GROUSE NEWS

Newsletter of the Grouse Group *of the*
IUCN-SSC Galliformes Specialist Group

Galliformes Specialist Group

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Chair Grouse Group within the IUCN-SSC Galliformes Specialist Group

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Editorial Board

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From the Editors

As all of you know it is a terrible situation in Europe with the Russian invasion of Ukraine. This has resulted in millions of Ukrainians fleeing west to Poland and other European countries. Because of this situation, we regret to inform you that once again the 15th IGS conference has to be postponed. In 2021 the conference was postponed one year because of Covid-19. This time it is the Russian attack on Ukraine that make it very uncertain to arrange a conference close to the border of Belarus, so it is decided to postpone the IGS one more year to 2023.

We hope the Galliformes web page will soon be back up and operating so we may have all the past issues of Grouse News to be found. Until all issues are available at the web page, you may email the editors and request which issues you are seeking and they will be sent you by email.

As in many of the recent issues of Grouse News, this issue includes a nearly equal ratio of notes on grouse from both major land masses in the Northern Hemisphere. While very few grouse species can be found in both Eurasia and North America, the challenges faced by all species and those of us charged with their conservation are extremely similar, and as Mike Schroeder so elegantly stated in his Grouse Chair Report, we certainly live in an integrated world. Ninety years ago, despite intensive and costly last-ditch efforts, the booming of the Heath Hen was heard for the very last time ever. In this issue you will find a reprinting of a note on this unique grouse as a reminder that the time to save dwindling grouse species is now, not when they are down to the last few individuals or the last few square miles of suitable habitat. This issue also includes interesting readings about the impact of wildfires and the used of prescribed fire in western North America, short summaries on grouse population dynamics, a note on the impact of recreational activities on mountain wildlife, the seemingly ongoing discussion on whether Red Grouse are conspecific with Willow Grouse or not, and an opinion article on Greater Sage-Grouse conservation.

We hope you will continue to contribute article and notes of interest to Grouse News, and please encourage your colleagues to do the same. All kind of contributions are welcome, from research stuff, news about conservation in your area, use of dogs in your research, and short notes about new things that happen, like change in employment and so on. It would be very nice if you could send a short note when you move telling about your new position. And it is very important that you send us your new e-mail if you still want to receive Grouse News; and if any readers know of colleagues or friends that have moved or have changed their email addresses, please pass this issue on to them and provide us with the new email address. Each time we are sending a new issue we get many replies of address unknown.

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From the Chair

At the time of this writing, the war in Ukraine has forced millions of refugees from their homes and many of these individuals and families have found their way to neighboring Poland. The International Grouse Symposium (IGS) organizing committee made the difficult decision to postpone the conference to reduce any additional pressure faced by our Polish hosts during these difficult times. Although there was consideration of moving the conference to another country or converting the conference to a virtual meeting, both of these possibilities were rejected by the organizing committee.

Grouse News and the IGS are two of the many ways in which we share our passion for grouse. Although Grouse News has continued uninterrupted since 1991, the IGS has struggled to maintain its established triennial schedule. The 12th IGS in Matsumoto, Japan was rescheduled from 2011 to 2012 as a result of the tragic destruction caused by the 11 March 2011 Tōhoku earthquake and tsunami. The 15th IGS was originally scheduled for autumn 2021 in Białystok, Poland. The meeting was postponed a year due to the global COVID-19 pandemic. The 15th IGS has been postponed an additional year to autumn 2023, due to the war in Ukraine. When wars break out, negative impacts are never limited to the combatant countries, and this war is no exception.

We live in an integrated world. You might be sitting on a rock watching a pair of banded white-tailed ptarmigan at 4,000 meters elevation in the mountains of Colorado (USA), but you are still impacted by events halfway around the planet. We as individuals can’t stop earthquakes, tsunamis, pandemics, and wars, but we can do our best to keep the lines of communication open through emails, newsletters, publications, meetings, and collaborations. We will move forward with juggled schedules, but our ‘inconveniences’ are miniscule when compared to the price many have to pay in areas directly impacted.

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NEWS FROM GALLIFORMES SG

Update from the Galliformes Specialist Group

GSG went quiet for a period of time as we have navigated Covid. Co-chair Simon Dowell found he had to step down as his senior position at Chester Zoo required phenomenal additional work relating to Covid and the fire in some of their facilities. Rahul Kaul has graciously stepped in to help us move forward. We opted to take down the GSG website, but we have been busy building a new and more streamlined site. The site when relaunched will have the same url as the previous site. Main structure is done and we are filling in some details. For the Grouse Group we have added a tab to provide GG specific content. We are working hard on balancing security concerns with access—always a challenge.

The new quadrennium is upon us and those of you who did not respond to our invites are again invited to submit your paperwork for SSC membership. Please contact me at galliformesguy@gmail.com to get information on the process. I suspect for many that invites ended up in spam folders.

As you know two major conferences on Galliformes this year have been postponed—the International Grouse Conference and International Pheasant Symposium. Hopefully, pandemic responses around the world will allow us to move back toward some normalcy in 2023.

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NEWS FROM GROUSE GROUP

CONSERVATION NEWS

Opinion

Sage-grouse Conservation: The Bad, The Ugly, and the Downright Miserable

Jack Connelly

In 2021 the U.S. Geological Survey reported that greater sage-grouse populations had declined 80% since 1965 and up to 3% of the population decreases each year. These findings should not surprise anyone because this report is simply the latest in a series of publications dating back to a paper published in 1997 in Wildlife Biology that documented sage-grouse declines.

Wildlife managers typically view sage-grouse populations through a biological window and talk about habitat loss and degradation, disease, harvest, and other factors that can directly affect populations and habitat. I want to take a different approach and address more insidious problems that are often underlying causes of sage-grouse declines. Generally, I am referring to bio-politics of conservation and in this case the actions or inactions of federal agencies, state agencies, and politicians.

Over 60% of sage-grouse habitat is managed by federal agencies. The Bureau of Land Management (BLM) by far manages the majority of these lands. In the broader scheme, BLM is responsible for managing sage-grouse habitat while state fish and wildlife agencies are responsible for managing grouse populations. In 2015 the BLM released its final conservation plans for sage-grouse. Shortly after, then Secretary of Interior Sally Jewell announced that greater sage-grouse did not warrant Endangered Species Act Protection. This decision was largely predicated on the belief that the new conservation plans would succeed.

In 2017, before the new plans had any chance of success, then Secretary of Interior Ryan Zinke requested a review and possible revisions to those plans. More than 100 wildlife and natural resource professionals pushed back, encouraging the Department of Interior to stick to the best available science before considering changes. Nevertheless, in 2019 the BLM released the revised sage-grouse conservation plans, in some cases ignoring the science and removing some conservation measures from the 2015 plans.

Lawsuits followed and in late 2019 a U.S. District Court Judge ruled that the BLM failed to fully analyze how these changes would affect sage-grouse. Meanwhile sage-grouse habitat continued to be lost or degraded due to wildfire, invasive species, and energy development. Drought was also taking a toll.

The BLM recently acknowledged current management plans "are potentially inconsistent with new science and rapid changes affecting the BLM's management of the public lands, including the effects of climate change." The agency expressed concerns about continuing drought, habitat loss, and wildfire. BLM announced its intention to review the current sage-grouse plans that were finalized in 2015 and amended in 2019. Separately, the agency is also reconsidering its 2015 proposal to withdraw 10 million acres of sage-grouse habitat from new mining claims. In 2017, the Trump administration canceled an evaluation of this withdrawal before completing an environmental review of the proposed action.

This may seem confusing, but the bottom line is the BLM has more influence on sage-grouse habitat than any other state or federal agency. Thus far, the BLM's conservation efforts have been largely ineffective as evidenced by continued habitat loss and decline of sage-grouse populations. This lack of success appears largely due to political interference often buoyed by special interest groups, lack of support by state fish and wildlife agencies (also suffering from political interference), and an unwillingness to embrace the best available science.

As BLM engages in planning, it also claims to continue employing a range of treatments for sage-grouse habitat. But, what does this actually mean? A great example can be found in eastern Idaho where BLM recently approved a plan the agency claims will reduce the risk of catastrophic wildfires, improve and protect wildlife habitat, and provide for a working landscape. To do this, BLM is proposing to treat 6,100 hectares of sagebrush in sage-grouse habitat. This habitat reduction comes on the heels of a 2018 wildfire, which burned approximately 40,000 hectares in the project area. Essentially, the agency is going to add to the damage already done by the wildfire. Although the BLM refers to these actions as "restoration" it's not entirely clear what they are restoring.

State fish and wildlife agencies manage or conserve sage-grouse populations in three general ways: regulating harvest, monitoring and assessing populations, and working with federal partners (e.g., BLM) and others to ensure that land management actions do not harm sage-grouse habitat.

By the late 1990s it became obvious to anyone paying attention that sage-grouse were in trouble. Scientists briefed the Western Association of Fish and Wildlife Agencies (WAFWA, an organization that includes all western state and provincial fish and wildlife agencies) on the situation and WAFWA responded. WAFWA asked western states to collaborate on a range-wide analysis of sage-grouse habitat and populations. The Association encouraged individual states to work more closely with federal agencies to stress the importance of maintaining sagebrush habitats. State and federal agencies increased research to better understand causes of declines and identify possible solutions.

It is now about 25 years since this recognition that sage-grouse populations were in trouble. Over the course of that time states have taken several actions that might affect grouse numbers. In addition to expanding research and monitoring, hunting was curtailed or closed in most states. Colorado closed two popular hunting units because of habitat loss and declining populations. Nevada reduced season lengths across several hunt units, closed some, and provided 40 percent fewer grouse hunting permits on the Sheldon National Wildlife Refuge. Oregon reduced the number of permits available to hunters for the 2020 season. Sage grouse hunting remains closed in parts or all of Idaho, Wyoming, the Dakotas, California, and Washington.

Idaho, once a major stronghold for sage-grouse that offered generous seasons and bag limits, eventually moved to one bird per day for either a 2- or 7-day season, depending on the unit. Some units were closed completely. Last year Idaho implemented a very questionable tag system for sage-grouse.

State monitoring continues to document declining sage-grouse numbers range-wide, but, in some cases, states falsely claim that low grouse numbers are due to a population "cycle." Research by state agencies has largely been relegated to universities and federal agencies.

