The Grouse Family

A challenge for the aviculturist

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The Grouse Family, the Tetraonidae, have a long and largely disastrous history in aviculture. Although they are a fascinating group, with some of the most theatrical of breeding displays, they are genuinely "difficult".

The grouse have been widely studied as gamebirds, both in the wild and in captivity. Several species are among the most highly-valued of the world's game. Individually, these species have been examined in some detail and almost all – with the apparent exception of some Central Asian grouse – have been bred in captivity at one time or another. But the Family still awaits the support of a Peter Scott or a Jean Delacour who can see them as an entity, base useful research on an avicultural foundation, provide a clearing house for information, and draw attention to their interesting problems in the field and in the aviary.

Much of the fascination of the Tetraonids lies in the fact that within this comparatively small group of 16 species we find a full spectrum of territorial and display behavior. There could hardly be a greater contrast than between the aggressive male Red grouse, who must stake out a territory on the moor or perish of starvation, and the beautiful Blackcock, living in a companionable flock with other males and ritualising all his aggression on the meeting ground of the lek. The Red grouse and his mate look very much alike; the Blackcock and his hen are a very good example of sexual dimorphism and are completely different in plumage form and colour.

Tame, confiding and vocal in captivity, the grouse have, above all, the attraction of their dramatic displays in the breeding season. Some of these include examples of the finest drama in the avian world: drumming, dancing, hooting, coo-ing, whistling, song-flights, plumage displays – the grouse have them all.

They may be difficult to keep and to breed, but the effort is greatly rewarded. Grouse can never be said to be flashy, like some of the more popular pheasants! Grouse grow on you because they have character and because their tameness is not of the aggressive type so often found in pheasants and other gamebirds. Whether you are the kind of bird-breeder who pursues purely scientific aims, or the type who seeks birds with what we might call "personality", the Tetraonids are worth persevering with.

When managing these birds in confinement, one of the main points to be kept in mind is that many of the grouse are specialists. They have developed adaptations which have enabled them to colonize habitats little used by other resident

Ruffed Grouse, Bonasa umbellus, displaying.

