

Roosevelt Elk *of* Olympic National Park



ELK CALF

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ROOSEVELT ELK OF OLYMPIC NATIONAL PARK

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Wayne Howe: iv, 13

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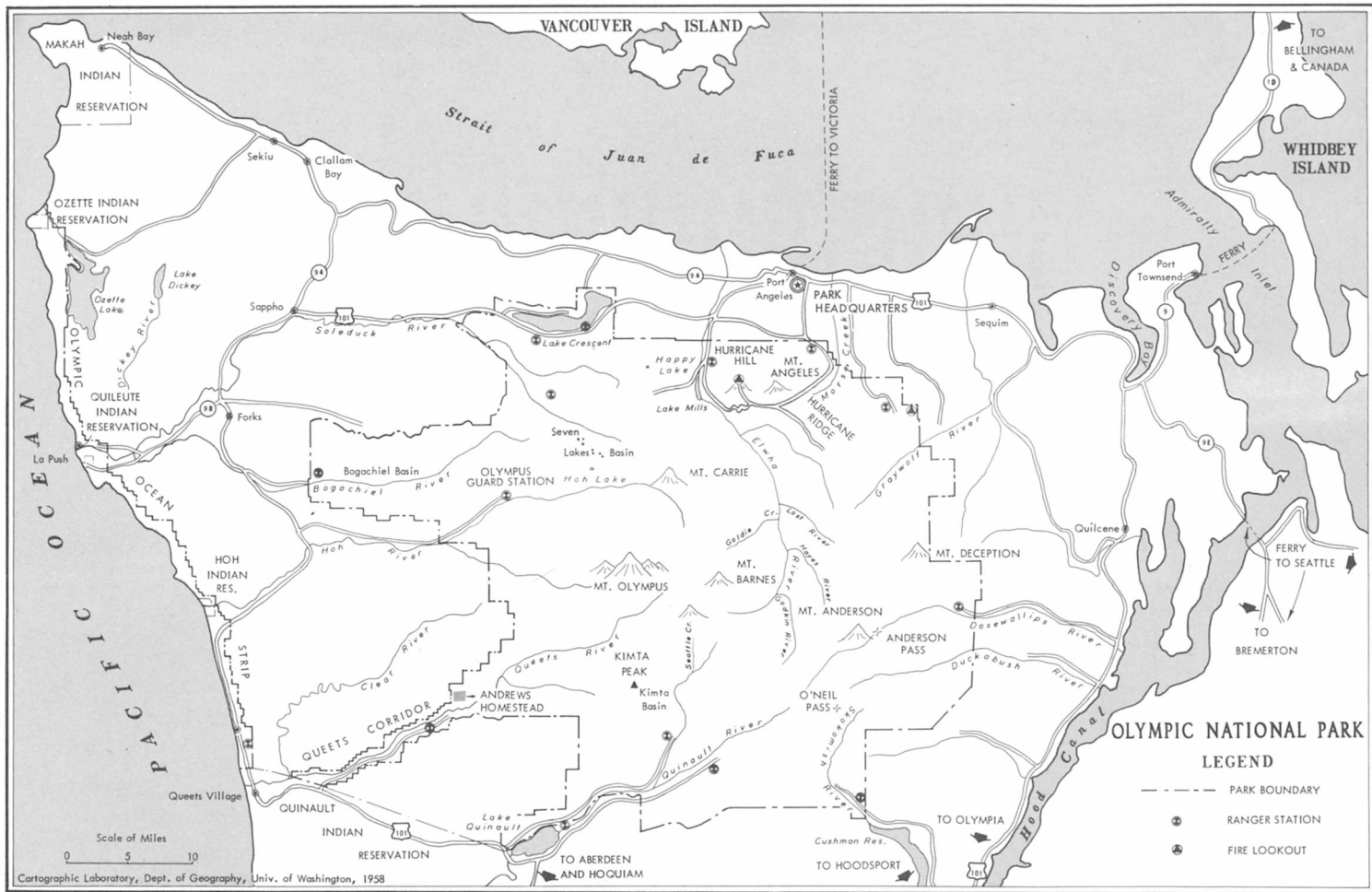
W. R. Oakes: 11

H. Buechner: 19 (bottom)

NATIONAL PARK WILDLIFE POLICY

The National Park Service has been charged by the people of the United States, through Congress, with the responsibility and privilege of managing the various parks and have been directed "to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for enjoyment of future generations." The Roosevelt elk and its natural habitat, the rain forest, are considered to be of national importance and interest. Therefore, Congress has included this area in the Olympic National Park. The wide-awake national and local interest has assured that steps in management of the elk be taken that will guarantee their perpetuation for the benefit and enjoyment of future generations.