Although federal agencies continue to promote some projects likely to harm sage-grouse, these projects are seldom criticized and sometimes supported by state agencies. As an example, an Idaho Department of Fish and Game (IDFG) official recently predicted that a very problematic BLM project "should improve the resilience of the … sage steppe habitats that sustains not only iconic populations of mule deer, sage-grouse, elk and moose, but important ranching operations as well." The statement appears to ignore the agency's own research in that area that concluded "Burning created a long-term negative impact on nesting habitat…" and disregards the fact that IDFG was adamantly opposed to this project just a few years ago.

Political decisions can seriously affect state and federal agency programs. Lately there have been several news stories describing various questionable activities by state legislatures that may negatively impact wildlife management. In general, these legislative actions circumvent responsibilities afforded state fish and wildlife departments and commissions. Additionally, these actions marginalize efforts by trained fish and wildlife biologists to manage the states' resources in a scientifically sound manner.

State fish and wildlife commissions are supposed to insulate wildlife management from politics because they are independent citizen commissions leading professional fish and wildlife departments. Commissions adopt seasons and rules for hunting, fishing and trapping, approve budgets for submission to the legislature, hold public hearings, and make decisions about fish and wildlife management. Nevertheless, because commissioners are political appointees there is no guarantee that they can successfully insulate state agencies from political interference.

The Idaho Wildlife Federation recently noted that despite strong public support for conservation of natural resources, the Idaho legislature saw dozens of anti-conservation bills surface and passed over the last few years while pro-conservation bills were voted down.

Similar problems occur in other states. In 2017, the Wyoming Legislature passed a controversial law allowing private game farms to collect sage-grouse eggs and raise chicks in captivity despite concern that legislators were ignoring important information on sage-grouse captive-rearing and reproduction. Although this bill was passed with a sunset clause, this year the legislature made this legislation permanent, resulting in privatization of public wildlife. Last year an Idaho legislator introduced a similar bill despite objections by many biologists and the lack of science supporting this activity. Like the Wyoming legislation, the Idaho bill ignores input from scientists. It did not pass but the bill is being considered again this year.

Will BLM finally get it right and ultimately begin to effectively conserve sagebrush landscapes? Time will tell, but I have my doubts. Strong leadership and a commitment to science driven solutions is necessary and, so far, BLM has been lacking on both counts. Similarly, when it comes to sage-grouse, state agencies currently appear to value politically palatable actions over biologically meaningful efforts. Hunters and wildlife enthusiasts should be deeply disappointed in federal and state agency's efforts to date. Clearly, many decisions made by these agencies are influenced by politicians. National and state politicians are often seeking, by legislation, to circumvent natural resource agencies, ignoring the will of the vast majority of the public. In the end, the fate of sage-grouse likely rests in the hands of voters who will decide whether or not to support anti-wildlife politicians.

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Awareness and mitigation measures are needed to reduce the impact of outdoor activities on wildlife in the Italian Alps.

A new website in Italian is now available *www.conoscereperrispettare.it*

Luca Rotelli

The Alps are the largest natural area in the world for tourist purposes and the second overall, behind the costs of the Mediterranean Sea (Bartaletti, 2011). According to the website www.unsere-alpen.org that collects the opinions of the alpine clubs of Germany, Austria and Südtirol on environmental issues, about 150 million tourists visit the alpine chain every year. This number is continuously increasing, as always more new outdoor activities that can take place just in mountain areas are spreading (ski mountaineering, snowshoeing, freeride, free-climbing, bouldering, ice-climbing, mountain-biking, hang-gliding, paragliding, rafting, canyoning, orienteering). The number of the participants of these activities has grown in an exponential way in the last thirty years. The wave of tourists that visits the Alps in every season, besides being the most important source of income for the people who live in this region, brings with it a couple of negative consequences on the environment. The wildlife not only loses part of its habitats because of the construction of human settlements, roads, ski facilities, ski slopes and water basins for making artificial snow, but it has to avoid always more frequently the presence of people, who penetrate more deeply and more often in until now undisturbed areas.

The increasing consideration of the different groups of interest for the Alps determines that even the outdoor activities initially defined at low environmental impact, as ski mountaineering and snowshoeing, because of the increased number of participants, can have negative repercussions on the natural ecosystems, causing a heavy disturbance of the wildlife.

Figure 1. Rock ptarmigan and fresh tracks of a mountaineering skier. Who comes first? Ski mountaineering has drastically increased in the last 20 years in all alpine countries. According to the data collected from the alpine clubs and some ski mountaineering associations, today there are about two million people who practice this activity in the Alps (photo Giovanni Pelucchi, 27.03.2022).

The numerous winter outdoor activities, as they are carried out in the same habitats where the wildlife spends the winter, not only represent a direct threat for the fauna, but also can cause the fragmentation, degradation and loss of the best wintering areas.

However, not only the winter outdoor activities can be critical for the wildlife, but also those carried out in other seasons, such as mountain-biking, orienteering, mushroom and berry gathering, as they interfere with other sensitive phases of the life cycle of the wildlife (mating, breeding and rearing of young).

As the number of outdoor activities and their participants is steady increasing, if we want to preserve sensitive habitats in the Alps in the future, each human activity should be regulated in order to guarantee the wildlife undisturbed areas where to spend the most critical periods of their life cycle.

For these reasons I decided to create a website www.conoscereperrispettare.it ("more knowledge for a better respect"), where the different aspects of the matter are treated in detail. Information about the biology and ecology of wildlife in winter, the consequences of the human activities on grouse (capercaillie, black grouse, rock ptarmigan and hazel grouse), snow hare and ungulates (red deer, chamois and ibex), the experiences of the German speaking alpine countries in managing the flow of tourists, the criteria for the establishment of protected areas and some rules that people should know in order to reduce the impact of their activities, is given. At the moment it is written in Italian, but an English and a German version will be provided as soon as possible.

All groups of interest should maintain the opportunity to practice their leisure activities in the nature even in the future. Prohibition does not seem the right way to follow, but in order to enjoy mountains in a more respectful way, awareness campaigns are needed for all stakeholders involved.

Figure 2. The home page of the website www.conoscereperrispettare.it The site provides information about how people should behave to reduce the impact of the outdoor activities on wildlife and environment when practicing their leisure activities in the Alps.

Literature cited

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A study in extinction

The passing of the heath hen

On the morning of March 11, 1932, ornithologist Alfred Gross rolled out of bed at his customary 3:30 a.m. to attend a final performance. He walked to a wooden blind at the edge of a grassy clearing on a Martha's Vineyard farm, crawled inside, and waited for first light. About an hour later, the last heath hen on earth slipped out of the scrub oak onto the grass and began his courtship display, oblivious to the fact that he had no rivals to conquer and no hens to win. For four years, he had kept the spring appointment on the lek and had met no companions there. Gross took photographs as the light improved and meticulously noted the bird's behavior. Then, as the sun broke over the eastern horizon, the cock finished his last display, stepped back into the scrub, and disappeared forever.

Perfection is always a scarce commodity, but our dealings with the heath hen must qualify as one of the most perfect assaults ever mounted on a species. When our forebears hit the beach in Massachusetts, the heath hen was one of the coast's most abundant upland birds. Later taxonomists recognized it as a subspecies of the greater prairie-chicken, and the heath hen shared its western cousin's taste for grass. Although we're inclined to think of the Eastern Seaboard as a thin strip of beach against a backdrop of endless forest, there were meadows and stands of scrub oak and pine along the coast, maintained by fire like the tallgrass prairie of the Midwest.

The heath hen moved through these savannahs from the Carolinas to New Hampshire. In the winter, the birds depended on acorns; in the spring and early summer, they ate insects and greens; in the late summer and fall, they stuffed themselves with every wild fruit they could find, from blueberries to rose hips. They were probably more comfortable in timber than western prairie grouse, but they seldom strayed too far from a clearing. In the spring, they rendezvoused on display grounds, or leks, just like prairie chickens, the males dancing to intimidate each other, the females showing up from time to time with a great show of indifference to choose their mates, usually the dominant males at the centers of the leks.

Judging from Gross' description, their calls were very much like the greater prairie-chicken's: "The sound was accented on the second syllable or the first part of the second and then gradually diminished in intensity . . . The booming was interspersed with henlike calls." Gross' permanent blind became a favorite display site for the Martha's Vineyard birds because, he wrote, "the resonant wooden roof" amplified their stamping.

A chicken-sized bird with a taste for prairie openings couldn't have escaped the notice of English colonists for long. Fifteen years after the Plymouth landing, one hunter wrote: "Heathcockes and Partridges be common: he that is husband, and will be stirring bedtime, may kill half a dozen in a morning. . . . The flesh of the Heathcockes is red, and the flesh of the Partridge white, their price is four pence a piece."

The 19th-century naturalist Thomas Nuttall found a report from Governor Winthrop of Plymouth Colony that reflected the heath hen's numbers, if not its popularity: "They were so common on the ancient brushy site of Boston, that laboring people or servants stipulated with their employers not to have Heath Hen brought to table oftener than a few times a week."

A glut of heath hens wasn't a problem for long, however. It's possible that the clearing of farm land actually helped the species for a while, but persistent market shooting was more than the heath hen could survive. In 1811, the ornithologist Alexander Wilson reported that, as human populations grew and grouse populations declines, the price of a brace of grouse in the market had risen to about $5. By 1840, the heath hen had disappeared from mainland Massachusetts and Connecticut; four years later, it was declared extinct on and around Long Island. A few birds lingered in the huckleberry barrens in eastern Pennsylvania's Pocono Mountains until 1869. Those sightings were the last recorded on the mainland.

The heath hen's plight did not go unnoticed. In 1791, the New York legislature considered a bill protecting heath hens from spring and summer shooting. In 1831, Massachusetts prohibited heath hen hunting from March 1 to September 1; in 1837, the heath hen season was closed entirely for four years.

These regulations had about the same effect as most game laws of the period. Many people weren't even aware of the restrictions, and, with no provisions for law enforcement, it wouldn't have made much difference if they had been posted on every fence post. The Massachusetts laws were particularly empty because each town in the state had the authority to set aside the closures. In any case, the damage to mainland heath hen flocks had been done before most of the legislation on their behalf had been enacted.

