Valuation of Polish coastal waters

Jan Marcin Węsławski & Joanna Piwowarczyk
Institute of Oceanology PAS, Sopot, Poland

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Socioeconomic
& biological valuation

Goods provided by Polish EEZ

Mineral resources	**Gravel, sand**	**Limited exploitation (1mln euro)**
	Oil, gas	**Exploited (40 mln euro)**
	Amber	**Extensive grey zone.** **Over 20 mln euro?**
Biological resources	**Comercial, artisanal** **and sport fishery**	**Extensively exploited and regulated: 60 mln euro (100?)**
space	**Wind farms**	**Planned investm.** **500 mln euro**

Services provided by Polish EEZ

Climate regulation	CO_2 sink, DMS production	Valuation possible
Disturbance regulation	Oil spill degradation	no data
Seabed erosion control	Algal mats, TEP production	no data
Remineralisation	Microbial decomposition	Limited information
Provision of biological resources	Nursery grounds	Valuation possible
Monitoring and modelling	Bioindicators & biomarkers	Limited information
Recreation	Tourism, sea sports	Limited information
Culture, education & Science	Popular scientific products	no data

Poster says:

We are selling the Nature

-You may earn money by selling

- You have to pay to keep it as it is

UWAGA sprzedajemy Przyrodę !

Prosimy o informacje - ile jesteście Państwo skłonni zapłacić za zachowanie, zmianę lub oddanie dóbr Natury ?

Jestem gotów zapłacić co miesiąc, żeby zachować taki brzeg niezabudowany i dostępny dla wszystkich:

1 zł (ochroni 1 ze 100 km brzegu)

10 zł (ochroni 5 ze 100 km brzegu)

15 zł (ochroni 20 ze 100 km brzegu)

20 zł (ochroni 50 ze 100 km brzegu)

50 zł (ochroni całe 100 km brzegu)

Zgodzę się na zabudowę i brak publicznego dostępu do plaży, pod warunkiem zysku co miesiąc:

10 zł (zabudowa 1% brzegu)

20 zł (zabudowa 20% brzegu)

100 zł (zabudowa 75% brzegu)

500 zł (zabudowa 100% brzegu)

Sandy coasts as biocatalytical filters, value without human investement

Nature’s washing mashine burns clean about 45kg of organic matter/m2/year (V FP EU COSA).

Biological valuation

„the intrinsic value of marine biodiversity without reference to anthropogenic use”

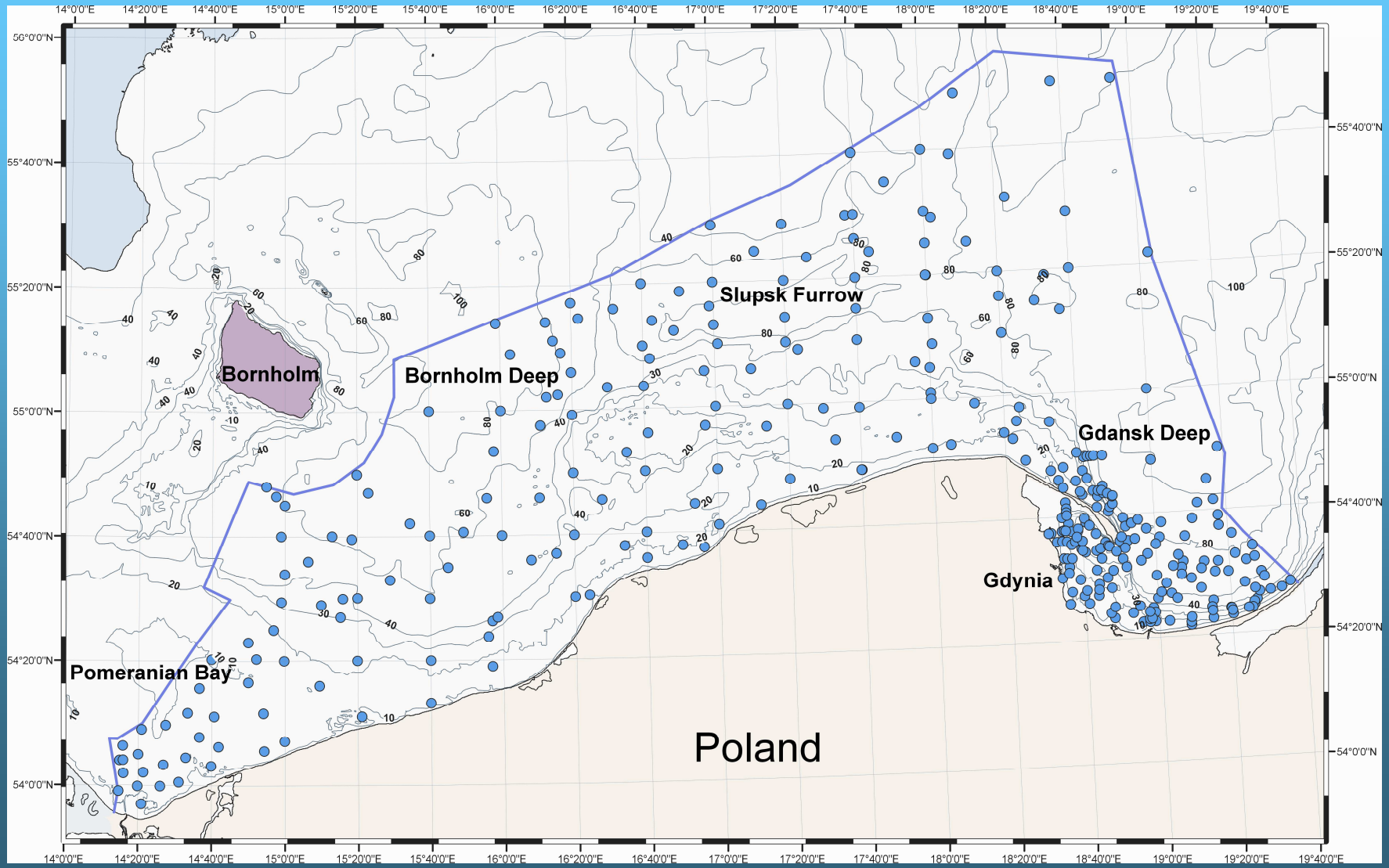
Criteria:

