Alaska Department of Fish and Game
Division of Wildlife Conservation

Kenai Peninsula Ruffed Grouse Transplant 1995-1997

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FINAL REPORT

KENAI PENINSULA RUFFED GROUSE TRANSPLANT
1995–1997

Nicholas C. Steen

Alaska Waterfowl Association
The Ruffed Grouse Society
Safari Club International

SUMMARY

A project to introduce ruffed grouse (*Bonasa umbellus*) onto the Kenai Peninsula began in 1995 and was completed in 1997. We live captured 243 grouse north of the Alaska Range using lily pad traps. It took 721 trap days for an average of 3.0 trap days per bird. Of these, 232 grouse were translocated and released at 1 of 3 sites on the northern portion of the Kenai Peninsula.

Thirteen birds released in 1995 and 17 birds released in 1996 were fitted with radio transmitters for information on movements, mortality and reproduction. Grouse were radio tracked until August 1997. Mortality rates of radiocollared birds were high. Of the 13 birds released in 1995, only 1 survived to May of 1996. Of the 17 birds radiocollared in 1996, only 2 survived past May of 1997. Dispersal varied between release sites, but movements of 3-5 miles were not unusual. Two radiocollared birds moved 12 miles before 1 returned to the release site.

The high mortality rate limited the opportunity to locate nesting females. Only 2 nests were located, 1 with 11 eggs and 1 with at least 10 eggs. The nest with 10 eggs had been scavenged, and a mammalian predator had killed the female. Based on this very small sample, the mean clutch size is 10.5.

Although drumming male ruffed grouse have been heard at all 3 release sites, only 7 broods have been reported. All but 1 of these was observed near the primary release site east of Sterling.

Despite the high mortality rate of the radiocollared ruffed grouse, birds are being observed at all 3 sites. Grouse have dispersed into available habitat, located suitable forage and successfully reproduced. Monitoring to determine the success of the Kenai Peninsula ruffed grouse introduction is ongoing.

CONTENTS

BACKGROUND

In 1988 the Alaska Department of Fish and Game initiated a 3-year project to transplant ruffed grouse from the interior of Alaska to the Matanuska/Susitna Valleys. As a result, ruffed grouse are now using suitable habitat throughout Subunits 14A, 14B, 14C, 16A and portions of 16B.

In response to the success of the transplant, sportsmen on the Kenai Peninsula and in Anchorage encouraged the Department to transplant birds to the Kenai Peninsula. Consideration of this transplant was delayed pending review and rewrite of the Department policy on transplanting wildlife.

In October 1994, the Division of Wildlife Conservation adopted a new transplant policy. This policy established a series of steps that must be taken prior to obtaining authorization to transplant wildlife within Alaska. Upon adoption of that policy a scoping report, the first step in the process, was submitted for the introduction of ruffed grouse from north of the Alaska Range to the Kenai Peninsula. This report was approved in October of 1994.

In February 1995, a feasibility report (step two) was prepared exploring all aspects of the proposed transplant, and the Director of Wildlife Conservation appointed a feasibility review committee (step three). Following several public meetings, review of written comments, and a detailed analysis of the feasibility report, the committee approved the report and forwarded its recommendation to the Director. The Director approved the report (step four) in June 1995. The report and Director's recommendation were forwarded to the Commissioner, whose approval (step five) for the transplant was made in July 1995.

Most of the land on the northwest portion of the Kenai Peninsula is within the Kenai National Wildlife Refuge. The refuge encompasses the majority of the deciduous forest that has the greatest potential as ruffed grouse habitat. US Fish and Wildlife Service policy prevents the translocation of species onto a refuge not known to previously occur in the area, so the Kenai

refuge staff officially opposed releasing ruffed grouse on the refuge. However, they did not oppose the release of birds on state or private lands.

GOAL AND OBJECTIVES

MANAGEMENT GOAL

Establish a huntable population of ruffed grouse on the Kenai Peninsula (Game Management Units 7 and 15).

MANAGEMENT OBJECTIVES

Evaluate potential release sites and determine those most suitable for the introduction of ruffed grouse.

