## Cultural landscape in maritime planning



Puck Bay - an example from Poland

Iwona Pomian

Krzystof Kurzyk

National Maritime Museum in Gdansk

**WORKSHOP 3:** 

**MARITIME CULTURAL HERITAGE - CHALLENGING PART OF MSP** 





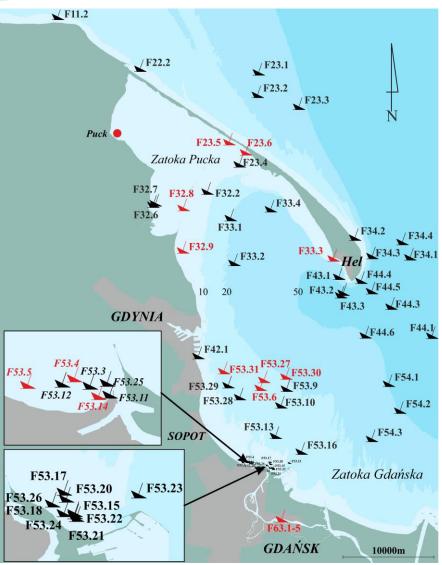




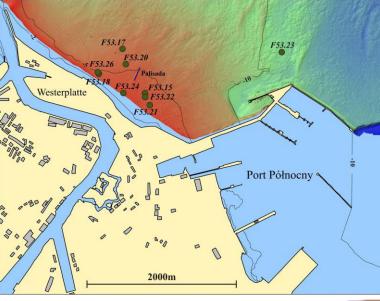




The maritime cultural heritage of the Puck Bay







#### Changes in the coastline of the southern Baltic Sea during the Holocene

About 9300 years BP (red rectangle - the location of the Ustka test area; red line - the present-day shoreline).





In early Holocene after deglaciation Puck Bay (part of Gulf of Gdansk) was a land area which was subjected to flooding by seawaters about 7500 BP.

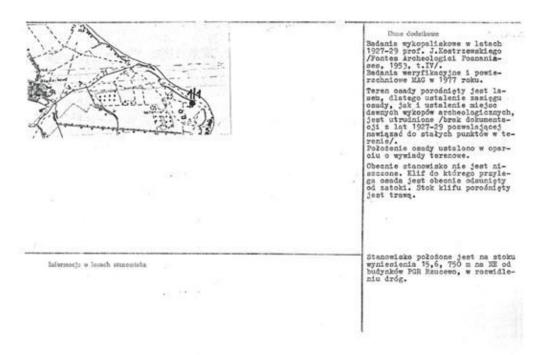
Today Puck Lagoon is very shallow, average 2-3 m deep

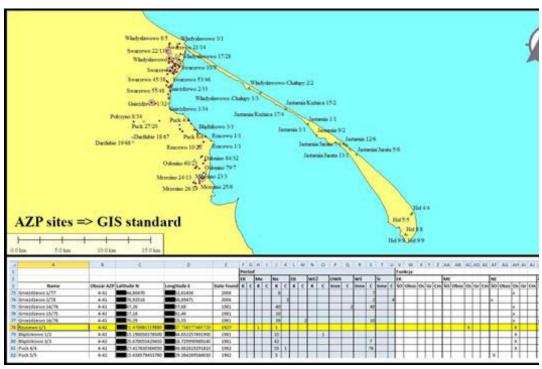
with potential of submerged landscape and archaeological sites and artefacts from Stone Age.



#### Searching for underwater cultural landscapes Activities in the BalticRIM project







Stone Age archaeological sites were transferred to digital map and database

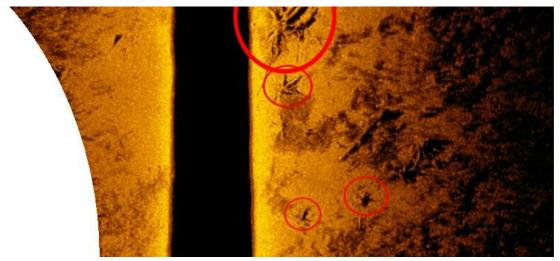
## Applied methods:

Geological analyses and reconstruction of paleoshoreline in the Bay of Puck

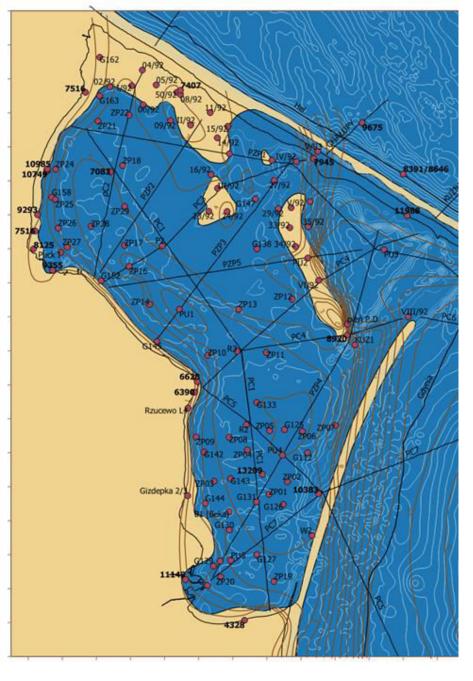
Now we have 32 radiocarbon dates from Rzucewo Test Area and Swarzewo Test Area.

