Executive summary of the Ecological Evaluation of Nature Conservation Schemes run under the Stewardship Programme and the Dutch National Forest Service 2000-2006

Executive summary of the Ecological Evaluation of Nature Conservation Schemes run under the Stewardship Programme and the Dutch National Forest Service 2000-2006

The Netherlands Environmental Assessment Agency

Milieu en Natuur
Planbureau

Executive summary: Ecological Evaluation of Nature Conservation Schemes run under the Stewardship Programme and the Dutch National Forest Service 2000-2006

MNP-publication number 500410004

Coordination and editing
J. Wiertz and M.E. Sanders (project leaders), J.M. Kranendonk (MNP)

Other contributions
H.W.B. Bredenoord, A. van Hinsberg, B. de Knegt (MNP), G.H.P. Dirkx, Th.C.P. Melman, M.J.S.M. Reijnen, A.G.M. Schotman, M.N. van Wijk (WUR)

Preparation of graphics
M. Abels, F.S. de Blois, M.L.P. van Esbroek, J. de Ruiter (MNP), J.P.M. Willemen (WUR)

Design and layout
Studio RIVM

Contact
j.wiertz@mnp.nl

The complete publication, in Dutch, can be downloaded from the website www.MNP.nl, or a copy may be requested from: reports@mnp.nl, citing the MNP publication number.

The Netherlands Environmental Assessment Agency (*Milieu- en Natuurplanbureau:* MNP) provides the Dutch government with independent evaluations and studies on the quality of the physical residential environment and its influence on people, plants and animals. In this, the MNP constitutes the bridge between science and policy-making.

The Netherlands Environmental Assessment Agency (MNP)
PO Box 303
3720 AH Bilthoven

T: +31 (0)30 274 2745
F: +31 (0)30 274 4479
E: info@mnp.nl
I: www.mnp.nl

CONTENTS

SUMMARY

In addition to the development of a system of connected nature reserves in the National Ecological Network, the management of these nature reserves is one of the key points in nature conservation policy in the Netherlands. The Netherlands Environmental Assessment Agency (*Milieu- en Natuurplanbureau*, MNP) has been asked to conduct an evaluation of the subsidy schemes for nature conservation for the period 2000-2006, and to answer the question: 'How ecologically effective are these schemes, in the short term, and the medium to long term?' The schemes concerned cover the Subsidy for Nature conservation (SN), the Subsidy for Agricultural Nature conservation (SAN) of the Stewardship Programme, and the work of the Dutch National Forest Service (*Staatsbosbeheer*). At present, the national budget for nature conservation and management amounts to about 120 million euro per year.

Biodiversity in nature reserves improving, but 'result-based funding' could be better
In most managed nature reserves, the biodiversity has generally been maintained or improved over the past six to fifteen years. Such schemes, which have been operating since 2000 under 'result-based funding,' have contributed to this. However, significant improvements are still possible by optimising the coherence between the various subsidy schemes and their biodiversity targets, monitoring and reporting.

Managers of nature reserves comply with the subsidy conditions
From national monitoring data collected from the field, it appears that managers of nature reserves have largely complied with agreements made, following the SN and SAN schemes and by the Dutch National Forest Service. The degree of compliance differs for each type of ecosystem.

National biodiversity conservation targets not yet achieved
The national government's ambitions go beyond the agreements that have been made with managers. The government's biodiversity conservation targets in more than half of the area covered by the nature reserves managed with subsidies from the SN and the Dutch National Forest Service have not yet been achieved. This is in part because the development period is longer than the six-year term of a subsidy agreement, but it is also partly attributable to poor environmental conditions and the fragmentation of nature reserves.

Impact of agricultural nature conservation still limited
In agricultural areas, the overall biodiversity is still deteriorating. Agricultural nature conservation (by farmers) has now been subsidised for almost thirty years. Where botanical agricultural nature conservation (managing farms to optimise plant biodiversity) has been applied for some time, the – generally low – biodiversity appears to have been maintained, but little or no progress has been made towards the nature target types. This is probably due to poor environmental conditions in the surrounding agricultural areas and/or the limited potential suitability of the site. In the meadow bird

areas the number of meadow birds has generally not been maintained; in fact, their numbers have decreased. This applies both to agricultural areas under nature conservation (managed by farmers) and other forms of nature conservation. A much larger proportion of the meadow bird areas under agricultural nature conservation needs to be placed under a strict management regime (i.e. by ensuring that 20 - 40% of the area is mowed in June instead of May so that meadow birds are left undisturbed when they breed). Afterwards the chicks can grow up in tall grass meadows that provide insects for food and cover to predators. It is also necessary to concentrate more on the most favourable areas.

Main conclusions

From the results it can be concluded that:

- allocation of potential areas for agri-environmental schemes is not optimal;
- result-based funding can be improved, for example, by focusing it more on nature target types and associated target species;
- the ecological results of new nature reserves are vulnerable when the reserves are small and isolated within intensively used agricultural land;
- environmental conditions, reserve size and buffering with agri-environmental management are key factors in improving the ecological result of nature management;
- the nature policy of the government is not transparent because of a lack of harmonisation of target types and monitoring regimes.

The government bears final responsibility for both national and international biodiversity policy. However, the provincial authorities is responsible for implementing the Stewardship Programme from 2007 onwards. It is therefore important for the national government to make agreements with the provincial authorities in coordinating further improvements to current schemes and introducing simpler, transparent, result-based funding.

1 EVALUATION OF NATURE CONSERVATION SCHEMES

In 2006, the Netherlands Environmental Assessment Agency (MNP) conducted research at the request of the Ministry of Agriculture, Nature and Food Quality (*Ministerie van Landbouw, Natuur en Voedselkwaliteit* –LNV) into the way the government has subsidised nature conservation in the Netherlands. The national government, which carries the ultimate responsibility for the biodiversity in the Netherlands, provides subsidies for nature conservation and management. At present, approximately120 million euro is budgeted annually for nature conservation in an allocation made by the Ministry of Agriculture, Nature and Food Quality. The MNP study focused on the question, 'Does Dutch nature benefit from the various subsidies?' or in more scientific terms: 'What is the ecological effectiveness of the subsidy schemes for nature areas?' This executive summary briefly reports on the answers to this question. A more detailed account, in Dutch, is provided in the main report, Ecological evaluation of schemes for nature conservation' (*Ecologische evaluatie regelingen voor natuurbeheer, Programma Beheer en Staatsbosbeheer 2000-2006*) along with the associated technical background reports.

This summary, published in Dutch and English versions, is intended for a broad target audience including the Dutch national government, the parliament, provincial authorities, and the general public. The corresponding main report, mentioned above, 'requires some knowledge of the context of Dutch nature policies on the part of the reader. The target audience for the main report comprises advisors and staff responsible for policy-making at the Ministry of Agriculture, Nature and Food Quality, the nature conservation organisations, and the provincial authorities.

Chapter 1 of this executive summary outlines the evaluation of the nature conservation subsidy schemes, with explanations on why it is necessary to evaluate the schemes and the changes that have been made in the schemes given in section 1.1. This is followed by a brief description of how the nature conservation policy and the subsidy schemes are currently organised in sections 1.2 and 1.3, respectively. Section 1.4 outlines how the evaluation was structured. And, finally, Chapters 2-6 present the five most important conclusions arising from the evaluation (one chapter for each conclusion), with policy options presented for each.

1.1 The need to evaluate the subsidy schemes

The effectiveness of subsidy regulations is a topical issue. The subsidy schemes for nature conservation were changed in 2000, and the Stewardship Programme was introduced at roughly the same time. At that time, the Minister of Agriculture, Nature and Food Quality promised the Dutch parliament that he would commission an evaluation of the Stewardship Programme at the end of the first six-year subsidy period. The Stewardship Programme (*Programma Beheer*) is the subsidy scheme under which the Dutch Society for the Preservation of Nature (*Natuurmonumenten*), the provincial Nature Con-

servation Organisations (*provinciale Landschappen*), local authorities, farmers and other private landowners can get subsidies for managing nature reserves, agricultural biodiversity and landscape elements such as hedgerows. The Ministry has asked the MNP to simultaneously evaluate a separate agreement with the Dutch National Forest Service *(Staatsbosbeheer)* dating from 1998.

So what has changed? In 1998, when the Dutch National Forest Service became an independent administrative body, the Ministry of Agriculture, Nature and Food Quality made agreements with this service on budgets and performance. Similar to the case of the Dutch National Forest Service, the subsidy schemes under the Stewardship Programme have changed from input-based financing to result-based funding. This means that the government no longer pays a fixed amount of money per hectare nature reserve, but an amount per type of ecosystem. Furthermore, the government wants to measure the ecological results of nature management in terms of biodiversity achieved to account for the subsidy spent. In addition, the Stewardship Programme has been changed so that new private landowners have the same opportunities for receiving government funding for nature conservation as the large nature management organisations that traditionally manage such reserves. Thus there were two fundamental changes in the subsidy schemes in 2000: result-based funding and the full participation of private landowners.

As of 1 January 2007, the budget of the Stewardship Programme was transferred to the provincial level of government, which means that the management of the Stewardship Programme is now in the hands of the provincial authorities. In the process, it has been agreed that the schemes will remain unchanged until 1 January 2009, after which the provincial authorities may introduce changes. These authorities may benefit particularly from this evaluation, as they are considering possible changes. Contrary to the Stewardship Programme, the supervision of the work of the Dutch National Forest Service has not (yet) been transferred to the provincial authorities.

