

GROUSE NEWS



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



Galliformes Specialist Group

Issue 48

November 2014

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From the Editor

First of all we would like to say thanks a lot to all of you that have contributed to this and earlier issues. Without you we could not have kept Grouse News going. It is, however, a struggle getting enough contributions each time. Often we have many promises, but for different reasons many do not send what they were expected to do. Sometimes this is a little frustrating. So people, get on writing. We need additional content to include in Grouse News. You do not need to have much data, but maybe you have an idea you want to discuss with colleagues. Also short notes about your work and other things of interest to grouse people should be sent to Grouse News.

In this issue you will find information concerning conservation of Gunnison sage grouse in US and hazel grouse in Europe. In research reports there are two papers on Caucasian black grouse and observing dust baths with camera traps to gather data on breeding success of endangered grouse populations. A reprint of a thesis dealing with differences in behavior between populations of captive blue grouse is found and also information about greater prairie-chicken research in the Sandhills of Nebraska. Two new books are mentioned in this issue. From Finland it is reported on the background for decisions on grouse hunting bags. Also a paper dealing with bioacoustics and long term monitoring of hazel grouse is found. As usual Don Wolfe has made a great job putting together the long list of recent grouse literature.

The 7th International Black Grouse Conference was in Russia organized by Institute of Biology, Komi Science Centre, Urals Branch, Russian Academy of Sciences, and Pechoro-Ilychskiy State Nature Biosphere Reserve. In 2015 the next international grouse symposium will be arranged. The 13th International Grouse Symposium will be held in Reykjavik, Iceland on 4-7 September 2015 hosted by the Icelandic Institute of Natural History and Olafur Nielsen as a key person. Also the 31st meeting of the Prairie Grouse Technical Council will be held September 22-24, 2015 in Nevada, Missouri.

Tor Kristian Spidsø, Editor Grouse News

Skilsøtøppen 33, N-4818 Færvik, Norway, TKS.Grouse@gmail.com

Don Wolfe, Co-editor North America

G. M. Sutton Avian Research Center, University of Oklahoma, P.O. Box 2007, Bartlesville, OK 74005, dwolfe@ou.edu



From the Chair

How can the Galliformes Specialist Group (GSG) and its Grouse Group (GG), support researchers in communicating their conservation activities? Here is an example:

In a contribution below (page 7) Siegi Klaus reports about the situation of the hazel grouse *Tetrastes bonasia* in the Šumava Mountains in the Czech Republic. Siegi has been working in the Bohemian Forest (Šumava) for decades and knows the situation well. Since 1972, he has annually surveyed hazel grouse densities along transect routes in a 100 km² study area. Over the years, many of his colleagues have visited the area and joined Siegi's work.

The Bohemian Forest is the second-largest distribution range of hazel grouse in Central Europe. Siegi's monitoring data suggest that the Šumava population has long been stable with a total population size of about 2000 pairs. From 2011, Siegi's data indicate a pronounced population decline. Changes in human land use, including tourism and hunting management, but primarily forestry, are deteriorating hazel grouse habitats. Siegi felt that state authorities were little aware of the situation. Together with other European hazel grouse researchers, he drafted a letter for the Chairs of the GSG to send on behalf of the GSG to the Czech administrators in charge. The letter explained that the hazel grouse as a unique umbrella species for Šumava is declining, primarily due to the dramatic increase of forestry pressure since 2011. It further showed that this negative impact could be stopped with relatively simple and inexpensive management rules. A letter from an IUCN Specialist Group will have more "weight" than a letter from an individual researcher. Of course we must use the GSG letterhead rarely and wisely. But in cases of more than local concern, such as the decline of hazel grouse in the Bohemian Forest, we should raise our voice more often in order to increase awareness about conservation issues among administrators and decision makers.

In our roles as Co-Chairs of the GSG, Peter Garson and I are happy to support conservation activities in favour of grouse and other Galliformes, provided the concern is shared by an international group of colleagues, and the underlying data or other knowledge base is sufficiently robust. After all, the GSG is a network of specialists, who are primarily scientists, and not advocates. If you feel a letter from the GSG may help your case, feel free to discuss it with me.

Ilse Storch, Chair, Grouse Group within the IUCN-SSC Galliformes SG (GSG), Co-Chair, IUCN-SSC Galliformes SG.

Wildlife Ecology and Management, University of Freiburg, D-79085 Freiburg, Germany, ilse.storch@wildlife.uni-freiburg.de.



CONSERVATION NEWS

U.S. Fish and Wildlife Service Protects Gunnison Sage-Grouse as Threatened Under Endangered Species Act

12 November 2014 - The U.S. Fish and Wildlife Service (Service) has determined that the Gunnison sage-grouse, a ground-dwelling bird found only in southwestern Colorado and southeastern Utah, requires the protection of the Endangered Species Act (ESA) as a threatened species.

The Service originally proposed to list the species as 'endangered' under the ESA in January 2013, but efforts by the two states, tribes, local communities, private landowners and other stakeholders to conserve the species and its habitat have helped reduce the threats to the bird sufficiently to give it the more flexibly protected status of 'threatened.' The Service's efforts to work with plaintiffs to extend the court settlement deadline to allow more time for development of conservation commitments by counties and states were unsuccessful, and therefore the agency must proceed with this listing and critical habitat designation today.

Today's listing decision will have no impact upon many of the area's agricultural landowners. Those who previously entered into agreements known as 'Candidate Conservation Agreements with Assurances' need only to continue to abide by those agreements in order to fully comply with the ESA. Other landowners who participate in the U.S. Department of Agriculture's Natural Resources Conservation Service programs including the 'Sage-Grouse Initiative,' 'Working Lands for Wildlife' and the 'Conservation Reserve Program,' can continue to implement the practices covered by those programs with the knowledge that they will be consistent with the ESA.

In addition, because the Service has determined that the species is 'threatened,' instead of 'endangered' the ESA provides the Service the flexibility to tailor the conservation measures needed to protect the species through a special 4(d) rule, which it intends to propose in early 2015 to allow still other ranchers, farmers and other landowners who commit to Gunnison sage-grouse conservation to continue to manage their lands without additional restrictions.

"USDA's partnerships with farmers and ranchers in voluntary efforts such as the 'Sage Grouse Initiative' and the 'Conservation Reserve Program' are helping to support both sound wildlife habitat management and agricultural production," said Jason Weller, Natural Resources Conservation Service Chief. "By harnessing innovative approaches included in today's announcement, USDA is committed to working with producers to voluntarily plan and deliver conservation activities that will help them be productive and give them certainty that they are in compliance with the ESA."

"While many people hoped that the extraordinary conservation efforts by our partners in Colorado and Utah would resolve all the threats faced by the Gunnison sage-grouse, the best available science indicates that the species still requires the Act's protection," said Service Director Dan Ashe. "This is a work in progress, however, and we will continue to join our partners in protecting and restoring the rangelands with the hope that, in the near future, the Gunnison sage-grouse will no longer need additional protection." [Click here to read the rest of this story. »](#)

To build on recent work between the state, counties, and other stakeholders, the Service and the Governor of Colorado will convene stakeholders within the next few weeks, to discuss the upcoming 4(d) rule and steps to expeditiously return full management authority to the states of Colorado and Utah through delisting.

"We applaud the combined efforts of our many agency and local partners, as well as private landowners across the species' range, for tackling the significant challenges faced by the Gunnison sage-grouse," added Ashe. "Colorado Parks and Wildlife and Gunnison County in particular are to be commended for their many years of diligent, effective work to conserve habitat through easements and conservation agreements with landowners. Their work has made a difference that will allow more flexibility in managing this species under the ESA."

Noreen Walsh, Regional Director of the Service's Mountain-Prairie Region, said that the Service will take steps to minimize the impact of the threatened designation on activities that do not harm the species or contribute to its overall conservation.

"Our goal is to make sure we use of all the tools in our tool kit as we work with partners toward the recovery of this bird and the long-term conservation of its habitat," Walsh said. "We want to build upon the great work of Gunnison County and more recently Montrose, Dolores and San Miguel, to continue to foster growth of these populations in a way that recognizes the protections already in place. We hope to continue to work with our partners to recover this unique species and return it to exclusive state management as quickly as possible."



