

# ***Analysis of management measures of an MPA:*** the case of the German small scale gillnet fisheries around the island of Fehmarn in the Baltic Sea

**Leyre Goti**

Thünen Institut of Sea Fisheries, Hamburg, Germany



# Overview on talk

- Introduction
- Case study: effects of Natura 2000 on gillnet small scale fisheries
- Scenarios: policy measures, risks and limited knowledge
- Initial results
- Summary & Outlook



[www.socioec.eu](http://www.socioec.eu)

# Introduction

Try to produce an impact assessment of MPA measures covering the whole SOCIOEC approach: not only effects but also the incentives and governance that conditioned them.

And analyse measures against the objective aimed in the first place.

With a strong stakeholder component:  
Instead of „do I have the data I need for an IA?“  
try „what data do I have and what is the best I can do with it?“



Try to get alternative sources of data, both quantitative and qualitative.  
Use the experience to improve the methodology of small impact assessments.

# Case study: effects of Natura 2000 on gillnet small scale fisheries

- Small fleet of around 70 gillnetters below 12m from three ports (Heilifenhafen, Burgstaaken, Großenbroden) around an island in the German coast of the western Baltic Sea. Fish cod and others.
- Fishing grounds overlap with a **Natura 2000 area** aimed to protect harbour porpoises and sea ducks
- The coastal area is highly touristic and fishermen are trying to improve their livelihoods using **direct marketing** (PO restaurants, “fish from boat” sales)
- **Governance** conflict due to disagreement between government, fishermen and science

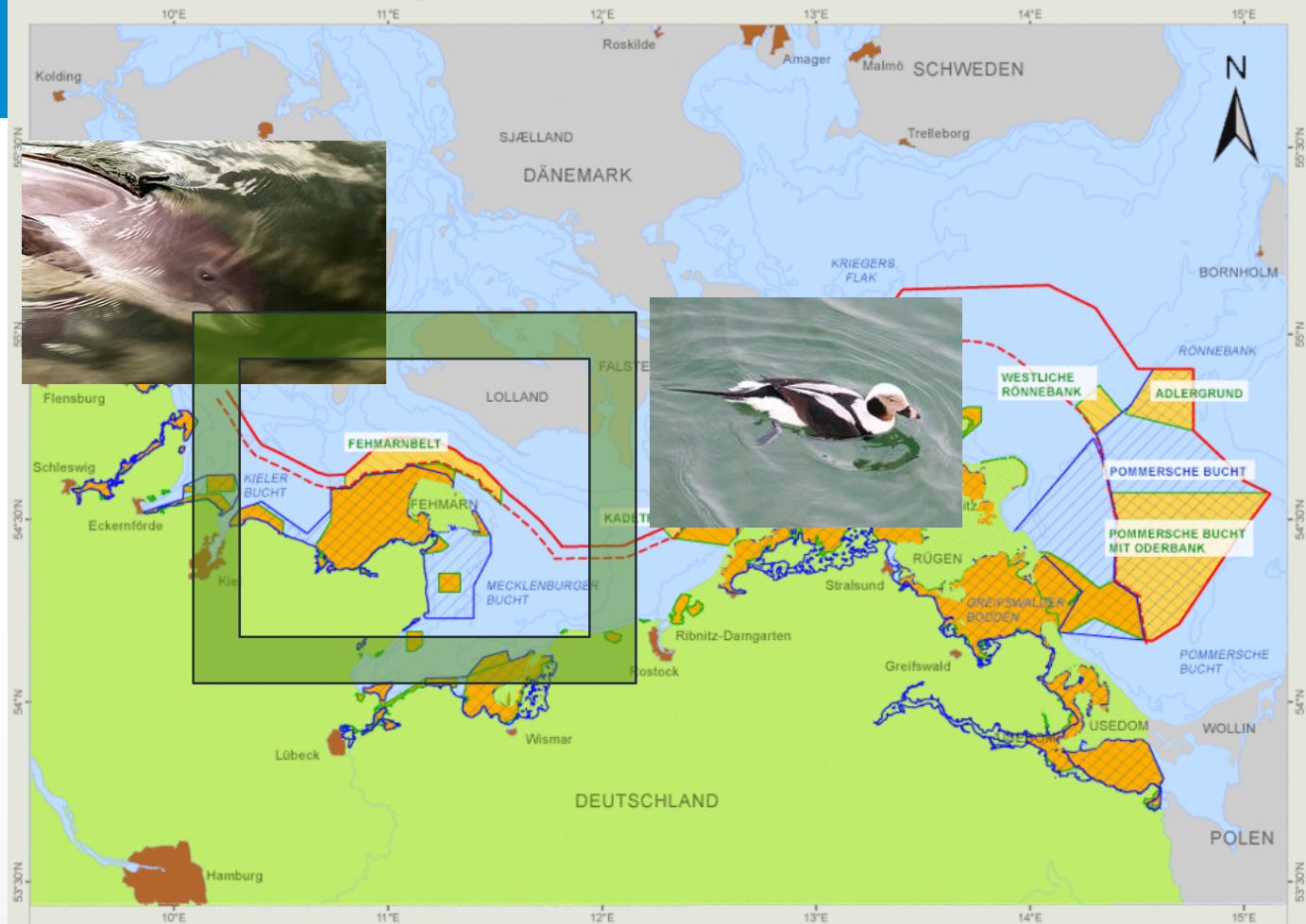
# Case study description: Natura 2000 area

