that though the doves may forsake the cultivated fields they feed in flocks on the desert wherever food is available and that large numbers remain until October or later each year. The practise of hunting these doves in the nesting season is inexcusable, save in occasional instances where it is necessary to protect crops. With the rapid settlement of the country and the reclaiming of land under new irrigation projects at present under way, the large colonies of the White-winged Doves in the lower Gila Valley will disappear. The mesquite groves in which these birds nest furnish valuable wood for domestic use and for fence posts so that the mesquite *montes* are being steadily cut away. The doves will in consequence be reduced in number as they have been elsewhere, near Phoenix and Tucson, but should remain fairly common, as scattered pairs will continue to nest on the desert and others will take up domiciles in cottonwoods and other trees scattered through the cultivated fields and along the irrigation ditches.

Washington, D. C., February 18, 1920.

A NEW PTARMIGAN FROM MOUNT RAINIER

By WALTER P. TAYLOR

WITH THREE PHOTOS

IN COMMENTING on the status of the three currently recognized subspecies of white-tailed ptarmigan, Riley has suggested (Canadian Alpine Journal, 1912, p. 60) that a specimen from Mount Rainier, Washington, in the Biological Survey collection, U. S. National Museum, probably represents a distinct form. Additional material secured on Mount Rainier in 1919 by a field party of the Biological Survey and coöperating institutions demonstrates the accuracy of Riley's suggestion. For the loan of material or access to collections I am indebted to Prof. J. W. Hungate, of the State Normal School, Cheney, Washington, Stanley G. Jewett, Portland, Oregon, J. M. Edson, Bellingham, Washington, and to the authorities of the U. S. National Museum. For many helpful suggestions, the loan of measurements in manuscript, and other courtesies, I am under obligation to J. H. Riley of the U. S. National Museum. Edward A. Preble, T. S. Palmer, Alexander Wetmore, and Harry C. Oberholser of the Biological Survey have also been generous with advice and help.

Lagopus leucurus rainierensis, new subspecies

Rainier White-tailed Ptarmigan

Lagopus leucurus, Ridgway, Man. N. Amer. Birds, ed. 2, 1896, p. 202 (probably part); Chapman, Bull. Amer. Mus. Nat. Hist., vol. 16, 1902, p. 237 (part); Dawson, Birds of Washington, 1909, vol. 2, p. 590 (part); American Ornithologists' Union Check-List of North American Birds, 1910, p. 142 (probably part); Riley, Can. Alp. Journ., 1912, pp. 59-60 (part).

Diagnosis.—Adults in nuptial plumage similar to *Lagopus leucurus leucurus*, but dark areas more blackish; buffy wash over light areas not so consistently present, and when present paler.

Type.—No. 269375, U. S. Nat. Mus. (Biological Survey coll.); adult female; Pinnacle Peak, 6,200 feet, Mount Rainier, Washington; July 19, 1919; collected by W. P. Taylor; original no. 479.

Geographic range.—While all specimens so far examined which are clearly referable to the new form are from Mount Rainier, it is not improbable that the ptarmigan occurring in the Cascade Mountains, at least in central and southern Washington and in Oregon, if the bird occurs in that State, will be found to be nearest this subspecies. The life zone occupied is Arctic Alpine.

Specimens examined.—Eight adults and four young birds, all from Mount Rainier, Washington, as follows: Near Nisqually Glacier, 3; Pyramid Peak, 6,000 feet, 1; Indian Henrys, 7,000 feet, 1; Indian Henrys, 7,500 feet, 1; Indian Henrys, near timberline, 2; Indian Henrys, 5,300 feet, 1; Pinnacle Peak, 6,200 feet, 1; McClure Rock, 7,300 feet, 1; Mount Rainier, 1.

Plumage descriptions.—Adult males in nuptial plumage: The plumage shows evident signs of wear. Back white, mottled and barred with blackish; individual dark feathers blackest toward ends, being nearer hair brown or mummy brown toward bases; the dark feathers variously barred and marked with whitish or buffy, some conspicuously (as in no. 853, collection of Stanley G. Jewett), some scarcely at all (as in no. 101,

Fig. 33. TYPICAL PTARMIGAN COUNTRY ON THE MOUNT RUTH RIDGE, 7,500 FEET, NORTH SIDE OF MOUNT RAINIER, WASHINGTON. THE EASTERLY EMINENCE OF THE ANCIENT CRATER IN THE DISTANCE.