The Service will propose a 4(d) rule, which would tailor restrictions to only those that are necessary for the conservation of the species. Such a rule may exempt from ESA restrictions a number of ongoing activities, including properly managed livestock and ranching activities; routine agricultural practices on existing row crops, hay fields, and pastures; habitat improvement or protection projects conducted under the federal 'Sage-Grouse Initiative' or 'Conservation Reserve Program'; and limited expansion of existing agricultural, residential and commercial facilities. This proposed rule, if adopted, would be finalized in 2015.

By limiting ESA restrictions to only those that are necessary for the recovery of the sage-grouse, the Service would endeavor to promote land uses that are more favorable to the bird, such as ranching, and encourage continued participation in the USDA's 'Sage-Grouse Initiative' and 'Conservation Reserve Program.'

In making the listing determination, the Service found that, thanks to conservation efforts led by Gunnison County and Colorado Parks and Wildlife, the Gunnison Basin population, which includes about 80 percent of the remaining birds, currently appears stable. However, six smaller, isolated satellite populations, stretching from the edge of the San Luis Valley in southern Colorado to the edge of southeastern Utah, are much less robust, with populations as small as 16 birds and as large as 200. If anything happened to the core population, healthy satellite populations would be essential to enable the species to rebound.

"The health of sage-grouse in and around the Gunnison Basin is a key indicator of the health of sagebrush habitat, which also supports activities such as ranching and big-game hunting which are central to the western way of life in the area," Walsh added. "Efforts focused on recovery of sage-grouse populations will reap long-term benefits for rangelands and the economy of the region."

Concurrent with publication of the final rule, the Service is designating 1.4 million acres of critical habitat as necessary for the species' recovery and survival, including the satellite populations. The critical habitat designation only affects actions of federal agencies and it does not establish a refuge, restrict access to private land, or affect private activities on private lands.

The final critical habitat designation has been reduced by approximately 275,000 acres below the proposed designation, reflecting exclusion of properties with existing sage-grouse conservation plans or conservation easements, and refinement of some boundaries based on updated maps. In addition, the proposed Poncha Pass unit was removed from the final critical habitat designation because this landscape has demonstrated over time that it is not capable of supporting a self-sustaining population of Gunnison sage-grouse.

Once numerous in sagebrush and nearby meadow and streamside habitats in southwestern Colorado and southeastern Utah, Gunnison sage-grouse have declined to approximately 5,000 breeding birds occupying between seven and 12 percent of their historical range.

The Gunnison sage-grouse is a distinct species from the greater sage-grouse, a larger bird which exists across a much broader range throughout the West and, in some places, faces different threats. The decision on the Gunnison sage-grouse in no way predetermines a decision on the greater sage-grouse, which the Service is independently evaluating.

First recognized as a species in 2000, the Gunnison sage-grouse is about two-thirds the size of the greater sage-grouse. It exhibits distinct plumage and behavioral characteristics and has a much smaller population and smaller, more fragmented range than its cousin.

In September 2010, the Service determined that listing the Gunnison sage-grouse under ESA was warranted but precluded by higher priorities.

In January 2013, the Service proposed to list the Gunnison sage-grouse as endangered, due to a variety of threats including habitat loss, degradation and fragmentation associated with residential and human development across its range and, in particular, in the Gunnison Basin. Using new information received during the public comment period and the peer-review process, the Service reevaluated residential development and found it to be currently a lower-level threat to the Gunnison Basin population than previous analysis indicated.

The Service's final listing and critical habitat rules, and additional information about the Gunnison sage-grouse are available [here](#).



Situation of the hazel grouse *Tetrastes bonasia* in the National Park Šumava and in the Šumava Landscape Reserve – activities of the Galliformes Specialist Group of IUCN

Siegfried Klaus.

The chairs of the GSG, Ilse Storch and Peter Garson, sent a letter to the administration of the Šumava National Park (CZ) based on the results of long-term monitoring of hazel grouse in the area. Several European hazel grouse specialists visiting hazel grouse habitats of Šumava before were contacted and agreed to this conservation activity. The main points of the letter are summarized here.

Except for the Alps, the Bohemian Forest is the largest area occupied by hazel grouse *Tetrastes bonasia* in central Europe. We estimate that the population size was > 2000 pairs in 1993. From 1972 - 2014 I monitored hazel grouse densities yearly along fixed routes in a 100 km² study area around Kasperske Hory (Reijstejn, Horská Kvilda). The study area covers different forest types at different altitudes (600 m a.s.l. Vydra- 1253 m Antigl/Sokol).

The results were presented at conferences in the Czech Republic and published in Czech and international journals. Since the establishment of the National Park Šumava, the monitoring work has been continued in close contact with the national park staff and the Czech Academy of Sciences (Dr. Ludek Bufka, Dr. Jaroslav Cerveny). The results of a diploma thesis (Sewitz 1997), including a Czech summary, with recommendations for habitat improvement for hazel grouse in the managed part of the reserves was delivered to the administration of the national park and to the Czech forest administration at Kasperske Hory.

After many years of stability, the population began a pronounced and sustained population decline in 2011. Our research has shown that the decline is the result of habitat change caused by forestry practices.

Main problems

1. Increasing clear cutting in larger scale > 3 ha, use of heavy machines (harvester, forwarder) resulting in soil destruction, direct destruction of forest habitats, often in close vicinity to 1st zone or even inside 1st zone.
2. Elimination of pioneer trees, the crucial winter food of hazel grouse, (*Betula*, *Salix*, *Populus*, *Alnus*, *Corylus*, *Sorbus*) in spruce stands, resulting in spruce monocultures.
3. Densities of red deer that are so high that their browsing inhibits deciduous tree rejuvenation and damages ground vegetation.
4. Increased tourism (hiking, biking, motor vehicles) in very sensitive parts of the reserves.

Conclusion

Hazel grouse as a unique umbrella species for Šumava is declining, primarily due to the dramatic increase of forestry pressure since 2011. This negative impact could be stopped with relatively simple and inexpensive management rules.



Hazel grouse – an umbrella species of the Šumava national park - female dust bathing (photo. S. Klaus, Šumava/Bohemian Forest).

Recommendations for management activities outside 1st zone

Preserve 10% of the pioneer trees (the most valuable are birch, willow and rowan) in all spruce stands. This is possible without any economic loss. This favours not only biodiversity but enhances stability of forest ecosystems during climate change. Increase the mixture with beech in all the mountain forests and deduce red deer densities all over the reserves.

Without any question, this is not a short-term process. Anyway all activities in this direction will not only favour hazel grouse, but enhance biodiversity and forest stability in all the presently managed forest parts of the Šumava reserves. They are in accord with the demands of IUCN for improving the protecting the status of National Park Šumava.



If the administration of the Šumava national park and Šumava landscape reserve is interested in more specific input from us to help improve the status of the hazel grouse, GSG members are more than willing to offer expertises to help.

Acknowledgements

I am grateful to GSG members Marc Montadert, Wolfgang Scherzinger, Ralf Siano and Jon Swenson for cooperation and helpful contributions to this conservation activity. Since 2011 the field work of S.K. was supported by Wolfgang Wiltshcko and DO-G (Deutsche Ornithologen-Gesellschaft).

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Siegfried Klaus, Lindenhöhe 5, D-07749 Jena, Germany, siegi.klaus@gmx.de.



