

GROUSE NEWS



Newsletter of the WPA/BirdLife/IUCN/SSC Grouse Specialist Group

Issue 34

November 2007

Contents

From the Chair	2
Research Reports	
Cripple losses from grouse shooting, a brief review	3
Breeding behaviour of a double-renesting female rock ptarmigan <i>Lagopus muta helvetica</i> L.	7
Developing a DNA test to separate black grouse <i>Tetrao tetrix</i> dung from that of other grouse	14
Conferences	
Eleventh International Grouse Symposium, Whitehorse, Yukon Territory, Canada, 11-16 September 2008	15
Proceedings of the X th International Grouse Symposium	16
The 4 th International Black Grouse Conference.	17
1 st International Conference „Conservation of the Forest Grouse” in Poland	18
Snippets	
Comments on notes on display by capercaillie <i>Tetrao urogallus</i>	19
Golden eagle kills displaying capercaillie at lek	20
Six grouse on the American WatchList 2007	20
Grouse taxonomy – an ongoing story...	20
IUCN Chair Meeting upcoming	21

In this issue there are research reports on cripple losses from grouse shooting, breeding behaviour of rock ptarmigan and DNA test to separate black grouse dung from other grouse.

Information on different grouse conferences is given. A short summary of Xth International Grouse Symposium and 4th International Black Grouse Conference is found and also 1st International Conference „Conservation of the Forest Grouse” in Poland. The 11th International Grouse Symposium will be held in mid September 2008 in Whitehorse, Yukon Territory, Canada. You will find updates on the conference in this issue and on the conference web site. Be sure you are able to join us for the week in September 2008.

Snippets contains many interesting notes like winter display by capercaillie and a link to a short video of a golden eagle killing two capercaillie cocks at lek in spring. Short notes on grouse on the American Watch list, grouse taxonomy and an upcoming IUCN chair meeting are published.

Tor Kristian Spidsö, Editor of Grouse News.

Department of Natural Resources Sciences and IT, Nord-Trøndelag University College, Norway

Tor.Spidso@hint.no

From the Chair

There is a German proverb “Gut Ding will Weile haben” – saying that a good result will take a while. The revision of the Grouse Action Plan took more than just a while. There were many obstacles along the way. The most significant one was that the compiler moved to a new job that produced a time lag of about a year in collecting information and writing of the manuscript. I hope for your understanding, and I am grateful to Michele Loneux for taking over the final formatting, to Phil McGowan from the GSG’s parent World Pheasant Association WPA for helping with financing her work, to Natalie Clark from WPA for proof reading, and to SSC Chair Holly T. Dublin and the IUCN Publication Unit for their support with the publication process.

The 2006-2010 Revision (Storch 2007) of the 2000-2004 Grouse Action Plan (Storch 2000, see <http://www.iucn.org/dbtw-wpd/>) will be published as an online document in pdf format by the Species Survival Commission of the IUCN and by the World Pheasant Association WPA. The manuscript has been approved by SSC and WPA in autumn 2007, and is now with IUCN for final touches. The new Action Plan will be deposited in the IUCN library database and accessible through the IUCN Online Publications Catalogue. Unfortunately, IUCN cannot yet give us the final URL, but promised to upload the Grouse Action Plan soon - hopefully still in 2007! All Grouse SG members will also be notified by email as soon as the AP is available. Meanwhile, until the final URL will become available, the Action Plan is available for download at <http://www.wildlife.uni-freiburg.de/downloads/Grouse%20AP-en/view>.

Here is what SSC Chair Holly T. Dublin and WPA Director Philip McGowan are saying in their foreword to the GSG’s 2006-2010 Grouse Action Plan: “*The Grouse Specialist Group contains a wonderfully diverse array of talented members.[...] the expertise contained within this technically-skilled group is a powerful demonstration of the important contributions made by the Specialist Groups of the IUCN Species Survival Commission. This Action Plan is their distillation of the current status of the world’s grouse and an assessment of the key issues facing these species. [...] This plan shows that our biological knowledge of what is needed to safeguard and even restore populations of grouse is very advanced. These magnificent birds deserve that this knowledge is translated into action so that their stunning displays remain a vibrant and evocative part of our relationship with nature.*”

References

- Storch, I. (Compiler) 2000. Grouse: Status Survey and Conservation Action Plan 2000-2004. - WPA/BirdLife/SSC Grouse Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK and the World Pheasant Association, Reading, UK.
- Storch, I. (compiler) 2007. Grouse Status Survey and Conservation Action Plan 2006-2010. - WPA/BirdLife/SSC Grouse Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK and the World Pheasant Association, Reading, UK. Online (URL.....)

Ilse Storch, Chair Grouse Specialist Group

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



RESEARCH REPORTS

Cripple losses from grouse shooting, a brief review

Adam Watson

Summary

During drives involving 30+ men for hunting red grouse, 1-2% of shot birds were crippled and not picked up. For willow ptarmigan in Newfoundland, as many were crippled and not picked up as were in the bag. Estimates for French black grouse amounted to 15%, but biologists allow 25% when setting bag limits, because some crippled birds show no signs of it after being shot. For capercaillie in Scotland (before a recent ban for conservation reasons) and the Pyrenees, estimates were 42% and 30%. In Canada, it is estimated that not more than 10% of shot blue and spruce grouse are crippled, low values because most birds are shot in trees or on the ground. An early estimate for ruffed grouse was 13% of birds picked up. Crippling losses in other bird species shot and in birds flying into power-lines provide relevant understanding and are discussed briefly.

Introduction

Mortality from hunting and morbidity from crippling of shot birds are of obvious relevance to population dynamics and conservation. The impact of hunting mortality on subsequent numbers has received much attention, but potential impacts of crippling are poorly understood. This review is a small contribution.

Hunters cripple many birds that fly on and are not picked up, and some of these die soon after. A few survive and recover partly, though usually severely handicapped by their injuries. These birds are vulnerable to predators, and some die from this cause later.

Despite this obvious material mortality, researchers on game-birds have tended to ignore cripple losses, and very few have published evidence where they tried to assess such losses. Many hunters are reluctant to admit that they wound birds and that some of these escape. Moreover, the topic is hard to study. A bird wounded by shooting becomes more vulnerable to predation. If it is found dead later, showing signs of predation, one might infer that it died from predation, yet crippling by shooting would have predisposed this. If it is found dead later, without signs of violence, one might attribute death to other unknown factors, without realising the predisposition.

Results

Red grouse

Much shooting of red grouse *Lagopus lagopus scoticus* involves drives by many beaters towards hunters who await the birds in a line of constructed butts. During a drive, each shooter in a grouse-butt, along with a man loading his gun and a gamekeeper behind the line of butts, watch where shot red grouse fall. Immediately after the drive, they walk to find and pick up birds, using dogs. Also they discuss with one another and with those in adjacent butts where likely carcasses are, and the number of carcasses.

Field notes from a population study at Glen Esk showed that biologists, each with 2-3 pointing dogs, found a few red grouse dead in good body condition, without signs of predation or wire accidents, on a belt 100-200 m behind the butts, in the week after shooting. These were likely to have been cripples. Their number amounted to none in one year and almost 2% of those shot in two years. It is possible that crippled birds flew far beyond the butts and that biologists later found them long dead, too late to tell whether they had died in poor condition from non-violent causes or in good condition from crippling. However, biologists with dogs searched ground beyond the butts during routine counts of live grouse, on study areas stretching from 200 m beyond the butts to 1 km beyond. Yet in September and October they found very few birds that had died without signs of predation or wire accidents. On the low study area, where estate staff picked up 752 shot birds in four years, the total that biologists found dead without signs of predation or wire accidents came to only seven during the period 12 August-30 September, and only three in October (Jenkins *et al.* 1963). Four live birds in poor condition and unable to fly proved to contain many thread-worms and showed no signs of shot or of injuries from shooting. Hence it is likely that not more than 2% of the grouse died from crippling without being picked up for the bag.