- Rarity, aggregation, fitness, naturalness, proportional importance

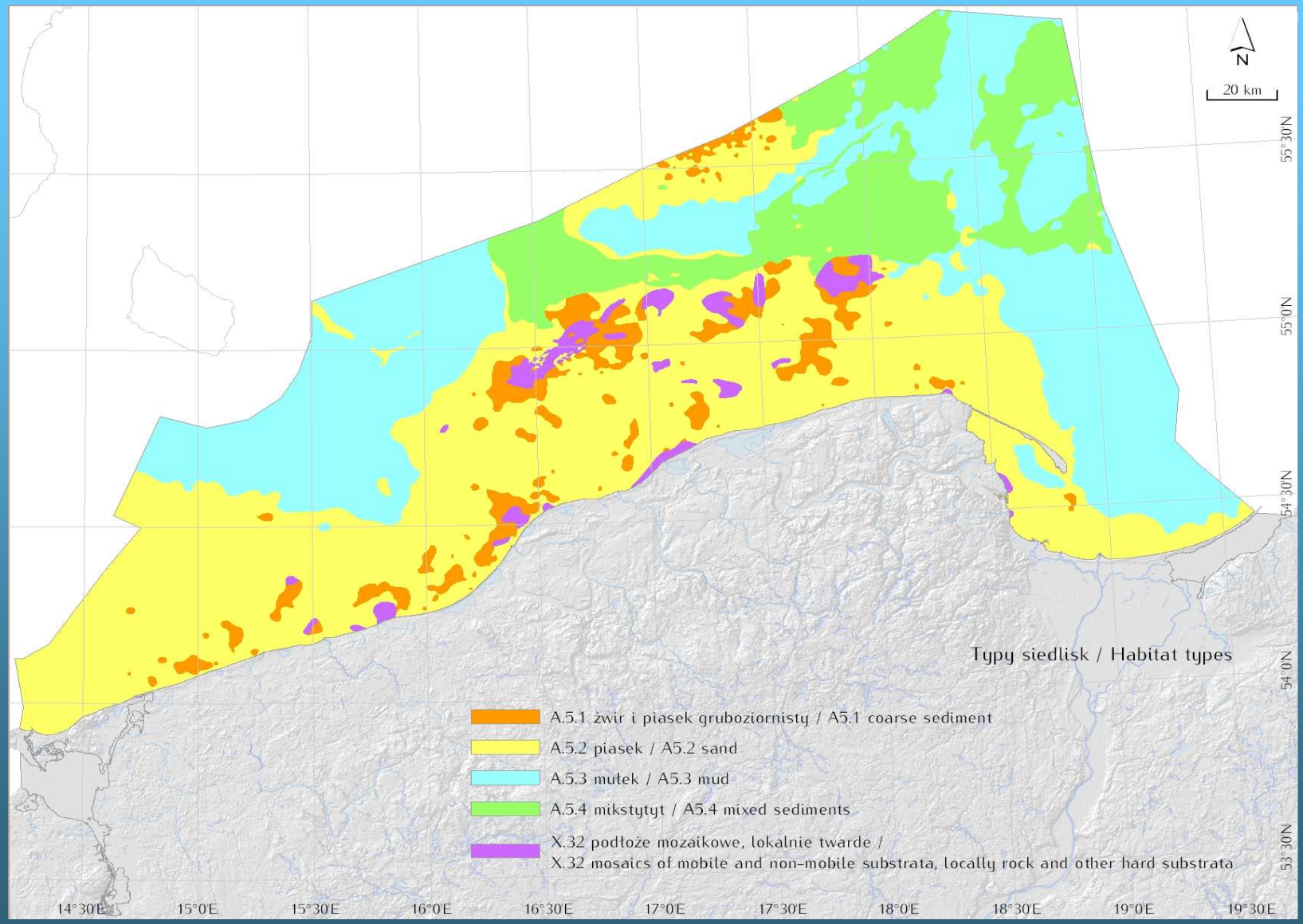
assumptions

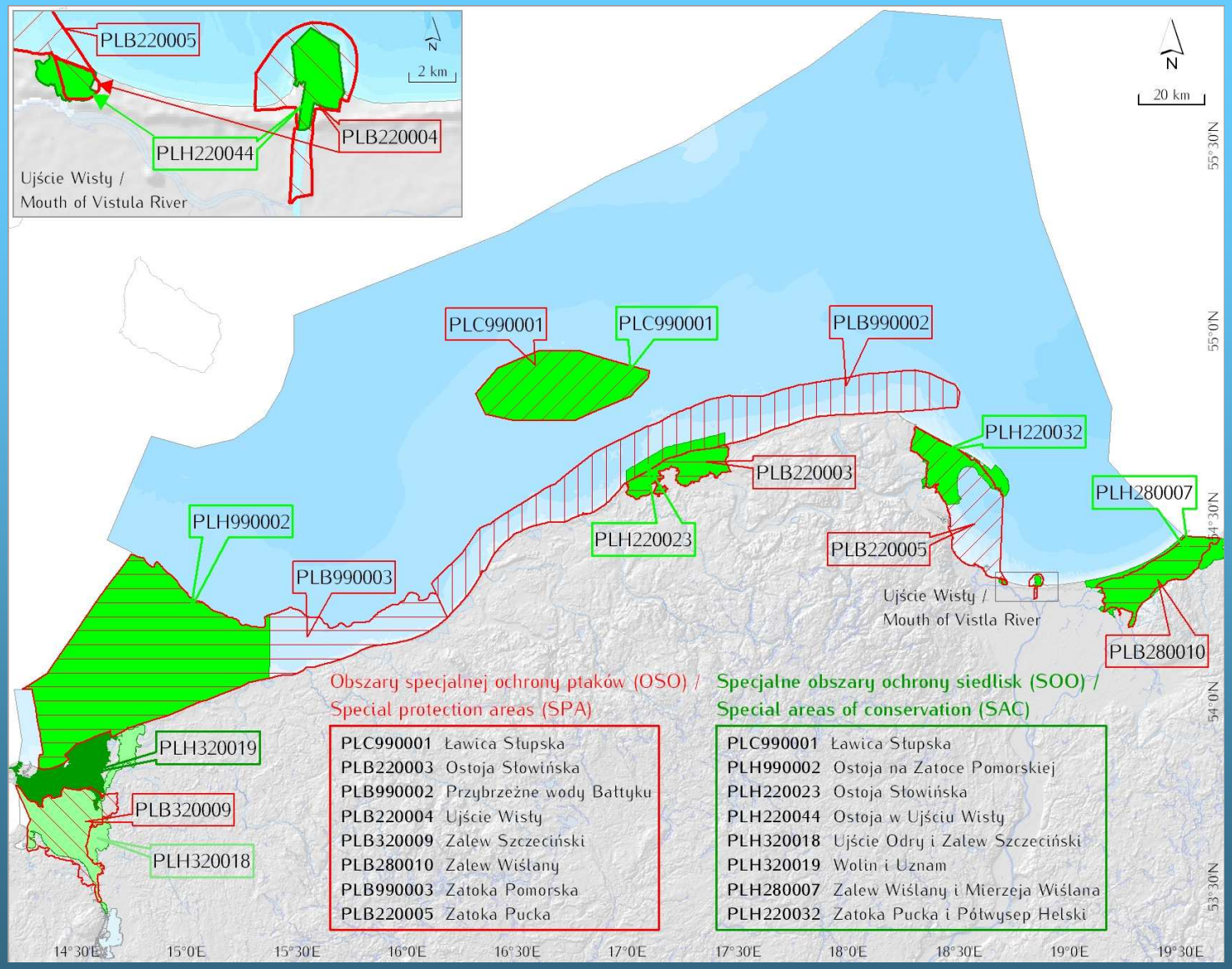
1) Species are not equal and might be valued by multiple criteria
2) Communities/habitats are defined by:
   - species content (from – to ..)
   - biomass (from – to …)
3) Biological value of the habitat is a combination of :
   - Its individual species value
   - Rarity of the habitat
4) Value of the specific point is the value of its habitat corrected for the quality (completness of species set and biomass class)

