

Coastal management case study:

# Coastal realignment and lagoon restoration - Geltinger Birk

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# Geltinger Birk: The location

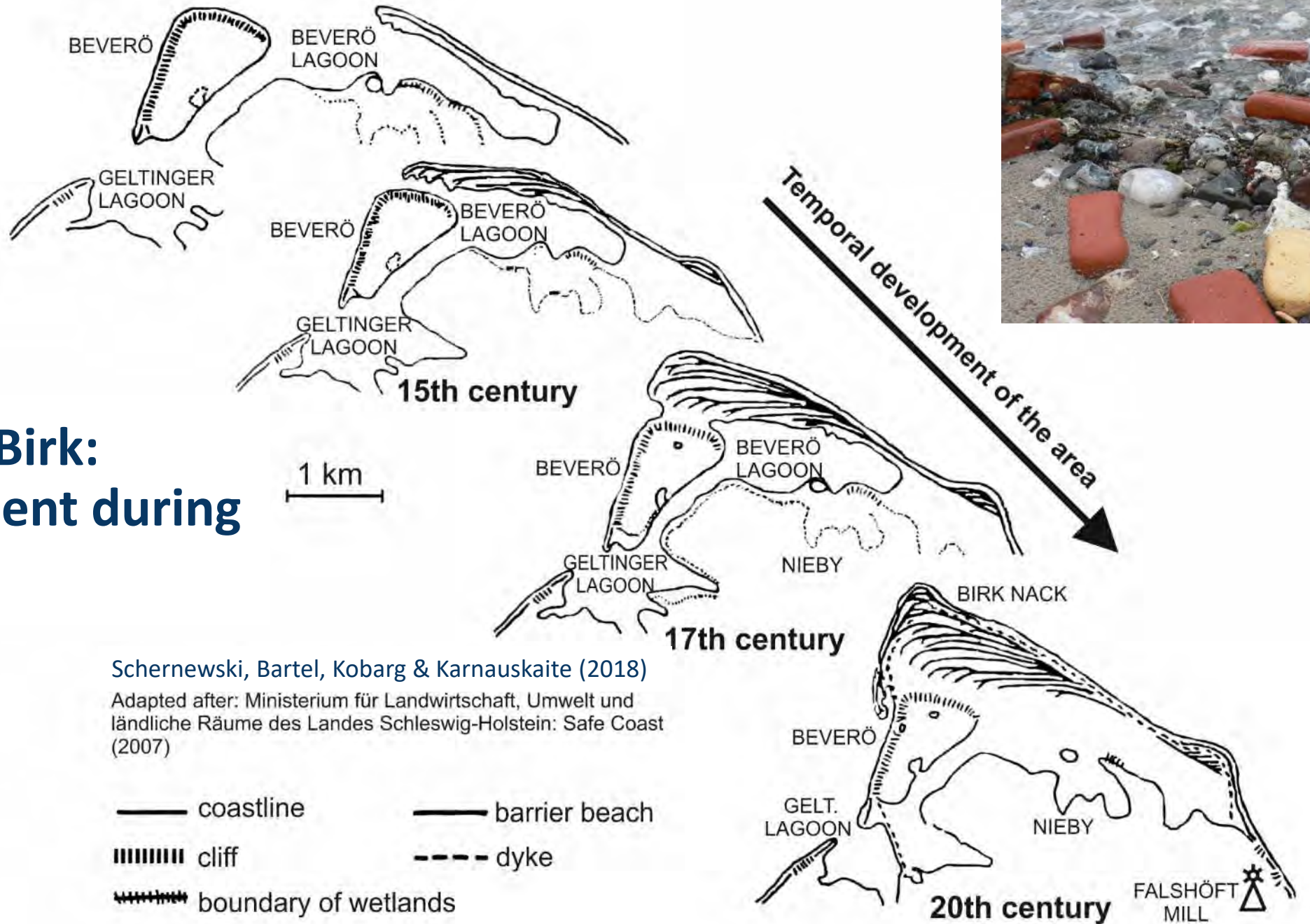


Area: about 10 km<sup>2</sup>





# Geltinger Birk: Development during centuries



Schernewski, Bartel, Kobarg & Karnauskaite (2018)

Adapted after: Ministerium für Landwirtschaft, Umwelt und ländliche Räume des Landes Schleswig-Holstein: Safe Coast (2007)



## The historic use and management context

**Date**

**1231**

Permanent settlements on the Geltinger Birk area.

