Falcipennis canadensis Elliot — spruce grouse


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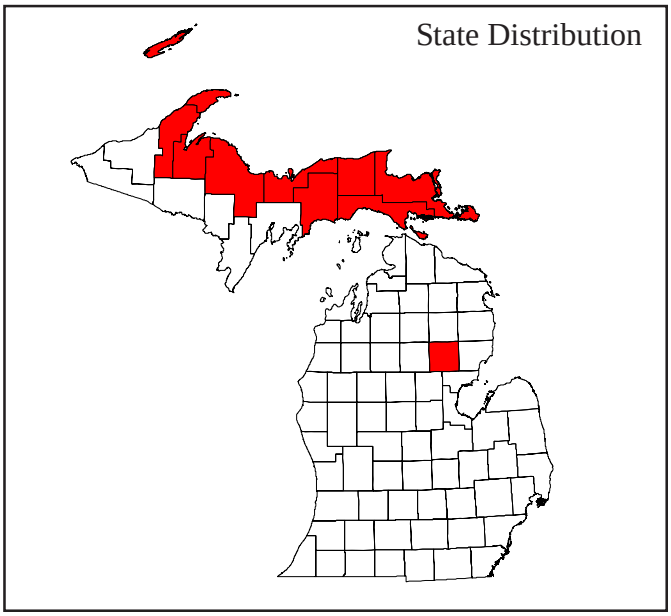
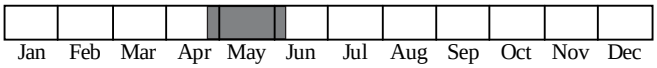


Best Survey Period



Status: State Special Concern

Global and state rank: G5/S2S3

Family: Phasianidae – Turkeys, Grouse, Pheasants, and Partridges

Total range: Spruce grouse has a broad range across northern North America, spanning from Maine, Nova Scotia, New Brunswick, Newfoundland, Labrador, and Quebec on the Atlantic coast west to Alaska, Yukon Territory, and New Brunswick on the Pacific coast (Boag and Schroeder 1992). Boag and Schroeder (1992) describe the southern edge of its range as the ecotone where northern coniferous forest gives way to deciduous forest in the east and shrubs and grasslands in the west, while the northern edge of the spruce grouse breeding range occurs where coniferous forest ends and tundra begins. Three subspecies, *Falcipennis canadensis franklinii*, *F. c. isleibi* (Dickerman and Gustafson 1996), and *F. c. canadensis*, have been identified in this species. *F. c. isleibi* is found in the Alexander Archipelago in southeastern Alaska (Dickerman and Gustafson 1996), while *F. c. franklinii* occurs in the montane forests of the northern Cascade and Rocky Mountains (Boag and Schroeder 1992). The remainder of the species' range is occupied by *F. c. canadensis*.

State distribution: Spruce grouse is found at scattered locations across much of the Upper Peninsula (UP), but appears to be more common in the eastern UP according to Michigan Breeding Bird Atlas (Atlas) surveys conducted from 1983 – 1988 (Robinson 1991). Spruce grouse was a confirmed breeder in nine UP counties during the Atlas. In the Lower Peninsula (LP), spruce grouse has only recently been observed in a few northeastern counties, with breeding confirmed only in Ogemaw County during the Atlas. Highlighted counties in the map above indicate confirmed breeding during the first Atlas or occurrences from the Michigan Natural Features Inventory database.

Recognition: Spruce grouse are medium-sized, stocky, short-necked, short-tailed, and sexually dimorphic (Sibley 2000). Spruce grouse are slightly smaller in length and weigh less than ruffed grouse (*Bonasa umbellus*). Robinson (1980) recorded the average weight of males at 483 g and females at 424 g in Michigan. Males have **red papillate combs**, a thin white line on each cheek, black feathers on the sides, front of neck, and center of breast, white-tipped feathers on the lower neck, gray feathers with two black bars on the nape, mantle, rump, and scapulars, and **black tail feathers** with **terminal orange bands** (Robinson 1980). Robinson (1980) described the **female** as having a **thin red comb** above each eye,