All dates are from Early Holocene, about 9000-8300 BC and 5000-4500 BC.

Archaeological surveys in about 30 underwater sites in test areas and possible submerged forests. Taking wood and peat samples for dating, searching for artefacts and preparing underwater documentation (photo, video etc.)



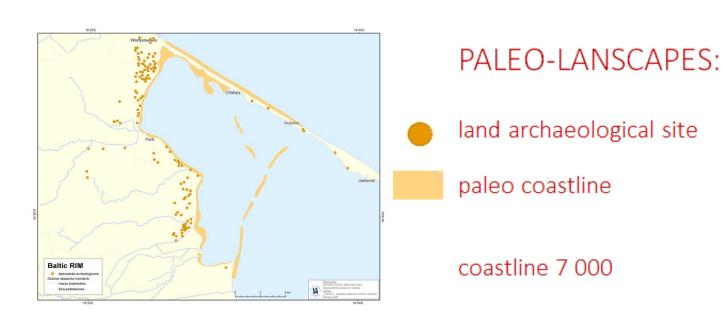




# Puck Lagoon state of geological reconnaissance 2018

- Macroscopic descriptions and results of granulometric analyses of 98 surface sediment samples collected with Petersen and Ekman bottom scoops (Musielak, 1979).
- Macroscopic descriptions of 29 cores up to 3.5 m long collected with a vibrating probe (Wypych, 1961).
- Macroscopic descriptions of 50 sediment cores up to 3 m long taken with a piston-pressure probe (Kramarska et al., 1993).
- Macroscopic descriptions and lithological results of 13 drill profiles to depths
- 10 to 20 m, below the bottom surface made by the percussion method (Kramarska et al. 1993
- Macroscopic descriptions and lithologic results of 14 cored drill profiles to depths ranging from 6 to 20 m below bottom surface (Zachowicz et al., 1998).
- Macroscopic descriptions and lithologic results of 6 cored drill profiles to depths of 6 to 20 m below bottom surface (Uścinowicz et al. 2008),
- Macroscopic descriptions of 55 short (20-25 cm) cores taken by a diver (Uścinowicz et al., 2008), 12 subbottom profiler seismic profiles totaling approximately 85 km
- (Zachowicz et al., 1998, Uścinowicz et al., 2008), 75 peat radiocarbon dates from 58 sites, and 2 lake chalk radiocarbon dates from 2 sites.

# Area of palo-landscape from the Stone Age. Probability of occurrence of prehistoric settlement residues







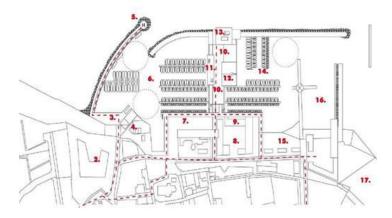


#### PLANNING AREA 1 high probability of submered relict forest and archaeological sites

- Planning rules:
- in maked spots restrictions on carrying out investments threatening the submerged paleolandscape and archaeological sites (dredging, tampering, sand extraction, construction, etc.).
- In other parts in-depth area, research in order to check the seabottom (seabottom scan, diver survey etc.) cultural paleolandscape;
- Obligatory performance of archaeological research in the direction of a cultural paleolandscape, apart from environmental impact assessment.
- Development of a strategy for the preservation of the cultural paleolandscape and their use for the development of municipalities.

#### Principles in practice - an example of the marina in Puck

- The results of geological research concerning the history of the Puck Lagoon suggest that under the bottom surface there may be remains of a much earlier human presence dating back to the 5th millennium BC.
- Comparison and correlation of geophysical data with more rarely available in-situ data such as borehole logs, allows for the identification of relevant layers in the geophysical data (ground truthing).
- Recommendations:
- Geological surveys should be carried out in order to indicate the concentration of historical monuments.
- Archaeological research in places indicated on the basis of the conducted boreholes.
- In the area, which has been previously significantly transformed, it is not required to carry out prior research provided that the investor provides permanent archaeological supervision of the earthworks - with the rigour of changing the supervision to archaeological excavation if archaeological objects are revealed during the works.



Rys.2. Schemat funkcjonalnego wykorzystania projektowanego portu Via Marina





# Population density as a factor influencing the protection of MCH on coastal areas

- Finland 5 518 000 (2019) Population density 18/km2
- Total length of the coastline 4600km. The area of the country 338145 km2
- Sweden 10 183 000 Population density 25/km2
- Total length of the coastline 60.8 thousand km
- Estonia 1 302 000 population density 31/km2
- Total length of the coastline 3794 km .The area of the country is 45 339 km<sup>2</sup>.
- Poland 37 734 000 population density 124/km2
- Total length of the coastline 770 km. Country area 312679

# 9000 8000 7000 6000 5000 4000 2000 1000 0 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 ■ Gdańsk ■ Gdynia ■ Jastarnia ■ Hel ■ Władysławowo

#### Does anyone care

- Number of persons registered for diving in Polish territorial waters managed by the Maritime Office in Gdynia / source: Maritime Office in Gdynia.
- From 2021 the city of Puck creates a programme presenting its underwater cultural heritage
- Temporary exhibition in the fishing harbour (opening in June)
- Boat trips over the archaeological site of the early medieval port in Puck (possibility of viewing with ROV vehicle)
- archaeological picnic in July





Delivering MSP
Interactions and Capacities
Across All Levels

## Thank you













