

Heath Helpers on the Hoof

The LIFE-Nature project Cuxhaven Coastal Heaths

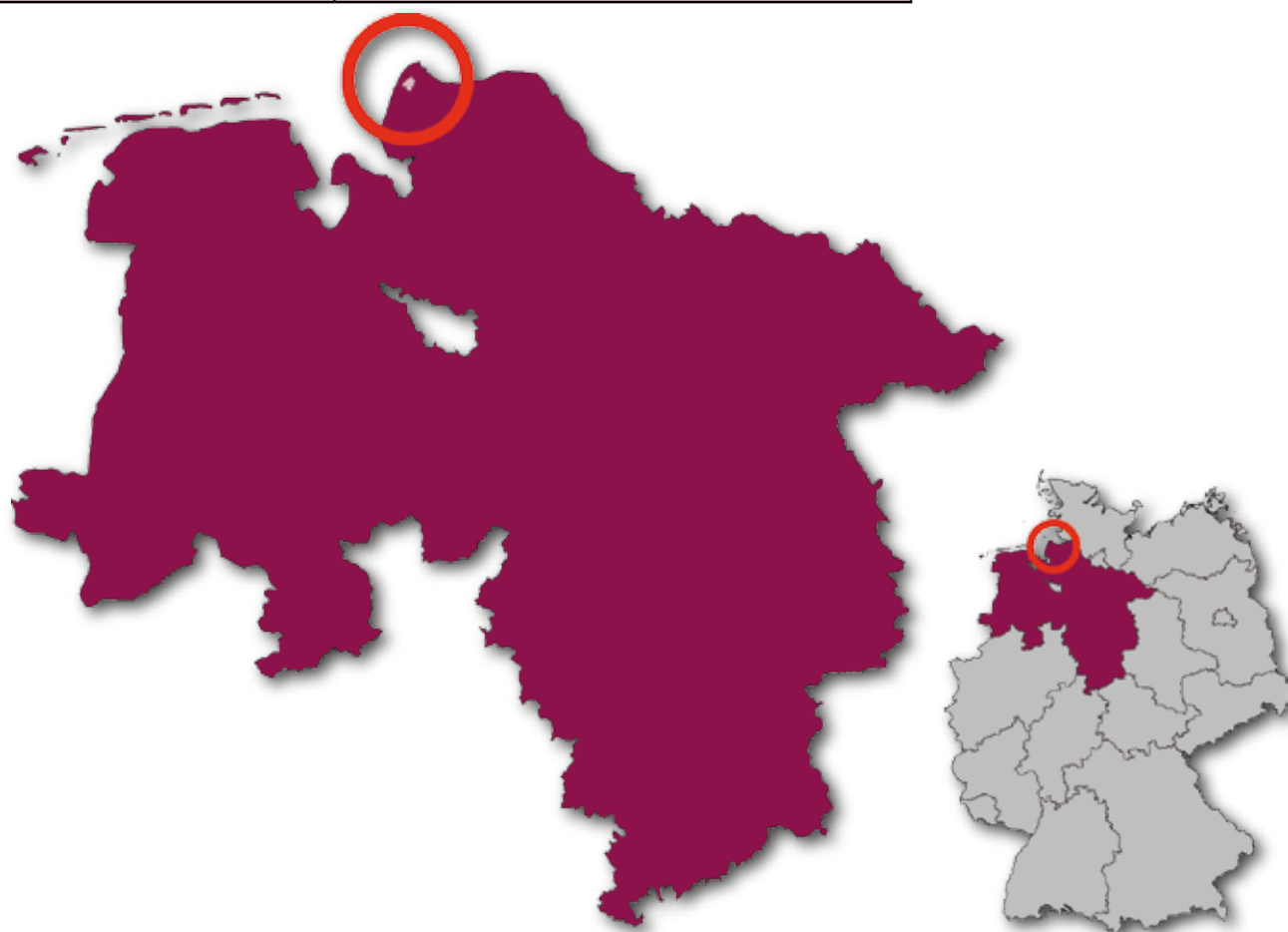
Wisent • Wild Horse • Heck Cattle



The Data

Cuxhaven Coastal Heaths – Overview of the LIFE-Nature Area

Location	North Sea coast between Elbe and Weser Federal Republic of Germany State of Lower Saxony District of Cuxhaven City of Cuxhaven
Size	580 hectares, including 420 hectares open land, 160 hectares forest (the entire NATURA 2000 area is 954 hectares)
Ownership	DBU Naturerbe GmbH (until 2009: Federal Republic of Germany)
Uses	Forest depredation beginning in the middle ages Heath and grazing landwood harvesting in historic "Krattwald" forests Reforestation during the 20th century Military training ground until 2003 Tourism and nature protection since 2004 Restoration of heath by large herbivores since 2006
Landscape and Nature	Hilly landscape (max. elevation 30 m) with about 60 percent open heath and dry meadows and 27 percent woodland. In addition, moors and nutrient-poor small ponds. 9 broad habitat types according to the Habitats Directive on nearly 400 hectares. In total about 70 habitat types. Fauna: 150 endangered animal species, among them the large white-faced darter (a keystone species according to the Habitats Directive), horseshoe shrimp (Triops), sand lizard, moor frog, European night jar, red-backed shrike. 73 species of breeding birds and 88 species of transitory birds, 10 species of amphibians und reptiles, 26 dragonfly species, around 100 species of ground beetles, and 400 butterfly species. Flora: Largest population of crowberry (Empetrum nigrum) on the German mainland. At least 189 plant species, among them marsh gentian, three species of sundew, and petty whin.
Nature protection	Part of a designated NATURA 2000 area according to the Habitats Directive (954 hectares, since 2004); part of the nature protection area "Cuxhaven Coastal Heaths" (892 hectares, since 2004); LIFE-Nature project "Large Herbivores for Maintenance and Conservation of Coastal Heaths" 2005 until 2009.





The **NATURA 2000** program enables the EU and its member states to create a network of Europe's most ecologically valuable and threatened habitats and species, assuring long-term survival and protection for future generations.

