

How to achieve more with butterfly inventory data

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Introduction

In 1981 the Dutch Butterfly Mapping Scheme started at the Agricultural University of Wageningen. It's main aim was to make distribution maps of all butterfly-species in The Netherlands. In 1989 this resulted in the Dutch Butterfly Atlas (TAX, 1989). In this atlas the distribution of all dutch butterfly species before 1981 was compared to the distribution in the period 1981-1986. In VAN SWAAY (1990) the changes in the abundance of the dutch butterflies are discussed.

These investigations showed that the distribution and abundance of many dutch species of butterflies has strongly decreased. Of 71 native species fifteen have become extinct. A large proportion of the remainder is assumed to have declined. The main reasons are loss of habitat, mostly caused by the intensification of agriculture, and bad management of the remaining populations (mostly in nature reserves).

Today areas which are rich in butterfly-species are restricted to small nature reserves, scattered all over the country. The rest of the land is unfit for butterflies. Isolation and bad management of the nature reserves have subsequently affected many of these isolated populations. Although isolated butterfly populations can survive very well for a long time, a change in the management regime can lead to the lowering of the carrying capacity to a point where local extinction is very likely as a result of natural fluctuations caused by environmental changes. After this local extinction isolation will reduce the chance of natural recolonisation.

To maintain these remaining species in The Netherlands biotope management will also have to be adapted to the special demands of butterflies.

The Dutch Butterfly Foundation (De Vlinderstichting)

The Dutch Butterfly Foundation was founded in 1983. It's main aim is to maintain and restore the dutch butterfly fauna. Starting with a small group of enthusiastic volunteers is soon grew out to become the central point for butterfly research in The Netherlands (together with the Agricultural University of Wageningen). In 1991 the foundation employed 12 persons. The activities can be divided in two main categories:

- Research and Advise
- Extension and Education.

Research

At this moment two general research projects are being carried out by the Dutch Butterfly Foundation:

- "Butterflies in the dutch landscape" (VNL).

Objectives: Getting more detailed information on the distribution of butterflies in The Netherlands (even at a scale of 100 x 100 m) and gathering ecological information of rare and characteristic species by making exact descriptions of their populations.

- Dutch Butterfly Monitoring Scheme (Monitoring-project).

Objectives: Monitoring changes in the abundance of dutch butterflies. This project can be compared with the British Butterfly Monitoring Scheme (Fig. 1).

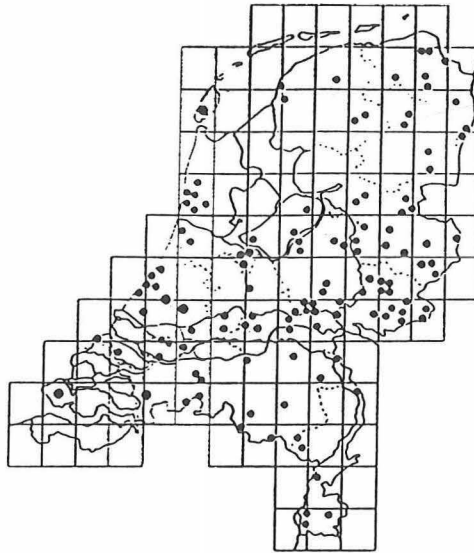


Fig. 1. Dutch butterfly monitoring sites in 1990.

Advise

The data collected in these research projects are immediately used in nature management and urban and rural planning to achieve maintenance and restoration of the butterfly fauna.

- The Butterfly Protection-plan of the Ministry of Agriculture and Fisheries (Ministerie van Landbouw en Visserij, 1989), written with help from The Dutch Butterfly Foundation, gives detailed information about this. The plan describes the characteristic butterfly species per biotope and mentions the principal threats and causes of decline. It also indicates which landscaping and management measures should be taken for characteristic butterflies in groves and scrubland, grasslands and verges, heathland, marshes, fields and urban areas. For extinct species which are not able to colonise former sites where the management has been improved, reintroduction is proposed.
- Courses "Butterfly-friendly management" are given to the planners and managers of nature reserves, public spaces in towns and road-verges in the countryside. In these courses the following aspects are being discussed:
 - Biology and ecology of butterflies
 - The decline of the butterfly fauna
 - Which measures can be taken in various types of habitat to stop this decline.

The participants receive written information in which this management is explained and summarised (Fig. 2).