At Kerloch moor, where shooters killed far fewer red grouse than at Glen Esk, biologists found none dead on the belt behind the butts, during the week after shooting. Over the three autumns 1962-64 they found only one dead without sign of predation or wire accident in September-November after shooting, compared with 100 shot on the study area (Jenkins *et al.* 1967). Because biologists searched up to 2 km beyond the butts during routine counts, losses from crippling must have been very small.



Among radio-tagged Swedish willow ptarmigan *Lagopus lagopus lagopus*, wounding was claimed to have taken only one out of 22 birds killed by shooting (Hörnell-Willebrand 2005). Most deaths were attributed to predation. Some deaths attributed to predators, however, might have involved birds crippled by shooting and hence predisposed to predation. Any study that does not involve observations of birds being hunted is liable to underestimate deaths by crippling and to overestimate deaths by predators.

On the Avalon Peninsula of Newfoundland, where hunting effort is heavy on land near roads, a game officer reckoned that he picked up only half of the birds that he had hit with shot (Mercer & McGrath 1963). Hunters walked on open barrens with short heath and infrequent patches of scrub. On such open land, mostly with a dark vegetation background in autumn, the many white feathers on wings and bellies of shot birds would be conspicuous and easily noticed if crippled birds were to fall on ground near the hunters. It seems likely that crippled birds that were not picked up would have flown out of the immediate visible area.

Black grouse

In black grouse *Tetrao tetrix*, hunting of females is prohibited in France. French hunters report a cripple loss equivalent to 15% of blackcocks picked up (Ellison *et al.* 1982 in English covering four of the five years, and Ellison *et al.* 1987, p. 39; in French, covering all five). However, hunters do hit some birds, without any obvious signs such as feathers coming out or the bird jolting in flight. All hunters have dogs and some are thought to be probably reluctant to admit causing cripple losses, so the total number killed would be under-estimated. Larry Ellison has informed me that he personally once shot at three woodcock without any of them falling or showing signs of having been hit, such as feathers out or brief checking in flight, and all three flew out of sight apparently unharmed, yet a few minutes later he and his dog found all three dead up to 200 m away. Because of such observations, game biologists in France estimate that the proportion of blackcock killed would amount to 26% above the number picked up. The biologists use prior counts to recommend a blackcock quota at say 100, but then adjust it to 75 for the game department to set for hunters.

Capercaillie

In Scotland, Moss *et al.* (1979) stated that shooters bagged about 12 % of capercaillie *Tetrao urogallus* that observers saw during drives. They counted shot birds seen to fall but not picked up by hunters. Some showed signs of having been hit, such as losing feathers or checking in flight, yet continued to fly out of sight through the woodland, so these were classified as wounded, amounting to 5% of the numbers seen during drives. Adding 5% to the 12% gives 17 % of those seen, or an extra wounded proportion amounting to 42% of the number bagged. Sometimes a wounded bird was found dead later. On the other hand, some in the bag had broken bones which had reset, indicating birds that had been shot but had recovered. Allowing for all this, authors estimated a total kill in round figures of about 15% of the birds that were seen coming over. In view of the above observations on black grouse and woodcock that were hit but did not show signs of it, and yet died soon after, it seems possible that 15% in capercaillie may be too low.

In the French Pyrenees, Emmanuel Ménoni informs me that at least 30% of shot capercaillie show signs such as feathers out or brief halting in flight, and yet are not picked up. Although most hunters use pointing dogs, they often shoot when birds are too far away and less likely to be killed outright, and the quality of dogs for searching varies. He includes cripple estimates when calculating overall losses and bag quotas.

Blue, spruce and ruffed grouse

Because there are few hunters across vast expanses of grouse habitat, Canadian regulations on hunting are liberal, so the provincial departments do not set bag quotas. Fred Zwickel informs me that not more than 10% of blue grouse *Dendragapus obscurus* picked up would be cripples, because hunters shoot half or more of them on the ground or in trees, and losses of spruce grouse *Dendragapus canadensis* would be less because virtually all are shot on the ground or in trees. In New York State, an estimate of cripple loss in shot ruffed grouse *Bonasa umbellus* was 13% of birds picked up (Bump *et al.* 1947).

Bobwhite quail

Of northern bobwhites *Colinus virginianus*, Bob Robel tells me that he studied 100-500 leg-ringed birds annually over five years in the 1960s. He estimated a cripple loss of 9-12 % of shot birds in different years. Although he did not know how many of these later recovered from their injuries, he suspects that at least 80% would not survive the winter, and if they did not die from injury they would be weakened and likely to be victims of predators. He took part in a study where 554 northern bobwhites carried radios (Madison *et al.* 2002), and hunters on different areas shot 8-23% of them in different years. Cripple loss



would have been additional to this, included among those deaths attributed to birds being killed by predators or found dead from unknown causes.

Using his own notes as a hunter in the USA, Leopold (1933) wrote that he had a particularly good retriever. Yet he found cripple losses amounting to 19% of the quail that he picked up.

Table 1. Estimated proportions of birds crippled by shooters and not picked up, as a percentage of the number that was picked up.

	Study area	Proportion (%)	Reference
Red grouse	Scotland, Glen Esk	not >2	Jenkins <i>et al.</i> 1963*
	Scotland, Kerloch	1	Jenkins <i>et al.</i> 1967*
Willow ptarmigan	Newfoundland, Brunette Island	103	Mercer & McGrath 1963
		100	^
	Sweden	4	Hörnell-Willebrand 2005
Black grouse	France, Alps	26	Ellison <i>et al.</i> 1987
Capercaillie	Scotland, northeast	42	Moss <i>et al.</i> 1979
	France, Pyrenees	at least 30	E. Ménoni, pers. comm.
Ruffed grouse	New York State	13	Bump <i>et al.</i> 1947
Blue grouse	Canada	not >10	F. Zwickel, unpublished
Spruce grouse		less than above	
Pheasant	Iowa	30	cited by Leopold
Northern bobwhite	USA	up to 19	Leopold 1933
	Kansas	9-12, different years	R. Robel, unpublished
Doves	USA	10	Leopold 1933

* Grouse shot by driving to butts, data supplemented by notes (A. Watson, unpublished).

^ Judgement of 'a conscientious wildlife officer' doing his own hunting.

Ducks

Cripple losses from shooting have been studied more in ducks, and this helps understand impacts on grouse. In Illinois, cripple losses affected 18-41 % of shot ducks in four years, averaging 30% (Bellrose & Chase 1950). Although 'a small proportion of these cripples recover; it is also known that, of the ducks shot at but apparently unharmed, many are so severely wounded that they soon die. These two factors tend to counterbalance each other'.

A study in eastern Canada revealed that the cripple loss of ducks was 25%, the same as the arbitrary figure used in the US and Canada to adjust national estimates of the total kill (Boyd 1971). The percentage crippled and not retrieved varied from 15-16% of teal (*Anas*) to over 40% for goldeneyes (*Bucephala*) and for goosanders and mergansers (*Mergus*). 'A few ducks retrieved by hunters but subsequently discarded have been included in the unretrieved category, since birds rejected by hunters are as much wasted as those hit but not picked up.' Later work involved a fluoroscope to detect embedded shot, which causes injury and lead poisoning.



Cripple losses of ducks in Wisconsin were 24-32% (Wheeler *et al.* 1984). Hunter crowding 'promotes skybusting even among experienced hunters. The extremely high shooting pressure and hunter numbers kept birds at extreme ranges and caused hunters to try to fire the first shot before someone else flared the incoming birds. Ducks and especially geese were unretrieved because hunters feared following cripples through several other hunting groups "territories"'.

A well-analysed study in Manitoba showed cripple losses amounting to 33% of the ducks shot (Hochbaum & Walters 1984).

Discussion

Deaths and crippling of birds flying into power-lines are of some relevance. In earlier studies of bird mortality on power lines in Finland and the Netherlands, losses from crippling were estimated at 22% and 50% (Hiltunen 1953, Renssen *et al.* 1975).

