



**STIFTUNG
NATURSCHUTZ**
Schleswig-Holstein

Natürlich hier.



Marsh fritillary
Euphydryas aurinia

Saved!

LIFE-Aurinia success story.

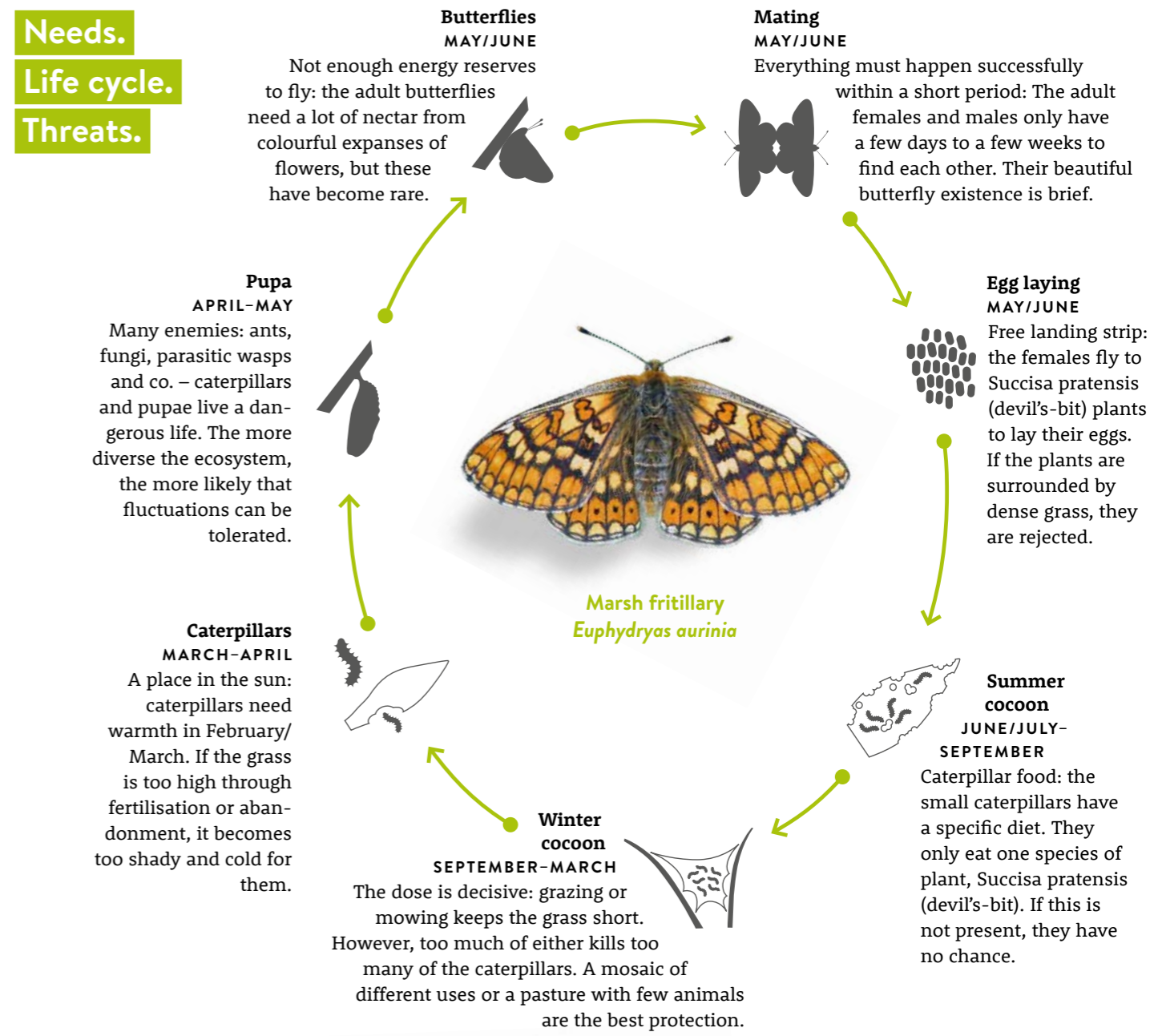


**Saving insects.
A project ahead of
its time.**

When the LIFE-Aurinia project was launched in 2010, the mass death of insects was far from everyone's lips. But the marsh fritillary – known by the scientific name *Euphydryas aurinia* – was already extinct in the north. What was once lost, is hard to regain. The project team led by Antje Walter and Detlef Kolligs still dared to try. This makes their project something special. Because no one has attempted anything of such magnitude here before.

70 years ago, they still existed in the north: colourful flowers in neglected grasslands, species-rich wetlands and brilliant heaths – and with the marsh fritillary at home there. Since then, humans have changed these habitats, more intensively fertilised, mowed and cultivated them. Over time, the butterfly found less and less food, and no longer the right places for laying eggs. It died out. Since the beginning of the 1990s, nobody has been able to locate the butterfly in Schleswig-Holstein. Its extinction is an

alarm signal, because the marsh fritillary is a so-called umbrella species. It represents many, many other species with similar habitat requirements. If the butterfly fails to thrive, this reveals a much bigger problem. Therefore, anyone who helps the marsh fritillary also helps hundreds of other species, many of which are at risk. This project demonstrates how much effort, and sometimes also pioneering spirit, is required.



LIFE-Aurinia project.

GOAL
Resettlement of an extinct butterfly in SH

PREQUISITE
Restore vulnerable habitats such as heaths, neglected grasslands and inland dunes, and make them hospitable to butterflies

TIMEFRAME
2010-2018

PHASE 1
Habitat restoration

PHASE 2
Butterfly resettlement

FINANCING
LIFE* programme "Nature & Biodiversity" (50% EU funding, 50% Stiftung Naturschutz Schleswig-Holstein)

CHALLENGE
Ambitious pilot project for butterflies on a scale never attempted before

Antje Walter, ...

...Detlef Kolligs and their team brought back the marsh fritillary.