The basis for the NATURA 2000 nature protection network is the EU's Habitats and Birds Directives. The Habitats Directive, created in 1992, is primarily aimed at preserving biological diversity. The Bird Directive, dating back to 1979, was created to assure the long-term protection of all wild bird populations and their habitats.

The EU member states are obligated to both protect from decline areas with species and habitats of European-wide concern and to further their ecological development. Accordingly, 892 hectares of the Cuxhaven Coastal Heaths were designated as a German conservation area in 2004.

The German network of Natura 2000 areas includes 5263 sites, encompassing about 15.3 percent of the land area and 41 percent of the ocean surface (based on late 2008 data). To support the member states in setting up the network of NATURA 2000 areas, the European Union created the **LIFE** financial instrument (L'Instrument Financier pour L'Environnement), which co-finance the Cuxhaven Coastal Heaths.

http://ec.europa.eu/environment/nature/index_en.htm
http://www.bfn.de/0316_natura2000.html



Heck cattle



Crowberry

Current Situation

The Cuxhaven Coastal Heaths – A Manmade Paradise

The Cuxhaven Coastal Heaths is an area of natural heritage not only unique to Germany, but one having European-wide significance. The wide open landscape characterized by moraines is located only a few kilometres inland from the North Sea coastal cliff. Over the past centuries, a rich mosaic of around 70 different biotopes has developed on the 10 square kilometre area: it includes natural jewels such as crooked "Krattwald" forests shaped by ocean breezes, or the largest population of crowberries on the German mainland. The area also harbours highly specialized fauna, such as darter, moor frog and red-backed shrike. In total, biologists have documented that the coastal heaths support around 80 plant species and 150 animal species that are listed as endangered.

Nonetheless, this landscape is undeniably a paradise shaped by man. The coastal heaths only developed with the medieval practice of intensive forest cutting, and, up until 2003, the area had been widely used for more than a century as a military training ground. After the German military stopped operations there, it became a special conservation challenge to maintain the area's treeless character.