1.2 How is Dutch conservation policy structured?

To understand the schemes for nature conservation and to be able to evaluate them, the characteristics of Dutch conservation policy should first be explained. Under the terms of various international and national agreements, the Netherlands has accepted the obligation of taking good care of its biodiversity and nature reserves. This involves maintaining the habitat of native plants and animals in a state that is as natural as possible. Under these agreements, the government bears the final responsibility for managing the nature reserves in the Netherlands. The way the government wishes to approach this is set out in various policy documents. The 1990 Nature Conservation Policy Plan forms the basis for the current conservation policy. The agricultural land improvements in the middle of the 20th century, left the Dutch nature reserves in a degraded state and much biodiversity was lost. Nature reserves lay isolated in the middle of intensively used agricultural land; water tables were low and environmental quality

poor. The Nature Conservation Policy Plan presented a strategy to keep Dutch biodiversity in a sustainable state. The plan is to connect and enlarge the isolated nature reserves into a National Ecological Network by developing new nature reserves in the agricultural areas. This National Ecological Network, in which 180.000 ha agricultural land is developed into new nature reserves should be completed in 2018.

This Plan was brought up to date in 2000 in the policy document, 'Nature for people, people for nature'. The government has formulated the national targets of its nature conservation policy under the following nature management strategies:

- Large-scale natural ecosystems: no active nature management intervention so that a wilderness develops spontaneously. The manager is not actively intervening or, at the most, the manager tries to modify the processes (e.g. water-level changes and overall grazing) at the landscape level. For example, the manager may allow herds of horses or cattle to graze on this land. The *Oostvaarderplassen*, a wetlands nature reserve, is an important model area for this management strategy.

- Semi-natural ecosystems: active management intervention to preserve existing biodiversity. The manager of these nature reserves determines what the landscape will look like, which is possible because the landscape is actively managed using instruments such as mowing, grazing and felling. Heathland and species-rich fen meadows are examples of such ecosystems.

- Multifunctional ecosystems: nature conservation is seen as a secondary function, alongside a primary function such as modern agriculture or forestry. It is accepted that this mixed function will lead to half the biodiversity and ecological quality of the 92 reference nature target types mentioned below.

The main ecosystem types of the national biodiversity conservation goals are subdivided into 27 separate ecosystem target types (*natuurdoelen*) which are spread over the Netherlands, defined in national policies, and identified in the national map of nature reserves. The biodiversity and ecological environment in these ecosystem target types is described in detail in the associated 92 nature target types (*natuurdoeltypen*) and target species.

However, since these national targets of the conservation policy are too general to provide real direction to nature management, scheme targets for nature reserves and landscapes have been introduced. These have practically applicable rules, and nature management requirements and result measurements. The Stewardship Programme calls these 'packages' (*pakketten*) and the Dutch National Forest Service uses 'local target types'(*subdoeltypen*). A 'package' might, for example, specify what efforts the manager must make and what the ecological result must be. Sometimes the packages are designed to preserve biodiversity assets such as rare plant species, and sometimes they are designed to develop such assets during the six-year subsidy period. The intention is that the biodiversity conservation goals defined in ecosystem and nature target

In the river region, between the Meuse and the Rhine, a lot of pasture land has been transformed into nature reserves using the strategy 'large-scale natural ecosystem'. This transformation contributes to biodiversity, scenic landscape and recreation (Photo: Mark van Veen).

types of the national conservation policy should ultimately be achieved through these scheme targets.

1.3 What subsidy schemes are covered by the Stewardship Programme?

The Stewardship Programme consists of the Subsidy scheme for Agricultural Nature conservation (SAN), covering agricultural areas managed by farmers, and the Subsidy scheme for Nature conservation (SN) covering nature reserves.

The SAN is intended for the conservation of biodiversity and the management of landscape elements in agricultural areas, such as meadow bird areas and historical landscapes with many hedgerows. These areas are generally in use by farmers. The Stewardship Programme is designed to actively involve these farmers in maintaining and developing biodiversity and historical landscapes. It works as follows: once the provincial authorities has designated an area on the map of the provincial area plan for SAN, the farmer concerned can apply for a SAN subsidy. The map of provincial area plan indicates what biodiversity (e.g. meadow birds, native plant species or hedgerows) the farmer should conserve, manage or develop in that particular location. For each area on the map, the provincial authorities have generally indicated multiple possible packages. Farmers can then choose if they want to apply for subsidy and which package they will agree to: the one which best matches their own ambitions, farming op-

erations and – of course– the local situation. For meadow bird protection, for example, there are several packages that differ in ecological results (i.e. the amount of breeding pairs) or in efforts that should be taken (i.e. the period the farmer should not use the land for hay-making).

To prevent all the farmers from choosing the same package (so that a range of ecological qualities are developed everywhere) most provincial authorities have set a quota for each package for each area on the map. In exchange for the subsidy, the amount of which depends on the loss of income and the effort that the farmer must make, the farmer concerned must ensure that the intended biodiversity is preserved or can develop there. The ecological result is measured by the extent to which the intended species are present. Depending on the package, this could be a minimum number of plant species and/or breeding pairs of meadow bird species. Each package contains an agreement on how many plant species or breeding pairs of meadow birds must be found so as to receive the subsidy in full at the end of the first subsidy period (advances having been paid during the period).

The system for the SN is comparable, but in the case of SN subsidies, conservation is the primary function of the areas concerned. In exchange for the subsidy, the amount of which depends on the effort required from the manager of the nature reserve, the manager must ensure that the intended nature target types can develop in the reserve. The SN has, similar to SAN, a system of identifying packages on the maps of new nature reserves in area plans. The SN also applies the system to measuring compliance with the requirements set out in the package that describe the area and/or the presence of a minimum number of indicator species. The SN scheme retains a distinction between the basic package and the 'plus' package: the former contains less stringent requirements for ecological results and management efforts than the latter. The subsidies for 'plus' packages are therefore higher.

The SN also covers subsidies for changing the function of an area and establishing new nature reserves. A subsidy for changing the function of an area is intended mainly to compensate for the decline in land value when private owners change the use of an area from agriculture to nature conservation. The subsidy for development of new nature reserves covers the cost of measures that restore the relief or geomorphology, historical water table and similar characteristics of land that under the usual agricultural regime have been heavily fertilised, have a low water table and/or have been levelled.

What schemes are run by the Dutch National Forest Service?

When it became an autonomous body, the Dutch National Forest Service, in close consultation with the Ministry of Agriculture, Nature and Food Quality, developed a somewhat different system for result-based funding that was based on local target types (*subdoeltypen*). These types combine the desired biodiversity, the efforts required to achieve it and the costs that are involved. On this basis, the Dutch National Forest Service submits a quotation to the Ministry each year for the costs of managing the areas concerned and the Ministry compensates the costs. The choice of the local tar-

get types for Dutch National Forest Service lands – for both new and existing nature reserves – is based on the national map of ecosystem target types compiled in 2003. The map with local target types for the Dutch National Forest Service is related to the quotation submitted to the Ministry. These local target types cannot therefore be simply changed whenever the provincial authorities has done more detailed work on the map of ecosystem target types. In cases where the Dutch National Forest Service changes local target types for more than 50 hectares, these changes are discussed with the provincial authorities and the regional offices of the Ministry.

1.4 The structure of this evaluation

To investigate whether these subsidy schemes are furthering the national biodiversity conservation goals, the Netherlands Environmental Assessment Agency has measured their effectiveness by comparing the ecological situation and development in the field (on two levels) with the ecological targets that have been set. These are:

1) the agreed scheme targets of the Stewardship Programme and the Dutch National Forest Service
2) the national nature target types set out in national policies.

The definition of the scheme targets is based on the documents of the Dutch National Forest Service and of the Stewardship Programme. The national target type locations are derived primarily from the national map of ecosystem and nature target types, since it is translated to the maps of the area plans and thus provides a framework within which subsidies are made available.

Ecological effectiveness depends on many aspects, including the goals, the subsidy scheme concerned, the management regime and external environmental conditions. The researchers have:

- closely examined the subsidy schemes
- analysed policy performance
- interviewed those involved
- made an inventory of the cash flows and
- compiled ecological information from literature surveys and field studies.

Because insufficient monitoring has taken place for this evaluation, the MNP has – in most cases – had to fall back on data that were not collected for the purpose of evaluating the Stewardship Programme and the conservation work of the Dutch National Forest Service. In addition, extra field work has been carried out to collect data on different types of grassland using methods that relate, as far as possible, to the schemes and predescribed measurement methods. Only in the case of meadow birds was it possible to make optimum use of a national monitoring project, which was conducted in 2006 as part of the project ‘organisational costs of partnerships’ (SAN-OS).

Effects of cattle grazing on the salt marsh in Ameland (Photo: Ruut Wegman).

The following topics are excluded or only partially covered in this study because insufficient data were available or because research is already being conducted on these aspects in another framework. The researchers have not looked at the subsidy schemes for aquatic ecosystems (waters) or conservation management for hamsters and geese. Moreover, only limited consideration has been given to financial aspects, and no evaluation has been made regarding the cost efficiency of the schemes. Finally, a separate report on a study on the willingness of farmers and private landowners to participate in nature conservation was published in September 2007.

2. ALLOCATION OF POTENTIAL AREAS FOR AGRI-ENVIRONMENTAL SCHEMES IS NOT OPTIMAL

The national map of ecosystem target types, and the provincial maps of nature target types and the provincial area plans, are important instruments for result-based funding. However, the potential use of these maps as directive for achieving the national conservation goals has only been utilised and implemented to a limited extent because the maps are not mutually consistent and up to date. The area plans have been officially approved by the provincial authorities after the participation of landowners, while the consequences of this for the ecological effectiveness of management are still unknown. If the Ministry of Agriculture, Nature and Food Quality and the provincial authorities do not keep the national map and provincial maps up to date and consistent with each other – so that they represent realistic and current ecological goals – result-based funding and evaluation will have only a limited effect.

