Box 318 Ontario, Oregon	Biologist, Oregon State Game Commission	July 5, 1971
Leckenby, Donavin A.	P. O. Box 35 Silver Lake, Oregon	Biologist, Oregon State Game Commission	June 17, 1971
Lind, Gordon S.	1125 N. W. 30th Corvallis, Oregon	Oregon State University Department of Fisheries and Wildlife	December 2, 1971
Mace, Robert U.	8102 S. W. Capitol Hwy. Portland, Oregon	Chief of Game, Oregon State Game Commission	July 13, 1971
Maser, Chris O.	Box 361 Bandon, Oregon	University of Puget Sound Museum of Natural History	Several Conversations 1971-72
Masson, W. Victor	Box 8 Hines, Oregon	Biologist, Oregon State Game Commission	June 16, 1971
Mate, Bruce R.	292 N. 12th Coos Bay, Oregon	University of Oregon Marine Research Center	February 11, 1972
McIntyre, John D.	1845 N. W. Menlo Dr. Corvallis, Oregon	Oregon State University Department of Fisheries and Wildlife	October 15, 1971
Meslow, E. Charles	4225 S. W. Fairhaven Dr. Corvallis, Oregon	Oregon State University Department of Fisheries and Wildlife	March 8, 1972
Neiderer, Robert	Reedsport, Oregon	Fur Trapper	February 6, 1971
Nelson, Willard E.	Portland, Oregon	U. S. Bureau of Sport Fisheries and Wildlife Div. of Wildlife Services	February 11, 1971
Nordahl, Richard	Florence, Oregon	Fur Trapper	February 6, 1971
Pederson, Richard J.	Range & Wildlife Habitat Lab, Route 2, Box 2315 La Grande, Oregon	Biologist, Oregon State Game Commission	June 14, 1971
Pesek, Joseph	5060 N. E. Hwy. 20 Corvallis, Oregon	Biologist, Oregon State Game Commission	November 11, 1971
Rohweder, Ronald S.	Route 3, Box 3401 La Grande, Oregon	Biologist, Oregon State Game Commission	June 14, 1971
Rosborough, E. H.	Star Route Chiloquin, Oregon	Fur Trapper	January 8, 1972
Ruegger, George	4120 Altamont Klamath Falls, Oregon	Fur Trapper	February 7, 1971
Styskel, Edward W.	Silver Lake, Oregon	U. S. Forest Service	June 17, 1971
Tabor, James E.	1350 S. E. Vica Way Corvallis, Oregon	Oregon State University Department of Fisheries and Wildlife	Several Conversations 1971-72
Turner, Larry W.	Box 82 John Day, Oregon	University of Arizona Department of Biological Sciences	June 15, 1971
Walter, Kenneth M.	346 Walnut Dr. Monmouth, Oregon	Oregon College of Education Department of Biology	December 29, 1970