In a study of mortality from power-lines in Norway, Bevanger (1995) used a pointing dog, which searched for carcasses outside as well as inside the power-line corridor. The dog found fatally wounded birds that had flown out of the corridor before dying, in some cases far outside. He considered that the cripple loss was about the same in willow ptarmigan, black grouse and capercaillie, with an estimated loss of 20% in autumn and spring, and 30% in winter. At power-lines through dense forest, he has informed me that the dog sometimes disappeared into the forest on either side, and came back carrying wounded birds that it had killed and retrieved, including willow ptarmigan and a capercaillie. He did not know how far such wounded birds had gone from the corridor, when the dog found them, because the dogs were in woodland out of his sight.

In Finnmark, where reindeer fences kill many grouse, Bevanger & Brøseth (2000) found that some willow ptarmigan and rock ptarmigan *Lagopus muta* that flew into fences were 'not mortally wounded and managed to move quite a long distance from the fence'. It seems likely, however, that in most cases such wounded birds would die later from predation, and that few, if any would breed in the next summer.

One defect that applies to birds crippled by shooting and by flying into power-lines is that cases where birds are crippled but fly on without showing any signs of crippling are likely to lead to minimal estimates or underestimates. The only way to overcome this snag is to use radio-tracking. During a study in the Netherlands, some radio-tagged black-headed gulls *Larus ridibundus* and herring gulls *Larus argentatus* that had been injured by flying into power-lines moved up to 2000 m from the place of injury (Heijnis 1980).

Hence the losses of grouse due to crippling by hunters may well be under-estimated. This would be less likely if observers search big areas beyond where shooting occurs, as in studies of red grouse at Glen Esk and Kerloch. Obviously, it would be far easier to see injured birds (or find them subsequently after they have died) on ground that is open, such as tundra or short moorland, than in dense scrub or woodland.

Acknowledgements

Jim Bendell, Kjetil Bevanger, Larry Ellison, Harry Lumsden, Emmanuel Ménoni, Bob Robel and Fred Zwickel gave unpublished information that added greatly to this review.

References

- Bellrose, F.C. & Chase, E.B. 1950. Population losses in the mallard, black duck, and blue-winged teal. - Biological Notes No 22, Illinois Natural History Survey.
- Bevanger, K. 1995. Estimates and population consequences of tetraonid mortality caused by collisions with high tension power lines in Norway. - *Journal of Applied Ecology* 32, 745-753.
- Bevanger, K. & Brøseth, H. 2000. Reindeer *Rangifer tarandus* fences as a mortality factor for ptarmigan *Lagopus* spp. - *Wildlife Biology* 6, 121-127.
- Boyd, H. 1971. Observations on duck hunting in eastern Canada in 1968 and 1969. - Occasional Paper No. 12, Canadian Wildlife Service, Ottawa.
- Bump, G., Darrow, R.W, Edminster, F.C. & Crissey, W.F. 1947. The ruffed grouse: life history, propagation, management. - Holling Press, New York State Conservation Department.
- Ellison, L.N., Magnani, Y. & Corti, R. 1982. Comparison of a hunted and three protected black grouse populations in the French Alps. - *Proceedings of the Second International Conference on Grouse*: 175-187.
- Ellison, L.N., Bernard-Laurent, A., Magnani, Y., Gindre, R. & Corti, R. 1987. Le Tetras Lyre *Lyrurus tetrix*. Dynamique des Populations, Chasse et Biotope de Reproduction dans les Alpes Françaises. - Office National de la Chasse.
- Heijnis, R. 1980. Vogeltod durch Drahtanflüge bei Hochspannungsleitungen. - *Ökologie der Vögel* 2, 111-129.



- Hiltunen, K. 1953. Om de förluster som flygning mot ledningar förorsakar hönsfåglarna. - Suomen Riista 8: 70-76, 200-201.
- Hochbaum, G.S. & Walters, C.J. 1984. Components of hunting mortality in ducks. - Occasional Paper No 52. Canadian Wildlife Service, Ottawa.
- Hörnell-Willebrand, M. 2005. Temporal and spatial dynamics in willow grouse *Lagopus lagopus*. - PhD thesis, University of Agricultural Sciences, Umeå.
- Jenkins, D., Watson, A. & Miller, G.R. 1963. Population studies on red grouse *Lagopus lagopus scoticus* (Lath.) in north-east Scotland. - Journal of Animal Ecology 32: 317-76.
- Jenkins, D., Watson, A. & Miller, G.R. 1967. Population fluctuations in the red grouse *Lagopus lagopus scoticus*. - Journal of Animal Ecology 36: 97-122.
- Leopold, A. 1933. Game management. Scribner's. - New York.
- Madison, L.A., Robel, R.J. & Jones, D.P. 2002. Hunting mortality and overwinter survival of northern bobwhites relative to food plots in Kansas. *Wildlife Society Bulletin* 30, 1120-1127.
- Mercer, E. & McGrath, R. 1963. *A study of a high ptarmigan population on Brunette Island, Newfoundland in 1962*. Department of Mines, Agriculture & Resources, St John's.
- Moss, R., Weir, D. & Jones, A. 1979. Capercaillie management in Scotland. In: Lovel, T.W.I. (ed.). *Woodland Grouse 1978*: 140-55.
- Renssen, T.A., Bruin, A. de, Doorn, J.H. van, Gerritsen, A., Greven, N.G., Kamp, J. van de, Linthorst Homan, H.D.M. & Smit, C.J. 1975. *Vogelsterfte in Nederland Tengevolge van Aanvaringen met Hoogspannings-lijnen*. Rijksinstituut voor Natuurbeheer, Arnhem.
- Wheeler, W.E., Gatti, R.C. & Bartelt, G.A. 1984. Duck breeding ecology and harvest characteristics on Gravel River Marsh Wildlife Area. *Technical Bulletin* No 145. Department of Natural Resources, Madison, Wisconsin.

Adam Watson, Centre for Ecology & Hydrology, Banchory, Kincardineshire AB31 4BW, Scotland, awat@ceh.ac.uk.

Breeding behaviour of a double-renesting female rock ptarmigan *Lagopus muta helvetica* L. André Miquet & Thomas Deana

Summary

During a study of rock ptarmigan *Lagopus muta helvetica* in northern French Alps, where human frequentation and nest predation are very high, we observed changes of nesting territory and double replacement clutches for the same hen during two successive years. Nest destruction during incubation may be the cause of this behaviour. Monitoring incubation for the last of these six clutches with a thermocaptor, showed complete nest desertion by the hen during 75% of the nights, causing death of embryos and an abnormally long incubating period (33 days) that was terminated by predation. We studied rock ptarmigan in National Park Vanoise within the French Alps. Study area is an alpine meadow with rocks and small marshes, at an elevation of 2500 m above sea level. It is the major entrance into the park, with a comfortable refuge in its centre and a road across it. The objective of our research was to assess the effects of human presence on nesting and breeding behaviour and success of rock ptarmigan. However, the purpose of this paper is to describe unusual nesting behaviour we observed by one hen for two consecutive years.

Material and methods

We located nests by observing male and female behaviour from a distance of 100 to 150 meters. Chronology of male displays with or without his mate and hen movements was the only cues leading to nest location and discovery (visual tracking of the hen with a 30 x telescope). Intensive observations allowed us to document laying and incubating chronology, in many cases to the nearest day. Nests were never visited, except during capture of the hen for radio-tagging. Documenting replacement clutches and subsequent years' nests was accomplished with radio-telemetry.

In 2000, to monitor incubating rhythm, we equipped two nests with programmable data-loggers recording temperature every minute, allowing determining when the hen leaves the nest (Wiebe & Martin 1997). The first nest was of a hen monitored since 1997, in a highly disturbed section of the park. This was the third clutch of this hen; it contained four eggs, and was considered completed as incubation was initiated.



In addition to this "disturbed" nest, we instrumented a second one (age unknown) in an undisturbed area of the site. This "reference" nest contained 7 eggs and the hen was equipped on the fifth day of incubation and monitored until hatching.

Results

Territorial fidelity and nest distribution

This hen changed her territory twice in four years. We do not know whether these changes were linked to the death or change of mate; both occurred after a breeding failure and the death of the hen previously occupying the territory. Nests made within the same territory were 40-360 meters from one another. The distance between nests with change of territory was 710 and 560 m (Table 1).

