

# Alaska

## Small Game Summary 2020

Richard A. Merizon and Cameron J. Carroll

Species considered small game in Alaska are defined by the Alaska Department of Fish and Game (ADF&G), for regulatory purposes as grouse, ptarmigan, and hare. Alaska has 7 species of grouse and ptarmigan (Tetraonidae) including ruffed (*Bonasa umbellus*), sharp-tailed (*Tympanuchus phasianellus*), sooty (*Dendragapus fuliginosus*), and spruce (*Falcapennis canadensis*) grouse; and rock (*Lagopus muta*), white-tailed (*L. leucurus*), and willow (*L. lagopus*) ptarmigan. In addition, Alaska has 2 species of hare (Leporidae) including Alaska (*Lepus othus*) and snowshoe (*L. americanus*) hare. All 9 species of small game can be legally harvested in Alaska with liberal seasons and bag limits for all game management units (Unit).

The statewide Small Game Program (SGP) has three primary responsibilities including research, management, and outreach. Recent research results are briefly described within the specific species sections. Management efforts largely focus on breeding and brood surveys, harvest composition, recommendations to the Alaska Board of Game (BOG) regarding regulation changes, and addressing concerns from staff and the public. Specific survey methods are fully described in Carroll and Merizon (2019). Survey and research efforts occur across the state from Nome to Ketchikan and along the road system from the Steese Highway south to the Kenai Peninsula. Outreach and education efforts focus on recruiting new hunters, providing hunters with tips, recommendations, and insight into Alaska's small game species.

This report summarizes the activities conducted by the SGP during the 2019 regulatory year (RY19, 1 July, 2019–30 June, 2020) in addition to brood survey results from summer 2020. Specifically, it addresses: 1) 2019-20 weather patterns, 2) species status including spring 2020 breeding and summer 2020 brood survey results, and 2019-20 harvest composition 3) research updates, 4) recent BOG regulatory changes, and 5) new developments and outreach efforts. A more thorough multi-year (2019 and 2020) management report will be published by December 2020 highlighting these topics in more detail (available at: [www.smallgame.adfg.alaska.gov](http://www.smallgame.adfg.alaska.gov)).

### **2019 / 2020 Weather and Brood Production**

Spring through mid-July 2019 across Alaska experienced above average to record high temperatures and extremely dry conditions. Numerous all-time high temperatures were set throughout the state including Anchorage (90°F) and Bethel (98°F). This contributed to fish, krill, mussel, and seabird die-offs across the state, fueled an intense wildfire season burning an estimated 2.5 million acres, and ultimately set a record as the warmest year on record for Alaska. As a result of the warm dry conditions, grouse and ptarmigan chick survival was high in all monitored locations and likely average to well above average for other locations across Alaska.

Near average temperatures and precipitation returned for much of fall 2019 across the state except near Fairbanks and Delta Junction where precipitation exceeded the long-term average by 2 to 3 inches for August 2019. For most of the state, above average temperatures and low snowfall returned and continued from late October to mid-December contributing to an unusually late sea ice freeze-up in the Bering and Chukchi seas. Delta Junction and Fairbanks received higher than average snowfall in November 2019 resulting in higher than average snow depth that persisted throughout the winter. Some snow was experienced in Anchorage in late October and November however remained mild through mid-December for much of the state. This likely contributed to higher mortality for many grouse and ptarmigan populations across some areas of Alaska that were unable to take advantage of snow roosting for thermal protection and predator avoidance as well as camouflage mismatch.

More normal temperatures returned in mid to late-December 2019 along with frequent snow events. For the month of January 2020, temperatures dropped to below average throughout the state and remained near normal to below normal through March 2020 accompanied by heavy snowfall.

Significant snow fell in western Alaska, the Alaska Range, and Chugach and Talkeetna mountains between February and April 2020. Despite near normal temperatures returning in late March and April causing snowmelt, deep snow and cooler temperatures in the mountains persisted through early May 2020. The Alaska Department of Transportation (DOT) was finally able to clear the Denali Highway on 18 May after clearing numerous 15-20' snow drifts. In Southwestern Alaska, there was a very rapid warm up period that caused flooding in the Yukon-Kuskokwim delta. From Southeast to the Interior snow melt, plant phenology, and subsequent peak spring breeding activity of grouse and ptarmigan was either near normal or up to 7 days delayed when compared to the recent 5-years.