Since 2006, wild horses, wisents and aurochs have been making sure the heaths won't turn into forests again – naturally and cost efficiently. These large grazers are the top actors in the LIFE-Nature project "Large Herbivores for Maintaining and Preserving the Coastal Heaths" (2005-2009), initiated by the State of Lower Saxony. In 2004, the European Union gave 954 hectares of the Cuxhaven Coastal Heaths the NATURA 2000 status, a designation that acknowledges their special value and the need to protect them. The LIFE-Nature project encompasses about half of this area.

Conservation and recreational use can certainly coexist on the coastal heath lands: hiking, cycling and riding trails along with an observation platform, a self-guided nature trail and informational displays invite visitors to explore and enjoy this unique natural environment.



Military training ground Altenwalde (until 2003)

The Project

The Project

Cooperation and Public Awareness
as Basic Principles



Two fundamental goals characterize the LIFE-Nature project to conserve the Cuxhaven Coastal Heaths:

- Protection of the coastal heaths and forests (Krattwälder – low, scraggly forests resulting from historical uses) as part of the European-wide ecological network of NATURA 2000 sites
- Cost efficient conservation of the area according to the EU Habitats Directive.

The basic underlying assumption is that large herbivores can maintain this unique landscape consisting of heath land, dry meadows and forests in a natural and cost-effective way.

To accomplish these goals, close cooperation was established at an early stage between the project manager (State of Lower Saxony), the land owner (the federal government, represented by the Federal Real Estate Agency, BfMA), planning agencies, and the City of Cuxhaven, the authority responsible for local environmental protection.

To guarantee the successful implementation of the LIFE-Nature project, the partners also called on the expertise and experience of ten other German projects that use grazing as a part of their management practice, as well as nature conservation organisations and the veterinary authority for the district of Cuxhaven.

The project was managed by the Lüneburg office of the Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency (NLWKN), working closely with the BfMA's Federal Forest Service office in Wense. By launching a media campaign to inform the public early on, the project partners were able to generate a high level of interest and acceptance among local residents for the LIFE-Nature project and for protection of the Cuxhaven Coastal Heaths.

The project ran from January 1, 2005 until September 30, 2009, during which a total of 928,996 euros were available, half of which was provided by LIFE-Nature, the EU's financial instrument to fund natural and environmental projects.



Konik

Measures and goals for the LIFE-Nature project Cuxhaven Coastal Heaths

- Preservation of the unique, wide open coastal heaths with the help of aurochs (Heck cattle) and wild horses (koniks) on a total of 300 hectares and using wisents on an additional 45 hectares.
- Additional pasturing of the wisent herd in parts of the forest to combat black cherry.
- Development and protection of near-natural deciduous forests (including "Krattwald") and near-natural forest transition areas.
- Prevention of shrub invasion (particularly black cherry) on non-pastured areas through mechanical means (Entkusselung).
- Development and protection of small bodies of nutrient-poor water as habitats for endangered species, such as dragonflies and amphibians.
- Enable the experience of nature, recreational use and education for the public.

Project name	Large Herbivores for Maintenance and Conservation of Coastal Heaths (LIFE05 NAT/D/000051)
Project management	State of Lower Saxony (Ministry for Environment and Climate Protection)
Project partners	Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency (NLWKN, Lüneburg office) - project management Bundesanstalt für Immobilienaufgaben (BfMA = Federal Real Estate Agency)
Project budget	€ 928,996
Project financing	EU LIFE-Nature: € 464,498 State of Lower Saxony: € 435,698 Federal Republic of Germany: € 28,800
Project duration	October 1st, 2005 through September 30th, 2009
Project area	580 hectares

Project measures

Situation: The Cuxhaven Coastal Heaths NATURA 2000 site is characterized by wide open heath and dry meadow areas, a condition that, until 2003, was maintained by the military's use of it as a tank military training ground. Without constant maintenance, these areas would revert to forest within a few years. Rare species and habitats typical of the open landscape, and which are granted special protection under the EU Habitats Directive, wouldn't be able to survive there anymore. Special attention must be given to the unwanted and massive spread of black cherry, an invasive tree imported from North America.