- Covers whole island perimeter except for area already covered by traps (TURFs), not accessible to gillnets anyway
- Management measures cover a more restricted area but:
  - Best area in terms of adequacy of seafloor to gillnets
  - Area closer to ports, with lower costs
  - Vessels have restricted spatial range due to technical and safety issues
  - Other fishermen already occupy remaining areas
  - Some of the most productive fishing grounds for them
- Effectiveness of measures on porpoises (vs pingers) and sea ducks (vs avoidance) as well as real state of species are controversial

# Natura 2000 areas

## Natura 2000-Schutzgebiete nach FFH-Richtlinie und EU-Vogelschutzrichtlinie im Hoheitsbereich und in der Ausschließlichen Wirtschaftszone (AWZ) der deutschen Ostsee

Erstellt durch: Bundesamt für Naturschutz (BfN), Fachgebiet Meeres- und Küstennaturschutz, Stand: Juli 2011



### Kartengrundlage:

Seekarte 2921  
"Deutsche Ostseeküste  
und angrenzende Gewässer",  
Herausgegeben vom BSH

### Kartennetz:

Mercator-Abbildung

### Positionen:

World Geodetic System  
(Datum WGS 84)

- AWZ
- Küstenmeer/Tiefwasserreede
- Tiefenlinien
- Meeresfläche
- Nachbarstaaten
- Landfläche Deutschland
- Städte

- ▨ EU-Vogelschutzgebiete  
im deutschen Küstenmeer  
(12 sm Zone)  
(Stand: Juli 2011)
- ▨ EU-Vogelschutzgebiete in der  
deutschen Ausschließlichen  
Wirtschaftszone  
(AWZ, 12 - 200 sm Zone)  
(Stand: Juli 2011)

- ▨ FFH-Gebiete im deutschen  
Küstenmeer (12 sm Zone)  
(Stand: Juli 2011)

- ▨ FFH-Gebiete in der deutschen  
Ausschließlichen Wirtschaftszone  
(AWZ, 12 - 200 sm Zone)  
(Stand: Juli 2011)



# Case study description: valuation problems

The only source of data for the economic evaluation of the catch (and therefore the potential losses) is the landings declaration database

- Landing declarations database misses important price data: does not contain prices of fish marketed directly → 20% of landings in weight, much higher in value
  - Try different valuation criteria for directly marketed landings
  - Reality check criteria with fishermen
- Same database mixes professional and recreational fishermen
  - Economic effect needs to be separated to tailor measures

# Case study description: management scenarios

The only source of data for the economic evaluation of the catch (and therefore the potential losses) is the landings declaration database

- Landing declarations database misses important price data: does not contain prices of fish marketed directly → 20% of landings in weight, much higher in value
  - Try different valuation criteria for directly marketed landings
  - Reality check criteria with fishermen
- Same database mixes professional and recreational fishermen
- Economic effect needs to be separated to tailor measures



# Scenarios: policy measures, risks and limited knowledge

Management Option	Risk factor 0	Risk factor 1	Risk factor 2
Status quo	Status quo (no regional closed areas or changes in current quota regulation, effort regulations or EU and local technical regulations)	Status quo management scenario with change in fish prices due to decrease in direct marketing	Status quo management scenario with change in fish prices due to certification of western cod
Alternative 1	MPA measures 1: regional closed areas 8 months	MPA measures 1 scenario with change in fish prices due to decrease in direct marketing	MPA measures 1 scenario with change in fish prices due to certification of western cod
Alternative 2	MPA measures 2: regional closed areas up to 3.5 months technical measures and effort restrictions	MPA measures 2 scenario with change in fish prices due to decrease in direct marketing	MPA measures 2 scenario with change in fish prices due to certification of western cod

Additionally, baseline price hypothesis and estimated direct marketing price hypothesis

# How the CFP addresses now nature conservation issues to fulfil conservation objectives

Measures already implemented:

- Quota restrictions for managed stocks (e.g. Cod, Herring Western Baltic), MSFD objective MSY nearly achieved
- Effort regulations for parts of the fishing fleet (maximum number of days allowed to fish)
- Technical measures: minimum landing size, mesh size limits, etc.