Capture and release a minimum of 100 ruffed grouse over a 3-year period.

Minimize stress and mortality to relocated birds by utilizing efficient capture and handling techniques developed during the Matanuska Valley transplant (Steen 1995).

Monitor translocated grouse and determine survival, dispersal and reproductive success.

STUDY AREA

CAPTURE SITE

The primary capture site was adjacent to the Parks Highway between mileposts 275 and 284, approximately 50 miles south of Fairbanks, Alaska. This area is on the north slope of the Alaska Range, drained by the Nenana River, and 525 to 700 feet in elevation. A portion of the area is on Clear Air Force Site.

The primary capture site has a mosaic of variously aged trees and shrubs. The predominate species is quaking aspen (*Populus tremuloides*), 4 inches to 6 inches in diameter at breast height (DBH). The secondary deciduous forest type is paper birch (*Betula papyrifera*) with scattered balsam popular (*Populas balsamifera*). Interspersed within the deciduous forest is white spruce (*Picea glauca*) of various ages. The understory supported alder (*Alnus spp*.), highbush cranberry (*Viburnum edule*), labrador-tea (*Ledum spp*.) and wild rose (*Rosa acicularis*). Ground cover includes lowbush cranberry (*Vaccinium vitis-idaea*), crowberry (*Empetrum nigrum*) and a variety of small herbaceous plants, mosses and lichens.

RELEASE SITE

The Kenai Peninsula encompasses approximately 5.3 million acres. Of this total approximately 1.9 million acres are forested and includes 558,000 acres with coniferous growth, 163,000 acres with deciduous growth, and the remaining 1.2 million acres are non-stocked or unclassified (van Hess and Larson 1991). Non-stocked forests contain few or small trees with no commercial

value. Unclassified forests are those areas not ground truthed to determine vegetative cover; however, some are covered by shrub materials such as alder or willow (W. van Hess, pers. commun.). Deciduous forests on the Kenai Peninsula consist of 94.5% birch, 3.7% aspen, and 1.8% cottonwood, all species utilized by ruffed grouse. The non-stocked and unclassified forests supporting shrub cover may also provide ruffed grouse habitat. Of the 163,000 acres of deciduous forests on the Kenai Peninsula, approximately 88,000 acres occur on federal land and 75,000 acres are on state or private lands (van Hess and Larson 1991).

In July 1995, Dan Dessecker, habitat biologist for the Ruffed Grouse Society, accompanied representatives from the Division of Wildlife Conservation to the Kenai Peninsula to assist in evaluating release sites. Three sites supporting dense deciduous growth, distant from population centers, away from the major highways, and on non-federal lands were identified. The first site is located along Atkins Road in the northeastern corner of the Sterling Corridor in Subunit 15A and is considered the primary release site. The second is in Unit 7 along Quartz Creek north of the community of Sunrise. The third site is in Captain Cook State Park on the western edge of Subunit 15A.

METHODS

TRAPPING

Lily pad traps, as described by Backs et al. (1985) with modifications, were employed in the capture effort. The trap site consists of a circular trap 3 feet in diameter, constructed of 2x4 inch welded wire with a lid of similar material. A one-way funnel of 1 inch mesh poultry netting (chicken wire) allowed access to the trap but did not permit the birds to escape. Birds were directed to the trap by a 50 foot fence of 1 inch mesh poultry netting, 18 inches high. A trap was placed on each end of this fence. At most sites, 2 sets of traps and fencing were installed back-to-back to form a barrier of approximately 115 feet.

In 1995, 3 trapping locations were utilized for this capture effort: Gold Creek, 35 miles northwest of Fairbanks; Nenana ridge, approximately 40 miles south of Fairbanks; and Clear Air Force Site, approximately 80 miles south of Fairbanks. In 1996 and 1997, all trapping was done in the vicinity of Clear Air Force Site.

Trapping was done in September, the time of dispersal for ruffed grouse broods (Steen 1995). The random wanderings of young birds in their search for vacant habitat bring them into contact with the traps. Traps were checked twice daily, mid-morning and just after dark. Frequent checking reduces exposure to predators and to injuries from attempted escapes.