**1581**

First dyke separates Geltinger und Beverö lagoons from the Baltic Sea and prevents regular flooding. The area is largely covered by forests and mainly used for hunting.

**1821 -1832**

Strengthening of the dyke (1821) between Beverö lagoon and Baltic Sea. Building of drainage mill ‚Charlotte‘ (1824). Large area drainage and establishment of agriculture (potatoes, cereals, rape, beet) as well as ongoing reed harvesting.

**1872**

Extreme storm surge (3.20 m above sea level) causes dyke breach and heavy inundations. Subsequently, a full dyke with a length of 10.5 km and a height between 2.5 and 3.5 m above sea level was built.

**1930s**

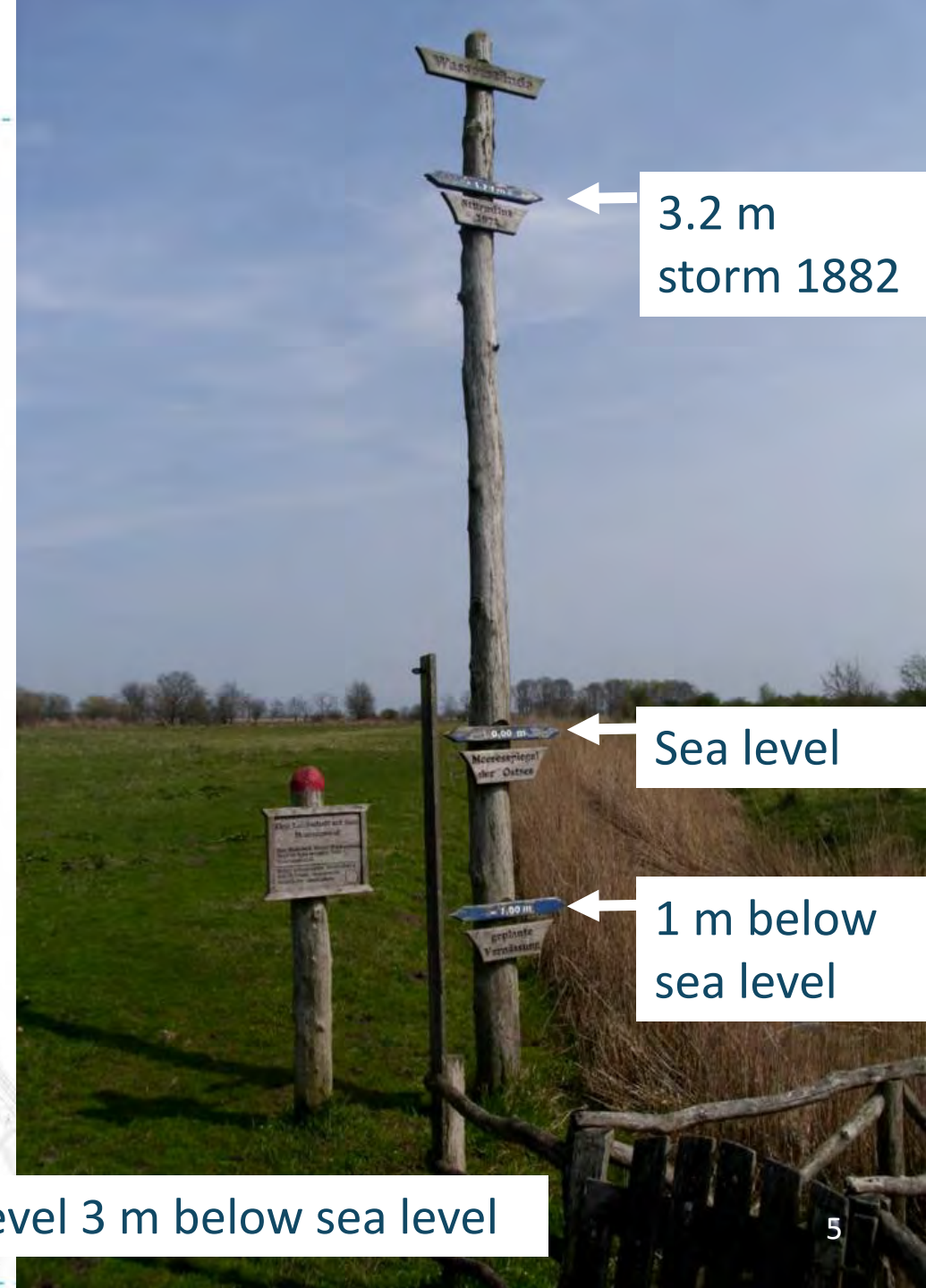
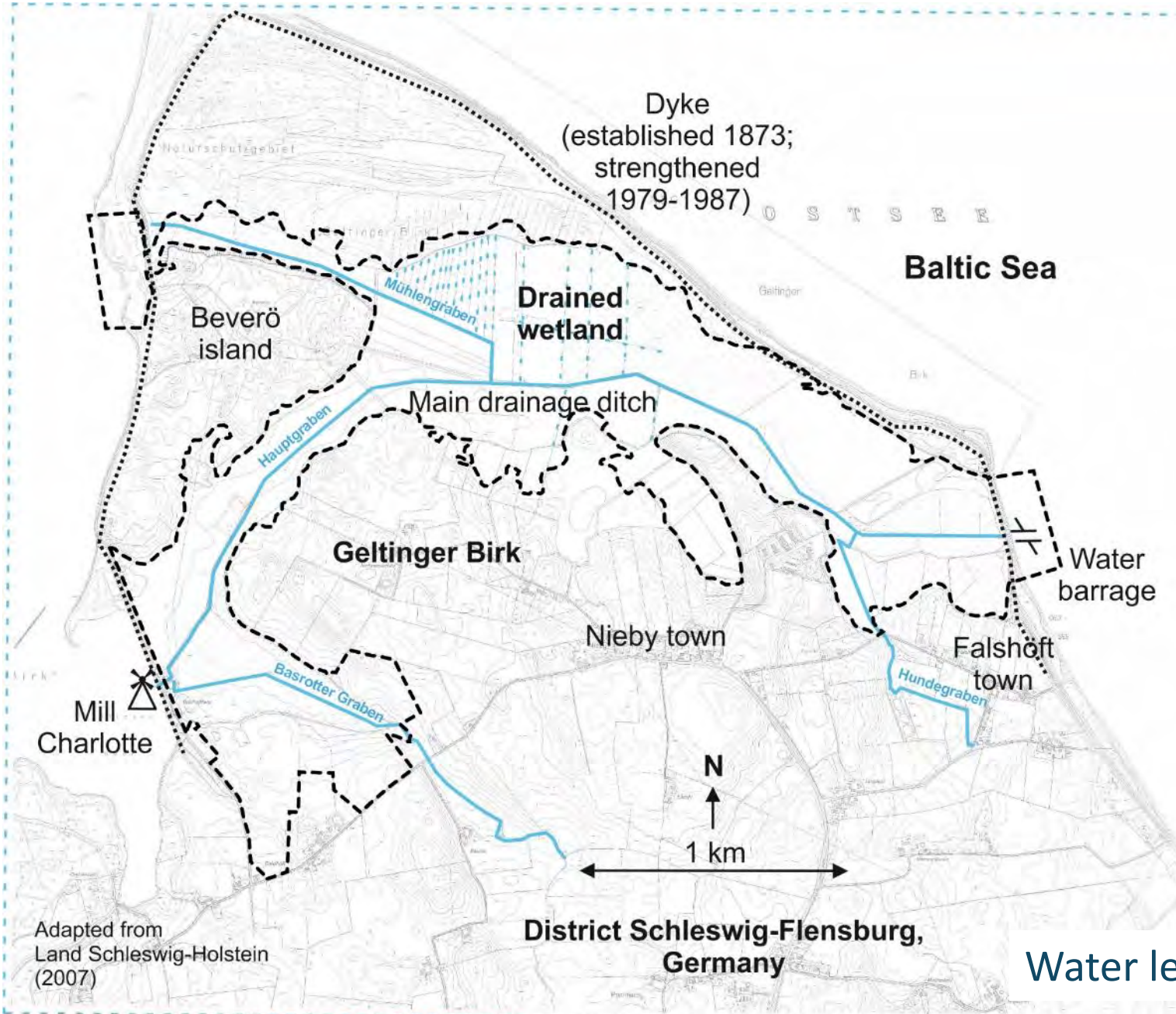
Improvement of drainage ditches to increase agricultural production. Northern parts became nature protection areas (1934).