RESEARCH REPORTS

Courtship and copulation behaviour in Caucasian black grouse *Tetrao mlokosiewiczi* – new findings

Siegfried Klaus, Ilja Ukolov & Hans-Heiner Bergmann

The Caucasian black grouse is one of the least studied species within the subfamily of Tetraonids. The species is listed in the Red Book of Russia (Boronin 1984) as “lower risk, near threatened” (Storch 2000). Field studies have been increasing since Potapov & Pavlova (1977) and Potapov (1982, 1985) published their detailed observations carried out in the Teberda Reserve in the northwestern Caucasus Mountains. The most extensive long-term field work has been performed by Vitovich (1986) in the same reserve, followed by our cooperative work (Bergmann et al. 1991, Klaus et al. 1987, 1988, 1990, 2003, Klaus & Vitovich 2003). Recently, the distribution and habitat use of this species has been studied and conservation recommendation made in Azerbaijan (Sultanov et al. 2003, Etzold 2005), Georgia (Gokhelasvili et al. 2003), and Turkey (Isfendiyaroglu et al. 2007), which have added considerably to our knowledge of the species elsewhere in the Caucasus.

We report here new insights into the organization of courtship and preparation of copulation in the Caucasian black grouse. During 6-9 May 2014, one of the authors (I. U.) succeeded to record (camera Canon 7D+Canon 500mm f/4 and audio recorder Tascam DR-05+Sennheiser MKE-300) courtship and copulation by video on the same lek (altitude 2,400-2,500 m a.s.l.) visited by us in 1987, 1988, and 1989 in the Teberda Reserve. In contrast to the steep slopes normally used for courtship, the birds observed here preferred a small flat plateau. The new recordings are consistent with most of the behaviour described before. In addition, we describe in detail two types of behaviour, not noticed earlier, due to the large distance between our hide and the courting and copulating birds and lower quality of our 16 mm film recordings. We use the terminology of Hjorth (1970). For drawings of typical behaviour patterns and sonograms see our papers cited above.



Figure 1. Courting Caucasian black grouse male near to the crouching female, showing rapid movements of the wing (s) and harping by toes.

1. Display walking (Figure 1): While standing near the female (estimated distance 0.5 - 2 m), the male moved his lowered and half-spread wings up and down quickly, on one or both sides of the body (probably causing a weak rustling sound of the hard primaries touching the toes, tarsus, or the lateral plumage). The white shoulder patch oscillated in size during this short performance.

2. Head shaking (Figure 2): After finishing the run, the male crouched demonstratively, sometimes in a depression in the grassy ground and started shaking his head (10-20 movements). Sometimes, a weak “click” sound was heard during head shaking. Head shaking by the female was not clearly seen, because she changed her position often. Display walking, crouching, and head shaking were repeated several times during a 2 min continuous recording.



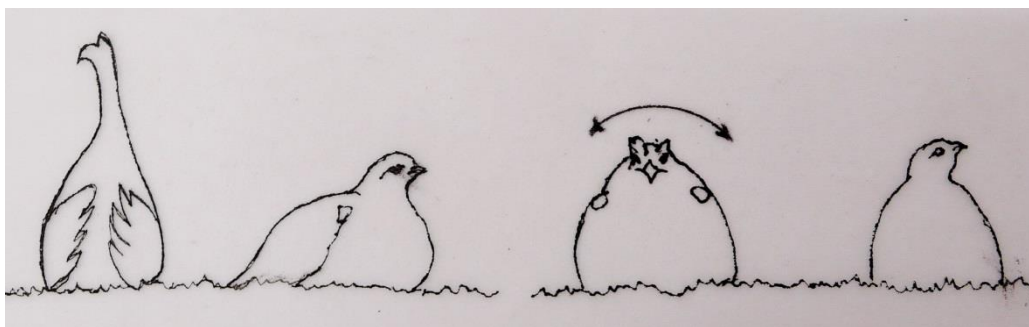


Figure 2. Prior to copulation, both male and female crouching and head-turning of the male.

As described earlier (Klaus et al. 1988, 1990, 2003, Table 1), the copulating male grasped the female's crest feathers (Figure 3), like in other grouse. This was clearly shown in the new recordings made in 2014. Vitovich (1986), who observed only 2 copulations, reported that grasping does not occur (cited in Potapov 1985, 1989, 2013). This mistake was possibly due to high grass vegetation covering the birds. Table 1 summarizes the data from 7 copulations observed to date. In 5 cases grasping was clearly seen.

Table 1. Copulations observed at Teberdinskij zapovednik/NW-Caucasus

No	date	time	duration (s)	territory		supporting using wings	crasping females crest	reference
				central	marginal			
1	15. V. 1975	4.30	10	+	--	+	-	Vitovich (1986)
2	21. V. 1975	6.10	15	--	+	+	-	Vitovich (1986)
3	18. V. 1987	4.25	3-4	--	+	+	+	Klaus et al. (1988)
4	19. V. 1987	4.50	4-5	--	+	+	+	Klaus et al. (1988)
5	20. V. 1987	5.30	5	--	+	+	+	Klaus et al. (1988)
6	22. V. 1987	4.28	7	--	+	+	+	Klaus et al. (1988)
7	08. V. 2014	6.43	5	+		+	+	Ukolov (unpubl.)

Time course (in seconds) during precopulation and copulation (2 min continuous sequence)

000: Crouching and head shaking of the male, followed by wing lowering and spreading run, 010: crouching, head shaking, 020: display walk, 035: display walk, 050: crouching, head shaking, 060: display walk, copulation, 065: end of copulation, female shaking body, male laying down, shaking plumage for 12 s, 080: flutter jump, 090: flutter jump, 100: flutter jump, 120: flutter jump.

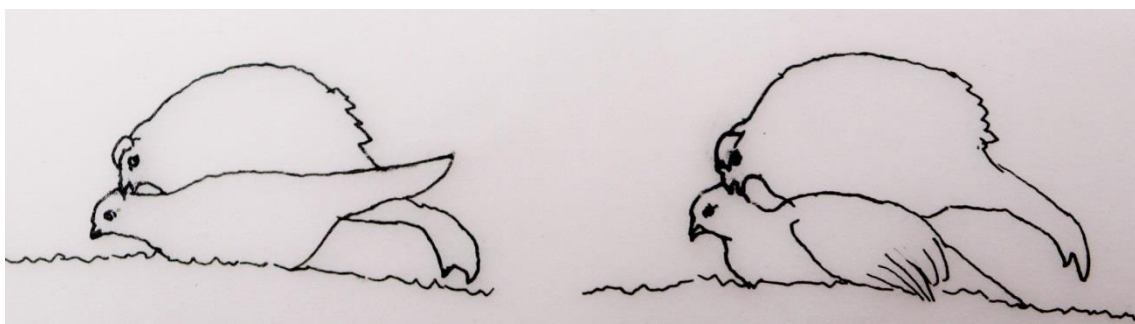


Figure 3. Copulation – males crasping female's neck feathers.





Figure 4. Flutter jumping male (photo, Ilya Ukolov, May 7, 2014, Teberda).

sound production when the primaries touch the toes. This is known in some displaying phasianids (Schenkel 1956), but also in ruffed grouse (Scherzinger, unpubl., Bergmann et al. 1996) and occasionally in capercaillie. Because the solid primaries and/or alula (Figure 4, 5) in the “wing-beat display” (Hjorth 1970) produce the whistling sound (Figure 6) during flutter jump and territorial flight (Potapov & Pavlova 1977, Vitovich 1986, Bergmann et al. 1991), a stimulating instrumental sound during the display walk would be a possible assumption. Unique in grouse is the fact, that there is no tail spreading in the ground display of the courting male (tail is spread during flutter flight and during confrontation). The folded tail is vertically erected like a flag and is visible on the grass-covered lekking

Discussion

As a special feature, display of the Caucasian black grouse is characterized by instrumental sounds during flutter jump and territorial flight first described by Noska (1895), Lorenz (1897) and Averin (1938). Here we concentrate on the new findings in courtship behaviour.

The display walking with rapid up-and-down movements of the wings (not touching the ground) prior to copulation is a unique behaviour in the Caucasian black grouse, and has never been reported in either capercaillie species nor in the black grouse. From the video it was impossible to determine if the wing(s) were making a hissing sound when touching the tarsus or toes, like the tail feathers in the Spruce grouse and Siberian grouse. In German a special term “harfen” (harping) is used for this phenomenon;



Figure 5. Flutter jumping male (photo, Ilya Ukolov, single pictures composed, May 7, 2014).

ground.