Distribution of stations



EUNICE 3. level habitat map of Polish EEZ



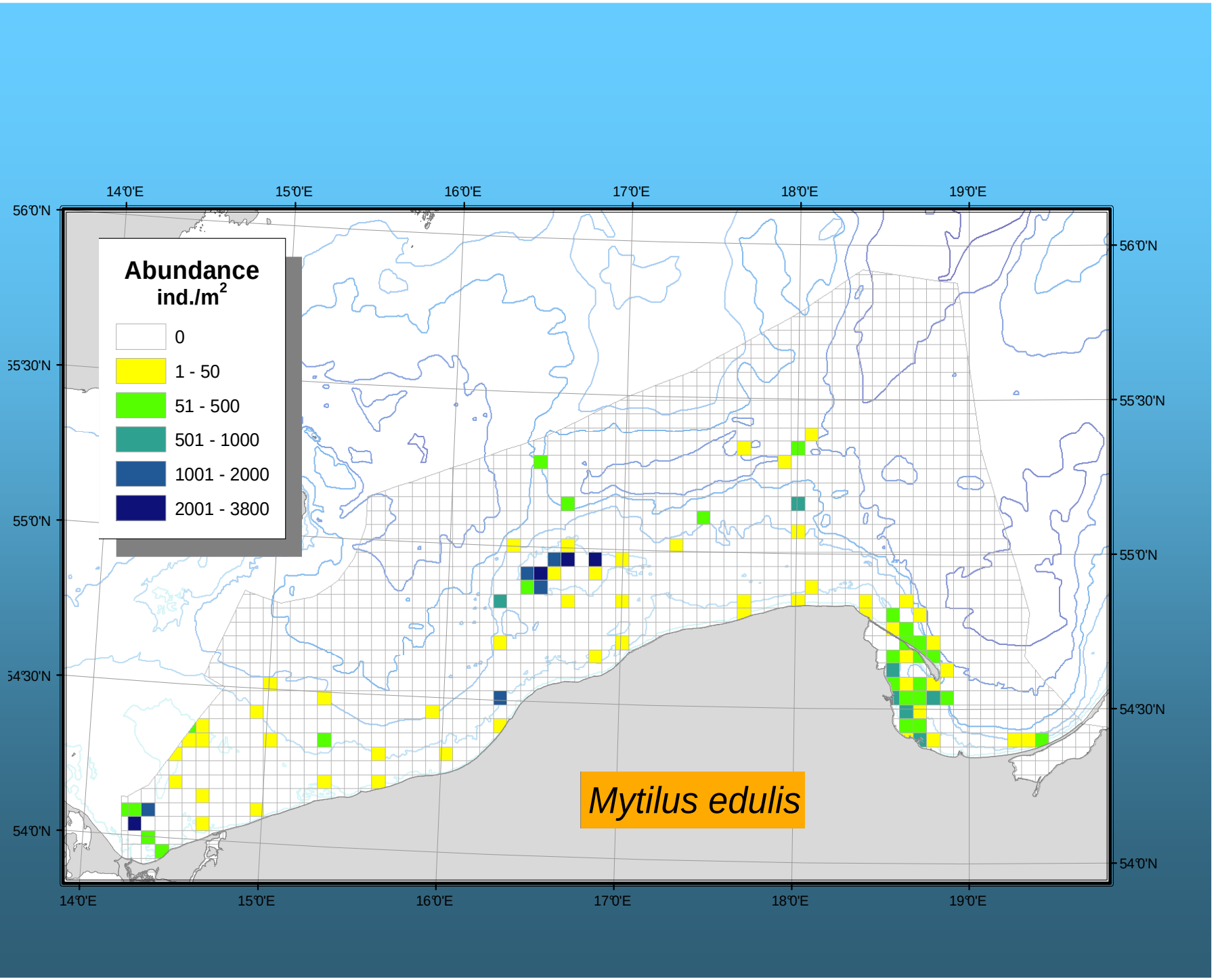


Obszary specjalnej ochrony ptaków (OSO) /
Special protection areas (SPA)

PLC990001	Ławica Słupska
PLB220003	Ostoja Słowińska
PLB990002	Przybrzeżne wody Bałtyku
PLB220004	Ujście Wisły
PLB320009	Zalew Szczeciński
PLB280010	Zalew Wiślany
PLB990003	Zatoka Pomorska
PLB220005	Zatoka Pucka

Specjalne obszary ochrony siedlisk (SOO) /
Special areas of conservation (SAC)

PLC990001	Ławica Słupska
PLH990002	Ostoja na Zatoce Pomorskiej
PLH220023	Ostoja Słowińska
PLH220044	Ostoja w Ujściu Wisły
PLH320018	Ujście Odry i Zalew Szczeciński
PLH320019	Wolin i Uznam
PLH280007	Zalew Wiślany i Mierzeja Wiślana
PLH220032	Zatoka Pucka i Półwysep Helski


Abundance
ind./m2
0
1 - 50
51 - 500
501 - 1000
1001 - 2000
2001 - 3800
14°0'E
15°0'E
16°0'E
17°0'E
18°0'E
19°0'E
56°0'N
55°30'N
55°0'N
54°30'N
54°0'N
Mytilus edulis

Stages of biological valuation

1. ***Objective – environmental data compilation***

- Habitat and communities maps – multidimentional analyses
- Analyse of biomass and density data for each habitat/community
- Statistical analysis of environmental drivers (correlation analyse)

2. Subiejective – expert judgement

- Assessment questions selection e.g Derous et al. 2000, adjustment the scale of points

3. Objective – filling the forms

- Score of points for each species
- Score of points for each habitat according to optimal characteristics
- Score of points for specific site according to four categories of biomass and species richness completness.
- GIS analyse and mapping