Museum, State Normal School, Cheney, Washington, collected by J. W. Hungate). Top of head white thickly sprinkled with wedges of blackish. Lower back and rump variously modified with darker feathers. Wings and tail white; some of wing coverts blackish like feathers of back; upper tail coverts near fuscous, pencilled and barred with light ochraceous-buff, or light buff; underparts white, sometimes washed with light ochraceous-buff; breast blotched and barred with blackish; throat white with scattered splotches of black. One bird (no. 853, collection of Stanley G. Jewett), has acquired dark flank feathers on the left side, these feathers crossed by four bars of blackish. Blackish portions of feathers beneath sometimes pencilled with light buff.

Black mottling and barring on belly and flanks of males less extensive than in females; the former are also less buffy, especially dorsally. The black blotches are larger in the male than in the female, and consequently the black bars are broader and

less numerous; the black areas often tend to coalesce. The bare red skin above the eye is brighter and more conspicuous than in the female.

Adult male in postnuptial plumage: One specimen (no. 269376, U. S. Nat. Mus., Biol. Surv. coll.) collected September 26, 1919, is rapidly acquiring the white winter plumage. Scattered black feathers from the summer plumage, much worn, still remain, but the handsome fall feathers (ground color light buff to warm buff, exquisitely dotted and pencilled with blackish) occupy most of the back, rump, and breast.

The period during which the postnuptial plumage is worn must be short. The earliest appearance of fall feathers in the series from Rainier is August 10, as exemplified in a female bird (no. 156505, U. S. Nat. Mus., Biol. Surv. coll.) which is acquiring a few transitional feathers. In a male collected September 26 (no. 269376, U. S. Nat. Mus., Biol. Surv. coll), the fall plumage is being rapidly replaced by the immaculate white plumage of winter

Adult females in nuptial plumage: As in the males, the plumage shows evident signs of wear. Upperparts heavily mottled with black, the feathers variously spotted and barred with light buff to ochraceous-buff, and edged and sometimes spotted or barred with white. Underparts white, more or less extensively washed with pale buff; breast and sides heavily barred with black, the flanks and mid-belly also with scattered barred feathers. Throat white, sparsely spotted with dark brown. Wings and tail white.

Adult females in postnuptial plumage: No specimens fully exemplifying this stage are at hand from Mount Rainier. One bird (no. 156505, U. S. Nat. Mus., Biol. Surv. coll.) taken August 10, 1897, is acquiring feathers of this plumage, which approximate light ochraceous-buff or ochraceous-buff in color, thus being a shade darker than in the fall male described above.

Young, transition from natal to juvenal plumages: A series of four specimens (nos. 156494-156497, U. S. Nat. Mus., Biol. Surv. coll.) taken by Dr. A. K. Fisher on Mount Rainier July 31 to August 2, 1897, exemplify an early stage of plumage All are beginning to acquire feathers of the juvenal plumage, but, excepting the wings and scapulars, and in some the tail, the natal down still covers the entire body. In two (nos. 156495, 156497) the juvenal feathers are just appearing on the tail; all have them barely started in the scapular area, longer in one (no. 156497).

Down of upperparts colored as follows: top of head cinnamon or sayal brown, in one (no. 156494) modified by blackish; sayal brown area inclosed by black line; back with broad lengthwise area of sayal brown, bordered and often modified by blackish; in one (no. 156497) the brown area is finely cross-barred with black; a median black line, bordered by pale smoke gray, connects the coloration of the top of the head with that of the back; shoulders and underparts pale smoke gray, the breast lightly washed with buffy, and flanks and belly with suggestions of buffy; face white, crossed by two or three distinct black bars, one extending backward from nostril and eye, one from corner of mouth, and one from below corner of mouth; two black spots (fused in some specimens) above nostrils; natal down of wings anteriorly sayal brown, variously modified by black; feet and legs pale smoke gray, with suggestions of buffy; incoming scapulars (juvenal plumage) fuscous black, tipped with wedge of white, and modified with warm buff; wings (juvenal plumage) deep mouse gray; the feathers tipped with white, and, particularly the secondaries and coverts, edged and otherwise modified with buffy; bill black, tipped with cream buff or whitish.