The relatively small white shoulder patch of the male clearly oscillates in size during this walking display in close proximity to the female. Hjorth (1970) interpreted the function of such a “shoulder patch display” of male grouse during the communication with females in the sense of “do not fear me” (appeasement).

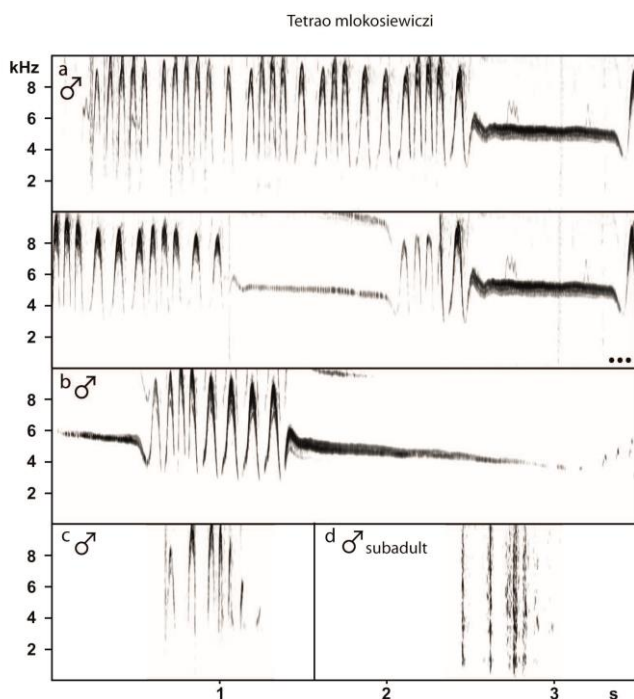


Figure 6. Sonograms of instrumental sounds produced by the wings of male Caucasian black grouse (recordings by Ilya Ukolov, May 7 and 8, 2014). A, b - adult male territorial flight and gliding, c - adult male flutter jump, d - yearling male flutter jump (less developed performance).



Head shaking by both sexes to demonstrate readiness to copulate has been recorded both in the hazel grouse and the Chinese grouse (Bergmann et al. 1996, Klaus et al. 1996, 2009). In the ruffed grouse, courtship display, head shaking, and turning (head jerking according to Hjorth 1970) is most impressive due to the prolonged neck feathers, the "ruff". Head shaking prior to copulation is also typical in the two species of spruce grouse and in the dusky and sooty grouse (Schroeder, pers. comm.). It is also known in Siberian grouse (Andreev, Hafner, Klaus, unpubl.). In addition, some of the pheasant species show this behaviour (Schenkel 1956, Möller pers. comm.). It seems that head shaking is typical in grouse species that are basal in the phylogenetic tree (Gutierrez 2000, Luccini et al. 2001). The question of whether head-shaking is an ancient feature in phasianid species and is lacking in some species due to reduction should also be discussed in the framework of systematics. For this purpose, new genetic methods should be used to compare the Caucasian black grouse with black grouse, and the genera *Bonasa*, *Tetrastes*, *Lagopus*, *Falcipennis* and *Dendragapus*. Morphology and behaviour support the view that the Caucasian black grouse is more basal in the phylogenetic tree than the black grouse (Potapov & Pavlova 1977, 1982, 1985). These arguments have been summarized by Klaus et al. (1990, 2003).

Acknowledgements

We are grateful to Oleg A. Vitovich (Teberda) for continuous support of our field work, to Franz Müller for drawings of the behaviours from our video recordings, to Wiltraud Engländer for the composition of sonograms and Jon Swenson for helpful comments to the manuscript.

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Siegfried Klaus, Lindenhöhe 5, D-07749 Jena, Germany, siegi.klaus@gmx.de.

Ilja Ukolov Russian Bird Conservation Union, Entuziastov Shosse, 60 bld. 1, RU 111123 Moscow, Russia, iukolov@gmail.com.

Hans-Heiner Bergmann, Landstr. 44, DE-34454, Arolsen, Germany, bergmannhh@web.de.

Preliminary introduction to Caucasian black grouse in Iran Nader Habibzadeh and Omid Rafieyan

In Iran Caucasian black grouse (CGB) (*Tetrao mlokosiewiczii*) is distributed within Arasbaran Region in East Azerbaijan province (Figure 1). The range of this species in Iran is near the Karabakh Mountains and these birds may be part of the Armenian population. The population in northeast Turkey appears more isolated than Iran (Gokhelashvili et al., 2003).

The specific area is between 626000 mE to 661100 mE and 4282200 mN to 4305300 mN, UTM Zone38, comprising 31656 ha, within the Arasbaran Biosphere Reserve and recently protected Area of Dizmar (Figure 1). The topography of the area is rugged and diverse with elevation ranging from 800 to 2800 m asl. The dominant habitat types in the area were xeric and mesic deciduous stands composed of oak species (*Quercus spp.*), hornbeam (*Carpinus spp.*), maple (*Acer spp.*), and ash (*Fraxinus spp.*).

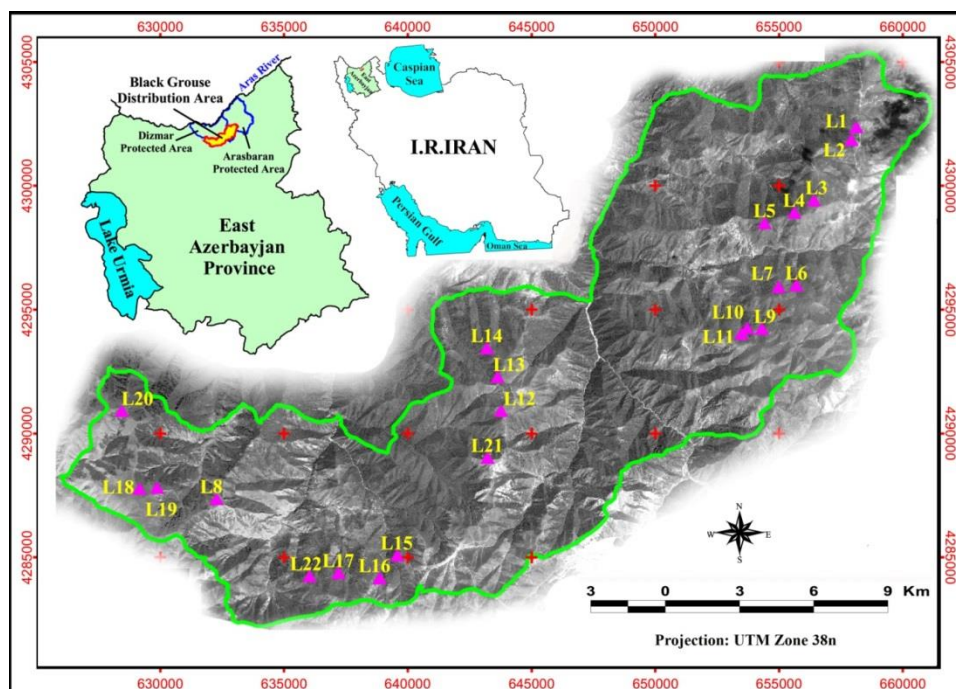


Figure 1. Caucasian black grouse update distribution area and lek locations ($n = 22$) in East Azerbaijan province, Iran.



According to our knowledge, the CBG documented studies that have been carried out in Iran are Masoud (2004), Masoud *et al.* (2006), Habibzadeh *et al.* (2010, 2013). Also, another research is currently being carried out by Habibzadeh *et al.* which is financially supported by Islamic Azad University of Tabriz branch titled “The landscape composition and structure of traditional lekking habitat of CGB in Arasbaran region of East Azerbaijan province, Iran”.