Drawing up the national map of ecosystem target types was an important step in implementing current conservation policy. On this map, the Ministry – working with the provincial authorities – has indicated where each kind of ecosystem needs to be protected or developed. The national map with ecosystem target types is based on the provincial maps of nature target types and used as a directive within the agreement between the national and provincial authorities. In addition to this, the provincial authorities draw up provincial area plans (see Figure 2.1) in which they define the target types at the local level in terms of possible scheme packages. An application of the Subsidy scheme for Agricultural Nature conservation (SAN) and the Subsidy scheme for Nature conservation (SN) must formally comply with the provincial area plans. Hence, the provincial authorities can decide what types of ecosystems need to be developed, and where to build on or fill in the National Ecological Network.

Input from nature management organisations and private landowners

However, in reality it would seem that provincial maps do not simply represent a detailed version of the national ecosystem target types, but also comprise provincial and local ambitions that are generally lower than the national goals. Provincial authorities draw up area plans in consultation with nature management organisations through informal prior consultations before the plans are made available for public inspection. The consultations and public inspections influence the desired ecological results of the area plans. The regional representatives of the Ministry also have a voice in this process. Provincial authorities justify this approach to drawing up and modifying the maps and plans as a means of obtaining local support, and for making optimal use of local ambition and local ecological potential. This means that the provincial area plans are not a one-to-one translation of the national map of ecosystem target types.

Moreover, for the sake of administrative practicality and to gain the support of private landowners, areas are widely defined and more than one package can be chosen

within a concrete area defined on the map. Within these widely defined areas (known as 'baggy coat' areas or search areas) the desired nature target type may be developed in various places, with the result that many private landowners in a larger area are eligible for a subsidy (see Figure 2.1). However, the wider the defined area is, the less the provincial authorities direct the process on the basis of the spatial coherence of the nature reserves in the National Ecological Network and the landscape.

Negative consequences

The provincial authorities accept the fact that desired ecological results which the national government and provincial authorities have agreed on are sometimes not achieved. This may affect the achievement of spatial coherence in nature reserves and the landscape, yet this coherence is one of the most important conditions for ecological effectiveness within the scope of the national conservation goals. Moreover, much agricultural nature conservation is not very effective, for example because it is not concentrated in the most favourable locations. An up-to-date and realistic national

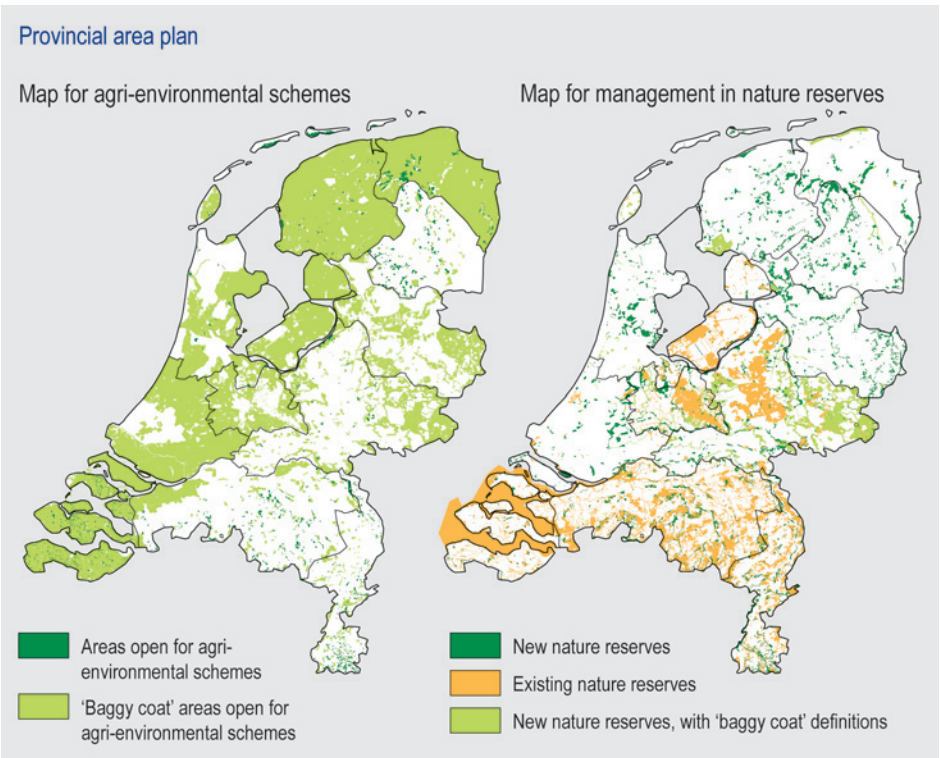

Figure 2.1 The allocation of agri-environmental schemes is spatially insufficient in 'baggy coat' areas. The more broadly the area in the maps of the provincial area plans are defined, the less the provincial authorities focus on the ecological potential of particular locations, the size of the areas, and the geographical coherence of nature reserves and landscape. See on the left, the map of agricultural areas eligible for agri-environmental schemes (SAN), and, on the right, the map of nature reserves eligible for SN subsidies or managed by the Dutch National Forest Service. (Sources: Provincial authorities, Government Service for Land and Water Management (DLG)

map of ecosystem target types is important as a guarantee of the original intention that local considerations, cost-effectiveness, and social and administrative support should continue to be assessed in the light of national and international obligations. At present the national and provincial authorities do not ensure that the maps are frequently updated and coordinated, which would be advisable at three-year intervals, for example.

Policy options

How are the actions of the various actors such as the national government, provincial authorities and the nature conservation organisations to be properly coordinated? Research by the MNP shows that the national map of ecosystem target types and associated nature target types are suitable instruments for evaluating ecological effectiveness. Furthermore, the map of ecosystem target types may serve as a main reference for agreements between the parties. To do so, it is important that the map is up-to-date and realistic. In reality, however, no binding agreements have been made between the various parties when to use the map of ecosystem target types and how frequently it will be brought up to date. For example, according to the policy plan 'Agenda for a Living Countryside', a new map of ecosystem target types should have been decided at the end of 2005, but this has not yet been done because the national and provincial authorities have still not reached a clear agreement about the map.

In the first place, the Ministry of Agriculture, Nature and Food Quality should ensure that a map of ecosystem target types and a map of nature target types continue to play a central role in agreements with the provincial authorities in relation to the Rural Investment Budget (*Investeringsbudget Landelijk Gebied*, ILG). To be able to continue to focus on ecological results, the Ministry should make firm agreements with the provincial authorities to keep the map up-to-date. The Ministry, after all, bears the responsibility for completing the National Ecological Network (EHS) and for compliance with international obligations to preserve Dutch biodiversity.

In the second place, the Ministry, together with the provincial authorities, can ensure that more scientific knowledge and local expert knowledge about the functioning of the ecosystems is made available to improve the map with ecosystem target types. This knowledge can be used by provincial authorities to select areas with the greatest ecological potential for nature development. The better the potential of the locations, the more effective the management can be. Maps of ecosystem target types and nature target types can then be tested for ecological results within the scope of achieving the national biodiversity conservation goals. Only then can provincial authorities translate the map of ecosystem target types in a transparent and ecologically meaningful way into maps of area plans, and make agreements with the landowners and nature managers about the ecological results to be achieved.

3. RESULT-BASED FUNDING CAN BE IMPROVED

The current schemes are based on the idea that managers of nature reserves receive a subsidy on the basis of the ecological results achieved and not, as in the past, a fixed subsidy per hectare. On the one hand, this result-based funding is working well, despite the higher administrative costs. Ecosystems that are expensive to manage, such as species-rich fen meadows that need to be mown yearly, receive more subsidy than ecosystems that are less expensive to manage such as natural forests. Furthermore, knowledge on the ecological results in nature reserves has increased. On the other hand, this form of managing and testing the schemes has its limitations. Managers of nature reserves are paid according to ecological results which they can only partially influence. Moreover, the government sometimes fails to make use of some of the options for result-based funding that are available, and is for various reasons unable to use others.

Since 2000, the subsidy schemes have been based on output financing under the motto: 'focus on the main points and evaluate according to results'. The national government wanted to be able to directly relate the ecological targets to its financing and the results: the manager of a nature reserve would be paid on the basis of the ecological results of his/her management. While administrative costs and complexity have increased with the introduction of result-based funding, a manager's insight into the ecological results of many reserves has improved and, in some of the reserves, monitoring has also improved. The improvements relate mainly to more accurate and more frequent systematic monitoring. However despite these advantages, there is still room for criticism of this management philosophy.

The testing criteria are not unambiguous

One problem that was found is that the criteria (the indicator species to test the ecological results) in the Stewardship Programme are not the same list of species as the previously chosen target species of the nature target types. This means that managers are evaluated according to the presence of species that are less rare and/or better recognizable, such as the presence of a minimum number of indicator species, or according to land characteristics such as invasion of grasses in heathland. In some of the scheme packages, result-based funding is not applied: compliance is measured rather by actions taken, for example, mowing after certain dates. While the criteria based on indicator species provides a legal basis for the Stewardship Programme, the criteria do not form an indicative measure for the intended ecological results in the ecosystem target types (see Figure 3.1). Thus the scheme targets may be achieved, while the national conservation targets have not been achieved. Therefore these criteria are not suitable as an unambiguous measure for the national conservation targets.

Tasks and responsibilities in equilibrium?