*LIFE is the abbreviation for L'Instrument Financier pour l'Environnement, and is an EU funding programme devoted exclusively to environmental concerns.

Project phase 1.

Restore habitats.

The way to bring back the marsh fritillary is via neglected grasslands, heaths and a lot of flowers. What has been destroyed in our landscape for decades must first be restored. The team had four years to re-create colourful, flower-filled habitats. A massive achievement, with many challenges.

Caterpillar food: Purple blooming Succisa pratensis (devil's-bit).

1 CHALLENGE Preventing nutrient entry

Today, no area is left unfertilised. Even just from the air, a lot of nitrogen enters the soil, also in protected areas. Bad for the marsh fritillary, because it needs plants that grow in nutrient-poor locations. Simply stopping fertilisation is not sufficient to combat decades of over-fertilisation. Mowing or grazing are the "antidote". They withdraw nutrients, and at the same time ensure better starting conditions for many not-so-competitive species.

2 CHALLENGE Getting to grips with grass

Dense green meadows of grass grow where there are many nutrients in the soil. But where grass grows close together, it is cool and dark on the ground, and usually damp. Not a good climate for small caterpillars. And the butterflies also can't find what they need. Because fast-growing grasses displace nectar-rich flowering plants. The team therefore had to thin the grass with heavy equipment such as rotary hoes.

3 CHALLENGE Bringing flowers back into the landscape

Once the grass is defeated, the nectar producers required unfortunately often don't return without assistance. Many methods have been tested to reintroduce Succisa pratensis (devil's-bit), viper's grass, arnica and the like: collection of seeds, specially developed seed mixtures, cultivation of plants by nurseries, and the transfer of cuttings from colourful, flower-filled donor areas. This works particularly well on empty ground. A weed has also helped: the rattleweed exploits grasses, and draws water and nutrients from their roots, which creates space for flowers. Succisa pratensis (devil's-bit) was sown and planted in huge numbers. Here, it is the only plant the caterpillars can eat.