**1945 -1970**

Loss of forests (use as firewood after the war) and transformation of crop land into pastures with cattle breeding. The water level in the Birk was 3 m below sea-level. Extension of the nature protection area (1952).



# Geltinger Birk: Situation in the 1990's





# Geltinger Birk: A nature protected area used as pasture and for recreation







# Problems with storm surges and solutions

Date	
1979 -1987	Several storm surges destroyed parts of the dyke and caused repair costs of 2.8 million Euros. First considerations of a re-wetting and a coastal realignment. Extension of the nature protection area (1986, total 773 ha).
1989 - 1990	Storm surges with dyke breach in 1989 and some destruction in 1990. Use of gabions (cages filled with rocks).
1990 - 1997	<p>Development of two scenarios:</p> <ol style="list-style-type: none"><li data-bbox="733 634 1811 676">1. Upgrade of the old dyke at costs of 10 million Euros.</li><li data-bbox="733 694 2486 858">2. Realignment of the protected coastline with a new shortened dyke at costs of 6 million Euros, including costs for land purchase. This includes a re-wetting to a water level at 1 m below sea level.</li></ol> <p>Parliament decision to go for the second scenario including local stakeholder involvement. 6 refined scenarios for the future integrated development of the Birk. Land purchase (Stiftung Naturschutz) and stop of commercial agriculture.</p>
2002	Wild horse herds (Koniks) are introduced to maintain a semi-open landscape (together with Galloways). The final decision was taken to given up the old dyke and to realign the coastline with a short dyke.



# Geltinger Birk: Wild horses and cattle herds as landscape managers



Konik-horses and highland cattle serve as landscaper.



# Geltinger Birk: Hydraulic transformation



Photos: Integrierte Station Geltinger Birk e.V.:

Filling of old drainage systems.  
Building of new digs to regulate the water level (1 m below sea surface).