Proposed specific measures for nature conservation:

- Seasonal/area closures for certain fishing methods up to 8 months

# Impact of valuation hypothesis

	Proxies for direct marketing price			Baseline
Port of origin	max	avg	min	0
Burgstaaken	249992 €	204597 €	171782 €	164417 €
Heiligenhafen	375753 €	311800 €	268144 €	257826 €
Total	625745 €	516397 €	439926 €	422243 €
Income difference	203502 €	94154 €	17683 €	-
%	48%	22%	4%	-

# Impact of management measures

Originally proposed management measure: 8 months closure:

<i>Port of origin</i>	<i>SQS*</i>	<i>8m**</i>	<i>Loss SQS-8m</i>	<i>% Loss SQS-8m</i>
Burgstaaken	249.992 €	81.660 €	168.331 €	67%
Heiligenhafen	375.753 €	117.436 €	258.316 €	69%
Total	625.744 €	199.096 €	426.648 €	68%

Finally agreed management measure: up to 3.5 months closure plus two months effort limitation:

<i>Port of origin</i>	<i>SQS</i>	<i>3,5+nets***</i>	<i>Loss SQS-3.5m</i>	<i>% Loss SQS - 3.5m</i>
Burgstaaken	249992 €	121883 €	128109 €	51%
Heiligenhafen	375753 €	215794 €	159959 €	43%
Total	625744 €	337676 €	288068 €	46%

\*SQS= Status Quo Scenario \*\*8m= Scenario with 8 months closure \*\*\*3.5+nets= Scenario with 3.5months closure+ nets length limit

# Impact of possible risks

Revenue losses under uncertainty on fish prices due to changes in direct marketing (directly marketed landings valued at the average of prices obtained in the auction for each species):

<i>Port of origin</i>	<i>SQS</i>	<i>8m</i>	<i>Loss SQS-8m</i>	<i>% Loss SQS-8m</i>	<i>3,5+nets</i>	<i>Loss SQS-3.5m</i>	<i>% Loss SQS-3.5m</i>
Burgstaaken	204.597 €	58.969 €	145.628 €	71%	87.280 €	117.317 €	57%
Heiligenhafen	311.800 €	90.792 €	221.008 €	71%	169.630 €	142.170 €	46%
Total	516.398 €	149.762 €	366.636 €	71%	256.910 €	259.487 €	50%

Revenue losses under uncertainty on fish prices due to certification of western Baltic cod (directly marketed cod valued at the average of prices obtained in the auction for western Baltic cod in the same year):

<i>Port of origin</i>	<i>SQS</i>	<i>8m</i>	<i>Loss SQS-8m</i>	<i>% Loss SQS-8m</i>	<i>3,5+nets</i>	<i>Loss SQS-3.5m</i>	<i>% Loss SQS-3.5m</i>
Burgstaaken	159.680 €	53.517 €	106.163 €	66%	77.596 €	82.084 €	51%
Heiligenhafen	235.271 €	69.140 €	166.130 €	71%	130.575 €	104.696 €	45%
Total	424.258 €	134.339 €	289.919 €	68%	225.617 €	198.641 €	47%

\*SQS= Status Quo Scenario \*\*8m= Scenario with 8 months closure \*\*\*3.5+nets= Scenario with 3.5months closure+ nets length limit

# Conclusions

Uncertain ecosystem gains against certain economic (and social) losses.

This type of study has spill over effects on the enrichment and correction of existing data.

Focus groups and interviews can be an effective tool to gather new qualitative and quantitative data, as well as to check results.

Research preparation can help reduce the number of interviews needed and make a study more focused and less dependent on available funding.

Stakeholders have shown interest in this kind of study, making implementation of result more probable



# Outlook



Further sources of data on revenues, spatial range of vessels and quota restriction are being investigated that could improve the analysis.

Study will be presented to managers and fishermen to inform them and seek final feedback.

As the management designa process has being evolved into an increasingly participatory one, there is a chance that results will be taken into account for the management of the fishery.

Additional management measures for the federally managed part of the EEZ are expectd soon, that would also affect the same fishermen



# Analysis of management measures of an MPA: the case of the German small scale gillnet fisheries around the island of Fehmarn in the Baltic Sea - Leyre Goti

Thank you for your attention !