4 CHALLENGE Providing light

If areas are left to themselves, small bushes and trees sprout quickly. The sunny, warm butterfly meadow gradually becomes a shady forest. On the foundation land, this is prevented by hungry grazers. But even they can't combat resilient blackberries, hawthorn and fast-growing birches. Goats have a big appetite for woody plants, and will also bite their way through thorns. So the largest herd of goats in northern Germany helped the cause of the marsh fritillary. In very tough cases, helping hands cleared blackberries, birches and the like with spades. The really heavy work was done using a digger.

Milestones: Habitat improvement.

- 2010 Start of the project
- 2011 Experts assess all areas
- 2011 Habitat improvement starts
- 2011 First application of mowed material
- 2011 Propagation of Succisa pratensis (devil's-bit) begins
- 2011 120 volunteers eliminate woody plants
- 2012 Grazing by goats starts
- 2012 Caterpillar tractor mows wetlands
- 2012 Converting forest back to heath
- 2013 Restoring natural water levels
- 2014 Heath: rejuvenation and creation
- 2014 Expansion of goat grazing
- 2014 Doubling to 14 project areas
- 2014 Rewetting
- 2014 Record: planting 45,000 Succisa pratensis (devil's-bit)
- 2014 Seed harvesting/sowing
- 2015 Start of "heath meadow"
- 2015 Sowing arnica
- 2016 Rich harvest of rattleweed seed
- 2017 Successful breeding of viper's grass

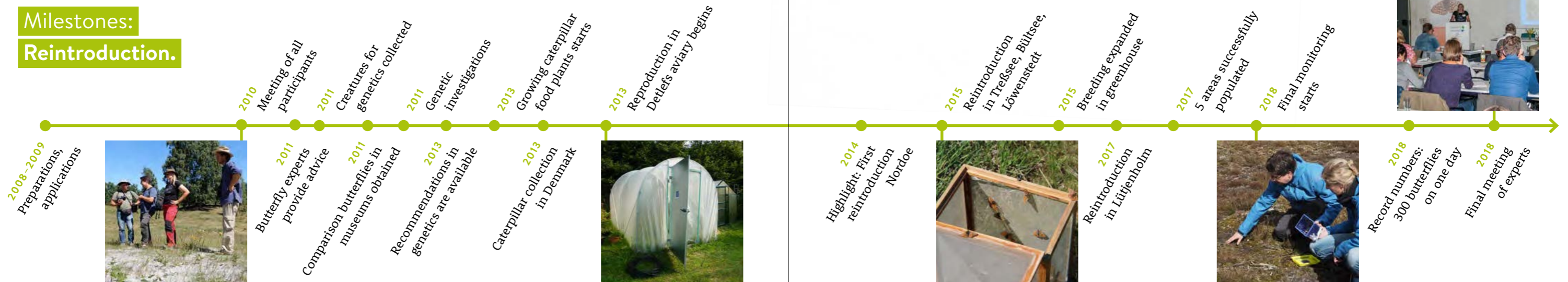


Project phase 2.

Bring back the butterfly.

Just releasing a handful of butterflies into the wild rarely works. Many, many creatures are required for reintroduction, because the losses in nature are high. And the more butterflies involved in the breeding, the higher their genetic diversity overall. But where should lots and lots of the rare butterfly be taken from?

Milestones: Reintroduction.



1

CHALLENGE Three become thousands

When insects lay eggs, only a fraction of them and the caterpillars develop further. Thus, unlike with the wildcat, lynx and co., it is necessary to resettle thousands, in order to compensate for the losses. But numerous butterflies cannot be removed from their environment, because each individual creature is protected and valuable. The solution was an own breeding programme. A huge "pupa nursery" was created in butterfly expert Detlef's garden, where the team was able to breed the butterfly without the losses usually sustained in nature.



