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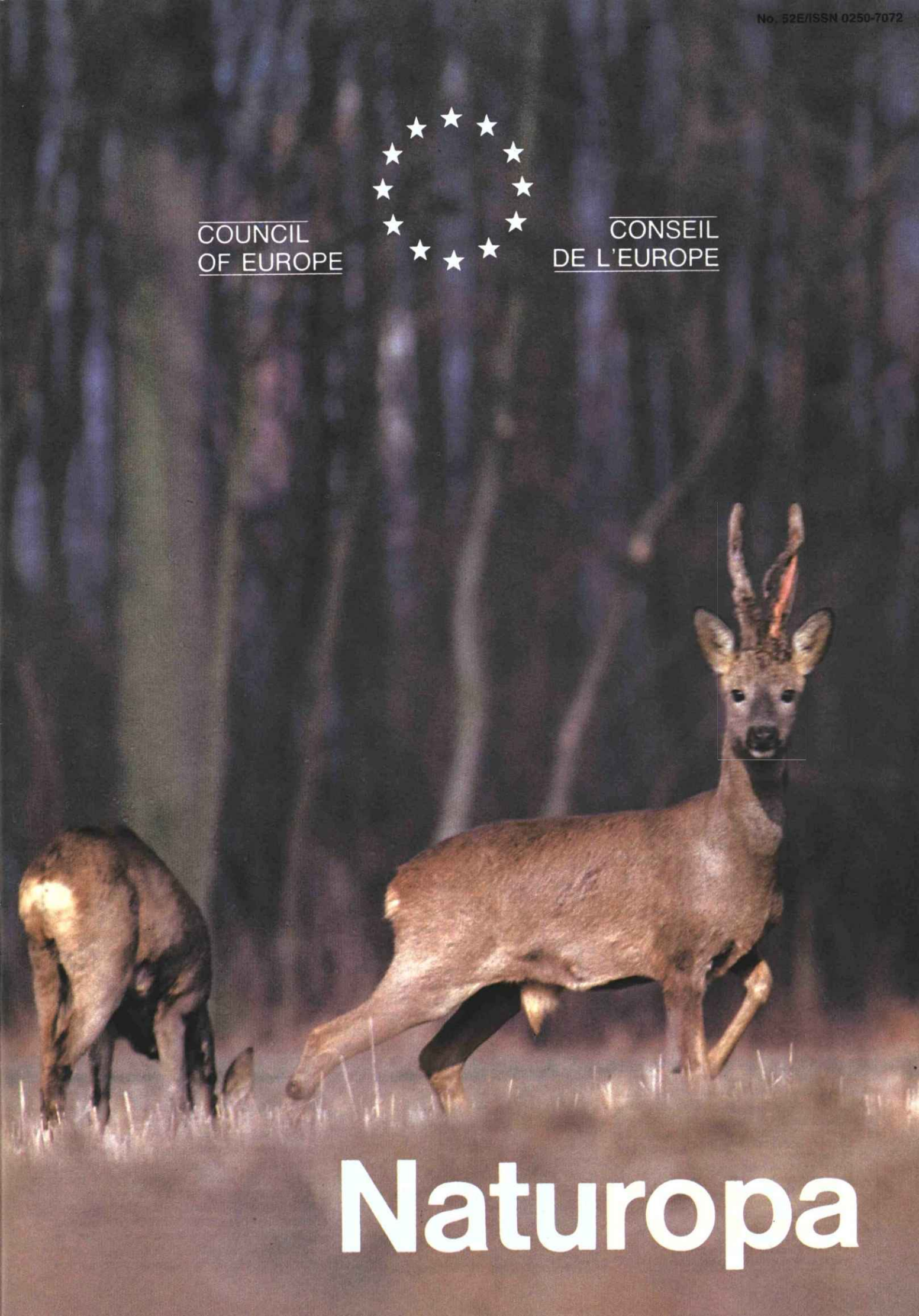

Naturopa

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1. *On the mirador* (Photo J.C. Chantelat)
2. *Middle mountain habitat* (Photo G. Lacoumette)
3. *Arable land habitat* (Photo G. Lacoumette)
4. *Fox* (Photo G. Lacoumette)
5. *Red deer* (Photo G. Lacoumette)
6. *Wild boar* (Photo Varin-Visage/Jacana)

Naturopa

Nº 52 - 1986

Respect

The responsibility for a substantial part of the living environment lies with hunting and the present issue of Naturopa is devoted to this topical and controversial theme. The intention in these pages is not to take a stand "for or against" but on the contrary to draw attention to the duty of care and the respect which hunters owe to nature and to the opportunities they have for improving that environment.

Although hunting tends to differ considerably from region to region and country to country on our continent, certain basic rules remain the same. While some elementary skills are undoubtedly required as in any other activity, a huntsman's attitude must be based on a love of and a natural respect for nature and its creatures. If these are missing, then some other form of recreation may be more appropriate.

As part of its continuing campaign for a better environment, the Council of Europe is launching a project for a European code of hunting conduct, the aim of which is to highlight the ethics of hunting.

The theme of Naturopa 53 will be judiciously protected sites, landscapes and nature reserves of international importance, which have been awarded the European Diploma of the Council of Europe.

H.H.H.

Photo David de Lang

Editorial

With my passionate interest in forests and game animals, it was undoubtedly a stroke of good fortune for me to have grown up in East Prussia with its rich pattern of varied landscapes, relatively few human settlements and wide variety of species. But even during my childhood there, people were already expressing concern at the decreasing numbers of eagles, cranes, black storks and otters. The complaints of nature conservationists were usually answered at the time with the remark that it was unavoidable to make some sacrifices in exchange for the benefits of progress. It was claimed that only a few species were threatened and even then not everywhere.

An alarming deterioration of nature

In a few decades, however, the progress once longed-for has brought with it an alarming deterioration in natural, healthy living conditions, while the face of the earth has been considerably altered through the use of increasingly sophisticated machinery. The protection of nature developed into environmental conservation, expressing the need to protect all living creatures. Today there are already more vehicles driving on our roads than there are roe and red deer making tracks across our woods and fields. The area of land required for communications and housing, for roads, industrial plant and other building works is constantly growing although this development might have been expected to taper off long ago. It should hardly come as a surprise therefore that the "red lists" of threatened animal and plant species are growing to depressingly large proportions. Only a few animal species succeed in adapting to our industrial world — and these frequently become "problem" species because, no longer subject to the pressure of rivals or predators and benefitting directly or indirectly from human intervention, they are more or less free to expand and proliferate. This applies equally to some species that are suitable as game and others that are not.

Heated discussions take place on the problem of cloven-hoofed species of game and the harmful effect of too large a population of such animals on forest plantations. Can it be that the chorus of lamentations by the conservationists has been ill-advised and premature? Are not game animals scandalously well catered for in our modern high-yield countryside — especially when whole herds of 30 or more roe deer can be seen in the open country in winter a mere stone's throw away from towns? No, the truth of the matter is that a small minority of species are constantly increasing in numbers while the vast majority of others are declining — sometimes to an alarming extent — and give rise to acute concern as to their continued survival in our midst. It is therefore understandable that more and more people who are aware of the situation urge that at least 10 % of the various natural habitats should be set aside as wildlife "recuperation areas". The total exploitation of the environment is the greatest general threat to the diversity of wildlife species. There is no reason, however, why such sanctuaries should be hermetically sealed areas which people should not be allowed to enter.

A common effort is necessary

But isolated pockets of protected area alone cannot by any means suffice to preserve ecological diversity or check the decimation of our fauna. This task calls for a large measure of collaboration and goodwill on the part of landowners, hunters and conservationists. It is high time to put a stop to the unfortunate confrontation between these groups and enlist their joint support for a vigorous action programme. Enormous areas are invested in the management and protection of hunting grounds. It must be made clear that this action benefits all the creatures in the ecosystem and helps to preserve both fauna and flora. This means that conservationists must accept as a matter of principle that hunting is one aspect of the responsible exploitation of wildlife population. It also means that all hunting must be done in accordance with ecological knowledge and principles. If such guarantees are provided, hunting should have no adverse impact on the population of a given species. As a corollary, hunters must realise that there are a certain number of traditional game animals which can no longer, at least for the time being, be subjected to hunting. A stubborn insistence on the right to continue shooting certain species is just as certain to lead to confrontation as the stubborn insistence on the total protection of animals whose stocks could in fact sustain a certain measure of hunting.

Photo Sessner

A modern hunting community well versed in ecological knowledge could be a major task force in promoting practical nature conservation. Behaviour in accordance with hunting principles entails taking account of environmental considerations and responding to ecological requirements.

Preserve biotopes

I am hopeful that the younger generation of huntsmen whose training includes an increasing amount of ecological knowledge will apply appropriate nature protection methods, such as the supervision and management of hunting grounds, the planting of hedges and protective brushwood, the acquisition of banks, ponds or oxbows and so on. More and more, huntsmen are coming round to the idea that gamekeeping implies not only the preservation of a population of game adapted in number and species to the environmental conditions, but it is also realised that maintaining a biotope ensures the best conditions for preserving a healthy population of game in intact ecological surroundings. The necessity for biotope conservation fortunately leads to closer collaboration between hunters, nature conservationists and environmentalists. This has been amply demonstrated in recent years through joint efforts such as reintroducing the threatened and totally protected capercaillie and black grouse, creating otter reservations, guarding white-tailed eagle nests and providing wetlands for storks. A particularly important aspect is the co-operation of all associations whose aim is to protect biotopes and species in spatial planning procedures, whenever there is a threat to valuable natural sites and beauty spots from development and building projects.

The principal way of protecting species is to safeguard their habitats and it is in the hunting community's own interest to make a greater effort to practise nature conservation. Understanding the symphony of life and learning how to appreciate its harmony has nowadays become a necessary precondition to game preservation.

This will give us added strength to stop the massive machine of industrial technology from running amok and to use all the conceivable ways at our disposal to prevent the wholesale destruction of species. In the last analysis, nature conservation and game preservation today are merely a question of persuading human beings to consent to their own survival.

Heinz Sielmann
Wildlife films producer and writer

Hare (Photos S. Cordier)

The modern hunter

Gerhard Frank

All the discussion, polemics and policy reforms in the hunting sector taking place today are, in the final analysis, the logical result of the situation in which game animals now find themselves because of the priority given to welfare and leisure in our society. A further factor which should not be under-estimated, however, is that people today, especially those living in cities, have never been so alienated from nature and so ignorant of the biological conditions and requirements governing wildlife, while at the same time there is an unprecedented nostalgia for a natural way of life.

Man's self-consciousness has far too often blinded him to the fact that he has unduly impaired and altered his environment as a result of industrial development and the ensuing demands of civilisation. Material wellbeing has obscured the truth that the quality of life depends not only on the purity of basic resources such as water, air and soil, but also on a healthy wild fauna and flora, in other words an ecologically balanced natural environment. Not only has this been ignored by those whose life is far removed from nature, but also those whose work and living depend directly on it have all too frequently failed to appreciate its importance.

For thousands of years the activities of human industry which have forged our present-day semi-natural landscape were carried on in harmony with nature. While the environment has thus been continuously subjected to change, the process has accelerated in recent centuries and has almost got out of control in the last 30 or 40 years.

Encroaching upon the natural conditions of life of animals.

The resulting changes have encroached upon the habitats of all forms of wildlife and have helped to make the present-day countryside hardly capable any longer of supporting numerous kinds of wild animal, above all the large cloven-hoofed herbivores.

But compared with exploitation in the form of agriculture and forestry, other demands made by human society on nature have contributed in a much more radical manner to the impairment of the natural conditions on which wild creatures depend.

From 1953 to 1983, in the Federal Republic of Germany alone, approximately one million hectares of farm land and forest suitable for supporting wildlife have been swallowed up by housing schemes, roadways, industrial estates, major plant such as power stations, refuse incinerators etc. This encroachment on the countryside as a rate of over 100 hectares a day continues unabated.

In the Federal Republic, there are now only 370 areas at least 100 square kilometres in size that are relatively free from traffic and not completely fragmented by building developments and roadways. These are equivalent to a mere 15 % of the national territory.

In the wake of the massive deterioration in the living conditions of wildlife and the loss of rural land, there is another time bomb ticking away, another threat from this fragmentation of the environment, namely the deterioration of genetic quality.

In the period between 1950 and 1980, visitor frequency in woodland areas has increased by 500 % on average and, in certain specific highland and upland regions and recreational areas near large towns, by over 1,000 %. The number of mountain railways, ski-lifts, downhill and cross-country ski-runs and more besides has also increased several times over.

The government spends astronomical sums on promoting leisure activities and recreational facilities, a considerable number of which have repercussions on the countryside, its use by the public and, hence, also on the fauna and flora concerned.

The rapid increase in human mobility compared with former times, the radical reshaping and clearing of the landscape to conform to technical requirements and the growing number of domestic pets allowed to roam free are further factors which aggravate the situation.

