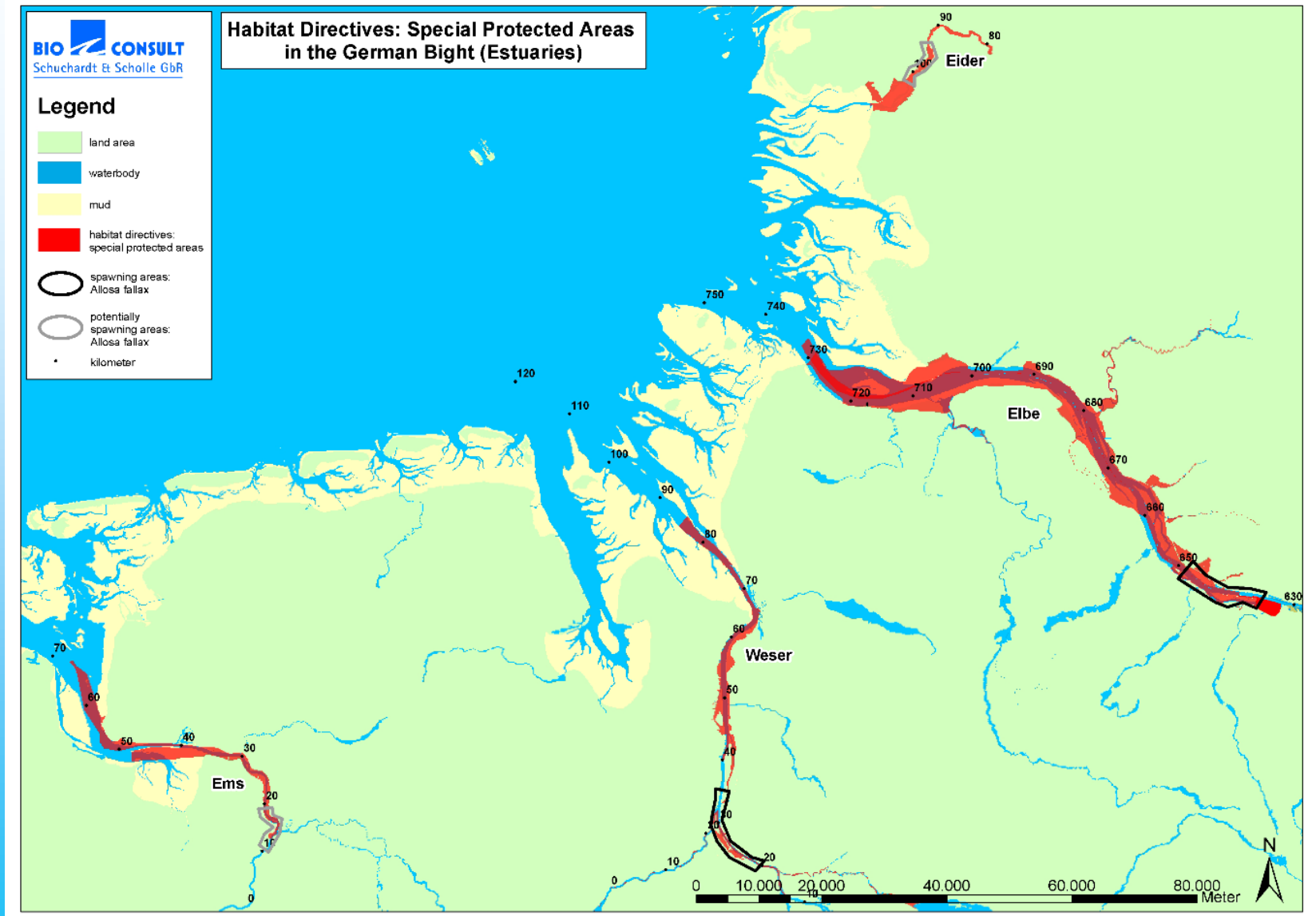


Embracing Estuaries 2016 Hamburg

**Estuarine Habitat Restoration in Germany:
Experiences and Perspectives**

Bastian Schuchardt

Wadden Sea Estuaries (upper/middle reaches)