Luckily, there was a flock of heath hens on the island of Martha's Vineyard off the coast of Massachusetts. Why they survived there is a minor enigma. The island had always been sparsely settled, and when the locals weren't tending their hard-scratch farms, they had been more inclined to fish than hunt. Whatever the reason, the birds hung on in the island's sandy grasslands and oak barrens, although they were apparently much depleted by the early 19th century. As early as 1835, John James Audubon talked to a local resident who said that, 20 years earlier, he was used to seeing as many heath hens in a day “as we now see in a week.” Still, in the spring of 1890, 120 to 200 birds clung to life on Martha’s Vineyard.

The assault on the heath hen was far more complex than it first seems. There’s little doubt that overharvest was the key, especially with the demand for grouse in the rapidly growing markets of the Northeast. But other factors were probably also at work. While the initial opening of eastern timber and the availability of waste grain must have helped the heath hen, the long-term intensification of farming probably didn’t.

Many of the heath hen’s favored foods, particularly the wild berries, grew along the edges of grasslands. Clearing these brushy edges, combined with the impact of livestock browsing, must have reduced the berry crops they produced. There was almost certainly less cover for nests and broods. Grazing in woodlots would have cut down on the number of available acorns, a heath hen winter staple, as well as reducing the vigor of nut-bearing trees.

And there were pets. As early as 1840, cat depredations may have been having an impact on local heath hen populations. Audubon wrote that “we frequently meet with the remains of such [heath hen] as has been destroyed by the domestic cat which prowls the woods in a wild state.”

Livestock also introduced another major threat to the heath hen — disease. Domestic chickens and turkeys brought over from Europe provided transportation for blackhead, a virulent and highly contagious pathogen among chicken-like birds. America’s native grouse had never faced anything like it and proved extremely susceptible. Since the heath hen gravitated toward farmed clearings, it was particularly likely to feed over the dropping of domestic fowl and become infected. No one will ever know how much of the heath hen’s decline was due to disease, but several observers reported sudden disappearances of local populations that sound suspicious.

Efforts to save the heath hen began with the first hunting closures in the late 1700s. Unfortunately, many of them may have done more harm than good. Since the heath hen and the Midwest’s greater prairie-chicken were so similar, several well-meaning people transplanted the western subspecies into parts of the heath hen’s original range. A transplant in southern Maine between 1870 and 1880 has forever after confused the issue of the heath hen’s northern range limit. In 1902, the fledgling Massachusetts Commission of Fisheries and Game introduced three greater chickens to Martha’s Vineyard. It must have seemed like a good idea at the time, but it makes any modern biologist cringe. The similarity between the two birds carried as much risk as potential benefit. There is a good chance that the western birds carried parasites and diseases the heath hen had not encountered for generations, if ever. And there is no doubt that the greater chicken was a grave threat to the heath hen’s genetic fitness. The two cousins had adapted to different environments; the innate behavior that served a greater chicken well could easily doom a heath hen in the sand barrens of Martha’s Vineyard.

As one species after another slipped toward oblivion, Americans entered the 20th century with a new appreciation of the fragility of wild things and wild places. John Howland, a native Vineyarder, proposed that a heath hen reservation be established on the island. Sport hunters and birder got behind the idea and raised enough money to buy 600 acres of the Vineyard’s best habitat. The Commission of Fisheries and Game, financed by the hunters of Massachusetts, leased another 1,000 acres and the reservation was a reality. A full-time state game warden was assigned to the island; soon after, William Day was hired to act as gamekeeper on the refuge itself. Observers estimated the island population at 50 birds.

Day killed every fox, raccoon, skunk, hawk, and house cat he could lay his hands on, and the state forestry department watched the reserve to guard against fire. In eight years, the population had exploded — the state ornithologist estimated 800 birds; Day figured closer to 2,000. The commission trapped a few birds and moved them to Long Island and the Massachusetts mainland, hoping to establish a second population, but the transplants didn’t succeed.

Then, in spite of the foresters’ best efforts, a fire scorched 20 square miles of the reservation. The birds were used to dealing with fire, but it seems likely that many of the hens were already on nests. Observations on the display grounds the following spring showed that many hens had been lost. The cocks harassed the remaining females so intensely that they produced few broods that year. In the winter of 1917-1918, an invasion of goshawks out of the north took a heavy toll among the birds that were left. By the spring of 1918, there were only a hundred birds left, most of them males.

Biologists close to the reserve recognized the problems inherent in this decline. In 130, Alfred Gross wrote, “In the recent history of the heath hen, it was well known that there was a great excess of male birds. This abnormal ratio may have been brought about by some hereditary influence, but it is certain that this condition was aggravated by the fires that ravaged the island during breeding season. . . Other factors that played their part were the excessive inbreeding, which was destined to occur after the heath hen was restricted in range and to exceedingly small numbers of individuals. It was also found upon examination of dissected specimens that many of the birds were sterile."

The battle to save the heath hen may have been the most intense wildlife management effort of its time. An accounting of state expenditures seven years before the last male disappeared showed that Massachusetts had spent $56,912 on heath hen preservation – the equivalent of almost $850,000 today. In many ways, this program blazed the trail for the intensive endangered species recovery programs that followed. It demonstrated the threats posed by inbreeding, imbalanced sex ratios, disease, and unexpected events like fire. More than that, however, it demonstrated how expensive and ultimately ineffectual our best efforts can be when we recognize a problem too late. The best way to manage endangered species is to do something before they're endangered.

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RESEARCH REPORTS

Close encounters of the Spruce Grouse Kind

Louis (Wil) Hallstrom

M5B perched on our radio telemetry antenna. Photo by: Jase Briggs

Can you say you have been attacked by a New York State endangered species, because I can! The New York State Dept. of Environmental Conservation (NYSDEC) has been undertaking a long-term spruce grouse recovery program to reverse the decline of the Adirondack Park population and promote the population's recovery. The project focuses efforts on surveying lowland boreal forest patches to monitor population trends and translocating spruce grouse into New York from Ontario Canada, and Maine to bolster numbers and improve genetic diversity of resident grouse. Since our work began in 2001, none of us have observed a spruce grouse acting overly aggressively towards humans or vehicles, until now. We had heard stories of spruce grouse walking into a bar, climbing onto people's laps, and flying onto people's heads, but until recently we remained skeptical.

Spruce Grouse, commonly known as the "fools hen" are typically elusive and well hidden from predators and humans alike. However, one male spruce grouse in the Adirondack Park decided to break that stereotype. Male five blue (M5B) was captured in August of 2021 at one of the remote bogs that NYSDEC staff frequently survey and track radio-collared birds. We suspect M5B was present in the same bog for at least one year prior to his capture because of a handfull of close encounters that my coworkers, David Selner and Kayla Huey, had with an aggressive male spruce grouse in the winter of 2020. The bird David encountered was not banded and aggressively displayed, getting extremely close and ultimately flying at David to peck his hand, drawing blood. We are pretty sure David had thin skin. On a separate occasion, another aggressive spruce grouse, presumably the same bird, was observed by Kayla Huey running at and pecking the tires on our parked field vehicle. We had to get out to verify that the bird was not beneath the vehicle before driving away. These behaviors are atypical for a New York spruce grouse. In most situations where a human encounters a spruce grouse, the grouse will flush straight up to perch in a spruce or balsam fir tree at a safe distance or it will sit still until the threat moves away. This individual showed uncharacteristically aggressive behavior when interacting with humans, making him a memorable bird in our study region.

M5B perched on a moss hummock. Gray circle near his crop is the radio. Photo by the author.

M5B Perched on Louis Hallstrom's head. Photo by Jase Briggs

Jumping ahead to late summer 2021, while surveying for female spruce grouse an aggressive male spruce grouse was observed again at the same site as the bold tire attacker we had previously shared stories about. This time our team was ready to capture, band, and affix a radio telemetry collar on the aggressive male. Before capture, this bird walked up to our tech, Jase Briggs, and began to display. He ultimately flew at Jase's head and attempted to perch there. As you might imagine, the capture went smoothly due to the bird's lack of fear towards humans, affording us the ability to get very close. We tracked all individual grouse twice per week to get location and habitat information to create a range map for each bird. Our first day tracking M5B, the bird was perched in a spruce tree observing us while we took notes for a few minutes, until he flew down from his perch and landed on my head. This encounter escalated to the bird landing on my radio telemetry antenna and pecking my hand. He also grabbed my eyebrow and gave it a good, sharp twist. I have been working with this project for two years, in that time I was unable to get closer than a few meters of a bird to snap a few photos. Working with this bird has been the highlight of my time on the spruce grouse recovery project with NYSDEC to this point.

Our most notable encounter with M5B was in late September 2021 at the end of the female survey season. On this day, our team was conducting a female playback survey through the site where M5B resided. We broadcast a chick alarm call along transects through lowland boreal habitat with observers evenly spaced to effectively listen for a female to respond. While surveying, we avoided areas where M5B was known to spend time, to reduce stress on the bird. Even with our avoidance of areas where M5B was known to reside, we still occasionally encountered him foraging during female surveys. This method of surveying may have inadvertently called in M5B when he heard the chick calls, though this was not our intent. When we observed M5B during the survey we immediately turned calls off and moved 150m away from his location before resuming survey protocol. Even at this distance M5B heard the call and came running at us on the ground. As he approached, we saw the understory vegetation rustling and parting as the bird walked at us until he hopped on a log and began to display. Immediately after we identified that the displaying male was M5B, our team stopped the survey and moved swiftly out of the site to avoid further stress.

Foreground: M5B perched on Louis Hallstrom's shoulder, Background: 2021 NYSDEC spruce grouse technicians (Left to Right) Jackie Lamica, David Selner, Mike Campbell.

While this behavior is uncommon, it was concerning to our team because of predation threats and the potential for roadway mortality if M5B displayed these aggressive behaviors while vehicles drove through the area. However, M5B did not die due to predation, or an altercation with a vehicle as we worried about. Instead, he was found dead and intact on top of the snow in the area he had spent most of the summer. Necropsy results indicated that the bird died from *Syngamus trachea* occlusion of the airway. Our concerns with *Syngamus trachea* were discussed in a separate article byAngelena Ross, in the article titled *Potential unforeseen problems arise with translocations of spruce grouse into New York* published in the December 2021 edition of Grouse News. It is our hope that these parasites are not a significant factor in mortality of New York spruce grouse, but we are observing several individuals with this infection. Our team enjoys observing spruce grouse in their natural habitat daily and working to conserve their New York population is fulfilling. Encounters like these make our job very rewarding.