# Geltinger Birk: Improvement of technical infrastructure



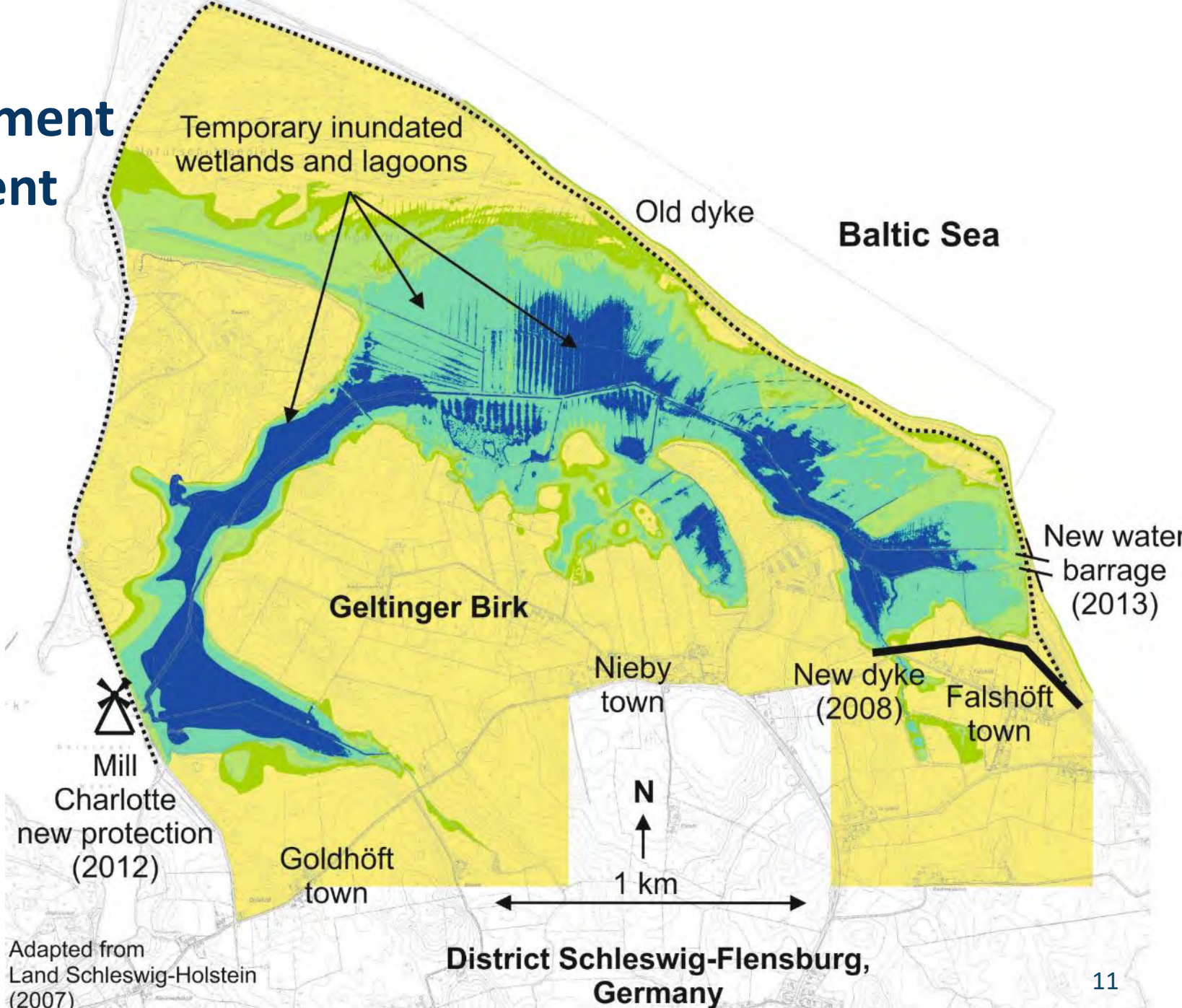
Drainage mill  
,Charlotte' with  
improved protection.





# Geltinger Birk: Coastal protection realignment and lagoon re-establishment

Date	Human activity and utilization
2008	Inauguration of the new short dyke near Falshöft.
2013	Inauguration of a water barrage that allows a controlled in and outflow of water. Controlled inundation of the area to test the dyke and the combined nature and coastal protection approach.
From 2013	Managed water level 1 m below sea-level.



Schernewski, Bartel, Kobarg & Karnauskaite (2018)

Adapted from Land Schleswig-Holstein (2007)



**Geltinger Birk:**  
Test flooding  
in 2013







**Geltinger Birk: 2016**



# Chronology - a media analysis

- 1987: A nature NGO and the Environmental Minister of Schleswig-Holstein publicly presented the concept of a dyke opening and a flooding.
- Regional newspapers (Flensburger Tagesblatt, Schleswiger Nachrichten, Kieler Rundschau immediately picked up the issue, first neutrally and later largely reflected the concerns of local people.
- Political parties in the district take contrasting positions: SPD pro nature protection and CDU against the measure as an attorney of parts of the local population.
- 1988: The major land owner called the project 'wish of a dreamer'. Local resistance increased because it was regarded as threat for agriculture and tourism.
- Dyke repair activities with gabions after a storm surge were heavily criticized by nature NGOs for being counter productive and a waste of money.
- Local people expressed their concern to lose local identity and for being governed by externals.
- 1989: Opponents publicly complained about intentional misinformation and troublemaking. Rumors about a public access ban for the area spread.
- 1990: 10 local mayor formed an initiative against the project, to maintain agriculture and tourism. They complained that alternatives were not considered because of a 'green' policy.
- The church parish in Gelting took position against the project to maintain gods creation.
- 1993: Local residents started a law suit against the new dyke to keep sea-view and lost.
- 1994: The fear that the walking track on the old dyke will vanish causes new dispute until its preservation is ensured in 1996.....