Maßnahmen in niedersächsischen Küsten- und Übergangsgewässern

● Durchgeführte Maßnahmen

● Geplante Maßnahmen

Stand 22.02.2008

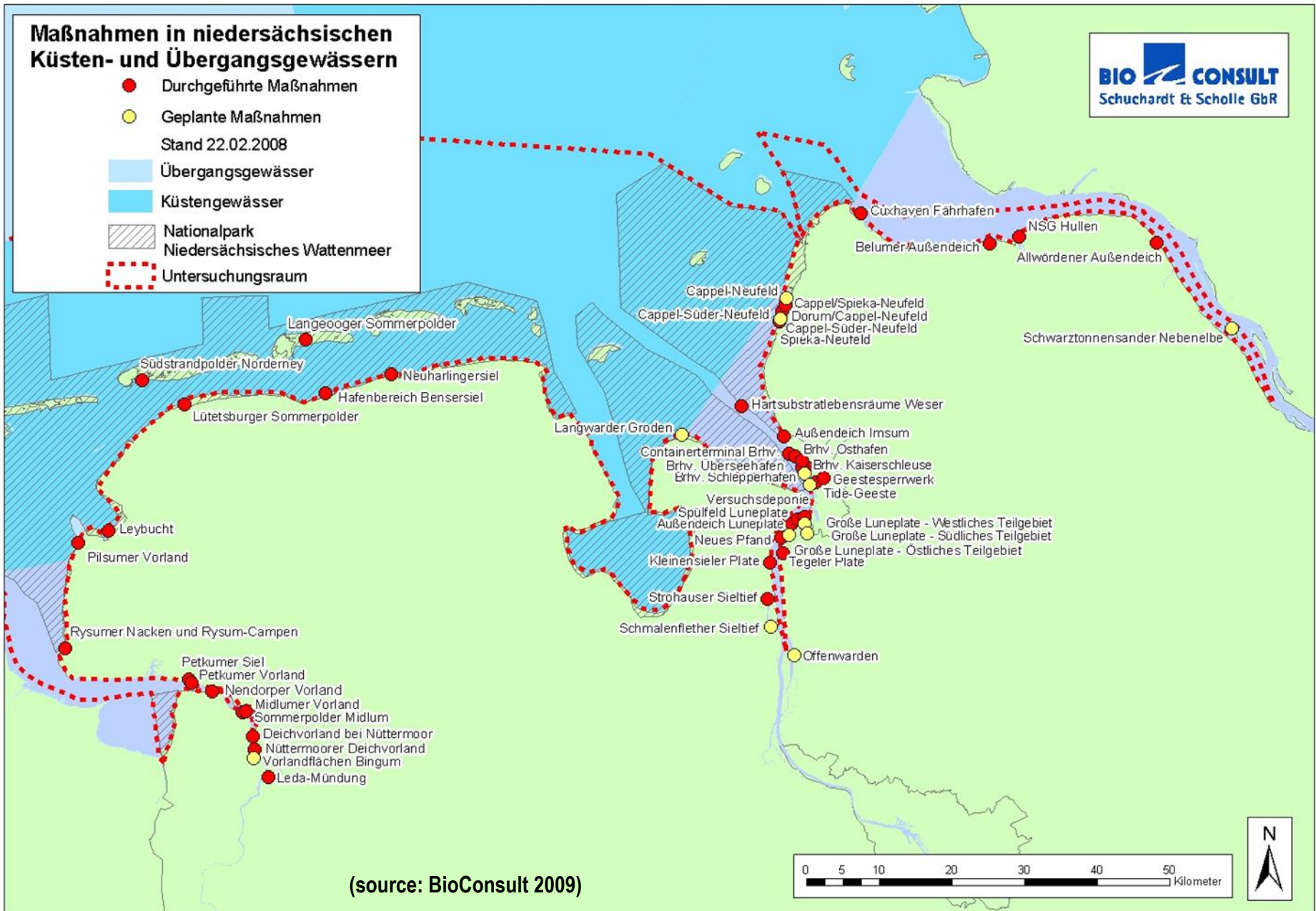
Übergangsgewässer

Küstengewässer

Nationalpark
Niedersächsisches Wattenmeer

Untersuchungsraum

BIO CONSULT
Schuchardt & Scholle GbR



(source: BioConsult 2009)

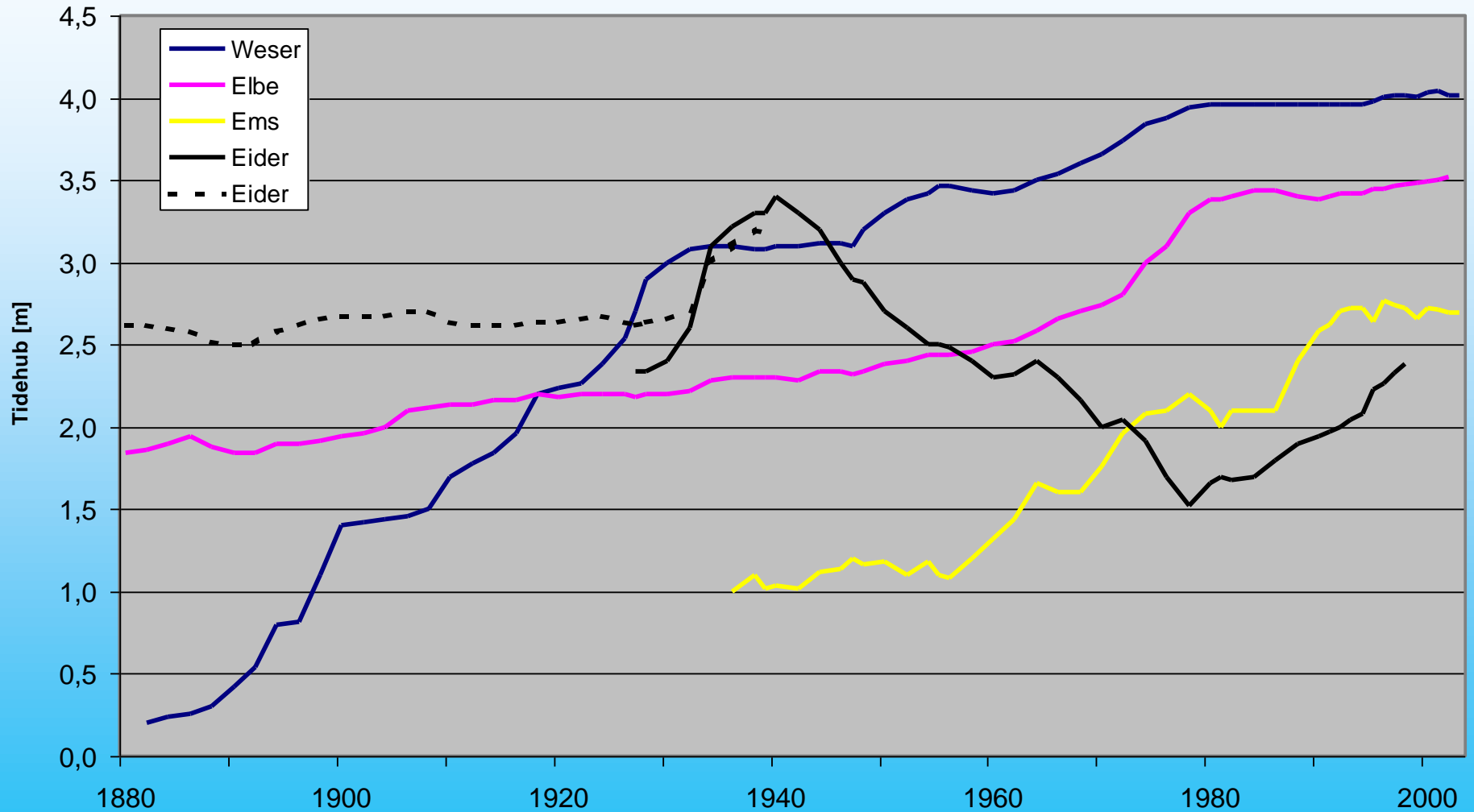
Background: deterioration of ecological functions

3 indicators, related to historical situation:

- Tidal range
- Spatial extent of foreland habitats
- Dissolved oxygen in the water column