Beginning in 2017 and accelerating in summers 2018 and 2019, a growing spruce bark beetle (*Dendroctonus rufipennis*) outbreak has severely affected large stands of mature ( $\geq 15$ cm diameter) white spruce (*Picea glauca*) throughout Southcentral and the Kenai Peninsula. Much of the lower Susitna and Matanuska river watersheds have been severely affected in addition to portions of the Anchorage bowl. This will likely have a strong negative effect on spruce grouse populations throughout Southcentral and the Kenai Peninsula over the coming years and has severely increased the wildfire risk in affected areas. Also, in 2019 a strong production of rusty tussock moths (*Orgyia antiqua*) on the Seward Peninsula defoliated large swaths of willow (*Salix* spp.) and as a result may have an impact on ptarmigan populations there.

ADF&G field personnel observed high densities of both avian and terrestrial predators during spring 2020. These observations were widespread throughout much of the state. Higher predator densities are likely explained by snowshoe hare being at or slightly past their 10-year population cycle peak in many areas of the state.

Beginning in early-June and continuing through July, much of the state experienced near normal temperatures and average to much above average precipitation. Large portions of the Interior experienced 1-3 times normal precipitation. This wet pattern likely had an adverse effect of chick survival for many grouse and ptarmigan populations particularly in the Interior and Alaska Range.

## Species Status

### Ruffed Grouse

Spring breeding surveys were completed at long-term monitoring sites near Palmer, Delta Junction, Anderson, Fairbanks, and Tok. Surveys were conducted from 15 April to 15 May, 2020 in Interior Alaska and 18 April to 16 May, 2020 in the Matanuska-Susitna valley (Mat-Su). Survey conditions in the Interior were generally good with minimal snow cover, except near Delta Junction during the first half of the survey period (15-20 April) and normal onset of plant phenology. Survey conditions in Mat-Su were good however persistent snow was present on many of the routes through late-April or early-May. Overall, counts of drumming males in Mat-Su in spring 2020 were down significantly from 2019. The average number of drumming males heard along survey routes within the Interior remained low and relatively unchanged from 2019 to 2020 except along a survey route just outside of Fairbanks where the data showed a slight increase in relative abundance of ruffed grouse.

In the Interior, wing donations received in RY20 ( $n = 30$ ) were up from those received in RY19 ( $n = 11$ ), which was likely in part a result of favorable conditions observed in the summer of 2019 as a high proportion of wing donations from harvested ruffed grouse were juveniles (77%). However, caution is warranted in drawing strong conclusions due to the relatively small sample size from such a large geographic area. The proportion of juveniles in the harvest (based on hunter harvested wing collections) is used as an index of juvenile recruitment (Carroll and Merizon 2019). In the Mat-Su, wing donations in RY19 ( $n = 26$ ) was near the long-term average and suggested strong chick survival (84% juveniles) despite the very small sample size. Overall, hunter reports were very good during RY19 in the Mat-Su as weather during the first few weeks of June 2019 was likely favorable for chick survival with drier than average

conditions. Hunters from the Interior reported seeing few ruffed grouse while afield during RY19 despite an increase in donated wings from the previous year.

Overall, spring breeding surveys coupled with poor weather conditions in the Interior during the early brood rearing period suggest hunters should expect to see lower than average numbers of ruffed grouse in the Mat-Su and Interior regions.

### **Sharp-tailed Grouse**

The SGP conducted annual spring breeding surveys near Delta Junction from 15 to 30 April, 2020 and 4 May, 2020 and near Tok from 27 April to 1 May, 2020. Survey conditions were excellent with light winds and relatively cool temperatures.