Measurements.—Four adult males of *Lagopus leucurus rainierensis* measure as follows: Wing, 181.5 mm. (187-176); tail, 99.5 (106-96); culmen, 15.5 (16.0-14.5); depth of upper mandible, 6.3 (6.6-6.0). Four adult females: Wing, 175.7 (182-171); tail 86.7 (90-82); culmen, 15.2 (16.5-13.5); depth of upper mandible, 6.2 (6.4-6.1).

On comparison of these measurements with those published by Riley for *Lagopus leucurus peninsularis* from the Kenai Mountains, it will be observed that the Rainier specimens are longer-winged on the average; the wings and tails of the series of *L. l. rainierensis* are nearly the same as in specimens of *L. l. leucurus* from Alberta and British Columbia, but average less than in examples of *L. l. altipetens* from Colorado.

Remarks.—The type locality of the new subspecies is near the southern extremity of the geographic range of the species in the major Pacific Coast mountain chain. Comparison with specimens of *Lagopus leucurus leucurus* from

Moose Pass, British Columbia, Moose Pass, Alberta, and Moose Branch of Smoky River, Alberta (one specimen from Henry House, Alberta), practically topotypes of *leucurus*, all in nuptial plumage, indicates that the dark areas in *rainierensis* average more blackish than in *leucurus*. In the latter the shade is close to mummy brown (Ridgway, Color Standards, 1912), while in *rainierensis* they approximate one of the darker shades of blackish brown. The buffy portions of the feathers in *rainierensis* are paler than in *leucurus*, being, in the former, near light ochraceous-buff, while closer in the latter to ochraceous or ochraceous-tawny. In two male birds from Moose Branch of Smoky River, Alberta, and

Fig. 34. NEST SITE OF PTARMIGAN ON RIDGE NEAR McCLURE ROCK, ABOVE PARADISE VALLEY, 7,300 FEET, SEPTEMBER 26, 1919. THE SCATTERED SHELLS AT THE BASE OF THE LARGE ROCK IN THE FOREGROUND JUST ABOVE THE BLACK CROSS PRECISELY INDICATE THE POSITION OF THE NEST. THE PRINCIPAL PLANTS IN THE VICINITY ARE RED HEATHER, PHLOX, A SEDGE, AND THE TINY ALPINE LUPINE.

Henry House, Alberta (nos. 222661 and 222655, U. S. Nat. Mus.), there is a light wash of pale buffy. A male from Moose Pass, Alberta (no. 222656, U. S. Nat. Mus.) has the buffy scarcely indicated. Males of *rainierensis* are immaculate white, or have less suggestion of buffy than the Moose Pass male. Thus the contrast between the black areas and the white ground color is more vivid in the new subspecies than in *leucurus*. A specimen of *leucurus* from Moose Branch of Smoky River, Alberta (no. 222661, U. S. Nat. Mus.) has some black-barred flank feathers as in no. 853 (collection of Stanley G. Jewett) from Mount Rainier; but while the Alberta example shows two or at most three distinct dark cross-bars on each feather the Rainier specimen has four dark cross-bars, and the cross-bars are narrower than in the Alberta example.

Brown feathers of the fall plumage on the back of a male of the new form (no. 269376, U. S. Nat. Mus., Biol. Surv. coll.) compared with those in a bird from Moose Pass, British Columbia (no. 222656, U. S. Nat. Mus.) are noticeably less intense. But this apparent difference might not be borne out in a larger series.

Comparisons of *rainierensis* with ptarmigan from Colorado, including a topotype of *Lagopus leucurus altipetens* Osgood, show the Rainier form to differ in having the dark areas of summer plumage more blackish. At least one male specimen (no. 142372, U. S. Nat. Mus., Biol. Surv. coll.) taken on Bald Mountain, Colorado, has the fall browns much darker than in the only comparable male from Mount Rainier (no. 269376, U. S. Nat. Mus., Biol. Surv. coll.).