Effect of human presence on nest distribution

First clutches were laid when human presence was very low, but replacement clutches occurred during the tourist season when probability of disturbance to the hen was relatively high (Table 1). We could not detect any pattern with regard to distance from paths and off-path human density in nest surroundings. The last clutch of the hen A (monitored with thermo-captor) was by far the most exposed to disturbance, being laid between two paths, one 10 m away and 2 meters above the nest, the other 20 m lower down. Hundreds of people hiked on both paths each day during incubation but never flushed the hen.

Table 1. Nest distribution of hen A over four successive years.

	Distance from former nest (m)	Difference in elevation (m)	Hatching success	Change of territory	Death of former owner hen	Difference as to human pressure
1997	unknown	unknown	Failure	unknown	unknown	unknown
1998	710	+ 30	Failure	YES	YES	more disturbed
	220	- 5	Failure			less disturbed
1999	40	0	Failure	NO	-	similar
	190	+ 10	Failure			more disturbed
	70	+ 10	Failure			less disturbed
2000	560	+ 40	Failure	YES	YES	more disturbed
	170	+ 40	Failure			less disturbed
	360	- 50	Failure			more disturbed

Laying pattern and breeding success

During four consecutive years of monitoring, this hen laid nine clutches and none hatched successfully (Table 2). Predation was the cause of all nine failures, and the red fox *Vulpes vulpes* was the likely predator in all cases.

Table 2. Fate of first and replacement clutches in hen A over 4 study years.

	Predation of 1 st clutch	Predation of 2 nd clutch	Predation of 3 rd clutch
1997	during last week of incubation	none	none
1998	between end of laying and first week of incubation	on 18 th day of incubation	none
1999	on 2 nd day of incubation	on 9 th day of incubation	on 13 th day of incubation
2000	on 8 th day of incubation	on 4 th day of incubation	on 33 rd day of incubation

Replacement clutches

Only four of the 9 clutch sizes were known, two first clutches (9 and 7 eggs), one second clutch (5 eggs) and one third clutch (4 eggs). Such a decline in clutch size in successive clutches is often the rule (Parker 1981).



Considering the 1999 and 2000 seasons, two replacement clutches were laid each year (i.e. six clutches in all) (Figure 1). All six clutches were preyed upon after incubating initiation, so all can be considered plain clutches and not single clutches interrupted and laid in successive nests.

The duration of incubation on the day the nest was lost was 1 and 7 days in 1999, more than 8 days and 4-5 days in 2000. The number of days between predating and relaying initiation was 7 and 15 days in 1999, 5-9 and 2-4 days in 2000. The date of the initiation of the third clutch was July 15th in 1999, and July 14th in 2000.

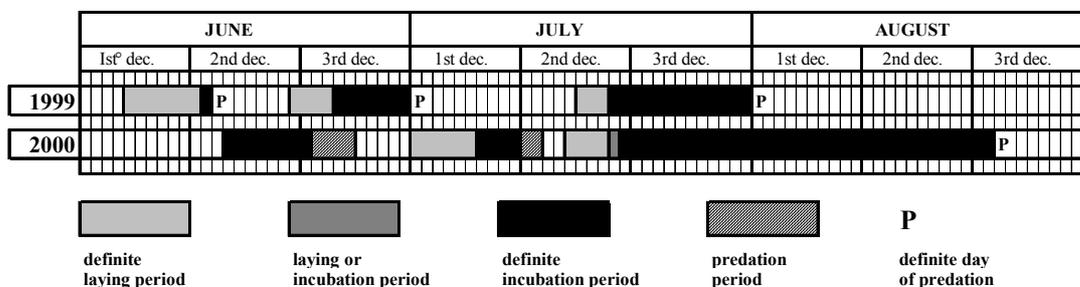


Figure 1. Laying, incubating and predating chronology of clutches of hen A in 1999 and 2000.

Incubating behaviour

- Reference nest.

This “reference” hen showed a quite regular rhythm with three pauses per day (Figure 2):

- one very regular at dawn (100% of 14 days)
- one quite regular at the end of the morning (10 days out of 14)
- one quite regular at the end of the day (9 days out of 14)

The mean nest temperature during incubation was 25 °C. Hatching occurred on July 10th, all 7 chicks left the nest at 09:37.



- Nest of hen A (third clutch)

This hen attended her nest for only 8 of the 32 nights monitored (25 %) (Figure 3). Incubation was continued long over the time required for hatching (33 days instead of 21); predation occurred during the night of the 17–18th August, probably on eggs dead long before. Otherwise, the pauses showed clear adherence to the “normal” pattern:

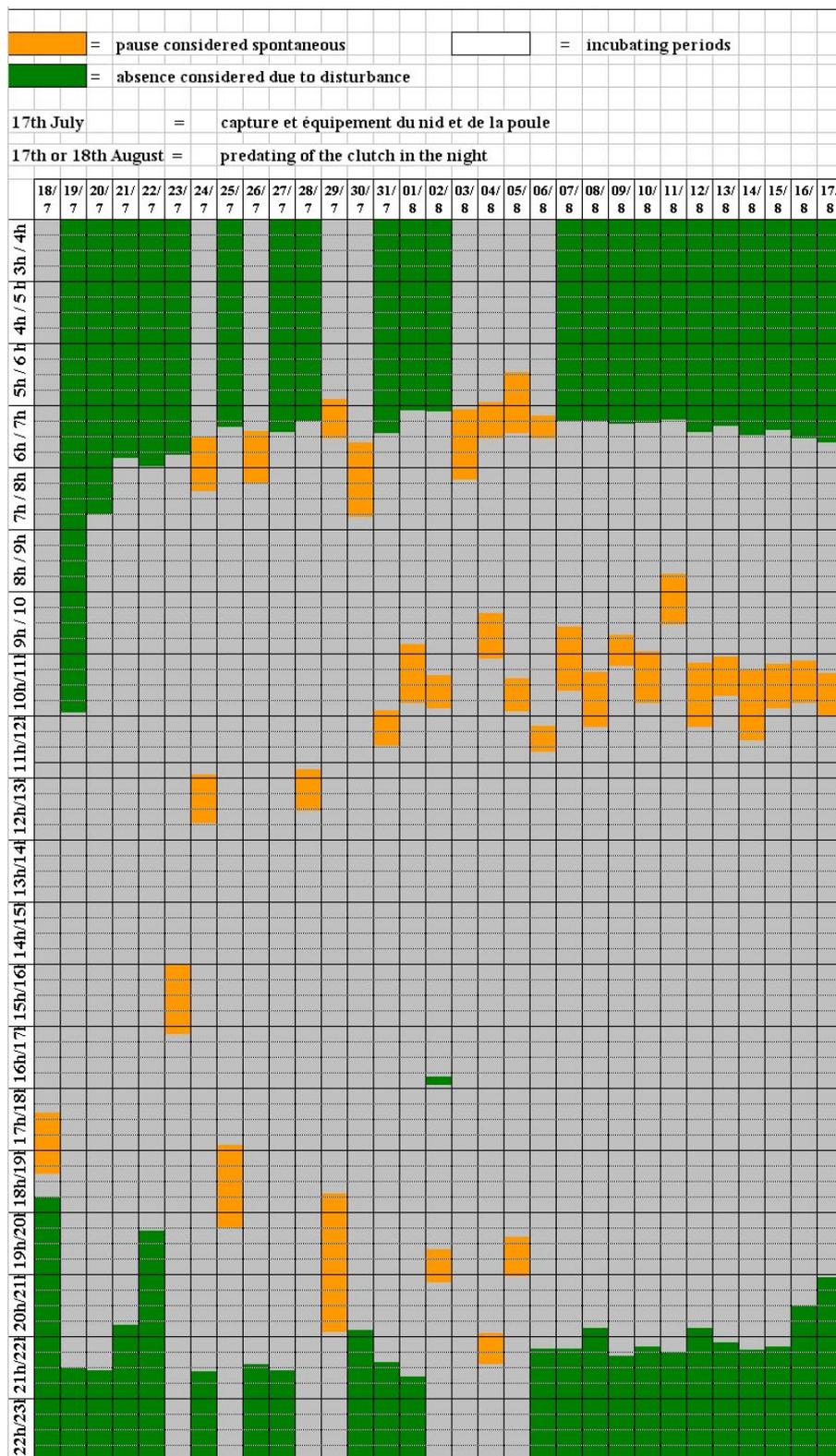


Figure 3. Incubating pauses of the disturbed hen.



