

THE PRINCE OF WALES SPRUCE GROUSE: A NEW SUBSPECIES FROM SOUTHEASTERN ALASKA

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The Spruce Grouse (*Falciennis canadensis*; see below for use of generic name) consists of two groups of subspecies, those with white-tipped upper tail coverts and lacking a chestnut tail band (the *franklinii* group) and those without white tipping but with a chestnut tail band (the *canadensis* group, see Figure 1). The first group, up to now composed of only the subspecies *franklinii*, was until recently represented from Alaska by only a single museum specimen, an adult female taken by Wilfred H. Osgood on Prince of Wales Island in the Alexander Archipelago on 27 May 1903 (unpublished data in Smithsonian Institution archives). A second specimen, a male, was taken on the island by Paul Coffey on 14 September 1982.

In 1993 Gustafson, with the help of other biologists, assembled a series of five additional specimens. These included an adult female struck by a car on Prince of Wales Island on 22 June 1993, a subadult male collected there on 12 June 1993, an adult female collected on Heceta Island on 9 June 1993, and two males, one adult and one subadult, taken by a hunter on adjacent Kosciusko Island in the spring of 1990. The last were retrieved from a taxidermy shop in Ketchikan, Alaska.

These five specimens were prepared at the American Museum of Natural History, New York, three as round skins and two as "shmoos" and full skeletons. These five, plus the two earlier specimens, Dickerman compared with a small series of recently taken males (1958 to 1984) from elsewhere in the range of *franklinii* and large series of both sexes taken 1900–1923. This study revealed the archipelago birds to be a distinctive but unnamed form. Before describing it, we must digress to discuss the species' nomenclature and foxing.

NOMENCLATURE

We strongly agree with Yamashina (1939), Parkes (1952), Stepanyan (1962), Pofapov (1986, not seen in the original), and Boag and Schroeder (1992) that the Spruce Grouse, long placed in its own genus, *Canachites*, is not congeneric with the Blue Grouse (*Dendragapus obscurus*), *contra* Short (1967), who was followed by the A. O. U. (1983). Yamashina (1939) made a strong argument, most of which was cited by Short (1967), that the Spruce Grouse is, instead, congeneric with the Siberian or Sharp-winged Grouse (*Falciennis falciennis*). The name *Falciennis* Elliot, 1864, has priority over *Canachites* Stejneger, 1885. Short discussed the distinctness of the downy young of the Spruce Grouse with respect to those of the Blue Grouse and mentioned, but did not consider important, the difference in the

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number of rectrices (16 in *Falcipectus* and *Canachites* vs. 18 in *Dendragapus*) or absence of inflatable esophageal sacs in *Falcipectus* and *Canachites*. We fully agree with Bendell and Zwickle (1984), cited by Zwickle (1992), that the Spruce and Siberian Grouse are forest-adapted members of the smaller-sized forest-grouse complex, which lacks esoph-