According to ongoing research, update CBG distribution area includes 22 breeding display sites (Leks) (Figure 1). To determine spatially precise reliability of the lek locations that were identified by Masoud (2004) recorded in East Azerbaijan province from field observations and interviews of local people and Habibzadeh *et al.* (2013), we identified these leks using foot and roadside surveys in spring 2014 mid-April to late May. Surveys began 0.5 h before sunrise and continued until 2.5 h after sunrise and evening surveys (2 hrs before sunset until sunset) were also used to identify general locations of leks, which were subsequently visited during the early morning survey period. Indices such as feathers, droppings and tracks as well as direct observations, were used to identify leks. We also utilized Google Earth in order to show general view of the region to an indigenous person, Hosien Asadi from Vanestan village, who is so familiar with the region and has good experience in CBG field researches to recognize initial locations of leks before conducting and starting field trips.

There is only general knowledge about the biology of this endemic, rare and globally threatened species in Iran. Lack of information is mainly due to the bird's elusive behavior for much of the year, its relatively small population size, and its remote distribution at higher altitudes of the Arasbaran Mountains. In order to fill some of the knowledge gaps, a detailed ecological study of the CBG is required to develop habitat management recommendations for the species. Among many unknown aspects of the CBG's biology is whether the birds migrate to the Karabakh region. No knowledge also exists about their seasonal habitats and possible migration routes during the year.

We believe that the most effective method for gathering reliable data about CBG nesting, brood rearing, wintering sites, bird movements, and habitat connectivity is satellite telemetry and GPS tracking to provide a biological foundation for development of an effective conservation strategy for CBG. Therefore, we extremely require to be supported financially and technologically from international associations to prepare an international species action plan.



Lek habitat along with flying and standing posture of Caucasian black grouse in Kalan core zone of Arasbaran biosphere reserve, 24 April 2014 (Photos, Behnam Gorbani).



Acknowledgments

We gratefully acknowledge Behnam Ghorbani as a B.sc. student of environmental science for providing fantastic photos.

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Nader Habibzadeh and Omid Rafieyan, Department of Environmental Science, Faculty of Agriculture and Natural Resources, Islamic Azad University, Tabriz Branch, P. O. Box 51589-1655, Tabriz, Iran.
Corresponding author: Nader Habibzadeh Habibzadeh@iaut.ac.ir.

Observing dust baths with camera traps – A non-invasive approach to gather data on breeding success of endangered grouse populations

Annette Stephani, Lisa Bitterlin & Roland F. Graf

In several countries, breeding success rather than the mortality of the adults was identified as the crucial factor for the decline of grouse species (e.g. Storch, 1994; Moss, 1994). Information on the breeding success therefore is an important prerequisite for efficient conservation action. Usually, invasive methods are used to collect such data. In case of transects or the wildlife triangle method, hens and their chicks get flushed with the use of specialized dogs, while for telemetry methods, hens have to get captured and fitted with radio transmitters (Baines 1991, Willebrand 1992, Lindén et al. 1996, Summers et al. 2004, Ludwig et al. 2010). Those methods are causing stress for hens and chicks and can have a negative effect on their fitness. Since in Switzerland capercaillie (*Tetrao urogallus*), black grouse (*Tetrao tetrix*) and hazel grouse (*Tetrastes bonasia*) are classified as endangered and vulnerable species, respectively (Mollet et al. 2008, Keller et al. 2010), additional disturbance has to be avoided as far as possible (cf. Arlettaz et al. 2006, Thiel et al. 2011). As a consequence, knowledge about the reproduction of grouse species in Switzerland is scarce, especially where local grouse populations are endangered and invasive monitoring methods with pointing dogs are not accepted.

Dust baths are an important structural habitat element of forest-dwelling grouse species (Bergmann et al. 1982, Klaus et al. 1989, Klaus et al. 1990). Hens have been observed to use them together with their chicks (Bergmann et al. 1982, Klaus et al. 1976, Klaus et al. 1989, Klaus et al. 1990) and sometimes, the places are used for multiple consecutive years (Klaus et al. 1985, Renard & Schmitz 1988, Klaus et al. 1990). Therefore, dust baths are clearly defined sites that local grouse individuals will visit with a certain probability and, in the best case, even several times during summer. We tested the potential of observing dust bath places with camera traps to get data on reproduction of grouse populations.

The field test was done in three study areas of the northern pre-alps (canton Lucerne, Switzerland) with regular presence of capercaillie, black grouse and hazel grouse. In autumn 2013 and spring 2014, we searched for dust bath places and structures like rootstalks or trees with low hanging branches, where dust baths could be developed either naturally or artificially. From May to July 2014, we observed three dust baths with natural origins and 14 that we created or improved artificially with 17 camera traps (Reconyx PC 900 HyperFire, Reconyx HC 550 HyperFire, Reconyx PC 90).

The surveillance resulted in observations of ten adult grouse individuals and eight chicks: three black grouse cocks, three single black grouse hens, two black grouse hens with two and six chicks, respectively, one capercaillie hen and one hazel grouse cock (Figure 1). For all the documented grouse individuals, species and sex could be identified. The pictures of the hens with chicks allowed an estimation of the hatching time with an accuracy of about one week. Two of the three naturally



originating dust baths were used over two consecutive years. Five of the 14 artificially created dust baths were accepted by grouse.



Figure 1. Camera trap picture of a black grouse hen with six chicks; position of the five chicks in the shrubbery marked with orange circles.

With about 130 hours, the search for natural dust baths and suitable structures for creating artificial ones, as well as the installation of the camera traps represented the main expenditure of time. The collection and subsequent maintenance of the camera traps consumed 16 hours. The remaining tasks were done in a few hours (Figure 2).

Task	Expenditure of Time [h]
Search for natural dust baths (Fall 2013)	70
Preparation of camera traps, batteries and further material	4
Search for suitable structures for artificial dust baths, installation of camera traps (May 2014)	57
Collection and subsequent maintenance of camera traps	16
First, general interpretation of data	2
Detailed interpretation of grouse data	5
Total amount of time spent	154

Figure 2. Overview of tasks performed and the relating expenditure of time

This field test yielded only little information on grouse reproduction. However, we believe that the relationship between expenses and yield can be optimised with methodological adaptations and better weather conditions.

First, the behaviour of dust bathing is normally shown during dry weather (Pynnönen 1954, Klaus et al. 1989). In July 2014, weather conditions in the study area were extraordinarily wet and cold



(MeteoSchweiz 2014). Therefore, we assume that the number of observations could increase with better weather conditions for dust bathing.

Second, most of the hours were spent to locate natural dust baths or suitable structures for creating artificial ones. The coordinates of the identified places can be used in subsequent years and a part of the field effort could therefore be calculated as initial expenses. Furthermore, gamekeepers could help reducing the initial searching time by collecting information about dust bath places during their regular field presence. Additionally, dust baths could occur more frequently in other types of habitats, e.g. in the central Alps with dryer climate conditions.

Third, our test period was limited to June and July. Extending the observation period until September would probably increase data outcome substantially, since the mobility of hens and chicks increases during the course of a breeding season (e.g. Storch 1994).

In spite of the relatively poor data outcome from the field test, we believe that this method has a high potential for monitoring breeding success in areas with endangered grouse populations. The main field presence can be moved to autumn, a period of the year, when disturbances probably have the smallest effect. Under good conditions, the non-invasive method provides high quality data on reproductive success and the timing of breeding – data that are usually not accessible without telemetry studies or the use of pointing dogs. A more extensive survey and further assessments of the method are planned for the coming years.

Acknowledgements

We thank D. Schmid and the Department of Nature, Hunting and Fishing of LAWA Lucerne for their support, assistance and cooperation.

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Annette Stephani, Zurich University of Applied Science ZHAW, Wädenswil, Switzerland
annette.stephani@gmail.com, Corresponding author.

Lisa Bitterlin, Zurich University of Applied Science ZHAW, Grüental, Postfach 335, CH-8820
 Wädenswil, Switzerland, lisa.bitterlin@zhaw.ch.

Roland F. Graf, Zurich University of Applied Science ZHAW, Grüental, Postfach 335, CH-8820
 Wädenswil, Switzerland, roland.graf@zhaw.ch.

Differences in behavior between populations of captive blue grouse

Carl Ross Cooper

A Thesis submitted in conformity with the requirements for the Degree of Master of Science in Forestry in the University of Toronto, 1977.

