

A Guide for Determining
Species, Age, and Sex of
Alaskan Grouse and Ptarmigan

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What Species Is It?

- A. Breast feathers barred with yellow and brown, or black tipped with white. Tail dark brown or black mottled with brown, 1/2" tan band at tip.....Spruce Grouse
- B. Reddish or grey in color, dark ruff on neck, head crested, tail grey or reddish brown; dark brown or black band 3/4" wide near tip.....Ruffed Grouse
- C. Brown V- or U-shaped patterns on breast, white spots on primaries, central pair of tail feathers brown, 1-2" longer than others; other tail feathers pale, stiff.....Sharp-tailed Grouse
- D. Large grouse, either dull bluish grey or mottled brown, tail slate-colored with paler band at tip (males only) or tail mottled brown with no band at tip.....Blue Grouse
- E. Wings white; tail white.....White-tailed Ptarmigan
- F. Wings white; tail black, with narrow band of white at tip.
 - 1. Bill considerably longer than broad.....Rock Ptarmigan
 - 2. Bill about as broad as it is long.....Willow Ptarmigan

Male or Female?

The best method for sex determination is to check the gonads (Fig. 1). Males are recognized by the pair of oblong testes located on the dorsal wall of the body cavity, along the backbone

and just anterior to the kidneys. During the hunting season the testes will usually be less than 1/4" long. Females have a single ovary on the left, yellowish or white in color and ventral to the anterior portion of the left kidney. The gonads are easily located if you hold the visceral mass to one side.

If internal examination is not possible, the following secondary sex characteristics should be used:

A. Spruce Grouse

1. Males have a black breast and neck.
2. Females have yellowish markings on breast feathers.

B. Ruffed Grouse -- No simple, accurate method developed, however, if each tail feather distinctly banded, chances are very good specimen is a male. An incomplete tail band (lacking on two central feathers) can be found in either sex. Length of unplucked central tail feather may be used after mid September. Based on a few Alaskan specimens, this feather is rarely less than 130 mm in males; in females rarely more than 120 mm. Future collections will allow further testing of this method.

C. Sharp-tailed Grouse

1. The two long, central tail feathers in males have longitudinal color patterns from the base to beyond the half-way mark.
2. The central tail feathers of females are cross-barred.

D. Blue Grouse

1. Males have dark tail with a terminal grey band about 1/2" wide.
2. Females have a mottled brown tail in various shades.

E. White-tailed Ptarmigan¹ -- Males and females impossible to tell apart externally after they get their white winter plumage (October).

1. Early in hunting season nape, flanks, inner portion of wings, and upper tail coverts of males finely barred with black and brown.
2. Early in season these areas on females are coarsely barred with black, brown, and yellow.

F. Rock Ptarmigan -- Early in hunting season the sexes are hard to tell apart externally. In August and September the long flank feathers, just under the wing, are broadly barred with yellow in old females, and finely barred with brown and grey in old males.

1. In winter males have a complete black stripe from ear to bill.
2. During winter females either lack, or sometimes have an incomplete stripe from ear to bill.

G. Willow Ptarmigan² -- In winter sexes difficult to distinguish externally. Wing and tail feather lengths have been used in the Brooks Range, but not tested in other parts of state.²

1. Early in hunting season throat and upper breast of old males chestnut; long flank feathers, just under wings, finely barred with black and yellow.

¹Braun and Rogers. 1967. Determination of Age and Sex of Southern White-tailed Ptarmigan. Colo. Fish, Game and Parks Leaflet No. 54.

²West, Savage, and Irving. Morphological Homogeneity of a Population of Alaska Willow Ptarmigan. Publication No. 76 Institute of Arctic Biology.

2. Early in season breast of old females barred yellow and black, also a few scattered chestnut feathers; long flank feathers, just under wings, broadly barred with yellow and black.

What Age Class Is It?

Juveniles (young of the year) can be distinguished from adults (birds about 15 months or older) during the fall and early winter by noting the presence or absence of the bursa (Fig. 1). This structure is a blind pouch produced by an outpocketing of the cloacal wall. If present, it can be located inside the body cavity dorsal to the extreme posterior end of the large intestine. During the time when check stations are in operation, juveniles have a bursa and adults do not. The bursa disappears sometime in mid winter, so this technique is useful only during the first half of the hunting season.