Testing and accountability based on ecological results assumes that there is a clear connection between the management of a nature reserve and the outcome of that

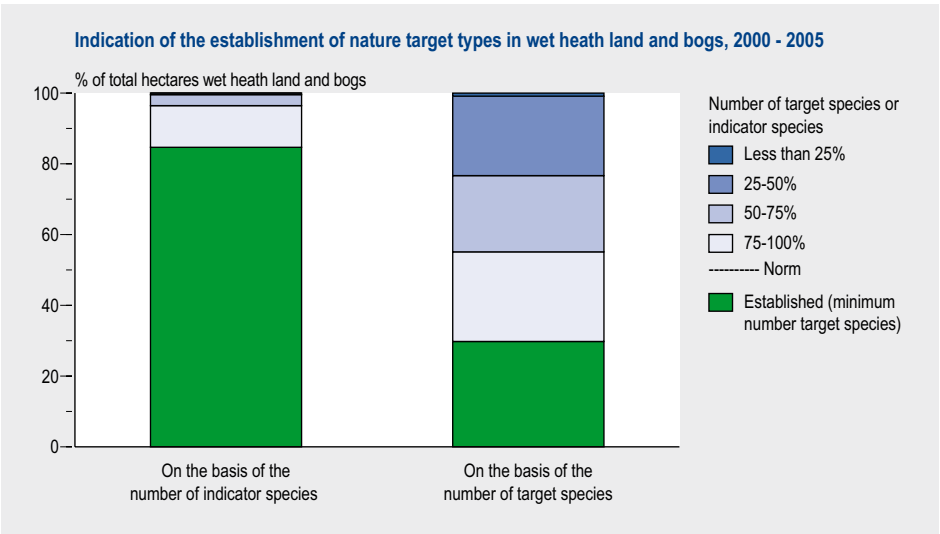

Figure 3.1 The requirements of the package have almost been achieved (left), but the requirements for nature target type (right) are far from being achieved. The figure shows the achievement of targets based on a single set of data for locations with wet heathland and bogs, measured against the requirements of the 'plus' packages (number of indicator species) of the Stewardship Programme, and against the requirements of the system used for nature target types (number of target species) (Sources: derived and adapted from distribution data provided by SOVON, FLORON and the Butterfly Foundation).

management in terms of species. However, most of the indicator species are rare and have a low dispersion rate which makes the ecosystem subject to long development times. Many species also depend on the resolution of critical issues in the environmental conditions (such as low groundwater tables or acidification), which the manager of the nature reserve cannot always influence. So it may sometimes be impossible to pay a manager despite great efforts having been made to manage a particular site.

Limits to the use of result-based funding

One problem that has limited the application of result-based funding relates to the amount of money paid. By paying managers an amount of money depending on the ecological results they have achieved, the government is rewarding results. However, the European Union only allows compensation for efforts made or income lost. Therefore the government is now only compensating the costs that are incurred and – except under the SAN – there is no financial incentive to achieve more ecological results. In other words: the Stewardship Programme does link the resources to targets, but there is no extra financial incentive for a manager to achieve the highest possible ecological results. Hence, result-based funding only works well when ecological results depend solely on the effort of the manager. It doesn't work when ecological result doesn't depend on management. This means that there is no management tool available to stimulate the adoption of the less popular but important packages to achieve national biodiversity goals by increasing the amount of the subsidy. For example, the

subsidy for large-scale natural ecosystems is low, because there is no active intervention. So wilderness ecosystems are not financially valued and stimulated, although these ecosystems are highly desirable. Thus the Stewardship Programme, in contrast to the system used for forestry management, does not contribute to the realisation of large-scale natural ecosystems.

There is also a problem with the landscape scheme packages. While farmers can be subsidised to maintain historical landscape features, such as hedgerows, they are not compensated for the loss of income by running a farm in a landscape with small fields and many hedgerows. These historical landscape features limit agricultural land improvements and hamper a farmer's economic position on the international market. Compensation for loss of income for the sake of landscape features is only possible within the so-called 'agriculture problem areas' that have been registered with the EU. The Minister of Agriculture, Nature Management and Food Quality has been only partly successful in drawing up unambiguous criteria for distinguishing 'agricultural problem areas' and, as a result, this provision is not applicable to sandy soils with many important historical landscape features.

Result-based funding within the Dutch National Forest Service only internally effective

Result-based funding (linking subsidy to ecological targets) has encouraged the development of ecological knowledge within the organisation, which has improved monitoring, and planning and evaluation of nature management. The Dutch National Forest Service provides annual reports on the achievement of ecological targets, covering about 10% of its nature reserves. However, the ecological results in these reports are not used as a basis for consultation and adjusting agreements between the Ministry of Agriculture, Nature and Food Quality and the Dutch National Forest Service. Hence, the national government is failing to use a management tool that is available. An explanation might be that it is difficult to link these annual reports of the Dutch National Forest Service (different reserves each year), to the progress towards achieving the medium- to long-term national biodiversity targets set out in the agreements that have been made. Moreover, there is no national map of the ecological results at a certain starting time to which the changes can be compared. Furthermore, the fact that the reports are based on the Service's own system of local target types rather than the national ecosystem or nature target types reduces transparency on the national scale. Because result-based funding appears ineffective in reality, the amount of money that the Dutch National Forest Service needs for their management of nature reserves threatens to get out of balance with the budget that the Ministry has available. This could make it very difficult to achieve the national ecosystems target types.

Policy options

Overall, the switch to result-based funding, instead of a fixed amount per hectare that was used before 2000, appears to have worked well. The managers of nature reserves and the government have both been stimulated to pay close attention to the intended ecological result. However, this has led to a rather complex set of regulations and con-

trol. The simplification of the schemes do not always go hand in hand with the need for more packages adjusted to match local situations, such as limestone caves. One solution could be to allocate these local ecosystems to existing packages on the basis of expert advice from an arbitration committee. However, the Ministry of Agriculture, Nature and Food Quality could also adjust its policy so that it relates better to reality. There are at least three ways to simplify this: 1) by making biodiversity monitoring a central professional task, 2) by combining many applications for subsidy per package into one application per manager or group of managers, and testing the results with a certification system, and 3) by making managers accountable for the effort they have to make rather than the ecological results in terms of species. These three options are discussed below in turn.

1) The burden of monitoring biodiversity could be shifted from the manager of a nature reserve to a central organisation. This would reduce the burden of monitoring for the reserve managers and improve the monitoring quality for testing ecological results at national level. It could also harmonise with the quality control for the National Ecological Network, the monitoring and evaluation needed in implementing the policy plan 'Agenda for a Living Countryside' and with the 'National Spatial Planning Policy' (*Nota Ruimte*).

The Ministry of Agriculture, Nature and Food Quality would be assigned the task of monitoring biodiversity and ecological results at national level. The justification and evaluation of nature policy and protection at a national level requires unambiguous and consistent monitoring of results. The monitoring should be frequent (e.g. once every three years) and could be carried out by professional or semi-professional actors, as was done in the census of meadow birds in 2006, as part of the project 'organisational costs of partnerships' (SAN-OS). These monitoring data should also be suitable for reporting on progress in relation to national and international targets and obligations (for example under the EU Bird Directive and Habitat Directive). This would require the Ministry and the provincial authorities to cooperate closely to employ the findings of the monitoring in a timely and effective way to modify environmental policy as well as its management subsidy schemes. The provincial authorities would play an important role in implementation, because from 2007 on they have to manage the subsidy schemes for nature management and had already the task to implement the environmental policy and care for sound environmental conditions.

One important disadvantage is that monitoring would be taken out of the hands of the managers of the nature reserves. The managers have been right to recognise as a major advantage of the Stewardship Programme the fact that monitoring has given them a better understanding of the ecological results of the reserves they manage. Monitoring for management purposes should not be taken out of the hands of the managers. In monitoring for their own management purposes, they select the data required and the appropriate methods according to the local situation. The purpose of this monitoring is for them to learn, and to be able to adjust and improve their management methods. On the other hand, the regular provision of national monitoring data of high

quality also offers many advantages for managers. They can use the national monitoring information and concentrate these extra monitoring efforts on reserves that need more detailed information for management planning. This kind of monitoring could become a detailed extension of the national monitoring.

2) A number of applications for subsidy could be combined in a joint application, and the performance of each could also be checked at the same time, with the assurance, for example, of a certified quality monitoring and control system.

3) Managers of nature reserves could be made accountable for the necessary management efforts rather than for the biodiversity that results. They would have a duty to put effort into nature conservation. But one result of this approach could be that managers would lose the incentive to achieve the desired ecological results.

The responsibility for achieving ecological results and biodiversity conservation could be more realistically divided. At present the manager of a nature reserve is evaluated only according to the ecological results achieved, while the provincial and national authorities have not (yet) achieved their environmental targets. Moreover, monitoring ecological results leads to a heavy burden of regulation, control and monitoring. An alternative way of reducing the government's burden of control would be to rely on the managers' own quality control systems. Managers could, for example, adopt their own certified quality controls, subject to confirmation by random checks conducted by independent external controllers. The provincial and national authorities, in turn, could be held responsible for agreements about the environmental conditions to be achieved. The agreements could differ for each manager, or for each nature reserve. A national evaluation of the effectiveness of these different, tailor made agreements would, however, be impracticable.

National forestry management

The Ministry of Agriculture, Nature and Food Quality and the Dutch National Forest Service should consult more closely about reports on the achievement of targets. This implies that the Dutch National Forest Service must provide clear reports of the monitoring data and a national statistical overview, so that it is possible to estimate to what extent the work of the Dutch National Forest Service contributes to achieving the national nature conservation goals in casu the nature target types. On the basis of these reports, the Dutch National Forest Service and the Ministry can then adjust targets or set priorities for management and discuss the consequences of funding cuts.