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Prescribed Burning to Restore Sharp-tailed Grouse Habitat in Northeastern British Columbia

Alicia Woods

In the world of sharp-tailed grouse, the province of British Columbia is typically known for its populations of the Columbian sharp-tailed grouse. However, being located on the eastern side of the Rocky Mountains, northeastern BC has the unique distinction of being the only place where the plains subspecies (*T.p. jamesii*) of sharp-tailed grouse can be found in the province. The Peace Lowlands is a 1.5 million ha area, bisected by the Peace River, that is comprised of a mixture of aspen parkland, grasslands, shrub-steppe ecosystems as well as expanses of agricultural development. Historically, and as indicated by local place names such as Rose Prairie and Lone Prairie, the Peace Lowlands included open canopied, native grasslands and shrub-steppe ecosystems, which was maintained through recurrent fire events. These fire events included cultural burning by local First Nations, prescribed fire conducted by ranchers and landowners, and wildfire events, resulting in an open, prairie-like habitat that sharp-tailed grouse exploited. However, as the area became more settled, wildfires were suppressed, prescribed fire decreased, and industrial pressures such as oil and gas development, forest harvesting, ranching, and crop farming expanded, reducing the open habitats relied upon by sharptails (lovingly referred to as "chickens" by the locals). In some cases, these disturbances increased habitat for sharp-tailed grouse – specifically the clearing of aspen parkland to increase cattle grazing opportunities – resulting in the regeneration of native, mixed grass-shrublands.

Since 2003, I have been fortunate enough to conduct research and monitoring of these quirky birds in northeastern BC, including investigating measures of nest success, brood survival, and habitat selection in a couple populations of sharp-tailed grouse in the Peace Lowlands. Through annual lek surveys, I have seen lek attendance decline, long-standing leks disappear, and a general reduction in sightings. Sharptail habitat that was previously occupied has been converted into cereal crops, lost to the encroachment of aspen and increasingly tall shrubs, and destroyed by the construction of oil and gas well sites and access roads.

Since the 1950s, wildfires have been suppressed across BC, resulting in a significant build up of fuels throughout most of the province and subsequent destructive fires in recent years. In the Peace Lowlands, fire suppression has resulted the advancement and encroachment of deciduous species, such as aspen and balsam poplar, into previously fire-maintained grassland and shrub-steppe habitats. Previously referred to as "weedy species" for their quick growth and regeneration, aspen is now considered a commodity in the forestry sector in the Peace Lowlands, which has resulted in diminished support by government for the use of prescribed fire to maintain ecosystems. As such, ranchers and conservation groups have been unable to use prescribed fire to maintain open habitats and encourage grass, herb, and low shrub growth on public land.

In response to the declines in sharp-tailed grouse lek attendance and the disappearance of the grass-shrubland habitats I have observed since 2003, in 2020 I initiated a program to restore and enhance sharptail habitat in the Peace Lowlands using treatments such as manual brushing and prescribed fire. When prescribed burning is not feasible on public land and sites can be accessed by machinery, manual brushing or mulching is being proposed to decrease willow height and density in areas surrounding leks. Due to the lack of support for conducting prescribed burning on public lands, I have focused my efforts on collaborating with landowners to conduct prescribed burning on privately owned land, with the objective to reduce the density and cover of aspen, poplar, and willow in key habitats used during the breeding season. Since program initiation, multiple landowners have joined the program to work in partnership to implement prescribed burns on over 1,000 ha of sharp-tailed grouse habitat.

In a predominantly industry-driven region such as northeastern BC, we are fortunate to have large-property landowners that are committed to wildlife conservation and equally as lucky to have organizations such as the Habitat Conservation Trust Foundation to assist in funding conservation projects on private land. Landowners do not receive any financial benefit for their efforts to restore sharp-tailed grouse habitat but support habitat restoration programs because they have seen firsthand the significant benefits to wildlife that occur because of prescribed burning.

In May 2021, we conducted our first habitat restoration project on the 2,000 ha Preston property in the Peace Lowlands. The Preston property is a unique ridge, approximately 3 km long that, at its peak abundance had three individual leks, which were supported by surrounding mixed grass-shrub habitat for nesting. The first lek, originally discovered in 2008, consistently had between 9-18 males on the lek annually until 2019, when only two males were observed on the lek and has not been active since then. Between 2011-2014, an average of 27 males were collectively observed on the three leks, and then male attendance decreased to 11 males between 2015-2021. The property, which had been previously burned by the landowner approximately 15 years ago, was becoming overgrown with dense patches of 2-5 m tall aspen and willow thickets, resulting in low residual grass and shrub cover for nesting. Further, low shrubs were encroaching in on lek sites and reducing the line-of-sight for displaying males. To address the diminishing habitat, using a combination of aerial- and hand-ignition techniques, approximately 400 ha of prime sharptail lekking, nesting, and brood-rearing habitat was burned in May 2021.

The prescribed burn, which was implemented with help from the Preston family, neighbouring landowners, and the British Columbia Wildfire Service crews, resulted in an intense ground fire that removed dead, standing shrubs, killed regenerating aspen, and decreased shrub height and cover around the leks. Within 1-week post-burning, grass shoots were visible across the site and within 3-months herbaceous vegetation growth was between 30-60 cm in height. Vegetation characteristics around the three lek sites and random, unused sites were measured pre-treatment and will be re-measured one-year post treatment in May 2022 to assess burn effectiveness at achieving habitat objectives, specifically decreasing woody vegetation height and cover. Annual lek surveys will also be continued to measure lek attendance post-treatment.

After this year's success in restoring critical sharp-tailed grouse habitat, I look forward to working with additional landowners to conduct prescribed burning in 2022 in two other sharp-tail populations in the Peace Lowlands. Combined with prescribed burning initiatives, approximately 38 ha of manual brushing is also scheduled to be completed this fall around three lek sites located on public land and additional brushing prescriptions are being developed.

The success of this project can be attributed to the conservation-minded landowners in the Peace Lowlands and the support of funding groups such as the Habitat Conservation Trust Foundation, the North Peace Rod & Gun Club, and the Society for Ecosystem Restoration in Northern BC.

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Impact of wildfires on sharp-tailed grouse and greater sage-grouse in Washington State.

Michael A. Schroeder

The summer of 2020 in northcentral Washington was wonderful for hiking in the mountains and enjoying wildlife. The record-setting wildfires of 2014 and 2015 were a distant memory and the air was mostly smoke-free. All of that changed the night before Labor Day when the wind picked up and a new round of wildfires started. The largest of these fires was the Cold Springs Canyon/Pearl Hill fire. At 410,000 acres, it set a record as the largest wildfire in Washington State history. The fire burned so fast it was able to cross a stretch of the Columbia River that was a quarter mile wide. It burned many houses and chased me out of my own. When the wildfires of 2020 were added together, they burned roughly 50 percent of greater sage-grouse and sharp-tailed grouse habitat in the state of Washington.

One of my goals in spring 2021 was to examine the impacts of wildfires on grouse. Monitoring is usually done by counting grouse on their traditional display grounds (leks). To provide a useful comparison, I counted birds in areas that were burned and in areas that were not burned. For greater sage-grouse, counts on leks declined 22 percent in burned areas and increased 4 percent outside burned areas. For sharp-tailed grouse, counts on leks declined 77 percent inside burned areas and increased 13 percent outside burned areas.

Although it is clear that both species were impacted by wildfires, it is not clear why sharp-tailed grouse appeared to be more impacted than sage-grouse, at least in the first year following a fire. There are several ways that grouse can be impacted by wildfires. The first way is the most obvious – direct mortality. Direct mortality has been observed in many wildfires, but it is not clear why this would impact the species in different ways.

Another possible difference between the species is their behavior. Greater sage-grouse typically display on leks in open areas; in northcentral Washington, many of these leks are wheat fields. In contrast, sharp-tailed grouse display in grasslands, often with substantial cover. Observations in spring 2021 illustrated some of this variation. I observed sage-grouse displaying in burned areas with little or no concern for their apparent vulnerability. In contrast, sharp-tailed grouse observed in spring 2021 appeared to be very skittish. They were easy to flush from a lek and reluctant to return. It is possible that this behavioral difference could explain some of the differences in lek counts.

The largest impacts to grouse from wildfires are probably long-term. Research on habitat has shown that fires can increase the abundance of invasive species like cheatgrass. As cheatgrass increases in abundance, the suitability of habitats for grouse declines. This declining suitability is likely to affect nesting and brood-rearing success. Because most of the fires in 2020 occurred after the nesting and brood-rearing season, many of the fire impacts will not be apparent until 2022.

2015 was also a significant fire year in the range of sharp-tailed grouse in Washington, primarily as a result of the Okanogan Complex fire. Grouse populations had not recovered to pre-burn numbers even four years after the fire. If a similar delay occurs following the most recent fires, grouse populations will be in trouble for years to come. This may be something we have to get used to. The fires of Washington State and other western states show that risk of wildfires is going to keep increasing.

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Spatio-temporal population dynamics of Nevada Greater Sage-Grouse from 2000–2018.

Cheyenne Acevedo.

Abstract

Dynamic spatio-temporal models, interfaced with long-term time-series data permit a better understanding of population dynamics across large spatial scales. The Greater Sage-Grouse (*Centrocercus urophasianus*) population appears to be declining across much of their range. However, there is considerable uncertainty in the spatial drivers of this decline. I developed and applied contemporary dynamic spatio-temporal statistical models to 19 years of Greater Sage-Grouse lek count data to examine spatially-explicit drivers of sage grouse population dynamics. Mean expected lek counts in Nevada declined 2.84 birds per lek between 2000 and 2018, however trends varied substantially over

space, with northwestern Nevada and the Bi-State (Nevada and California) region experiencing the steepest declines (up to 6 birds per lek), and northeastern Nevada experiencing increased lek attendance. I found that elevation, total precipitation, normalized difference vegetation index, and percent sagebrush were positively correlated with expected lek counts and that drought, slope, percent bare ground, wildfire, and maximum temperatures were negatively correlated with expected lek counts. I also found that sage grouse population dynamics were closely correlated with mean precipitation the preceding 8 years. Specifically, expected lek counts tracked an eight-year precipitation average with lek attendance declining 3-4 years following 8 years of low precipitation. These results support the hypothesis that long-term mean inter-annual precipitation drives sage grouse habitat quality, and ultimately, sage grouse survival and reproduction, affecting the number of birds visiting leks the subsequent years. Finally, I provide spatially-explicit maps of population trends from 2000–2018 that can support future sage grouse management and conservation.