Duties and objectives of hunting today

This is the situation which faces hunters today in many parts of Europe and which dictates the duties and standards of hunting practice. Accordingly :

— hunting today means preserving the entire range of existing wildlife to the fullest extent possible as an essential component of the natural environment, so that the necessary balance between populations of game and their habitats is maintained and so that as many wild species as possible may survive and remain available for succeeding generations;

— since no-one should be allowed to kill an animal without justified reason and no unnecessary pain inflicted on any animal, hunting practice must be based on ethically acceptable principles of fair play and strictly adhered to.

Hunting today must therefore conform with the following aims and duties :

a. maintaining a wide variety of healthy stocks of game in a balanced relationship to their biotope;

b. preserving and improving the natural conditions necessary to all wild species of game, including plant diversity, and vigorously opposing any further encroachment on natural habitats;

c. ensuring that no species of game becomes extinct;

d. checking or preventing the proliferation of any species of game;

e. avoiding as far as possible any prejudice to the legitimate pursuit of agricultural, forestry or fishery activities;

f. organising judicious conservation, i.e. protecting game from poaching, food shortage, epizootic diseases, stray dogs and cats, etc, and taking steps to guarantee compliance with regulations designed to preserve wild game and uphold good hunting practice.

Hunting as an instrument for nature protection

As a form of applied nature conservation, hunting today is more indispensable than ever, particularly with regard to the preservation of species. It currently makes a decisive contribution to improving living conditions for all wild creatures and ensuring their long-term survival. If hunting were no longer practised, many species of game would increase sharply in numbers at the expense of others and to the detriment of agriculture, forestry and fishing. Epizootic diseases would spread and many kinds of animal would be condemned to extinction.

If hunting were discontinued, it would be impossible to maintain the balance between the different species of game in our modern over-exploited man-made environment.

The determining factor today is that the care and attention devoted to game should no longer be primarily concentrated on particular animals or species as such, but above all on the preservation and management of the natural environment in the interests of wildlife as a whole. To achieve this, all negative factors such as disturbance, environmental pollution, the fragmentation of self-contained landscape units etc must be identified and every effort made to eliminate them. Wherever this is not possible, an attempt should at least be made to soften their impact.

The greater the idealism and enthusiasm invested by the members of the hunting community in the present-day aims of this sport, the more pleasure they take in fulfilling the tasks required of them in the expectation of being able to continue, with moderation, to hunt as wide a variety of game as possible in the future, the sooner the goal they have set themselves will be achieved.

Apart from a few exceptional cases, it is less important for the protection of species to preserve extensive areas than to maintain a large number of small ecological pockets regularly distributed throughout the entire country.

In future, hunters must energetically resist any further non-essential use of land and they must also help to promote the regeneration of areas no longer required for social activities.

Joint action

These tasks can only be accomplished, however, if hunters are actively supported by all sincerely committed nature conservationists and animal lovers and if they enjoy the support of a wide section of the population.

If there was ever a time when the formation of a common front composed of right-minded farmers, foresters, fishermen, huntsmen and all wildlife and nature conservationists was necessary, that time has now come.

The issue is not whether a particular species is "rare" or "common", or "valuable" or otherwise as game; the main thrust of our efforts should be the preservation and maintenance of natural processes.

In the long run, this is the most effective way to protect species. It is taken for granted by hunters today that shooting and protection, exploitation and conservation are two inseparable functions. In order to have this truism accepted in the interests of the biotope — and hence of species conservation — and acted upon, it is right and proper that huntsmen should be entrusted not only with those animals which currently have to be hunted, but also those very species which will require protection in the long term.

While recognising the achievements of many individuals inspired by high conservationist ideals, it must not be overlooked that in certain countries of central Europe today the practical responsibility for preserving wildlife as a whole lies with hunters who have the general charge of the entire territory.

In recent decades hunting has increasingly become a form of applied nature conservation and will continue to do so in the coming years. This should be recognised and accepted by those who wield power and influence in the government and the community at large. They should also realise that the state would have to spend thousands of millions of its tax revenue were it not for the voluntary and private commitment of hunters to the preservation of the genetic diversity of game. ■

J.C. van Hasselt

Training and responsability

With a surface of 4,200,000 ha and almost 14,000,000 inhabitants the Netherlands is one of the most densely populated countries in the world. Every inch in the Netherlands has a claim, so to speak. From different angles parties claim this interest (from a economical or infrastructural or recreational point of view and by way of a harmonised or aggressive approach).

It goes without speaking that such a society has strong needs for rules of life.More than that. If one wants to do justice to groups and their interest, those rules must be put into written law. This also goes for hunting.

Originally, the hunting rights were reserved for the small circle of large landowners. They provided themselves traditionally with hunting education that was fully embedded in the general education. Since a new law in 1923 this pattern changed rapidly. As a consequence of this new law more people were entitled to exploit hunting rights and therefore more and more people started to show interest in hunting than previously and traditionally was done. This interest increased rapidly in the sixties and seventies partly due to the economic boom.

The increasing number of hunters and the consistent (and restricted) hunting areas caused the need for new rules. In the first instance those new rules were made on a voluntary basis because members of the Royal Netherlands Shooting Association created a hunting education for members. The basis for this course was the wish to maintain a good and respected practice and conduct of hunting and shooting.

The foundation and aims

The foundation of the course was that it should fulfil the following requirements :

— The dissemination of the necessary basic knowledge and techniques to the Dutch hunter or hunter-to-be i.e. not the knowledge and techniques required by a professional gamekeeper or warden. In other words this course is directed to giving the beginner a thorough grounding in essentials, before he actually enters the field as a hunter.

— The course should be suitable for everybody, regardless of previous education or where they live.

Besides the educational aims of the course, concentrating on the teaching of theory and techniques in wildlife, behaviour during the hunt, the hunting field, weapons, and gundogs, the course has certain secondary aims. Amongst these latter, the more important are :

— The course should demonstrate the correct mentality;
— Correction of misconceptions concerning hunting, land-users, fauna-management, etc;
— Promote co-operation between hunters.

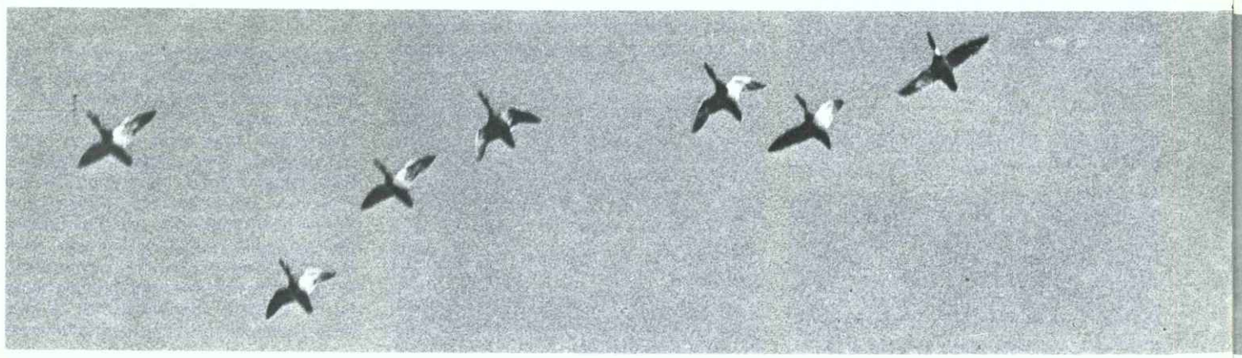
During the composition of the course material one question was posed again and again, ''What can the 'typical' hunter encounter in the hunting field and what is — or may be — expected of him in any given situation?'' Besides the necessary knowledge of minor game, he should be able in an conversation with a novice, to tell something about the major game animals, regardless of whether or not these latter normally form the object of his hunt; this is the ''General Knowledge'' of the hunter. Similarly in a conversation with a farmer, the hunter must be able to recognise the vegetation present and its susceptibility to damage from certain wildlife.

The Course Plan

The course may be split conveniently into two sections covering theory and practical.

The theoretical section is contained in a course file. The course material is divided into 9 chapters, namely furred-game, wildfowl, gamebirds, behaviour on the hunt, major game, weapon knowledge, management of the hunting field, hunting dogs, and hunting law. After each chapter about any subject a number of questions are asked, which the student answers, a set of questions which are to be submitted for correction and returned to the student. The whole course closes with a final examination example, from which the student can form an impression of what may be expected in the official exam.

The practical section concentrates on techniques i.e. putting into practice of the theory. This includes such things as recognising species of prey, habitat, and dangerous situations; use of weapons and behaviour during the hunt is, amongst other things, also covered. The practical section is implemented in different ways. There are 10 instruction evenings, each given over to a specific subject, with the help of slides, situations, etc. Beside these, a number of excursions are organised dealing with similar material but in field conditions. Practice shoots and instruction in hunting behaviour complement the practical section.



And if the trigger gets caught... (Photo J.C. Chantelat)

It is important to stress here that it is not only the skill of the student which is important, but also his moral attitude towards hunting and conservation. Sufficient opportunity is given for the student to use his own initiative by visiting museums, dog-trials, etc.; all of the latter can be recorded in a ''study-book''.

With an increasing sense of responsibility towards the Netherlands fauna and flora, and realising the international responsibility towards the migratory birds, a new hunting law was created that was and still is characterised by a strong interwoven interest of agricultural, natural protection and hunting aspects. This was in 1977.

Examination obligation

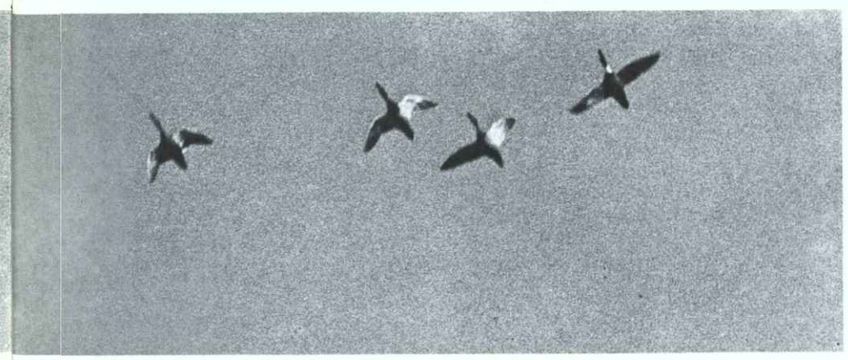
Together with other changes in the hunting legislation, the sitting of a hunting exam has been made compulsory as from 1 April 1978. To ensure a smooth transition from the voluntary to obligatory exam, provisional measures have been taken. Those who, in the period 1 January 1972 to 1 January 1977, were already in possession of a game licence for 3 successive years, are not obliged to sit the examination. If during the same period a game licence was issued, but not for a period of 3 successive years, then the hunting exam does not become obligatory until 1 April 1979. In all other cases, no hunting licence will be issued until the exam has been passed.

Conclusion

Through a decentralised structure, i.e. 40 equidistant instruction centres throughout the country from which the practical portion of the course is organised, every Dutchman has the chance to participate in the course.

The form of the course, using written and audio-visual material, instruction evenings, and skill instruction aids utilises all possible facets of teaching methods, ensuring that a part in the final exam is possible for everyone with a sound basic education. ■

Species identification is not always easy but is essential. (Photo J.C. Chantelat)



The course comprises the following chapters :

1. **Ecology and wildlife**
Nature and culture, consequence of human interest, natural balance, circular course, foodbond, biotope, capacity, territory, influences, game population, game diseases, managing populations, bird migration.

2. **Furred game and other small animals**
Hare, rabbit, fox, otter, badger, marten, polecat, stoat, weasel, feral cat, squirrel, seal, rats, mink, raccoon.

3. **Game birds**
Pheasant, partridge, black grouse, woodcock, woodpigeon, crow, hooded crow, rook, magpie, jackdaw, jay, birds of prey and owls, unprotected birds.

4. **Waterfowl**
Ducks in general, mallard, other dabbling duck, diving duck, geese, swans, coot, golden plover, common snipe, jack snipe.

5. **Big game**
Roe-deer, red deer, fallow deer, moufflon, wild boar.

6. **Agriculture**
Tillage of the land, horticulture, fruit-growing, forestry, dairy-farming, poultry keeping, land consolidation.

7. **Damage to crops by wildlife**
What is damage?; who is responsible?; where and how to settle damage?; several types of damage; how to prevent damage?

8. **Fieldcraft and management**
Basic principles of game management, inventories, the needs of wildlife, food, cover, rest, shooting and conservation.

9. **Shooting laws**
Shooting rights, lease, shooting and the authorities, shooting and land-users, the sportsman and his companions, shooting and bird protection law, laws on conservation of environment.

10. **Behaviour in the field**
Safe gunhandling, attitude towards game animals, attitude towards fellowmen.

11. **Shooting methods and taking care of the bag**
Driven shooting, rough-shooting, shooting in the woods, hunting (big game), shooting in the dunes, waterfowl shooting, pigeon shooting.

12. **Knowledge of guns and ammunition**
Safety regulations, the shotgun, cartridges and shot, the rifle, cartridges and bullets, combination-guns.

13. **Dogs**
Choice of breed, work before and after the shoot, organisations, gundog tests and trials.

The course is adapted every year and as a consequence meets the most modern standards.