In Delta Junction, the average number of males observed per lek was down from 2019 (4.0 males observed per lek) to 2020 (2.9 males observed per lek), which is below the 5-year-average (3.7 males per lek). The number of active leks observed was also down from 2019 ( $n = 32$ ) to 2020 ( $n = 22$ ). In Tok, the average number of males observed per lek was down from 2019 (4.7 males observed per lek) to 2020 (3.2 males observed per lek), which is below the 5-year-average (4.5 males per lek). For clarity, a lek is defined here as an area with  $\geq 1$  male sharp-tailed grouse observed displaying in at least 2 consecutive years. A lek is considered inactive or abandoned when no males are observed displaying for 5 consecutive years.

Fewer sharp-tailed grouse brood groups were seen in 2020 ( $n = 2$ ) compared to 2019 ( $n = 5$ ). Conditions precluded a good count of the number of chicks per brood in 2020 but each group had at least 1 chick present. In 2019 observers documented an average of 5.0 chicks per brood ( $n = 5$ ) along the same survey routes. The data suggests that nest success and or brood survival was likely poor during the summer of 2020 and may have been due to high predator densities and or wet weather conditions experienced during the month of June both of which would have a negative influence on brood survival. Although we don't have good data on predator densities, average temperatures near Delta Junction during June 2020 was slightly below the long-term average and total precipitation was almost 3 times above the long-term average. It is well known that heavy precipitation during the early brood rearing period has a negative influence on chick survival.

More wings were donated from hunters throughout the Interior in RY19 ( $n = 107$ ) than in RY18 ( $n = 73$ ), which was likely in part due to the favorable weather conditions experienced in the summer of 2019 as a similar high proportion of donated wings from harvested birds were juveniles (75%).

Overall, spring breeding and summer brood surveys in the Interior suggest hunters should expect to see fewer sharp-tailed grouse while afield in the Interior.

### **Spruce Grouse**

Limited data are available for spruce grouse. All abundance projections are limited to inference made from wing collections and field observations.

Wing donations for spruce grouse throughout Southcentral and the Kenai Peninsula were down significantly for RY19 ( $n = 62$ ) and had a slightly higher proportion of juveniles (51%) than RY18 (44%,  $n = 162$ ). The number of donated samples in the Interior from RY19 changed little ( $n = 93$ ) from RY18 ( $n = 90$ ) and the proportion of juveniles in the population in RY19 (52%) was very similar to FY18 (50%).

In 2020, Southcentral and Kenai Peninsula spruce grouse populations likely will be reduced due to the ongoing and widespread spruce bark beetle infestation and higher predator densities. ADF&G staff in June

2020 reported much higher numbers of spruce grouse throughout Bristol Bay than have been observed in the recent past. There have been few reported observations of spruce grouse broods in the Interior during the summer of 2020 and with the poor weather conditions observed in June, hunters should expect to see fewer spruce grouse while afield.

### **Sooty Grouse**

Spring breeding surveys were completed in Juneau, Petersburg, and Ketchikan between 10 April and 15 May, 2020. The spring breeding index was unchanged in Juneau compared to 2019 but down significantly in Petersburg. New in 2020, sooty grouse surveys were completed in Ketchikan and suggest a similarly low spring breeding abundance as was observed in Petersburg. Several survey routes in Haines that were created and completed in 2019 were not completed in 2020 due to Covid-19 travel restrictions. Hunters reported fewer birds in general throughout Southeast Alaska during fall 2019 and spring 2020 as well as a rapid decline in breeding activity in early May 2020. According to survey data, peak breeding activity was later than has been observed since 2015, snow persisted across all survey locations, and landscape phenology was delayed throughout Southeast in 2020. Much like the remainder of the state, Southeast Alaska experienced heavier and more persistent snow and cooler temperatures during winter and early spring 2020.

### **Rock Ptarmigan**

Rock ptarmigan spring breeding surveys occurred from 25 April to 22 May throughout the Kenai Peninsula, Anchorage Bowl, Alaska Range, and White Mountains. Spring breeding abundance of rock ptarmigan in 2020 appeared to be similar to or slightly higher than 2019 in the Interior, on the Kenai Peninsula, near Anchorage, and across the Alaska Range. Reports from ADF&G staff in Bethel, Dillingham, and King Salmon have all observed very modest growth in local ptarmigan populations and reported seeing more ptarmigan throughout Southwestern Alaska and the Alaska Peninsula during late winter 2020. Rock and willow ptarmigan populations throughout Southwestern Alaska and the Alaska Peninsula have been depressed for nearly 6-7 consecutive years likely due to low chick survival, cool wet summers, and low to zero snow throughout much of the winters. In the southern portion of the Seward Peninsula rock ptarmigan populations appear to remain strong in spring 2020.