Thesis introduction

The behaviour of animals, and in particular, the interaction of yearlings with residents, plays an important role in population regulation. This thesis investigates the possibility that behavior differs in populations of blue grouse (*Dendragapus obscurus fuliginosus*) that are at different densities and phases of growth. Furthermore, any differences in behavior are attributed to differences inherent in the egg.

My approach was to rear eggs from a dense and expanding population at Comox Burn and from a sparse and declining population at Middle Quinsam Lake, on Vancouver Island, and to observe the behavior of the birds in captivity. Behaviour was studied by direct observation, mirror tests, and pair tests.

Long term studies of blue grouse populations on Vancouver Island have been concerned with the regulation of numbers. Field studies indicate that blue grouse populations are regulated behaviourally through the eviction of yearlings (Bendell et al. 1972, Zwickel 1972). Aggression is probably an important behavior involved in this regulation process.

Differences in breeding densities of blue grouse cannot be correlated with any features of the habitat that have been studied (Zwickel and Bendell 1972). However, Mossop (1971) found a correlation between aggressive behavior and population levels for blue grouse in the field. Theberge (1971) concluded from captive studies that chicks taken from a declining population of rock ptarmigan (*Lagopus mutus*) are more aggressive than those from an expanding one. As red grouse (*Lagopus lagopus*) populations decline, the birds become more aggressive and defend larger territories (Watson 1964). Krebs (1970) found that aggressive behavior changed significantly over the population cycle in two species of *Microtus*.

Thus, behavior can be correlated with population density or phase of growth. However, in each of the studies cited above, the causes of the differences in behavior could be genotypic and/or phenotypic. By the present study, variances in behavior between stocks can be attributed to differences inherent at least in the egg stage, since all birds were reared under identical environmental conditions.

The first paper of this thesis (The Rearing and Survival of Blue Grouse in Captivity) describes the rearing techniques and aviary facilities. My success in rearing and holding blue grouse is compared to that of other aviculturists.

In the second paper (The Behaviour of Captive Blue Grouse) a qualitative description of the various behaviours observed in captivity is presented. In addition, behavior is quantified to give diurnal and seasonal rhythms of activity. The behavior described in this paper provides the background for the third paper comparing the different stocks.

The third paper (Differences in Behaviour of Captive Blue Grouse from Dense and Sparse Populations) is concerned with differences in behavior of birds from dense and sparse populations. Differences are discussed in relation to current theories of population regulation.

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Abstract 1

In 1973, 58 eggs and 48 young chicks were collected from dense and sparse populations of blue grouse (*Dendragapus obscurus fuliginosus* (Ridgway)) on Vancouver Island. The eggs were incubated artificially in a propane-fired incubator. Hatchability was 83 percent. Seventy-seven chicks (80%) survived to 15 days of age. Young chicks were held in a small screened-in pen with a brooder unit maintained at 90°F, and fed commercial turkey starter (30% protein) as well as a mixture of chopped, hard-boiled egg, tomato and lettuce. From two to eight weeks, the chicks were held in a large dirt-floored flight pen. Feed consisted of turkey poult ration and miscellaneous wild greens. At eight weeks of age they were shipped to Toronto where they were held in an indoor aviary for studies of comparative behaviour. Each bird was caged individually. Turkey grower and scratch feed were fed. Two years later, 19 birds (28%) were still alive. Aspergillosis and an ulcerative gizzard syndrome were the major causes of mortality. Simple agricultural methods resulted in an inexpensive, flexible, and efficient system for holding blue grouse in captivity.

Abstract 2

Blue grouse were reared and held in captivity from June 1973 to August 1975. Their behaviour is described with reference to function. Three new postures, snapping, the circle dance, and the sky-point display are described, as well as several forms of aberrant behaviour not previously referred to in the literature for blue grouse. New calls included the grunt, sneeze note, aggressive whoot, gluck, squeaky cluck, and croak. Diurnal and seasonal rhythms of activity are presented. Daily activity peaked at dawn and dusk. Seasonally, levels of activity were high in the spring and very low in the winter.

Abstract 3

Eggs from dense and sparse populations of blue grouse (*Dendragapus obscurus fuliginosus*) were collected in 1973 and the chicks reared and held in captivity for over two years. Behaviour was studied by direct observation of birds 'in a solitary situation, mirror tests, and pair tests. There was greater activity and response to tests in spring, and yearlings showed a greater response than adults. As yearlings, significantly more birds from the dense than the sparse population showed breeding behaviour. More birds bred as adults and the breeding season was longer for adults than for yearlings. Yearling males from the dense stock were dominant over those from the sparse stock in pair tests done in the spring. In mirror tests, birds from the sparse stock consistently showed more aggression than birds from the dense stock, while the reverse was true for escape behaviour. Females were less reactive in tests than males. Since all birds were reared and held under identical environmental conditions, differences in behaviour can be attributed to differences inherent in the egg. Results are discussed in relation to population regulation in the field.

Thesis summary

The main purpose of this thesis was to determine if populations at different densities show differences in behavior. From studies of captive blue grouse, I found inherent differences in behaviour between stocks and these differences relate closely to what parent populations were doing in the field.

As yearlings, significantly more birds, both males and females, from the dense population showed breeding behaviour. In pair tests, yearling males from the dense population were dominant over their opponents from the sparse population. Birds from the dense stock also showed a stronger escape response in mirror tests. The birds from the sparse population, however, showed more aggression in mirror tests and paced more than did birds from the dense population.

Since all birds were reared from eggs and held under identical environmental conditions, the differences in behaviour can be attributed to genotypic and/or phenotypic causes within the egg.

Several behavioural observations on the captive birds can be related to population processes in the field. The birds seemed more highly motivated to interact in the spring. From field work, Bendell et al. (1972) suggest that the critical interactions for determining numbers occur in early spring. The



behaviour of yearlings is of great importance in the regulation process, with the densities being determined by the number of yearlings that are recruited into the breeding population. In the aviary, yearlings showed a stronger tendency to interact behaviourally than did adults.

I conclude that intrinsic factors determine differences in behavior that may be critical to the recruitment of yearlings to the breeding population. Thus, my work supports the intrinsic schools of population regulation. Watson and Moss (1972) propose a theory whereby the nutrition of the hen determines the quality of the egg, and this in turn determines the subsequent behaviour of the bird. The differences in behaviour might also be due to genotypic differences in the stocks. Chitty's theory of population regulation (Chitty 1967) is based on rapid selection for different genotypes and their expression through behaviour. Future work should be directed toward determining what intrinsic factors cause the behavioural differences between stocks.

In addition to showing behavioural differences between stocks, the study made other contributions. The techniques described in the thesis add to the information available on the rearing and holding grouse in captivity. The study also provided an opportunity to add to the knowledge of the behavior repertoire of blue grouse. A new behaviour, the sky-point display, was described.

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If the full thesis is wanted go to the university library first or contact Jim Bendell.

This text is printed in memory of Carl Ross Cooper, Faculty of Forestry and Landscape Architecture, University of Toronto, who died in 1994.

The Society of Tympanuchus Cupido Pinnatus Ltd. and Greater Prairie-Chicken research in the Sandhills of Nebraska

Greg Septon and John E. Toepfer

Founded in Wisconsin in 1961, the Society of Tympanuchus Cupido Pinnatus, Ltd. (STCP) is the nation's oldest conservation organization dedicated to prairie grouse conservation. Initially STCP was formed to help save the Greater Prairie-Chicken (*Tympanuchus cupido pinnatus*) in Wisconsin and did so by raising the funds necessary to purchase 7,000 acres of critical grassland habitat in the central portion of the state. Today these lands remain at the core of over 14,000 acres set aside for this state listed threatened species. In essence we answered the call when a once common grouse was found to be in trouble and helped keep it from becoming extirpated in the state.

Today, we are focused on learning all we can about Greater Prairie-Chickens in one of their last true strongholds - the Sandhills of Nebraska. All too often, research and conservation efforts are only initiated when a species is in trouble. STCP, on the other hand is looking at the future and at what elements are in play where healthy, stable or expanding populations are still to be found.