Acevedo, C. R. 2021. Spatio-temporal population dynamics of Nevada Greater Sage-Grouse from 2000–2018. M. Sc. Thesis. University of Nevada, Reno.

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Species-specific responses to landscape features shaped genomic structure within Alaska galliformes

Robert Wilson & Sarah Sonsthagen

Summary

How grouse and ptarmigan species are able to respond to environmental disturbances in part depends on the ability of individuals to navigate across the landscape. As the decision to disperse or stay is an individual decision, movement patterns cannot only vary between species but also by population. The consequences of dispersal decisions can have short- and long-term implications on population fitness, therefore assessing how populations are interconnected is essential to understand how resilient populations are to random disturbances and future habitat disturbances imposed by continuing climate change. Here we used genomic data to investigate genetic population structure and connectivity across six species of Galliformes (Ruffed Grouse, Spruce Grouse, Sharp-tailed Grouse, Rock Ptarmigan, White-tailed Ptarmigan, and Willow Ptarmigan) distributed in Alaska. The level of genetic structure varied across and within (historical vs. contemporary structure) species and species-specific patterns were observed as not all landscape features (e.g. mountain ranges and associated lowland habitats) appear to be acting as barriers across all species. In general, the Alaska Range in interior Alaska, the Brooks Range in northern Alaska, and the Yukon-Tanana Uplands in eastern Alaska, appear to be strong barriers for most species with strength of the barrier likely corresponding to species behavior (movement tendencies) and habitat affinities. In addition, we found the level of genetic differentiation between transplanted (southcentral) and native (interior) Ruffed Grouse populations were comparable to that among native populations of Spruce Grouse and ptarmigan. This highlights the impact founder events can have on populations with limited movement propensity and that genetic differentiation can develop rapidly (within at least 30 years). For species that inhabit the Arctic tundra, the Willow (based on historical and contemporary analyses) and Rock (contemporary only) ptarmigan show limited dispersal across most regions we were able to secure samples from, in particular the Arctic. As recruitment among habitat areas are vital to the rescue of populations that may be adversely affected by environmental disturbances, the continued reduction of Arctic and alpine habitats due to the advancement of shrub habitats may further isolate these populations and thus reduce their long-term resiliency.

Key words: Alaska, effective dispersal, grouse, landscape genomics, ptarmigan

Sonsthagen, S.A., R.E. Wilson, & S.L. Talbot. Species-specific responses to landscape features shaped genomic structure within Alaska galliformes. Journal of Biogeography 49: 261-273.
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Rock Ptarmigan in early spring on highway marker near Galbraith Lake along the Dalton Highway, Alaska. (Photo credit: Sarah Sonsthagen).

Spruce Grouse in late winter found in Far North Bicentennial Park in Anchorage, Alaska (Photo credit: Robert Wilson).

Regional government supports wind farms on a key area for critically endangered Cantabrian capercaillie in Northwest Spain

Rolando Rodríguez-Muñoz and Manuel A. González

Over the last 50 years, Cantabrian capercaillie has declined dramatically. The population was classified as critically endangered in 2017, and last census estimates 191 birds surviving in 2019 in about 17% of the range known to be occupied by late 1970s (Jiménez et al., 2022). About 10% of this remnant range is located in an area with an unusual habitat expanding to the South of the Cantabrian Mountains, around the limits between the Eurosiberian and Mediterranean regions (González et al., 2010). Since 2008, this area has been subject of intense development for the wind energy industry. Five projects for wind farms construction have lead so far to the installation of 63 turbines within and among capercaillie lekking grounds (Figure 1). Environmental assessment reports neglected the importance of the area for capercaillie, but the regional government (Junta de Castilla y León) was favourable to them anyway. Due to the serious impact of this decision on capercaillie conservation, the Spanish society for ornithology (SEO Birdlife) started a case in court against them that finished with three of the farms being declared illegal by the Supreme Court in 2017; it was proved that there was serious flaws in the environmental assessment report. Despite the critical status of the species, the farms developers decided to write a new environmental assessment, focusing this time on their impact on capercaillie. This new environmental assessment report has ended (again) with a favourable decision of the regional government, that approved two of the wind farms by the end of March 2022.

There is increasing evidence about the negative effects of wind farms on capercaillie (Coppes et al., 2020a; Coppes et al., 2020b). Consistent with that, González et al. (2016) found a severe decline in capercaillie use of the area described here, shortly after the construction of one of these wind farms, indicative of a negative impact. More recently, a hen was found dead by impact, very close to one of the turbines (González, 2018). At present, capercaillie seems to be very rare in the area. This is a clear example to illustrate the absolute absence of interest for capercaillie conservation among Spanish politicians and decision makers. Over the last 15 years, around 10 million euros have been allocated to Cantabrian capercaillie conservation, including about six millions of a LIFE project, partially funded by the EU (Rodríguez-Muñoz et al., 2017). Not a single success has been achieved. At the same time that this money was being wasted, heavy machinery was destroying this area, one of the last capercaillie remains, and one with a unique habitat worldwide. More wind farms are expected to come in this and other very important areas for biodiversity conservation in the Cantabrian Mountains in the near future. In the meantime, money keeps being wasted to pretend that government is doing all possible efforts to preserve capercaillie, and citizens are continuously tricked about how important biodiversity is within EU policies. This is just an example on how biodiversity conservation in Spain (and the rest of Europe) is often more a matter of propaganda, than the key target we are permanently told by our EU political representatives.

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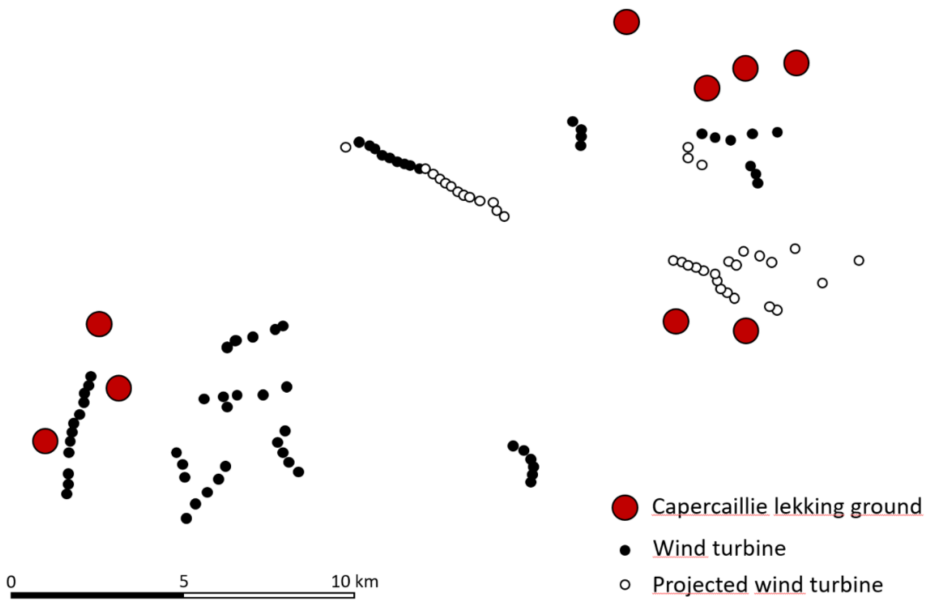

Figure 1. Location of the capercaillie lekking grounds and the wind turbines built over the last 15 years at the Southwestern end of the Cantabrian Mountains (based on (González, 2018; González et al., 2017).

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Issues of rock ptarmigan translocation project at Central Alps of Japan: Comparison to a protocol in North America and IUCN guideline

Yasuyuki NAGANO

Background

The Ministry of the Environment of Japan (hereafter MEJ) is implementing a rock ptarmigan *Lagopus muta japonica* translocation project from Mt. Norikura where the population is stable, to Mt. Kisokoma in the Central Alps where the population is extinct in the 1960s. Because this project involved activities that were not recommended in protocols for successful translocation of ptarmigan (Braun et al. 2011, hereafter Braun's protocols) such as eggs and chicks' translocations, I compared this project with the Braun's protocols and IUCN Guidelines for Reintroductions and Other Conservation Translocations (IUCN 2013, hereafter IUCN Guideline). I wrote this paper in Japanese because I want many people who are interested in the conservation of the nature in Japan to know the current status of translocation and conservation projects of rock ptarmigan implemented by the Ministry of the Environment. I will write the abstract here to let you know what is happening in rock ptarmigan conservation in Japan right now.

Implementation of translocations

A female was observed at Mt. Kisokoma in the Central Alps by a hiker on July 2, 2018, and a nest with eight eggs was found on June 4, 2019. To establish a population in the Central Alps, the MEJ collected a total of six eggs from two nests on Mt. Norikura and transferred them to Mt. Kisokoma on June 8, where they exchanged these eggs for the unfertilized eggs laid by the female. Five hatched chicks were observed on July 1, but only an adult female was found in the survey on July 10. It was highly possible that the five chicks were predated. Furthermore, on June 7 in 2020, the next year, eight eggs laid in captivity were again replaced with unfertilized eggs laid by the female of Mt. Kisokoma. The five chicks and three eggs were confirmed dead due to disturbances caused by a herd of Japanese macaques *Macaca fuscata* on July 1. After that, the MEJ translocated three families, three adult females and their sixteen chicks protected from predation in cages only at night in Mt. Norikura to Mt. Kisokoma on August 1. Each family was also protected from predation in cages only at night in Mt. Kisokoma and then all birds were released on August 7, 2020. There was no release of ptarmigan in 2021, but MEJ was preparing to release the breeding individuals and intend to release these individuals in 2022.