Forty-five harvested rock ptarmigan wings collected in RY19, most of which were harvested in Southcentral ( $n = 33$ , 39% juvenile).

Brood surveys were completed between 21 and 23 July, 2020 along the Denali Highway, and between 7 and 9 August near Eagle Summit. Very few rock ptarmigan are typically observed along brood survey routes along the Denali Highway and are more focused on willow ptarmigan. Surveys near Eagle Summit suggest good chick production in 2020. Counts of broods was relatively high and chick survival was slightly higher in 2020 ( $n = 7$ ; 3.9 chicks/brood; range: 1-5) than 2019 ( $n = 3$ ; 3.7 chicks/brood; range: 2-6) and above the 3-year-average (3.8 chicks/brood; range 1-7); however caution is warranted when making strong conclusions from the data for 2 reasons. First, sample sizes are small in all years. Second, not all survey transects were completed in 2019 due to inclement weather and time constraints (the data above is comparable because we only included data from transects that were available for both years). The data from the transects excluded from 2020 ( $n = 5$ ) would not have changed the brood size estimate because no broods were observed on excluded transects; however, the same cannot be said for 2019 since those transects were not completed. Overall, hunters should expect to see good numbers of rock ptarmigan throughout Southcentral and the southern Interior.

A study in Unit 25C (2015-2020) near Eagle Summit documenting spring breeding densities, annual movement, mortality, and productivity of rock ptarmigan was completed in May 2020. The results of that study will be available in a future report. Another study (2018-2019) was initiated in spring 2018 examining

and comparing the reproductive ecology of rock ptarmigan between the Steese and Denali highway populations. For a full list of recent SGP research study results and other reports please visit ([www.smallgame.adfg.alaska.gov](http://www.smallgame.adfg.alaska.gov)).

### **White-tailed Ptarmigan**

Little is known about white-tailed ptarmigan other than wing collections and hunter reports. This is a difficult species for which to complete spring breeding surveys due to access. Much like other grouse and ptarmigan in 2020, we anticipate poor chick survival and subsequently low abundance throughout the Alaska Range and only slightly higher abundance in the Chugach and Talkeetna mountains.

### **Willow Ptarmigan**

Willow ptarmigan spring breeding surveys occurred from 25 April to 21 May throughout the Kenai Peninsula, Anchorage Bowl, the Alaska Range, and White Mountains. Spring breeding surveys along the eastern Denali Highway (Unit 13B) and Denali National Park (DNP) were largely unchanged in 2020 from 2019; however, were down significantly along the western Denali Highway (Unit 13E). There is uncertainty as to why this discrepancy between Units 13B and 13E exists especially considering the robust survey effort employed in both units during April and May 2020. Interior, Seward Peninsula, and Kenai Peninsula surveys estimated similar breeding abundance as in 2019. The population adjacent to the front-range of the Chugach Mountains (Unit 14C) experienced a modest increase in 2020 from 2019. Reports from ADF&G staff in Bethel, Dillingham, and King Salmon have all observed moderate growth in local ptarmigan populations and reported seeing more ptarmigan throughout Southwestern Alaska and the Alaska Peninsula during late winter 2020. Rock and willow ptarmigan populations throughout Southwestern Alaska and the Alaska Peninsula have been depressed for nearly 6-7 consecutive years likely due to low chick survival, cool wet summers, and low to zero snow throughout much of the winters. In the southern portion of the

Summer brood surveys were completed between 21 and 23 July 2020 along the Denali Highway and between 7 and 9 August in the White Mountains. Denali Highway brood surveys documented only 2 small broods (1.5 chicks per brood average) which is much lower than 2019 (6.7 chicks per brood) and 2018 (3.4 chicks per brood). This population likely experienced very poor chick survival as a result of very wet weather and cool temperatures throughout late-June and July. No willow ptarmigan broods were observed in 2020 along transects adjacent to the Steese Highway. In previous years a few willow ptarmigan broods have been observed along the same transects but very small sample sizes preclude making inferences from the data.