Knowing the forest

Walter Lang

In historic times, roughly to the end of the period of Absolutism, the professional forester, as officially designated warden responsible for a specific woodland sector, had a very similar function to that of the huntsman, whose job was to protect the game entrusted to his care and guard it against outside depredation. Often, hunting duties took precedence since, in the landowner's estimation, the forest had greater value as a game preserve than as a place for growing timber. When the training, dispensed in those days by experienced practitioners, covered both fields, those who qualified were deemed to be "forestry-trained huntsmen", (*holzgerechter Jäger*) as defined, for example, in 1784 by the Forestry Superintendent of Saxony, Johann Gottlieb Beckmann.

In the present-day situation, the inclusion of hunting as a subject of study in a forestry training programme is justified not only by the fact that owing to strict protective measures many varieties and large numbers of game continue to inhabit our woodlands, but also because its presence there has a major impact on the forest ecosystem through the interrelationship between the animals and their biotope. If therefore woodlands are to be responsibly husbanded and maintained with a view to obtaining optimum results in economic, ecological and recreational terms, it is essential that account should be taken of hunting craft and game management.

Inherent conflicts between forestry and gamekeeping

Nowadays forests and woodlands are subjected to a host of pressures resulting partly from the extensive impairment of natural resources due to the side-effects of industrial activity, and partly from the tremendous increase in recreational requirements on the part of the population and the organisation of its leisure time. In addition, thanks to systematic game conservation and strict hunting and shooting regulations designed to protect game in the Federal Republic of Germany, the numbers of cloven-hoofed game have reached new all-time records in recent decades. This interplay between the demands of game and the interests of forestry has led to conflicts :

1. **Identity of food value and economic value of certain timber**

Many types of forest trees, above all the broad-leaved varieties such as oak, beech, sycamore, ash and lime, but also conifers such as silver fir and pine, are favourite sources of food for cloven-hoofed wild animals. As a result, the natural regeneration of these tree species is often hindered so that young trees have to be planted at great expense and protected by technical means.

2. **Susceptibility of valuable tree species to peeling**

In central Europe, forestry depends heavily on coniferous species to meet the requirements of the building, paper-pulp and timber industries. Spruce and pine in particular, together with various deciduous species, are extremely susceptible to damage to their bark caused by the grazing habits of red deer, fallow deer and moufflon. The bare wood where the bark has been peeled off is attacked by destructive fungi which weaken the tree's resistance to the force of winds and the weight of snow, causing economic losses amounting to several hundred million DM a year (mathematical models by Speidel 1980 and Crub 1984).

3. **Disturbance of game by tourists**

Even in the remotest corners of the forest, game is frequently disturbed by hikers, long-distance runners, cyclists and cross-country skiers. Animals are thus subjected to stress which leads to increased energy requirements, and hence more frequent feeding. Often game is prevented from reaching grazing grounds outside the forest, so that it has no option but to fall back on the meagre supplies of food to be gleaned from the forest trees.

4. **Absence of large predators**

Under the natural conditions which prevail in those areas of Europe where the full range of wildlife is still present, the population density of cloven-hoofed game is regulated by predatory species such as the wolf, the lynx and the bear. The absence of these large predators is one of the factors which have led to the numbers of deer and similar game increasing far beyond their normal figure. In central Europe, therefore, it is the responsibility of hunters not only to regulate the size of the game population, but also to ensure that this is done in accordance with the requirements of the other members of the animal and plant kingdom. Any imbalance in game conservation therefore disturbs the general equilibrium of nature and by the same token represents a breach of the huntsman's duty towards the community as guardian of the welfare of the countryside.

Identifying and understanding complex relationships

In view of such conflicts, many more examples of which could be quoted, it is of fundamental importance for trainee forestry administrators to be aware of the biological and ecological factors affecting game in woodlands and their connection with forestry work.

In the curricula of the departments of forestry in the universities of Freiburg, Göttingen and Munich, and those of the forestry training colleges in Hildesheim-Holzminden, Rottenburg/Neckar and Weihenstephan, the subjects of game biology, ecology and economy and hunting are covered in lectures, seminars and practical work. They account for 4-6 % of the entire basic course curriculum, a reasonable proportion considering the broad spectrum encompassed by all the main and subsidiary branches of forestry science.By way of example, some topics from the game hunting syllabus are given below, which illustrate their close relevance to forestry questions :

1. Assessment of the biotope capacity of various woodland sectors, combinations of tree varieties and types of woodland structure with a view to deducing the sustainable population of cloven-hoofed game;

2. Impact of forestry measures and procedures on the behaviour, cover requirements and feeding habits of game;

3. Effect of the pressure of grazing on saplings of valuable tree species and especially on threatened woodland plants;

4. Controlling predator/prey ratios in wildlife populations, including the possible reintroduction of former native species (e.g. beaver, lynx, otter, peregrine falcon, eagle owl);

5. Discussion of the various means of preventing damage by game, considering technical, organisational and economic aspects;

6. Preservation of native genetic resources and genetic diversity in the flora and fauna of woodland ecosystems;

7. Comparative study of the different hunting regulations in European countries and their consequences for game stocks and agriculture;

8. Channelling visitors in woodland areas with a view to improved game protection by the provision of sanctuaries with special areas of cover and feeding places;

9. Comparison between various methods of hunting with a view to establishing which combine minimum disruption with maximum efficiency.

Necessity of hunting skill

All this kind of theoretical knowledge represents only one side of the business of hunting; the other is knowing the practical skills and crafts necessary in order to satisfy the demanding requirements of game biology and ecology in the field. The forester versed in hunting must therefore master the tough practical aspects of hunting, beginning with the recognition of game (assessing the age, strength and health characteristics of individual species) and including the whole gamut of hunting craft, setting up hides, protective barriers and fences etc, providing facilities for feeding and cover, together with the proper methods and handling hunting weapons, shooting techniques, dealing with dead game, hunting customs and much more besides. For teaching purposes, special training areas are made availabe to the forestry colleges for carrying out all the necessary practical exercices and engaging in scientific research on hunting. In addition, students receive extra instruction in hunting methods during their practical courses in forestry training centres, lasting several months, which they are required to undergo in order to complete their professional qualifications.

All this ensures that the future managerial staff in the forestry service receive a balanced amount of theoretical and practical training in the art of hunting, which not only allows them first and foremost to acquire a hunting licence, but equips them to understand the increasingly complex reciprocal relationships between woodlands and game, nature and environment and to take them into account as responsible professional practitioners. ■

Council of Europe: the European code of conduct of hunters

The purpose of this code is to foster hunting ethics. The hunter bears responsibility for a natural heritage that must be passed on to future generations and must not only comply with hunting laws and regulations but also abide by the rules governing the ecological balance.

To summarise, the rules of conduct of the hunter are the following:

1. Respect the restrictions on your hunting rights: they are dictated primarily by the ecological requirements of species and their habitats.
2. Treat all game with respect.
3. Seek to be competent and responsible hunter.
4. Be aware of your responsabilities towards the natural heritage shared by all of humanity.
5. You are responsible for your own actions: strictly observe security rules.
6. Show concern for others.
7. Be a good manager:
— Protect and manage game populations.
— Protect and manage hunting grounds.

(Photo W. Lapinski)

Ecological balance

Paul Schwab

Widely varying types of woodland combined with diverse characteristic landscape features still constitute today the largest, most prevalent and most significant ecosystemes of our planet. The forest is the most important element and protective factor for plant, animal and human habitats.

Between the individual components of this woodland ecosystem and those who exploit it, there exist close correlations and situations of dependence which produce far-reaching interactions.

The healthy survival of such living communities can only be guaranteed by means of balanced exploitation that remains within tolerable limits and avoids harmful extremes, in other words if the ecosystems concerned remain in a steady state of "stable equilibrium".

The most frequent and important causes of disturbances in the state of stable equilibrium, which at the same time threatens individual species, families and whole ecosystems, are as follows :

— ruthless large-scale harvesting or clearance of woodlands without adequate precautions being taken to ensure regeneration;

— extensive pollution and introduction of harmful substances in soil, water and air;

— excessive, blatant over-exploitation (e.g. mass snaring of birds in southern Europe, over-fertilisation of arable land), as well as preferential treatment (e.g. excessive protection of cloven-hoofed game in large areas of central Europe) of individual species or groups of an ecosystem.

All these disruptions stem from population growth and/or constantly increasing consumer demands, but they also result from misconceptions of what represents true progress. The disturbance or destruction of forest ecosystems leads to wasteland, steppes or deserts.

Damage caused by game

The mountain region of Achensee Karwendel, situated halfway between Innsbruck and Munich in the North Tyrol limestone Alps, began from around 1955 onwards to suffer from the effects of sharp increases in the numbers of large ungulate game, as happened moreover almost throughout central Europe during the same period. Serious damage was caused to woodlands by these animals, above all through grazing. This in turn led to stunted growth, epizootic diseases and a high natural death rate among game, as well as an almost total cessation of the natural regeneration of the mixed forests in the relevant mountain areas, silver fir, sycamore and beech being among the species particularly affected.

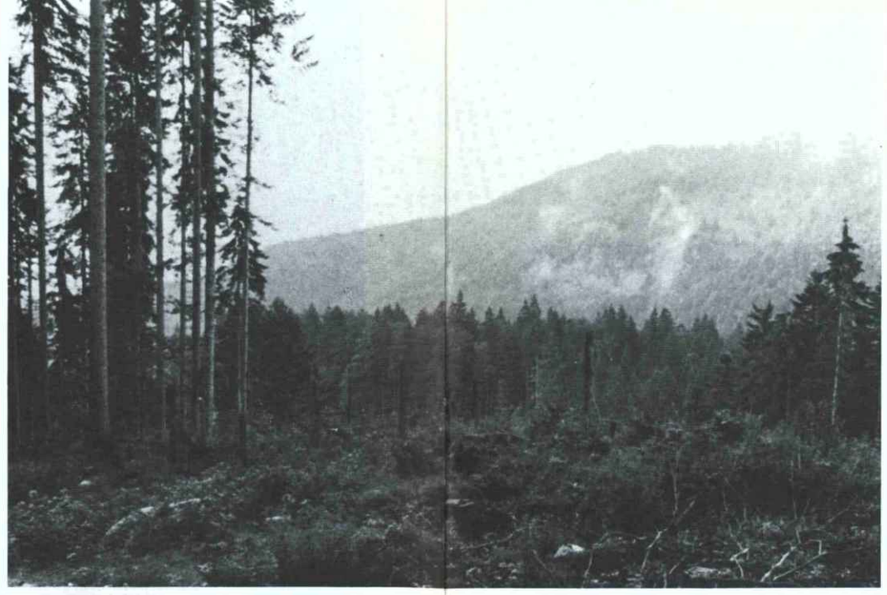
In order to counteract this negative development and curtail the damage caused by game, while improving the quality of the latter, the "Karwendel red deer conservation community", managing an area of 63,000 hectares, was founded in Achenkirch in 1963. This was the start of a successful large-scale scheme to regulate the game population with greater regard to its needs and habitat.

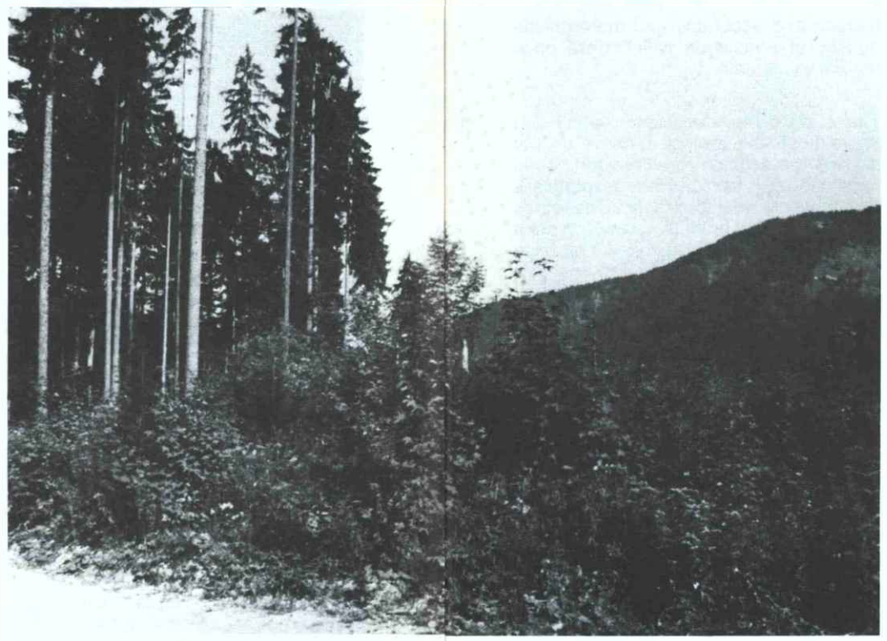
Thanks to the initiative and energetic collaboration of the tenant of the hunting grounds, the Achenkirch research and experimentation project was launched in 1970. Under the direction of the well-known game biologist, Dr A. Bubenik, the main attention was concentrated first of all on the questions of forest and game. Owing to the many and varied inter-relationships, the project has also for some considerable time now been analysing, with the support of private and public institutions, the problems of cattle grazing, timber exploitation, woodland road construction, mass tourism and air pollution, together with their impact on the forest.

