

# COUNCIL OF EUROPE

## COMMITTEE OF MINISTERS

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RECOMMENDATION No. R (86) 10

**OF THE COMMITTEE OF MINISTERS TO MEMBER STATES**

**CONCERNING THE CHARTER ON INVERTEBRATES**

*(Adopted by the Committee of Ministers on 19 June 1986  
at the 398th meeting of the Ministers' Deputies)*

The Committee of Ministers, under the terms of Article 15.b of the Statute of the Council of Europe,

Considering that the aim of the Council of Europe is to achieve a greater unity between its members ;

Having regard to the resolutions of the European Ministerial Conferences on the Environment ;

Considering the recommendations by the Committee of Ministers of the Council of Europe and particularly the one related to the reintroduction of wild indigenous species (No. R (85) 15) ;

Considering that the diversity of wildlife is essential to the maintenance of the biological balance of the biosphere and that invertebrates here play a vital role ;

Considering that the too-often harmful effects of human activity on the environment in Europe as elsewhere in the world urge us to revise our relationships with nature and demand severe controls on such activity with the aim of avoiding damage or reducing it to a minimum ;

Considering that concerted action at an international level is necessary, because plant and animal life, primary productivity — plant — and secondary productivity — animal — depend directly and indirectly on the existence of a diversified invertebrate fauna and that, in consequence, the perennality of its existence is essential to the survival of mankind,

Recommends to the governments of the member states that, when drawing up their management policies for the natural environment, they should take account of the appended charter.

### Charter on invertebrates

1. *Invertebrates are the most important component of wild fauna, both in number of species and biomass*

The number of scientifically identified invertebrate species in the world is well in excess of a million, whereas there are only some 51 000 species of vertebrates. In Europe the invertebrate fauna can be put at between 150 000 and 200 000 species, while the vertebrate fauna includes 902 species.

Invertebrates comprise microscopic protozoa (25 000 species), worms (20 000), molluscs (over 100 000), arthropoda (925 000 known species) which include spiders (34 000), crustaceans (25 000), myriapoda (10 000) and insects (approximately 850 000).

However, it is now believed that the tropical arthropod group alone may in reality consist of at least 30 million species (including 22 million insect species) or 600 times the total number of vertebrate species. Every year science discovers and describes 15 000 to 20 000 new species of invertebrates.

The greatest animal production (biomass) can be ascribed to soil invertebrates; in Europe it may be as much as one tonne per hectare, well in excess of the average biomass of wild vertebrates. This is an enormous potential of which man knows and uses only a tiny part, but, on the other hand, destroys to a large extent.

To these terrestrial invertebrates may be added the biomasses of flying invertebrates, which may exceed 100 kg per hectare in a temperate European forest zone, and marine invertebrates whose quantity defies calculation, between 9 and 10 million tonnes of which are fished every year for human food (molluscs and crustaceans).

These huge quantities of invertebrate biomass consist largely of species which degrade and mineralise primary (plant) and secondary (animal) organic matter, putting it back into circulation for biological use.

2. *Invertebrates are an important source of food for animals*

Terrestrial and aquatic invertebrates are the principal source of food for large groups of vertebrates, including many species of fish, amphibians, reptiles, birds and mammals.

They are therefore a basic element in the food chains and networks which underlie the general balance of nature. Their existence and full development are essential for the overall biological equilibrium.

3. *Invertebrates may also constitute a source of food for mankind*

Particularly in tropical regions, arthropoda and other invertebrates may constitute a large direct food reserve for man, either in normal times or, especially, in case of shortage. Marine and freshwater crustaceans (crabs, lobsters, crayfish, etc.), marine molluscs (mussels, oysters, clams, octopus, cuttlefish, etc.) and terrestrial molluscs (snails) are universally employed as foodstuffs and sustain considerable farming, harvesting and commercial activity.

Termites, grasshoppers, the larvae of wood beetles and butterflies, spiders of the Mygale family, etc. are invertebrates widely used for human consumption in four continents. Honey, which is produced by insects, is also of great importance as a foodstuff.

4. *Invertebrates are vital to the fertility and formation of the soil, and to the fertilisation and production of the vast majority of cultivated plants*

In both temperate zones and tropical climates invertebrates are preponderant among terrestrial fauna and are vital to the formation of the soil and humus and to keeping them fertile; invertebrates which bury the carcasses of small animals help in both this and the cleansing of the environment.

Approximately 80% of plants cultivated for the production of fruit and vegetables, textile fibres, medicinal preparations and various other things are fertilised via invertebrates (especially by bees, but also by many other pollen-bearing insects).

Furthermore, invertebrates are one of the crucial factors in plant productivity, through their physical action on soil or their elimination of processes which restrict soil productivity.

For instance, the effect of earthworms on the soil stimulates grass growth, which is necessary for conserving the soil, rearing domestic animals and preserving wild fauna: transplanting them from Europe to Australia has improved the production of grassland and boosted stockbreeding results. Dung beetles break up and consume the excrement of wild and domestic mammals, which would otherwise form a layer, choking the soil and slowing down production.

Coral reefs and atolls are formed from invertebrates, and their importance for humanity cannot be overlooked.

Since invertebrates encourage vegetation, they are of irreplaceable benefit to all agriculture, forestry and animal husbandry and enhance the richness and variety of wild fauna, soil conservation and the beauty of the landscape, the regulation of water systems, atmosphere purity and the fitness of the environment for habitation.

5. *Invertebrates are useful in protecting farming, forestry, animal husbandry, human health and water purity*

Biological pest control, which exploits natural patterns of competition between living organisms, is an effective system of defence for limiting damage by harmful animals and plants. For instance, red wood ants, which prey on tree-damaging insects, protect forests and can be mass-produced and transplanted for the purpose of such protection. In Europe, they destroy 700 000 tonnes of forest insects, the majority of which are harmful.