When internal examination is not possible or late winter specimens are being autopsied, the following characteristics should be used:

A. Spruce Grouse³

1. In adults the outer primary (P10) is distinctly rounded at tip. Adjacent primary (P9) with no mottling in the terminal 3 cm. of the outer vane, or if this portion of the vane is edged in brown, the edging is less than 0.5 mm wide.
2. In juveniles the outer primary (P10) distinctly pointed at the tip. Adjacent primary (P9) heavily mottled in the terminal 3 cm. of the outer vane, or having a brown edging more than 0.5 mm wide.

³Ellison. 1968. Sexing and Aging Alaskan Spruce Grouse by plumage. J. Wildl. Mgmt. 32(1):12-16.

B. Ruffed Grouse⁴

1. In adults primaries 8, 9, and 10 rounded with sheathing at base. Sheathing disappears late September or early October.
2. In juveniles primary 8 rounded, 9 and 10 pointed with sheathing on 8 only.

C. Sharp-tailed Grouse⁵

1. In adults outer two primaries unworn, same color as other primaries.
2. In juveniles outer two primaries rough and worn, lighter in color than others.

D. Blue Grouse⁶

1. In adults tips of the outer two primaries are well rounded.
2. In juveniles tips of outer two primaries pointed.

E. Willow and Rock Ptarmigan⁷

1. In adults area of black pigment on primary 8 is equal to or greater than area of black pigment

⁴Hale, Wendt, and Halazon. 1954. Sex and Age Criteria for Wisconsin Ruffed Grouse. Wis. Conserv. Dept. Tech. Wildl. Bull. No. 9, Madison, 24 pp.

⁵Ammann. 1944. Determining Age of Pinnated and Sharp-tailed Grouse. J. Wildl. Mgmt. 8(2):170-171.

⁶Smith and Buss. 1963. Age Determination and Plumage Observations of Blue Grouse. J. Wildl. Mgmt. 27(4):566-578.

⁷Bergerud, et al. 1963. Determination of Sex and Age of Willow Ptarmigan in Newfoundland. J. Wildl. Mgmt. 27(4):700-711. Same method works for Rock Ptarmigan.

on P9. Consider flecking on feather vane only; ignore any pigmentation that may be on the shaft.

2. In juveniles the area of black pigment on P8 is smaller than on P9.

F. White-tailed Ptarmigan¹

1. In adults P9 and 10 are white with no black flecking.
2. In juveniles P9, P10, or both have black flecking.

Additional Information for Check Station Personnel

The location, time, and date of kill should be recorded for each animal checked. If check station personnel are asked to save materials, it should be done as follows:

- A. Wings should be cut off at the junction of the humerus and the radius-ulna (Fig. 2). They should be labeled with the proper specimen number and stored in a dry place. Avoid placing wings in a tightly sealed plastic bag before they are dry.
- B. Tails should be cut off well down toward the base so that the feathers do not drop out individually but remain attached in the fleshy material. They should then be treated in the same manner as described above for wings.
- C. Soft parts such as crops and gizzards should be placed in vials of 5 per cent formalin along with a pencil-labeled tag bearing the proper specimen number. When preserving gizzards, only the sac should be saved; the musculature should be peeled away and discarded.