- the dawn pause occurred after the 8 nights spent on the nest (Table 3 gives data for these 8 pauses only). When she spent the night away, the hen resumed incubating at “normal” time (average over the 33 days monitored: 6h34, extremes 6h03 - 7h46).
- mid-day pause was quite regular (18 days out of 33), similar to that of undisturbed hen.
- evening pause occurred on 6 days only (20 %) (Table 3 gives data for these 6 pauses only), with an extremely irregular pattern and double duration compared to the other hen. When she deserted her nest for the night, her evening departure corresponded with that of “normal” hen.

Table 3. Pause pattern in incubation of the disturbed and undisturbed hen.

		Morning pause			Mid-day pause			Evening pause			Global pause
		length (min.)	leaving time	time of return	length (min.)	leaving time	time of return	length (min.)	leaving time	time of return	
Undisturbed hen (monitored 14 days)	Mean	45	5h30	6h15	41	11h15	11h56	30	21h38	22h09	6 % (1h44 / day)
	Extr.	22– 80	5h13 - 5h58	5h44 - 6h40	27 - 54	9h56- 12h56	10h50 - 13h46	15-49	21h28 - 21h50	21h58- 22h21	1h03 - 3h05
Disturbed hen (monitored 30 days)	Mean			6h34	42	10h21	11h03	61	18h59	20h00	65 % (including 8 nights)
	Extr.			6h03 - 7h46	23 - 67	8h43- 11h57	10h03 - 12h42	29- 133	17h24– 20h57	18h22- 21h56	

On July 22nd, one pause in mid-afternoon replaced both mid-day and evening pauses; it is not included in the above statistics, but it is in the global ones of duration and percentages. The mean nest temperature during incubation was 22.5 °C.

Discussion

We consider our methods (nest search and monitoring) did not significantly bias our results. In rock ptarmigan, Cotter & Gratto (1995) found a predation rate, clutch size and breeding success similar in disturbed hens (flushed from nest every 3-4 days) vs. undisturbed ones. Also, hatching and fledging success were similar in hens flushed every 3-4 days and every 6-9 days during incubation. In willow ptarmigan *Lagopus lagopus*, Hannon *et al.* (1993) found similar hatching rates and percentage of reproductive hens in intensely searched vs. unsearched areas.

Occurrence of double replacement clutches

More than one replacement clutch per year is known in the genus *Lagopus*, ascertained in white-tailed ptarmigan *L. leucurus* (K. Wiebe *pers. com.*) and suspected in rock ptarmigan (Scherini & Tosi 1997). Rock ptarmigan could be prone to this strategy, having the smaller clutch size, the faster laying rate and most extreme environmental conditions among Tetraonids. It is also known though very rare in sage grouse *Centrocercus urophasianus*, as well as "doomed" hens (one never brought off a brood and apparently only attempted to nest in 3 of the 5 years, J. Connelly *pers. com.*)

Here, the disturbed hen presented this second replacement clutch two years in a row. This behaviour was caused of course by a very high predation pressure (8 nest destruction on a row in this single female, 80 % predation over 30 nests studied in the area (Miquet & Deana in press). All nests were predated at early stages, allowing the formation of a new clutch.

Time span between replacement clutches was “classic” in 1999: 7 days between first and second clutch (3-14 days in willow ptarmigan, Parker 1981), and logically longer (15 days) between second and third clutch. In 2000 this rate was very quick (first interval of 5-9 days, second of 2-4 days only, probably linked to short incubation stage at destruction time).

Aberrant incubating behaviour

Three pauses a day was the natural pattern in the “reference” individual hen. Through her aberrant incubating behaviour, the disturbed hen showed a similar tendency to three-period pauses. Aberrancy comes from nest desertion during 75 % of nights, leading to abnormally long incubating period (33 days interrupted by predation, standard length being 21 days). This hen being at least 4 years old, lack of experience cannot be a reason for this aberrant incubating behaviour. This leaves three hypotheses.



- *individual aberrant behaviour*: though this cannot be excluded, no case in literature has been found to support this hypothesis.
- *fear of the fox*: this clutch was the 6th in two successive years, the 5 previous ones being predated probably by the fox by night, i.e. during “obligatory” incubating periods. So all must have resulted in *in extremis* flights with extreme stress: the hen being the target of the fox might have associated night incubation with lethal risk, and given up doing it most of the time. Though speculative and with no literature references to support it, this hypothesis cannot be excluded. Exceptional circumstances can lead to exceptional answers.
- *physiological weakening*: physiological investment in clutch formation is very high in rock ptarmigan (nearly 29% of body mass, Jonhsgard 1983), and energetic demand of incubating is high especially by night (air temperature between 5° and 10°C here). Hens loose 11% of their body weight during incubation in white-tailed ptarmigan (Wiebe in Wiebe & Martin 1997), and 19 % in capercaillie *Tetrao urogallus* (Storaas et al. 2000), which is considerable. In capercaillie, Storaas et al. (2000) also observed that renesters left the nest more and for longer periods than first nesters.

It can be assumed that this hen, already weakened by the formation, laying and partial incubating of two clutches, was in such a weak condition at this time that she could not face nocturnal incubating, the most demanding in energy. This hypothesis could be supported by the lower incubating temperature achieved by this hen (20° to 24°C, vs. 23° to 27°C in the reference hen).

In terms of human perturbation, no direct impact was noticeable as the hen incubated all day long. Though absence of flushing does not mean absence of stress (Gabrielsen *et al.*, 1977), one could assume that human presence did not directly cause aberrant incubation.

Whatever the explanation, it is remarkable that this hen persevered so long, 9 days longer than normal incubating period: such adverse conditions could have made her simply abandon her nest.

Acknowledgements

J. Connelly, L. Ellison and K. Wiebe provided comments on the manuscript. This research was funded by the French Ministère de l'Ecologie et du Développement Durable. Field work was conducted by T. Deana and guards of Vanoise National Park.

References

- Cotter, R.C. & Gratto, C.J. 1995. Effects of nest and brood visit and radio transmitters on rock ptarmigan. - *Journal of Wildlife Management* 59 1: 93-98.
- Gabrielsen, G., Kanwisher J. & Steen J.B. 1977. Emotional brachycardia: a telemetry study on incubating willow grouse (*Lagopus lagopus*). - *Acta Physiol. Scandinavica* 100: 255-257.
- Hannon, S.J., Martin, K., Thomas, L. & Schiek, J. 1993. Investigator disturbance and clutch predation in willow ptarmigan: methods for evaluating impact. - *Journal of Field Ornithology* 64 4: 575-586.
- Jonhsgard, P.A. 1983. The grouse of the world. - University of Nebraska Press, 413 p.
- Miquet, A. & Deana, T. in press. Etude du lagopède alpin *Lagopus mutus helveticus* dans le Parc national de la Vanoise (Termignon, Savoie) : résultats préliminaires. - *Trav. Sc. Parc national Vanoise*.
- Parker, H. 1981. Renesting biology of Norwegian willow ptarmigan. - *Journal of Wildlife Management* 45: 858-864.
- Scherini, G.C. & Tosi, G. 1997. Ecologia e gestione faunistico-venatoria della pernice bianca. - *Oikos*, Regione Lombardia, Servizio Faunistico, 143 p.
- Storaas, T., Wegge, P. & Kastedalen, L., 2000. Weight-related renesting in capercaillie *Tetrao urogallus*. - *Wildlife Biology* 6: 299-303.
- Wiebe, K.L. & Martin, K. 1997. Effects of predation, body condition and temperature on incubation rhythms of white-tailed ptarmigan *Lagopus leucurus*. - *Wildlife Biology* 3: 219-227.

André Miquet & Thomas Deana, Cora Savoie, Université de Savoie, , F-73 376 Le Bourget du Lac, Parc national de la Vanoise, B.P. 705, F-73 005 Chambéry, France, amiquet@free.fr.