HANDLING

Upon removal from the trap, birds were sexed and aged using rump spots and the shape of outer primary wing feathers (Brewer 1980). All birds were weighed and fitted with sequentially numbered leg bands. During 1995 and 1996, 30 radio transmitters were placed on adult or large juvenile, primarily female grouse.

After processing, 2 birds were placed in a cardboard shipping container (Trico Porta Pet) consisting of 9x18 inch carpet-floored box fitted with a divider allowing each bird a 9 square inch area. While in the shipping container, the birds received unlimited quantities of muskmelon or honeydew melon for nourishment and liquid. Birds were moved from the capture location to the release site every third day.

RADIOCOLLARING

The radios used in this program were manufactured by Holohill Systems, Ltd., Woodlawn, Ontario. They weighed 10-11grams and were circular in shape with a round elastic band for attachment. All radios had a 10-month battery life and were equipped with a mortality mode.

Tracking flights were conducted using a Piper PA-18, Super Cub aircraft with H-element antennas mounted on each wing strut. All locations were recorded on a 1:250,000-scale map. When a transmitter was detected on mortality mode, we attempted to locate the site from the ground and determine the cause of death.

RESULTS AND DISCUSSIONS

CAPTURE AND HANDLING

During the 3-year project we captured 243 ruffed grouse, including 42 adult males, 37 adult females, 78 immature males, 84 immature females, and 2 that escaped before being sexed and aged. We successfully moved 232 of those birds to preselected release sites on the Kenai Peninsula. An additional 3 birds were killed in the traps by predators.

All birds were captured using lily pad traps and drift fences. Trapping effort totaled 721 trap days. This translates to a trapping success of 3.0 trap days per bird. This trap rate is much higher than the 9.2 trap days per bird reported for the Matanuska transplant (Steen 1995), the 16.1 trap day per bird reported by Backs et al. (1985), and the 33 trap days per bird reported by Wentworth et al. (1986).

CAPTURE MORTALITY

September of 1995 set record high temperatures, with daytime temperatures in the low to mid-seventies. Two birds were found dead in 1 trap with no sign of predation. It is believed they died of trap related stress aggravated by the warm temperatures. Two additional birds were removed from 1 trap panting and died within 1 hour. Three of these birds were immature; the fourth was an adult male.

In 1996, 1 immature male bird died enroute to the Kenai Peninsula. This bird had sustained an injury to his neck. This is not believed to have been serious enough to cause mortality, but no necropsy was performed. A second bird, also an immature male, died in the holding box prior to shipment. This bird weighed only 370 grams, the smallest bird captured, and was lethargic with a protruding breastbone. This bird was obviously ill at the time of capture but no necropsy was

conducted. The 1996 trapping season was characterized by below normal temperatures and almost continuous rainfall. Despite modifications to the capture techniques, numerous birds exhibited skin damage, either cuts or abrasions, to the head, neck or wing roots. I believe the wet feathers did not provide the cushioning needed to protect the skin during the birds repeated attempts to escape.

In 1997 no birds were lost to capture or handling techniques.

The mortality rate of 2.5% is slightly higher than the 2.1% experienced during the Matanuska Valley transplanted (Steen 1995) but substantially lower than the 12% rate reported in Indiana (Backs et al. 1985). The lower mortality rate is attributed to several modifications in the capture and handling techniques developed in Indiana. The isolation of birds in compartmentalized shipping containers reduced competition among birds and reduced holding-related injuries. Feeding the birds melon afforded them a high water and sugar diet, reducing stress-related problems. Substituting 2 inch welded wire for poultry netting recommended by Backs et al. (1985) on trap tops eliminated injuries.

POSTRELEASE MORTALITY

Thirty birds were fitted with radio collars (13 in 1995 and 17 in 1996) to gain survival, reproduction and dispersal information. Only limited information was obtained due to the very high mortality experienced by the collared birds.

Of the 13 birds collared in 1995, only 1 adult male is known to have survived beyond May 1996. Two birds were killed by avian predators, 2 by cars, 1 by a hunter, 1 by a mammalian predator, 3 shed their collars, 2 birds died of unknown causes, and 1 radio malfunctioned.

