

No food, no home, no partner?

What is left when biodiversity disappears?



Biodiversity describes biological diversity, or to put it more simply, nature's variety of living organisms. It embraces the different ecosystems, natural habitats, varieties of plant and animal species, their genetic diversity and interactions. The use of pesticides threatens wildlife populations and our native flora. Pesticide Action Network promotes alternatives.

Lonely frogs or the effects of pesticides on amphibians

Pesticides are chemicals designed to harm or kill living organisms which we view as problematic, such as insect pests, weeds or fungal diseases. They are used to protect grain, fruit and vegetables against disease, competing weeds or from being eaten by insects or rodents. When applied on fields or gardens, pesticides also enter neighbouring ecosystems via run-off, leaching into groundwater, soil erosion or via the air. They also enter watercourses, the habitat of amphibians.

Apart from climate change and loss of their aquatic habitats, pesticide contamination of spawning grounds has reduced amphibian populations. Pesticide water contaminants due to intensive farming contribute to reduced overwintering survival, lower egg production in females, heavy parasite load and limb deformities¹. Today worldwide: nearly 168 amphibian species are believed extinct and at least 43% are in decline². In Europe 31% amphibians are classed as "threatened species" in the IUCN Red List 2007³. Take the fire-bellied toad for instance: a few decades ago it was one of the commonest amphibians in the NE German Lowlands; today it is threatened with extinction and the common spadefooted toad is also under serious threat.

¹Prof Tyrone Hayes, Pesticides News 70 12-17, 2005

²Information on amphibian biology and conservation. 2008. Berkeley, California: AmphibiaWeb. Available: <http://amphibiaweb.org>.

³International Union for Conservation of Nature and Natural Resources (IUCN) Red List of threatened species 2007. Table 1.

Who are the losers?

Reports on the high levels of pesticide residues in strawberries, tomatoes, cucumbers etc. appear regularly in the media. But what about the inhabitants of pastures, fields and streams? Pesticides do not differentiate between beneficial and harmful organisms. What we may regard as a pest may be the skylark's evening meal. Useful insects such as ladybirds or earwigs which travel through the wheat fields searching for their daily meal of aphids are totally unprotected against the chemical drenching from pesticides. Newly hatched quail and partridge chicks waiting for protein-

rich insects may go hungry if there are not enough insects left after insecticide spraying. In addition to the direct toxic effects of pesticides, indirect effects, such as lack of food or plant shelters can reduce population levels. Planting fewer varieties and increasingly standardised crops, along with farm landscapes with hardly any hedges, bushes or small streams are the reasons that some populations may never recover. Wildlife often lacks the necessary barrier-free interchanges and migration routes between the fields and semi-natural landscapes.

How does this concern frogs?

Pesticides used on farmland can enter into our watercourses depending on their active ingredients, the method and time of spraying, soil conditions and weather. Amphibians and other aquatic creatures are therefore highly exposed to pesticides. In spring, pesticide spraying often coincides with the spawning of many amphibians. Field research shows that even when principles of Good Agricultural Practice are followed and buffer zones are maintained, pesticides can enter watercourses and harm amphibians in their various stages of development. Adults may be poisoned, due to contaminated food sources, e.g. grasshoppers, beetles⁴.



Pesticides in water are absorbed by spawn and tadpoles. This can lead to a reduced rate of hatching as well as alterations in tadpole behaviour and physical development. Tadpoles react with spasms and cramp-like twisting, leaving them with no protection against their predators. (Source: MLUV Brandenburg, see above). Result: the survival chances of amphibians are steadily decreasing and sensitive species are slowly dying out in intensely farmed areas.

⁴MLUV Brandenburg (2003): Einfluss von Pestiziden auf Laich und Larven von Amphibien)

Did you know that ...

just 100 grams of a pesticide are enough to contaminate a billion litres (1,000,000,000) of water?

about 15,000 plant and animal species are almost extinct worldwide? Climate change will further damage our biodiversity.