Fig. 1

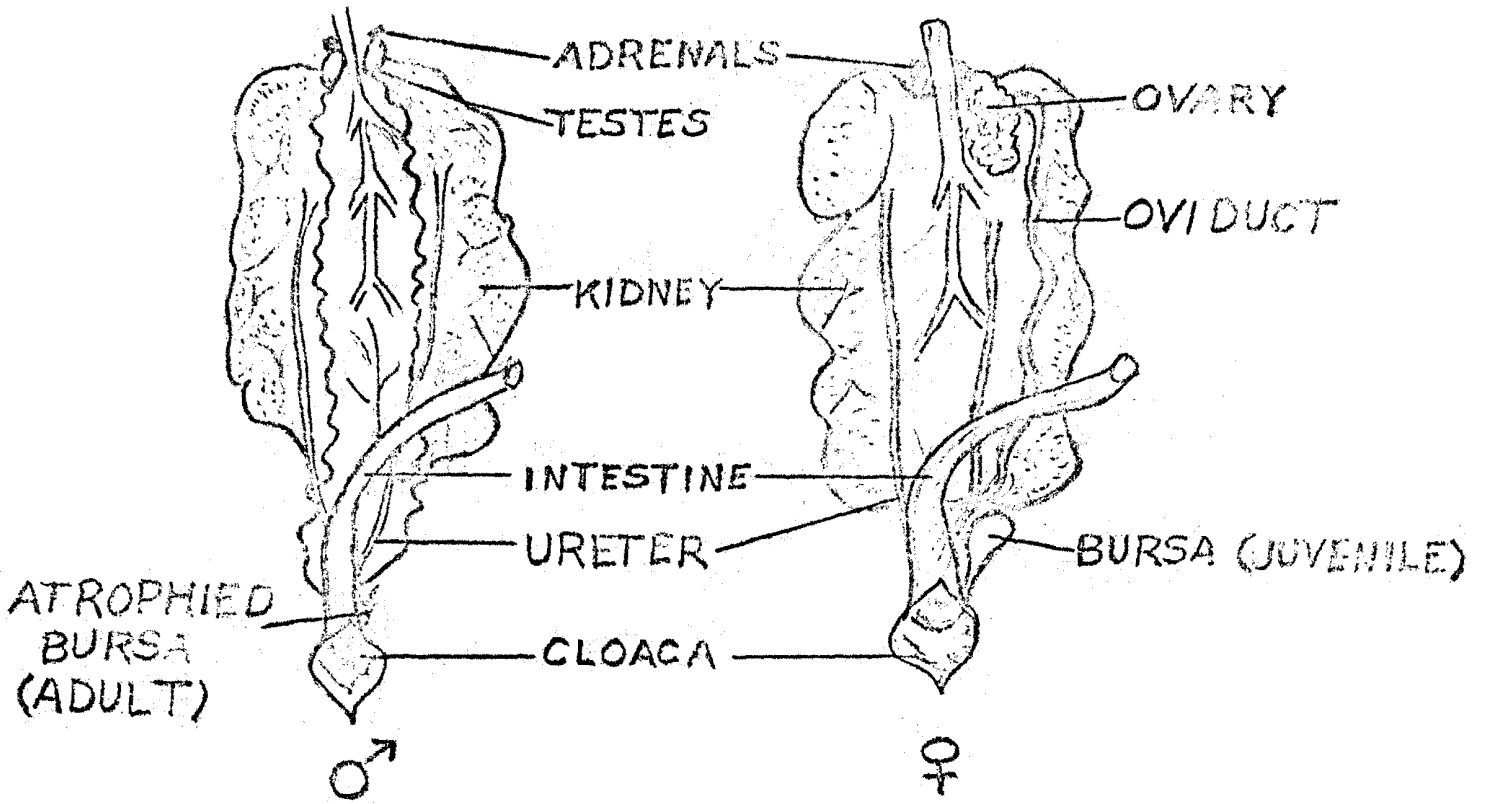
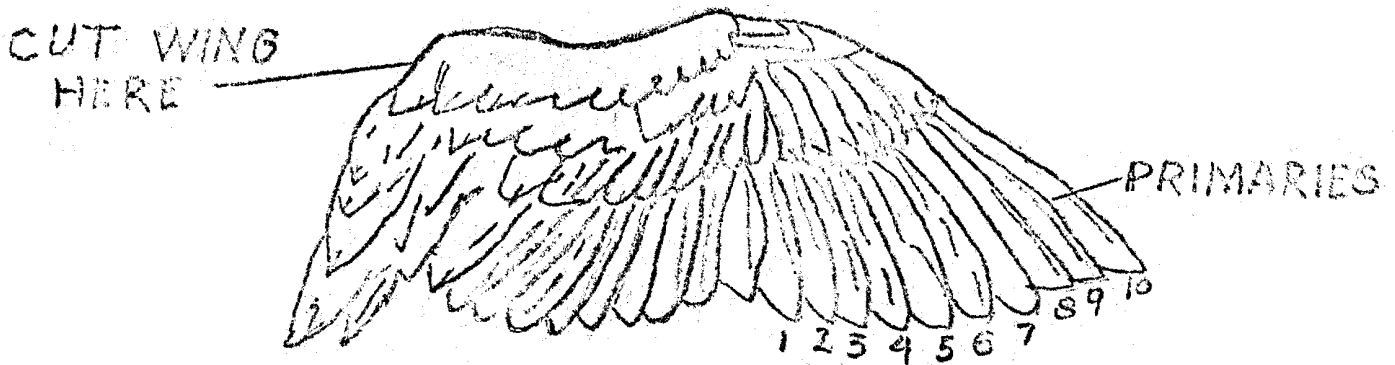


Fig. 2



Figures adapted from Mosby, et al. 1963. Wildlife Investigational Techniques.