Indicator tidal range: increasing energy input, tidal pumping, loss of shallows

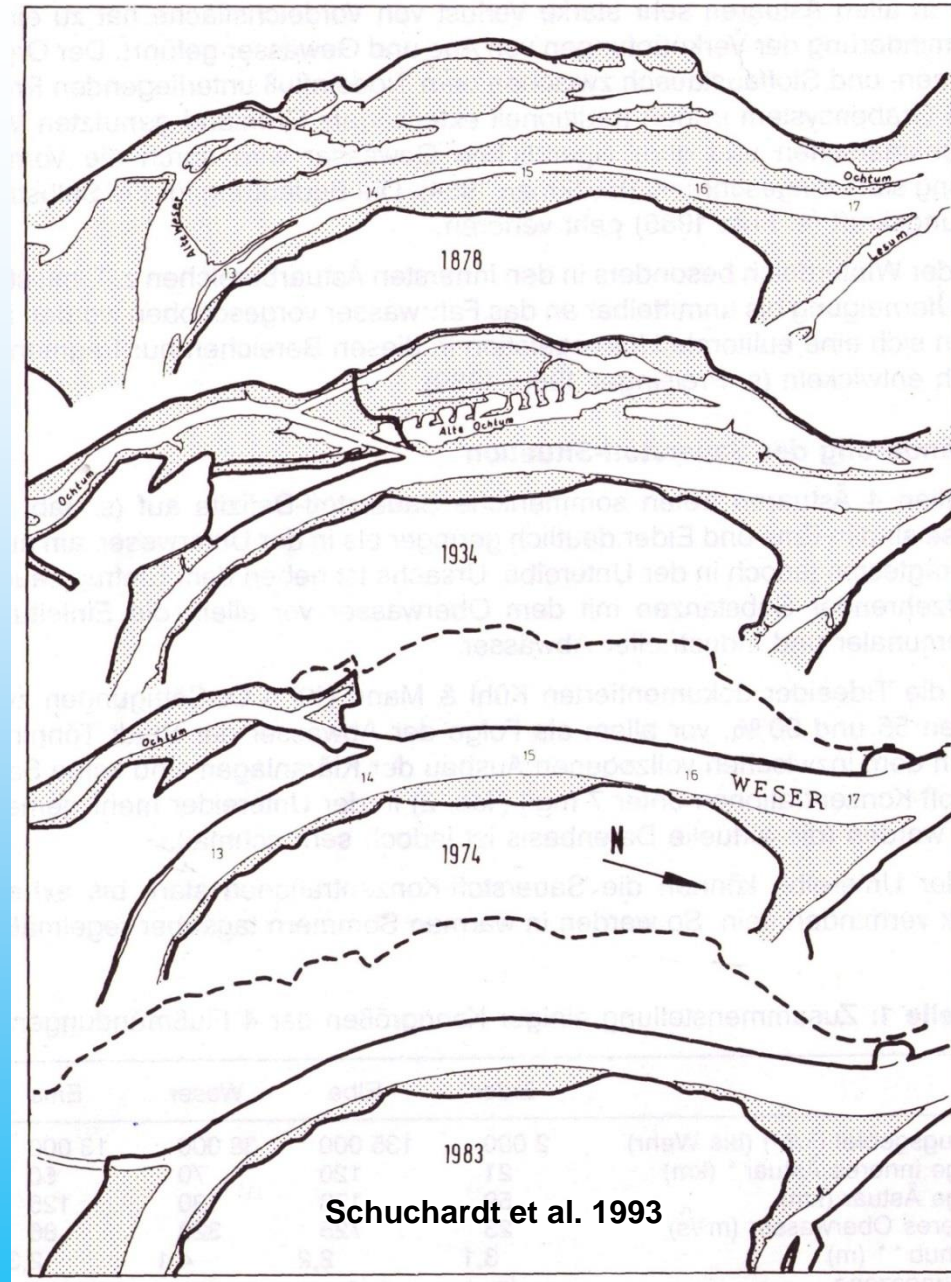


Indicator foreland area

Reduction of foreland area
between 1887 und 1987:

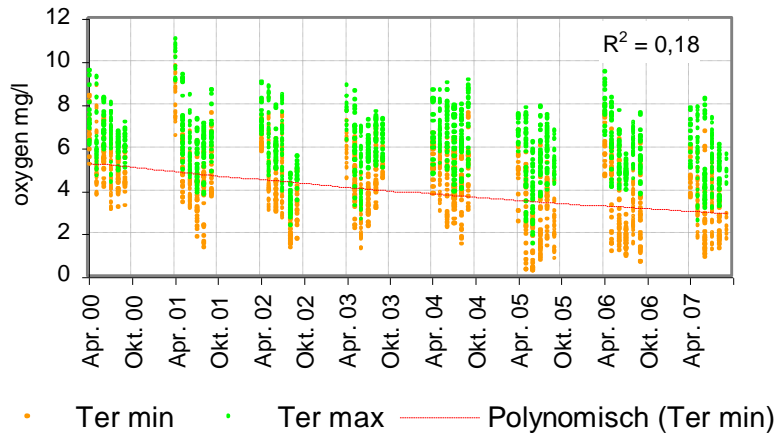
- Eider: none
- Elbe: ca. 63 %
- Weser: ca. 13 %
- Ems: 37 %