2

CHALLENGE A butterfly aurora please!

Creatures may only be reintroduced if they are closely genetically related to the extinct ones. The project team therefore investigated butterfly stocks from Denmark, Poland and Latvia, to find suitable donor populations. Historical butterflies from collections and museums served as a comparison. Butterflies from Skagen in Denmark were the closest relatives of the extinct northern population. These creatures are better adapted to our northern German environment than butterflies from further afield. The butterfly also passes on this adaptation to its offspring.



3

CHALLENGE The mix is the key

If we only take a few creatures, and want to produce a large number of butterflies, we must also make sure that the breeding specimens are not too closely related to each other. The more individuals that can be taken to set up a breeding programme, the better. But how many creatures do we need in order to be sure? This difficult question was discussed and calculated with experts. Ultimately, 600 caterpillars were collected from different areas in Skagen, spread over two years.



4

CHALLENGE Masses of butterflies

Until then, the large-scale breeding of butterflies was untested, so there were no "off the shelf" solutions. The closest accommodation in an aviary quickly became too small. But a normal greenhouse would be too warm. The solution: a greenhouse covered with netting. The caterpillars thrived here so much that food supplies became scarce. So *Succisa pratensis* (devil's-bit) was grown especially for us in a nursery.

The butterfly is back!

A project with many

success stories.

It's flying again in five project areas and is reproducing rapidly! The marsh fritillary is back in the north. The path to reintroduction has taken many years. Along the way, many successes were achieved, not only for the butterfly.



Well informed.

During lectures, guided tours and festivals, we have informed 4,000 interested citizens and approximately 3,000 experts about our work.



356 copies of fun reading were published in many different forms, both print as well as digital, on the topic of LIFE-Aurinia. A project diary always published the latest updates promptly.



100,000 x Caterpillar food.

Without the purple blooming Succisa pratensis (devil's-bit), the caterpillars starve. We planted 100,000 plants.



We received fantastic support from volunteers for many campaigns, for example with planting. Almost **500** helping hands joined in.



1,300 butterflies were released into the wild altogether.



A total of **100,000** caterpillars were allowed to crawl to their freedom by Antje and Detlef.



16,000 yellow beauties planted.

The marsh fritillary cannot satisfy its hunger with just any plant. As its nectar plants arnica and viper's grass are almost extinct, we reintroduced them to former locations.



The **biggest goat herd** in northern Germany helped the marsh fritillary by grazing.



Rarities benefit.

The marsh fritillary is an indicator of especially intact habitats. If it thrives, many other species will also benefit. 30 diurnal butterfly species alone were assisted by the project, twelve of which are on the red list. They include rarities such as the purple-edged copper butterfly and the niobe fritillary.



Record numbers.

After reintroduction, 300 butterflies were counted in Gelting in just one day. In Reesholm, 300 cocoons were also identified on just one day.



Not only the butterflies were delighted. **120** regional companies also received work from the project.



Know-how and experience were passed on in around 170 events.



Fun folding: in our **design competition**, students created an object to make yourself.

Experience the butterfly.

Hiking in the project area.

The project areas are not only new habitats for the marsh fritillary, they are also beautiful places to visit. From a quick stop to a day trip, you can spend as long as you like. Antje and Detlef have selected their four favourites. With a little luck, those who come at the end of May can now see the marsh fritillary again themselves.