The minute insect *Prospaltella berlesei*, introduced into Europe to act as a control against the *Diaspis pentagona* ladybird, which destroyed the mulberry tree and accordingly spelt the end of silkworm breeding, has wiped out the *Diaspis* and saved the silk industry.

The undisturbed presence of invertebrates is fundamental for preserving the purity of surface and groundwaters.

6. *Invertebrates are valuable aids for medicine, industry and crafts*

Invertebrates may be the source of medicinal preparations; in this respect they are still a poorly known and under-exploited resource. There is, for instance, the European coleoptera *Paederus fuscipes*, which produces pederin, a substance used successfully in homeopathic doses in the treatment of ulcers, or bee toxin used in articular diseases, royal jelly, manna, and the use of such invertebrates as leeches in certain medical therapy.

Many species play an important part in industry and crafts: silk and beeswax; earthworms and other species used in agriculture and for fishing, or as protein in fish-farming; pearls, coral, mother-of-pearl, etc. for the manufacture of jewellery and trinkets; the fishing and harvesting of natural sponges, etc. Invertebrates are also highly sensitive indicators of environmental quality.

7. *Many invertebrates are of great aesthetic value*

Butterflies and dragonflies are very often taken as symbols of beauty and many other invertebrates are of great aesthetic value.

The large number of species and their great morphological variations make invertebrates a major source of inspiration for both ordinary people and artists.

8. *Some invertebrates may harm human activities but their populations may be controlled naturally by other invertebrates*

Periodic pullulations of certain species of plant-eating invertebrates, especially defoliator insects, may result in major damage to crops and forests; in addition, the harmfulness of certain invertebrates as parasites and in the transmission of diseases to man, domestic animals and cultivated plants is recognised and justifies measures for the defence of human interests.

However, such measures can be implemented in such a way as to respect as far as possible the integrity of the environment and of its plant, animal and human components.

98% of the arthropoda potentially harmful in the above-mentioned areas are in fact kept under control by other arthropoda which are their predators or parasites, permanent, free and non-polluting natural factors in biological equilibria and biological pest control. The following are examples: Ladybirds destroy plant lice, and cochineals, which are immensely harmful to agricultural crops. Coleoptera of the *Calosoma* species are an effective brake on the pullulation of lepidoptera which defoliate forests in Europe. Certain species of microhymenoptera protect the olive tree from *Dacus oleae* diptera, which is a parasite of such trees in the Mediterranean region.

9. *Mankind can benefit greatly from enhanced knowledge of invertebrates*

In the field of biology, medicine, chemistry, physics, and so on, invertebrates lend themselves to research in aquatic, terrestrial and aerial environments both on and in animals and plants, and to educational operations; they have remarkable possibilities for adaptation, sensibilisation and reaction; they may often be easily bred to great quantities and they have little bulk. These qualities have encouraged basic research, experiments and their practical applications and will enable new research to be conducted on a vast scale.

In particular, the known successes achieved by the use of invertebrates to control harmful animals and plants biologically hold out the greatest hopes of further achievements, and research in this field should be encouraged, promoted and given every support.

It is also worth noting the case of cave-dwelling animals and their importance when it comes to studying changes in climate and fauna in the different continents, such animals being genuine examples of live fossils.

10. *Terrestrial, aquatic and aerial invertebrates should be protected from possible causes of damage, impairment or destruction*

Invertebrates provide humanity with important irreplaceable sources of food, work and welfare. Their presence must therefore be protected and preserved from all causes of damage or destruction or must be promoted by development, that is, by the reintroduction of suitable species according to the principles approved by the Council of Europe.

The natural fauna of invertebrates is diminishing continually and many species have either disappeared or are in the process of disappearance because of man's action, without man even having been aware of their existence or having studied their characteristics and possible uses.

As the equatorial forests are destroyed at an estimated rate of 30 hectares per minute (160 000 km<sup>2</sup> per annum), without being replaced, millions of animal species are doomed. In temperate zones too, owing to urbanisation and other action with a disturbing effect on the land (fertilisers, agriculture, monoculture, consolidation and division of land holdings, deforestation, fires, hydrographical changes, insecticides, weedkillers, pollution, etc.), the wild fauna of invertebrates is constantly dwindling and is in danger of extinction. A single example suffices: 96 species of butterflies are threatened with extinction out of a total of 380 European species. This situation calls for urgent protective measures.

Places where the fauna of invertebrates is threatened, or is of interest for other reasons, should be protected, because species cannot survive unless their habitats and environment are preserved. A considerable proportion of the conservation measures to be taken will therefore relate to the establishment of nature reserves (primitive forests with specific fauna, wetlands where threatened insect species are found, etc.); areas constituting the habitats of a fauna of invertebrates unique in Europe will have to be given special priority.

In the fields of spatial planning, urban development, agriculture, forestry, animal husbandry, health, industry, trade and recreation, methods of intervention should be devised which interfere as little as possible with the environment in order to spare wildlife, including invertebrates.

In the fight against invertebrates which are prejudicial to human interests, preference should be given wherever possible to systems of biological control based on natural patterns. Other, that is, chemical or physical types of intervention must be reduced to a minimum, practised as selectively as possible and entail the adoption of methods which are strictly and solely aimed at the target agent and have short-lived effects. Where invertebrates have been exterminated, they should be reintroduced in accordance with the approved principles for the reintroduction of species. In view of their practical value to mankind, research on invertebrates in all branches of science must be encouraged.

*No animal or plant species must be allowed to disappear because of man's activities.*