- Loss of aquatic and semi-aquatic tidal habitats

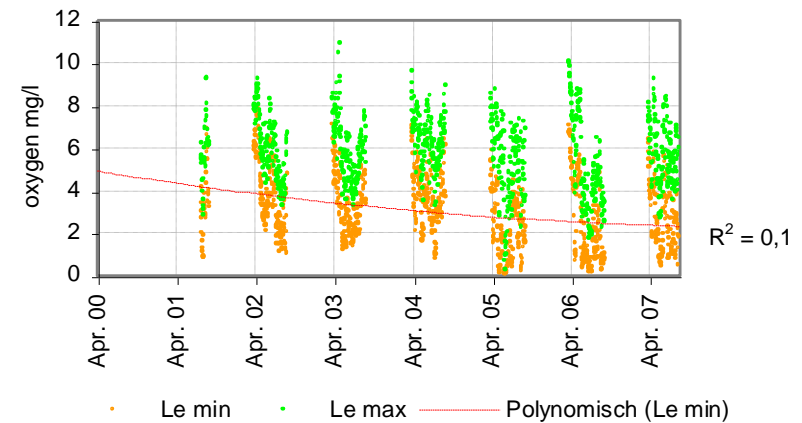


Indicator dissolved oxygen (Ems): strong deficits in Ems and (smaller) Elbe

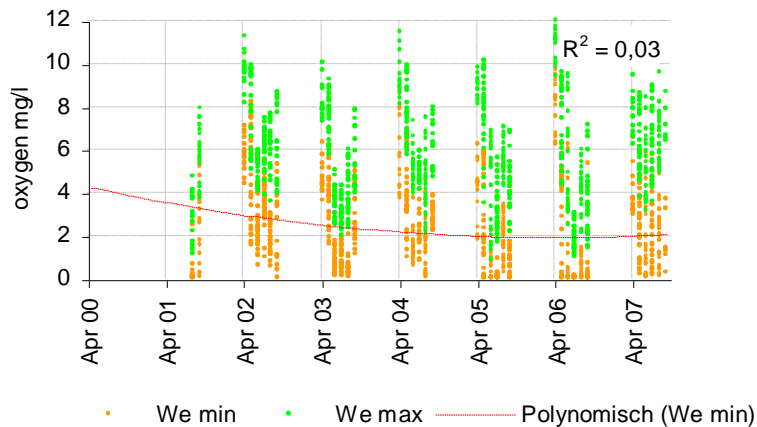
Terborg



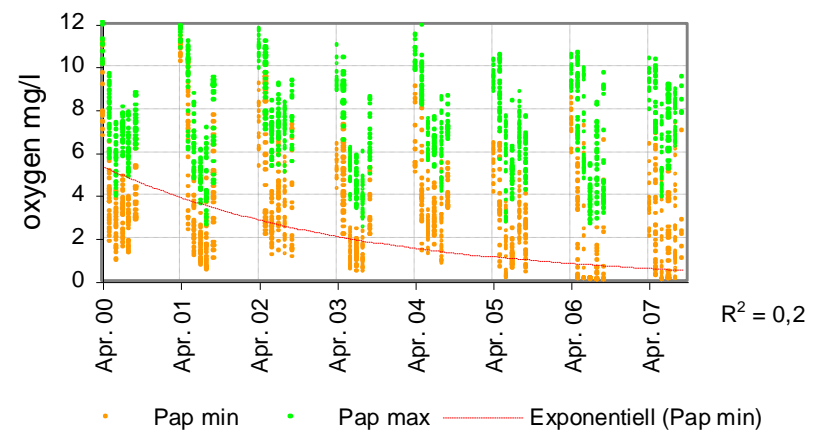
Leer



Weener



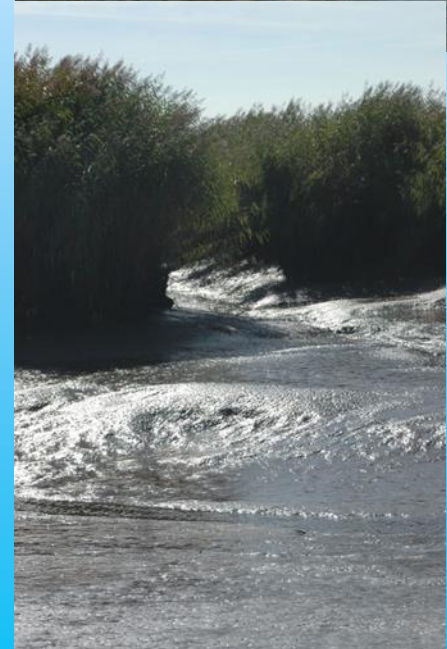
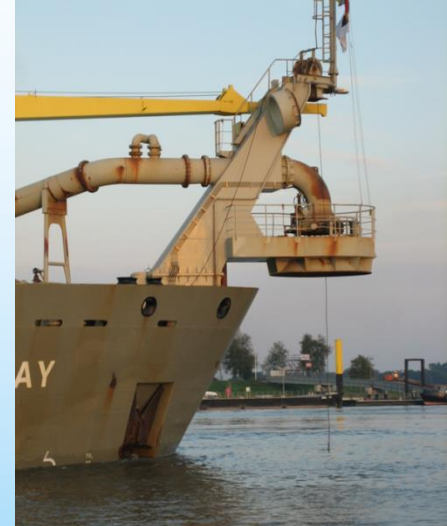
Papenburg



Habitat restoration: (legal) framework

The upper estuaries of Eider, Elbe, Weser, Ems:

- are protected habitats according to habitat directive (HD)
- are “heavily modified” according to Water Framework Directive (WFD)
- have to be improved ecologically (HD, WFD)
- additional impact has to be compensated



Habitat restoration: types of measures

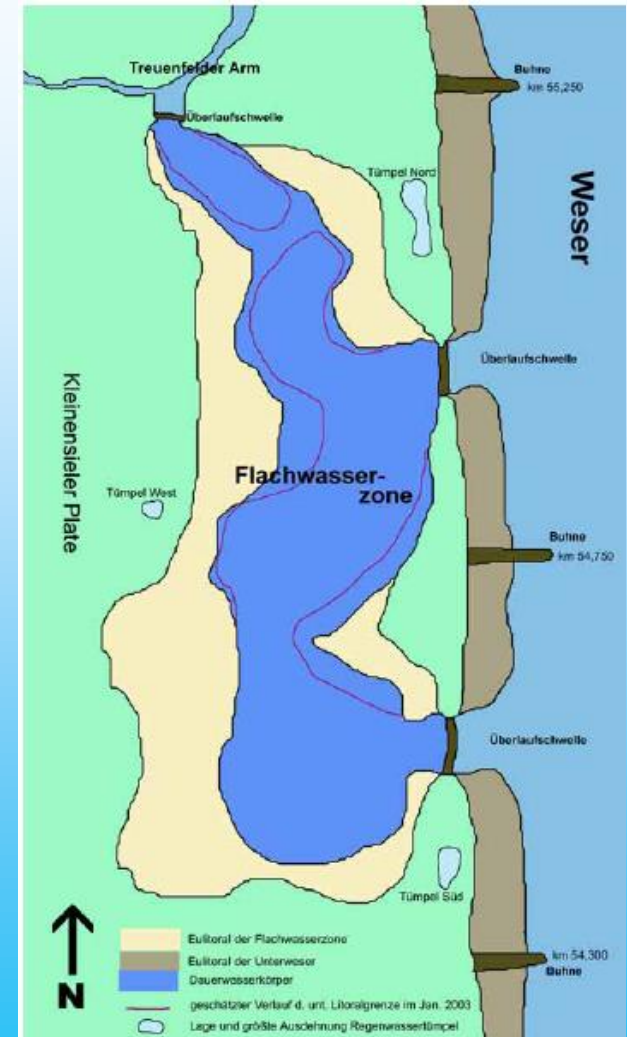
- Renaturation of riverbanks
- Renaturation of foreland
- Opening of summer dike
- Reestablishing anabranches
- Tidal polders behind main dike
- Backward relocation of main dike