Project goal: Large herbivores - namely konik horses (wild horses), Heck cattle (aurochs) and wisent (European bison) - will be utilized to maintain the open landscape and forest edges within the LIFE-Nature project area in a cost-effective and natural way that can coexist with recreational uses. The variations in size, ecology and behaviour of these three species reflect the mosaic of different habitats within the project area.

Project measures: In early 2007, 25 Heck cattle and 10 konik horses were initially introduced to the LIFE-Nature project area. They graze together on three separable pastures encompassing a total of 296 hectares. The pastures are fenced in with 13 kilometres of electric cattle fencing operated in part by solar energy. A network of trails with self-closing gates allows hikers and horseback riders to cross the area safely. Pumps for the cattle's water supply lift ground water from designated wells and are also operated with solar power. Since December 2007, five wisents (one bull and four cows) graze on a 45 hectare area that transitions from open landscape to forest. A local farmer is entrusted with the care of the animals.

Successes and findings: Even before the end of the project period, the success of the grazing project became evident. Comparison to aerial photographs taken before the large grazers were present clearly indicates that the much anticipated spread of new tree growth has been kept in check. The Heck cattle and konik horses have damaged most of the encroaching hard woods through browsing and "comfort behaviour", such as chafing and rubbing their horns against the stems. Only thorny plants, like hawthorn, and soft woods, like European black pine, have escaped the grazers' attentions. The wisents, too, have been successful in reducing the spread of black cherry, which they do by peeling the bark and thus causing the trees to die.

A measure of the success of the species appropriate animal husbandry may be indicated by the fact that koniks, Heck cattle and wisents have already had many offspring on the heath lands.

Species	2006	2007	2008	2009
Skylark	115	145	101	101
Tree pipit	90	109	84	70
Yellowhammer	55	35	27	36
Common whitethroat	19	26	8	12
Stonechat	8	15	14	18
Woodlark	5	7	10	7
Red-backed shrike	3	4	4	8
European night jar	1-2	1-3	2	4
Northern wheatear	-	-	1	1
Whinchat	-	2	1	2

Number of territorial pairs of characteristic bird species of open lands within the LIFE project area "Cuxhaven Coastal Heaths" (approximately 420 hectares). Some of the species, such as the endangered stonechat and woodlark, exhibited a distinct population increase.

Heath Helpers on the Hoof Wild horse, wisent and Heck cattle preserve the landscape



Konik (Polish: little horse) is the name of an Eastern European horse breed related to the extinct tarpan (European wild horse). Koniks are very robust and can spend the entire year out in the open. In addition, they are well suited for the Cuxhaven Coastal Heaths and its many visitors because of their friendly temperament. The first ten of the now 23 koniks within the LIFE-Nature project area were provided by a breeder in Groningen, Netherlands.



Heck cattle are a type based on a breeding program in the 1920s by the brothers and zoo directors Lutz und Heinz Heck. These robust cattle resemble the now extinct aurochs, the ancestor of our modern house cattle, but are noticeably smaller. Heck cattle are winter hardy and have been successfully used in landscape maintenance. They use their horns to bend down and browse on tree limbs, thus preventing the reforestation of the coastal heaths. The initial 25 of the now 63 animals within the LIFE-Nature project area came from breeders in East Frisia, the Biosphere Reserve Mittlere Elbe (Saxony-Anhalt) and from the Lippeaue (North Rhine-Westphalia).



Wisents (Bison bonasus) were once part of the central European landscape, but have been extinct in the wild since the 1920s. Breeders succeeded in restoring the population from only a dozen animals in captivity to 3500 animals worldwide. The LIFE-Nature project therefore also helps to ensure the survival of the species. The first five animals for the Cuxhaven Coastal Heaths came from the Wildpark Lüneburger Heide and the Wisentgehege Farchau in the Naturpark Lauenburgische Seen. Wisents prefer a landscape mosaic of forest and open grass land. Their task within the coastal heaths is mainly to reduce the spread of black cherry and to provide visitors with a special "wilderness" experience.