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brown feathers edged with black, flank feathers with increasing amounts of **white toward the breast and belly**, gray-tipped tail coverts, and **brown and black barred tail feathers** ending with a **terminal buffy band**. Female spruce grouse could be confused with a ruffed grouse, but the two species can be separated by **rectrice color** and the fact that spruce grouse do not erect crown feathers when alarmed, as do ruffed grouse (Boag and Schroeder 1992). Ruffed grouse rectrices are **pale with a dark subterminal band**, while in the spruce grouse they are **dark with a paler terminal band** (Boag and Schroeder 1992). Males of the three subspecies differ in morphology, with *F. c. franklinii* and *F. c. isleibi* lacking the terminal orange bands found on the rectrices of *F. c. canadensis* (Boag and Schroeder 1992, Dickerman and Gustafson 1996). Although 11 distinct vocalizations have been described for spruce grouse, it is one of the least vocal of the Subfamily Tetraoninae (Boag and Schroeder 1992). Boag and Schroeder (1992) noted that only the *cantus* vocalization, given spontaneously at dawn and dusk by females on spring territories, is classified as a song.

Best survey time: Since spruce grouse are resident birds, it is possible to find them year round. However, surveys are probably best conducted during the breeding season prior to incubation, which usually occurs in late May (Robinson 1980), when males are active with courtship activities and have moved to more open forest stands with improved visibility. Although usually an inconspicuous species of remote habitats, spruce grouse will often allow humans to approach within a few meters before walking or flying away, hence the nickname “fool hen” (Robinson 1991). *Wing-claps* are nonvocal sounds produced by territorial males of the Franklin’s subspecies (*F. c. franklinii*) (MacDonald 1968). *Wing-laps* can be heard up to 150 m by humans and have been used as an index of spruce grouse abundance (Schroeder and Boag 1989). Unfortunately, the subspecies found in Michigan (*F. c. canadensis*) does not exhibit the *wing-clap* behavior, so surveyors should employ other techniques. When searching for spruce grouse, Robinson (1980) recommends two to four people walk slowly in parallel about 40 – 50 feet apart while looking for birds on the ground.

Habitat: Throughout its range, the spruce grouse is closely associated with coniferous forests (Boag and Schroeder 1992). The species usually occupies locations dominated by short-needled conifers in Michigan, such as jack pine (*Pinus banksiana*), black spruce (*Picea mariana*), white spruce (*Picea glauca*), and tamarack (*Larix laricina*) (Robinson 1991). Robinson (1969) describes optimal habitat in Michigan as areas with a mix of jack pine and black spruce and scattered openings containing blueberries (*Vaccinium* spp.), trailing arbutus (*Epigaea repens*), and decaying logs and stumps. Boag and Schroeder (1992) noted that even though conifer species composition varied within its range, spruce grouse appear to prefer early successional stands. Szuba and Bendell (1983) observed a negative relationship between spring spruce grouse densities and age of jack pine in Ontario, and they found their highest densities in young jack pine plantations. Robinson (1980) stated that spruce grouse in Michigan preferred younger stands of jack pine, and sparser stands of older jack pine mixed with spruce, over mature jack pine or spruce stands. Locations where spruce grouse were observed had a higher percentage of spruce and lower percentage of jack pine compared to random points. Robinson (1980) found the opposite during winter, with jack pine dominating sites frequented by spruce grouse. Robinson and Maxwell (1969) indicated that spruce grouse in Michigan move to denser forest stands in the winter, and then return to more open stands as the snow melts.