A large share of the American people have long recognized that wild animals are most attractive and inspiring when seen in their natural habitats. This is a primary reason why the native wild creatures are protected unmolested in the national parks.



PREFACE

National Park Service areas have been set aside to preserve features of nationwide significance. These may be of historical, geological, archeological, recreational, scenic, or biological interest.

Some areas possess a combination of features worth preservation. For instance, the Olympic National Park is outstanding in that it holds in trust for the American people a portion of the only rain forest in the United States, a large herd of distinctive elk, and superb scenery.

The information in this bulletin is an attempt to answer the many questions on the Roosevelt elk that are asked Park Service personnel each year. If the publication adds to the enjoyment of the park visitor and stimulates a greater interest in the wildlife its purpose will be well served.

The members of the ranger staff of the Olympic National Park have been of material aid through their assistance in field work. Superintendent Fred J. Overly and other members of his staff have also been helpful. Much special credit is due Gunnar O. Fagerlund, Park Naturalist, for his untiring efforts to make this publication a reality.

COLEMAN C. NEWMAN



Herd wintering near Olympus Guard Station on the Hoh River

THE ELK OF NORTH AMERICA

The American elk, sometimes called wapiti, is a member of the deer family. This family is composed of hoofed mammals that have antlers that are shed each year. Moose and caribou are also members of this group.

Originally, there were six subspecies of elk in North America. Two are now extinct, namely, the Eastern elk (*Cervus canadensis canadensis*) that ranged through eastern United States, and the Merriam elk (*Cervus canadensis merriami*) that ranged through New Mexico and Arizona. The Tule elk (*Cervus canadensis nanodes*), sometimes known as the "dwarf elk," was once common in the interior valleys of California but is now reduced to a few animals in two main herds. One herd is in Owens Valley and the other in the Tule Elk Reserve, a state park, near Bakersfield. The Rocky Mountain elk (*Cervus canadensis nelsoni*) is the most numerous today and is found chiefly in the Rock Mountain states. This subspecies has been widely used in an effort to stock areas in many states. In the Canadian provinces of Saskatchewan and Manitoba is found the Manitoba elk (*Cervus canadensis manitobensis*). The sixth subspecies is the Roosevelt elk (*Cervus canadensis roosevelti*).

The Roosevelt elk, with which this booklet is concerned, is a native of the moist Pacific Coast. Its original range extended from north central California to west central British Columbia, including Vancouver Island. Its present suitable range is greatly reduced



Outrider bull in Cat Creek Basin

—a reduction resulting from changes in land use that an expanding modern civilization has brought about. Accordingly, the number of Roosevelt elk is also reduced. Of the remaining animals, the largest herds are on the Olympic Peninsula in Olympic National Park. Pacific County, bordering the coast just south of the Olympic Peninsula, still has a fair-sized elk population. In Oregon, Tillamook County probably has the greatest number for that state. Roosevelt elk, in reduced numbers, can still be found in the redwood forests of the north coast of California, being especially associated with Prairie Creek State Park and nearby areas along the Redwood Highway. Vancouver Island, in British Columbia, has a moderate-sized stable elk herd in the northwest portion.

The Roosevelt elk, often locally called the Olympic elk, is named in honor of President Theodore Roosevelt. This honor was accorded him because of his great interest in wildlife conservation. He did not, as rumor has it, introduce this magnificent animal to the Peninsula. It is a native here and records indicate that restocking has never been necessary.

