

Alaska

Small Game Summary 2019

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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 (*Falci pennis 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 2018 regulatory year (RY18, 1 July, 2018–30 June, 2019) in addition to brood survey results from summer 2019. Specifically, it addresses: 1) 2018/2019 weather patterns, 2) species status including spring 2019 breeding and summer 2019 brood survey results, and 2018-19 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).

2018 / 2019 Weather and Brood Production

For Southcentral, Interior, and portions of Western Alaska, spring and summer 2018 experienced near normal temperatures and precipitation. However, much like the summer of 2016 and 2017, Southwestern Alaska (including Dillingham, Bethel, and the Yukon-Kuskokwim delta) experienced cool and wet conditions throughout much of the 2018 summer that likely contributed to poor chick survival. Also, portions of the Alaska Range and the Chugach and Talkeetna mountains experienced cool, wet, and snowy conditions during late June and early July that strongly affected rock, white-tailed, and willow ptarmigan chick survival.

Record warm fall temperatures and overall lack of snow were experienced from Utqiagvik to Homer through October 2018. Warm temperatures also contributed to an unusually late sea ice freeze-up in the Bering and Chukchi seas. Some snow was experienced in Anchorage and Fairbanks in late October and November however continued mild temperatures remained until mid-December for much of the state. This likely contributed to higher mortality for many grouse and ptarmigan populations across Alaska that were unable to take advantage of snow roosting for thermal protection and predator avoidance.

Between mid-December 2018 and February 2019 near normal temperatures and snowfall occurred for Southcentral and Interior Alaska. However, as has occurred since 2013, Southwestern Alaska received unseasonably warm temperatures, rain, and strong wind. North of the Yukon River, temperatures remained below freezing and experienced very high snowfall on the Seward Peninsula.

The mild winter of 2018-19 concluded with record setting warm temperatures and early snowmelt in March throughout most of the state. The majority of the Interior and Southcentral was completely snow free by mid-April which greatly contributed to increased wildfire risk in those areas. The DOT was able to have the Denali

Highway cleared nearly 2 weeks early on 1 May. As a result of the early melt and rapid increase in daytime high temperatures, plant phenology and subsequent peak spring breeding activity of grouse and ptarmigan was between 4-10 days early throughout most of Alaska.

Beginning in 2017 and accelerating in 2018 and 2019, a growing spruce bark beetle (*Dendroctonus rufipennis*) outbreak has severely affected large stands of mature (≥ 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 have severely increased the wildfire risk in affected areas.

ADF&G field personnel observed high densities of both avian and terrestrial predators during spring 2019. These observations were widespread throughout much of the state. Higher predator densities are likely explained by the snowshoe hare population nearing their 10-year peak in many areas of the state however predators will also impact grouse and ptarmigan.

Beginning in early-June and continuing throughout July and early August 2019, much of the state set record high temperatures coupled with very dry conditions. These warm and dry conditions are highly correlated with high chick survival for both grouse and ptarmigan. Portions of the Alaska Range had several heavy rain events in early August 2019; however this occurred late enough in the brood rearing period to likely have minimal impact on chick survival.

Species Status

Ruffed Grouse

Spring breeding surveys were conducted from 16 April to 9 May, 2019 in Interior Alaska and 15 April to 12 May in the Matanuska-Susitna valley (Mat-Su). Survey conditions in the Interior were generally good with minimal snow cover and relatively early onset of plant phenology. Survey conditions in Mat-Su were good with minimal snow cover and a normal to slightly early spring phenology. Surveys were conducted at long-term monitoring sites near Palmer, Delta Junction, Anderson, Fairbanks, and Tok. Overall, counts of drumming males in Mat-Su found no significant change from 2018. The average number of drumming males heard along survey routes within the Interior were slightly higher in 2019 than in 2018 except along a survey route just outside of Fairbanks where the data showed a decline in relative abundance of ruffed grouse.

In the Interior, wing donations in RY18 ($n = 11$) were much lower than those received in RY17 ($n = 133$), which was likely a result of both reduced abundance of ruffed grouse as well as lower hunter effort (hunter effort is influenced by small game abundance with hunters adjusting their effort in response to grouse and ptarmigan abundance). 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). Due to the low number of wing donations in RY18, meaningful inferences cannot be made about the proportion of juveniles from the Interior ruffed grouse population. General observations of ruffed grouse broods in the Mat-Su this summer indicate high chick survival and above average brood sizes. There have been fewer reports of ruffed grouse broods in the Interior. However, weather during the first few weeks of June was likely favorable for chick survival with drier than average conditions.

Overall, hunters should expect to see near average numbers of ruffed grouse in the Mat-Su and should expect to see relatively low numbers in the Interior as populations appear to be in the low phase of their cycle.

Sharp-tailed Grouse

The SGP conducted our annual spring breeding surveys near Delta Junction from 16 to 26 April, 2019 and near Tok from 27 April to 29 April, 2019. Survey conditions were generally good with light winds and relatively cool temperatures (range: 13°F to 44°F).