Individual species valuation – assessment questions – yes or not 0-1

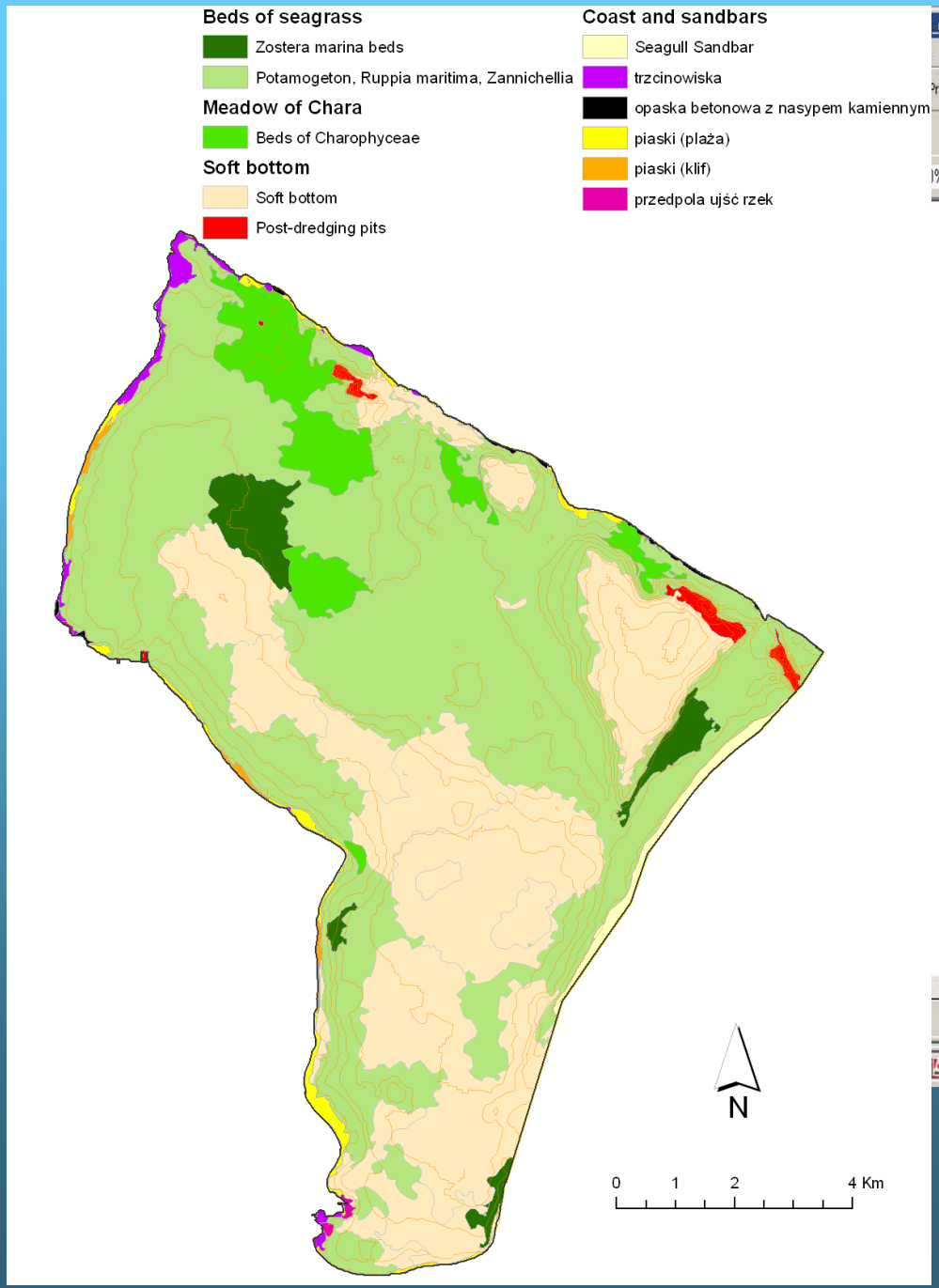
weight	3	3		2	2	2		1	1
Taxon	habitat builder	Slow regeneration	**together**	key species	rare	habitat specif.	**together**	bioturbation	filtrat.
Fucus vesiculosus	3	3	**6**	2	2	2	**6**	0	0
Mytilus edulis trossulus	3	3	**6**	2	0	0	**2**	0	1
Chara sp	3	3	**6**	0	0	2	**2**	0	0
Zostera marina	3	3	**6**	0	0	2	**2**	0	0
Talitrus saltator	0	0	**0**	2	2	2	**6**	1	0