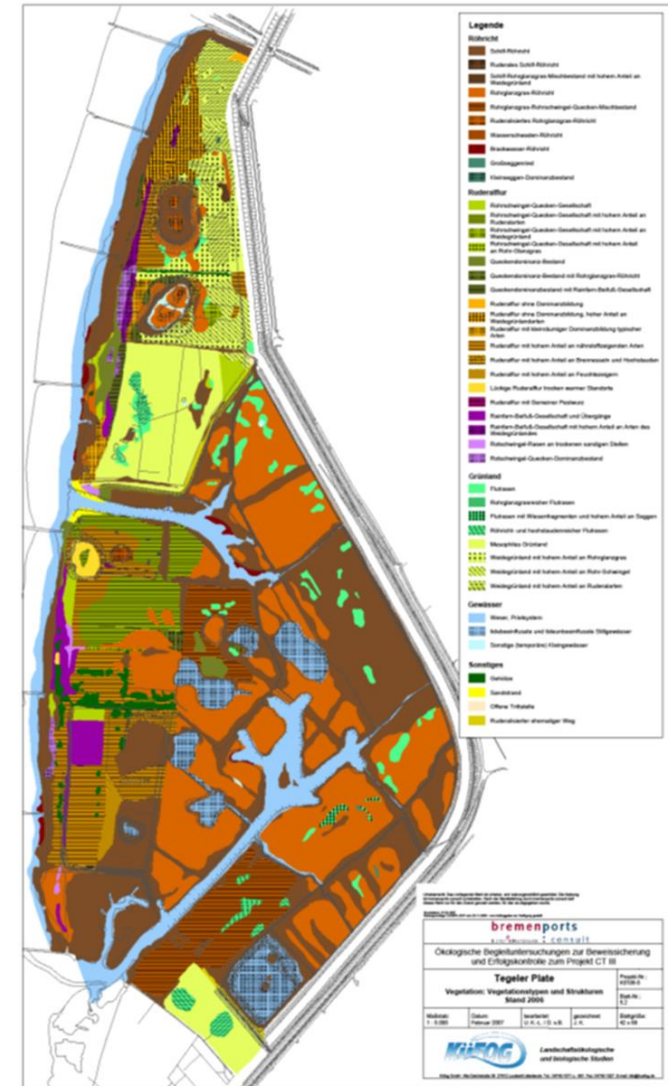
Renaturation of riverbanks



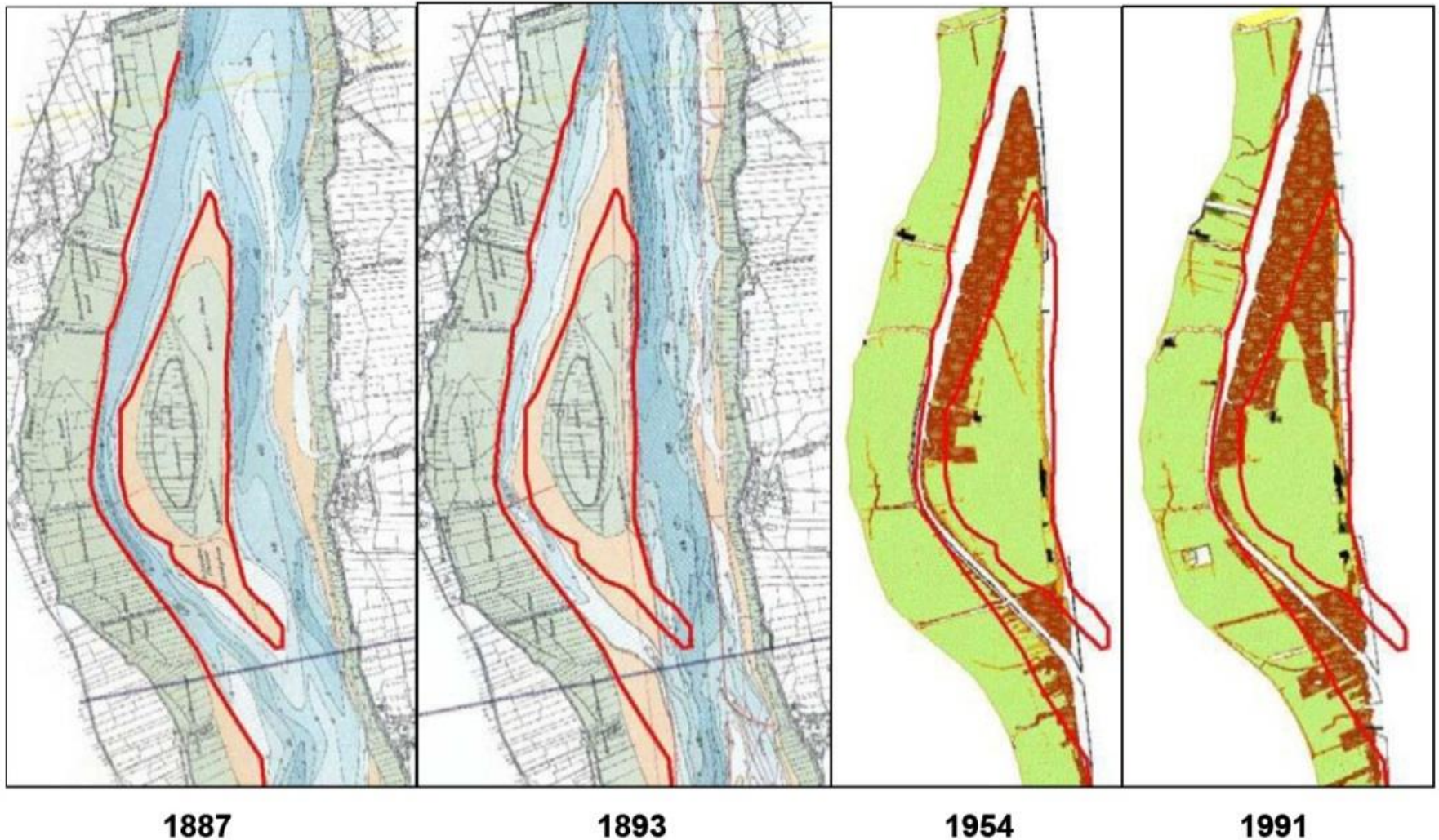
Renaturation of foreland: Kleinensieler Plate, Weser, 60 ha, oligohaline, tidal shallows, 2000, compensation measure