Developing a DNA test to separate black grouse *Tetrao tetrix* dung from that of other grouse

Mark Hancock

At Abernethy Forest in Scotland (a nature reserve owned by the conservation NGO, the Royal Society for the Protection of Birds), increasing black grouse *Tetrao tetrix* populations is an important management aim. Recently, we established a new trial at the reserve, which aims to test different forms of management – like burning, cutting and cattle grazing – as possible means of improving black grouse habitat. While we will get some indication of likely benefits, or otherwise, of these techniques, by comparing resulting vegetation with that preferred by young broods, and also perhaps by the pattern of changes in lek counts, we would like to be able to record direct usage of the managed areas using grouse dung counts.

However, while many observers can attribute grouse dung to the likely species, identification is never certain, due to the large overlap in diet and dung pellet size between some grouse species. Areas of the reserve used by black grouse are also visited by two other grouse species: capercaillie *Tetrao urogallus* and red grouse *Lagopus lagopus scoticus*, and it is likely that these species will also occur, perhaps regularly, in our managed areas.

Recently, Forest Research in Edinburgh, the research section of The Forestry Commission (the British national forest agency), used a DNA based test to distinguish dung of pine marten *Martes martes* from that of the red fox *Vulpes vulpes*. This work was carried out as part of the capercaillie LIFE project, funded by the European Union. The results showed that, while observers correctly assigned dung to species in most cases, a significant proportion of dung (c 20%) was mis-identified.

Forest Research and RSPB staff are now collaborating to develop and apply a DNA test for black grouse dung. Development of the test itself is being carried out by Forest Research, with RSPB contributing to costs, and providing some of the material (specimens, feathers, dung) used to develop the test. We have also been assisted by Jacob Höglund of Uppsala University, and Stuart Piertney of Aberdeen University, in providing sequences and further material; and by the Kincaig Wildlife Park in Scotland, who have provided grouse dung of known identity, from their captive birds.

Results to date look very promising, with a test that can distinguish black grouse dung from that of capercaillie and red grouse being a likely outcome. This work will be written up and published in due course, and the technique initially applied to assess the efficacy of the management techniques being tested at Abernethy, as appropriate tools for black grouse conservation.

Further details:

Mark Hancock, RSPB. mark.hancock@rspb.org.uk

Joan Cottrell, Forest Research. joan.cottrell@forestry.gsi.gov.uk

Stuart A'Hara, Forest Research. stuart.a'hara@forestry.gsi.gov.uk

Mark Hancock, RSPB. mark.hancock@rspb.org.uk



CONFERENCES

Eleventh International Grouse Symposium, Whitehorse, Yukon Territory, Canada, 11-16 September 2008

Kathy Martin

Update December 23, 2007

Plans are evolving for the eleventh International Grouse Symposium to be held in Whitehorse, Yukon, Canada, September 11 to 16, 2008. This symposium, which is held every three years, brings together grouse specialists and biologists from many countries in Europe, North America and Asia to discuss ecology, conservation and management of grouse.

To date, over 114 people have signed onto the website and have requested further information on the conference. For current information on dates, travel, and accommodation please visit the International Grouse Symposium website: <http://www.forestry.ubc.ca/alpine/IGS2008>. Please encourage your students to do so as well. You can also indicate your interest in the conference by sending an email to Shelagh Bucknell, the conference coordinator at Shelagh.Bucknell@ec.gc.ca. Shelagh will be sending out a message to all potential attendees in late January 2008 regarding the registration fees, deadlines for submitting abstract and registering, and details on the post conference field trips.

Scientific program

We welcome oral and poster presentations on all aspects of grouse biology, research and management.

The special themes will include

Population Dynamics (Brett Sandercock, convenor),
Behavioural Ecology, Habitat and Landscape ecology,
Conservation and Management Implications,
Molecular Genetics Applications (Gernot Segelbacher, convenor),
Impacts of global warming on grouse populations and habitats (Scott Wilson, convenor).

Conference Tour

On Sept 14 or 15, (Sunday or Monday), we will have a half day field trip to forest and alpine sites at Fish Lake just outside Whitehorse to visit habitats of interior blue grouse, and willow, rock and white-tailed ptarmigan.

Post Conference Tour

We have engaged Liz Hofer to organize the Post Conference Field trip. To date, 36 people have expressed interest in taking a post conference field trip, with the most popular trip being in the Yukon, compared to southerly options. It will help greatly in planning our tour if you indicate as soon as possible whether you are interested in joining this tour. We will post further details on the website in January.

Book your accommodation as soon as you can

The conference venue has reserved 150 rooms for us in two hotels (details on the website). September is a very busy month in Whitehorse, so we suggest that you book your accommodation early.

If you have questions for registration and program information, please contact Shelagh Bucknell Shelagh.Bucknell@ec.gc.ca or myself for program details, Kathy.Martin@ubc.ca.

Kathy Martin, Centre for Applied Conservation Biology, University of British Columbia, Vancouver, B.C. Canada V6T 1Z4, Kathy.Martin@ubc.ca



Proceedings of the Xth International Grouse Symposium

Larry Ellison

The Xth International Grouse Symposium was held at Luchon in the Pyrenees Mountains of France, 26 September to 3 October 2005. Congratulations to Emmanuel Ménoni and Claude Novoa of the Office National de la Chasse et de la Faune Sauvage for their professional organization of a widely appreciated symposium. Like in the past, the conference was truly international, attended by 163 scientists from 24 countries of Europe, Asia and North America. Presentations included 50 oral communications and 77 posters. One of the main topics concerned grouse habitats, partly because loss of suitable habitats is the main threat to grouse populations. Habitats of all species are being degraded or fragmented by diverse land use practices such as urbanization, agriculture, grazing, establishment of recreational facilities, particularly ski stations, development of oil and natural gas fields, and forest exploitation, including the associated access roads. Presentations on habitat often treated aspects of population biology, for example nest losses or dispersal in fragmented landscapes. Other topics in population biology included the impact of predation, shooting, and climate change on survival or reproduction, as well as reintroduction efforts and grouse cycles. Genetics was treated in several texts, although the results were often preliminary. Other subjects were the status and distribution of grouse, food habits, parasites, and census techniques.

The presentations resulted in 13 papers being accepted after peer review for publication in the Proceedings of the Grouse Symposium (Wildlife Biology Vol. 13, Supplement 1, 2007).

The first paper of the Proceedings reports on the worldwide status and threats to grouse, followed by an article detailing the situation of the Caucasian black grouse in Turkey. The next eight texts treat studies of habitats at the landscape or local scale. These include a landscape model based largely on soil conditions and climate for identifying both habitats currently used by capercaillie in Germany and those that would be suitable if management practices were changed. In the next paper, a landscape approach is also used to study niche partitioning by the lesser prairie-chicken and the ring-necked pheasant in Kansas (USA). The following two articles concern studies of specific habitats resulting in management guidelines applicable over wide geographic areas, namely recommendations for nesting and brood rearing habitats of sage-grouse across North America and a tree stocking guide for ruffed grouse resulting from an analysis forest stands at drumming sites in Minnesota (USA). The next paper discusses the little-known establishment of small capercaillie leks in young plantations in Norway. The last three habitat papers treat selection of nest sites in Chinese grouse, selection of winter night roosts by capercaillie in Germany and Switzerland and the new technique of GPS satellite telemetry for studying movements of capercaillie broods in Norway. Population biology is the subject of the final three articles. The first treats the importance of predation and collisions with fences as causes of mortality in lesser prairie chickens in New Mexico and Oklahoma (USA), followed by a paper on the effects of weather on fluctuations in hazel grouse numbers in the Czech Republic. Last but not least is an analysis of relevance of survival and reproductive rates to black grouse recovery programmes in the United Kingdom.

Our congratulations to Alexandre Andreev of Russia, whose research on the nesting biology of the Asian spruce grouse won the competition for best poster.

We trust that the Proceedings will contribute in some small way to the worldwide conservation of grouse, their habitats and the associated wildlife.