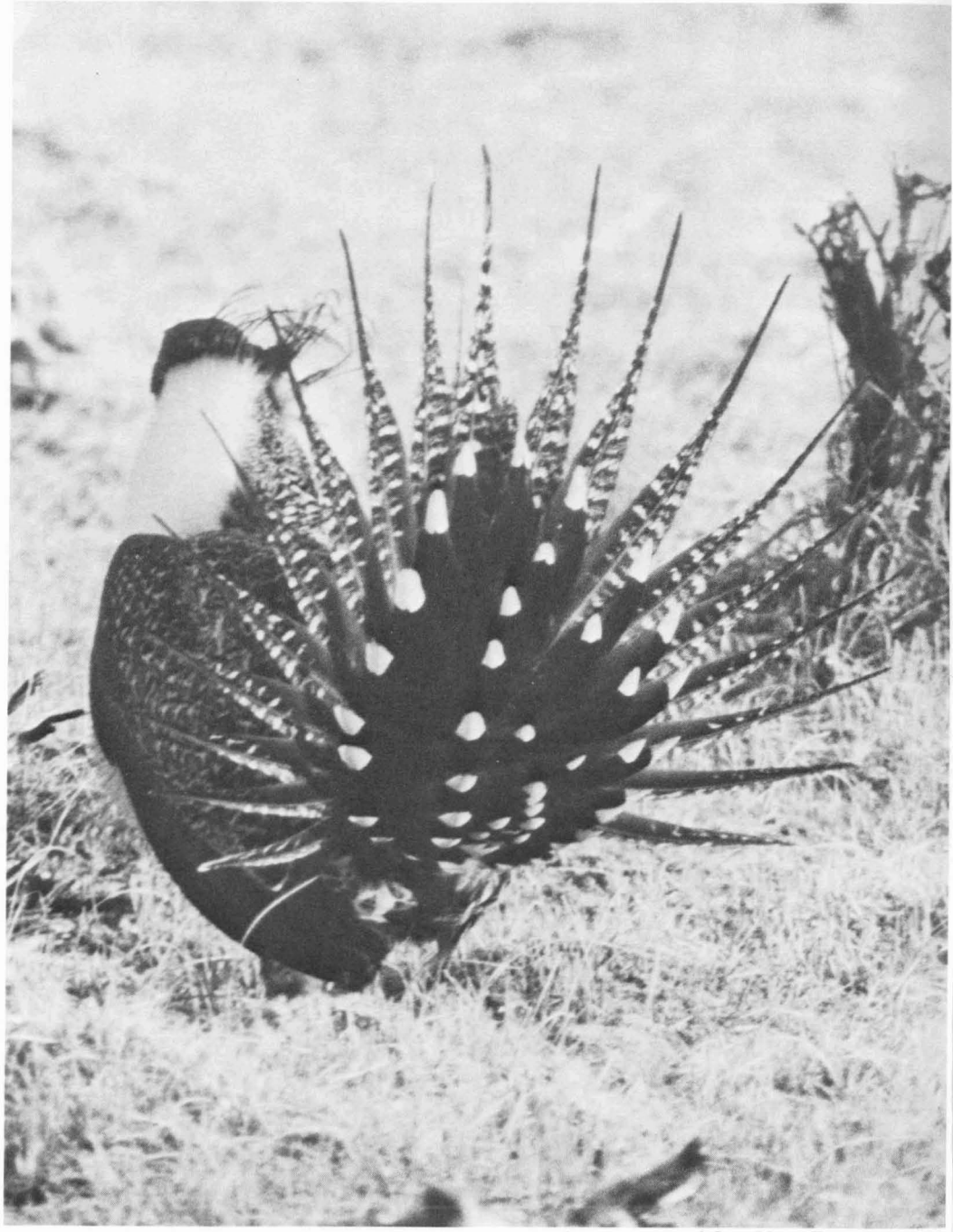


photo courtesy of San Diego Zoo.

bird species, such as sagebrush and mature pine forest.

The 16 species which make up the Tetraonidae are as follows:

Tetrao parvirostris	Asia
Black-billed capercaillie	
Tetrao urogallus	Eurasia
Capercaillie	
Lyrurus mlokosiewiczi	Eurasia
Caucasian blackcock	
Lyrurur tetrix	Eurasia
Black grouse	
Lagopus lagopus	Circumpolar
Willow grouse (inc. Red grouse)	
Lagopus leucurus	N. America
White-tailed ptarmigan	
Lagopus mutus	Circumpolar
Rock ptarmigan	
Dendrogapus canadensis	N. America
Spruce grouse (syn. Canachites)	
Dendrogapus falcipennis	Asia
Sicklewing grouse	
Dendrogapus obscurus	N. America
Blue grouse	
Bonasa bonasia	Eurasia
Hazel grouse	
Bonasa sewerzowi	Asia
Severtzov's hazel grouse	
Bonasa umbellus	N. America
Ruffed grouse	
Tympanuchus cupido	N. America
Prairie chicken (inc. Lesser & Attwater's)	
Tympanuchus phasianellus	N. America
Sharptailed grouse	
Centrocercus urophasianus	N. America
Sage grouse	

Palearctic: 7 spp.
Nearctic: 7 spp.
Circumpolar: 2 spp.

Apart from taxonomic groupings, the Tetraonidae can be divided into monogamous and promiscuous species, and also into species which have either solo displays or group displays.

Monogamous and solo displaying are *Tetrastes* and *Lagopus*. Promiscuous, but with a solo display, are *Bonasa* and *Dendrogapus*. Promiscuous, with a group display (of varying degrees of organization) are *Tetrao, Lyrurus, Tympanuchus* and *Centrocercus*.

Most of these species have a wide range. Only four species could be said to have a restricted range. These are the Caucasian blackcock, Severtzov's hazel grouse, the White-tailed ptarmigan and the Sicklewing grouse. The Sage grouse has a wide geographic range, but its preference for stands of pure sagebrush greatly limits the available habitat and it may have the most narrow distribution of any North American grouse.

Most gamebirds are the products of "edge" habitats. Several grouse species, however, are able to make use of solid blocks of a dominant plant species such as heather, sage, spruce, or pine. This ability has made the grouse important as gamebirds in areas which do not have a wide selection of game, such as the boreal forest and the upland heaths and tundra. This value has resulted in several species being given the title of "King of Gamebirds" at various times – the crown having been awarded at least to the Red grouse, Ruffed grouse, Sage grouse, Capercaillie, Blackcock, Priarie chicken and the Sharptail!

Although heavily hunted, none of the grouse appear to be in danger of extinction, other than two sub-species of the Prairie chicken (one sub-species of this interesting grouse, the Heath hen of the East Coast barrens, is already extinct).