Opening of summer dike: Tegeler Plate, Weser, oligohaline; 280 ha; creek formation; tidal marsh; 1998, compensation measure,



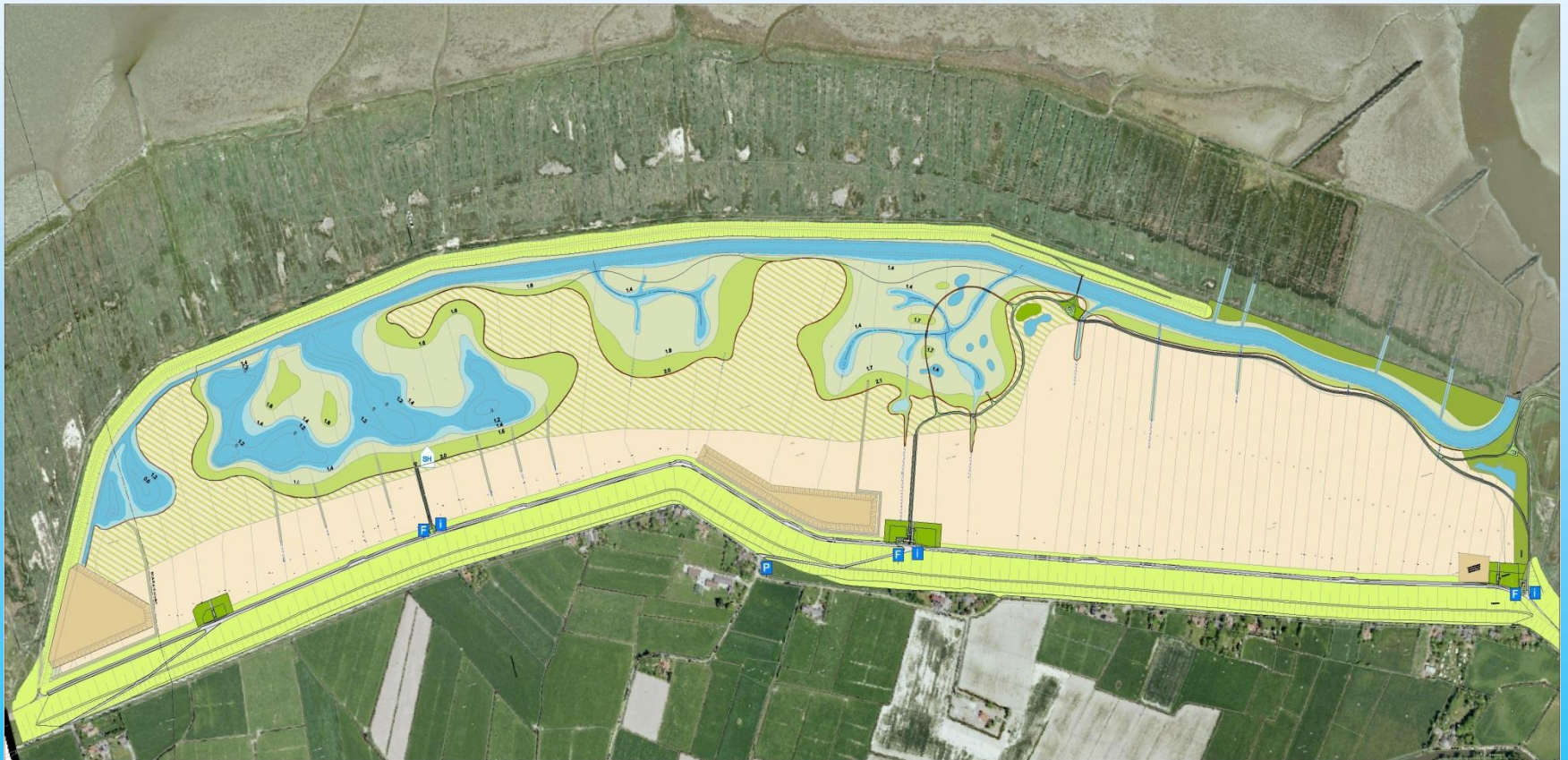
Reestablishing anabranches: Schweiburg, Weser, oligohaline, feasibility study, only possible with very strong maintenance dredging



