IS THE ALARM OVER THE COLLAPSE OF NATURE JUSTIFIED?

THE CASE OF FINLAND

Alongside climate change, biodiversity loss has become a mantra in public discourse, particularly when it comes to forests. Yet there is no clear consensus on what the term actually means or how it should be interpreted. Different parties hold different, and sometimes even contradictory, views of nature and its decline.

Seppo Turunen in his article *What Kind of Nature Conservation Do We Want?* (Kanava 5/2024), provided an excellent analysis of the differences between the traditional, preservationist approach and its opposite, the liberal approach. Preservationist conservation is based on the idea that nature has an equilibrium state that should be maintained without disturbance. The liberal school of thought, which views nature as being in a state of continuous change, argues that nature is constantly changing, largely as a result of human activity and environmental factors, and that preservation alone is not a meaningful way to secure its future. The liberal view is adopted here, while recognising the importance of preservationist conservation as part of the overall approach.

Change is a fundamental feature of nature

Put simply, nature consists of two levels: what we can observe and the hereditary material, or genes, underlying it. The genetic makeup of existing organisms has been shaped by environmental changes and inherited mutations. Living organisms are not inherently stable; they change within a reality in which chance and probabilities also play a role. Nature is therefore a stochastic process, not a permanent state of equilibrium.

Darwin's theory of natural selection is likewise based on continuous change, with species competing for resources such as nutrients, light and growing space. Organisms best adapted to their environment survive the competition and reproduce, leading to the adaptation and gradual transformation of species over time.

The idea of a stable, ideal state of natural equilibrium towards which we should strive is neither biologically nor ethically realistic, even though it is explicitly the main objective of many conservation measures. In practice, we cannot achieve such a goal by restoring or managing nature.

The greatest threat to nature is by no means environmental change itself or the sustainable use of natural resources. Rather, it is land use that converts natural environments into agricultural or built-up land, together with ever-increasing overall consumption. These pressures are linked to the effects of climate change on living conditions and to the increasing chemical contamination of the environment. The decline of insect populations observed in many countries, for example, may be due in large part to the hundreds of thousands of chemicals released into the environment.

Changes in species composition as a measure of biodiversity loss

When we speak of biodiversity loss, we are primarily referring to what we observe. The concept is usually associated with species extinction or the loss of habitats. However, disappearance can also refer to a quantitative or qualitative decline.

What we observe in nature is not simply a list of individual elements, such as species and habitats, each supposedly of equal importance. The absence of one element in the course of ecological development does not necessarily mean that the whole system is collapsing, even though this is often what the public is led to believe.

Measurement is complicated by morphological variation within a species, which can sometimes be greater than the differences between two species. Conversely, organisms that appear to belong to a single species may actually comprise several distinct biological species. Such differences do not always provide sufficient grounds for distinguishing species from one another, and they affect data on species distributions. In practice, however, species identification relies primarily on taxonomic classification. Its core evidence consists of observed differences in species distributions or biological specimens.

Species extinction forecasts have little credibility

According to the International Union for Conservation of Nature (IUCN) Red List, about 2.15 million species have so far been scientifically described, and the number continues to grow. Insects are the best-known group in terms of the number of described species, with well over one million identified. Yet there may be millions more, or even tens of millions. New species are continually being discovered even among the best-studied groups, including mammals, birds and flowering plants. Our knowledge of microorganisms remains marginal because of their enormous diversity.

The first global forecast of species extinctions was made by Norman Myers in 1979, when he predicted that one million species would disappear from the world by the year 2000. Numerous scientists have since produced various forecasts, but their reliability is impossible to assess (for example, Lovejoy, 1980; Ehrlich & Ehrlich, 1981; Wilson, 1992; Thomas et al., 2004; Urban, 2015; Román-Palacios & Wiens, 2020).

In its assessments of changes in species composition and habitats, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) uses, among other expressions, the term "*established but incomplete*" to describe the level of confidence in available knowledge. In its 2019 report, IPBES used this expression in almost all its assessments of species group extinctions because the information could not be fully verified.

Knowledge of the number and distribution of species worldwide remains incomplete, and extinction forecasts cannot be relied upon. When neither the present situation nor the historical baseline is adequately known, many forecasts cannot be evaluated at all.

Nevertheless, catastrophic forecasts of species loss are likely to continue to be produced, helping to ensure that conservation remains a political priority and an important recipient of funding. One can only hope that the reliability of the underlying information will improve, lending greater credibility to these forecasts.

Species composition is changing in Finland, but slowly

It is reported that Finland has has approximately 49,200 species. The figure changes constantly as new species are discovered, previously recorded species disappear, and additional alien species arrive in the country. Some newcomers are harmful, while others

enrich natural environment. Competition under Finnish conditions is not easy, so some species eventually disappear, although they may attempt to establish themselves again later.

According to the 2019 Red List assessment, 312 species were considered *possibly* extinct in Finland. This represents 0.6 per cent of the country's entire recorded species pool. Three insect groups—beetles, true bugs and hymenopterans—account for 80 per cent of the total number of species considered extinct.

According to the Finnish Museum of Natural History (Luomus), at least 19 new insect, fungal and lichen species were discovered in Finland in 2024. No systematic data are available on newly arriving alien species. Their numbers are increasing as a result of climate change, international trade and human mobility. However, the number of species that have *possibly* disappeared is considerably greater than the number of newly recorded species.

Habitats as part of change in nature are inadequately known

Finland's first assessment of threatened habitat types, conducted in 2008, evaluated approximately 400 habitat types and the changes in them caused by human activity. Areas affected by climate change and natural disturbances therefore appear not to have been included, which is surprising. Just over half (51 per cent) of the habitat types were classified as threatened, ranging from small, localised habitats to extensive vegetation types.