This opportunity is taken for describing, albeit briefly owing to lack of space, the most significant insights, conclusions and practical experience derived from this experimental project, which holds out much promise for the future of Alpine forestry and environmental planning.

Problem of population density

The investigations carried out in the research areas (*Versuchsreviere*) showed that the damage to forest plants and





An experimental fenced zone in 1975, then ten years later with natural regeneration, and finally with young plantations of mixed varieties, unfenced, thanks to the "adaptation" of game to the needs of the environment (reduction in numbers), and to measures concerning woodland grazing and timber harvesting.
(Photo P. Schwab)

saplings jeopardising regeneration was caused mainly by the excessively high roe deer population.

Especially in the case of conifers and beech, a large proportion of the branch tips of shoots bitten off by game can, in certain areas, be blamed on woodland chamois. Red deer also have a preference for mixed woodlands, but as "grass eaters" they cause much less serious damage to trees than roe deer.

The population structure (sex ratio, age distribution) is of equal importance for the wellbeing and normal behaviour of cloven-hoofed game along with adequate nourishment and tranquil resting places. Numerous examinations of organs, analyses of stock numbers, simulations, computer projections, behavioural analyses and practical tests indicate that the sex ratio for roe deer, red deer and chamois should be approximately 1 : 1 and that roughly 50 % (60 % for roe deer) of the individuals of both sexes should be socially mature, i.e. fully grown, sexually active, in top condition, widely experienced and playing a responsible role in the herd.

It was established that a better and more varied diet combined with suitable winter feeding can help to improve the quality of red and roe deer, while reducing the amount of damage they cause.

As a logical consequence of all this information, in the course of the first five years the roe deer population was reduced by an estimated figure of 70 %, red deer by 35 % and chamois by 25 %, thereby adjusting their populations to the capacity of the territory.

The game population density today for an area of 100 hectares is estimated at an average of 2-3 roe deer, 3 red deer and approximately 6 chamois.

To improve the population pyramid

In order to improve the population pyramid, the large surplus of female animals was eliminated while the total cull included on average between 65 % and 80 % of young animals compared with less than 10 % from the main (medium) section of the population. Older game was only shot once the first characteristics of ageing had become apparent.

The culling of too few members of the young population (of which nature always produces a surplus to guarantee the survival of the species), or too many in the middle-aged section (the guarantors of a healthy population), and/or the premature shooting of "old" individuals all contribute to the disorganisation of herds of game and by the same token increase the likelihood of forest damage.

The determining indicator for assessing the number of animals to be shot was, and still is, the extent of damage from game recorded in the research area, as well as the health and condition of the animals concerned. Investigation into harm caused by game led to the conclusion that both past and present damage to trees in the Achensee/Karwendel region and the hampering or prevention of natural regeneration can be blamed to a considerable extent on cattle, wherever intensive woodland grazing is practised.

Damage to forests

This damage from grazing consists in the indiscriminate feeding on tree seedlings and small plants and also in the chewing of the leaves, young shoots and buds of forest vegetation. Woodland grazing also caused the forest floors to become compacted by the trampling and lying of animals. Just like damage caused by game, the harmful effects of cattle grazing tend to impoverish timber diversity and, in extreme cases, result in the exclusive survival of the least sensitive tree species. Silver fir surprisingly enough is avoided by grazing cattle. Damage to fir trees by browsing is therefore a good indication of how well or badly the numbers of wild game are suited to their habitat.

Severe grazing damage in woodlands is a sure sign that areas in adjacent clearings and meadows are over-grazed. Wherever at all possible, therefore, the attempt was made to solve forest grazing problems by terminating non-essential grazing rights, transferring woodland grazing rights to suitable alternative farmland or restocking open meadow land and separating it off

from the woodlands. Numerous examples of such procedures have proved beneficial for both the economic branches concerned.

To preserve the forest soil

The more successful the reduction of damage caused by game and cattle has been in promoting the natural regeneration of large areas of mixed woodlands and the more damage due to pollution increases, the more important it became and continues to be, to preserve the forest soil, the surviving saplings and the grown trees from any damage in the course of timber felling and forest road construction.

Timber exploitation, especially of hardwoods, and its transportation to loading points on main roads by means of heavy tractors — by far the cheapest current method, but one entailing risk of forest damage especially in the summertime — was largely restricted to the winter months. Since the ground is frozen and protected by a layer of snow, damage to saplings, forest soil, standing timber and forestry tracks is considerably reduced and often avoided altogether, as illustrated by many practical examples. Winter logging has many further advantages with regard to distribution of work, supply to clients, alleviation of winter unemployment, reduced risks from pests and losses in value, and the price of the timber itself.

The least destructive method of all for conveying logs to the road is to hoist the prepared load of timber clear of the ground by means of a sledge-mounted cable-winch crane. This procedure was therefore widely adopted. By dint of avoiding damage, limiting cultivation costs, achieving better yields and improved quality while at the same time ensuring the optimum functioning of the forest system, this type of transportation often proved more effective and, despite higher direct costs, cheaper in the long run than many another technically more productive, but at the same time more destructive, timber harvesting method.

An adequate network for metalled forestry roads are a precondition for intensive woodland care and rapid, efficient timber exploitation, as well as for the application of environmentally more acceptable logging methods. Such roads must however be carefully planned and built in order to minimise damage and unsightliness. Sensible restriction to essentials, avoidance of coarse, highly-mechanised building methods using large calibre deep bore-hole explosive charges, and a combination of the most up-to-date machinery and refined working techniques make it possible to build forestry roads with surprisingly little environmental impact, at no extra cost, as demonstrated in many cases.

That a reduction in game numbers in accordance with a healthy population pyramid and with environmental conditions, together with the measures concerning woodland grazing and timber harvesting where necessary and have proved effective can be demonstrated by the reappearance of extensive young plantations of mixed varieties, in contrast to the situation of only a few years ago.

Consequences on the health of game

That the reduction in the dangerously high numbers of game has also promoted the wellbeing and healthy development of wild species is proved by the lower rates of wastage through premature death, heavier specimens of game, more and considerably better hunting trophies than before and an increase in the diversity of species and the numbers of formerly rare animals now living in the wild.

Forests have been subjected for thousands of years to the presence of game and the effects of grazing. The only point at issue is the share of damage due to game, when the balance of the ecosystem begins to be upset. In the interests of public acceptance of hunting, we should concentrate less than before, as regards future game populations, on the contribution of hunters, who have too little time and too little experience, training and accuracy, and more on the density of population which were once regulated naturally.

The results of the Achenkirch research and experimentation project certainly do not provide the solution to all environmental problems in this field, but they nevertheless constitute a model for practical measures by scientists and practitioners which point in the right direction and hold out promise of success.

They offer a glimmer of hope that this forest, which has regained its vitality and wildlife diversity, will successfully survive the dangerously long period of time which will elapse before the sweeping measures necessary in favour of the environment, especially those designed to curb pollution, which are all too often decided too late by excessively indifferent or opportunistic politicians, can really begin to take effect. ■

(Photo S. Cordier)

Reintroduction of the beaver (Photo W. Lapinski)

Game and habitat

Erik Dahl

The influence of man upon nature must have been small at the stage when conditions began to ameliorate after the latest of the glaciations which, directly or indirectly, affected the whole of Europe. Some palaeontologists and archaeologists maintain that Stone Age man contributed materially to the postglacial mass extinction of large mammal species in North America and Europe. But to the biologist and hunter this appears unlikely. Early Stone Age hunting man was nowhere a common animal, his weapons were ineffective except at very close range, and even with the aid of fire it is hard to see how he could have wiped out whole species, even if he may have killed the last individuals of some already doomed by environmental change.

We can safely presume that the disappearance from the European fauna of such cold-adapted animals as mammoth, woolly-haired rhinoceros and Irish elk was mainly due to changing climate, that the herds of wild horses were pushed eastwards towards drier plains when the west European ones became grown over by forest, and that reindeer herds had to retreat rapidly northwards behind the melting ice.

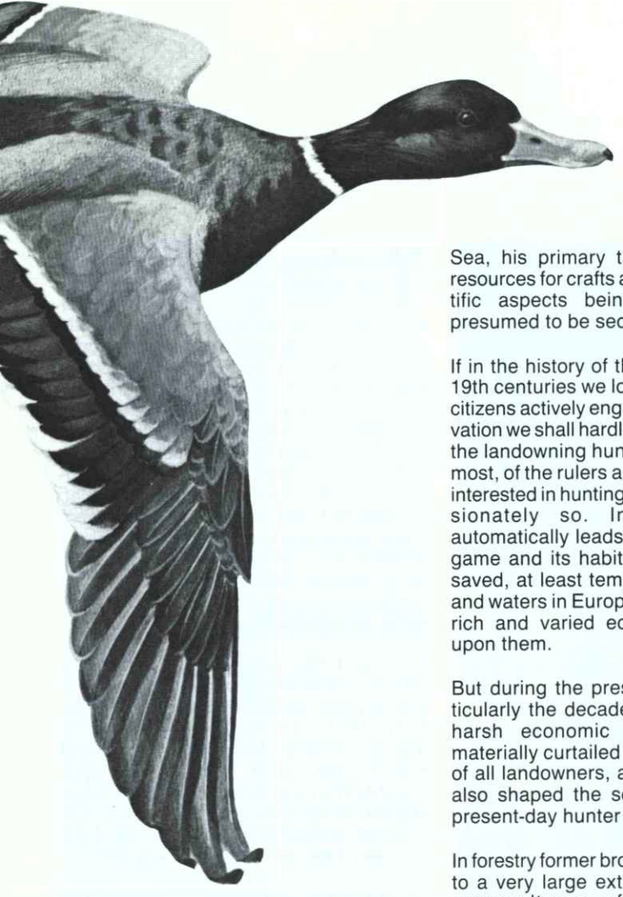
But when man increased in numbers and his technical efficiency improved, he became a dangerous enemy to other forms of life because he acquired the ability to transform his own and their environment.

Human interference

As a result any shovel of earth lifted to-day from the European continent, any bucket of water filled from the seas around it could be made to bear witness to some sort of human interference with nature. This is a process which began only about 10,000 years ago when farmers round the eastern Mediterranean first made a lasting impact upon the soil they tilled. As far as we can trace it from the fossil record and, more recently, from written sources, it started almost imperceptibly, but gradually it gained an increasing and, from the point of view of the biologist, a terrifying momentum.

Long before the texts of the New Testament were written, grazing, fire and partly man-made drought had denuded vast areas of southern Europe and thereby destroyed much of their natural wildlife habitats. And the influence of humans, increasing in force, spread northwards over Europe. The effects upon wildlife of permanent human settlement were massive.

Animal products obtained a commercial value and some species were more vulnerable than others. The extinction or near extinction of elk, beaver, bear, wolf, and lynx in western Europe was an effect of too strong human pressure, and the same holds for some birds, particularly large raptors like the sea eagle. High-ranking among the enemies of the large



predators were sheep and cattle owners, in the north reindeer owners, none of whom spared any effort to decimate species which they regarded as threats to their means of sustenance.

But even if direct human persecution played a part in the impoverishment of the higher fauna of Europe, indirect effects of human activities were ultimately far more destructive.

The human population of Europe grew from about 130 million in the year 1700 to 180 million in 1800, 400 in 1900, and 600 in 1960. This meant exponentially increasing demands on land and water resources. With the onset of industrialisation in the early part of the 19th century ever-increasing and chemically more and more varied pollution was added to the forces set in motion by the demands of agriculture, communications, and urbanisation.

To animal and plants, large and small, terrestrial and aquatic, all this added up to a process of habitat destruction unparalleled since the end of the Pleistocene glaciation.

Habitat destruction

But it took a long time before the implications of the growing exploitation of nature was understood. Nature was there to be at the service of mankind. When Linnaeus, leading naturalist of the 18th century, was sent out by learned societies or by the parliament of his country on trips of exploration ranging from the then largely unknown Lapland to the southern shores of the Baltic Sea, his primary task was to find new resources for crafts and industry, the scientific aspects being at least officially presumed to be secondary.

If in the history of the utilitarian 18th and 19th centuries we look for any category of citizens actively engaged in wildlife conservation we shall hardly find more than one — the landowning hunters. Many, not to say most, of the rulers and landed gentry were interested in hunting, not a few of them passionately so. Interest in hunting automatically leads to a wish to preserve game and its habitats. This simple logic saved, at least temporarily, many forests and waters in Europe and thereby also the rich and varied ecosystems dependent upon them.

But during the present century and particularly the decades since World War II harsh economic realities have very materially curtailed the freedom of choice of all landowners, and they have thereby also shaped the scene upon which the present-day hunter has to act.

In forestry former broad-leaved forests have to a very large extent been replaced by monocultures of conifers, thereby drastically reducing the degree of variability within the habitat, including the food spectrum available to herbivores. This in its turn has increased the danger of damage to conifer cultures of uniform age by browsing, in the first place by deer, and also to attack from insects.