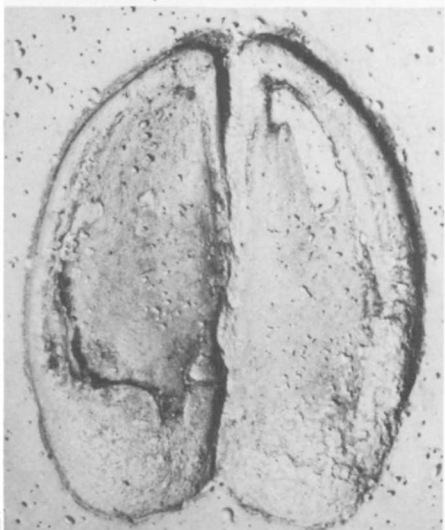
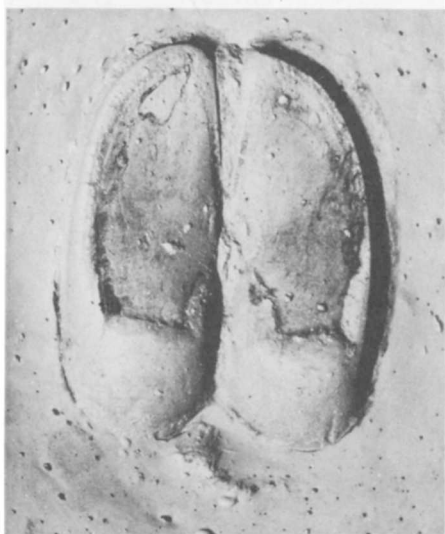
NATURAL HISTORY OF THE ROOSEVELT ELK

Description

Superficially all the subspecies of elk in North America are similar. On closer examination, the Roosevelt elk differs from others in several respects. It is heavier, considerably darker in color, and shows more contrast between the light and dark areas.

The neck of the elk is dark and at times black, especially in the winter when it has a manelike appearance. The large, buff or near-white rump patch is a distinctive characteristic. In summer the coat is rather tawny, the mane less pronounced, and the head and limbs not as dark. The bulls usually have stout, massive antlers, whereas the cows have none. Some males weigh as much as a thousand pounds. The cows range from four to six hundred pounds. The calves at birth weigh between thirty and forty pounds, have a rich tawny color splashed with numerous light spots and conspicuously show the light-colored rump patch. The size, the large antlers on mature males, and the conspicuous rump patch serve well to distinguish the elk from other members of the deer family.

Even though the elk are not seen on every visit to their range,



There is a great difference in the size and shape of tracks of elk and deer: (top) mature deer, (middle) ten-month-old elk calf, (bottom) mature cow elk