By learning what elements are in play and how these keep a population stable or increasing, we'll be better suited to provide a broad picture of what is necessary to maintain a population so they don't become threatened or endangered. And, in the future if/when habitat restoration and reintroduction efforts are undertaken, there will be a wealth of information available to serve as a "how to" book to guide for these efforts.

If research similar in scope to what STCP has undertaken with Greater Prairie-Chickens in the Sandhills of Nebraska was carried out 20 years ago with Lesser Prairie-Chickens (*Tympanuchus pallidicinctus*) and Greater Sage-Grouse (*Centrocercus urophasianus*), these species might not be in such dire straits today.

Both species are currently on their way to becoming federally listed as threatened/endangered species. When this happens hunting of these species comes to an end. It's not too late for Greater Prairie-Chickens but we need to act now and learn all we can while we still have the time. The Lesser Prairie-Chicken was federally listed as a threatened species on March 27, 2014 and it's likely the Greater Sage-Grouse will follow in its path when a determination is made in 2015. When this happens, sport hunting of



these species comes to an end. It's not too late for Greater Prairie-Chicken but we need to act **now** and learn all we can while we still have time so that in the future these native North American game birds can be properly managed and remain huntable species for future generations.

For more information on our current research efforts in the Nebraska Sandhills including downloadable Progress Reports, please visit the STCP web site at: www.prairiegrouse.org.

Greg Septon STCP, Ltd., P.O. Box 320487, Franklin, WI 53132, USA, sharptailpoint@earthlink.net.
John Toepfer, 3755 Jackson Ave., Plover, Wisconsin 54467 USA, jtoepfer@coredcs.com.



NEW BOOKS

Gamekeeping – An Illustrated History

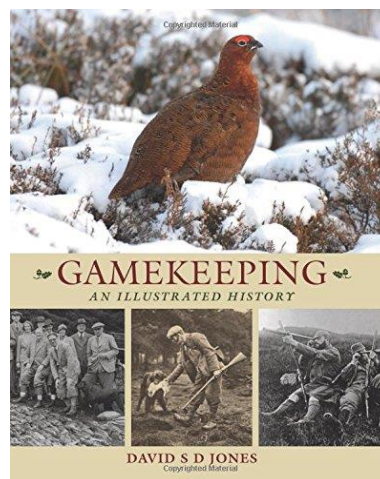
Don Wolfe

Before there were small radio transmitters, before there was GIS, before the understanding of genetics, before diseases and nutrient requirements of grouse were known, and before there were state-commissioned game wardens, grouse populations throughout much of Europe were allowed to persist, and sometimes flourish, due to the efforts of gamekeepers. What these keepers may have lacked in formal education or true biological knowledge, was largely mitigated by their integrity, pride, and boots-on-the-ground knowledge of the land and its inhabitants. While certain aspects of gamekeeping may be controversial or even frowned upon today, there can be little argument that the present day abundance of grouse in some areas is at least partially due to these centuries-old practices. As a grouse enthusiast in North America, I visualize ideal grouse habitat, whether for prairie grouse, woodland grouse, or ptarmigan, as large heterogeneous but contiguous landscapes, and cringe upon the idea of intense fragmentation or manicured monocultures of “desired” vegetation. I must acknowledge, however, that all wildlife species in much of Europe have been forced to adapt to a dense human population and intensive agricultural practices for many centuries, and with urban sprawl, increasing energy demands, and vast monoculture farming in North America, we are increasingly faced with managing for wildlife on smaller and fewer parcels of habitat. While not condoning all traditional gamekeeping practices, a more complete understanding of those practices and those individuals charged with the preservation of grouse is enlightening and may provide information and ideas to management in the 21st Century. This is where Mr. Jones’ book fills some of those information gaps. I will point out that this book does not deal exclusively with grouse, but also management of ungulates and introduced gamebirds. Mr. Jones takes the reader through the daily and yearly life of head keepers, beaters, loaders, game breeders, and estate wardens, and even spares little detail on the appropriate dress of keepers, much of which has persisted to the present day. The book also outlines the rise of the gamekeeping profession throughout the past couple of centuries and its decline in the past few decades. He discusses in length the various methods of predator control, plantings, and prescribed burning, and the difficult task of limiting poachers, some of whom may even be relatives or sustenance hunters. Another interesting point made by Mr. Jones was that with the advent of The Great War and subsequently World War II, many of the gamekeepers not only enlisted in the militia to protect their motherland, but their proficiency with firearms and knowledge of the land were extremely valuable assets. Overall, Mr. Jones does an exceptional job of romanticizing the gamekeeping profession.

As evident from the title, the book is well illustrated, ranging from 19th century daguerreotypes and line drawings to modern digital photographs, showing garb and tools of keepers, sporting dogs, various game species, moorlands, and keeper’s dwellings. Also included are copies of ledger entries, keeper job announcements, keeper duties, etc. The author also gives examples of compensation to keepers, including monetary payment as well as shares of game and gratuities, throughout the past 200 years. Some conversion to today’s Euros or US dollars would have given a better idea of the compensation level, but it is still evident that keepers in the past were rarely ever able to accumulate large fortunes, as is still the case with modern keepers today. While this book is perhaps not your typical grouse biology or grouse management tome, it is an interesting and insightful read, and has truly given me a new or better appreciation of traditional gamekeeping.

David S. D. Jones, 2014. *Gamekeeping, An Illustrated History*. Quiller Publishing Ltd. Price: \$30.28 from www.amazon.com.

Don Wolfe, dwolfe@ou.edu.



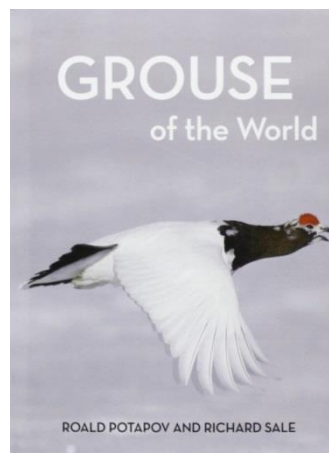
Grouse of the World

Don Wolfe

The lead author of this book should be well known among all grouse biologists, and many of those same biologists have likely been awaiting this monumental work for several years. Dr. Potapov combines his vast hands-on knowledge of grouse with that of hundreds of other grouse experts to produce this thorough and authoritative text, which possibly usurps Paul Johnsgard's "The Grouse of the World", published in 1983, as the definitive work on grouse. This book should not only be on shelf of every grouse enthusiast, but also read in its entirety. Expect to see a full review of this book in the next *Grouse News*.

Roald Potapov and Richard Sale 2013. Grouse of the World. New Holland Publishers. Price: \$35.68 from www.amazon.com.

Don Wolfe, dwolfe@ou.edu.



CONFERENCES



13th International grouse symposium -- Iceland 2015

Second announcement

The 13th International Grouse Symposium will be held in Reykjavik, Iceland on 4-7 September 2015. The conference site will be the Hilton Reykjavík Nordica Hotel. The focus will be on grouse biology and topics addressed will include among other population ecology, genetics, phylogeny, conservation and management. The conference language will be English. The conference is hosted by the Icelandic Institute of Natural History.

Invited key-note speakers are: Dr. Olafur K. Nielsen, Icelandic Institute of Natural History, Iceland; Professor Rolf A. Ims, University of Tromsø, Norway; Professor Rudy Boonstra, University of Toronto, Canada; and Professor Stephen Redpath, University of Aberdeen, Scotland.

A one day workshop will be offered on 3 September titled *Workshop to Expand the Use of Emerging Technology to Understand the Ecology of Grouse in a Changing Environment*. The workshop will be led by Professor Jennifer S. Forbey, Boise State University, USA and Professor Gail Patricelli, University of California, Davis, USA, who have developed technology as part of two NSF-funded grants to understanding the behaviour, ecology and conservation of wildlife, including the greater sage-grouse. Their team of experts will use the workshop to expose researchers to novel opportunities that exist at the interface of technology, basic research, and management of grouse.