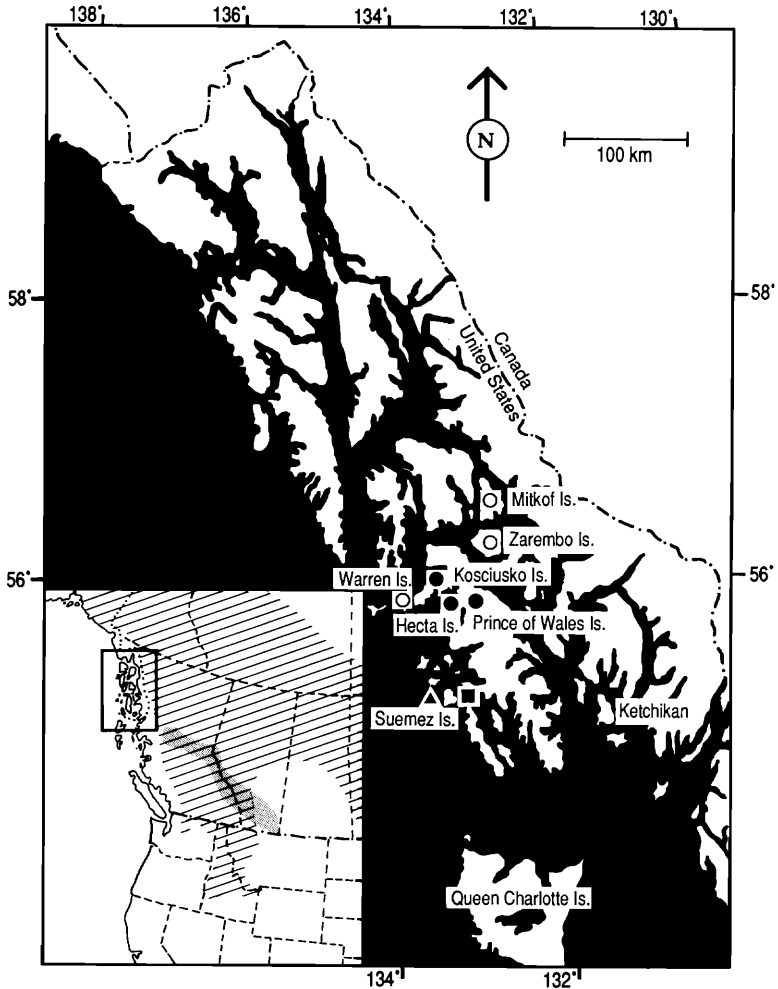


Figure 1. Range of the Spruce Grouse in western Canada and Alaska, showing range of *Falcipectus canadensis isleibi* and zone of intergradation between the *canadensis* and *franklinii* subspecies groups (inset). Solid dot, specimen record; open dot, sight record; triangle, bones; square, nest.

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ageal air sacs for booming, while the Blue Grouse is a forest-adapted representative of the prairie/scrubland *Tympanuchus* complex, whose members are larger and have esophageal air sacs. Recent studies of grouse relationships using mitochondrial DNA confirmed the distinctness of *canadensis* and *obscurus* and placed the former in a clade with the Ruffed Grouse (*Bonasa umbellus*); however, grouse with esophageal air sacs did not form a monophyletic clade (Ellsworth et al. 1995).

FOXING

Postmortem plumage-color change, or foxing, is extensive in males of *F. canadensis* (insufficient females were seen for the extent of foxing among them to be assessed). Three 1981–1987 males of *F. c. franklinii* were compared with a large series taken from 1897 to 1914, and to three from the period 1958–1964. The older series is dramatically browner, in both the grays and the blacks, than the most recently taken birds, while even the 1958–1964 birds have foxed sufficiently that they differ consistently from the 1981–1987 series. Thus only the latter series was used in the color diagnosis. No recently taken females of *franklinii* were available. However, the three females from the Alexander Archipelago, all spring birds, are not consistently separable by color from a large series of older fall-taken *franklinii*.

DESCRIPTION

The Alexander Archipelago population may now be described as

Falcipennis canadensis isleibi new subspecies

Holotype. Adult male, American Museum of Natural History no. 830558; collected by Paul Coffey on 15 September 1982, near Little Naukati Bay, Prince of Wales Island (55° 52' N, 133° 13' W), southeastern Alaska; prepared by Daniel D. Gibson (DDG 819). Formerly no. 4282, University of Alaska Museum.

Diagnosis. Most similar to *F. c. franklinii*, but with shorter wings and longer tail (Table 1). Males darker, more olive, less clear gray on the dorsum and flanks; top of head darker, more sooty. White tips of the long upper tail coverts dramatically narrower than in *franklinii* (<5 mm wide vs. 6–11 mm, see Figure 2). Available females do not differ consistently from *franklinii* except in size. Other subspecies of the Spruce Grouse lack white on the upper tail coverts and have a chestnut band at the tip of the tail (Figure 1).

Etymology. This subspecies is named in honor of the late Malcolm E. (Pete) Isleib, outstanding birdwatcher, collector, contributor to our knowledge of the Alaskan avifauna, and friend to the Alaskan ornithological community. We suggest as a common name “Prince of Wales Spruce Grouse,” to reflect much of the known range of the new taxon.

Discussion. One female is distinctly darker and more richly ochraceous than any fall female *franklinii* examined, but the other two females are more worn and faded and match mainland birds. Two females, taken 9 and 22

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June 1993, were both molting heavily on the brood patch. Thus the characteristics of fresh-plumaged females of *isleibi* await determination. An immature male (white tipping on several rectrices) taken 12 June was in non-breeding condition, with testes measuring only 2 × 3 mm, and was in light body molt.

All four males (both adults and first-year birds) have traces of chestnut in the tips of the outer rectrices (Figure 2). Thus in this character and in the narrowness of the white tips of the upper tail coverts *isleibi* resembles Spruce Grouse found elsewhere only in the zone of intergradation between *canadensis* and *franklinii*.

In view of the abundance of taxa endemic to the area of the Queen Charlotte Islands and the Alexander Archipelago, it is surprising the Spruce Grouse population, known since 1903, has not been described previously. Four minor anecdotal accounts (Osgood 1903, 1905, Swarth 1911, Gabrielson and Lincoln 1959) refer to the occurrence of the species in the archipelago on Warren and Zarembo islands as well as on Prince of Wales Island.