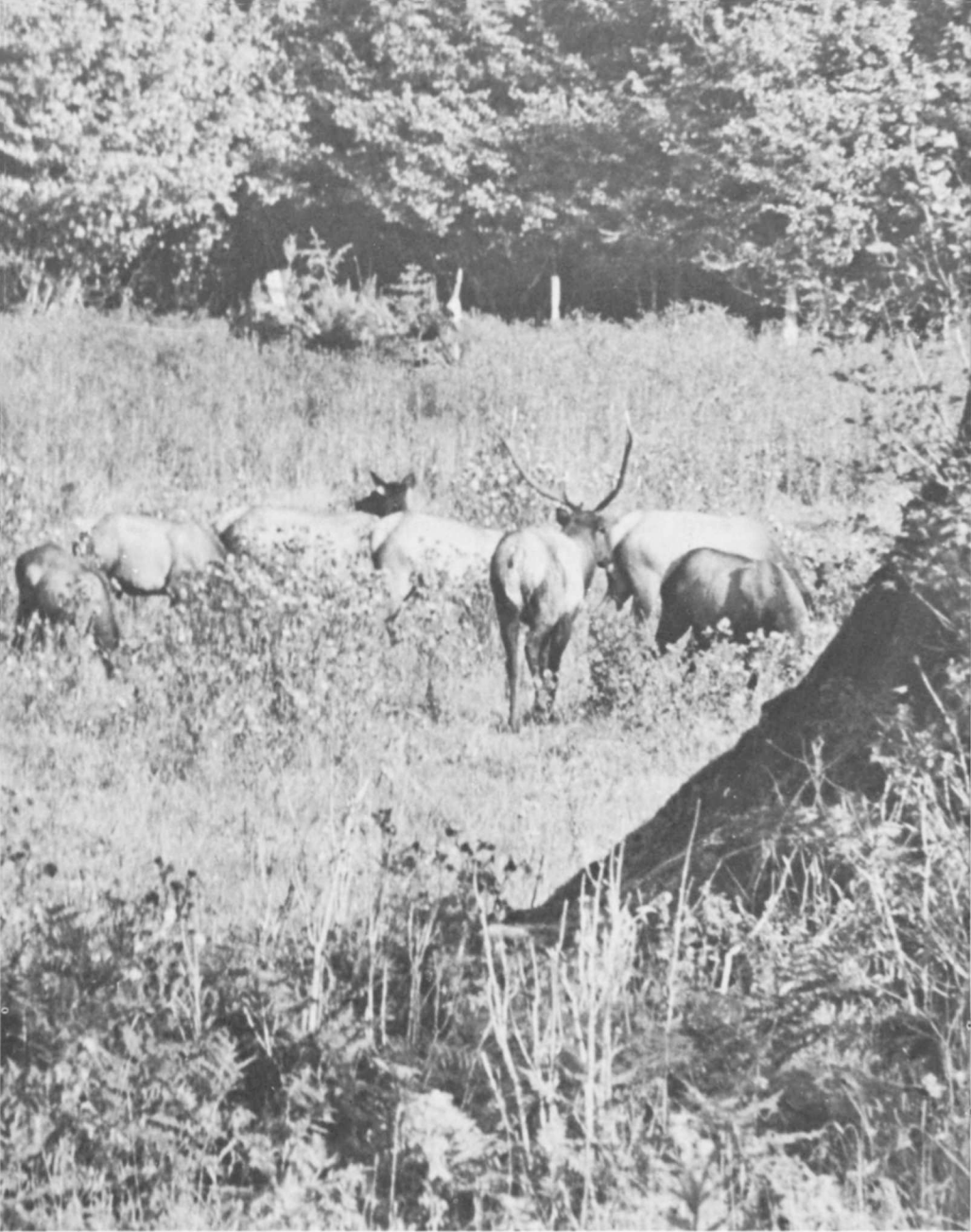
their presence is often evident by well-defined trails, cowlike tracks, and globular pellets. The globular pellets are as much as an inch in length and a half inch in diameter. The tracks resemble those of the domestic cow except that they are somewhat larger and more pointed. Because of this large size, they should not be confused with tracks of the deer. The photograph on page 4 illustrates the comparative size of the elk and deer tracks.

The Mating Season

About the first of September the behavior of the bulls indicates the approach of the mating season. The peak of mating activity is reached during the latter half of September, and by early October most of the herds have returned to their regular routine. During this period the antlers are used in the hooking and slashing of trees, brush, and the ground. Frequently enough bark is removed to cause permanent injury or eventual death of the smaller trees. Occasionally alders as large as four inches in diameter are torn out by the roots. A bull hooking and pawing the ground often creates a wallow. Where this is done in moist places the wallow develops into a mud hole which has a very strong odor not unlike that of a holding pen for a dairy herd.

The antlers are also used expertly as a weapon of battle. A bull collects into a harem as many cows as possible and expends much energy in guarding them against the raids of the other bulls. This hoarding of females leads to much fighting between the bulls, which sometimes results in the death of one or both. The older bulls that are not able to hold a harem become what is known as "outriders." These "outriders" often stay in the vicinity of the herds, much to the annoyance of the younger successful males, and make half-hearted raids in vain attempts to drive off a few cows. However, most of the time after supremacy has been established they keep their distance and indulge in much hooking of trees, bugling, and wallowing in the sites prepared during this period. These "outriders" also do much cross-country traveling during the mating season. Bull tracks often appear in places in September that are not used as range during the rest of the year. In this roaming about they are no doubt in search of cows that are not too expertly guarded.

During the mating period the spike bulls (males with un-



A bull with a small harem. Many of the clearings at early-day homesteads are favorite feeding areas

branched antlers) are about 16 months old and are usually driven from the herds and form bands of their own. Occasionally a spike remains with the herd but does not offer competition to the bull in charge. Actually any antlered bull is interested in the cows at this time, but only the strong and the cunning are successful. The photograph on page 6 shows a group of cows being jealously guarded by a large "four-pointer." The term "four-pointer" means that the bull has four points on each antler. The bull eats very little during the mating season and therefore loses much weight. The physical strain of being constantly on the alert is exhausting. Seldom does he risk the loss of cows to a raiding bull by being caught lying down. The cows continue to feed and loaf, but owing to the many skirmishes fought for their possession, this activity often is interrupted. Frequently the harem is driven into a "forced march" by the possessive male in an attempt to elude another bull that is staging a raid.