Farewell diversity?

First 'Red', then dead?

You can find out more about the species or ecosystems which are particularly at risk in your country by using the IUCN Red List of Threatened Species. This List reflects the manner in which we treat nature. Each year nature conservation organisations nominate an endangered species as 'Bird, Flower or Frog of the Year'. This sad notoriety makes us aware of the decrease in biodiversity. To preserve amphibians such as the common spadefoot and the fire-bellied toads, we must not only take well-targeted measures to protect species and ecosystems, but also avoid, or at least reduce, the use of pesticides. Introducing wide pesticide-free buffer zones would be a valuable step in the right direction.

Convention on Biological Diversity (CBD)

The Convention on Biological Diversity has been signed by 187 states. Its aim is to significantly reduce the loss of biodiversity. Every two years the achievements of the convention are assessed. In May 2008, Germany hosted the United Nations 9th Meeting of the Parties in 2010 Japan will take over this task. Topics under discussion include: the rights to use plants in native forests; who should bear the financial burden of setting up large conservation areas; how much land should be provided for conservation and by whom; and how to avoid conflicts in and around these areas. Other topics are genetic manipulation of economic plants (grains, oilseed plants, and trees), the protection of the oceans and national CBD strategy implementation.

PAN lobby for GM-free agriculture and works towards non-chemical pest management and pesticide reduction policies which better protect our valuable biodiversity.

A frog in the pond is worth ...



Protecting biodiversity means much more than just the protection of endangered frogs, birds or butterflies – it means protecting our natural living conditions. Biodiversity has many functions. We are able to relax in colourful natural surroundings, in species-rich woods and meadows. We will not fully appreciate this beauty until all that is left are fast-growing conifers, monotonous maize fields and a few species of bird. But the loss goes far beyond what the eye can see: apart from its ecological repair and maintenance functions, nature's diversity possesses hidden treasures. Nature supplies us with medicines and acts as a model for technological innovations. Biodiversity safeguards our lives. The complexity of our ecosystems also makes us less

Did you know that ...

the ecosystems on our planet provide us with services to the value of about 26 trillion euro? That is far more than the gross national product of the whole world⁵.

⁵Umweltbundesamt (2007): Landwirtschaft ist auch für die biologische Vielfalt verantwortlich, Press Information No. 31/2007

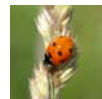
susceptible to different kind of threads, like climate change. A healthy living soil, for example, is a source of nutrients for plants, it stores water and oxygen, captures carbon dioxide from the, filters rain water and is, to a certain extent, even able to render heavy metal pollutants harmless. Did you know that in one handful of fertile soil, there are as many microorganisms as there are people alive on earth?

Enjoy nature's diversity!



Diversity in your garden

Bring wild nature into your front-garden. Your garden is your empire and you can adapt it to make birds, amphibians, and useful insects feel at home. Create hideaways, nooks and oases with native shrubs, bushes and trees. The garden will benefit from natural regeneration if you do not spray it.



Enjoy and respect nature

Regardless of whether you are at home or away. For example, ants in the front garden do not have to be combated with a chemical weapon. Develop your own and your children's interest in beetles, bees, toads and the woods. When hiking or walking, mountain climbing or doing winter sports, stay on the signposted tracks and make sure you give wild animals the chance to retreat to secluded areas



Reduce your ecological footprint

We influence biodiversity by the way we live. It is worth reconsidering our transport, living space, clothing and food habits. Support sustainable, ecological production by changing your shopping choices, buying organic products or seasonal, regional products, for example. PAN groups offer free online services that help to make good choices – just visit the indicated websites.



Support initiatives for biodiversity

Support groups which campaign for biodiversity. PAN provides information about the dangers of pesticide use to humans and the environment and actively supports alternatives worldwide.

www.pan-germany.org • www.pan-europe.info