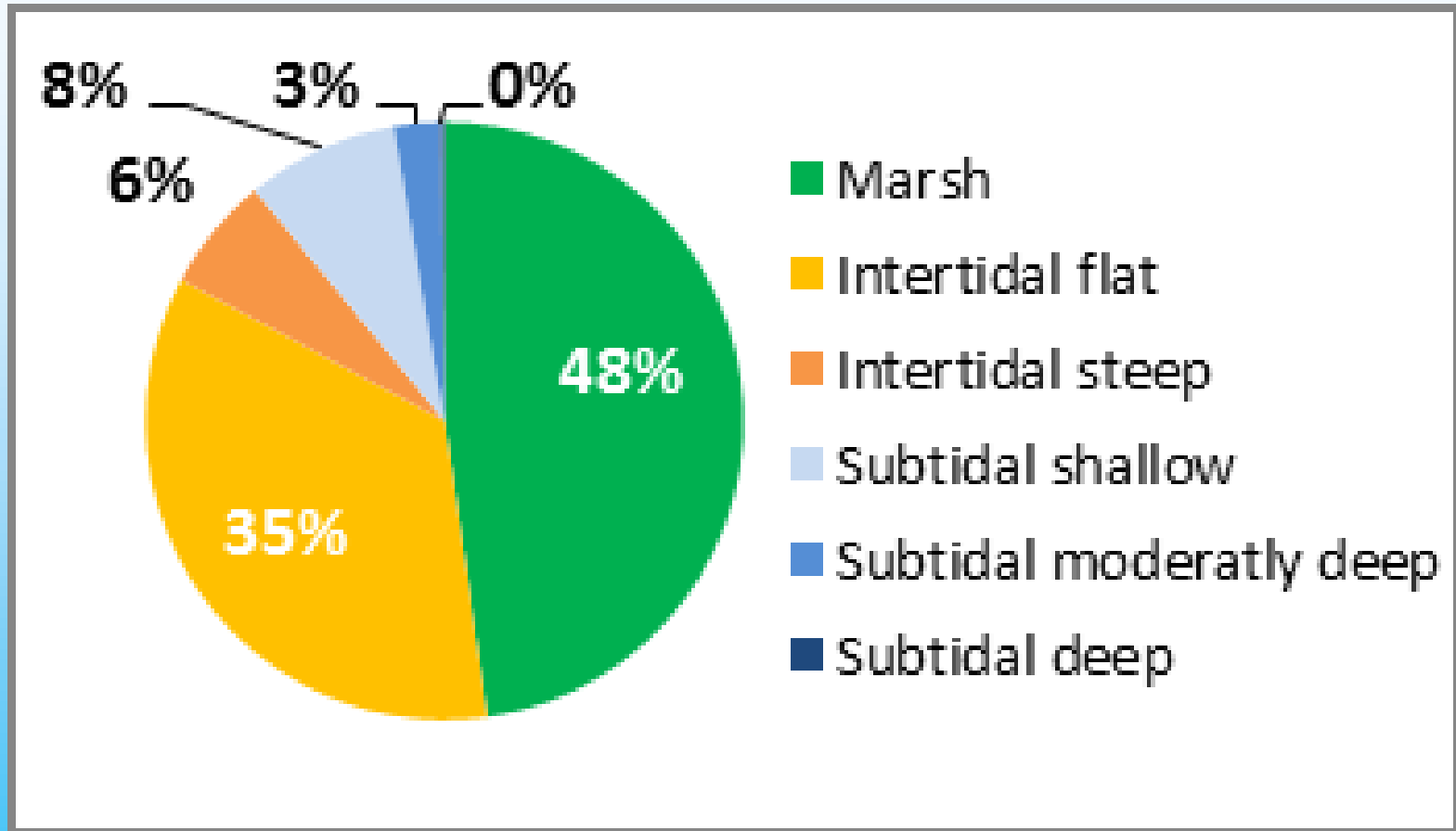
Tidal polder behind main dike: Luneplate, Weser, oligohaline, 220 ha with storm surge barrier, tidal creeks, flats and marshes, 2012, compensation measure



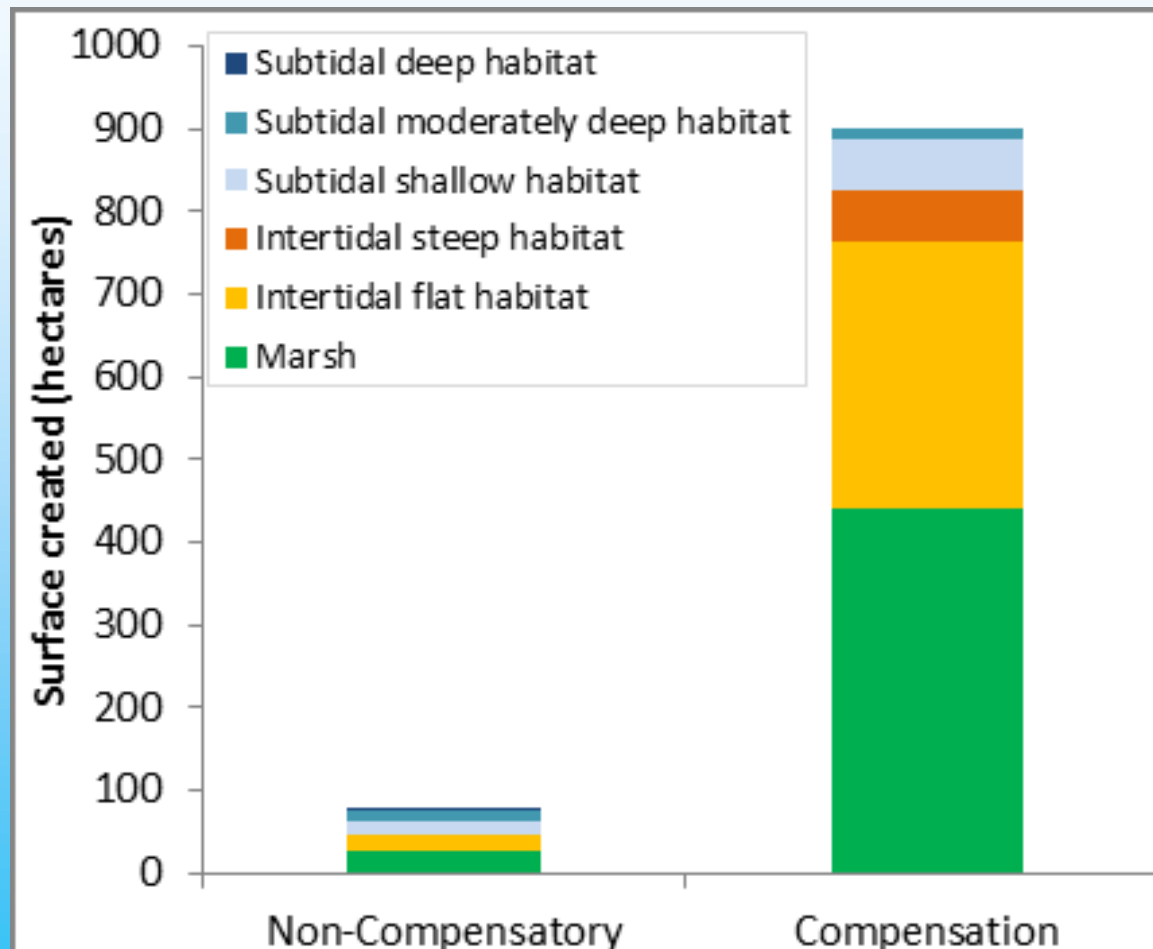
Relocation of “main dike”: Langwarder Groden, Weser, euhaline, 60 ha, tidal marshes, shallows, creeks, 2015, compensation measure



Habitat types created by the “TIDE cases”