Similar comparisons with ptarmigan from Medicine Peak, Wyoming, and five miles south of Twining, New Mexico, show much the same differences as those previously cited, the dark areas in *rainierensis* being more blackish. In a Wyoming female in summer plumage (no. 230372, U. S. Nat. Mus., Biol. Surv. coll.) the buffy areas are of a darker shade than is typical of the Rainier series; and two males from New Mexico (nos. 194588, 194,589, U. S. Nat. Mus., Biol. Surv. coll.) resemble the specimen taken on Bald Mountain, Colorado, in having the fall browns more intense than in the Rainier form.

Examples of *Lagopus leucurus leucurus* from various points in British Columbia, aside from those already mentioned, and from several localities in Alaska, demonstrate average differences similar to those cited, the dark areas of feathers in summer tending to be less blackish than in the Rainier subspecies and fall browns more intense.

I have seen no skins of *Lagopus leucurus peninsularis*. Riley states (Can. Alp. Journal, 1912, p. 60): "The type *L. l. peninsularis* is a female with a few feathers of the fall plumage just appearing; it is very dark, but there is a specimen (no. 156498, Biological Survey, Department of Agriculture collection) from Mount Rainier, Washington, still darker, and the latter probably represents a distinct form which for the present I am obliged to refer to *Lagopus l. leucurus*."

Specimens in the U. S. National Museum collection taken by Dr. C. B. Kennerly at Camp Skagit and Similkameen (nos. 16000, 16002, 16003, 34076) are apparently closer to *L. l. leucurus* than to *rainierensis*, the only bird in summer plumage (no. 16003) having the dark areas paler than in the new form. The others are in fall plumage, of which, unfortunately, scant material is at hand. The browns in these fall birds from Camp Skagit and Similkameen are paler than in the female from Mount Rainier (no. 156505), but very similar to, or even slightly more intense than in the fall male (no. 269376, U. S. Nat. Mus., Biol. Surv. coll.).

Examples in the collection of J. M. Edson from Austin Pass and Bald Mountain (nos. 170, 207, 208, 209, J. M. Edson, Bellingham, Wash.) are in fall plumage. Two (nos. 207, 208) have been mounted and seem to be somewhat faded. One (no. 170) is passing into winter plumage. One (no. 209) is in nearly the same plumage stage as the fall male of *rainierensis* (no. 269376, U. S. Nat. Mus., Biol. Surv. coll.); in the blackness of some of the dark feathers this bird (no. 209) resembles *rainierensis*, but additional comparable material is necessary to determine with certainty the status of birds from the northern Cascades.

Habits.—Ptarmigan were found in a strip of timberline between altitudes of 6,000 and 7,500 feet all around the mountain. A nest discovered by J. W. Hungate at 6,100 feet on Pyramid Peak contained five eggs, one of which proved to

be infertile, one addled, and three in different stages of development to approximately ten days. The sitting bird was studied and photographed for several hours. She was more approachable than the average domestic fowl, finally even permitting herself to be stroked gently on the back.

While we never saw the male with the female and young, we did note adults of the two sexes together. But in such events nesting activities apparently were not in progress.

The ptarmigan furnishes an interesting example of protective coloration. The freezing habit is characteristic. Repeatedly we were startled to find that we had for some moments been looking directly at birds which we had not noticed until that instant, so quietly did they stand on the rocks, and so harmoniously did their coloration blend with that of their surroundings. There seems