The Calves

The gestation period of the elk is between eight and eight and one-half months. Thus, the majority of the calves are born between June 1 and June 15. Twins seldom occur. The calf retains its spotted coat for about two months, after which its colors are similar to the adult's but not as distinct. For the first few days the new calf moves about very little, but within a week it can run rapidly and it is soon able to keep up with the mother.

The cow usually seeks some secluded place to give birth to her young, but as the calf gains strength and is able to follow, she joins a group of other cows and their calves. The calf mortality for the first eight or ten months is rather high. The known causes for the losses are principally malnutrition, disease, drowning, and predators. However, the majority of the deaths have to be listed as "cause unknown."

Growth of the Antlers

The antlers are shed early each spring and almost immediately a new set begins to develop. These new antlers, knoblike at first, grow very rapidly, and by August they have passed the velvet stage and have become hard. Spike bulls, however, are late in shedding the antlers, which often remain in the velvet state until early fall



Sword ferns and moss-covered logs form good protective cover for elk calves

—even past the rut. When the antlers are in the velvet they are soft and easy to injure because there are many blood vessels near the surface. As time passes, the flow of blood to the antler ceases and “rubbing” begins. The rubbing on trees and brush is done to remove the dried velvet, and when this is removed the antler is revealed—a bonelike structure, brown in color. The pencil-sharp tips of the tines are repeatedly polished until they are nearly white.

There is variation in size, shape, and number of points of the antlers produced by animals of the same age group. The first antlers are spikes and are ordinarily produced when the bull is approaching two years of age. The second antlers usually have three points. Following this the antlers may increase in size and number of points through the prime of life. In the animals’ declining years, deformed and degenerate antlers may be produced. The antlers are not a reliable criterion for determining the age.

Migration

Many observers have speculated about seasonal migration. It was once generally believed that the elk migrated to the high country in the summer and back to the valleys and other low areas for the winter. Recent studies show that a large percentage of the elk do not change range in what could be called a true migration. Actually, the elk on the Olympic Peninsula should be divided into two classes—resident and migratory. No doubt there are gradations between the two classes. Field observations indicate that less than 50 per cent of the elk move to the high country for the summer.

Usually before January the snow is deep enough at the higher altitudes to force the herds into the lower areas. However, some of the old bulls have been known to spend the winter on high, wind-swept slopes where the snow is blown away and food can be obtained.

Undoubtedly some of the herds do make long migration treks, but this cannot be definitely stated as applying to all herds on the western watersheds of the park. It is true that all elk, except a few stragglers on the north and east side of the park, leave the lower parts of the valleys for the summer. These valleys include the Elwha, Dosewallips, Duckabush, and Skokomish rivers. The population in these eastern and northern valleys is low compared to that found in the park’s western valleys—the Bogachiel, Hoh,

Queets, and Quinault. The latter streams have many resident elk scattered along their courses, and these herds are joined by migrating animals during the winter. It is not known whether a given group of animals migrates to the high country year after year, but it is reasonable to assume that the migrating herds are led by animals that have previously migrated. An adventuring tendency in some animals may be cause for interchange of elk between herds and for the moving into new range.

Populations

The reports of early writers contain interesting information on the number of elk in the Olympics. The following tabulations are population estimates made by men representing, in general, federal agencies concerned with the area from 1904 to 1954:

<i>Area Covered</i>	<i>Date</i>	<i>Number</i>	<i>Name</i>
Olympic Peninsula	1904	2,000	Chris Morgenroth
Olympic Peninsula	1909	3,000	Chris Morgenroth
Olympic Peninsula	1916	7,000*	R. S. Frome
Olympic Peninsula	1918	7,000	Vernon Bailey
Olympic Peninsula	1918	7,000	Smith Riley
Olympic Peninsula	1921	8,000	Chris Morgenroth
Olympic Peninsula	1933	6,000	M. P. Skinner
Olympic National Forest	1938	6,225	John Schwartz
Olympic National Park	1954	4,000-5,000	National Park Service

*1,500 in Olympic National Forest.