4 ECOLOGICAL RESULTS OF NEW NATURE RESERVES VULNERABLE WHEN THEY ARE SMALL AND ISOLATED

The national government wants to treat all managers of nature reserves equally, giving them the same rights in managing new reserves. In other words, it should, in principle, be possible for any reserve to be managed by a private landowner or, for example, by the Dutch Society for the Preservation of Nature or the Dutch National Forest Service, as long as the biodiversity targets remain the same. In reality, new private landowners generally have equal opportunities, but these opportunities, along with the guidance and supervision differ per province. Some of the new private nature reserves are small, while research has shown that it is more ecologically efficient to manage large connected areas coherently. Where the distance to larger nature reserves is small, effectiveness can be increased if the private managers cooperate with the large, and more experienced, land management organisations.

In 2003, the national government decided on a so-called 'turnabout' regulation as the answer to their wish for more involvement of farmers and other private landowners in nature conservation. Under the new policy, the organisations for management of natural ecosystems, private landowners and farmers would all the same rights and opportunities in managing nature reserves. The government hoped that this 'turnabout' regulation, affecting mainly private managers of new nature reserves such as farmers who transform agricultural land into nature reserves, would increase participation in the management of nature reserves and reduce costs. There is also still a large group of private owners of forest areas country estates (foresters and stewards) who have been managing forests and nature reserves for a long time. Private managers comprise a highly diverse target group, differing in their experience with practical nature management, ecological knowledge, motivation, and financial and physical capabilities with the large nature conservation organisations specialised in managing nature reserves. In other words: although all managers are equal they are not alike.

Terms of reference for new nature reserves under private management

The main idea of the turnabout principle is to transform land that has been used for agriculture to land designated for nature conservation without purchasing it on behave of the nature conservation organisations. When it implemented the 'turnabout' regulation in conservation policy, the Ministry of Agriculture, Nature and Food Quality also defined the total size of the new nature reserves that private landowners would manage to be 42,000 hectares. This area would contribute to construction of the National Ecological Network. Achieving the target area is still a long way off, considering that only 4,000 of the target of 42,000 hectares for 2018 have been newly designated. This is partly due to unclear taxation rules and complicated and drawn-out procedures for changing the land-use designation. For these and other reasons, private landowners have thus far made relatively little use of the subsidy for changes in land use. As

a result, potential private managers of new nature reserves in a number of provinces have been personally approached to ask whether they are interested in private nature conservation. The most proactive provincial authorities even offer land to private landowners that had been previously earmarked for the large organisations already managing nature reserves.

The treatment looks equal

In general, the opportunities for participation by private managers are now almost equal to those offered to the large nature conservation organisations, but there are differences between the provinces. The various types of scheme packages for new nature that have been chosen by private landowners are, in proportion, similar to those of the large nature conservation organisations managing the nature reserves: packages consist mainly of semi-natural pastures, meadow bird grassland and species-rich fen meadows. In principle, private landowners with these packages also contribute to the realisation of the national biodiversity targets. However, it is still too early to consider the ecological effectiveness of these new nature reserves.

Management problems of private actors

Despite their personal interest, idealism and enthusiasm, most new private managers have no practical experience in nature management and conservation. Without this experience, professional knowledge and guidance they may not be able to achieve the conservation goals when it comes to nature target types. For this reason guidance given by an ecologist or in cooperation with experienced staff in nature management would be desirable. These 'auxiliary troops' would then be able to study the (ecological) problems with the owner, and perhaps provide management advice and evaluate developments.

Earlier research by the MNP has shown that large nature reserves under coherent hydrological management form an important precondition for conservation of biodiversity. As long as private managers and farmers have so much freedom in choosing packages and are free to decide whether or not they will manage particular sites as nature reserves within a widely defined area, the situation of seriously isolated and small managed reserves continues. This does not contribute to the construction of the National Ecological Network. This is the downside of the involvement of many private landowners in nature conservation. The more private managers there are in an area, the more people are involved in agreements on restoring the natural hydrology, and the greater the likelihood that not everyone will agree on all issues. Sometimes provincial authorities attach conditions to the sale of land to private landowners that is earmarked for nature development. Such a condition could be, for example, that a private manager is not allowed to object to developments in the area that will have a positive influence on the ecological results. Although it is not known how often this condition has been imposed, from the point of view of conservation policy it is certainly a desirable development.

The Donkse Laagte is an example of a semi-natural nature reserve, where both nature conservation organisations and farmers committed to agri-environmental schemes participate in nature conservation (Photo: Mark van Veen)

Policy options

How should these problems for private managers of nature reserves be addressed? First of all, assuming ecological effectiveness as the basic principle, provincial authorities can use the maps of the area plans to guard against fragmentation of nature reserves by allowing private management only in selected zones. Indeed, ecological effectiveness will increase if the provincial authorities first look critically at the ecological potential of biodiversity targets for an area; only then can they offer subsidies to a manager with the right qualifications in terms of experience, ecological knowledge, and the size and location of his land. If the government is the owner and supplies the land, it can set conditions for the type of ecosystem that the manager should develop. The government can also stipulate that the manager is not allowed to object to developments in an area having a the positive influence on the ecological results.

If ecological effectiveness is the basic principle private landowners should only have the same opportunities as the large organisations that manage nature reserves when they have equal experience and capabilities in developing the desired ecosystem. Some provincial authorities already apply this preferred policy, but they do it in very different ways. The Stewardship Programme does not provide sufficient guarantees to successfully achieve the desired ecological results with private management. This could mean that the government must take greater control of spatial planning aspects, actively purchase land or, ultimately, perhaps purchase the last fragments of land compulsorily to create a coherent National Ecological Network.

Secondly, if participation is the basic principle, the government could simplify the process confronting the private managers who want to change their land use designation, particularly the administrative aspects of the application. Even though a private manager can obtain advice on the ecological aspects by hiring professional consultancy firm, it is much better from an ecological point of view to have the largest possible nature reserves under coherent management. This applies particularly to coherent hydrological management. If the government continues to stimulate private landowners to manage nature reserves, it will also be necessary to stimulate cooperation between private managers and the larger nature conservation organisations, where their properties are close to one another. This could include ecological research, sharing experiences, monitoring and practical nature management.

5. ENVIRONMENTAL CONDITIONS; KEY FACTORS TO IMPROVE THE ECOLOGICAL RESULT OF NATURE MANAGEMENT

Not all the targets of the national biodiversity conservation policy can be attained everywhere using only the subsidy scheme packages. For example, the biodiversity of a reserve is also influenced by external environmental conditions. This applies to all main ecosystem types: large-scale natural ecosystems, semi-natural ecosystems and multifunctional ecosystems. Thus it would be advisable to consider the possibility of modifying the schemes to accommodate the local situation, for example, by paying more attention to tightening management agreements, or to limiting environmental conditions, or by concentrating nature reserves more in the most potential areas.

In general, the biodiversity in nature reserves has, on average, shown improvement during the past 20-30 years, judging by the numbers of plant target species (see Figure 5.1). The biodiversity in the agricultural areas has, on average, declined further. In the nature reserves, conservation has focused on large-scale natural ecosystems and semi-natural ecosystems, while in the agricultural areas the conservation achieved by farmers has partly focused on semi-natural ecosystems and partly on multifunctional ecosystems.

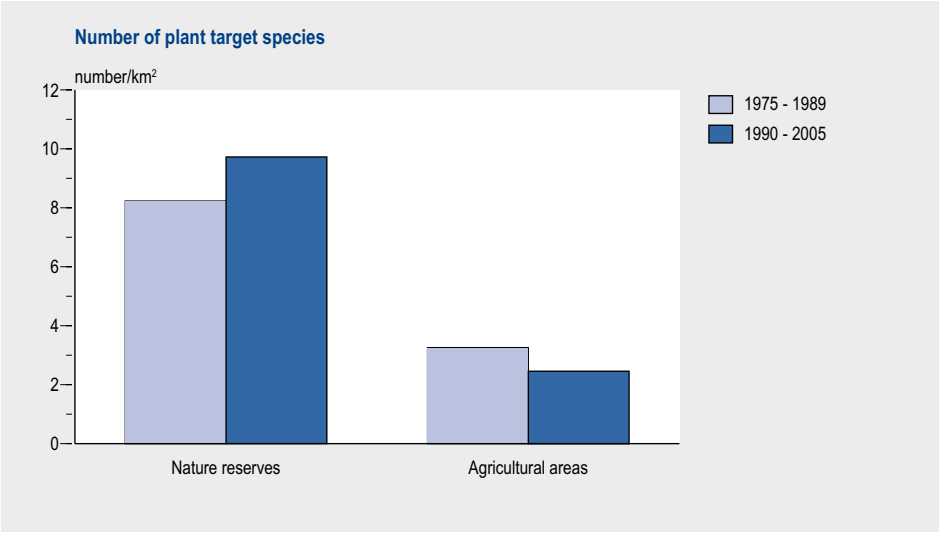

Figure 5.1 Conservation policies in nature reserves are effective (i.e. the number of target species has increased over the past 20-30 years, while the number of target species in agricultural areas has declined, despite the implementation of agricultural nature conservation in 3% (net) of the agricultural area. (Source: FLORON)

How attainable are the ecosystem and nature target types with their specific management strategies?

