



Eddo Hartmann

The Collective Landscape

HAND
OUT



Theunis Piersma

Portrait made close to his home. From here he can look over the IJsselmeer where he not only has a beautiful view of the flight routes to and from Schiphol, but also of the flight routes of the birds.

Theunis Piersma is professor of Migratory Bird Ecology at the University of Groningen. Together with an international research team, he investigates the way in which distribution and numbers of tidal and meadow birds are related to climate, food, predators, germs and their historical genetic background. The research is not only taking place in the Netherlands, but also in Africa, Australia, North and South America and Asia.

As a wadden biologist, Piersma is also affiliated with NIOZ, the Royal Netherlands Institute for Sea Research on Texel. With the acquisition of knowledge, he tries to penetrate the society of the "soft values" of (semi) natural landscapes (a moist flowery meadow, an unspoilt mudflats). For more than fifteen years he and his team have been researching the Netherlands national bird, the Black-tailed Godwit. He received several international prizes for his research, including the prestigious Spinoza prize, also known as the "Dutch Nobel Prize".



Henk Folmer

Portrait in the Beesterzwaag area. According to Folmer, this location is a typical example of intensive agriculture that leads to a decline in flora and fauna and to the quality of the living environment.

Henk Folmer is professor of Spatial Economics at the University of Groningen (UG). Among other things, he conducts research into sustainability, market forces and the regional economy, with a special interest in the agricultural sector, nature management, environmental economy, biodiversity and nature conservation. Folmer states that the current intensive and industrial way of farming significantly reduces biodiversity and makes the landscape scarce, partly due to the dominance of huge monoculture plots. This is bad for the living environment, recreation and tourism and ultimately for agriculture itself.

Henk Folmer is editor-in-chief of The International Review of Environmental and Resource Economics, Letters in Spatial and Resource Sciences and Briefs in Regional Science. He is the founder of the European Association of Environmental and Resource Economics and a board member at It Fryske Gea. Folmer also regularly publishes in national and regional newspapers. He is also affiliated with Northwest Agricultural and Forestry University in China.



Han Olf

Portrait in a greenhouse of the University of Groningen. In these greenhouses research is being done into the interaction between grasses and soil microbes from the Serengeti in Africa. These are not allowed to spread here, hence the plastic overshoes and jacket. It is also being investigated here how different types of grasses adapt to large savanna grazers, such as the wildebeest and the zebra, which are increasingly disappearing as nature areas become smaller.

Han Olf is professor of Ecology and Nature Management at the UG. He conducts research into biodiversity, nature management, nature conservation and sustainable landscapes in the Netherlands (such as the Oostvaardersplassen), but also in tropical savannas and the rainforest. He focuses on the umbrella ecosystems. How do they work? How do they function? Which structures can be recognized? In particular, he focuses on the interaction between the different species. How are plants, herbivores, predators and waste eaters in relation to each other? Olf gives advice on nature conservation with the results of his studies.

In addition to his work at the RUG, he is a supervisor at the World Wildlife Fund and ARK Nature Development and a member of the NIOZ scientific advisory board.



Scanning

Ecologist Raymond Klaassen explores the Blue-headed Wagtail, equipped with a transmitter, in the area of Muntendam early in the morning. With the data that he collects, he gains insight into the lack of space for this endangered field bird.

Klaassen is affiliated with the GELIFES research institute of the UG, where interdisciplinary and international ecological research is conducted. He specializes in migratory behavior and habitat use. Klaassen works closely with the Montagu's Harrier Workgroup - Akkervogels Knowledge Center and is a strong advocate of "science-based conservation", where there is a direct exchange between conservationists, policy makers, farmers and scientists. Klaassen also works with residents, bird watchers and other amateurs to collect data and protect species.



Future

A young Blue-headed Wagtail is ready to be released after being ringed. Bird ringing allows researchers to determine survival during the first year of life. Only if enough young wagtails survive will the population be maintained. It is therefore important that the young wagtails fly out in good condition. The birds are caught with fine-meshed "fog nets". They are enticed with species-specific sound, in this case the vocals of the Blue-headed Wagtail.



Predator

The life of field birds such as the Blue-headed Wagtail has many dangers. For example, the Kestrel is not averse to a wagtail, if it gets the chance. This Kestrel thought he could take advantage of a chance when he heard a Blue-headed Wagtail singing in the Winter Wheat, and flew into the fog net next to the loudspeaker. This Kestrel appeared to be renewing the flight feathers, a process called "molting."



Selection

An installation on the island of Griend in which Red Knots are tested for their exploration behavior (their "personality"). In the tent there is a water basin with four pieces of sand. Depending on whether they remain seated or go to investigate, the character of the individual birds can be determined. After the test, the birds are released with a WATLAS transmitter to investigate their exploration of the Wadden Sea. The research is conducted by Selin Ersoy, PhD student at the UG, under the supervision of Allert Bijleveld and Theunis Piersma. It is one of the scientific collaborations between the UG and the NIOZ.