Laurence N. Ellison, *Special Editor for the Proceedings*, larry.ellison@orange.fr



The 4th International Black Grouse Conference. Ursula Nopp-Mayr

In September 2007, the 4th International Black Grouse Conference was held at the University of Natural Resources and Applied Life Sciences, Vienna/Austria. About 60 participants from 13 different countries attended the oral presentations, dealing with habitat selection and habitat management of black grouse in different nations and at different spatial scales on the first day. On day two, studies on human impacts on black grouse habitats due to tourism and building projects were presented. In a third session, black grouse genetics as well as breeding and re-introduction programs were shown and discussed. During an excursion to Styria, ongoing trends in the development of Austrian black grouse habitats were demonstrated, focusing on the installation of wind power plants and ski lifts in particular. On the last day of the conference, a workshop was held to discuss an assessment guideline for official expertises on construction projects in Alpine black grouse habitats, which will be published soon. Proceedings of the conference will be published as a supplemental volume of Folia Zoologica. The book of abstracts of the 4th International Black Grouse Conference is available for download at the web site of the conference (URL: <http://www.boku.ac.at/conference/>).



Participants at the black grouse conference in Vienna.

Ursula Nopp-Mayr, University of Natural Resources and Applied Life Sciences, Vienna, Department of Integrative Biology, Institute of Wildlife Biology and Game Management, Peter Jordanstraße 76, A-1190 Vienna, Austria, ursula.nopp-mayr@boku.ac.at.



1st International Conference „Conservation of the Forest Grouse” in Poland

Dorota Zawadzka, Jerzy Zawadzki, Małgorzata Piotrowska

From 16 to 18 October, the 1st Polish Conference Conservation of the Forest Grouse held in Janów Lubelski. The meeting was organized by Regional Directorates of the State Forest in Lublin and Radom, and Lublin Society for Ornithology in order to create an open platform for exchange of experiences and knowledge on forest grouse ecology and conservation. The organizers would also like to establish the international cooperation. More than 100 participants attended the conference. Besides Polish specialists, guests from Germany, Czech, Ukraine, Belarus and Lithuania presented their solutions and problems in capercaillie, black grouse and hazel grouse. The conference program was very rich. During two days, 29 talks and 13 posters and two workshops were presented. Effects of active protection of capercaillie in Lasy Janowskie Forest were shown by visitors on the tour in the third day. Sessions on the first day were intended for presentation of data about distribution and numbers of forest grouse in Poland, Ukraine and Belarus. According to data gathered by Robert Kamieniarz, range of black grouse in Poland decreased by about 37% between years 1993-1994 and 2006-2007. Capercaillies inhabit 4 isolated areas in Poland: the Carpathian (about 175-210 individuals, data from Włodzimierz Cichocki), Solska Forest (100-150, Małgorzata Piotrowska), Augustów Forest (50-70, where rate of extinction equals 3,5-5 cocks /year Dorota & Jerzy Zawadzcy) and Lower Silesia Forest (only 10, Artur Pałucki). On the contrary, conditions of Polish populations of hazel grouse (in the Carpathian and in the east of Poland) are very good. A total population was estimated by Zbigniew Bonczar at 70,000 birds in spring and 90,000 in autumn. According to Sasha Kratiuk and Andriy-Taras Bashta, numbers of capercaillie and black grouse are decreasing in Ukraine. In Belarus, the western subspecies *Tetrao urogallus major* is strongly endangered (900 birds) while the subspecies *T. u. pleskei* is stable (9000 birds, data by Tatiana Pavlushchick). Nikolai Cherkas explained reasons of decreasing capercaillie numbers in the National Park "Belovezhskaya Pushcha" from about 200 individuals in 1947 to only 20 nowadays.

Results of regional programs of the active grouse protection were presented during the second day of the symposium. In general, not all projects were successful, but some of them (mainly in mountain regions) give hope for stopping of the decrease in the populations. The main activities for protection are: monitoring, reduction of the red foxes population, removing of fences, and improving of habitat conditions. Beata Siewlewiec has summarized legal and formal problems concerning the grouse status and conservation in Poland. Unfortunately, different rules in law are contradictory. The second problem is a lack or poverty of Polish studies on ecology, which should be a basis to recommendation for the active protection. Copying of foreign solutions is not always properly for Polish conditions. Roman Dziejdzic presented information about two Polish capercaillie captive rearing centers and results of setting free hand reared birds (105 birds in Wisła Forest Division). Translocation of 116 adult black grouse from Belarus and Ukraine to Poleski National Park was successful. A new method of rearing grouse "born to be free" was introduced by Andrzej Krzywiński. Rudi Suchant has shown German approach to capercaillie protection in order to find consensus among all different interest groups and to answer the question "where do we want to have capercaillie?" by developing a Landscape Ecological Habitat Model.

A review of grouse studies conducted in Poland was presented. Development of future methods of forest grouse active protection and habitat managements was discussed. The main problem of conservation of forest grouse are lack of proper national policy created by Ministry of Environment and The State Forest, despite of elaboration of national strategies for black grouse and capercaillie protection. The Committee of Forest Grouse Conservation as a national organization was established during the meeting. It was decided to have the next conference in 2009.



SNIPPETS

Comments on notes on display by capercaillie *Tetrao urogallus*.

In grouse news 33, pp. 13-16, Arne Flor and Öyvind Andreas Duus describe observations of several different cock capercaillies displaying around midwinter, often when the ground was snow-covered. They knew of no earlier literature describing this behaviour.

In a note following this account, Ilse Storch writes that displaying capercaillies “may be met in any month of the year” and refers to papers supporting this.

Storch’s note is further supported by a very full account of social behaviour in capercaillie in *The Birds of the Western Palearctic* (ed. Cramp & Simmons) 1980 Vol. 2, pp. 436-440, which includes the following remarks. “[Display] activity occurs sporadically from New Year, more frequently in late winter, birds slowly moving back towards traditional display grounds for high season”. “Display, with much reduced territorialism, also occurs occasionally in late summer and early autumn.”

Flor and Duus may also be interested in David Jenkin’s published photograph of tracks left in snow on 31 January 1965 by a displaying cock capercaillie (*Scottish Birds* 1965, Plate 32).

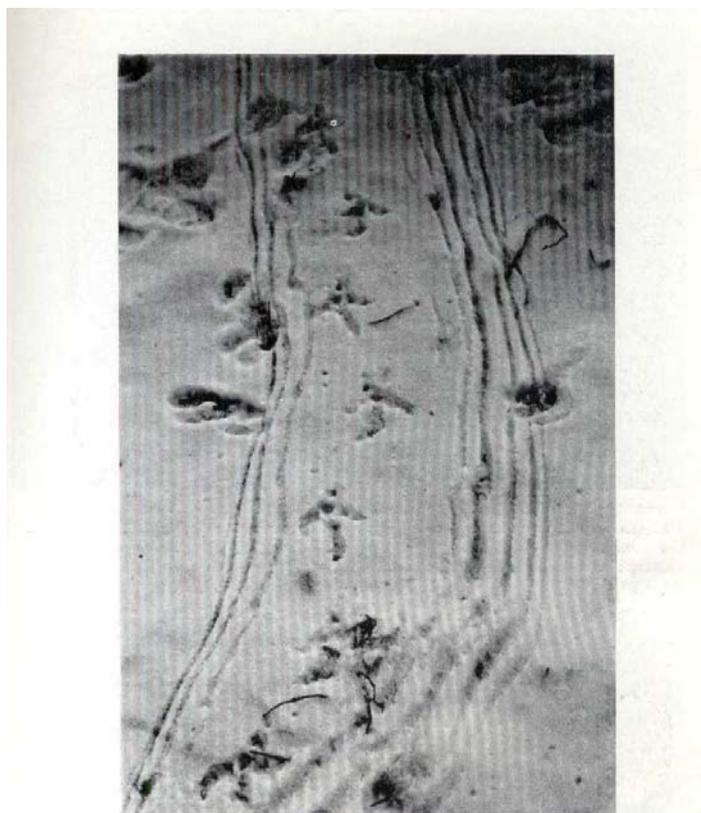


PLATE 32. Tracks left in the snow by displaying cock Capercaillie, Ballochbuie Forest, Aberdeenshire, 31st January 1965 (cf. pl. 31). Like other species of grouse, cock Capercaillie parade around a female with the wings extended stiffly at their sides and the primaries marking the ground. In this instance only the cock was seen, but the female may have been in a tree and flown away as the observer approached.