In agriculture a corresponding economic pressure has led to the introduction of large monocultures and to the use of heavier and more bulky machinery. All this has called for a re-planning, resulting in an agricultural landscape made up of big fields with rectilinear margins and with obstacles such as hedgerows, open ditches, groups of trees, and moist patches eliminated. Automatically this new type of farming country, with large areas carrying a limited number of crops, became more vulnerable, and its productivity had to be maintained by means of an increased use of artificial fertilisers, herbicides, and pesticides, the two latter ones indiscriminately destructive to large sectors of the plant and animal kingdoms. As a result much of the farmland of Europe to-day has a high biological productivity combined with an appallingly low biological diversity.

The wholesale destruction of natural habitats now causes widespread concern, and, broadly speaking, attempts to reduce its adverse effects follow two different lines. One, which we could call the protectionist way, is to create the largest possible reserves and national parks. The projects launched for this purpose are highly expensive and therefore few and far apart, but they are highly important in producing a sort of living museum of a landscape that was, complete with its flora and fauna. Unfortunately, however, little can be done to prevent their being exposed to secondary effects caused by outside activities, and therefore their future is not without problems. The other one, the hunters' way, leads to the preservation or the creation of large numbers of small waters and to the reshaping of numerous small patches of land in order to maintain or to add an increased degree of biological diversity within an exploited landscape, i.e. to achieve a massive effect by means of a large number of projects at a less ambitious level. Fortunately the beneficial effects of these two lines of approach have the advantage of being supplementary.

The hunter is a conservationist

In industrialised Europe to-day the hunter is a conservationist. This is partly due to an attitude of mind closely connected with hunting itself — he likes to move in an environment which he has learnt to know and to love, where he feels at home, and where he will automatically react negatively upon any influence or action which detracts from its inherent values, including the hunting ones but not only those. Partly, however, his attitude is due to his having been better educated than his forbears in what could be called the biological facts and dynamics of hunting, and this also helps him to define his own relationship to the game and its environment. Often he has attended courses in game management, and year by year it becomes more likely that he has passed one of the more or less rigorous hunters' examination now obligatory in a growing number of European countries. He is learning that problems of game management must be tackled at their source, that they are inevitably linked to the situation prevailing within the ecosystem of which the game species form part.

All this has combined to divert the flow of game management into new channels. From having been predominantly species-oriented it has become habitat-oriented.

This had far-reaching consequences, for it became the main motive power behind the launching of the multitude of small local projects for the improvement of habitats referred to above. Sometimes, but more often not, these small projects may receive some support out of public funds, but in the first place their rapid increase in numbers is due to a unique peculiarity of the hunter, i.e. his willingness to pay for them out of his own pocket or by his own labour. His motives are not primarily unselfish, because, for obvious reasons, he hopes to derive some hunting reward from his efforts or at least from the efforts of himself and others, but at the same time he is aware that their effect tends to reach far beyond the specific hunting purposes.

Improvement of habitats in forest areas

One concrete example may serve as an illustration. On a range of low, forested hills in the south of Sweden a small stream, which generally dries up in summer, had been dammed, and part of the dammed area had been dug out to a depth of 1-2 m, the immediate purpose being to provide a permanent source of drinking water for roe deer and elk. Two summers later the flooded area covered about a hectare, and deer tracks were numerous around its margins. Thereby the primary object had been achieved. But the new water had attracted a variety of other forms of life. Besides a number of species of water plants there were also some nesting waterfowl, viz. one pair of whooper swans, one pair of red-necked grebes, one pair of moorhens, and one pair of green sandpipers. Two species of swallows hunted over the water, and one pair of pied flycatchers and one pair of wagtails along its edges. At least six species of dragon-flies patrolled the area, and there were numerous may-flies, caddis flies, mosquitoes and other kinds of aquatic insects. In short, part of the dry, clear-cut and rather sterile slope had become an oasis with an abundance of aquatic life eagerly colonising the new habitat offered to it. Beyond the provision of drinking water nothing had happened to improve the shooting, but, watching the result, the person who had put a fair sum of money and much labour into the project was deeply satisfied.

Elk, whose population is increasing in Scandinavia. (Photo Le Carlsson)

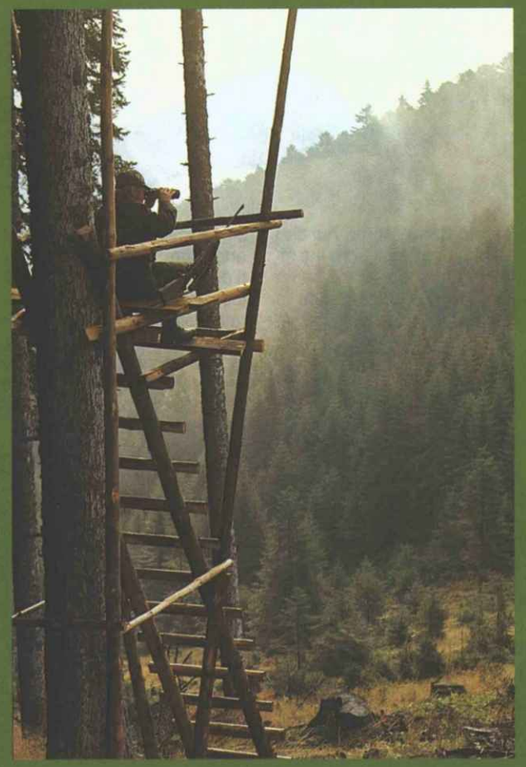
This example was chosen from a forest area, but, even if many forest bogs and waters have been laid dry and planted with spruce or pine, no major wildlife habitat in Europe has suffered so much loss of wetlands as the fertile plains, where lakes and bogs are often shallow and easy to drain, and where streams are often not difficult to canalise.

Farmland districts

Hunters are now showing much ingenuity in finding sites in farmland districts where small waters can be established without conflict with more powerful economic interests. Fortunately in many parts they are now rapidly multiplying. Depending upon the location of these small man-made waters, the general topography, soil and local climate and the size and depth of the water itself, each one tends to acquire its own personality. To the hunter many of them will produce a brood of mallards, and migrating ducks of various species may visit them. Of other water birds coot, moorhen, water rail, or little grebe may choose to nest in them. And like the forest pool mentioned above they will also rapidly become colonised by other forms of aquatic animals, such as amphibians, fishes, insects, molluscs and leeches. They will also attract a variety of water plants.

Because they are themselves different the fauna and flora living in them also vary from case to case. It is also important to realise that they will change with time, the rate of this process being dependent upon a variety of factors among which the size and depth of the water itself play an important part. Reeds and rushes or plants with floating leaves will tend to fill them or to cover them, and this will affect the fauna. In many cases it will be necessary from time to time to open them again. But generally speaking a variety of these small waters present within a farming area previously devoid of open water surfaces will produce a great increase in its biological diversity.

Corresponding effects will be produced on pieces of land cultivated for hunting purposes within a farmland area. On any farm there will be small patches which cannot profitably be farmed by heavy machinery or which for other reasons are not used for crops. They may be narrow corners where large implements cannot turn, small stony hills, rows of trees or bushes planted as wind shelters, gardens and parks or other small areas of untilled land



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Management... helping to maintain the diversity of habitats, which is the very foundation of nature's richness.

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around buildings. Particularly valuable to the hunter are strips of land around the edges of waters, artificial or natural. With the consent of the farmer and, whenever possible, in cooperation with him, such patches of land can be made attractive to game and at the same time turned into refuges for other living forms decimated by modern large-scale farming, as an extra asset among them some of the flowers which the older of us associate with former farmland practices.

Woodlands

In woodlands the hunter will also first and foremost strive for the retention or creation of the highest degree of diversity of habitat compatible with the demands of forestry. Here cooperation with the forester is urgently needed in order to create a situation where the needs of game can be met with in such a manner that damage to forest cultures are avoided or reduced. Many examples show that with mutual goodwill between the parties concerned such a balance can be achieved. It will be self-evident that also in this case increased diversity within the habitat will make the forest attractive to more species of animal and plants. But where deer are involved the hunter must be aware of the danger that their populations may easily multiply to such an extent that the normal carrying capacity of habitat is exceeded.

Hunters cannot work miracles. In large parts of Europe many elements of the original flora and fauna, particularly species which tolerate only small variations of environmental factors, are irrevocably lost due to, generally indirect, human interference. They cannot be restored by the creation of large numbers of new waters or the saving or replanting of a multitude of small patches of land. It is the task of the large reserves or parks to save remaining areas of non-disturbed or little disturbed nature, where such species may still have a chance to survive.

But if at their lower level of ambition hunters can restore a somewhat more varied community of animals and plants within small areas taken over for game management purposes, even that is a major achievement in the field of conservation.

Influence of hunters' organisations

We must be aware in this context that there may still be areas in Europe where, due to the persistence of age-old hunting traditions in combination with a lack of educational and economic facilities, hunters are still not aware of the modern ideas applied within the field of hunting. Here local and national hunters' organisations have the opportunity to produce important progress.

But with all due reservations we can only conclude that the millions of hunters active in Europe to-day, with their readiness for active engagement and personal sacrifice, constitute one of the stronger, perhaps even the strongest, force in day-by-day conservationist activity in large parts of the continent. These hunters have also on many occasions demonstrated their readiness to cooperate with other bodies with related aims and ideals, possible differences on one point or another notwithstanding.

And finally we can also see with our own eyes that in those areas where the hunter is allowed to apply the modern principles of game management, be it in wetlands, farmlands or forests, more animals and plants, species as well as individuals, will be given a better chance to lead a normal life than in those where his influence is missing. This also includes the comparatively few species which he is harvesting on the basis of his knowledge of the carrying capacity of the respective areas. When ducks are increasing in Europe to-day, this is at least partly due to the efforts of the hunter.

Even more striking is the outstanding success achieved by hunters in North America, where the habitat-oriented activities of "Ducks Unlimited" started earlier and has been of the greatest benefit to all kinds of aquatic organisms.

There is an old saying : "Where there are hunters there is game". The application of modern methods of game management leaves room for a broader statement : "Where there are hunters there is a richer variety of life". ■

Agriculture and Wildlife

Colin Mc Kelvie

Almost alone among the developed nations, the United Kingdom and Ireland have no state-funded institutions for scientific research into the ecology and management of game birds and mammals. That role is carried out by The Game Conservancy, an independent charitable trust which is supported entirely by voluntary donations from its 15,000 members, with some additional sponsorship from industry and commerce. The Game Conservancy's scientific research, and the subsequent development of practical techniques of game management, can be conveniently divided into four broad areas — wetlands and inland waters; grouse moors and the uplands; woodlands; and lowland arable farms.

Correct land use allows the development of wildlife in all its diversity.
(Photo K. Scowen/The Game Conservancy)

Pheasants and partridge

Not only does this last type of environment support the greatest diversity of game species and also of other forms of fauna and flora, but it also supplies the majority of game shooters with their sport. Recent analysis of bag records from farmland shoots in Great Britain, carried out by The Game Conservancy's National Game Census, reveals that pheasants (*Phasianus colchicus*) constitute over 85 % of all game shot each year. This gives the pheasant an overwhelming numerical superiority over any other gamebird species, and a major Game Conservancy research project is currently investigating the natural history and ecology of the wild pheasant on farmland in southern England. Initial results from these studies have provided some important guidelines for the effective management of arable farmland and adjacent small areas of woodland so as to promote flourishing populations of wild pheasants.

The other typical gamebird of British farmland is the grey partridge (*Perdix perdix*). Unlike the introduced pheasant, the partridge is an indigenous species and was the commonest gamebird in most lowland areas of Britain and Ireland as recently as the 1930s. It then underwent a dramatic decline which Game Conservancy research has shown to be almost entirely attributable to changed patterns of arable farming; the increased use of agrochemical sprays, especially on cereal crops; loss of hedgerow nesting habitat; and reduced levels of effective gamekeepering and predation control. These factors have

combined to bring about the disappearance of over 85 % of the partridge population over the last fifty years, during which time intensive rearing and releasing of pheasants to augment the wild stocks has raised the pheasant to its present overwhelming numerical and economic importance as the premier gamebird in Britain and Ireland.

Changes in farming techniques

It is unwise and unrealistic to attempt to consider wild gamebird populations in isolation from the many other species of birds, mammals, insects and plants which share the same environment. It would be equally wrong to ignore the important and fundamental impact of farming upon the lowland habitat of Britain and Ireland. Since the 1950s arable farming has undergone a series of revolutionary changes, which have had an important and generally destructive effect upon farmland wildlife in general and gamebirds in particular.

The quest for higher cereal yields and improved agricultural productivity has led to the greatly increased use of agrochemicals on the farm, not only as insecticides but also as herbicides and fungicides. Tests have shown that some chemical sprays intended as weedkillers and anti-mildew agents can often have an insecticidal action. The inevitable consequence of their use has been the virtual loss of many formerly abundant species of farmland weeds and wild flowers, and the insects which depend upon them as host plants.

Research has shown that young partridge and pheasant chicks simply cannot survive without abundant insect items in their diet. In the cereal fields of the 1980s the chicks often hatch out into an environment with many fewer insects than formerly, which means that their survival chances are greatly reduced.

The tendency to drill cereals in autumn has also meant that farm workers have been used increasingly to "tidy up the farm" during the winter, thereby eliminating many of the untended corners which, during the summer, are beneficial to insects, plants and wild flowers of many species, and attractive to gamebirds, songbirds and butterflies. Rural Britain has thus become a "tidier" but much impoverished environment as a result.