**A difficult start followed by a slow implementation process with many conflicts and compromises.**



## Today - Improved infrastructure to ensure accessibility:

- 15 km walking paths, established in 2004 and further improved later
- Nature protection information & exhibition center (Falshöft)
- Kiosk & info stands
- Guided tours







# Today - Improved visitor guidance and education systems



### Kormorankolonie

**Kormorankolonie vor der Mühle Charlotte**  
Kormorane wurden bis zum Ende des 19. Jahrhunderts in Europa intensiv bejagt. Seit den 1940er Jahren erholte sich der Bestand der Großvögel langsam wieder. Noch in den 1970er Jahren wurde der Kormoran als Salzwasser eingestuft. Die Geltinger Birk ist für Kormorane sowohl Rastplatz als auch geeigneter Lebensraum. Die Besiedlung der Birk begann 2009, als auf dem bereits bestehenden Torfkübel zwei Horste gebaut wurden. Die rasche Ansiedlung festigte sich, so dass der Bestand bis 2016 auf 312 Horste angewachsen war. Erstmalig wurde in dem Jahr wohl aus Mangel an geeigneten Nistplätzen, das „Eschenholz“ an der Fischerkate als Ersatz genutzt, so dass der Bestand auf 376 Brutpaare anwuchs.

**Jungvögel im Nest**  
Kormorane ernähren sich ausschließlich von Fischen, welche sie tauchend unter Wasser erbeuten. Sie jagen opportunistisch, d.h. sie jagen die Fische, die häufig und am leichtesten verfügbar sind. Die Zusammensetzung ihrer Nahrung schwankt daher je nach lokalen Bedingungen und Jahreszeit erheblich. Trotz ihrer Größe haben Kormorane natürliche Feinde. Während der Brutzeit lauern täglich Seeadler auf Jungtiere. Die Verluste an Küken können dabei sehr hoch ausfallen. So wurden 2013 mindestens 50% aller Jungkormorane auf der Birk getötet.

**Adulte Kormoran**  
Kormorane sind in Schwung-Häusern. Das Gestein gibt nicht nur Schutz vor den kühlenden Winden, sondern auch einen hervorragenden Schutz vor den Küken. Die Kormorane sind sehr anpassungsfähig und können in verschiedenen Lebensräumen überleben. Sie sind in der Lage, in verschiedenen Lebensräumen zu überleben, wie zum Beispiel in der Nähe von Menschen, in der Nähe von Wasser und in der Nähe von Fischen.

- ### Attractions:
- 200 bird species, including 90 breeding species
  - Wild horse (Konik) herd (>20)

### Naturschutzgebiet „Geltinger Birk“

**Vielfalt naturnaher Lebensräume**  
Viele ungestörte Strände, Lagunen und Salzwiesen mit hoher Dynamik, gebildet durch die Einflüsse von Meeresschwümmen, Küstendünen, Strandkolk, Strandrasen, Strandwäldchen mit Heiden, Borstgräsern, Trockenrasen und eingeschlossenen Nieder- und Übergangspflanzen: die Geltinger Birk zeichnet sich durch eine außerordentliche Vielfalt unterschiedlicher Standorte aus. Sie ist Lebensraum einer außergewöhnlich hohen Zahl an z.T. sehr seltenen Tier- und Pflanzenarten, wie sie sonst in Schleswig-Holstein kaum noch anzufinden ist.

**Zurück zum salzigen Ursprung**  
Nach Installation eines differenzierten Einsteuersystems entwickeln sich auf ehemaligen Acker- und Grünlandflächen wieder Salzpflanzen. Ziel ist die ursprüngliche, von der Ostsee beeinflusste Vegetation mit den starken Schwankungen möglichst naturnah wiederherzustellen.