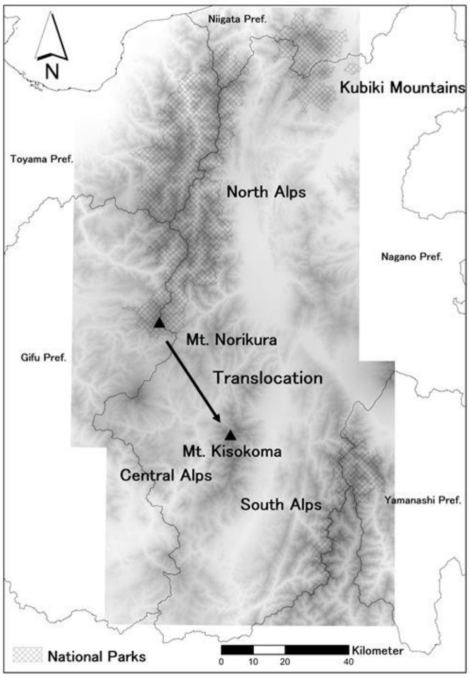

Figure 1. Mt. Norikura, the source of the translocation, and Mt. Kisokoma, the destination of the translocation.

Comparison of translocation project with Braun's protocols and IUCN Guideline
Table 1 shows the results of the comparison between the MEJ's translocation project to the Braun's protocols and IUCN guidelines.

Table 1. Comparison between the MEJ's translocation project to the Braun's protocols and IUCN guidelines.

	Translocation Project at Mt. Kisokoma, the Central Alps in Japan	Braun's Protocols (Braun et al. 2011)	IUCN Guidelines（2013）
Attributes of the individual to be released	2019：6 eggs from Mt. Norikura 2020：8 eggs from captive breeding 3 families (3 Adult females and 16 chicks from Mt. Norikura) 2021：There was no release.	"Release of younger chicks should be discouraged as mortality of chicks of most gallinaceous birds is high. Releasing mated pairs is desirable."	"The age/size, sex composition and social relationships of founders may be optimised for establishment and the population growth rate stated in the objectives,"
Timing of release	2019：6 eggs, June 8 2020：8 eggs, June 7 1 family, August 3 2 families, August 7 2021：There was no release.	The optimum time for releases is during the spring breeding period.	The life stage and season of release should be optimised with respect to the species' natural dispersal age or season, considering whether dispersal after release is to be encouraged or discouraged.
No. of individuals to release	2019：6 eggs from Mt. Norikura 2020：8 eggs from captive breeding 3 families (3 Adult females and 16 chicks from Mt. Norikura) 2021：There was no release.	A minimum of 40 wild-caught birds should be released within the first year.	Translocation success increases with the numbers of individuals released (which is often enhanced through multiple release events across more than one year), but this needs to be balanced against impacts on source populations,
Site evaluation before release	No survey was conducted prior to the implementation of the project. After egg translocation in 2019, a 2-day of vegetation survey was conducted to evaluate the suitability of the site for translocation, and a camera trap survey using four cameras was conducted to evaluate predator status.	Sites should be evaluated prior to release.	"Matching habitat suitability and availability to the needs of candidate species is central to feasibility and design. "
Monitoring	–	All birds released should be marked with bands or other inconspicuous markers, but not radios.	Monitoring the course of a translocation is an essential activity
Dissemination of information	–	Reports must be prepared and followed by peer-reviewed publications.	Collaborative efforts to develop translocation science are helped when reports are published in peer-reviewed journals (as an objective indicator of high quality), and include well-documented but unsuccessful translocations or methods as well as successful ones.

Braun's protocols noted that the release of younger chicks should be discouraged as the mortality of chicks of most gallinaceous birds is high. But in the translocation project, eggs were mainly translocated in 2019, and chicks were mainly translocated in 2020. Braun's protocols also recommended that a minimum of 40 wild-caught birds should be released within the first year and IUCN Guideline noted that translocation success increases with the number of individuals released (which is often enhanced through multiple release events across more than one year), but this needs to be balanced against impacts on source populations. But only six eggs were released in 2019, and only eight eggs and 3 adult females with 16 chicks were released in 2020. Moreover, Braun's protocols noted that sites should be evaluated prior to release and IUCN Guideline also noted that matching habitat suitability and availability to the needs of candidate species is central to feasibility and design. Although it is important to evaluate the habitat prior to translocations, MEJ did not evaluate habitat suitability and predation risk at Mt. Kisokoma where it is said that it has become extinct due to predation in the 1960s.

In this paper, I pointed out that MEJ needs rethinking of the translocation project that comply with Braun's protocols and IUCN guidelines. And I reviewed the research history of rock ptarmigan in Japan, it must be said that estimation number of population and trends are unreliable. I pointed out a number of proposals that we need to do for conserving rock ptarmigan in Japan are shown in Table 2.

Table 2. Proposals for transplantation and conservation projects of rock ptarmigan in Japan

For the translocation project of the rock ptarmigan
Rethink the project in compliance with Braun's protocols and IUCN guidelines
Reassess the habitat suitability of the translocation site, Mt. Kisokoma
Review the need for translocation to the Central Alps and conservation priorities
For the conservation project of the rock ptarmigan
Review the counting territory number method as the basis for estimation of population abundance
Adopt new methods instead of counting territory numbers to the precise estimation of population abundances and trends
Conduct a detailed resurvey to the precise estimation of population abundances and trends
Reconfirm the conservation unit
Each population may be locally adapted and should be treated carefully
The project should be implemented by Evidence-Based Conservation
Introduce citizen science for conserving rock ptarmigan
Make efforts to open information and to gain social consensus

Concluding remarks

As I have written here, it must be said that the translocation project in the Central Alps is planned and put into practice without scientific evidence and preparation with reference to Braun’s protocols and IUCN guidelines, which are standard translocation guidelines. I will continue to watch the details of the MEJ's translocation and conservation project, and keep to let you know. Please pay attention to the situation in Japan!

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The taxonomic status of Red Grouse

George Sangster, J. Martin Collinson, Guy M. Kirwan, Alan G. Knox, Barry J. McMahon, David Parkin, Manuel Schweizer and Jacob Höglund.

Abstract

The Red Grouse *Lagopus lagopus scotica* is a well-known but declining bird endemic to Britain and Ireland. Its taxonomic status was downgraded from species to subspecies in the mid-twentieth century but without any clear rationale. Here, we review the molecular evidence that has accumulated since the mid 1980s and address three issues: (i) the evolutionary distinctiveness of Red Grouse, (ii) the implications on the taxonomic status of Red Grouse from the 'intermediate', west Norwegian insular form *L. l. variegata*, and (iii) whether the Irish population (*L. l. 'hibernica'*) merits taxonomic recognition. Combining modern taxonomic approaches with recent molecular data, including genome-wide analyses, we demonstrate that there are good reasons to treat Red Grouse as a full species, and that Irish birds may be recognisable as a distinct taxon that should be managed as a separate conservation unit from Red Grouse in Britain

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FORUM

New section in Grouse News

Grouse News establishes a readers' section called FORUM where questions about grouse are discussed. The questions should be short and may address anything about grouse - across the whole spectrum from behavior and physiology to population dynamics, hunting and conservation management. General themes and questions which have been well presented in published articles in readily available journals should be avoided. Instead, FORUM should serve as a venue for discussing puzzling/unexpected field observations or strange results from field studies. For example, why do small chicks wander long, daily distances during the first few weeks after hatching? To minimize predation, optimal foraging behavior, or some other reason? Another example: In the northern boreal forest, the conspicuous capercaillie cocks often sit on and within tops of pine trees in calm winter days after snowfall? Why? Since their exposure facilitates detection by golden eagles - an important winter predator - such behavior cannot be linked to anti-predator behavior. Or selective feeding on pine needles. But since it usually occurs when in flocks, could it be coupled to social vigilance? That doesn't sound very probable either - so must be something else!

Preferably, responses to questions should not exceed 1000 words, and references to relevant articles about the particular inquiry should be minimized. The main idea with FORUM is to create an outlet for grousers to voice questions, thoughts and ideas without having to comply with time-consuming, formal requirements.

Contributors to FORUM should provide name and email address in order to facilitate further communication among interested members. In the upstarting phase, Torstein Storaas (torstein.storaas@inn.no) and Per Wegge (new email address: perwegge@gmail.com) will serve as editorial assistants for chief editor Tor K. Spidsø, TKS.Grouse@gmail.com. Contributions should be sent to Torstein Storaas and Per Wegge with copy to Tor Kr. Spidsø.

CONFERENCES

The 15th International Grouse Symposium Białystok, Poland postponed till 2023

The 15th International Grouse Symposium was first planned to be held on September 12-16, 2021 in Poland and hosted by University of Białystok (UoB). Because of the COVID-19 pandemic it was postponed till 2022. Once again the Conference Committee, in consultation with other responsible persons has decided to postpone the conference by one year to 2023. This time the reason is the Russian attack on Ukraine.

The Conference Committee remain firmly dedicated to organize the IGS as an in-person event. It will continue to monitor closely the evolving situation and keep would be participants informed with due notice allowing to prepare for the event. Hopefully next year will all safely gather together to enjoy the IGS in Poland.

For more information please visit the IGS15 webpage www.igs2022.uwb.edu.pl. For enquires please contact the members of the Local Organizing Committee of the 15th IGS: prof. Marek Konarzewski (marekk@uwb.edu.pl) and Dorota Ławreszuk (dorota.lawreszuk@bialystok.lasy.gov.pl).

34th Meeting of the Prairie Grouse Technical Council – October 3-6, 2022

On October 3-6, 2022, Montana is planning to host the 34th Conference of the Prairie Grouse Technical Council. During this 4-day conference, prairie grouse scientists and managers from across the continent will assemble in Lewistown to discuss contemporary research, management, and conservation issues of greater and lesser prairie-chickens, sharp-tailed grouse, and sage-grouse. Montana has not hosted the PGTC since 1991. Despite a 1 year COVID-related delay, the PGTC is excited to bring the conference back to the Treasure State.

Planning for the conference is ongoing, but please save the date and plan to join us in Lewistown, October 3-6, 2022. Abstract submissions for presentations will likely open Spring 2022. Please keep an eye on the website (link below) for updated information.

Conference home page: www.prairiegrousecouncil.org.

PGTC Chair and conference contact: Lance McNew, Montana State University, (406) 994-6645;. Lance.mcnew@montana.edu.

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RESEARCHERS AND THEIR BEST FRIEND ASSISTANTS

Dogs Training Biologists

Jason D. Robinson

Trigger's tail was straight up, his head held high, with his nose pointed into the wind. The crisp November air was moist and cold. The residual yellow grass swayed back and forth with the salty wind coming off of the Great Salt Lake. It carried the scent of the birds straight into his nose, sparking his instinct to freeze and hold still, reinforced through thousands of hours of training and experience. No doubt there were birds within forty meters of his nose.