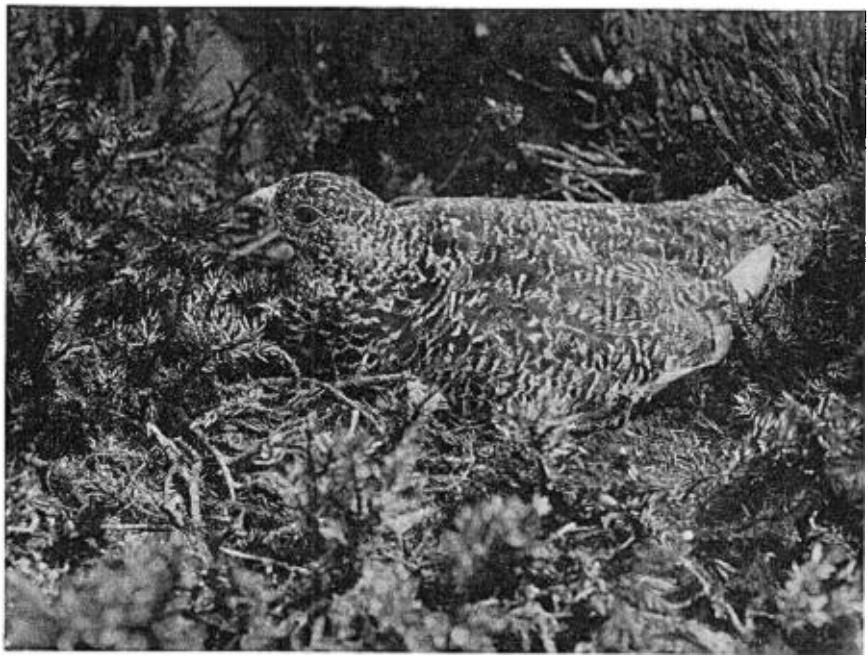

Fig. 35. FEMALE PTARMIGAN ON NEST, PYRAMID PEAK, 6,100 FEET, INDIAN HENRYS HUNTING GROUND, MOUNT RAINIER, WASHINGTON, JULY 11, 1919. THE VEGETATION IS RED HEATHER (*Phyllodoce empetriformis*) AND WHITE HEATHER (*Cassiope mertensiana*).

to exist in these ptarmigan a marvelous correlation between need for protection and degree of protective coloration; for the young are best protected by their coloration, the hens next, the cocks least.

Young birds, up to six in number in each brood, were seen in different parts of the Park from July 29 well on through August. J. B. Flett, Senior Park Ranger, Mount Rainier National Park, found a ptarmigan track under a cliff at McClure Rock (7,300 feet), late in the fall of 1919. According to Flett, the ptarmigan usually descend in winter and are found below the terminal moraines of the glaciers, though occasionally they winter under cliffs at timberline, doubtless feeding on the foliage and berries of the abundant *Juniperus sibirica*.

MEASUREMENTS OF ADULT EXAMPLES OF *LAGOPUS LEUCURUS RAINIERENSIS*, ALL FROM MOUNT RAINIER, WASHINGTON

Males

Number	Collector	Locality	Date	Wing	Tail	Culmen	Depth of upper mandible
101	J. W. Hungate	Indian Henrys, 5300 ft.	July 11, 1919	187	100	16	6.5
269376	W. P. Taylor	McClure Rock, 7300 ft.	Sept. 26, 1919	176	96	14.5	6
853	S. G. Jewett	Indian Henrys, 7000 ft.	July 10, 1919	177	96	15.5	6.2
854	S. G. Jewett	Indian Henrys, 7500 ft.	July 10, 1919	186	106	16	6.6
			Average	181.5	99.5	15.5	6.3

Females

269375	W. P. Taylor	Pinnacle Pk., 6200 ft.	July 19, 1919	182	90	15	6.3
156505	V. Bailey	Indian Henrys, above timberline	Aug. 10, 1897	172	83	13.5	6.1
156498	A. K. Fisher	near Nisqually Glacier	Aug. 2, 1897	178	92	16.5	6.4
103	J. W. Hungate	Pyramid Pk., 6000 ft.	July 11, 1919	171	82	16	6.1
			Average	175.7	86.7	15.2	6.2

Washington, D. C., April 8, 1920.

THE CALIFORNIAN RACE OF THE BREWER BLACKBIRD

By J. GRINNELL

(Contribution from the Museum of Vertebrate Zoology of the University of California)

TO SEE that the Brewer Blackbirds of west-central California are appreciably smaller than those of the Great Basin and Rocky Mountain regions requires but a few moments examination of an appropriate series of specimens. Furthermore this difference has already been commented upon, at least once, nearly twenty years ago. Under *Scolecophagus cyanocephalus* (Wagler), Ridgway (Bds. N. and Mid. Amer., II, 1902, p. 249, footnote) makes this statement: "California specimens average decidedly smaller than those from east of the Sierra Nevada, as the following measurements show" [giving a table based on two males and five females from California and five males and four females from the "Rocky Mountain pleateau"].

In view of the ease of securing specimens of so common a bird, and in view of the continual activity in describing subspecies, it is curious that the California Brewer Blackbird should have been left so long without a subspecific name. The race seems to me to possess quantity of difference to quite as great measure as many subspecies of birds which have already stood for years on our lists. None of the scientific names given by Ridgway (*loc. cit.*) in the synonymy of the