We now live in an age of major agricultural over-production and there is growing concern among economists about the viability of an over-productive farming industry supported by massive grants and subsidies; and among environmentalists about the impact of agrochemically-orientated farming regimes upon the whole range of farmland wildlife. Recent trends and current thinking in agriculture indicates that many hundreds of thousands of hectares of farmland may be taken out of arable production over the next ten or twenty years.

Perdix perdix (Photo M. Danegger/Jacana)

Producing "game" instead of "crops"?

Sportsmen and environmentalists are anxious that this change should be as beneficial as possible to game and other wildlife. This presents landowners with a challenge : what economically viable use can be made of those hectares? A challenge for the farmer may actually be an important opportunity for the environmentalist and the sportsman. Throughout the western world there is an ever-increasing demand for leisure use of the countryside and for free access to country areas by a predominantly urban based population, for rest and recreation. The demand for good quality shooting is far in excess of the available supply, and if more attention is paid to the promotion of vigorous populations of wild game on farmland, landowners will find they can produce game as a valuable alternative "crop" for which there is a ready market, paying good prices.

The Game Conservancy's research work continually demonstrates that environments which support flourishing populations of wild game tend to be rich in a wide diversity of other species of birds, mammals, butterflies and wild flowers. Game shooting and the management of land so as to encourage gamebirds makes an invaluable contribution to farmland wildlife in general across a wide range of species.

Use of hedgerows and small areas of woodlands

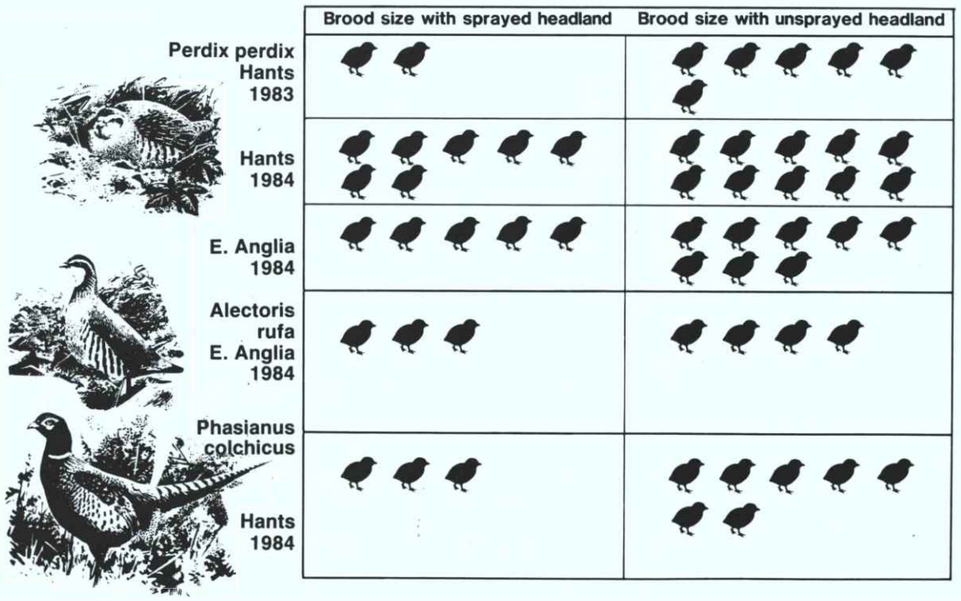
Two examples of farmland management with gamebirds in mind demonstrate this point. Hedgerows and small areas of woodland (perhaps only one or two hectares in extent) make no contribution to the productivity of arable farms; indeed they have often been regarded as a positive liability, harbouring undesirable weeds and injurious insects and making it more difficult for large machinery to manoeuvre. The removal of many hedgerows and small woods has taken place over large areas of southern and eastern England. However, game shooting requires that hedgerows and small copses and spinneys should be retained and managed so as to provide breeding habitat for wild game and holding cover for released birds. Game shooting is often the chief motivation for retaining these habitats, which are vital for many species of farmland flora and fauna. In this way the landowner who conducts his farming regime to maintain game habitat also does a major service to many other species, and helps to promote the diversity and richness of wildlife on farmland. If game shooting had not been such an important feature of Britain's farmland over the past thirty years we would undoubtedly have lost many thousands more kilometres of hedgerows and countless hectares of small woodlands — uneconomic for timber production but enormously beneficial for game and other wildlife.

Use of agrochemical sprays

The second example comes from some important new research work which has shown how a small degree of restraint in the use of agrochemical sprays on cereal crops can result in enormous benefits for wild gamebirds, and also for butterflies, wild flowers and other species. Experiments have shown that where a 6-metre wide strip is left unsprayed with weedkillers along the margins of cereal fields this helps to promote the growth of weeds and wild flowers and to encourage the insects which depend upon these host plants. Where the unsprayed strip is bordered by a well-maintained hedge - Ω in section and on a raised well-drained bank with a good growth of long grasses in the hedge bottom — partridges and pheasants have a much improved nesting habitat and the newly hatched chicks have immediate access to abundant supplies of the insects which are so important if they are to survive and flourish. After three years experimental work it is clear that partridges and pheasants both enjoy a much higher survival rate as a result of stopping the use of agrochemicals on as little as 2 % of the area, without any measurable reduction, in normal years, in the farmer's crop yields. Best of all for the environmentalist is the way this new spraying regime benefits wild flowers, butterflies, songbirds and many other plant and animal species which have so often been reduced or eliminated by agrochemicals.

If levels of predation by corvids and mammals are also controlled, game and other wildlife should benefit very substantially.

It is clear from The Game Conservancy's recent research that efficient modern farming need not be incompatible with flourishing populations of game and other forms of wildlife. The development of acceptable "management packages" and the educational challenge of increasing the awareness of how farming and conservation can harmonise are high on our list of priorities. ■



Economic repercussions

Jean-Michel Pinet

A still morning, a breath of autumn, a watchful man holding a gun and following a dog — he hopes for an encounter, though often it will be only a fleeting glimpse. Sometimes a pack of hounds, horses, a stag; men strung out, men grouped together. These are some of the mental images of hunting which we all have : an age-old cultural heritage, one of those rare situations in our European countries where, it seems, modern man faces nature without thought of production or making money. Yet this encounter between man and beast is the product of complex motivation and a chain of micro-economic decisions taken before any hunting begins.

Broadly speaking, hunting involves five types of expenditure in the various Community countries.

Types of expenditure

1. **Legally required expenditure** (8 to 15 % of total expenditure). A hunting permit and/or a gun licence are everywhere compulsory. Insurance is virtually compulsory.

2. **Expenditure on obtaining hunting rights** (25-40 %). Almost universally these run with ownership. The sociological characteristics of the hunter are obscure (there have been a few studies in Belgium, France, Great Britain and Italy usually on the basis of untypical samples) but it appears that the "average" European hunter is "worker/middle executive/farmer". Often therefore he does not own land to hunt upon and will have to pay an annual fee for his leisure pursuit. This represents an important item in his total expenditure.

3. **Expenditure on equipment** (40-60 %). Like every other sport hunting requires certain things : one or more guns, ammunition, special clothing like jackets and footwear, gamebags and gear for carrying cartridges; also telescopic sights, knives, horns and many other accessories. For accounting purposes expenditure on dogs is included under this head as hunters own many more than the national average.

4. **Expenditure on the area of the hunt itself** (5-15 %) is a variable item depending on country and hunting demand. It is often difficult to assess its financial importance because most of this expenditure is usually included in the cost of obtaining the hunting rights.

5. **Finally, optional expenditure** (5-10 %) incurred by only a small number of hunters : permits for special types of game (big game, deer) or over particular types of ground (waterfowl), subscriptions to hunting journals, foreign travel.

Hunting is therefore a pursuit which can be described in financial terms, provided reliable statistics can be obtained. This is a matter on which our institute is currently doing research. With this reservation, Table 1 shows the financial signifiance of hunting in the Community.

These figures do not include expenditure on dogs (purchase and maintenance) which we estimate at around ECU 500 M.

Beneficiaries of hunting expenditure

This expenditure benefits many kinds of people and creates jobs for gunsmiths, equipment suppliers, rearers of game, dogbreeders and trainers, hunt-organisers and private gamekeepers, taxidermists, and personnel concerned with control, hunting magazines and specialist tourist agencies. The owners of hunting rights profit directly from money spent, as does the government through specific taxes and VAT. By comparing national studies brought together by the Federation of Hunting Associations of the EEC we have made a preliminary estimate of the jobs created by hunting activity (Table 2). It shows that the number of jobs created by each hunter is nearly constant : 2 jobs per 125 hunters or 15 jobs per 1,000 hunters. This average is about right in our opinion.

Some essential points in conclusion :

— hunting is a leisure pursuit followed in rural areas by a population group of very varied social and occupational backgrounds;

— it is financed exclusively by those who take part in it, without any subsidy;

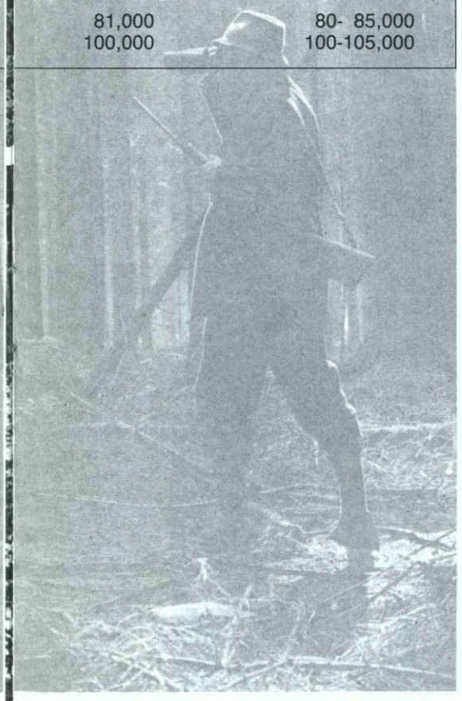
— it is a form of economic activity which creates resources for government, benefits many people and creates jobs. In 1984 it generated a total expenditure of about ECU 4,000 M and about 100,000 jobs. ■

Table 1: Hunting expenditu re in Community countries

Countries	Number of hunters	Hu nting expenditure per head (ECU)	National expenditure on (millions ECU)
Belgium	28,500	2,200	62,7
Denmark	170,000	1,000	170,0
France	1,880,000	400	752,0
Great Britain	800,000	900	720,0
Greece	300,000	400	120,0
Italy	1,500,000	400	600,0
Ireland	120,000	900	108,0
Luxembourg	2,600	1,000	2,6
Netherlands	36,000	1,000	36,0
F.R.G.	265,000	1,000	265,0
Spain	1,050,000	400	420,0
Portugal	300,000	400	120,0
Total	6,452,000		3,376,0

Table 2: Number of jobs created by hunting in the European Community

Number of countries	Jobs	Round figures	Range
10	82,150	81,000	80- 85,000
12	100,350	100,000	100-105,000



(Photo J.C. Chantelat)

Common property

Mario Spagnesi

The present position regarding game in Italy has very specific historical and cultural roots. In simple terms, three essential factors are involved : cultural attitudes towards wild animals, the country's changing socio-economic situation, and environmental changes. In Italy, unlike the countries of central and northern Europe, wildlife has aroused only limited and occasional interest among the general public. Italian culture, which is primarily humanist and hence anthropocentric, has in fact nearly always shown scant respect for the environment and regarded the natural sciences as being of secondary importance compared with the humanities. This relative lack of interest in wildlife per se also means that hunting is seen as a sport and hence that wildlife constitutes not a resource to be managed but the simple object of a leisure pursuit. For a long time the only people interested in wildlife were hunters. No account therefore needed to be taken of the views of other social groups, and this, in the final analysis, resulted in lack of restraint and responsibility among hunters as regards the number of animals killed.

Wildlife belongs to the national and international community

Yet it is now generally accepted that wildlife, like other natural resources, belongs to the national and international community. Wildlife is, both structurally and functionally, an integral part of ecosystems, on whose completeness and stability the welfare and even life of mankind depend. The idea that wildlife constitutes a supranational asset does not apply only to ecological itinerants such as migratory birds and cetaceans which, in their travels, are a matter of concern for many different states; even non-migratory species of wildlife, particularly when endemic, must be regarded as the heritage of the whole human race and as such given the fullest attention by the national organisations over whose territory their distribution areas extend. Such organisations will have to take steps to employ the most appropriate management techniques in order to ensure the conservation of the species concerned. These techniques should include protection from various direct threats such as excessive exploitation (both intentional and accidental), destruction and deterioration of habitats, and the effects of the introduction of exotic species.