Figure 1. Trigger pointing a covey of 8 Columbian sharp-tailed grouse on Antelope Island, Utah

This particular point had significance beyond the typical point Trigger has made. He was pointing Columbian sharp-tailed grouse on a 109 square kilometer island within the Great Salt Lake in Utah. The Great Salt Lake is the largest inland lake in the Western United States and is a significant stop over for migrating waterfowl and shorebirds within the Pacific Flyway. This particular island is Antelope Island, named for the pronghorn — or American antelope — that live there. Bison, mule deer, coyotes, and bighorn sheep also call the island home. When European settlers arrived to Utah in the early 1800s, they documented sharp-tailed grouse on the island and surrounding areas. However, the grouse were extirpated from the island at an unknown date in the late 1800s or early 1900s. Trigger was pointing reintroduced Columbian sharp-tailed grouse released 18 months prior. The first sharp-tailed grouse on the island in nearly 100 years.

The sharp-tailed grouse were captured in self-sustaining populations in northern Utah, transported to the island, where a VHF tracking necklace was attached. The grouse were then released within suitable habitat on Antelope Island, a Utah State Park, to reestablish the once robust population and accomplish long-term conservation goals. Utah has lost over 90% of the sharp-tailed grouse since the 1800s. Large efforts have taken place to conserve and reestablish the birds. Pointing dogs have played a vital role is this conservation and management work.

Figure 2. Re-introduced Columbian sharp-tailed grouse on Antelope Island, Utah with VHF necklace tracking collar.

Pointing dogs have been used extensively in grouse research. They have been used for grouse management as well, albeit less documented in the literature. All grouse biologists —including researchers, managers, and hunter-naturalists — can benefit from increased knowledge and experience in the field. Dogs help us with all aspects of grouse research, grouse management, and grouse hunting. Grouse research and grouse management can be represented with a Venn Diagram, each with unique aspects and goals, often with overlap in the middle. If a biologist adds in grouse hunting experience, the three can converge to create an overlap for optimal grouse understanding in today's complex and changing natural world. People that understand grouse most thoroughly have experience in all three areas, the pinnacle point of grouse understanding.

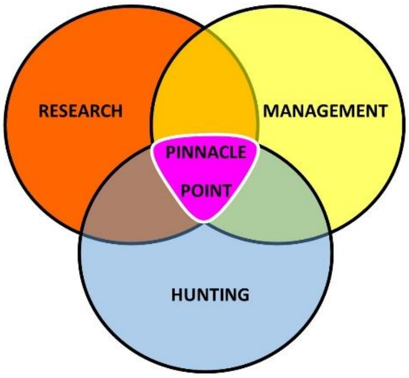

Figure 3. Venn diagram showing the intersection of Grouse Research, Management, and Hunting experience to form the "Pinnacle Point" of grouse understanding.

As a former grouse researcher and current grouse manager, I can attest with 100% certainty that hunting grouse—specifically hunting a variety of species of grouse— has made me a better biologist. Now I fully credit the work of others for any knowledge I have gleaned through their research and experiences written down in articles and books. However, no one has taught me more about grouse than my bird dogs. Trigger is the best bird dog I have ever owned, and he has taught me more about grouse than any book, article, or conversation ever could. Through the culmination of years of following Trigger, I am able to perceive the world as a grouse predator does. I can see how the thick cover hides the birds; I can see how grouse will take evasive maneuvers to keep from being discovered. I have watched my bird dogs track grouse for hundreds of meters, step by step. The dogs have shown me how to systematically search the highest probability areas within a fine scale. How vegetation and terrain can affect scent conditions, and hence the best places for grouse to be at certain times of the day. All this adds to my understanding of grouse biology.

From a grouse manager's perspective, the dogs are invaluable in detecting rare and low-density grouse. The example above of the sharp-tailed grouse is a great illustration(?). No one had seen a sharp-tailed grouse on the Island since we released them. The batteries in the VHF transmitters had stopped working, the regular lifetime of the units. Pointing dogs were able to show us that sharp-tailed grouse were still on the island, and our management activities should still be directed at their conservation.

We have since conducted grouse surveys on white-tailed ptarmigan to estimate density and a population size. We have used pointing dogs to search for unknown greater sage-grouse leks and surveys for chick production. We have used pointing dogs to survey for ruffed and dusky grouse in Utah mountains, and for locating high density areas for trap and relocation efforts, specifically capturing ruffed grouse in Utah to relocate to suitable habitats in Colorado. VHF and GPS tracking units have revolutionized grouse research and management, but technology can never replace a dog's keen sense of smell and their natural predatory instincts. We humans are visual creatures; our canine companions are olfactory predators. This relationship has worked for tens of thousands of years. I highly suspect it will continue to work for thousands more.

I have had the great fortune to hunt all ten of the huntable grouse species in North America (lesser prairie-chicken and Gunnison sage-grouse are no longer hunted). Five of these grouse species are found within Utah, my home state. These grouse include the ruffed grouse, dusky grouse, sharp-tailed grouse, white-tailed ptarmigan, and greater sage-grouse. Utah also has a small un-hunted population of Gunnison sage-grouse. My trusty companion, Trigger, has been with me on every one of these hunts. Trigger is a male white and orange American Brittany. In fact, Trigger has pointed and retrieved twenty different species of upland game birds, often called *The North American Pointing Dog Slam*. We have traveled thousands of miles in pursuit of various grouse species. We have flown to Alaska to hunt the Alaska Range for willow and rock ptarmigan, drove to the Sandhills of Nebraska in pursuit of greater prairie-chickens, hiked to the top of the Uinta Mountains (3,660 meters elevation) to hunt white-tailed ptarmigan, stumbled through the coastal forests of western Oregon in search of elusive sooty grouse, and often hunt as close as 8 kilometers from my house for the beautiful dusky grouse. Prior to each and every one of these hunts, I would find and read literature on the birds, many of the articles and books I read were written by readers of Grouse News. I read authors like Patterson, Johnsgard, Dahlgren, Gullion, Potapov, Bump, Bendell, Huggler, Williams, Zwickel, Bergerud, Connelly, Braun, Schroeder and many others. The information on behavior, spatial scales, and habitat type was invaluable for hunting these birds, many of which I had never seen prior to hunting them. As we all know, written knowledge, in the form of articles and books, can only take us so far. We must apply it on the ground.

Enlightened with this knowledge, I was able to put Trigger into the best grouse habitat I could locate, depending on the species we were hunting. Trigger's job was to find the birds within the habitat. He had an uncanny ability to seek out and find whichever species of grouse we were hunting. Each grouse has its own unique habitat that varies greatly across the various species. I quickly learned that I would rarely find grouse based on my knowledge alone. It took a trained pointing dogs' incredible nose to find the right clump of grass or shrub the grouse were hiding in. The literature does a great job of describing average habitats and variations around that mean. But as many authors know, it is impossible to fully and accurately articulate the scents you smell walking through a short grass prairie, or the gentle breeze flowing over the endless Alaskan willows. It's hard to truly understand an average of 5,000 stem density per hectare until you have fought your way through the tangled mess, and then attempted to shoot a ruffed grouse flying through it. The centuries of work of many before me, captured in their written accounts, saved me endless time gaining that knowledge. But to truly have it embed in my mind and my soul, I had to see a grouse fly out of its coverts twenty meters upwind of a pointing dog, smell the scent of the yellow pines, hear the cackle of the flushing sharp-tailed grouse, taste the dew in the early morning hours in the Douglas fir forests, and feel the tops of the bluestem grass on my fingertips. Pointing dogs make this possible for all of us.

Figure 4. The author with two sharp-tailed grouse harvested with the help of his pointing dog, Trigger.

Figure 5. Trigger retrieving a white-tailed ptarmigan at over 3,960 meters elevation.

Figure 6. Trigger retrieving a white-tailed ptarmigan at over 3,960 meters elevation.

Figure 7. Trigger about to embark on a grand adventure, an airplane ride to Alaska to hunt willow and rock ptarmigan.

Figure 8. Trigger posing with a willow ptarmigan, accomplishing the North American Pointing Dog Slam, as the author takes his photo

Figure 9. Resulting photo from the photo to left.

An aside: If you are interested in reading more about Jason's adventures with Trigger in pursuit of *The North American Pointing Dog Slam*, check out his book, titled "Trigger: A Remarkable Bird Dog." - Melissa Chelak

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SNIPPETS

Grouse on Stamps
Ladislav Paule

We continue publishing grouse stamps. Besides the Europa 2021 stamps, the Ukrainian Post issued in August 2021 a block of nice stamps with capercaillie, black grouse, hazel grouse and willow ptarmigan. Except these species chukar partridge, grey partridge, quail and pheasant are part of the block of eight stamps. The issue of nine stamps by five countries in a single year is a proof of conservation concerns aimed at grouse species in Europe. The very first stamp showing *Bonasa (Tetrastes) sewerzowi* issued in China 2021. There are still many stamps with ptarmigan, black grouse and capercaillie.

Ladislav Paule, Zvolen, Slovakia, paule@tuzvo.sk.


8R.
IRAN
C.I.C. TEHERAN - 1974


SLOVENSKO
Tetrov hlucháň / Tetrao urogallus
EUROPA
€ 1,70


1951
FINLAND
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SUOMI 7+2
TETRAO UROGALLUS


0,65 €
EESTI
ESIMENE PÄEV
29.03.2018
TALLINN
AS EESTI POST
Metsisekana


Prof. Dr. Ladislav Paule
Pražská 1456/10
SK-96001 Zvolen
Slovakia
BRATISLAVA
SLOVENSKO
€ 1,70
FDC
Tor Kristian Spidsø
Skilsøtoppen 33
N-4818 FÆRVIK
NORWAY


HELSINKI
26.10.51
HELSINGFORS
FINLAND
SUOMI 7+2
SUOMI 12+3
SUOMI 20+5
FIRST DAY COVER
SUOMEN TUBERKULOOSIN VASTUSTAMISYHDISTYS
FÖRENINGEN FÖR TUBERKULOSENS BEKÄMPANDE I FINLAND
Posttjänsteman
Herr G. Hellman
Vargentinsg. 3.
Stockholm
Sverige.