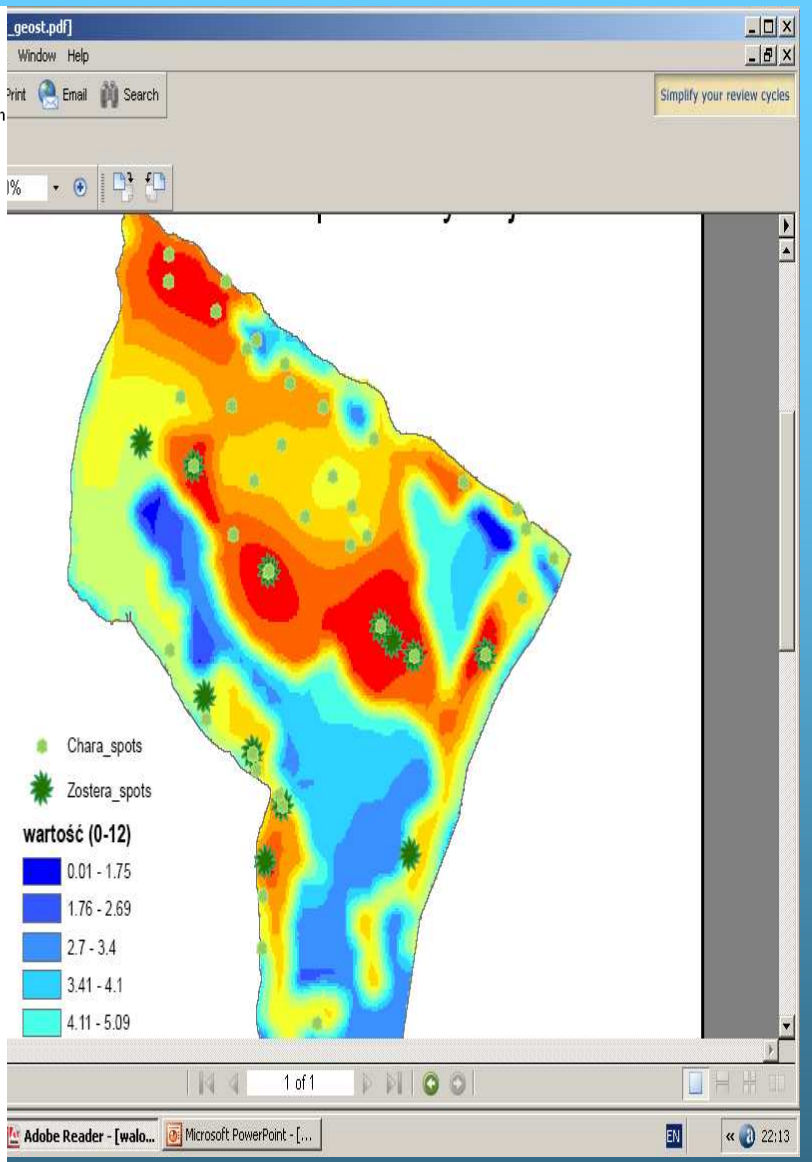
Individual community/habitat quality valuation

Habitat	points	optimal species	good sps	fair sps	poor sps	optimal Biom.	good Biom.	fair Biom.	poor Biom.
1 *Zostera*	**12**	25 and more	11 to 24	6 to 11	below 5	over 100g	50 to 100g	25 to 49g	below 25g

Example analyse:

1. Station nr 20b, defined habitat: Zostera bed
2. Value of Zostera bed in Polish EEZ is 12 points
3. Station 20b have half of the optimal species count for the Zostera bed in EEZ
4. Station 20b have half of the optimal biomass value for the Zostera in EEZ
5. Biological value of station 20b is half of the Zostera bed score (12/2=6 points)