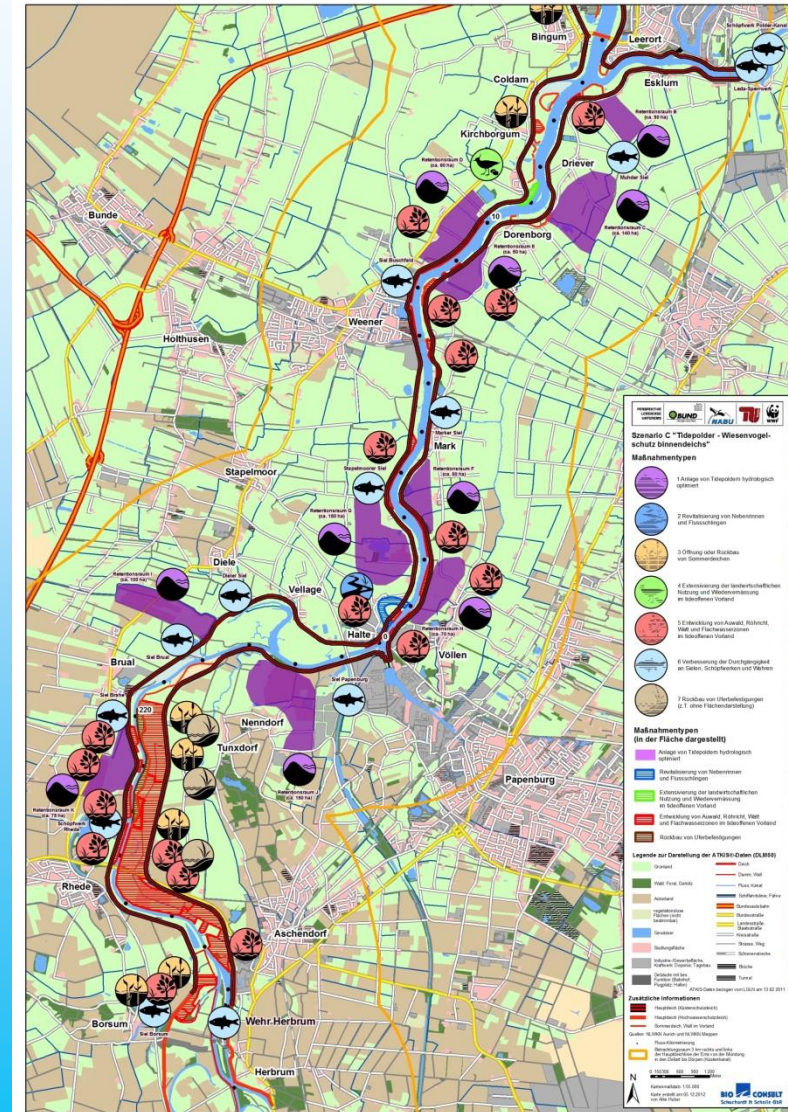


Habitat types created by the “TIDE cases”: relation of compensation and non-compensatory measures



Perspectives

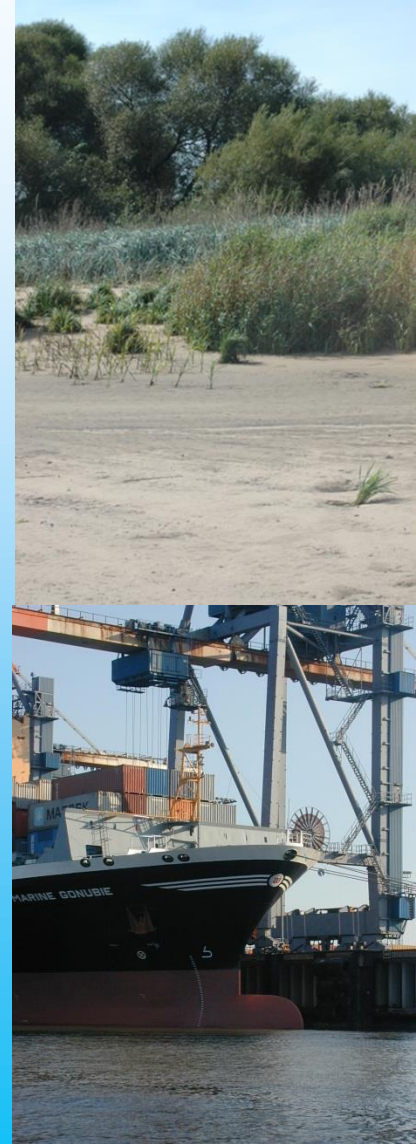
- Synergistic habitat restoration measures will be the future
- Synergies will reduce costs and conflicts
- Synergies are possible e.g. between nature protection, sediment management, coastal defence, recreation
- Example: Master Plan Ems



Conclusions 1

Habitat restoration measures

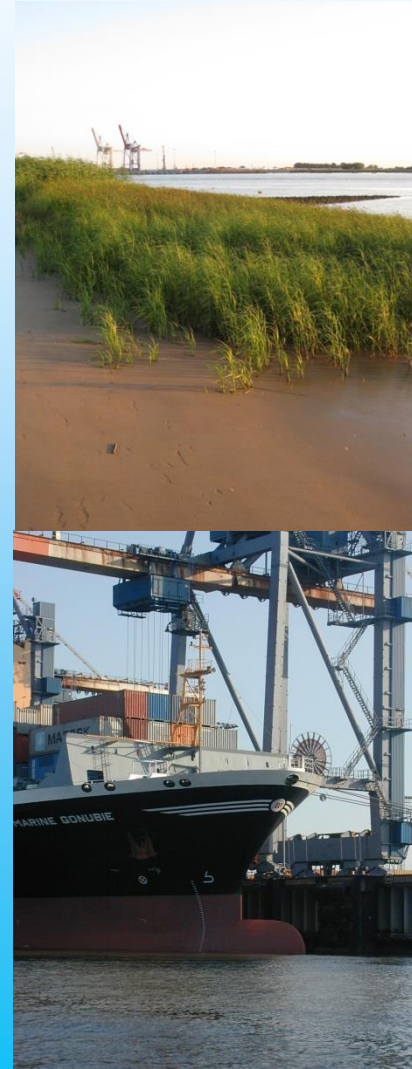
- are necessary and legally required
- can be successful
- have created mainly tidal marsh and flats; aquatic habitats have been created only to a small extent



Conclusions 2

Habitat restoration measures might be challenging due to

- high sedimentation rates (naturally and anthropogenically increased)
- fundamental man made changes of the hydraulic and/or morphological systems (e.g. anabranches)
- conflicts with other users/competition for space
- conflicts between different objectives within nature protection



Conclusions 3

- Up to now habitat restoration is done mainly in the framework of compensation; estuarine regeneration has not really started
- Integrated management plans are a step forward
- Synergistic habitat restoration measures will be the future