The adaptation of some species to heavy hunting has been gradual. Originally, for example, the Ruffed grouse of the eastern American forests was called "fool hen" because it was so trusting; today it is one of the wariest of all North American gamebirds. On the other hand, the Spruce grouse – also called "fool hen" – is still a trusting bird and survives in numbers only where its boreal forest habitat is largely unhunted by man. Another tame grouse is the White-tailed ptarmigan, which in some places is so approachable that squatting birds can be touched with a stick. And yet its very close relative, the Rock ptarmigan (the Ptarmigan of our own mountains) is anything but tame and flushes with a noisy croaking call when an intruder is several hundred yards away. In this connection, it is interesting that the North American grouse are still tame only where people have not intruded. The Eurasian grouse are tame only where people have intruded so frequently, without causing harm, that they can be ignored. This is noticeable at such places as the summit of the Cairngorm chairlift, in the Scottish Highlands, where Ptarmigan live close to large numbers of summer and winter tourists without alarm.

Grouse appear placid in aviaries, but this is deceptive. They are subject to stress and must be treated with care if they are not to suffer from heart-attacks and stress-induced disease.

The problem of disease is considerable with all Tetraonids in aviculture. With modern drugs compounded into the pelleted diet, it should be possible to combat most of these. However, grouse are usually kept in such small numbers that it is not possible to make special pelleted feed available. And the range of drugs which can be introduced via the birds' water is quite restricted (and the water consumption very variable). In practice, the most successful way of combating disease has been to design accommodation which keeps the birds away from infection – particularly from the soil-borne parasitic diseases.

At the Highland Wildlife Park we use raked sand, where possible, but ideally

the pens would have concrete bases, landscaped with rocks and timber. In either case, it is a good plan to take the birds off public exhibit at intervals and put them on wire floors where they can be given prophylactic doses against such ailments as blackhead under controlled conditions. We take all our birds off exhibit in the winter and they spend at least four months in small pens on wire. Losses during this part of the year are always small when compared with those during the summer.

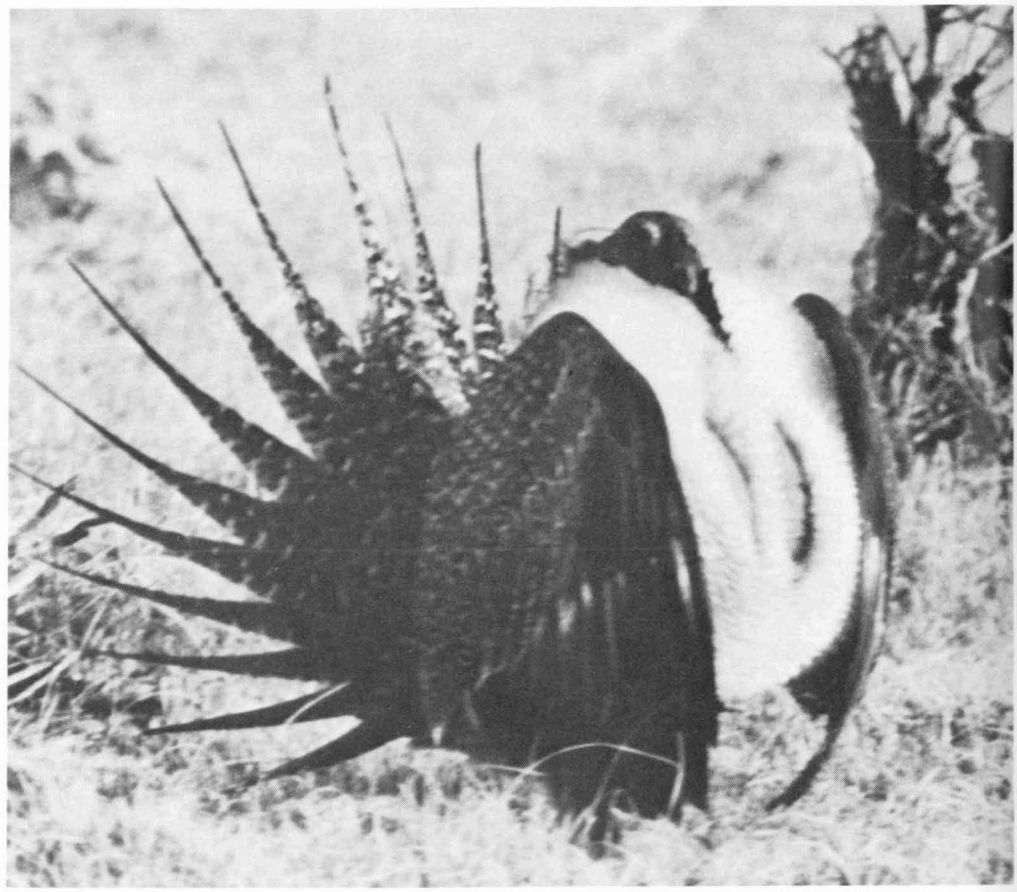
My own experience, and the trials held by various scientific establishments (notably the Institute of Terrestrial Ecology at Banchory, near Aberdeen, Scotland) indicate clearly that our native grouse species, at least, do best in captivity if they are kept in small, secluded pens – little larger than hutches – on wire floors.