Beds of seagrass
Zostera marina beds
Potamogeton, Ruppia maritima, Zannichellia
Meadow of Chara
Beds of Charophyceae
Soft bottom
Soft bottom
Post-dredging pits
Coast and sandbars
Seagull Sandbar
trzcinowiska
opaska betonowa z nasypem kamiennym
piaski (plaża)
piaski (klif)
przedpola ujść rzek
N
0
1
2
4 Km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Simplify your review cycles
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wartość (0-12)
0.01 - 1.75
1.76 - 2.69
2.7 - 3.4
3.41 - 4.1
4.11 - 5.09
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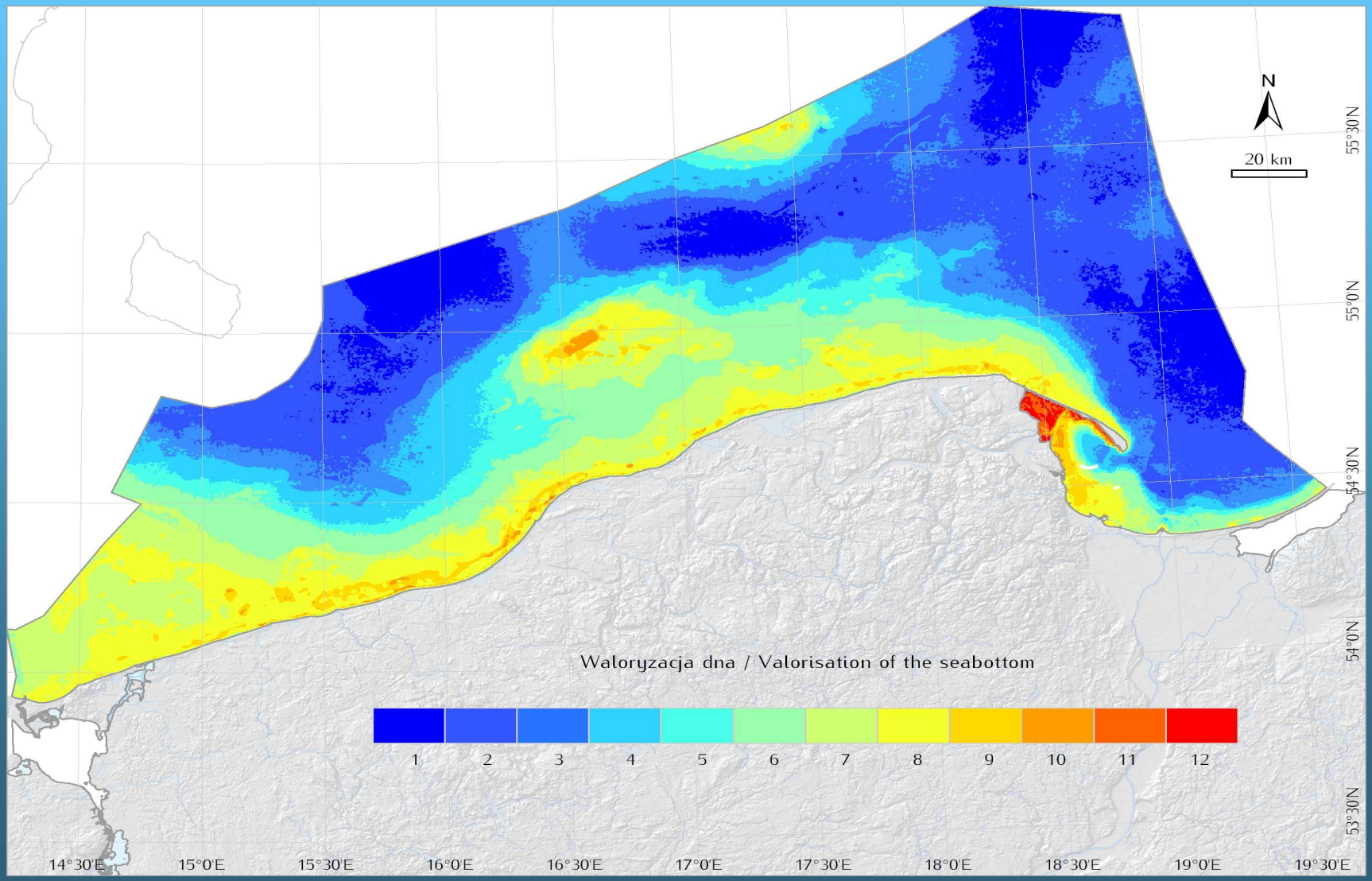
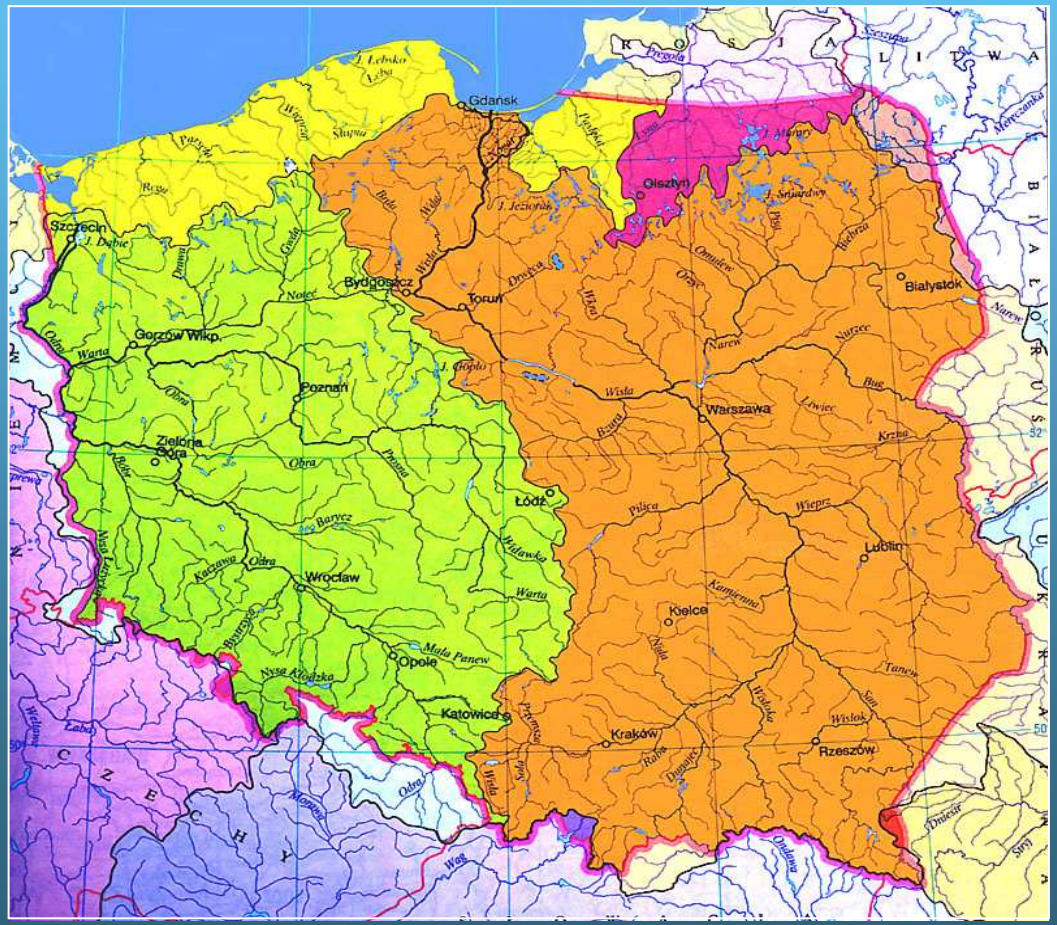
Biological valorisation of Polish Marine Areas