1. Without large-scale processes, there can be no large-scale natural ecosystems
The ecological effectiveness of large-scale natural ecosystems depends on the unimpeded impact of large-scale natural processes shaping the landscape, such as coastal erosion or flooding. If these processes are not impeded, they produce a varied mosaic of water, sand, pastures, scrublands, thickets and woods. Without these large-scale landscape shaping processes, and in the absence of nature management, the mosaics are taken over by forest growth. Although the national government and provincial authorities have formulated this management strategy as a goal in large parts of the National Ecological Network, this management strategy can, in reality, only be applied in a few reserves. In the Netherlands today, social limitations scarcely allow any room for such large-scale processes shaping the landscape. There are roads, villages or agricultural enclaves almost everywhere in large nature reserves. Despite this, biodiversity and ecological results of nature management can, through these processes that shape the landscape, be enhanced either on a smaller scale or in semi-natural ecosystems,. This could include meandering streams, allowing flooding and ensuring a natural water table in wetlands.

Despite the hindrances that have been mentioned, the management strategy for large-scale natural ecosystems has already been applied in some areas. On the Wadden Islands, this management strategy is most effective for the salt marshes outside the dikes, and on the beach plains. This is because the sea has a very large influence; furthermore, people do not live in these areas. In new areas, such as in the riverbanks of the Meuse and the Rhine, large ecological benefits can be achieved in the short term through riverine processes. This is in part because these areas were previously species-poor agricultural grasslands. Birds and pioneer plants, in particular, benefit from these processes. In the medium term, a manager will again have to intervene in the vegetation succession, because a lot of forest area in the riverside floodplains would increase the risk of flooding, at least to humans.

The risk of losing the current biodiversity under this management strategy is highest in the dunes, since such processes as coastal erosion and sand drift are only be allowed to have an unimpeded impact in some places. Grazing with cattle and ponies, for example, can delay the succession of vegetation into woods, but cannot stop it. If the trees are to be cleared and vegetation regression lead to scrub and pasture, such high densities of grazers are required that the advantages of grazing are lost: the strategy would then be at the expense of the current biodiversity. Thus the choice of this management strategy is no guarantee that biodiversity will be maintained. Managers adapt the strategy to suit the local situation. They support integral management of a reserve and initiate and support landscape forming processes where possible. But they also intervene locally or in favour of a particular species (e.g. by mowing and felling) if this is necessary to maintain biodiversity or the cultural and historical values of the landscape. This spatial integration of management strategies provides the best

The management strategies for semi-natural and large-scale ecosystems ('wilderness nature') can complement and reinforce each another, and this appears at present to be the best guarantee of the maintenance of biodiversity and naturalness. The dune slack is mowed (semi-natural management), while there is no active nature management on the sandy dunes, except for grazing by ponies (management strategy of the large-scale ecosystems) (Photo: Ruut Wegman).

guarantee for preserving biodiversity, cultural and historical values, and the current naturalness.

The Stewardship Programme, in contrast to the target system of the Dutch National Forest Service, does not contribute much to achieving large-scale ecosystems. The criteria in the scheme packages and the financial compensation for the corresponding package under the Stewardship Programme do not guide, direct or stimulate managers of nature reserves to establish such ecosystem target types. Wilderness reserves are financially not profitable, so managers choose packages that fit well with semi-natural ecosystems.

2. Environmental conditions limit ecological results in semi-natural ecosystems

National data shows that the biodiversity of the desired nature target type has, on average, been achieved in less than the half of the nature reserves, although the conditions of the agreements under the Stewardship Programme and those set for the Dutch National Forest Service have to a large extent been satisfied. As far as achieving the national nature target types goes, there is generally little difference between the ecological results of the Dutch National Forest Service and those of the SN part of the Stewardship Programme. Compliance with scheme package requirements has brought the biodiversity targets for semi-natural ecosystems closer, but the same cannot be

said for all nature target types and locations. Poor environmental conditions (such as a low groundwater table and artificial fertilisation, for wet heathland and species-rich fen meadows) have limited success in achieving the desired biodiversity and ecological results. Thus a considerable effort will still need to be made to achieve these targets.

Analyses have shown that the quality (i.e. completeness in species composition) of characteristic vegetation in managed nature reserves is generally being maintained, or even increased (see Figure 5.1), while the quality of vegetation in comparable areas that are not managed under subsidies, has in general declined. In areas under 'plus' package management or falling under the local target types of the Dutch National Forest Service, the trend is even more positive than in areas with only basic scheme packages. This is a positive finding, although it cannot be conclusively shown whether these developments are attributable only to the Stewardship Programme. They may also take place in selected locations with good environmental conditions or with subsidised measures, an example of which is the effect-oriented measures against the implications of low groundwater tables and fertilisation.

Statistical relationships between the presence of target species and the local environmental conditions indicate that it should be possible to achieve the nature target types

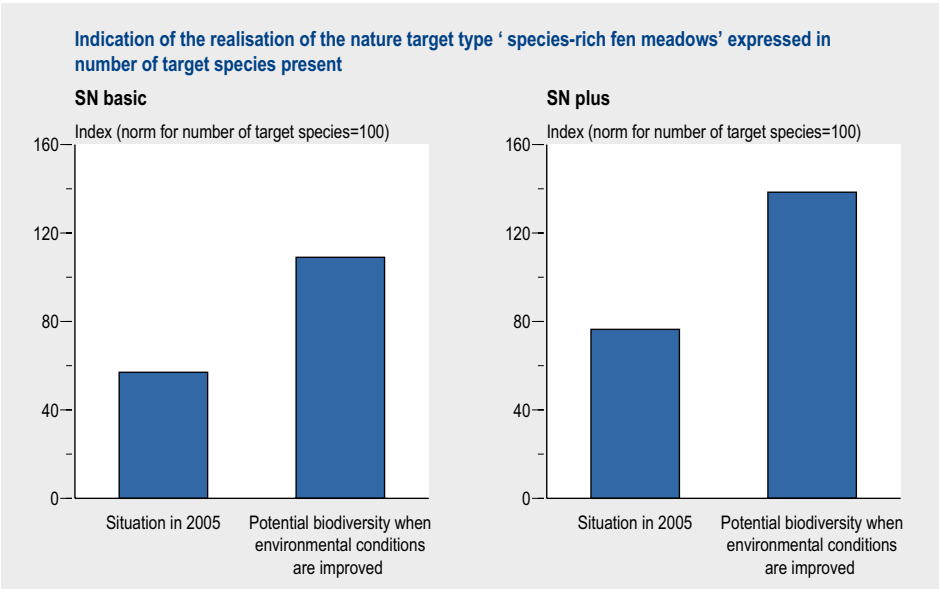

Figure 5.2 The ecological results in 2005 (left column) improves remarkably once the environmental conditions (such as eutrophic level, water table and spatial coherence) are improved (right column). The ecological result is greater under the better paid SN 'plus' packages (graph on the right) than with the SN basic package (graph on the left). The realisation of a nature target type is measured by the average number of target species (per grid cell of 250 x 250 m^2) in comparison to the minimum required number of target species that determines the realisation of the nature target type. (Sources: derived and transformed from species distribution data provided by SOVON, FLORON and the Butterfly Foundation)

in SN areas and land owned by the Dutch National Forest Service under the current management regimes, once the environmental conditions are improved for example the realisation of the desired eutrophic level, water table and spatial coherence (see Figure 5.2). However, managers can themselves improve environmental conditions in a nature reserve only so far. Generally, the national government and provincial authorities, the municipalities and the District Water Boards will have to take action to improve the environmental conditions of the surrounding areas that influence the conditions in the reserves. For example, they can introduce measures to reduce nitrogen emissions from agriculture and traffic, to modify regional water management, and to enlarge and connect nature reserves.

In a significant part of the areas where the minimum number of required target species for nature target types has not yet been achieved, this is probably attributable to poor environmental conditions. In addition, the development of some nature target types such as species-rich fen meadows, fens and bogs, and natural forest, will take many decades or even longer. For a still unknown proportion of the areas, it will not be possible to achieve the nature target types, even if the environmental conditions are improved. This is because the target type still does not agree with the natural environmental conditions, which, on average, are only achieved in that location with great effort. The potential to realise adequate environmental conditions of each location determines much of the ecological effectiveness of conservation management. Therefore it is very important for these areas that the map of nature target types and the area plans are ecologically evaluated.

3. The multifunctional ecosystem types are not located in the most favourable locations

Farmers' management of multifunctional ecosystems in agricultural lands does not always produce the results which meet the standards of the national nature target types (see Figure 5.3). These findings, published in the last few years in prestigious scientific journals such as *Nature (Kleijn et al. 2001)*, are in accordance with critical studies on the contribution of agricultural nature conservation to the biodiversity targets (when examined at the individual plot level). According to the available figures, however, agri–environmental schemes have an 80% or better rate of compliance with the requirements set in the scheme packages, yet the quality and ecological effectiveness of agricultural nature conservation are too low to realise the nature target types. This is partly because agricultural nature conservation is not carried out in the most favourable locations. The areas that provincial authorities have designated for agri-environmental schemes are generally too widely defined; sometimes almost a whole province has been designated as a 'baggy coat' area (i.e. the area designated is much larger than the maximum area qualifying for subsidy). This is particularly true for meadow bird areas.