The basic difficulties in dealing with grouse have been understood for a long time. What is still lacking is the willingness of private aviculturists and public zoological collections to put the answers into practice. It is considered unattractive to put grouse on exhibit on wire floors, or even on tinted concrete, which can be kept clean by daily hosing. This is a pity, because the birds are often condemned to a lingering death from parasites when they could be kept happily for several years if given the correct conditions.

About 1900 the Red grouse was being successfully bred in this country and the Ruffed grouse was also reproducing in captivity in the United States. By 1920, wire floors were being tried experimentally, notably at Cornell University in New York State. In 1931, Gardiner Bump took up the challenge of breeding the Ruffed grouse and was so successful that in 10 years he raised 2000 grouse and had birds of the tenth captive generation. With a grouse of such complex behavior, this was a fine achievement and nobody has done anything better to date – which perhaps emphasizes that good management is more important than any amount of miracle drugs or compounded feeds!

In Scotland, scientific work has been concentrated on the Red grouse, which is economically important since it is one of the few marketable products of our enormous acreage of heather moorland. Much has been found out about the close relationship between the Red grouse and its food plant, the Ling heather *(Calluna vulgaris).* In brief, this relationship is so close that if the heather is of poor quality (damaged by hard frosts, lacking nutrition, deteriorating owing to age) the grouse cannot maintain themselves at high densities, their territories become larger and larger and production of young declines. If the heather is enriched with fertilizer, the grouse pairs become more productive and the area required as a territory by each pair shrinks until as little as three acres may be needed, compared with 300 or more.

Photo courtesy of San Diego Zoo.



Ruffed Grouse, Bonasa umbellus, displaying.

The captive studies of Red grouse have shown that a high-fibre diet is necessary. Curiously enough, even if given rearing diets with high fibre levels, captive-reared Red grouse do not develop the efficient digestive system of their wild relatives. The caecae, the blind gut in which the heather is broken down by enzyme action, do not grow as long as in wild birds. As a result, captive grouse can never make a living for themselves on the moor: they die within a few weeks unless given supplement foods such as corn or pellets.

During the course of their studies, which have been aimed at discovering fundamental answers about aggression, territorial demands and so on, the Banchory scientists led by Dr. Adam Watson and Dr. Robert Moss, have set up a very efficient grouse rearing unit.

The females of most grouse species are willing to lay eggs in captivity; the problems usually arise in obtaining a worthwhile level of fertility. In the monogamous types, including the Red grouse and Rock ptarmigan, it is possible to keep pairs together throughout the breeding season and quite high levels of fertility and hatchability will be achieved. However, the promiscuous species pose special problems. If the pairs are left together all season, the males may start to display to the females and even attack them fatally before the latter come into breeding condition. And even where matings do occur, few eggs are fertile. It is preferable to keep the sexes apart in accommodation where the female can see the male's display without him being able to attack her. When she is ready for mating, she will be seen approaching the partition and lying down on the ground. If the pair are introduced before this point, fighting may result, but if the hen is in full breeding condition, mating should follow. I have found this to be the best system with at least three species

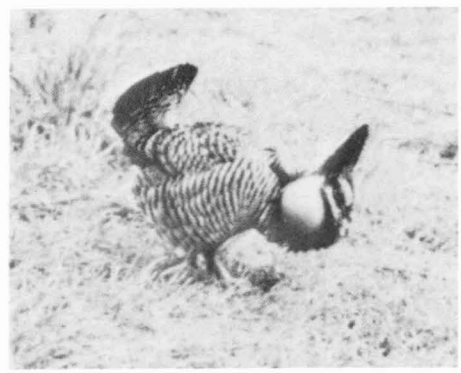


photo by W.A. Newlands

Prairie chicken.

which I have bred (Capercaillie, Black grouse and Prairie chicken) and it is worth the hours of observation necessary. Fertile eggs can be obtained from pairs kept in large aviaries, even with the promiscuous species, but results are not predictable and the loss of even one female is not worth the time saved.