**Liebe Besucherinnen, liebe Besucher!**  
Die Geltinger Birk ist eine der bedeutendsten Naturschutzgebiete in Schleswig-Holstein. Das Gebiet gehört nicht nur zu den küstennahen „Hotspots“ der Biodiversität, sondern ist auch ein wichtiger Bestandteil des europäischen ökologischen Netzwerkes „NATURA 2000“.

**Gezielte Förderung**  
Die Geltinger Birk ist aufgrund ihrer Größe und des hohen Entwicklungspotenzials bedeutender Bestandsveränderungen. Teilweise landesübergreifender Naturschutzprojekte im Rahmen verschiedener EU-Projekte wurden Lauftrichter, Rindkühnen und Rottschwänze wieder angepflanzt. Die Geltinger Birk wird als ein wichtiger Lebensraum für die Tierwelt erhalten. In der Region Naturschutz im LIFE ALPINA-Projekt wieder angepflanzt.


**Aktives Naturerleben**  
Die Geltinger Birk ist das ganze Jahr über ein attraktives Ausflugsziel und bei Entlangausfahrten sehr beliebt. Sie finden hier Ruhe und Entspannung und auch unergiebige Naturerlebnisse mit vielen EBi- und Aulücken in die Natur dieser atypischen Kulturlandschaft. In der integrierten Station Geltinger Birk erhalten Sie Infos zu Geschichte und Zustand des Gebietes, zu Landschaftsbedingungen sowie weiteren Entdeckungsmöglichkeiten in der Region. Weitere Infos unter [www.geltinger-birk.de](http://www.geltinger-birk.de).




# Evaluation – Tourists & visitors

Questionnaire based survey among 90 tourists (38 first time visitors) in August 2013

- 63% of first time and 69% of regular visitors are between 41 and 67 years old.
- 83% of first time and 57% of regular visitors are not from the region (federal state of Schleswig-Holstein). Locals are the exception.
- 89% of first time visitors and 71% of regular visitors come for walking followed by biking and/or to watch wildlife.
- First time visitors especially like the landscape (40%), walking tracks (20%), wild horse & cattle herds (13%), quietness and the view. There are only a few things they dislike mainly the disregard of rules (dogs running free) (8%).
- Regular visitors especially like the nature & landscape (59%), wild life (11%) and the walking & cycling tracks (11%). There are only very minor things they dislike.
- 94% of all visitors read the public information, 95% found it easy to understand and sufficient (88%).
- 80% of all visitors pointed out the outstanding nature experience and 84% plans to visit the area again.
- 87% of the regular visitors are positive about the combined coastal protection and restoration measure.

 The acceptance of the implemented measure among visitors is very high and the area became a nature attraction.

 The tourism infrastructure, information, and guidance can be regarded as very successful.







## Evaluation – Strengths

- ▶ Innovative integrated coastal realignment and nature protection project
- ▶ Covering a relatively large area (about 10 km<sup>2</sup>)
- ▶ A cost-effective measure
- ▶ Purchase and exchange of affected land reduced conflicts
- ▶ Active driving persons on local and regional levels with high persistence and trust among locals
- ▶ Readiness to accept compromises ( e.g. walking path, exclusion of areas from wetting)
- ▶ Establishment of the Integrated Information Center as joint address for concerns (1993)
- ▶ Successful technical implementation from a nature protection and coastal engineering point of view
- ▶ Successful public meetings and information campaigns during the implementation phase (at a later stage)
- ▶ Successful tourist attraction with very positive response from visitors
- ▶ Finally a good acceptance in the local population and positive media coverage





## Evaluation – Weaknesses

- ▶ Lack of a systematic information and participation strategy in the beginning
- ▶ Misunderstandings and negative media coverage hampered plannings in the beginning
- ▶ Strong polarization between the ‚green‘ supporter community and policy on one and a conservative local population on the other side
- ▶ Changing actors on all sides slowed down the process
- ▶ Single opponents with personal missions hampered the process
- ▶ Ongoing struggle for funding to cover maintenance costs
- ▶ Unclear nature protection objectives make an ecological evaluation difficult
- ▶ 25 years gap between first ideas and the full implementation

**Is it a coastal management best practice example ?**



# Thank you for your attention!

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