The Spruce Grouse is absent from the Queen Charlotte Islands of British Columbia to the south and from most, if not all, of the adjacent mainland to the east (Swarth 1911, Boag and Schroeder 1992).

In 1992 Gustafson began efforts to document the range of this population. He compiled information on recent sight records on Prince of Wales Island and obtained the birds from Kosciusko and Heceta islands. On Suemez Island, beneath a Northern Goshawk (*Accipiter gentilis*) nest, he found avian keels that were identified as Spruce Grouse remains (D. D. Gibson pers. comm.). On Suemez Island, a nesting female Spruce Grouse with six eggs was found by foresters on 11 May 1993, in an area of proposed logging. Peter J. Walsh (pers. comm.) saw a Spruce Grouse on Mitkof Island on 17 December 1989. The species probably occurs on other islands in the southern portion of the Alexander Archipelago.

Table 1 Wing Chord and Tail Lengths (mm) of Two Subspecies of the Spruce Grouse, *Falci pennis c. franklinii* and *F. c. isleibi*

	Males		Females	
	Wing chord	Tail	Wing Chord	Tail
<i>F. c. franklinii</i> ^a				
Adults	183.6 ± 3.1 (11)	113.4 ± 3.6 (11)	179.5 ± 4.4 (8)	94.7 ± 2.3 (8)
Immatures	179.5 ± 4.1 (11)	102.0 ± 1.6 (4)	168.2 ± 6.6 (5)	89.3 ± 4.5 (5)
<i>F. c. isleibi</i>				
Adults	169 (type)	126, 128 (type)		
Immatures	169	114, 117		
Age unknown			168, 169, 170	98, 105

^aMean ± standard error (sample size). Data from Boag and Schroeder (1992).

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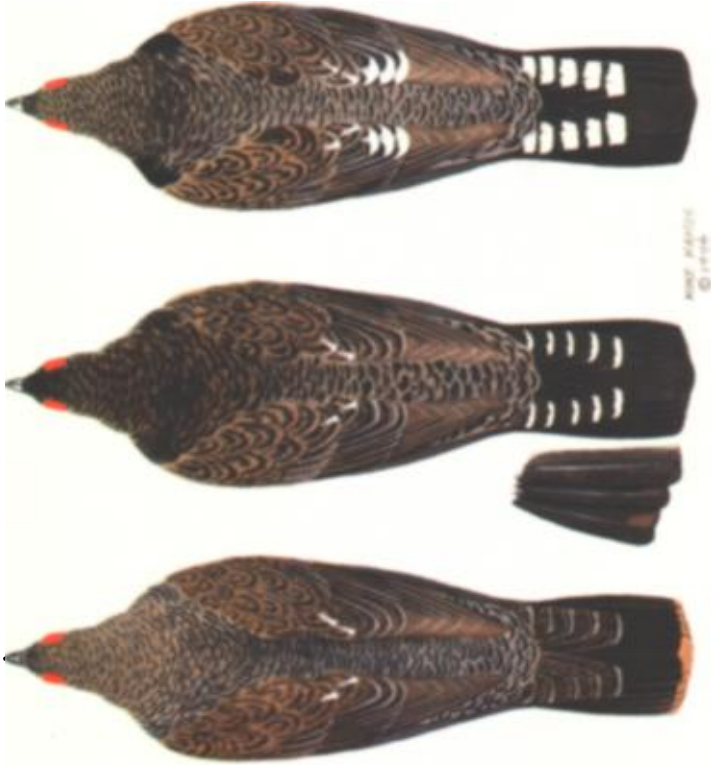


Figure 2. Upperparts of males of the Spruce Grouse. Left, *F. c. canadensis*. Based on two adults, MSB 880, from Thomas Lake, 30 mi. NE of Ely, St. Louis Co., Minnesota, 19 December 1924, and MSB 679, from mile 50 along Richardson Highway, 150 mi. NE of Anchorage, Alaska, 3 September 1961. Middle, *F. c. isleri*. Based on AMNH 830554, an adult, and 830555, an immature, both from Koscusko Island, about 50 mi. SE of Ketchikan, Alaska, in fall 1991. Right, *Falci pennis canadensis franklinii*. Based on two adults, UWBM 36214, from Skull and Crossbones Ridge, Okanogan Co., Washington, November 1981, and UWBM 50206, from Freezeout Ridge, 9 mi. W and 7.5 mi. N of Conconully, Okanogan Co., Washington, 27 August 1987

Watercolor by Mike Ramos

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Spruce Grouse are recognized as poor long-distance flyers. In the Great Lakes, for example, there is no evidence the species has occurred on Isle Royale or other islands more than a mile from the mainland. The islands on which it is found, such as Drummond Island in Lake Huron, lie 1 mile or less offshore (Ammann 1963).