By far the greatest number of elk occur in the watersheds of the west side of the park. The Hoh and the Queets lead with approximately equal populations. The Quinault, Bogachiel, Elwha, and Soleduck follow in the order listed. Small populations occur on the watersheds of Graywolf, Dosewallips, Duckabush, and Skokomish, which are on the drier east side of the park. Outside the park, particularly to the south and west, herds are well established. Perhaps the greatest number are found to the south on the Hump-tulips, Wynoochee, and Satsop rivers and the South Fork of the Skokomish River. Herds also range from the Soleduck and Dickey rivers south to the Quinault. There are several hundred elk ranging in and out of the fifty-mile long Ocean Strip that extends from the Ozette River south to the Queets. Occasionally elk are observed on the ocean beaches.



Elk herds frequent river bars both in summer and winter

Considering the food supply, the present (1956) elk population in the park is large enough. This is true even though it is difficult to see the animals at times. Possibly the east-side drainages could maintain a few more herds without damage to the range. If a few small herds could be induced to range on Hurricane Ridge in the summer and to winter down Morse Creek or on the Elwha, they would be a delightful attraction. Many years have passed since these meadows were frequented by elk. It is not known why this section of the park is without elk even though the range is apparently satisfactory.

Predators

The belief is unfounded that the carnivorous animals (cougar, coyote, bobcat, and bear) are detrimental to the elk or deer populations in the park. It is true that the cougars take both elk and deer, but the loss is not significant in a wilderness area of this type. The quality and availability of browse is the real factor that limits the elk and deer populations. A food-habit study of the cougar shows that deer are taken more frequently than elk. Buffer species, such as rabbits, squirrels, rats, and mice, serve as the primary food of the coyote and bobcat, and often of the cougar. The bear feeds a great deal on vegetation, salmon, and various forms of carrion.

About fifty cougar scats (droppings) have been analyzed in the past three years, and the items of food in order of frequency were deer, rabbit, beaver, squirrel, mice, mountain beaver, elk, and birds. Individual preference and availability of the prey species have a material effect on the diet of the cougar.

Winter Kill

The winter kill often exceeds the predator kill. This is certainly true during winters of heavy snowfall. The greatest number of deaths due to malnutrition occur in March and April after the vegetation starts its spring growth. This new growth is not rich in food value, and the animals expend more energy in obtaining it than they gain. The new growth also acts as a laxative and this has a very weakening effect.



A mature bull struggles to extricate his antlers from a tangle of wire

Foods

If there is any overbrowsing of the park vegetation by the elk, it is on the winter range in the valley floors. Available foods during periods of deep snow are limited to salmonberry, huckleberry, vine maple, fir, cedar, hemlock, spruce, fallen limbs of cottonwood and big-leaf maple, and the numerous lichens that are torn from the trees by storms and the weight of the snow. The understory of salmonberry, vine maple, and huckleberry is reduced in some places and the stubby hedgelike branches indicate overuse in past years. The overuse seems to occur where there is a large population of resident elk. The elk do considerable grazing when the ground is clear of snow. They seem to prefer grazing at all seasons, and browse only when necessary. A forest with a closed canopy tends to exclude the grasses and sedges which are the favorite plants for grazing. Grazing is the feeding on grasses, sedges, and broad-leaved herbaceous plants, whereas browsing is the taking of leaves and twigs of the woody-type plants, such as trees and shrubs.

The climax forest of the river valleys has many small glades or openings, and these furnish excellent grazing. Doubtless, the climax forest with its associated small natural openings has been a factor in the supporting of the elk in such large numbers.

If it were not for the browsing by the elk, the forest floor would be mostly covered with a dense growth of shrubs. Wherever elk herds are present in fairly large numbers they keep the forest floor open. In 1935, before Olympic National Park was established, the U.S. Forest Service fenced several plots (exclosures) for the purpose of studying the effect of elk browsing and grazing. A high rail fence prevented both deer and elk from entering. The photographs on page 19 illustrate how the rain forest would look if it were not for the browsing of the elk. The pictures are of a study plot on the Queets, and the vegetation inside has developed since the fence was constructed.