IN MEMORIAM

Richard Evan Johnson, 1936–2021

Paul Hendricks

Richard E. ("Dick") Johnson, the foremost authority on the biology of North American rosy-finches (*Leucosticte*) and a great lover of all things alpine, died in Pullman, Washington on 8 December 2021 at the age of 85 from complications associated with dementia. During the last three decades of the 20th century, persons with the depth of knowledge and experience of alpine bird ecology that Dick possessed could be counted on one hand, and he was always willing to share his thoughts and advice on the feasibility of a possible bird study that anyone might be considering in the challenging regions above tree line, for there were few alpine areas of the western U.S. he hadn't visited at least once. From Dick's perspective rosy-finches were the pinnacle of creation, but he also had tremendous affection for all alpine birds, mammals, and plants. While on faculty at Washington State University Dick successfully chaired 12 M.S. and 7 Ph.D. committees. Topics for six of his graduate students pertained to alpine birds or mammals, three of which focused on White-tailed Ptarmigan (*Lagopus leucura*).

Dick was born on November 9, 1936 in Pomona, California, the only child of George Frank Morris Johnson and Mina Baines Johnson. Dick's first camping trips were with his parents into the mountains of California at a very early age, and they had a lasting influence on his passion for mountains. He remained in Pomona through high school, where he was active in Boy Scout Troop 1 (attaining the rank of Eagle). It was at this time that Dick became an avid and life-long bird watcher, completing his Bird Study merit badge with his scoutmaster and friend Dee Dellenbach. He then attended the University of California, Berkeley (B.S. Forestry 1958), Fuller Theological Seminary, Pasadena (1959-1961), University of Montana, Missoula (M.S. Zoology 1968), and then back to Berkeley (Ph.D. Zoology 1972), with Ned K. Johnson as his committee chair. He was hired fresh from Berkeley by Washington State University (WSU) with joint appointments as Director of the Charles R. Conner Museum and Assistant Professor of Zoology, teaching ornithology, mammalogy, and an introductory course on the natural history of animals. While he was museum director the collections expanded by about 33,000 mammals and 9,000 birds. He retired in 1998 but kept his office and lab for another 20 years, and continued to help at the museum. Dick served in various capacities for the Pacific Northwest Bird and Mammal Society (later the Society for Northwest Vertebrate Biology), including as editor of *The Murrelet* (now *Northwestern Naturalist*) during 1976-1980. He was named an Elective Member of the American Ornithologists' Union in 1980.

Two western states, California, and later Montana, were central to Dick's personal development. After completing his forestry degree, and while attending seminary, Dick worked summers during 1958-1961 for the National Park Service as a seasonal ranger-naturalist in Glacier National Park. Dick was encouraged to apply there by Lloyd Parratt, a Professor of Biology at Chaffey College in Alta Loma, California, whom Dick met while in scouts, and who had been a ranger-naturalist in Glacier since 1946. Dick wrote that Lloyd was "important in my history because I may never have gotten to Glacier (or Montana), and therefore never have studied rosy-finches were it not for him!" Dick could have used the same words regarding ptarmigan. Lloyd was Dick's supervisor for his first two summers in the park and introduced him to his first White-tailed Ptarmigan. While based in the St. Mary District, Dick began serious study of the reproductive biology of rosy-finches at Logan Pass during days free from other obligations, which eventually resulted in his first scientific publication (*Auk* 82:190-205, 1965). It was also at Logan Pass where, in 1959, Dick encountered Robert S. Hoffmann, then a young zoology professor at the University of Montana, and Hoffmann's graduate student, Thomas Choate, during the initial year of Choate's classic study on habitat use and population dynamics of White-tailed Ptarmigan (*Journal of Wildlife Management* 27:684-699, 1963). When not pursuing rosy-finches, Dick helped Choate for three summers with his field work on ptarmigan.

Dick might have continued working summers or permanently for the National Park Service had he not been drafted into the U.S. Army in 1961. After training at Fort Ord, California (Company B, 9th Battle Group, 3rd Brigade), he was assigned to the Military Processing Station in Butte, Montana as a medical lab technician, in hind sight a fortuitous posting. While in the Army Dick kept in touch with Hoffmann, who arranged for him, though not a student, to borrow literature from the University of Montana library that Dick needed to publish his work on rosy-finches at Logan Pass. Hoffmann was very supportive of Dick's alpine interests and the reason Dick eventually attended the University of Montana for graduate study (1963-1966). Hoffmann remained central to Dick's academic advancement and was influential in Dick gaining admission to Berkeley to pursue a Ph.D., and later wrote a strong letter supporting Dick's application to WSU for a faculty appointment. Two sabbaticals Dick obtained while at WSU included visits to the U.S. National Museum of Natural History where Hoffmann was, by then, Director.

At Montana, Dick initially studied the alpine bird community of the Little Belt Mountains (*Wilson Bulletin* 78:225-227, 1966), then settled on an investigation of temperature regulation in White-tailed Ptarmigan under the guidance of James R. Templeton while Hoffmann was absent on a lengthy trip to the Soviet Union. This study resulted in Dick's fourth scientific publication (*Comparative Biochemistry and Physiology* 24:1003-1014, 1968) as well as an ancillary note on the relationship of heart size and altitude in ptarmigan (*Condor* 70:185, 1968).

Dick's ruling passion for his adult life was rosy-finches. Fittingly, his last scientific publication (*Western Birds* 49:82-85, 2018), as well as his first, pertained to the breeding biology of rosy-finches. His 1972 dissertation "The biosystematics of the avian genus *Leucosticte*" was a hefty 536 pages, and remains a seminal work on the North American forms, only portions of which were published (*Auk* 92:586-589, 1975; *Condor* 79:76-86, 1977; *Condor* 85:447-452, 1983). Dick examined every rosy-finch specimen housed in U.S. museums at the time, and combined his morphological and colorimetric analyses of specimens with field work across much of their ranges, addressing almost every aspect of rosy-finch life history, from breeding behavior and diet to habitat use and winter movements. Dick intended to write several more papers on rosy-finches but other projects and distractions hindered that from happening. Fortunately, he was able to include unpublished material in the three rosy-finch species accounts he authored or co-authored during 2000-2002 for *The Birds of North America* series.

Dick returned to study of White-tailed Ptarmigan through the activities of three of his graduate students: Steve Catton (M.S. 1982), Jennifer Clarke (Ph.D. 1989), and David Benson (Ph.D. 1999). Catton studied the reproductive success of an introduced population in the Sierra Nevada, California, originating in the early 1970s from Colorado transplants. Catton's unpublished work was incorporated into Clarke's more thorough study on the biogeography, reproductive success, and foraging behavior of the same population. Clarke examined the barriers to dispersal that prevented ptarmigan from colonizing the Sierra Nevada, the factors affecting reproductive success and recruitment in the Sierra Nevada, and differences in their foraging behavior between the Sierra Nevada and the Colorado Rockies. Clarke's work resulted in three publications of which Dick was coauthor (*Journal of Biogeography* 17:640-656, 1990; *Condor* 94:622-627, 1992; *Arctic, Antarctic, and Alpine Research* 37:171-176, 2005). Benson studied the causes and consequences of the evolution of monogamy in White-tailed Ptarmigan, encouraged to do so at Logan Pass in Glacier National Park by Dick, and where Benson followed Dick's passion as a seasonal ranger-naturalist, now for more than 20 years. Benson's ptarmigan work resulted in a paper on the incidence of extra-pair paternity (*Condor* 104:192-197, 2002) and a later publication on changes in numbers, habitat use, and distribution at Logan Pass as related to climate change during a 13-year period (*Gyrfalcons and ptarmigan in a changing world, Volume 1* [pp. 237-246]. The Peregrine Fund, Boise, Idaho, USA. 2011).

Dick was happiest when in the field having fun (as he liked to say) and living in his 1982 Ford Pickup with custom camper. He especially enjoyed the freedom and independence to go where he wanted when he wanted. He found a life's worth of interesting things in the continental U.S. West, and rarely ranged beyond the region. He maintained a strong interest in Great Basin montane biogeography, where ptarmigan don't occur. With his former fiancée he published alpine floras of two Great Basin ranges, and while gathering additional data in 1987 on alpine plants of the Snake Range, Nevada he became involved with the resource planning process for management of the newly established Great Basin National Park, after the superintendent and park service study team discovered that he was a "scientist." By that time, he'd spent the better part of two years defending the Conner Museum from WSU bureaucrats threatening budget reductions, loss of space, or outright dissolution, all of which was extremely discouraging and reflected in a lengthy letter he wrote from the park. "I made some suggestions and people really listened! (Never seems to happen at WSU) . . . Wonder if they'd like a museum?! Wonder if they'd like an employee!!" Also revealing a few years prior to Dick's retirement, he commented on a biography of his park service hero, alpine botanist Carl Sharsmith, that "In some ways he lived the life I'd have liked to have lived."

Dick was a great talker and story-teller. When entering Dick's office you needed a defined departure time, otherwise a meeting needing a yes or no answer could go on for hours. But when someone wanted to talk about anything, and was willing to put in the time, the conversation could lead to insights into what made Dick tick. During one marathon session, Dick was discussing where alpine begins in the Great Basin, since many of its mountain ranges lack a tree line and he needed to generate a definition when describing their alpine floras. Finally, in frustration, Dick blurted "Alpine is where I feel good!"

Dick exuded enthusiasm and vigor. He delighted in leading ornithology class field trips and seeing the reaction of students during a lab practical when they had to identify muscles and bones on pieces of Kentucky Fried Chicken (KFC box, napkins, and mashed potatoes included at the station). He loved mountaineering, climbed hundreds of summits, and pioneered a new route up Clements Mountain at Logan Pass in 1965, described in J. Gordon Edwards' *A Climber's Guide to Glacier National Park* (1984). He routinely took stairs two at a time, even when in his early 80s, and students who were decades younger often found it challenging to keep up as he pursued something across a landscape. Dick also practiced speed skating with members of the 1964 U.S. Olympic team while stationed at Butte. He was deeply religious, and he loved talking with friends, endlessly.

Special thanks to Kelly Cassidy, Rich Scott, Kaitlin Watson, Dave Manuwal, Chris Norment, and Dave Benson, who helped flesh out Dick's life, tended to his needs, or shared stories, too many to tell here.

Dick Johnson in front of his 1982 Ford pickup in Pullman, Washington, 2019 (photo courtesy of Rich Scott)

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