The proportion of threatened habitats was by far the highest among traditional rural biotopes. Forests ranked second in the number of threatened habitat types,. More than half of the habitat types associated with the Baltic coastal areas and peatlands were also considered threatened. The lowest threatened proportion was found among fell and rocky habitats. As in the Red List assessment, trends were classified as negative, with a few exceptions.

Habitat changes can be substantial at the local level because of land use and vegetation dynamics. In the case of plants, for example, new individuals may emerge from the soil seed bank decades later, when conditions at the soil surface have changed in terms of light and nutrient availability.

The assessment of threatened habitats could not reliably establish how changes had occurred over time. The methodology has also been criticised for the varying degrees of subjectivity involved in the assessments. Improving the assessment criteria and sampling methods would increase the reliability of the results. Opportunities for cooperation to collect data as part of the National Forest Inventory (NFI) have largely remained unused.

Risks in decision-making must be recognised

The EU Nature Restoration Regulation defines a limited set of indicators for forest ecosystems to describe changes in the state of nature. This list is problematic because nature is a far more complex concept. It is impossible to measure the overall state of nature objectively, although changes in specific aspects of biodiversity can be monitored. An individual indicator of nature can provide information only about the particular feature it measures. Indicators are also interdependent, which complicates the interpretation of results.

Human interventions intended to improve nature are inherently risky, because their outcomes cannot be predicted with certainty. “Nature often has other ideas”, and the result may even prove harmful to the system as a whole.

The same problem affects the concept of ecological value enshrined in Finland's Nature Conservation Act. It is based on an assessment of the difference between the present state and the “natural state without human influence”. So little of this supposedly natural state remains observable that comparisons inevitably depend on the assessor's judgement.

In several reports, however, the Finnish Nature Panel has set this problem aside and presented a single area-based index value for the state of Finnish nature, calculated from changes in selected indicators describing vegetation structure. By monitoring this index, it claims that changes in the “naturalness” of the country can be identified.

If binding policy targets are attached to such a theoretical index, the consequences may be even worse than those seen in the case of forest carbon sinks, when uncertainties in the results were not adequately taken into account. If risks arising from inadequate data and unrealistic assumptions materialise, the resulting costs to the national economy could run into tens of billions of euros.

In the emerging biodiversity credit market, the Finnish Nature Panel proposes using the local “*nature-value hectare*” as a basis for valuation. This is defined as the percentage of the natural state that remains at each site under consideration. In practice, the numerical value is determined by the assessor's judgement. It remains to be seen how long-term, binding agreements between buyers of biodiversity credits and landowners can be based on percentages defined in such a theoretical yet subjective manner. Careful consideration is needed to find a practical, reliable and undisputed way of resolving this problem.

Finland s nature is not on the brink of collapse

Finland's location in the boreal and hemiboreal vegetation zones means that species richness is naturally lower than in temperate zones or the tropics. This makes it easier to understand natural environment and carry out the necessary measures.

The available evidence does not support the assumption that the country

faces an immediate, widespread threat of species extinction. Our species composition will nevertheless change, particularly as a result of climate change.

Efforts to halt the qualitative degradation of nature began years ago, and significant results have been achieved. Populations of many species considered important have even increased, including the whooper swan, white-tailed eagle, brown bear, roe deer and moose. However, improvements in the state of nature at the national or regional level take time—measured in decades and often even centuries. It is therefore more realistic to aim to prevent the impoverishment of nature than to attempt to create a new, “restored” nature in a stable state. Such a natural state cannot be brought back, even if it were possible to define a target state based on some point in the past.

Shared understanding of nature is crucial

Nature matters to people because they depend on it for a variety of purposes. There is no single universal solution that can satisfy all these preferences and needs. Fortunately, Finland has a relatively small population making use of a vast land area. There should be room for everyone to enjoy their own share, from urban parks to the extensive open mires in the north with everyone's traditional access rights being protected. However, one must also recognise the value of other people's objectives and needs, while understanding that nature is in a constant state of change.

Opinions are largely shaped by emotions and values. Urbanisation has narrowed public understanding of nature's cultural and economic significance to society. Nevertheless, the Finnish situation is good compared with that of most of the world's approximately 200 countries. Viewed from elsewhere in Europe, the intensity of disputes over nature seems deliberately exaggerated and is therefore bewildering.

One explanation may be that Finland's forests and waters have always been regarded as exceptionally important—as part of our *special relationship with nature*. Advocates of the biodiversity-loss narrative have nevertheless created an impression that nature as a whole is collapsing, despite the lack of evidence to support such a claim. It is surprising that biologists, as experts, have—with a few exceptions—not sought, or have failed, to develop a comprehensive picture of changes in nature that would help the public and decision-makers understand what is actually happening.

Elsewhere in Europe, forest ecosystems have been converted to other land uses over the centuries far more extensively than in Finland. Virtually everywhere, the remaining natural environment has been modified by human activity. Protected areas, too, may contain settlements and support a variety of productive activities. The result is often a mosaic of different land uses that combines various objectives for managing natural resources.

In Finland, reducing logging has been proposed as a specific solution to biodiversity loss and carbon emissions. At the same time, the multiple roles that forests play as a source of well-being have been overlooked. Forests have a role to play in addressing climate change, and this role can be strengthened by improving the resilience of forest ecosystems and promoting tree growth. Elsewhere, this kind of debate is largely absent, because the main concerns relate to insect outbreaks, forest fires and the use of harmful chemicals in agriculture.

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22 October 2026

The text is adapted from the original in Finnish published in Kanava (7)2026.