Furthermore, continuity in agricultural nature conservation is relatively low at present. More than 50% (by area) of the areas with agricultural nature conservation, for which farmers had an agreement under a previous scheme in 1999, were no longer covered

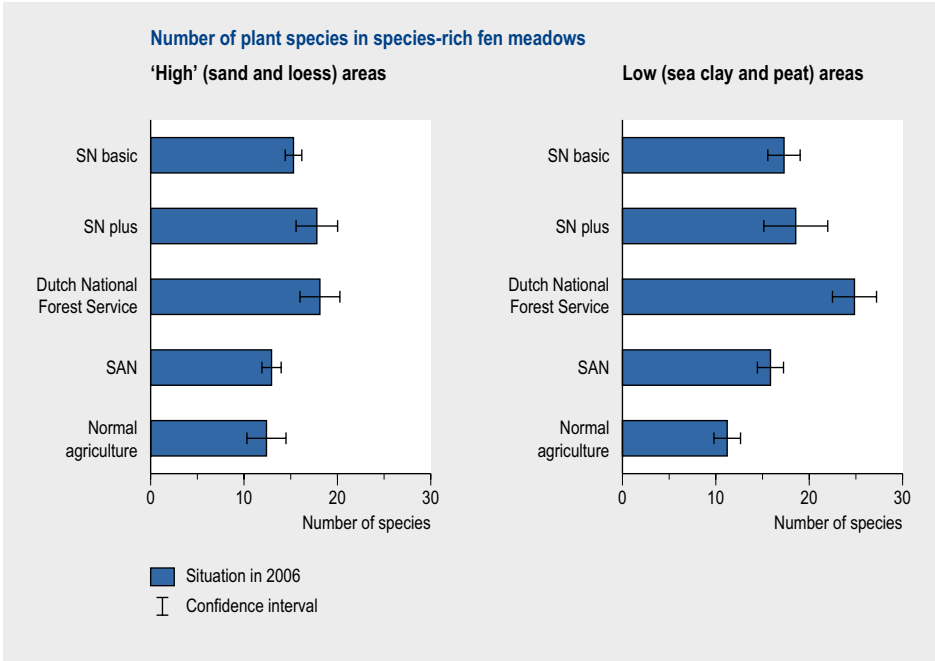

Figure 5.3 In 2006, the biodiversity of species-rich fen meadows was lowest under normal agriculture and agri-environmental schemes (SAN) and highest under SN-plus and Dutch National Forest Service management. The differences between agri-environmental schemes (SAN) and normal agriculture are minimal in 'high' areas, despite the SAN subsidy. The differences between SAN and the SN basic package are also quite small, but the prospects for SN-basic are much better in the end, because continuity is better guaranteed, and only in such areas is a marked quality improvement foreseen by planning measures to improve the environmental and spatial conditions (see Figure 5.2).

by a SAN agreement six years later. After the first term of the Stewardship Programme in 2005 this was 34 % (by area) and thus still low. Continuity must be a priority: otherwise many years of investment will have been for nothing. It is very important that a farmer does not stop participation in agricultural nature conservation after six years when the subsidy has to be renewed.

Meadow birds are still insufficiently protected

The Netherlands is covered with large areas of reclaimed peatland consisting of many wet agricultural meadows. Because the wet conditions of the meadows limited agricultural use, a characteristic meadow bird community has developed. This meadow bird community consists of species like black-tailed gotwit (Limosa limosa), lapwing (Vanellis vanellis) and redshank (Tring totanus). The national government has an international responsibility for the black-tailed gotwit, because about 50% of the world population nests in the Netherlands. However, the process of agricultural land improvements is still in progress and many meadow bird areas became unsuitable due to expansion of built-up areas and heavy fertilised and used agricultural fields. To protect the meadow

bird populations, the government introduced agri-environmental schemes that subsidise bird-friendly agricultural use, such as the protection of nests and leaving fields undisturbed until the chicks can fly.

The effects of this meadow bird management are visible. According to the available figures, 80% of areas comply with the requirements of the package, but this management is still insufficient to maintain the number of meadow birds in the Netherlands. Of all the forms of management, the strict and very strict regimes (late mowing date, also called the 'undisturbed period' regime) have the most positive effects for most meadow birds (see Figure 5.4). Lighter forms of management, such as the protection of nests, where these are not part of a mosaic with stricter management, seem to have scarcely any positive effects. The choices available in the current collective meadow bird packages of the SAN that relate to the length of undisturbed periods and the mowing date are so wide as to make the package definition of optimal management mosaic possible. It continues to be a critical problem that the parcels of land to which these packages apply, cannot be changed season by season depending on where the birds are brooding at that time.

Management continuity for meadow birds should therefore be agreed on not on the individual parcel level, but for entire areas. It is now possible to determine how strict

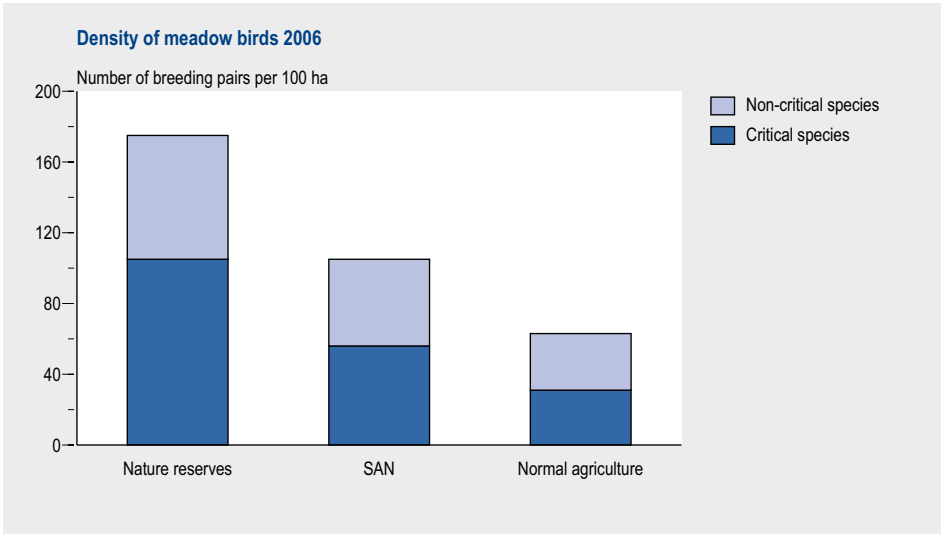

Figure 5.4 The average density of meadow birds in nature reserves (SN and Dutch National Forest Service) is considerably higher than in areas under agricultural nature conservation (SAN), and normal agriculture in 'Laag Holland'. The average density in areas under normal agriculture without any SAN subsidy is just above the minimum number of breeding pairs per 100 ha under the SAN. The figures relate to the densities of some critical and non-critical meadow birds in nature reserves, areas under agricultural nature conservation and areas under normal agricultural management; this is based on a full surface inventory in 27,445 hectares of meadow. The species studied also form the indicator species in the Stewardship Programme. (Source: North Holland Landscape Authority in cooperation with the North Holland Expert Team for meadow birds)

this management mosaic needs to be for each area. The most important key to success is then the farmers' willingness to cooperate in actually implementing the various periods in which the parcels should be left undisturbed. At present only 10% of the total area under collective meadow bird packages consists of meadow with an undisturbed period (late mowing date), while almost 90% of the area is subject to nest protection. This means that the area percentage of parcels with an undisturbed period has fallen far below the original requirements of the scheme and even further below the percentages recommended by meadow bird experts.

In the nature reserves, in contrast, it is necessary to avoid a too extensive management regime. An optimal habitat for meadow birds requires slightly fertilised meadows with high grass. In any case, it is still possible to expand the total area of meadow bird protection and management. A promising initiative is seen in the cooperation, research and sharing of knowledge and experience among nature conversation organisations, farmers and experts (see, for example, Expert Team for meadow birds).

Policy options

Compliance with the criteria of the Stewardship Programme alone has not been sufficient in achieving the biodiversity targets. How can one ensure that all the biodiversity set out in the nature conservation policy be made attainable?

In the first place, the nature conservation organisations, the national government and provincial authorities and the District Water Boards, will have to make all together greater joint efforts to solve crucial problems relating to hydrological and environmental conditions and spatial planning, if they wish to increase the ecological effectiveness of nature management and agri-environmental schemes. This could, for example, begin with an integral plan for the desired biodiversity or ecological results of a reserve, based on the agreements made with all parties concerned. Coordinated cooperation and the exchange of knowledge between the fields of research, policy-making, policy implementation and nature management would also increase ecological effectiveness. Private managers and farmers should also be involved. The national 'meadow bird forum' is an initial example pointing in this direction. In the end, the spatial integration of management strategies in large nature reserves is the best guarantee that biodiversity, cultural and historical values and naturalness will be preserved.

In the second place the natural potential of the locations is an important determinant of the ecological effectiveness of management in new nature reserves. Therefore it is very important to ecologically evaluate the nature target type maps and the maps of the area plans and optimised them according to the evaluation results.

Just as much money is spent on agri-environmental schemes as on management in the nature reserves, however the biodiversity is much higher in the latter (costs of acquisition of new nature reserves is not discussed here). To increase the ecological effectiveness of agricultural nature conservation, in particular, national government and provincial authorities could strive to achieve a spatial pattern, pursued, for example,

in the framework of the map of ecosystem target types and the area plans. Here, there would be:
1) an even greater concentration in large coherent nature reserves and conservation areas in the ecologically most favourable areas;
2) 'spheres of influence' around these nature reserves. Here, the environmental conditions would provide a strong buffer for the reserves and the agri-environmental management is done by farmers under agri-environmental schemes with stricter regulation than is possible under the current SAN, such as accepting a higher water table;
3) perhaps lighter forms of agri-environmental schemes than those in present use, that focus more on scenic beauty and cultural values than on biodiversity conservation could be applied in other areas such as 'national landscapes'.

Moreover, the financial resources used in agricultural nature conservation to maintain biodiversity are much more effective if farmers choose packages that are more ambitious (stricter) than the current scheme packages (for example, with wetter hydrological conditions). However, this form of agri-environmental schemes is probably difficult to implement within present farm operations. But if the reimbursement was higher, the financial advantage of SAN in comparison to SN, which is assumed in the current policy, could be lost (i.e. the government wants to save money when creating the National Ecological Network by using agri-environmental management instead of buying agricultural land to develop into new nature reserves). Further, the continuity (the long-term implementation of the agri-environmental management) would need to be better guaranteed. Otherwise, the investment made will have been for nothing.