Wad guard

Behavioral ecologist Allert Bijleveld and ecologist Roeland Bom are looking for birds on Richel, a sandbar near Vlieland. Both obtained their PhD from Theunis Piersma and now work at NIOZ, the Royal Netherlands Institute for Sea Research, with which the UG works closely in the Wadden Sea. Bijleveld conducts research into the social behavior of Red Knots and its influence on knowledge exchange and survival strategies. Bom is researching the migration strategies of Bar-tailed Godwits and Whimbrels in wadden regions in Guinea-Bissau (Bijagos archipelago), the Netherlands and Oman (Barr Al Hikman).



Wad tower

A temporary and portable house on the Richel sandbank near Vlieland, used by scientists for research into the Wadden nature. On this tower there is also a receiver for Allert Bijleveld's research with which he can map the spatial distribution of transmitted migratory birds. To do this, he uses the new WATLAS (Wadden Sea Advanced Tracking and Localization of Animals in real life Systems) tracking system. Through a large number of receivers in the western Wadden Sea, he can see from second to second where which birds are, with which other individuals.



Receiver

One of the many temporary receivers, placed in the Wadden Sea for the WATLAS project. Individual, transmitted wading birds can be fully followed with the WATLAS system. By mapping where they are going in the Wadden Sea, it is possible to find out why this unique area is so important for the birds.



Richel

Mist nets on the islet of Richel near Vlieland. At night, with the help of the nets, wading birds are caught for the WATLAS project. The birds are measured, weighed, given an exploration test and transmitted. Richel forms an exchange system with the nearby island of Griend. At very high tide, birds fly from Griend to Richel, where the vegetation is less high and they have more views.



Yellow Trap

The decrease in the number of insects in the Netherlands is worrying. The intensification of agriculture is an important cause for this biodiversity crisis, but surprisingly little is known about the precise occurrence of insects in agricultural areas in relation to land use and management.

Researcher Raymond Klaassen has placed insect traps on various fields near Muntendam, Korengarst, Midwolda and Veele. Yellow sticky traps are a simple method to quickly obtain an image of the biomass of insects in a place at a given moment. The numbers of insects on the sheets are counted via automatic image recognition.



Malaise Trap, Westeresch

With a Malaise Trap (designed by René Malaise in 1934) flying insects are monitored. Insects flying against the vertical walls crawl up, eventually falling into a pot of alcohol through an ingenious lock. Then the real work begins; the insects are determined one by one in the lab. A much more detailed picture of the occurrence of insects is obtained than with stick traps, but the method is too labor-intensive to use on a large scale.

With this trap on the Westeresch (Veele), Raymond Klaassen wants to investigate biodiversity at this location. Agriculture in East Groningen consists largely of monocultures of wheat, potatoes and beets. As an experiment, a larger variety of crops is grown on the Westeresch, such as buckwheat and field beans. In addition, sandy paths, flowery roadsides and "corners" (pieces of unattended land) have been created. The expectation is that the diversity of insects will increase again.



Exclosure Experiment 3

The Junner Koeland nature reserve is a stretch of floodplain near Ommen, enclosed by a river arm. Cattle and horses have been grazing for centuries, but traditionally there are also many rabbits. To investigate their influence on the diversity of plants, two types of fencing have been placed in the area: fences that exclude only cows and fences that exclude both cows and rabbits. This allows the influence of both types to be separated.

This oak has settled within a fence (exclosure) that since 1994 has excluded grazing by both species. Oaks are only established in places where rabbits are excluded, which shows that rabbits determine whether an area will eventually become forest or grassland. The bumps in the foreground are anthills of the yellow meadow ant, which also have a major influence on plant growth.

The research groups of Han Olff and Chris Smit map the functioning of the entire ecosystem of the area and compare this with the functioning of other grazed ecosystems in Europe and Africa.



Exclosure Experiment 2

Fences in the Junner Koeland nature reserve near Ommen. There are two types of fencing in the area: fences that exclude only cows and fences that exclude both cows and rabbits. The research groups of Han Olf and Chris Smit look at the functioning of the entire ecosystem of the Junner Koeland. By comparing this with, for example, other grazed areas, a good picture is created of how and why grazers often have a positive influence on the biodiversity of ecosystems.



Peter Harry Mulder

Portrait among the wheat. Mulder is an crop farmer in the neighborhood of Muntendam. He is a bird lover and therefore tries to make his farm "nature-inclusive" as much as possible. No pesticides, but natural vegetation around the fields, so that the insects in those natural areas keep the crops on the field lice-free. In turn, the insects and vegetation are good for the Quail, Linnets, Goldfinches and other farmland birds, including birds of prey such as the Montagu's Harrier. This creates a new ecological balance. Peter Harry Mulder works closely with researchers from the UG.