PROBLEMS

Baltic in Polish eyes - the sea of troubles

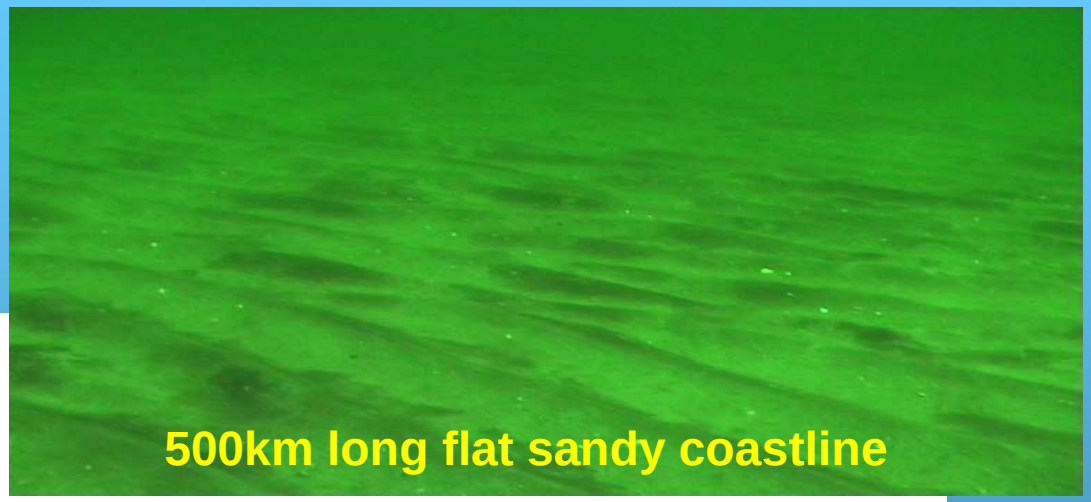


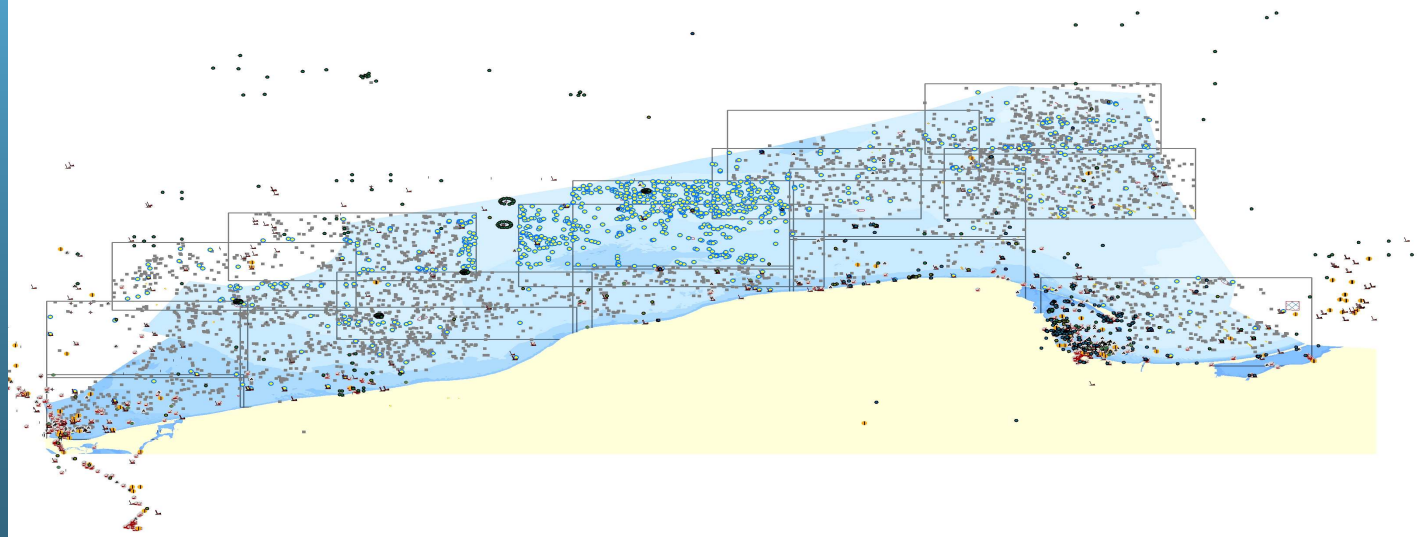
Public oppinion on the Baltic:

-Contamination
-Eutrophication
-Erosion
-Floods & storms
-Toxic blooms
-Neglible biodiversity
-No job market
-No public concern
-No international interest
-Short tourist season
-Dying sea
-Aliens alert

Coastline is valued, once it has been covered by concrete and stabilised

Are natural values too low ?





3000 shipwerecks above the seabed in Polish EEZ

CONCLUSIONS

Marine valuation - valuing the unknown ?

Anquettes reflecting ignorance rather than true value ?

Mix of ideas on landscape, charismatic species, specific elements….

More value for specific species than for the whole ecosystem

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