Woodlark



Red-backed shrike



Stonechat

Project measures

Excavator versus Black Cherry

Clearing supports the herbivores' work

Situation: Until the German military vacated the training ground Altenwalde in 2003, they maintained valuable heath lands and dry meadows, thus helping the open landscape of the coastal heaths to survive. Today, wisents, Heck cattle and konik horses have largely taken over this job. Even before the LIFE-Nature project got started, dense thickets had developed along the forest edges and on heath areas outside and inside the pastures which are still encroaching on the open heath lands. Among the shrubs in these thickets are European black pine (*Pinus nigra*) and, most seriously, black cherry (*Prunus serotina*).

Project goal: Dense growth of black cherry and European black pine on heath lands currently closed to the large herbivores are to be cleared through mechanical means (Entkusseln). The development of native trees within the "Krattwald" forests is to be left undisturbed. The large stands of crowberry are apparently able to protect themselves from competing species due to their dense natural growth habit.

Project measures: The cost-intensive mechanical removal of unwanted trees and shrubs was carried out according to a priority list which reflects the ecological value of each biotope (habitat types according to the Habitats Directive). Highest priority for black cherry clearing was given to areas with endangered plant species as well as areas in which the trees had already gained dominance and become well developed.

The pastures initially received only the most urgent treatment, such as clearing large seed producing specimens of black cherry. Since this species tends to send up root sprouts, the trees had to be pulled out by excavator. Dense stands of black pine were made victims of the chain saw. Areas outside the pastures and close to the forests were also cleared of black cherry by means of an excavator.

Successes and findings: While clearing heath land close to the forest edges, it proved beneficial to preserve individual older specimens of black pine as songbird perches and habitats for sand lizards. These also help to smooth the transition from forest to heath land. All in all, the removal of unwanted trees and shrubs has already contributed visibly to the success of the LIFE-Nature project, as further invasion of the heath lands with trees and shrubs has been largely stopped. Analysis of aerial photographs and field surveys will show how effective the mechanical removal of the trees has been.



Uprooting the black cherry



Black cherry ...



... and its fruit

Black Cherry

The black cherry (*Prunus serotina*) is native to North America and was imported to Europe in the 17th century as an ornamental shrub and forest tree. Today, the plant is classified as a persistent neophyte (newly resident plant), that forms dense thickets and thus inhibits the natural rejuvenation of other forest trees.

Common adder



Northern wheatear

Rock piles for the Northern Wheatear

The Northern wheatear, an endangered song bird in Lower Saxony, can still be regularly – if rarely – seen in the Cuxhaven Coastal Heaths. For its benefit, and for other bird species of the open landscape as well, ten piles of natural rock have been built within the LIFE-Nature area. This relatively simple method provides potential breeding sites for the wheatear. In addition, the rock piles are a popular habitat with snakes and lizards. The common adder and the sand lizard, both residents of the Cuxhaven Coastal Heaths and protected species under the EU's Habitats Directive, can benefit from these new micro-habitats.

Project measures

Situation: Ponds or small, shallow bodies of standing water are rare biotopes in the sandy environment of the Cuxhaven Coastal Heaths. Yet they are home to a host of specialized and endangered species. The reason: these pools are nutrient-poor, are exposed to extreme temperature changes, can partially dry out during the summer and freeze completely in hard winters. No fish can survive in this environment. "Habitats" species, such as the large white-faced darter (*Leucorrhinia pectoralis*) and the moor frog (*Rana arvalis*), on the other hand, use these ponds for reproduction. Due to its use by the military until 2003, a number of these ponds were created within the LIFE-Nature project area as a result of weapons detonations and soil compaction from tanks.

Project goal: Small, shallow bodies of water are endangered by siltation over time. As part of the LIFE-Nature project, the existing ponds are to be protected as biotopes for highly specialized, endangered species and new ponds are to be developed.