Even though the elk keep the understory of shrubs reduced, it has not, as yet, been established that this is detrimental to the forest. The open condition is of a recreational value as it provides an excellent opportunity for the viewing of the large trees and mosses of the rain forest.

The rain forest with its many giant trees is very important to the welfare of the elk. Not only is excellent cover provided, but,

most important of all, food in the form of storm-thrown branches and several species of lichen is available. Snow depth under the trees is always much less than in the open or in shrub-covered areas. The Roosevelt elk is truly a forest animal.

The elk on the west side of the park have a strange habit of eating logs that are in a certain stage of decay. The preferred woods seem to be cottonwood and maple, but Douglas fir, hemlock, spruce, and alder are sometimes eaten. It is fairly certain that the elk are attracted by fungi that are in the logs. Sometimes the eating begins in the middle of the log but more often it starts on the end where the unpalatable bark is not a hindrance. Very little feeding of this type has been noted except in the rain forest. Perhaps the desirable fungi require a very moist condition for growth that is not found in the eastern part of the park.

Mineral Licks

Elk commonly use natural mineral licks in the north and east portion of the park, but the presence of such licks is not known on the west side. This cannot be fully explained. However, it may be that the frequent rain drifting in from the Pacific Ocean causes salt to be in the daily diet of the animals in sufficient amounts to meet their physiological needs. In the mid-thirties, the U.S. Forest Service established several salting stations in the rain forest, but the elk never took salt from any of these sites. At the same time the elk were regularly taking commercial salt on the Elwha and on the eastern watersheds.

SEEING ELK IN THE OLYMPICS

Summer

The elk that go to the high country in the summer spend considerable time feeding in the open meadows. This provides a splendid chance for their observation and study. The snow banks at high altitude are used a great deal as a place to loaf. Frequently large herds are known to spend several hours each day on these snow fields. The high meadows most commonly used are in the western half of the park.

Elk can most likely be seen at O'Neil Pass, Seattle Creek, Kimta

Basin, Lake Beauty, Hoh Lake, Bogachiel Basin, and Cat Creek Basin. Nowhere in the park can elk be seen at the high elevations from the comforts of the car. One can reach the more favorable locations only on foot or on horseback.

Resident herds are difficult to see because of the dense forest cover in the lowlands. In July and August, if extreme care is exercised, the herds can be seen on the river bars, in the grassy glades that are scattered through the valley floor, or in the clearings created by the early-day homesteaders.

Winter

Herds on the Elwha are frequently seen in the vicinity of the campgrounds during the winter months. On the Hoh River the alder flats along the road to the ranger station are favorite range in late winter for many elk. On the Queets, the old fields associated with the early homesteads are used as both summer and winter range.

Mating Season

During the mating season, from mid-September to mid-October, elk may be seen almost anywhere in the western half of the park. By using the bugling of the bulls as a guide, herds can easily be found on the Bogachiel, Hoh, and Queets.

The Range of a Herd

It is thought that a given herd has a fairly definite range. It may not cover this range each day at the same time, but it is known with some degree of certainty that a certain group can be found in a particular place. For example, on the Queets at the old Johnnie Andrews homestead (see map of park) fresh evidence of a herd can be found any time of the year. It is certain that this herd, totaling nearly one hundred, grazes in and out of the old field each day if not disturbed by man. Similarly, other herds can be considered as residents of a given locality and can be found with minimum effort.

The daily movement of a herd can be checked by investigating its trails for fresh signs. These trails are often good enough to be used by man in cross-country travel and occasionally aid in preventing



Herds summering in the high country seem to get some relief from insects by loafing on snow banks

a hiker from becoming lost. Terrain that appears to be inaccessible is often traversed by well-defined elk trails.

The herds do considerable loafing and playing in the snow banks in the high country. Also entire herds composed of cows, mature bulls, and calves have been seen swimming, splashing, and playing in mountain lakes. At times it seems they play in the water for no other reason than for sheer joy. No doubt the playing on the snow and in the water is prolonged in an attempt to get relief from insects that sometimes are very annoying. These pests probably cause the elk to move about more than they would otherwise. The daily range of a herd may be increased or decreased according to severity of the attacks from insects.

History of Elk Protection

Early expeditions provided the first, although meager, information on the wildlife in the interior of the Olympic Mountains. The reports of these explorations contain comments on the elk; however, none state that they were seen in large numbers.