Photograph by David Jenkins

David Jenkins, C.E.H., Brathens, Banchory, Scotland AB31 4BY, JenkinsDavid@talktalk.net.



Golden eagle kills displaying capercaillie at lek.

In 1999 Odd Aukland was in a hide which they had put up to photograph capercaillie at a lek in Marnardal east of Kristiansand in Norway. He and a friend spent many days each spring in the hide. A video was being taken of two capercaillie cocks displaying and fighting each other when a golden eagle took one of the cocks. The second cock did not fly away when the golden eagle set his claws into the first cock. Instead it turned its aggression against the golden eagle and attacked the raptor. The eagle quite casually turned round and seized the second caper's breast, again with its claws, killing it too. The cock probably attacked the golden eagle instead of flying away because of a high level of male sex hormones. The second cock was also killed by the eagle.

Click at the link below to see some of the video of the golden eagle attacking the capercaillie cocks at the lek. <http://www1.nrk.no/nett-tv/klipp/116233>.

Name and address of the photographer: Odd Aukland, Sveinall, NO-4534 Marnardal, Norway.

Tor Kristian Spidsø, Department of Natural Resources Sciences and IT, Nord-Trøndelag University College, Norway Tor.Spidsø@hint.no

Six grouse on the American WatchList 2007

The American WatchList 2007, a joint effort between Audubon (BirdLife in the US) and American Bird Conservancy, reveals those bird species in greatest need of immediate conservation help. The American WatchList is essentially a list of globally threatened birds that occur in the United States.

Four grouse are included in the Red Watch list among the species of highest national concern: Gunnison sage grouse, sooty grouse (a clade of blue grouse now considered a species by some organisations, including the American Ornithologists Union – see above), Greater prairie chicken and lesser prairie chicken. In addition, Greater sage grouse and dusky grouse (the other clade of blue grouse recently recognized as a species by the AOU) are on the Yellow Watch list of species declining in the USA. None of these 6 species is currently protected under the Endangered Species Act, and only the Gunnison sage grouse and the lesser prairie chicken are listed as a candidate species under the US Endangered Species Act. In contrast, the American WatchList 2007 calls for immediate conservation help for these species.

“We call this a ‘WatchList’ but it is really a call to action, because the alternative is to watch these species slip ever closer to oblivion”, said Audubon Bird Conservation Director and co-author of the new list, Greg Butcher. “Agreeing on which species are at the greatest risk is the first step in building the public policies, funding support, innovative conservation initiatives and public commitment needed to save them.”

The WatchList is based on the latest available research and assessment from the bird conservation community along with data from the Christmas Bird Count and the annual Breeding Bird Survey.

<http://www.audubon.org/news/pressroom/WatchList2007/Report.html>

Ilse Storch, Department of Wildlife Ecology and Management, Institute of Forest Zoology, University of Freiburg, D-79085 Freiburg, Germany, ilse.storch@wildlife.uni-freiburg.de

Grouse taxonomy – an ongoing story...

Only recently (see GN 31, spring 2006) have I commented on changes in grouse taxonomy as a consequence of new, phylogenetic studies and interpretations. The most heated taxonomic debates are revolving around the genera *Bonasa* versus *Tetrastes*, and *Falcapennis* and *Dendragapus*, respectively. The first “new” grouse species “discovered” in the genetics lab was the Gunnison sage grouse *Centrocercus minimus* of Colorado and Utah, that was recognized as a species distinct from the Greater sage grouse *C. urophasianus* in the year 2000 based on morphological, behavioural and genetic characteristics.

Now, the blue grouse *Dendragapus obscurus* (Sibley and Monroe 1990, 1993) has been split into *D. obscurus* and *D. fuliginosus* following the American Ornithologists Union AOU (2006). In the past, most authors recognised 8 subspecies (Flint 1989; del Hoyo 1994) of blue grouse of which the four coastal subspecies are morphologically and geographically distinct from the four interior subspecies. Recent genetic studies reported three clades corresponding to the parapatric sooty (*D. o. fuliginosus*) and dusky



(*D. o. obscurus*) subspecies groups plus a previously unrecognized division between northern and southern dusky grouse populations; the latter does not correspond closely to any currently recognized subspecies boundary. Genetic, morphological and behavioural evidence suggest that sooty and dusky grouse are species-level taxa; the specific status of a third clade remains ambiguous (Barrowclough et al. 2004). In mid 2006, the American Ornithologists Union AOU therefore has split the blue grouse into two species: dusky grouse (*Dendragapus obscurus*) and sooty grouse (*Dendragapus fuliginosus*) (Banks et al. 2006, <http://www.aou.org/checklist/>), and in 2007, BirdLife International adopted the AOU's view <http://www.birdlife.org/datazone/index.html>.

Unfortunately, the Grouse Specialist Group has not been consulted during the decision process of recognizing the dusky and sooty grouse as separate species of blue grouse. Some North American GSG members, who have long worked on the species, are critical of the decision. Mike Schroeder writes: "The genetic information was relatively restricted in collection location and it was inconsistent with some of the identified phenotypic characteristics. Fred Zwickel and I have been exploring some of these inconsistencies. There is no doubt that there is variation among blue grouse throughout their range. Despite this variation, it is not clear that this variation represents distinct species-related differentiation. In that context, the decision was probably premature." Fred Zwickel adds: *It seems important to note that the molecular argument for a split in the 2 groups of blue grouse was based mainly on samples from the USA (except Alaska), where most dusky and sooty blue grouse populations are allopatric. Only 2 birds were sampled in Canada - in southern BC. Only from northern Washington to Alaska are the 2 groups of grouse parapatric and evidence is mounting of much hybridization where that is so. As well, much of the more recent molecular evidence appears to conflict with phenotypic evidence. Simply put, with more data, the picture has become much more muddy. I believe enough new evidence is accumulating that the issue should be revisited by the AOU.*"

References

- Barrowclough G.F., Groth J.G., Mertz L.A., Gutiérrez R.J. 2004. Phylogeographic structure, gene flow and species status in blue grouse (*Dendragapus obscurus*). *Molecular Ecology* 13:1911-1922.
- Banks, R. et al. 2006. Forty-seventh supplement to the American Ornithologists' Union check-list of north American birds. *The Auk* 123(3):926-936

Ilse Storch, Department of Wildlife Ecology and Management, Institute of Forest Zoology, University of Freiburg, D-79085 Freiburg, Germany, ilse.storch@wildlife.uni-freiburg.de

IUCN Chair Meeting upcoming

A long-held aspiration of the Species Survival Commission (SSC) is finally being fulfilled, and the SSC Steering Committee is pleased to announce that a historic meeting of the SSC's Specialist Group Chairs will take place in Al Ain, Abu Dhabi on 11 – 14 February 2008. This is the first-ever meeting of its kind in the Commission's 60-year history. The purpose of the meeting is two-fold. Firstly, and most importantly, it is a meeting for the Chairs, about their leadership of the SSC's Specialist Groups and the unparalleled contributions to conservation by these groups. The meeting will enable the Chairs to share their challenges and experience. Secondly, it will create a platform of learning and sharing that will ensure the persistence of the cumulative SSC knowledge into the future, and improve relationships between the SSC, IUCN Headquarters, the Regional Offices and the other Commissions. It is estimated that between 120 and 150 people will attend the meeting – the majority being the Chairs of SSC Specialist Groups and members of the SSC Steering Committee. The Chair of the Grouse SG, and also the Chairpersons of all other WPA-SSC Galliformes SGs will be able to participate in this meeting. From a Grouse SG perspective, I am mostly looking forward to discuss the growing discrepancy between the tasks given to the SGs by IUCN/SSC, and the challenge to fulfil these tasks on an exclusively voluntary basis.

Ilse Storch, Department of Wildlife Ecology and Management, Institute of Forest Zoology, University of Freiburg, D-79085 Freiburg, Germany, ilse.storch@wildlife.uni-freiburg.de