In Delta Junction, the average number of males observed per lek was up slightly from 2018 (2.3 males observed per lek) to 2019 (2.9 males observed per lek) with the number of active leks observed also up from 2018 ($n = 26$) to 2019 ($n = 36$). In Tok, the average number of males observed per lek was down from 2018 (6.5 males observed per lek) to 2019 (3.4 males observed per lek) with the number of active leks observed also down from 2018 ($n = 6$) to 2019 ($n = 3$). For clarity, a lek is defined here as an area with ≥ 1 male sharp-tailed grouse observed displaying in 2 or more of the last 7 years (Hagen et al. 2011).

Brood counts conducted near Delta Junction in mid-July documented an average of 5.2 chicks per brood ($n = 6$), which was up from the average of 1.0 chicks per brood observed in 2018 ($n = 2$). The data suggests excellent chick survival and was likely in part due to the warm, dry weather experienced during the early part of the brood rearing period (mid-June) when chicks are most vulnerable to weather related mortality. However, we caution against strong conclusions from the small sample sizes (interannual range in sample sizes: 2 to 9).

Fewer wings were donated from hunters throughout the Interior in RY18 ($n = 73$) than in RY17 ($n = 160$), which was likely a result of both reduced abundance of sharp-tailed grouse as well as lower hunter effort.

Overall, spring breeding and summer brood surveys suggest hunters should expect to find good numbers of sharp-tailed grouse when hunting near Delta Junction this season. However, those hunting near Tok will likely see fewer sharp-tailed grouse.

Spruce Grouse

Limited data are available for spruce grouse. All abundance projections are limited to inference made from wing collections and field observations. Harvest composition throughout Southcentral and the Kenai Peninsula ($n = 160$) for RY18 had much lower proportion of juveniles (44%) than RY17 (59%; $n = 176$) or RY16 (73%; $n = 163$). The number of donated samples in the Interior were down in fall 2018 ($n = 86$) from 2017 ($n = 160$) and also indicated a much lower proportion of juveniles in RY18 (50%) than in RY17 (68%). This is similar to many of the other closely monitored grouse populations throughout Alaska suggesting that 2018 was an overall poor year for grouse recruitment. In 2019, Southcentral and Kenai Peninsula spruce grouse populations are likely going to be reduced due to the ongoing and widespread spruce bark beetle infestation. However reports from these areas suggest fewer broods they remain near average size (4-7 chicks per brood). Despite few reported observations in the Interior, hunters should expect to find decent numbers of spruce grouse given the favorable summertime weather pattern.

Sooty Grouse

Spring breeding surveys were completed in Juneau and Petersburg between 6 April and 14 May, 2019. The spring breeding index (males/survey stop) overall was up slightly in Juneau but down in Petersburg. New in 2019, 2 new routes were created and completed in Haines. Although difficult to make inferences about only one year of data it does appear that spring breeding abundance was lower there than other survey locations. Hunters reported fewer birds in general throughout Southeast Alaska during fall 2018 and spring 2019 as well as a rapid decline in breeding activity in early May 2019. The peak of breeding activity was 6 days earlier in 2019 than in 2018 and the landscape phenology was approximately 7-10 days earlier than what has been observed in the recent past likely contributing to these observations. Much like the remainder of the

state, Southeast Alaska also experienced a warm winter and rapid warm up in spring 2019. Due to low sample size of hunter-harvested wings ($n = 40$) an estimate of the proportion of juveniles in the harvest was not possible. However, most of the hunter harvested wings turned in were males (90%) from the last 2 weeks of the season (70%, 1-15 May).

Rock Ptarmigan

Rock ptarmigan spring breeding surveys occurred from 19 April to 18 May throughout the Kenai Peninsula, Anchorage Bowl, Alaska Range, and the White Mountains. Spring breeding abundance of rock ptarmigan appear to be slightly higher in the Interior in 2019 than 2018; however abundance appears to be lower in 2019 than 2018 near Anchorage and the Alaska Range. Survey results from the Kenai Peninsula suggest similar abundance in 2019 to 2018. Reports from ADF&G staff in Bethel, Dillingham, and King Salmon all suggest continued low rock ptarmigan abundance in Southwestern Alaska and the Alaska Peninsula. What exactly is causing the decline is unknown however over a period of 4-5 years spring and summer weather patterns have contributed to very low chick survival and warm winter temperatures have not allowed snow roosting for thermal protection and predator avoidance. In the southern portion of the Seward Peninsula rock ptarmigan populations appear to remain strong.

Hunter harvested rock ptarmigan wings were collected during RY18 ($n = 46$) from primarily Interior ($n = 34$). Due to the limited sample size of wings collected across such a wide geographic area, little inference can be made about the proportion of juveniles in the RY18 harvest.