An adult gyrfalcon female feeding chicks. The gyrfalcon and rock ptarmigan in Iceland have a coupled predator-prey cycle. Photo: Sindri Skúlason

A one day, pre-conference field trip will be offered 3 September. The trip will be to Mount Esja just north of Reykjavik and the theme will be rock ptarmigan and ptarmigan habitats. A four day post-conference field trip to NE-Iceland will be offered on 8-11 September. The theme will be rock ptarmigan, gyrfalcon, birds, vegetation and geology.

Members of the organizing committee are: Ólafur K. Nielsen (chairman); Icelandic Institute of Natural History; María Harðardóttir, Icelandic Institute of Natural History; Arne Sólmundsson, The Icelandic Hunting Association; Arnór Þ. Sigfúson, Verkís, Consulting Engineers; Jakob Sigurðsson, BirdLife Iceland; Karl Skírnisson, Laboratory of Parasitology, Keldur, University of Iceland; and Tómas G. Gunnarsson, University of Iceland.

Members of the scientific program committee are: Professor Tomas Willebrand (chairman), Hedmark University College, Norway; Professor Ilse Storch, University of Freiburg, Germany; Dr. Claude Novoa, Game and Wildlife National Agency (ONCFS), France; Professor Kathy M. Martin, University of British Columbia, Canada; and Professor Hiroshi Nakamura, Shinshu University, Japan.

Practical organizing is by Iceland Travel Conferences: conferences@icelandtravel.is. The conference home page has a new URL address <http://igs2015.ni.is>. Registration will start 1 February 2015.

Olafur Nielsen, Icelandic Institute of Natural History, Iceland, okn@ni.is.





The 7th International Black Grouse Conference

The 1st International Black Grouse Conference was held in Belgium in the year 2000. Since then the conferences have been organized bi-annually in different countries to gather black grouse specialists from across Europe. The 5th and the 6th meetings took place in Poland and in Sweden. For the first time the 7th International Black Grouse Conference was now being organized in Russia. Black grouse *Tetrao tetrix* are sometimes considered not to be very sensitive to forest management at a local scale, but nowadays the abundance of

this forest species is relatively low in Europe, especially in central Europe. Grouse populations have considerably declined also in Finland, and local declines also have been reported in North-West Russia. Commonly human land use is being assumed as the major cause of decline; however, short-term weather fluctuations and longer-term processes such as climate change may have significant effects as well. Therefore, the vast pristine landscapes of the Pechoro-Ilychskiy Nature Reserve provide an important reference to understand the dynamics of black grouse in the boreal forest, and elsewhere in Europe. So it was especially interesting to organize the conference just in north-east part of Europe.



Seventeen researchers from 7 countries participated in the conference (20 more - correspondence participants as collaborators). Geographically there was large area of black grouse research in Europe from Germany via Poland and Belarus to Finland and to North of Russia (Karelia, Archangel region, Komi republic).



Dynamics in large regions and the impact of landscape factors in west and east parts of Europe was discussed and also behavior was discussed (captive breeding, lek tenacity, spatio-temporal variation in the display behaviour). We also discussed the physiology and genetic analysis of black grouse. An interesting point of the discussion was if it is possible to detect the influence of the climate change on the black grouse population. We also listened to reports on the status of black grouse

in different regions as Belarus, Poland, and in the extreme north-eastern part of Europe (Komi Republic and Pechoro-Ilychskiy Nature Reserve). The plans for a new project were also discussed. We want to thank the participants and especially - the organizers of the conference (Institute of Biology, Komi Science Centre, Urals Branch, Russian Academy of Sciences, and Pechoro-Ilychskiy State Nature Biosphere Reserve) for good organizing and warm atmosphere of communication. All the pictures are taken by Ilse Storch.

Juri Kurhinen, kurhinenj@gmail.com.

Prairie Grouse Technical Council meeting

The 31st meeting of the Prairie Grouse Technical Council will be held September 22-24, 2015 in Nevada, Missouri. For more information, contact Max Alleger at: max.alleger@mdc.mo.gov.



RECENT GROUSE LITERATURE

For a complete bibliography on grouse, go to: <http://www.suttoncenter.org/pages/publications> (please note that the link in previous editions may not be current).

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SNIPPETS

The timeliest grouse hunting regulation in the world?

Decisions on Finnish grouse hunting bags are now based on data “fresh from the oven”

Katja Ikonen, Saija Kuusela, Pekka Helle & Harto Lindén

In Finland, decisions on the yearly hunting bags for grouse (capercaillie *Tetrao urogallus*, black grouse *T. tetrix*, hazel grouse *Tetrastes bonasia* and willow ptarmigan *Lagopus lagopus*) are based on relative density estimates, for which the data are gathered through a line transect method. The first nation-wide monitoring program for grouse was launched already in 1963 (Lindén & Rajala 1981) followed by a Finnish innovation, the wildlife triangle scheme (Lindén et al. 1996), from 1989 onwards. The collection and analyzing of data, formulating the needed estimates and decision-making on sustainable hunting quotas are all based on effective collaboration between volunteers, researchers, wildlife experts and the Government.

Earlier, there has been a one-year time lag in the use of density data for hunting regulation, i.e. the decisions for hunting season in, say, 2010, were mainly based on grouse density estimates from 2009. The 2014 was the first year hunters and other volunteers had the opportunity to report wildlife triangle count results through an internet-based system, which was developed as a part of Lifedata project funded by the EU. Throughout Finland, 707 wildlife triangle transects were walked and grouse sightings reported over only nine days (from 26th of July to 3rd of August). Approximately 75% of the results were reported electronically through internet, and the database was thus quickly formed. The results could be followed online in real time. Altogether 941 wildlife triangles were studied corresponding to about 11 000 km transect lines. Compared to last year, the grouse populations were found to be roughly 25 % smaller throughout the country. The decline was mostly due to cold and wet breeding conditions in spring 2014.

Soon after the data were collected in August the officials from the Ministry of Agriculture and Forestry discussed the results with the Finnish Wildlife Agency and local wildlife experts. Based on these discussions and comparisons with the long-term data on grouse densities, proportions of juveniles and their fluctuations, the Ministry decided to suggest regional restrictions for hunting. The regulation laid down by the Ministry came into effect on 21st of August. The grouse hunting season opened on September 10th, leaving a bit less than three weeks for the officials to announce the restrictions.

With this timely process and well-functioning co-operation it is now possible to take into account population fluctuations of grouse on the ongoing year and thus greatly enhance the sustainability of grouse hunting in Finland.

Unfortunately the website used for collecting the wildlife triangle results can be found only in Finnish, but the address is www.riistakolmiot.fi.

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Katja Ikonen (katja.ikonen@rktl.fi), Saija Kuusela (saija.kuusela@ymparisto.fi), Pekka Helle (pekka.helle@rktl.fi) & Harto Lindén (harto.linden@rktl.fi).



Contribution de la bioacoustique au monitoring a long terme d'une population de gelinottes des bois *Tetrastes bonasia*

Blaise Mulhauser & Jean-Lou Zimmermann

Summary: Contribution of bioacoustics to the long-term monitoring of a population of Hazel Grouse *Tetrastes bonasia*

The first twelve years of bioacoustic monitoring of the population of Hazel Grouse in the *Communal de La Sagne* (Neuchatel canton, Switzerland) have clarified several aspects previously poorly understood of the biology of this species: demography, survival rates, social cohesion. It is shown that the numbers at this site depend not only on the general reproduction rate of the species in the region, but also on the presence of well-established social groups. In the Communal de La Sagne the average minimum life expectancy of Hazel Grouse is 4.63 years. At least three birds lived for more than 8 years and one of them reached 10 years. The area of each individual's territory, over the whole adult life, is between 7.8 and 62.6 ha. A mate male living in the center of a group is much more sedentary than are single birds on the periphery or at the intersection of two different groups. This suggests that the stronger is the cohesion within a group, the better are the chances of survival of each of its individual. However, too dense a population will attract predators. The "optimum" density is between 6 and 8 individuals per sq. km.

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