Green Line

A green strip on the land of arable farmer Peter Harry Mulder. Green strips are more common along the edges but rarely across the arable land. Mulder regularly experiments with test fields on his land to see how he can arrange the land as insect and bird friendly as possible. Successful farming, Mulder wants to show, benefits from biodiversity on, around and in the land.

His views are endorsed by UG professor of Spatial Economics Henk Folmer who strongly argues for nature-inclusive agriculture instead of the current predominant intensive agriculture.



Strips | film

Arable farmer Peter Harry Mulder does all sorts of experiments on his land to see how he can promote the biodiversity, and therefore the health of his soil and crops, as well as possible. This field is divided into strips with all kinds of crops side by side, completely different from the regular monoculture with large areas of only one crop, where the soil easily depletes.

There is also a lot of space for green areas that are attractive to insects and birds, creating a diverse and rich ecosystem. This classification requires more work and is less economically lucrative in the short term, but much more sustainable in the long term. Striking are the clearly visible dry spots, caused by the periods of great drought that have been causing problems in agriculture for two years in a row. Artificial watering is often impossible to do on these surfaces and also economically unprofitable. You just need more real rain.

At the bottom right is a circle in the grain at the beginning of the fragment. This comes from the placement of sticky traps by UG researcher Raymond Klaassen the day before. The UG is collaborating with Peter Harry Mulder to conduct research into the populations of different animals on his land.



Malaise Trap, Marker Wadden

A "Malaise Trap" (insect trap) on the Marker Wadden. The Han Olf research group wants to find out, among other things, which insects are the first to settle in this new nature reserve and what influence that has on the further development of the ecosystem.

An important question is the interaction between land and water. Many insects live in the water like larvae, but live on land and in the air as adults. The developments of the ecosystem on land and in the water are connected in this way. The research is a collaboration between Natuurmonumenten (Dutch organization for conservation of nature), UG, Radboud University and the Netherlands Institute for Ecological Research.



Marker Wadden

In 2016, at the initiative of Natuurmonumenten (Dutch organization for conservation of nature), the construction of the Marker Wadden, an island group in the Markermeer, started. The intention is to create a large nature and recreation area that has a positive influence on soil and water quality. During construction, sand, clay and sludge from the Markermeer are used to create spawning grounds, islands and natural shores. Endangered animals and plants profit from this.

Because it is a completely new type of nature reserve, it is also an interesting research location for scientists. Han Olf's group closely follows the ecological developments of this new ecosystem, in collaboration with Natuurmonumenten, Radboud University and the Netherlands Institute for Ecological Research.



Wadden Sea

The Wadden Sea near Uithuizen. Through the branched channel system, the water from the Wadden Sea runs up the tidal flats of the Groningen mainland coast every tide. Along this coast, the UG is conducting research into, for example, salt marshes, seagrass and soil animals. Mutual influencing is an important area of research.



Uithuizen

There are two types of Seagrass: large and small Seagrass. On the German and Danish flats, where there is still enough Seagrass, both species often grow mixed. It seems that the small seagrass helps the large variety by retaining water. Above Uithuizen, artificial Seagrass with the help of mats, mimics that situation. The fields resemble a square donut with a border of artificial Seagrass and a basin in the middle. Seagrass seeds have been sown therein. The test seems successful. The Seagrass recovery project is a collaboration between the UG, Natuurmonumenten and The Fieldwork Company .



Griend

To the south of Griend, researcher Laura Govers is conducting an experiment on a landscape scale (extended over 600 meters of mudflats) into the possibilities for, among other things, repairing tidal mussel beds. Here rows of crates of bioplastic, or biodegradable structures (BESE), are placed. They seem to work: the crates are not only green from the sea lettuce, but are also full of small mussels. The research is a collaborative project between Natuurmonumenten, the University of Groningen, Radboud University, NIOZ, Bureau Waardenburg and The Fieldwork Company.



dGPS

Seagrass is an important plant in the Wadden Sea and in similar shallow coastal seas around the world. The grass holds the soil, dampens the waves and offers food and protection for all kinds of animals. However, Seagrass has largely disappeared in the Dutch part of the Wadden Sea. Marine ecologist Laura Govers investigates how it can be restored, with the help of test set-ups and reintroduction around Griend.

Here she measures to the north of Griend, with a dGPS (differential global positioning system, a very accurate GPS system) how much sludge has caught the Seagrass. Researchers from the UG are also investigating the Seagrass fields of Banc d'Arguin in Mauritania, where the 'Dutch' wading birds spend a large part of the winter.



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