Of the southeastern Alaska islands known to support *F. c. isleibi*, only Warren and Mitkof are separated by more than 1 mile from Prince of Wales, the apparent core of the population. Notably, Prince of Wales is larger than Graham Island in the Queen Charlotte Archipelago, and it is in size second only to Kodiak among the islands of Alaska. Except for its linkage to Zarembo Island via a series of smaller islands, Prince of Wales Island is isolated from the next nearest mainland connection by nearly 4 miles of salt water while Zarembo is separated from other islands in the direction of the mainland by 2 or more miles. The waters separating Zarembo and Prince of Wales from the mainland are shallow, and a land bridge could have existed during the Pleistocene. A femur of a bear, probably a Grizzly (*Ursus arctos*), dated to $35,365 \pm 800$ years before present and an incisor of a marmot (*Marmota* sp.) dated to over 44,500 years before present have recently been reported from Prince of Wales Island (Heaton 1995). These mammals have been lacking from the island in historic times. Consequently, it is possible that this relict population of *F. canadensis* has been isolated since the late Pleistocene, and it might be that the unglaciated islands were the refugium from which the species expanded to the mainland during periods of low sea-water levels and from which paler *franklinii*, adapted to the drier interior slopes, evolved.

SUMMARY

The Spruce Grouse of Prince of Wales and nearby islands in the Alexander Archipelago in southeastern Alaska constitute a subspecies agreeing with *F. c. franklinii* and differing from other subspecies of *F. canadensis* in its having white-tipped upper tail coverts and lacking a chestnut tail band. The new form, *F. c. isleibi*, differs from *franklinii* in its shorter wing and longer tail; males differ by their darker, more olive upperparts and flanks and narrower white tips on the upper tail coverts. Because of its 16 rather than 18 or 20 rectrices, lack of inflatable neck sacs, and different color pattern of the downy young, the Spruce Grouse is better placed in *Falcipennis* than in *Dendragapus*.

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LITERATURE CITED

- Ammann, G. A. 1963. Status of the Spruce Grouse in Michigan. *J. Wildlife Mgmt.* 27:591–593.
- American Ornithologists' Union. 1983. Check-list of North American Birds, 6th ed. Am. Ornithol. Union, Lawrence, KS.
- Bendall, J. F., and Zwicke, F. C. 1984. A survey of the biology, ecology, abundance and distribution of the Blue Grouse (genus *Dendragapus*). *Int. Grouse Symp., World Pheasant Assoc., Proc.* 3:163–190.
- Boag, D. A., and Schroeder, M. A. 1992. Spruce Grouse, in *The Birds of North America* (A. Poole, P. Stettenheim, and F. Gill, eds.), no. 5. Acad. Nat. Sci., Philadelphia.
- Ellsworth, D. L., Honeycutt, R. L., and Silvy, N. J. 1995. Phylogenetic relationships among North American Grouse inferred from restriction endonuclease analysis of mitochondrial DNA. *Condor* 97:492–502.
- Gabrielson, I. N., and Lincoln, F. C. 1959. *Birds of Alaska*. Wildlife Mgmt. Inst., Washington, D.C.
- Heaton, T. H. 1995. Middle Wisconsin bear and rodent remains discovered from Prince of Wales Island, Alaska. *Current Research in the Pleistocene* 12: in press.
- Osgood, W. H. 1905. In Alaska's rain belt. *Condor* 7:68–71.
- Parkes, K. C. 1952. *The birds of New York and their taxonomy*. Ph. D. dissertation, Cornell Univ., Ithaca, N. Y.
- Potapov, R. L. 1985. *Fauna of the USSR: Birds, vol. III. Order Galliformes, family Tetraonidae*. Science Inst., Leningrad (in Russian).
- Short, L. L., Jr. 1962. A review of genera of grouse (Aves, Tetraoninae). *Am. Mus. Novitates* 2289.
- Stepanyan, L. S. 1962. [The systematic relationships between the Sharp-winged Grouse and the Spruce Grouse.] *Ornitologiya* 5:368–371 (in Russian).
- Swarth, H. S. 1911. *Birds and mammals of the 1909 Alexander Alaska Expedition*. Univ. Calif. Publ. Zool. 7:9–172.
- Yamashina, Y. 1939. Note sur le tétras falcipenne de Sibérie. *Oiseau Rev. Fr. Ornithol., N. S.*, 9:3–9.
- Zwicke, F. C. 1992. Blue Grouse, in *The Birds of North America* (A. Poole, P. Stettenheim, and F. Gill, eds.), no. 15. Acad. Nat. Sci., Philadelphia.

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