In this connection, it is worth noting the very high price now placed commercially on Tetraonids. One Brazilian-based German animal dealer is currently quoting Black grouse at 440 francs per pair (hand reared) and Rock ptarmigan at 310 francs. At this level, the prospective grouse breeder is likely to find his labors quite well rewarded. Such prices also mean, however, that birds must be managed with skill if your bank manager is not going to hint that stamp-collecting would be a wiser hobby.

The hatching of large numbers of eggs is efficiently undertaken in an incubator such as the Marsh Roll-X or some other forced-draught machine of modern design. But for the small-scale breeder, it is difficult to improve upon the results from eggs set under bantams. If the bantams come from a strain kept for their broodiness (usually cross Silkies of some kind) they can be relied on to bring out every possible chick. Whether the hens have any part to play in rearing is a matter of debate.

At times, I have used bantams alone for rearing, sometimes supplemented with an infra-red lamp. And I have also reared Red grouse, Capercaillie, Black grouse and Ptarmigan *(L: mutus)* under purely artificial systems, without broody bantams. On balance, I find that a combination system, with the bantam and a lamp, is the best – certainly during the first 10 days. It is wisest to set up such a system indoors, where temperature, airflow and so on can be controlled as far as possible. All young Tetraonids are very susceptible to chilling – remarkably so for birds of such northern distribution – and must be protected against all draughts. I use compartments about 4 ft. square for rearing, with an electric infra-red bulb offset towards one corner so that there is a temperature gradient across ,the floor of the compartment. Floor covering is coarse sand or sawdust.

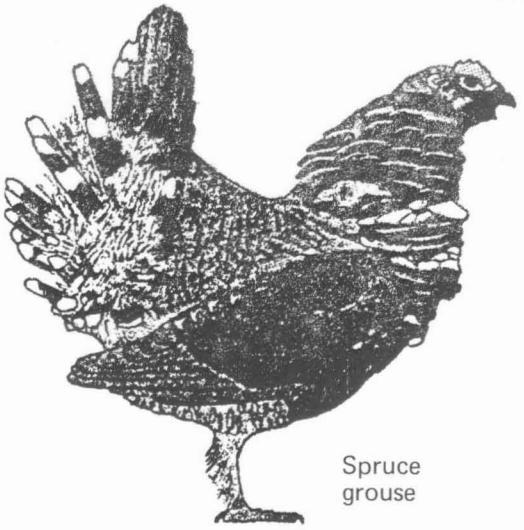
Food and water are offered as for the more delicate pheasants. An antibiotic/vitamin additive is included in the water. Some young grouse are not attracted by surface water and it may be necessary to set up a dewdrop dispenser. This is most simply achieved by placing the water container overhead with a strip of flannel hanging down into the pen and acting as a syphon. Drips of water form at the bottom of the flannel strip and are pecked off by the chicks. It is, of course, essential to have a drain of some kind, or the pen quickly becomes damp and eventually flooded!

Diet is a matter of personal opinion, especially in the early stages. I feed a pheasant starter, with sieved hardboiled egg, at first. I find that chopped greenfood is very important. Later the chicks are weaned on to a pellet diet, depending on the species, with their basic plant feed as a supplement (pine for Capercaillie, heather for Red grouse and Rock ptarmigan, birch buds for Black grouse). The fibre level in the pellets for Red grouse and Capercaillie is 12-15 per cent. More omniverous feeders, including the Black

Male Capercaillie, Tetrao urogallus.