Seventeen birds were radiocollared in 1996 with results similar to 1995. Only two birds (1 male and 1 female) survived past May 1997. Three birds were killed by avian predators, 1 by a mammalian predator, 2 shed their collars, 3 birds died of unknown causes, while the signals were lost on the remaining birds.

MOVEMENT

In 1995 most birds remained near the release site until their deaths or the radio signal was lost. Six birds remained within 2 miles of the release site, 3 moved 3-5 miles, and 3 moved 5-7 miles. The signal on the remaining bird was lost shortly after release.

In 1996, 15 of the birds remained within 1-5 miles of the release site. Two birds traveled approximately 12 miles east of the site where 1 was killed. The second bird returned to within 1 mile of the release site and is the only radiocollared bird to survive beyond 15 August 1997.

These movements are similar to those reported for grouse releases in Missouri (9 miles), Tennessee (2.5 miles), and Illinois (1.5 miles) (Kurzejeski and Root 1989). However, they differ

from movements observed in the Matanuska Valley release where 30% of the birds moved in excess of 5 miles, with 1 traveling 23 miles (Steen 1995).

NUTRITIONAL STATUS

A bird killed by a hunter in December 1995 was the only bird recovered for examination. It was well fleshed and contained large subcutaneous fat reserves.

PRODUCTIVITY

One female released in 1996 was located on 31 May 1997 on a nest of 11 eggs, within 1 mile of the release site. By 1 August 1997 she had been killed by a mammalian predator, believed to have been a lynx, and the status of her brood is unknown. A mammalian predator also killed another female while she was attending a nest of at least 10 eggs. The remains of those eggs were scattered around the nest site and had been scavenged by avian predators.

The mean clutch size of 10.5 eggs (range 10-11) is very similar to the mean of 11-12 eggs reported in studies done in the Midwest (Rusch 1989). However, it is lower than the mean of 14.3 eggs observed in the Matanuska Valley transplant (Steen 1995).

REPRODUCTION

Only 7 reports have been received of ruffed grouse brood sightings. Six of these were associated with the Atkins Road release site, with 2 being near the site. One sighting was reported at Lily Lake, approximately 9 miles NW of the Atkins Road site. The remaining 3 broods were observed along Skilak Loop Road 10-12 miles south of the Atkins Road site. The brood of the radiocollared female killed in August 1997 was the only brood reported in the vicinity of the 1996 Captain Cook State Park release site.

CONCLUSION AND RECOMMENDATIONS

Our trapping success of 3.0 trap days per bird is very high when compared to other projects (Banks et al. 1985, Wentworth et al. 1986, and Steen 1995). Part of this success is attributed to prior experience using similar methods, prior knowledge of the capture area, and timing of captures with the increasing phase of the ruffed grouse's natural cycle in interior Alaska.

Capture mortality was kept to a minimum (2.5%) by modifying the capture and handling techniques described by Backs et al. (1985). The use of confining cardboard shipping boxes for long term holding reduced attempted escapes and injuries from other birds. Melon wedges provided a high water and sugar diet, reducing problems of dehydration and stress. Using welded wire for trap covering reduced physical damage to the birds such as scalping and cuts, providing a healthier, less stressed bird for release.

The continuous rains encountered in 1996 soaked the birds, reducing the cushioning effect of their feathers; thus more injuries were experienced. A waterproof covering should be used on all traps during wet weather in any future capture efforts.

Radiocollared birds provide an opportunity to obtain valuable movement, mortality and reproduction information. The additional weight of radios can effect the survival of that bird (Steen 1996). In areas of known high predation, radiocollared birds are killed at such a rapid rate that little data are obtained. Unless that data is critical to the transplant, radios should be used only if other methods of data gathering are not available.

In the absence of radiocollared bird program, an alternate means of monitoring survival needs to be developed. This program could include drumming counts, flushing counts in specific habitat, flushing counts with the use of trained bird dogs, and a banding project with incentives for band return.

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