Renewable resources

Wildlife populations, like forest systems or water from catchment areas, represent finite but renewable resources, unlike, for instance, mineral deposits, the exploitation of which, however carefully it is controlled, irrevocably diminishes reserves. It is thus possible, at least in theory, to hunt continuously, provided the numbers killed take account of the total population of each particular species and thereby maintain reproductive capacity intact.
Hunting is, however, acceptable only if it complies with certain general conservation principles and is practicable only on the basis of a detailed knowledge of the status and dynamics of the population concerned. In fact, one general aim of rational wildlife management is to ensure the continued existence of zoocenoses which are as varied as possible and well balanced and whose constituent species' density is close to biotic densities so that their potential can be exploited to the full. Naturally, since the exploitation of wildlife is but one possible use for the land, it must not impede or interfere with other activities such as forestry, agriculture and the rearing of livestock. This is possible through careful planning which, by complying with the principle enunciated above, guarantees varied use of the land and the selection of priorities in the light of the environmental and socio-economic conditions prevailing in each region or management unit.

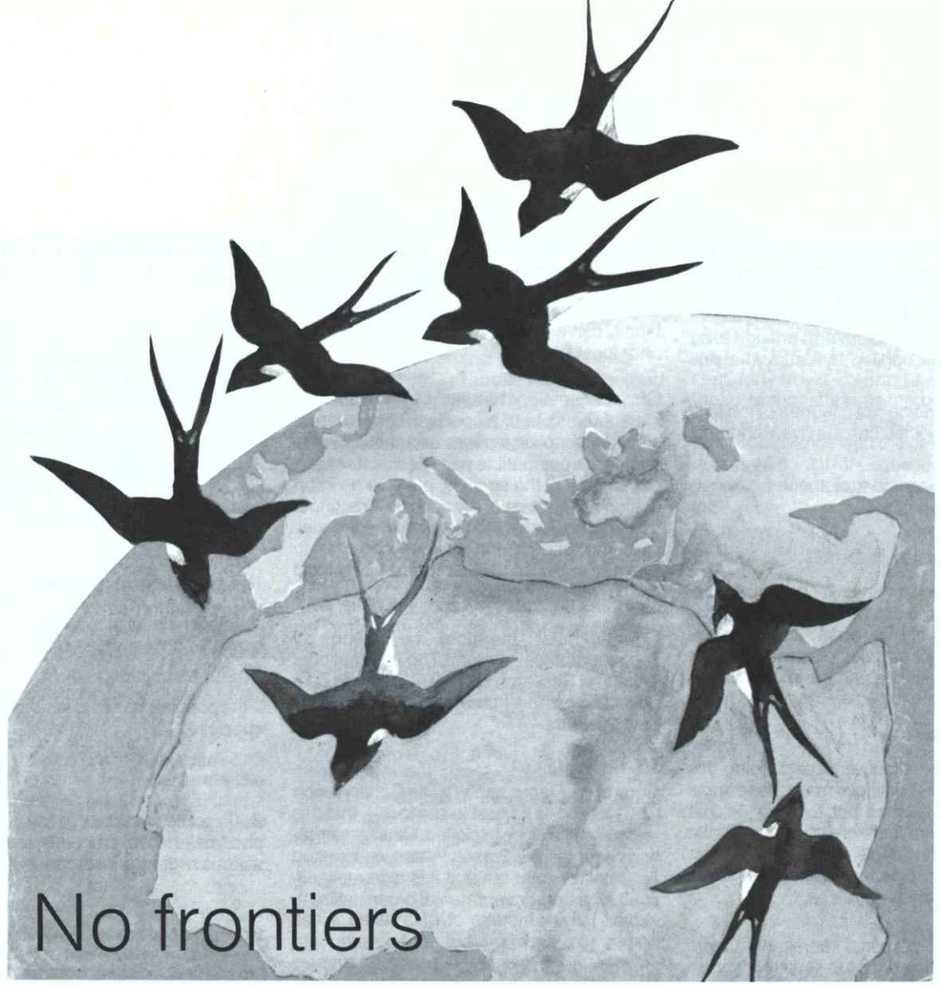
Censuses are necessary

A management model based on the principles outlined above provides for the carrying out of a set of preliminary operations designed to evaluate both the kinds and the numbers of wild animals in a particular area, establish the real status of the fauna present and create technically satisfactory game management units. Of fundamental importance, therefore, is awareness of the actual density of population of each species to be managed. The number of individuals per unit area must accordingly be known, as well as, in the case of certain species, the population structure, i.e. proportion of each sex and age group in the various areas. This can be done by means of population surveys or censuses which, because the methods used and time allowed can be adjusted to the target species and habitats, enable sufficiently reliable results to be obtained. Extensive censuses properly conducted throughout the territorial unit in which hunting is to take place are currently the only method of quantitative assessment enabling errors to be limited and, in certain circumstances, estimated and accordingly the number of animals which it is permissible to hunt to be fixed with a reasonable degree of accuracy. This result cannot generally be achieved either by extrapolating over vast areas data obtained in sample areas or by applying methods of calculation that give indications of relative numbers rather than true densities.

In theory at least, extensive censuses can be conducted of all wild bird and mammal species. In reality, for only some of them, in particular non-migratory species and a few groups of migratory birds, are there methods of quantitative evaluation which are both reliable and, in practical and economic terms, usable. Clearly, species that may at least conceivably be hunted will in future have to be identified by means of wildlife censuses. This is essential both for the implementation of the preliminary measures outlined above and for the formulation and implementation of plans for controlling kills and the creation of territorial management units.

Action on these points is being taken at various levels even in Italy, and it is to be hoped that within a few years we shall see the proper application of the fundamental principles of wildlife management. ■

Taking a census in order to know the animal potential and thus to be able to repopulate other areas.
(Photo G. Lacoumette)



No frontiers

Raymond Pouget

Migratory birds by definition know no frontiers, spending the breeding season in different geographical areas from those where they winter.

This means that they have to travel long distances, which may range from a few hundred to several thousand kilometres (some species such as terns and knots are quite equal to travelling 12,000 to 15,000 km) and adopt a variety of strategies for using available space.

To survive they need fertile areas where they can rest during migration and wide expanses where several hundred thousand birds can winter.

Aware of this, the European countries have equipped themselves with a network of extra reserves and launched a comprehensive scheme for the international management of migratory birds. Hunters play an essential part in it because they want to go on enjoying this renewable resource for a long time and of course, above all, to preserve the common heritage of wetlands and associated species for future generations.

Hunting and shooting

The ultimate aim of hunting and shooting is clearly to cull limited amounts of a renewable natural resource. Admittedly, this may not be obvious to the ordinary hunter, who goes shooting because he enjoys the natural entertainment it provides — actually a relic of the sometimes not-so-very-distant days when his ancestors hunted out of necessity. But even without realising it, he thinks in terms of the culling process, if only by observing the regulations imposed on him at various levels.

The reason is simple : if shooting — i.e. culling — is to continue, the natural resource must be renewed.

So the question is which species of fauna can be classed as renewable (whether their numbers are stable or progressing), i.e. suitable for culling and hence for shooting. This means monitoring the various species to establish whether those classed as suitable for shooting can continue to be shot and whether a protected species qualifies once more for shooting.

Basic factors

The monitoring involves a number of investigations carried out either by members of hunting associations or by staff they may hire for the purpose — wardens, technicians or recognised scientists, particularly biologists specialising in game.

The first basic method is counting, which is rarely exhaustive except in special cases; it normally means regular counting in control areas or establishing the density of breeders before hatching.

The second is recording the results of reproduction in order to draw up regional shooting programmes.

"State of health"

The third factor is actual information on the amount of game killed, which hunters are obviously alone in possessing. Efforts to establish indices without their co-operation have sometimes produced improbable results.

These factors indicate the general "state of health" of the species concerned and consequently the extent to which the resource is renewable and suitable for shooting.

Extensive surveys will need to be carried out among the lines of the local projects already in progress, to produce thoroughly reliable international descriptive data and statistics.

There can be no doubt that the three factors are indissolubly linked. Handled with care and method, they should enable us in the medium term to lay down a few simple management rules. These should be specific enough to be understood and applied by users, the real goal being :

- the conservation of fauna's habitats, because no species can survive without its biotope,
- and the management of species.

Conservation of habitats

This calls first and foremost for continuous action to prevent the destruction of the environment. The battle is often lost because economic priorities take precedence over ecological necessities, but the effort must be kept up at all time to narrow the gap as far as possible.

One of the most effective ways of doing this is to arrange for shooting to make these areas pay. It is an established fact, for instance, that in wetlands where there are no returns on the renting of shooting rights, many more habitats are lost than in regions where wetlands are auctioned at very high prices.

Also, it is in the personal interest of hunters who own or rent wetlands to keep them up so that shooting may continue.

Direct action by hunters — species management

Hunting and shooting can become essential to the survival of wetlands. For instance, discontinuing the shooting traditionally practised in a given area would inevitably lead to the speedy drying out of marshes still kept up by their owners for the pleasure of shooting though they are less profitable than zero-grazing on land drained and dried out for the purpose.

In France hunting and shooting enthusiasts finance a National Fund for Wildlife Habitats so that large areas can be purchased and set aside for conservation purposes and use by fauna, and steps can be taken locally to protect fragile, threatened areas.

Species management is first and foremost a matter of national regulations and even international conventions and directives. In actual fact, however, this broad framework is narrowed down by the much more stringent rules applied at regional, local and association level, not to mention the constraints of personal ethics.

A third approach is to set up nature reserves for the conservation of natural habitats and associated species and hunting grounds for the protection of areas essential to the species' survival.

Migratory birds and zoogeographical regions

Migratory species, as distinct from other fauna, can only be managed pragmatically, on a local basis.

Obviously, national counts give only a rough idea of the state of a species. They indicate whether reception facilities and shooting conditions are compatible with the maintenance or increase of the species, but give no information on the state of the species throughout its geographical area, since conditions may vary from one country or even one area to another. Many species are hard hit by local changes in reception capacity.

Counts must therefore be made by zoogeographical region. The International Waterfowl Research Bureau (IWRB) has conducted counts in a number of countries for the past 20 years.

It is to be hoped — and the International Council for Game and Wildlife Conservation (CIC) has done its best to see to it — that this mass of data will be exploited. Other organisations such as the French Waterfowl Hunting Association point out that it is extremely difficult for a non-governmental organisation to exploit large amounts of data when it has nothing to draw on but enthusiasm and volunteers. That is why the working party is strongly in favour of synchronising all these data collecting operations.

More information is also needed on other quantifiable data, namely the reproductive rate of breeding pairs and the number of birds shot. It is hard to accept statements — sometimes by eminent scientists — based on unconfirmed estimates and questionable data.

Lastly, surveys of the international network of reserves must be conducted to identify weak spots with insufficient facilities along the main migration routes, and care must be taken to monitor the state of the receiving areas.

The upshot of all this is that the management of migratory birds needs to be organised internationally.
That is the aim of the CIC.

The CIC and its strategy

The International Council for Game and Wildlife Conservation, set up in 1930 by 121 prominent hunting and shooting experts from 28 different countries, is an original organisation in that it includes states, hunters, scientists and zoologists.

It now numbers 67 member countries and has set itself two tasks : to explain to the general public the function of hunting and shooting in nature conservation and to pursue a genuinely effective policy of international co-operation.

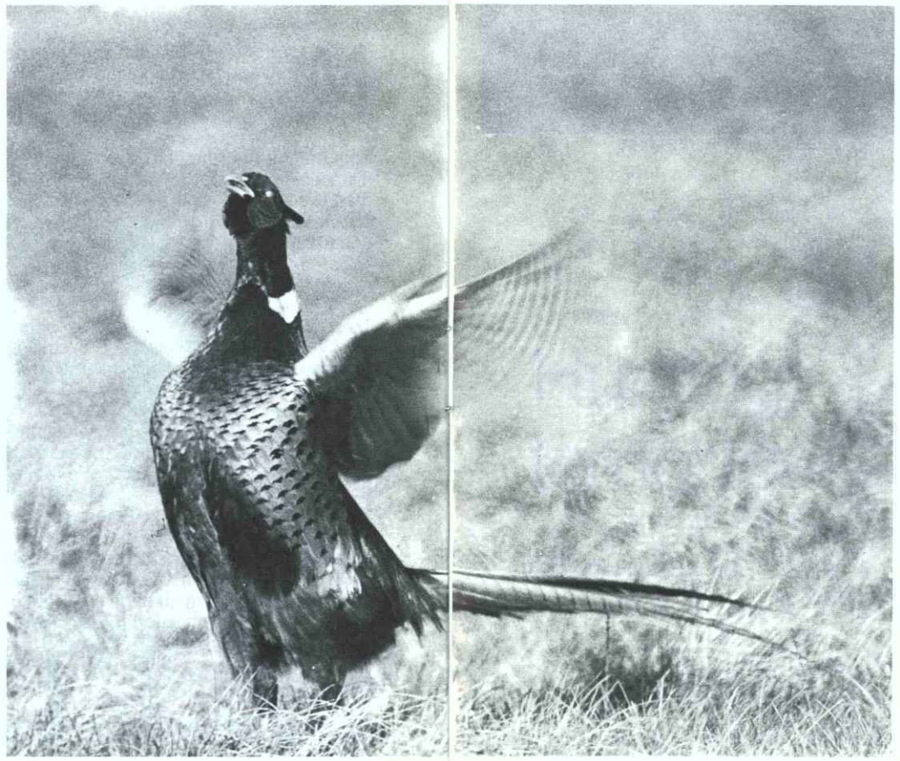
Surely no issue is better suited to international co-operation than migratory birds.