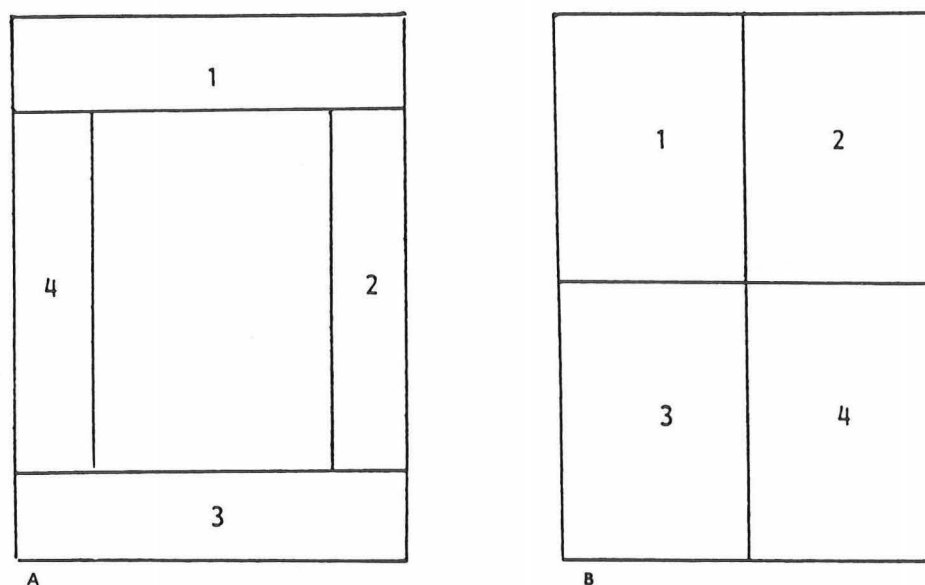


Fig. 2. Two examples of phased mowing schemes from the course "Butterfly-friendly management"; A. in nutrient rich fields; B. in nutrient poor fields (Vlinderstichting, 1990).

- Because in the new inventory project VNL very detailed information is collected on distribution and ecology, The Butterfly Foundation can make precise management plans, even for small reserves. These plans use the butterfly fauna as example-species, to achieve a better management for all flora and fauna.
- The butterfly data are used in "environmental impact studies". These studies summarise what impact a certain new development has on the environment. These developments can for example be (rail)road construction, land development plans or the creation of military areas. When there is lack of recent information, fieldwork is done to actualise the data. This study is paid for by the bodies responsible for the new development.
- The monitoring scheme is being used for evaluation of management in reserves and other areas. Managers of nature reserves participate in the monitoring scheme, as do many volunteers.

Extension

To achieve a change in planning and management a lot of information must be given to politicians, planners, landowners and general public.

- The Butterfly Foundation produces field guides, leaflets, posters, traveling exhibitions, slide-series and brochures on butterflies in different dutch landscapes.

- Lectures are given for many different groups: from Rotary groups to aged people, from Christian women groups to young farmers.
- General public is informed on how they can recreate their garden into a butterfly garden, by putting in adult and larval foodplants and create sheltered and sunny places.
- The Butterfly Foundation has intensive contacts with the press. Not only daily and weekly papers, but also radio and sometimes even television have features on butterflies.

Education

By getting schoolchildren to be interested in butterflies many people, including their parents can be reached.

- Lessons are produced about ecology and biology of butterflies with emphasis on the behaviour and how man can take concrete measures which will benefit butterflies.
- Live material (eggs, larvae and pupae) are sent to schools to be bred in class situations. The material is from common and widespread species (*Aglaia urticae*, *Inachis io* and *Pieris brassicae*) and can be released by the children after they successfully bred them.

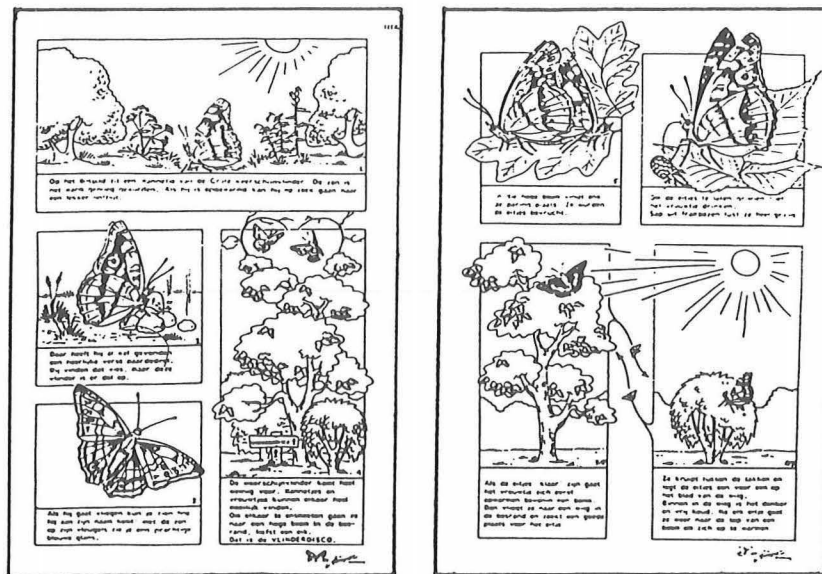


Fig. 3. Part of lessons produced on ecology and behaviour of butterflies. The tree-topping behaviour of *Apatura iris* (Vlinderstichting, 1989).

Conclusion

The inventory data collected by the Dutch Butterfly Foundation and the Agricultural University Wageningen are immediately used in nature management and urban and rural planning and management. By drawing the attention of as much people as possible these measures are supported by the public.

If we want to achieve more with our inventory data, we need an offensive attitude. Only then we can assure that invertebrates are taken into account by policy-makers, politicians and managers.

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