Biology: Although researchers (see multiple sources in Boag and Schroeder 1992) have observed short migrations of spruce grouse between breeding and wintering habitats in other parts of its range, it is a resident species in Michigan. Robinson (1980) noted that although spruce grouse moved to denser conifer stands in winter, the birds did not move far and often just used denser portions of the same home range. Males are polygynous and females are assumed to be monogamous (Boag and Schroeder 1992). Males produce several nonvocal sounds during courtship displays (Boag and Schroeder 1992). Drumming by spruce grouse produces soft thumps, which are only audible to humans over a very short distance (Boag and Schroeder 1992). Males sometimes produce faint dull stamping sounds when they raise and lower their feet rapidly during some displays (Boag and Schroeder 1992). *Tail-swish* and *whoosh* sounds are produced by movements of the rectrices during certain courtship displays (MacDonald 1968). Females begin nesting in

late May, lay a clutch of five to eight eggs, and incubate for approximately 23 days (Robinson 1980). Spruce grouse nests are placed on the ground and are simple depressions constructed of needles and small twigs from nearby (Robinson 1991). Spruce grouse often nest near the bases of trees or under low-lying branches (Robinson 1991). Eggs are subelliptical, smooth and slightly glossy, and buff or pinkish-buff with fine speckles, spots, and irregular blotches of reddish-brown or brown (Baicich and Harrison 1997). Young are precocial and downy and capable of short flights as soon as five days (Robinson 1980). Females brood young for about 50 days (Schroeder and Boag 1985), and broods disperse in September in Michigan (Robinson 1991). Although there is seasonal and geographic variation, Boag and Schroeder (1992) note that the major component of the diet is conifer needles year-round, with a secondary component made up of *Vaccinium* spp. leaves, growing tips, flowers, and fruits during spring, summer, and fall. In his analysis of spruce grouse crops collected in fall in Ontario, Crichton (1963) found by volume approximately 51% jack pine needles, 36% tamarack needles, 8% blueberry leaves, 2% fungi, and the remainder small amounts of needles, fruits, buds, and seeds of various species. During winter, almost all of the total volume of spruce grouse crops consisted of jack pine needles (Crichton 1963). Similarly, Pendergast and Boag (1970) found that spruce grouse in Alberta fed almost entirely on pine (*Pinus contorta*) needles during winter. During spring and summer in Alaska and Alberta, spruce grouse fed primarily on a variety of plant materials and fungi (Ellison 1966, Pendergast and Boag 1970, DeFranceschi and Boag 1991). Animals (insects, arachnids) and fungi appear to be an important part of the diet of juveniles (Pendergast and Boag 1970, DeFranceschi and Boag 1991). Spruce grouse foraging in conifers usually occurs at the midcrown level, while they mainly feed from the ground when not eating conifer needles (Boag and Schroeder 1992).

Conservation/Management: Spruce grouse require large areas of coniferous forest (Robinson 1980). Many of the coniferous tree species used by spruce are fire-adapted, so occasional fires can encourage these species and early successional stages (Boag and Schroeder 1992). Ellison (1975) suggested that fires of a certain frequency might be needed to maintain spruce grouse habitat in Alaska. Timber operations can mimic these conditions when harvested areas are small and interspersed with other suitable habitats (Szuba and Bendall 1983, Boag and Schroeder 1992). Szuba and Bendall (1983) felt that dense jack pine plantings and short harvest rotations (less than 60 years) could be beneficial to spruce grouse populations. Long-term spruce grouse use may be enhanced through mixed plantings of jack pine and black spruce (10-15% and evenly spaced), or by retaining regenerating spruce stands in harvested areas prior to jack pine planting (Szuba and Bendall 1983). Robinson (1980) noted that in the southern part of its range, spruce grouse may need protection from human impacts, such as contaminants, open-pit mining, and development for recreational uses and transportation. Although ruffed grouse hunters invariably kill some spruce grouse by accident, this mortality is not likely to threaten the populations in Michigan.

Research needs: Robinson (1991) suggested a systematic survey of the northern Lower Peninsula to determine the status of spruce grouse in areas where it was present during Atlas surveys. Surveys are also needed to update the species' status in the Upper Peninsula. Szuba and Bendall (1983) stated that comparative demographic and habitat-use research is needed in jack pine forests with high and low spruce grouse populations to investigate how habitat differences affect reproduction and predation.

Related abstracts: Poor conifer swamp, Dry northern forest and Pine barrens

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