A Western Palearctic working party has been set up to promote co-operation between states, hunting associations, the Federation of Hunting Associations of the EEC and all national and international organisations, governmental or otherwise, committed to the conservation and development of migratory bird populations in this zoogeographical region, with a view to drawing up an international programme for the management of migratory birds.

The group's main goals are :

1. In each country, by means of regional networks, to collect data on :
   - natural habitats ;
   - the populations of the various migratory bird species ;
   - the numbers of birds culled by shooting and other means.
2. To set up a central agency to store the data and make them speedily available to the various organisations concerned.

Introduced into Europe along time ago, the pheasant always figures in good game bags, but is also the object of much controversy.
(Photo S. Cordier)



3. Define management and conservation goals for species whose numbers are decreasing.
4. Co-ordinate studies and research in this area, particularly on techniques and alterations designed to improve the capacity of natural habitats essential to birds' survival.
5. Inform hunters and the general public of the results achieved, to help them understand the importance of efficient migratory bird management and the social and economic costs and advantages of the resource.

The working party agreed at two plenary meetings that it was of paramount importance for North and West Africa to take part in the programme. However, it soon became clear that for technical and financial reasons it would be difficult for African states to do so.

The working party concluded that it was obviously far better to enable them to join the programme themselves than to invest in expensive trips by qualified Europeans who would in any case have to rely to some extent on local infrastructures. In addition, the social and economic conditions prevailing in Africa naturally give rise to conflicts between the ecological and economic functions of the continent's wetlands.

A first 10-day training course was accordingly held in France at Chanteloup (Vendée) to instruct 21 officials from 13 African countries on how to set up national data collection networks — a training course for instructors, as it were.

A practical example of solidarity

The CIC's basic aim is practical action to monitor and help protect the environment. This relatively new approach has aroused an immediate response among our African partners, who are more interested in conservation projects, be they local and short-term, than in wordy declarations by European experts.

The practical outcome was the CIC's appeal to European hunters to show solidarity with the African states by making a small contribution — about the price of a cartridge — to an International Fund for the Western Palearctic which would be used primarily for the conservation of African wetlands.

Co-operation of this kind had in fact got off to a spectacular start at the beginning of 1985, with the funding of a scheme to partly reflood the Djoudj area in Senegal, hit by drought at the crucial moment when Western Palearctic birds wintering in Africa were setting out on their pre-breeding-seasons migration. Local co-operation projects financed by the first contribution to the International Fund for the Western Palearctic have also been carried out in Morocco, Mauritania and Guinea.

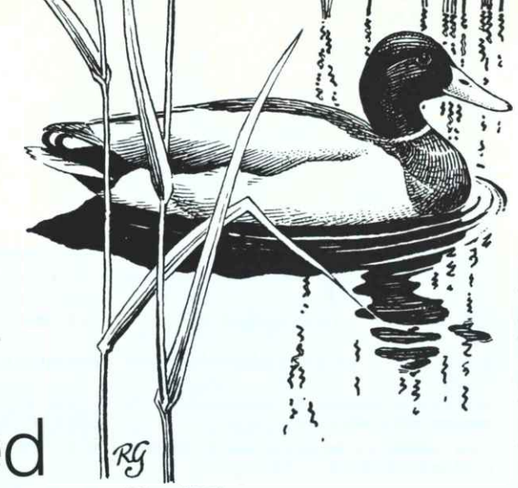
At the same time financial aid to the IWRB has enabled it to expand its facilities for centralising and exploitating data on bird population.

A valuable instrument : the Bern Convention.

The sensible, consistent provisions of the Council of Europe treaty known as the Bern Convention provide a useful legal framework for the establishment of Euro-African co-operation. Appreciating the measures advocated by the convention, the responsibilities it confers on organisations such as the CIC and its working party and the opportunities for harmonisation it affords under a system adaptable even to non-European Palearctic countries, we naturally bear the convention in mind wherever our work allows us to convince governments of its advantages.

Personally, I hope many African states will help the Bern Convention to function effectively by acceding to it, so that practical as well as legal action may speedily be taken to preserve wetlands — an absolute priority for those in charge of migratory birds.

The third meeting of the working party was held in Strasbourg (attended by representatives of 25 states) and marked a further step forward in co-operation between all those responsible for the conservation of natural habitats and associated species, in strict compliance with the ethics of the International Council for Game and Wildlife Conservation — whose work combines the two indissociable concepts featured in its title. ■



Ducks Unlimited

(Photo NCC)

James M. Shepard

During the great depression and drought-caused dustbowl days in America, it was discovered that waterfowl numbers were decreasing at an alarming rate. In 1929, the ''More Game Birds in America Foundation'' was formed to probe the reasons for this drastic decline in the numbers of ducks and geese. The results of this research laid the foundation for Ducks Unlimited. Three important conclusions were drawn from the Foundation's survey :

1. over 65 % of North America's waterfowl are hatched in the Canadian Prairie Provinces of Manitoba, Saskatchewan and Alberta;

2. agriculture, through draining and cultivation, was reducing the prime nesting areas;

3. droughts and floods were becoming limiting factors in waterfowl production.

Realizing that suitable habitat held the key to the success or failure of the waterfowl resource, Ducks Unlimited, Inc. was formed in 1937 as a nonprofit organization and, throughout the years, has had the single purpose of developing, preserving and maintaining wetlands for North America's wild geese and ducks.

Funds

Funds derived from America's sportsmen through voluntary contributions enabled Ducks Unlimited to embark on a major water management program to stabilize the habitat areas and protect them from disastrous effects of flooding and droughts. During its existence, DU has raised and put to use over $ 300 million developing critical habitats for waterfowl and other associated wetland species on this continent. Wetlands are not owned by DU, but projects are built by Ducks Unlimited under easements given by private land owners and government, both provincial and federal. Most of our work has been done in Canada, where we have about 3.5 million acres under reservation and have developed over 2,600 projects and 15,000 miles of important nesting shoreline. The actual construction of the important wetlands projects is carried out by Ducks Unlimited Canada, the companion organization incorporated under the laws of the Dominion in 1937.

In 1970, in an effort to help waterfowl on the entire continent, Ducks Unlimited de Mexico was organized. DUMAC, as it is called, is raising funds within that nation for wetlands management and conservation of the essential wintering marshes for migrating ducks and geese. At present, DUMAC has conserved more than 250,000 acres of wetland habitat while Ducks Unlimited, Inc., provides all available counsel and advice in its programs to preserve this natural resource.

Completing its continental approach to waterfowl and wetlands conservation, Ducks Unlimited, Inc., is expanding its project construction efforts into the fertile prairie wetlands of the U.S. With the cooperation of federal, state and private land owners. DU is developing important nesting areas in North and South Dakota, Montana, western Minnesota and Alaska. DU projects vary in size from small pot holes to over 500,000 acres.

To reach beyond the political borders

Since DU is a nonprofit organization, it can do what the federal government cannot do, and no other conservation organization has been able to accomplish — reach beyond the political borders to care for North American waterfowl throughout their continental migrations. Much of the government money spent on wetlands conservation in the U.S. comes from federal duck stamp revenues which cannot, by law, be used for conservation in Canada and Mexico, even though migratory birds do not respect our international boundaries. State governments, however, can contribute to conservation in Canada, and many now realize the vast majority of birds their citizens love to hunt, watch and photograph do, in fact, hatch in marshes that happen to lie north of the U.S./Canadian border. Therefore, it is important that everyone be concerned with the conservation of wetlands. Despite DU's conservation efforts, North America still loses thousands of wetland acres each year. Private citizens, who own most of the country's marshes, know they can supplant them, nearly at will, with such profitable things as cropland, houses, office buildings and parking lots. Many of the most critical waterfowl breeding marshes remain. However, a marsh drained is usually lost forever and, unless something is done now to save these remaining wetlands, many will be dry before the turn of the century. DU's 4,000-plus nationwide chapter (club) organizations form the platform of our fund raising activities. Each of these committees helps generate community participation by its banquets and donor participation program. The unselfish endeavors of these hunters-conservationists who form the backbone of the organization, serving without compensation, gain much satisfaction in their role as conservationists of action. While millions of hunters enjoy the waterfowl harvest each fall, over 600,000 are members of DU. Thus the potential for new members is almost unlimited.

DU continues to break records on behalf of North America's waterfowl. However, such achievements would not have been possible without the generous contributions of American, Canadian, and Mexican waterfowlers. The future of North America's waterfowl will be secure so long as there are those willing to accept the responsibility of wetland habitat conservation. DU accepted that responsibility almost 50 years ago, and will continue to campaign for the wise use of this valuable natural resource. ■

16th century tapestry at "La Converserie Saint Hubert" (Belgium) - symbolism of deer of classical Greek mythology

Hunting tomorrow

Georges Landrieu

The first manifestation of life on earth — the living organism which emerged from matter — had some limited awareness of its surroundings. Though lacking mind and feelings, and therefore moral sense, it had to meet its vital needs and did so at the expense of other creatures.

Thus millions of years ago hunting was born, in the murk of the swamps and the barren wastes of the first landscapes.

The evolution produced man. It took him many centuries to mark, with animal brutality, the difference between man and beast.

By natural selection, man was a hunter and a fisherman. He gathered the wild plants which made his bed, drank water as he found it, and in fear discovered fire. The hunter was also instinctively a warrior. Warrior, chief, hunter, he knew no right or wrong, he behaved as he must for the survival of the human race.

The hunter becomes civilised

For many centuries yet man, the hunter, warrior and tribal chief, forced evolution by pain and punishment upon the society he found : its mutation had to be assured. Civilisations bloomed, man inherited the course of history itself. That same hunter strode on through the centuries, now tribune and politician but also painter, historian and teller of stories. The trace of the hunt can be seen in the caverns where the cavemen lived and in the pyramids

where the Pharaohs rest. Great tapestries depicting beasts were woven in the centres of art manufacture, and hunting laws and regulations became the prerogative of kings.

As conquest and forest clearance took their course hunting gave way to agriculture as the source of vital nourishment, and ceased to provide essential support to man.

The age of chivalry brought refinement to the hunt. And behold one day with Saint Hubert, Duke of Aquitaine and bishop of the Ardennes as hunter and fisherman, it became a thing of tradition and of legend, something ideal.

The French Revolution brought hunting within reach of everyone. Hunters now make the laws which check inevitable abuse, both in open exercise of sporting skill and the illegal art of poaching.

Instinct has become subject to intelligence in that natural civilisation which instinct has helped to create : "man aspires to the absolute. To be a man is to differ from the animals by attaining the absolute through intelligence".

The hunter's future

Associated for ever with primitive society, an integral part of the countryside and with a traditional aura of rite and legend, hunting has become "a clear instance of a biological function being transformed by cultural forces".

Hunting continues of course to satisfy a basic human instinct. Man dominates it. The modern hunter has to face two new things : a shrinking bag of game and the hopes that went with it; and a challenge from minority groups largely ignorant of hunting practice. The hunter is obliged to manage the natural resources available to him, yesteryear's heavy toll of game is over. The hunter-manager has to work with the farmer to find ways of protecting crops. He must work with the forester to establish a balance between forest and game, and see that the great mountain ranges open to the public preserve the balm of their landscape and their tranquillity and cleanliness, all essential to the basic needs like water which the ground supplies and to movement of the animals which form their population.

To satisfy his sporting passion, the hunter must manage his means by installing systems for controlled shooting of the larger species and better protection of others, endangered or not, by apertures and fencing of different sizes.

The hunter has a duty to manage the natural heritage of the wild fauna over which he has both power and responsibility. He can do this because the source of his ability lies deep in his hereditary past.

Yet the hunter now faces the moment of choice. The first assaults of industry and ever-rising productivity have forced nature to retreat, and hunting with it.

Man is a shareholder in the world which he finds at birth and can become a manager; he must therefore share in the responsibility for humanity and man's forward progress, not in man's subjection. Some people would like to ban hunting arbitrarily and on grounds which are specious.

But if one follows this line of nihilist argument to its conclusion they should also ban all fishing rights, cease to pick grapes for wine, and abolish harvesting and the gathering of fruits. On the same pretext of solicitudes for preserving life they should forbid abortion in any circumstance and grant criminals and those guilty of sexual assault a legal dispensation to disport themselves throughout society unchecked.

A universe of absurdity indeed lies between an earthly paradise and the realms of hell. The hunter is builder of a better world, his feet planted on the rich soil of earth but his eyes fixed on the horizon of human values.

The botanists, the ethnologists, the philosophers, the politicians and all those committed to the struggle to conserve nature have been joined by the whole hunting community : only the moral aspect is open to question. And so, tomorrow, the hunter will learn to suppress his predatory and bloody instincts, through intelligence as the Book of Genesis suggests. He will learn that even greater than the pleasure of pursuit is the joy of "communing" with nature, a nature which he himself has helped to better for the greater good of all his fellows immersed in day-to-day worries about the difficulty of combining essential production with the vital frame of field and forest without which life on earth would lose all meaning. ■

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Hunting is natural to him (Wolf) (Photo S. Cordier)

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