Actually, the first expedition of any consequence into the interior of the Peninsula was made in the winter of 1889-90 by a group of men who were financed by the *Seattle Press*—an early-day newspaper of the Northwest. This exploration, known as the “Press Party” or “Press Expedition,” traveled up the Elwha River, crossed Low Divide, and continued down the North Fork of the Quinault to Lake Quinault. This trip required about four months. Party members shot both elk and deer as food, but these animals became increasingly scarce as progress was made up the Elwha Valley. This is understandable as the interior country was deeply covered with snow.

Dr. Elliot, of the Columbia Museum in Chicago, collected mammals in the vicinity of Happy Lake and Seven Lakes Basin in 1898. Dr. Elliot found elk easy to collect, especially in the Seven Lakes Basin area.

The first reports discussing the wildlife and its habitat were based on field work performed on the Hoh, Queets, and Quinault watersheds. A few quotations from the writings of these early investigators indicate the effect of man on the elk.

Chris Morgenroth, a Forest Service employee, wrote in 1909 on the elk of the Olympics: “Until about fifteen years ago, the elk



Open forest on the upper Queets showing results of elk browsing. The photograph below shows the interior of the exclosure seen at the left in this picture

Inside the rail fence huckleberry, salmonberry, ferns, and conifers have become well established since the elk were excluded in 1935



were very plentiful all over the Olympic Peninsula, but the modern repeating rifle, in the hands of irresponsible elk-head-and-teeth hunters, soon depleted their numbers to such an extent that they were in danger of extermination and the State Legislature, in 1905, passed a law making it unlawful to kill any of the elk until 1915."

Morgenroth states further that "on the north and east sides of the Olympics, the elk were about all exterminated, but on the west and part of the south side, they are still plentiful; this part of the country being too densely forested and inaccessible for the average hunter."

Another early writer, Smith Riley, also of the Forest Service, wrote concerning the elk under date of December 2, 1918: "Heavy losses are occurring where the recent (human) population increases have taken place on the Hoh above the settlements within the National Forest, up on the Clearwater, the Queets and Quinault, also within the National Forest. The feed within these areas, consisting of salmonberry, willow, alder, vine maple, black-stemmed and licorice ferns, not extensive at best, has become extremely scarce under excessive use in recent years."

These majestic animals have aroused the interest of conservationists throughout America. Real concern for their welfare is reflected in early and continuing efforts for their protection.

In pioneer days, market hunting was a common practice. Elk, as well as deer, supplied a substantial portion of the food served in the first logging camps of the Peninsula. The homesteaders took elk for their needs as long as it was available. When it was no longer necessary to hunt them for their meat, many elk were killed for their teeth. At this time the canine teeth from a mature elk brought a good price. These practices inspired state legislation that gave protection to the elk. A law was passed closing the hunting season in 1905. It was intended that the season remain closed for only a ten-year period, but actually it was not opened again until 1933.

Prior to legislation dealing directly with the elk, a problem of range condition was recognized. This recognition was noted when the Congress created the Olympic Forest Reserve (now Olympic National Forest). This act of 1897 placed much of the rain forest under jurisdiction of a federal agency, and paved the way for management of the elk on its unique range.

Efforts by the United States Government to preserve the Roosevelt elk and a portion of its wilderness habitat were started in 1904. At



Alder bottoms are frequently used as winter range

that time Congressman Cushman, of Tacoma, introduced a bill to create a park on the Peninsula to be known as the Elk National Park. This bill did not become law. However, interest in the elk did not die with this initial legislative failure. In 1909 President Roosevelt set aside, by proclamation, 615,000 acres to be known as the Mount Olympus National Monument. President Wilson, by executive order, in 1915, reduced the monument to 328,000 acres. In 1933 the monument was transferred from the jurisdiction of the U.S. Forest Service to that of the National Park Service. Congressional action, in June, 1938, created the Olympic National Park of 642,000 acres and gave the president authority to increase the park area to a maximum of 898,292 acres. The president has exercised this authority three times and the park now contains 896,599.1 acres.

By comparison with early-day observations the present (1956) range conditions are no worse than those described by the first investigators. It seems that the elk population is more or less stable and is not subject to great fluctuation.



A common hiding place for calves is near a log