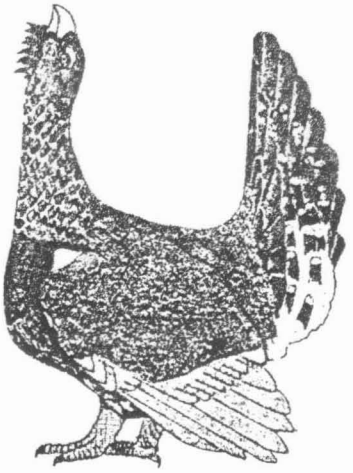
photo by W.A. Newlands

GROUSE DISPLAYS (after Hjorth)

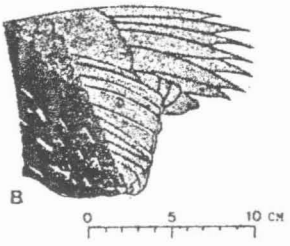


Spruce grouse

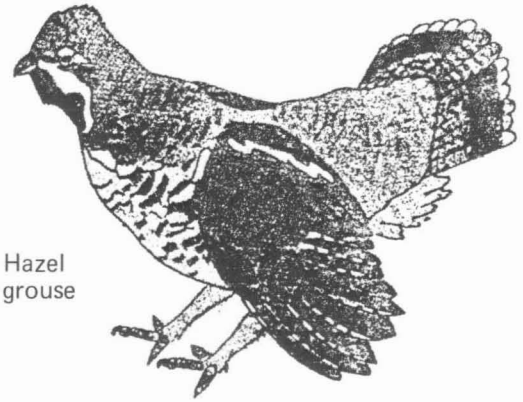
Ruffed grouse



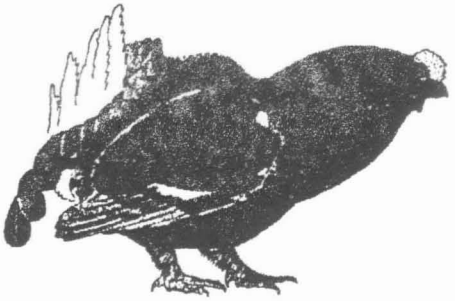
Capercaillie



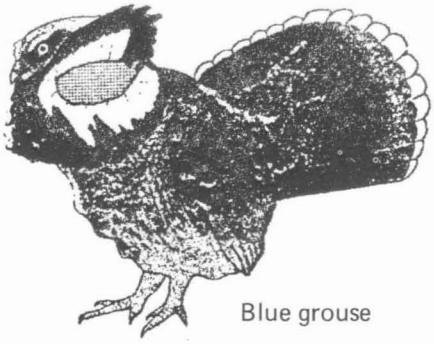
Sicklewing grouse



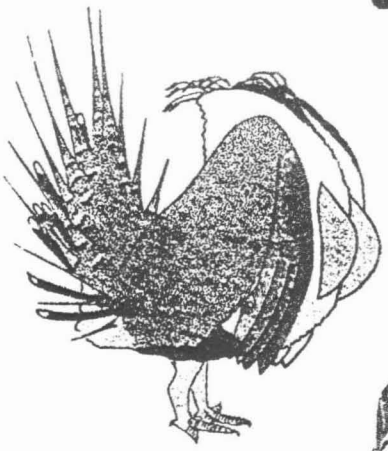
Hazel grouse



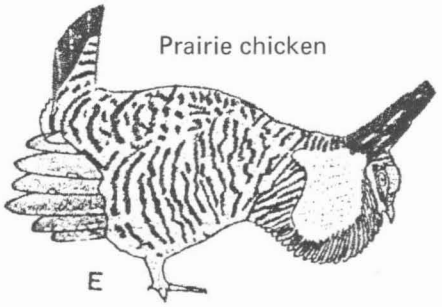
Black grouse



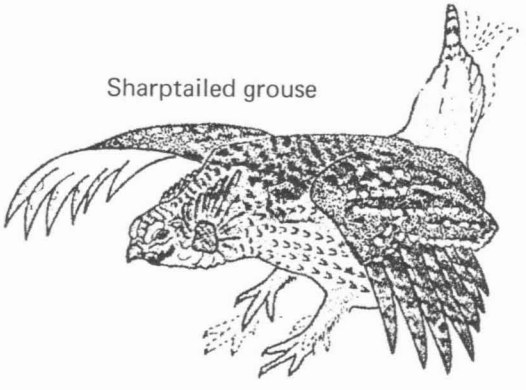
Blue grouse



Sage grouse



Prairie chicken



Sharptailed grouse

grouse and Prairie chicken, do well on a high-quality growers pellet as used for poultry. Too much protein in the growing period can result in dropped wings and other malformations. On the other hand, a poor diet will result in vitamin deficiencies, so care has to be taken to strike a balance which will keep the birds growing but not too fast. In this connection, I find the addition of quantities of chopped greenfood (especially clover) is vital.