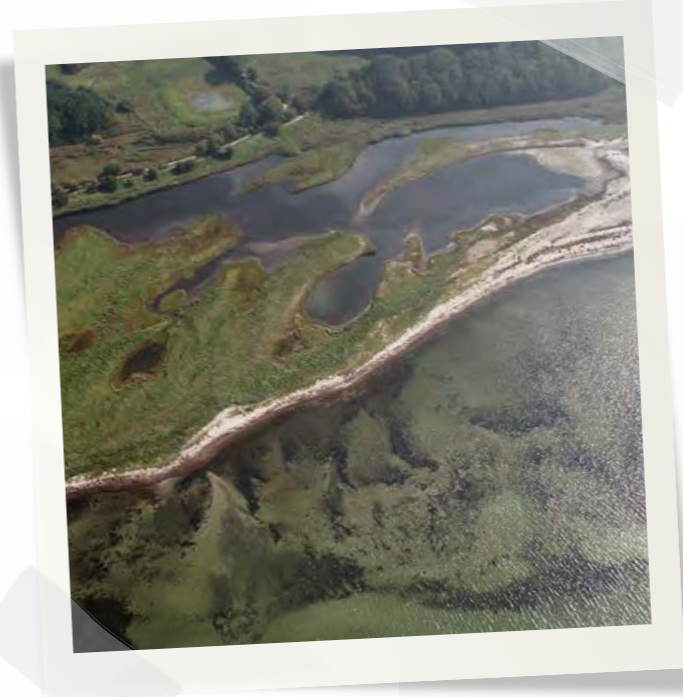
 **LÜTJENHOLM**
Purple late summer experience

In August and September, you can experience the heath blossoms here like you could in the past. Around 90 years ago, people began to make greater use of the nutrient-poor landscapes of Nordfriesland: heaths were turned into arable land, and inland dunes to spruce forests. During our project, the spruce were harvested, the acidic needles removed, and heath seeds sown. Today, in late summer a purple heath carpet covers the hilltops. In the low-lying areas there are small moors with peat mosses and cotton grass. And of course, the marsh fritillary is once again flitting across the countryside.



 **NORDOE**
Former tank desert

Until a few decades ago, the inland dunes of Nordoe were still reserved for the military. Those who follow the trail of the marsh fritillary through Schleswig-Holstein today, find its last location here. When the military withdrew, pines and birches grew very quickly. During the LIFE project, the treasures were kissed back to life again: the woody plants were removed by hand, by digger and by goats, creating plenty of space once again for flower-filled meadows. Today, you can marvel at the expanses of sown arnica. *Succisa pratensis* (devil's-bit) blooms almost everywhere and offers the marsh fritillary food. Further endangered species can be admired on guided tours through the inland dunes.



 **GELTINGER BIRK**
Natural treasure by the sea

The foundation land at Geltinger Birk is one of the most beautiful areas of Schleswig-Holstein. The nature reserve extends picturesquely as a peninsula into the Flensburg Fjord, and is worth a visit on its own. After the spreading birch trees were pushed back during the project, and the water balance improved in some areas, the marsh fritillary is once again on the rise – perhaps even the most successfully here of all areas. Those who don't encounter the marsh fritillary can see more than 200 bird species over the course of the year, observe the wild horses, or simply enjoy the view to Denmark.



 **TRESSEE**
Hiking in a sea of flowers

The areas around the Trefsee have undergone a huge transformation. They offer a great variety of landscapes, from dry dune crests to wet low-lying areas. Where previously there were few species and it was boring, there is now a sea of colour: maiden pink, thyme, knapweed and woundwort were transferred here as cuttings from donor areas. And bird fans also get their share. By restoring the natural water balance, redshank, lapwing, spoonbill and gadwall all feel at home in the numerous small ponds and lakes.

More about the project areas and their special features at:
www.stiftungsland.de

We are the Stiftung Naturschutz.



The Stiftung Naturschutz Schleswig-Holstein (conservation foundation) offers animals and plants a natural and important habitat. Our goal is to enable nature conservation and biodiversity in Schleswig-Holstein in the best possible way, and provide a home for nature.

This is what we stand for, in accordance with our motto: Naturally here!

Naturally helping.

Would you like to protect diversity and do something good, right on your own doorstep? We will gladly use your donation to protect nature in Schleswig-Holstein.

Donations account

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Thank you!

A project is only as successful as the cooperation between everyone involved. Therefore, we would like to thank all our partners from public authorities, NGOs, the numerous experts and many dedicated people locally.

Photo credits

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