Hunter harvested willow ptarmigan wings were collected statewide ( $n = 404$ ) during RY19. Samples were collected from primarily the Alaska Range ( $n = 172$ ), Southcentral ( $n = 80$ ), and Western Alaska ( $n = 83$ ). Statewide, the proportion of juveniles in the harvest was higher in RY19 (59%) than in RY18 (51%) indicating good chick survival in those areas during the summer of 2019.

As a result of the summer 2020 weather pattern throughout the state and brood survey results, willow ptarmigan hunters are likely to see well below average abundance of willow ptarmigan along the Denali Highway but near to slightly below average abundance in the Chugach, Talkeetna, and Kenai mountains.

### **Alaska Hare**

Currently there is no active monitoring effort underway for Alaska hare. Based on field reports from hunters and ADF&G staff, it appears that the hare populations are fairly stable at low density in Southwest and Western Alaska.

Beginning in March 2017, ongoing efforts have been evaluating various capture methods and population assessment methods. In May 2018 and 2019 several Alaska hares have been captured north of Nome and near Dillingham and fitted with a GPS tracking collar. Movement data from these individuals will prove to be very insightful in learning more about the life history of this valuable species.

### **Snowshoe Hare**

In the Interior, snowshoe hare populations have peaked and have declined considerably throughout monitored locations (Tok, Delta Junction, Anderson, and DNP). In Southcentral, snowshoe hares are very abundant and hunters will likely see modestly reduced populations during the RY20 season. Populations on the Kenai Peninsula are expected to peak in 2020-2021. Based on ADF&G staff observations in winter and spring 2020, snowshoe hare appear to be declining in areas of the Y-K delta and Kuskokwim River but are more abundant in areas adjacent to the lower and middle Yukon River, King Salmon, and the Alaska Peninsula.

### **Regulatory Changes**

During the January 2020 meeting in Nome the BOG created a management structure for Alaska hare in Units 18, 22, and 23. They created a season (1 August-31 May), daily (2/day) and season bag limits (6/season), and salvage requirement (hide or meat). They also reduced the Unit 18 ptarmigan daily bag (50 to 15/day) and possession limits (100 to 30 in possession).

During the March 2020 meeting in Fairbanks the BOG adopted a proposal for grouse in southwestern Unit 20D reducing the daily bag (15 to 5/day) and possession limits (30 to 15 in possession) provided that not more than 10 ruffed or sharp-tailed grouse in the possession limit. Finally, the BOG also adopted a proposal allowing the use of shotguns for small game hunting in the Healy-Lignite Management Area of Unit 20A.

For the upcoming BOG meeting schedule and the list of proposals to be considered during the 2020-2021 BOG cycle please visit the BOG webpage ([www.boardofgame.adfg.alaska.gov](http://www.boardofgame.adfg.alaska.gov)).

### **Public Involvement and Support**

In July 2020 the SGP continued efforts initiated in 2016 to monitor brood number and size of select heavily hunted populations of sharp-tailed grouse and rock and willow ptarmigan throughout the road system of Alaska. Engaged volunteers and their highly trained pointing dogs are used to locate and enumerate broods along survey routes. Survey locations include Eagle Summit (Steese Highway), Delta Junction, Denali Highway, and Hatcher Pass. New participants are always welcome and encouraged to join the fieldwork. If you are interested in participating in this program as a future volunteer please contact either Rick Merizon in Palmer (907.746.6333) or Cameron Carroll in Fairbanks (907.459.7237).

Our statewide wing collection program continues to have widespread support among hunters. This program allows biologists to gain valuable insight into the harvest composition (age, sex, species, and Unit of harvest) of numerous hunted populations. Please consider donating your harvested grouse and ptarmigan wings, it is often the only way the SGP can gather important biological information across Alaska. If you're interested in participating, at no cost, please contact your local ADF&G office or SGP staff for free wing envelopes.