Project measures: In 2006, five new ponds were created and an additional two were restored to serve as habitats within the LIFE-Nature project area. Site selection was determined by existing populations of protected vegetation. Pond development is being documented through 2009.

Successes and findings: Almost all ponds within the project area show an increase of typical and endangered plant and animal species (see tables). The large white-faced darter, a "Habitats Directive" species, was again documented within the project area in 2008, after having been classified as missing in the area since 1997.

As was expected, after the initial habitat reconstruction the development of the vegetation and, therefore, the amphibian populations as well, was slow. The moor frog, for example, prefers certain water plants for spawning that didn't reappear until some time after the pond restorations. The extremely dry springs of 2007 and 2009 also had a negative effect on the development of the ponds' environments.

Number of characteristic and endangered **vascular plant species** near selected ponds within the Cuxhaven Coastal Heaths project

Pond	2007	2008	2009
Holter Steertmoor neu	6	12	13
Wisentgehege Mitte Ost	6	11	10
Wisentgehege Mitte West	7	8	7
Nierentümpel	10	11	7
Binsensumpf	14	13	No data available yet
Übungshäuser Nord neu	8	12	5
Altenwalder Moorschlatt	6	12	11

Number of **dragonfly species** near selected ponds within the Cuxhaven Coastal Heaths project

Pond	2007	2008	2009
Holter Steertmoor neu	4	12	13
Wisentgehege Mitte Ost	1	0	7
Wisentgehege Mitte West	6	12	15
Nierentümpel	1	5	4
Binsensumpf	6	19	18
Übungshäuser Nord neu	5	6	9
Altenwalder Moorschlatt	2	7	6

The grazing of the Heck cattle and konik horses had a positive effect on existing ponds with surrounding tall willow thickets, as the animals' activity allowed sunlight to continue reaching the water. Other, more sensitive bodies of water remain taboo for the animals.

Small Bodies of Water

First Success for the Heath's Oases



Bogbean



Moor frog



Horseshoe Shrimp

Large white-faced darter

Project Measures



Black woodpecker



"Krattwald" Forests

The so-called "Krattwald" is a special feature of the Cuxhaven Coastal Heaths. These are small oak copses, in which, over time, people have continuously cut back the trees to harvest small diameter stems for building and heating purposes. As a result, the trees often have multiple stems and exhibit a crooked, stunted growth habit. Close to the sea, the trees are often formed into bizarre shapes by the wind. Conserving these special oak copses is an important goal of the project.

Forest restoration . . . Mixed hardwood forest instead of softwood monoculture

Situation: About 27 percent of the 580 hectare Cuxhaven Coastal Heaths LIFE-Nature project area is forested, or almost 160 hectares. Of that forest, 80 percent consists of non-native conifers planted in the 20th century. European black pine, Japanese larch and Sitka spruce are the predominant species.

Project goal: Using techniques of woodland management, about 80 hectares of the softwood monoculture, which is vulnerable to storm damage, pest infestation and fire, are to be replaced with mixed hardwood forest, which is more indigenous and better adapted to the site. The main focus will be on the cultivation of oak and beech forests - two particularly protected forest types under the EU Habitats Directive.

Project measures: Forest restoration was started 2007/2008 in the central area (Burgwall) and along two peripheral areas within the project. Foresters began by thinning the dense conifer stands to create sufficient light on the forest floor to plant oak and beech saplings. In total, 52,100 trees were planted in the spring of 2008, mostly European beech (*Fagus sylvatica*) and English oak (*Quercus robur*). Additional trees and shrubs, such as blackthorn, glossy buckthorn, hazel and blackberry, were also planted to create a varied forest edge as a transition to the open heath lands. They provide valuable habitat for a number of birds, insects and other invertebrates.

Successes and findings: By nature, forest restoration is a long-term process. The process is being managed by foresters from the Federal Real Estate Agency (BImA). The income that was generated from the sale of wood harvested during the restoration process was donated to the Cuxhaven Coastal Heaths LIFE-Nature-project.