Growing birds should be hardened off during a period of good weather and moved to outdoor pens. This greatly improves the plumage and avoids losses in the autumn. There is always a temptation to keep the birds indoors too long, but in the end this is a bad policy because they are difficult to acclimatize as the weather cools in late summer. They can be put out on sand/gravel, or the move can be made to wire floors. I have always found that this is the critical move, whether made at any point between 6 weeks and 16 weeks, and birds tend to die from stress unless treated with great care.

If possible, birds should be penned individually from 18-20 weeks onwards until the breeding season. Fertility is low in several species until they are at least two years old (e.g. Capercaillie) and there is not much point in attempting to put males with females until they have reached this age. By putting birds in individual pens, the spread of disease is prevented and there are fewer injuries. Where they are kept in large pens, rather than hutches, grouse should have one wing clipped: even the tamest of birds may flush one day if surprised by a wandering dog or low-flying aircraft and a fractured skull or broken wing is the result.

It is when the breeding season comes around that the grouse come into their own as exhibits. Penning should be designed so that they can be allowed to develop their displays as fully as possible. A Ruffed grouse will need a drumming log, a Blackcock an arena where he can rookoo and show off his lovely plumage. The display flights of *Lagopus* and others will be hampered by wing-clipping, but this is inevitable.

The North American grouse have some particularly fascinating displays and these have been incorporated into the design of special aviaries at various times – notably by Michael Flieg who was formerly at St. Louis Zoo. One of the most interesting of these was the construction of a sloping log so that a male Spruce grouse could be exhibited going through his full drumming display, which takes place up an inclined tree. Male Prairie chickens can have a full booming ground, partitioned so that they can see one another without coming to blows. When in display, these birds are fearless. I have had groups of people actually in an aviary with Prairie chickens during their dancing and booming performance; the birds take no notice at all. However, their mating is inhibited and if birds are kept on public show there is definitely a decrease in fertility.

The stage has now been reached in captive grouse management where a comprehensive collection should be brought together for comparative studies. There is also an urgent need for someone to undertake the task of providing a central information unit to collect and collate data about grouse in aviculture. If the challenge of these interesting species is to be met, we must have some sort of clearing house so that a clear picture can be built up of the requirements of all the Tetraonidae ▪

White-tailed Ptarmigan, Lagopus i. leucurus.

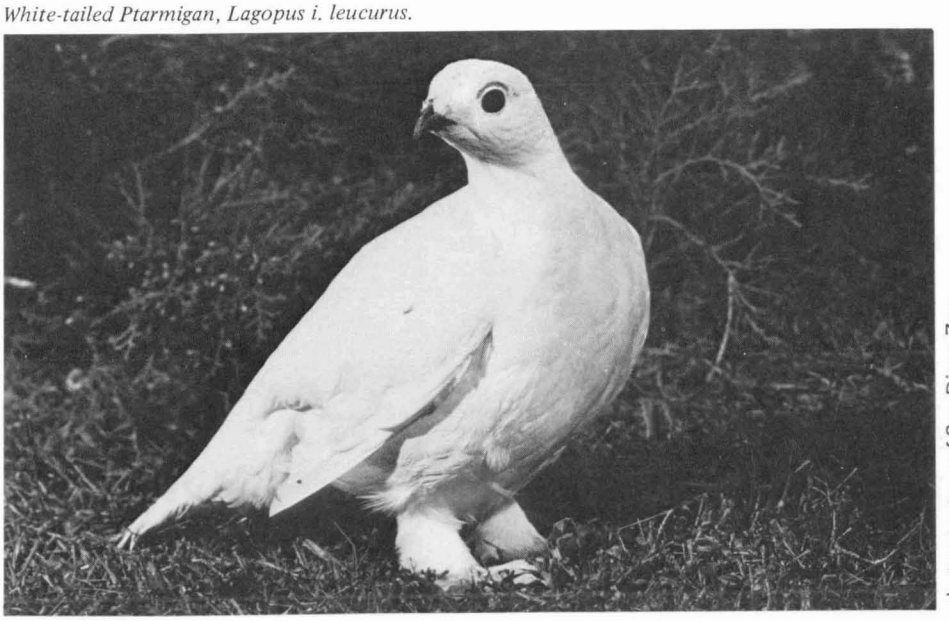


photo courtesy of San Diego Zoo.