Brood surveys were completed during the last 2 weeks of July near Eagle Summit, across the Denali Highway, and in Hatcher Pass. At Eagle Summit, surveys documented slightly higher chick survival (4.0 chicks per brood, $n = 4$) than in 2018 (3.0 chicks per brood, $n = 4$); however small sample sizes from both years make it difficult to draw any strong conclusions. Brood size along the Denali Highway are also higher than in 2018. Data collected from radio-collared rock ptarmigan hens that were monitored during the nesting and brood rearing period at Eagle Summit and along the Denali Highway in summer 2019 suggest average to good chick survival for each site respectively. In the southern Talkeetna Mountains, average brood size was up in 2019 (4.0 chicks per brood) from 2018 (2.0 chicks per brood). Overall, hunters should expect to see good numbers of rock ptarmigan throughout Southcentral and the southern Interior.

Beginning in 2015, a study in Unit 25C (Eagle Summit) is currently (2015-present) documenting annual movement, mortality, and productivity. This study also involves a spring survey to estimate density of breeding males. Another study (2018-2020) 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).

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. A small sample of wings ($n=15$) were collected from the Chugach, Kenai, and Talkeetna mountains in RY18 of which hunters reported encountering very few white-tailed ptarmigan in the Chugach and Kenai mountains. Much like other grouse and ptarmigan in 2019, we anticipate good chick survival based on the warm and dry conditions throughout the Alaska Range and Southcentral area mountains in June and July.

Willow Ptarmigan

Willow ptarmigan spring breeding surveys occurred from 20 April to 24 May throughout the Kenai Peninsula, Anchorage Bowl, Alaska Range, and White Mountains. Surveys along the eastern Denali Highway (Unit 13B) estimated a drop in the number of displaying male willow ptarmigan but an increase in

the western Denali Highway (Unit 13E) and Denali National Park population. This may be at least partly explained by the new season closure dates (15 February) instituted in RY18 allowing additional harvest opportunity in Unit 13B and reduced harvest opportunity in unit 13E. Interior, Seward Peninsula, and Kenai Peninsula surveys estimated similar breeding abundance as in 2018. However, the population adjacent to the front-range of the Chugach Mountains experienced a significant decrease from 2018. Reports from ADF&G staff in Bethel, Dillingham, and King Salmon all suggest continued low willow ptarmigan abundance in Southwestern Alaska and the Alaska Peninsula. What exactly is causing the decline is unknown however over a period of 4-5 years spring and summer weather patterns have contributed to very low chick survival and warm winter temperatures have not allowed snow roosting for thermal protection and predator avoidance.

Summer brood surveys were completed between 21 and 30 July 2019 in the Alaska Range, Talkeetna, and White mountains. Brood surveys along the Denali Highway documented much larger brood sizes (6.7 chicks per brood) than in 2018 (3.4 chicks per brood). Along the Steese Highway slightly larger broods were observed compared to 2018 despite a small sample size that make strong conclusions difficult. Field observations throughout summer 2019 documented large brood sizes in the Kenai and Chugach mountains.

Hunter harvested willow ptarmigan wings were collected statewide ($n = 301$) during RY18. Samples were collected from primarily the Alaska Range ($n = 95$), Southcentral ($n = 65$), and Western Alaska ($n = 120$). Statewide, the proportion of juveniles in the harvest was lower in RY18 (52%) than in RY17 (66%). However, despite the low proportion of juveniles statewide, the Seward Peninsula population experienced strong chick survival and subsequent contribution to the fall 2018 harvest (71%, $n = 120$). Southcentral had a low proportion of juveniles (42%, $n = 33$) and the Alaska Range was the lowest (36%, $n = 114$). Very poor chick rearing conditions were experienced during June and early July 2018 throughout Southcentral, Interior, Alaska Peninsula, and Southwestern Alaska. This strongly contributed to low chick survival and low proportion of juveniles in the fall 2018 harvest.

As a result of the summer 2019 weather pattern throughout the state and brood survey results, willow ptarmigan hunters are likely to see average to above average abundance of willow ptarmigan at popular hunting locations along the Denali and Steese highways, and in the Talkeetna, Chugach, 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 a 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 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 begun to decline throughout monitored locations (Tok, Delta Junction, Anderson, and Denali National Park). In Southcentral, snowshoe hares are very abundant and hunters will likely see peak to slightly past peak abundance during the RY19 season. Populations on the Kenai Peninsula are expected to peak in 2020-2021. Based on ADF&G staff observations in winter and spring 2019, snowshoe hare appear to have peaked in areas of the Y-K delta and Kuskokwim River but are more abundant in areas adjacent to the lower and middle Yukon River.

Regulatory Changes

During the March 2019 meeting in Anchorage the BOG adopted 2 small game related proposals. Beginning with the RY19 season, small game hunters will be required to have completed a basic hunter education course to hunt small game in the Joint Base Elmendorf-Richardson Management area (Unit 14C). Also, the eastern boundary of the Birchwood Management Area was changed from the Old Glenn Highway to the Glenn Highway.

For the upcoming BOG meeting schedule and the list of proposals to be considered during the 2019-2020 BOG cycle please visit the BOG webpage (www.boardofgame.adfg.alaska.gov).

Public Involvement and Support

In July 2019 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.