Twenty-two meadow bird species were inventoried in 2006, but the greatest interest has been in the black-tailed gotwit (Limosa limosa). The national government has an international responsibility for the black-tailed gotwit in its biodiversity policy, considering that about 50% of the world population nests in the Netherlands. In addition, meadow birds make an important contribution to the character of the Dutch landscape (Photo: Mark van Veen).

If the concentration of voluntarily undertaken agri-environmental management is not successful for nature conservation, national government could take a more active role in directing it, for example, by acquiring land.

According to the map of ecosystem target types dating from 2003, semi-natural ecosystems represent only part of the goal of the present area under agri-environmental schemes. In a larger area, the agri-environmental schemes are expected to produce a multifunctional ecosystem, where it is accepted that less target species will be achieved (50% of the target species of other nature target types). The emphasis is often more on hedgerows, pastures, fields or their edges with many flowers and such like.

However, the purpose of this multifunctional nature has, to date, not been well and clearly defined. The primary objective appears to be to contribute to the perception of nature and landscape, and perhaps to more natural combating of diseases and epidemics in agriculture, rather than on the realisation of nature target types and the maintenance of biodiversity. National government could clarify such choices, so that it is clear which financial resources are being used for which goals. What proportion of agricultural nature conservation is being used for biodiversity conservation, and what proportion for landscape maintenance and conservation of cultural values and scenic beauty? In fact, the current measures for landscape are also not very effective because only 2.5% of the landscape features in the Netherlands are maintained with a subsidy from the Ministry of Agriculture, Nature and Food Quality, and half of this is outside the designated ‘national landscapes.’

6. POLICY NOT TRANSPARENT BECAUSE OF LACK OF HARMONISATION OF TARGET TYPES AND MONITORING

Current nature conservation policy is not transparent. Monitoring, target types and the criteria of ecological results are not harmonised. Translation matrixes to relate the target types alone do not increase this transparency. The conservation policy would be considerably more transparent if the government were to harmonise the Stewardship Programme and the agreements with the Dutch National Forest Service, i.e. attune them to one another on a case-by-case basis. An unambiguous monitoring system to measure the ecological results would increase the transparency and benefit result-based funding and the evaluation of the ecological effectiveness of the conservation policy. However, such monitoring must be linked to the stated biodiversity targets.

The best basis for an evaluation, naturally, is to have the targets, the resources available and the results linked to one another, and for the required data to be directly available in digital form via the schemes. Then it would be possible to form a better and simpler judgement of the extent to which the resources used have produced the desired results; the ecological effectiveness would also be relatively simple to ascertain. At present such a link cannot be simply made. In the first place, the biodiversity target types and the criteria for measuring ecological results and achievements of nature management are formulated in very different terms. In the second place, there is a simple lack of sufficient monitoring data. And in the third place, what is being monitored is not the same as the targets that were initially set.

Problems with the evaluation criteria in the Stewardship Programme

As a performance check on the agreements between the Ministry of Agriculture, Nature and Food Quality and the managers of nature reserves, the managers have to supply maps showing the presence of indicator species in particular spots when they apply for an extension of the subsidy under the Stewardship Programme (for the plus packages). However, these maps are of little help in judging whether national objectives, such as the European Directive terms, the map of ecosystem target types, and the sustainable maintenance of biodiversity, have been attained. Although the principle underlying the evaluation criterion for the plus packages (the presence of a specific minimum number of indicator species) is the same as the principle for nature target types (the presence of a specific minimum number of target species), not all indicator species are also target species or species covered by the Habitat Directive. Thus the system used in the Stewardship Programme is designed for testing compliance with agreements that have been made; these are neither suitable for assessing the ecosystem and nature target types nor for evaluating the practical nature management. In addition, this data are only collected for a limited proportion of the area (8%). If a more suitable and representative choice of indicator species were to be made, usability could improve enormously.

It is important to realise that, once the provincial authorities are entitled to modify the Stewardship Programme themselves after 1 January 2009, and each province makes its own changes, an overall picture of the nation-wide achievement of the conservation policy targets can hardly be expected. This is undesirable not only because it will make it difficult to direct the programmes, but also because the Netherlands will still have international and national obligations to be able to demonstrate, at any time, what progress has been made in the nature conservation policy. Without harmonisation this will be an almost impossible task.

Only in the case of the meadow birds was it possible to draw on a national inventory of the collective meadow bird packages, which was conducted in 2006. These data are not only suitable for assessing whether the biodiversity targets have been achieved but also for evaluating the management applied and compliance with the requirements of the scheme package. This success is due to a very large area (almost 100,000 hectares) of all collective packages – under multiple managers – being inventoried within one season using a standardised method.

Incompatible monitoring system used by the Dutch National Forest Service

The Dutch National Forest Service has a different monitoring system compared to the monitoring system defined in the Stewardship Programme, but one to which the Ministry of Agriculture, Nature and Food Quality has agreed to. The planning and evaluation of area management, and reporting to the Ministry, have been combined in a single system. The different monitoring method makes it difficult to compare the performance of the Dutch National Forest Service with those of other nature conservation organisations. A translation matrix can be applied to the local target types of the Dutch National Forest Service to ascertain the presence of the nature target type. This different method of assuring the realisation of the nature target types has been agreed on between the Dutch National Forest Service and the Ministry. This approach with local target types is more ambiguous than the approach using target or indicator species, since the local target type may be achieved while the target species are not yet present. Translation matrices provide a limited but indicative picture of the achievement of the goals for nature target types. These disadvantages must be weighed against the advantage that the local targets types used by the Dutch National Forest Service are better indicators of the changes in the environment that may be of significance for further adapting the practical nature management regime. The low level of transparency in reporting on nature target types by the Dutch National Forest Service prevents getting a clear picture of the accountability and direction of funding.

Policy options

How can the nature conservation policy be more transparent? In the first place, the provincial authorities can ensure that there is more harmonisation in the formulation of targets and monitoring after 1 January 2009.

The Banisveld is a nature development project where results are promising results; however there is also a problem of a widespread uncontrolled growth of trees. Monitoring will be necessary to evaluate the ecological effectiveness of the project and to be able to adjust the management regime on time, in response to undesirable tree growth. (Photo: Rense Haveman).

In the second place, the national government can enter into agreements on the harmonisation of biodiversity targets. The nature management plans for the areas that fall under the Bird and Habitat Directives will soon be ready. It would be logical to link the preservation targets to the nature target types and to the packages of the Stewardship Programme.

In the third place, the monitoring of the ecological results must be better related to the national government's targets. Monitoring intended to report on ecological results of management achievements and to evaluate the nature policies at a national level must be unambiguous, consistent and standardised. The monitoring should be comparable to the meadow bird inventory performed as part of the project 'organisational costs of partnerships' (SAN-OS). It is also important that a much greater area be monitored than at present, especially for areas with an SN subsidy and areas under botanical agri-environmental schemes (SAN). It is therefore recommended to have the provincial authorities, the national government and the nature conversation organisations reach agreement on this.

Abbreviations, key terms and Dutch equivalents

Agenda for a Living Countryside	Agenda Vitaal Platteland
baggy coat area	ruimejasgebied
Birds and Habitats Directives	Vogel- en Habitatrichtlijnen
Butterfly Foundation	Vlinderstichting
District Water Boards	waterschappen
EU	European Union
FLORON (Foundation for Wild Flower Research in the Netherlands)	Stichting Floristisch onderzoek
Dutch National Forest Service	Staatsbosbeheer
Dutch Society for the Preservation of Nature	Vereniging Natuurmonumenten
Government Service for Land and Water Management	Dienst Landelijk Gebied (DLG)
indicator species	meetsoorten
large-scale natural ecosystems	grootschalige natuur
local target types	subdoeltypen (van Staatsbosbeheer)
map of ecosystem target types	Natuurdoelenkaart
Ministry of Agriculture, Nature and Food Quality	Ministerie van Landbouw, Natuur en Voedselkwaliteit (LNV)
multifunctional ecosystems	multifunctionele natuur
nature target type	natuurdoeltype
National Ecological Network	Ecologische Hoofdstructuur (EHS)
National Spatial Planning Policy	Nota Ruimte.
Nature Conservation Policy Plan	Natuurbeleidsplan
Netherlands Environmental Assessment Agency	Milieu- en Natuurplanbureau or MNP
North Holland Expert Team for meadow birds	Deskundigenteam Weidevogels Noord-Holland
North Holland provincial Nature Conservation Organisation	Landschap Noord-Holland
organisational costs of partnerships project	SAN-organisatiekosten Samenwerkings-verbanden (SAN-OS, voormalig ROS)
policy document ‘Nature for people, people for nature.’	nota ‘Natuur voor mensen, mensen voor natuur’
Provincial Nature Conservation Organisations	Provinciale Landschappen
Provincial area plans	Provinciale gebiedsplannen
RIVM (National Institute for Public Health and the Environment)	Rijksinstituut voor Volksgezondheid en Milieu

Rural Investment Budget	Investeringsbudget Landelijk Gebied (ILG)
scheme packages	pakketten (in Programma Beheer)
semi-natural ecosystems	halfnatuurlijke natuur
SOVON (Cooperative for bird research in the Netherlands)	Samenwerkende organisatie vogel onderzoek Nederland
Stewardship Programme	Programma Beheer
Subsidy for Agricultural Nature conservation	Subsidie Agrarisch Natuurbeheer (SAN)
Subsidy for Nature conservation	Subsidieregeling Natuurbeheer (SN)
target species	doelsoorten