Forest restoration: young oaks are replacing conifers



Wood anemone

Project Measures



Information panel

Experiencing Nature

The LIFE project as a good neighbour

Whether to study the bush crickets of the heath on a school outing, listen to the mysterious call of the nighthawk on a summer evening, or simply to enjoy the wide open landscape, the Cuxhaven Coastal Heaths and the LIFE-Nature project area make a worthwhile destination that welcomes guests year round.

Hiking trails and observation platform: A network of trails allows hikers, bicyclists and horseback riders to watch herds of Heck cattle, wild horses and wisents on their large, fenced in pastures, giving a close-to-wilderness experience. Since 2008, visitors can also get a good overview from the "Wilhelm Lemke Observation Tower".

Nature Trail: The three kilometre Holter Heide nature trail opened in July, 2009, and offers a new possibility to explore the coastal heaths in a more active way. Kids, too, are invited to learn more about the area at nine special stations.

Informational Map: A pocket flyer provides visitors with a large map of the coastal heaths, including important way-points, a brief description of the area and interesting facts about the LIFE-Nature project. The first 4000 flyers were out of stock by spring 2009; 10,000 updated flyers have now been printed, including an English version.

Informational stations: In May, 2009, 22 large information displays were set up to educate visitors about the landscape, its flora and fauna and the history of the unique ecosystem of the coastal heaths.

Informational events: Through a variety of guided tours and presentations, the project partners were able to engage people of all ages in the LIFE-Nature project. The spectrum of visitors included everyone from kindergarten and school groups up to international university delegations.

Internet: Want to know where the Heck cattle and wild horses are currently grazing, or if the wisents have any new offspring? Interested visitors can get the latest news and information about the LIFE-Nature project online (www.life-kuestenheiden.niedersachsen.de).

Press relations: Between 2005 and 2008, 18 press releases were sent by the NLWKN project management to local, regional and national media. The combination of conservation issues with opportunities to experience nature in the LIFE-Nature project generated a very positive response from the press.



Young nature explorers



Observation platform



Along the Holter Heide nature trail



Information brochure

You can order our free information brochure with tips, tours and more information on the project "Large Herbivores for Maintenance and Conservation of Coastal Heaths".



Wisent

The project continues . . .

After the conclusion of the Cuxhaven Coastal Heaths LIFE-Nature project



The LIFE-Nature project was the first successful step in turning the open landscape of the former military training grounds into valuable habitat for rare animal and plant species. Wisents, Heck cattle and konik horses played a major role in its success.

The initial achievements of the project, from 2005 to 2009, were:

- Habitat management on the coastal heaths using large grazing animals (mega herbivores) was successfully demonstrated. The animals succeeded especially in stopping the spread of the black cherry, "enemy of the heaths and dry meadows".
- Even though the initial costs are higher, the operating expense of pasturing wisents, Heck cattle and konik horses are lower than with more traditional heath grazers, such as sheep or goats.
- From the start of the project, wisent, Heck cattle and konik horses have generated offspring on the coastal heaths. The running costs for animal care, as well as for maintenance of fencing and other related installations, can be partially recouped from the sale of animals or meat.

Experts believe that at least another five years of pasturing practice is needed in order to make scientifically significant conclusions about the use of large herbivores on heath lands and dry meadows to prevent the growth of ecologically unwanted trees and shrubs. Further monitoring during this time will show whether wisents, Heck cattle and konik horses can guarantee a sustainable landscape management system and whether these practices can be transferred to other open landscapes in Central Europe.

A follow up "AfterLIFE Maintenance Plan" will determine how the sustainable protection of the "Krattwald" forests and coastal heaths can be continued into the future. To achieve this goal, several institutions will closely cooperate, namely the DBU-Naturerbe GmbH of the Deutsche Bundesstiftung Umwelt, the land owner, the city of Cuxhaven, the responsible environmental protection agency, and the Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency (NLWKN).

Wisent im Winter

Information

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This site offers up to date information on the animals' location.

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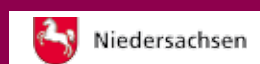
Mazarine Blue



Arnica



Sand lizard



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