

Copernicus HRL-WAW for assessment of Ecological Focus Areas and identifying and monitoring wetlands in Poland

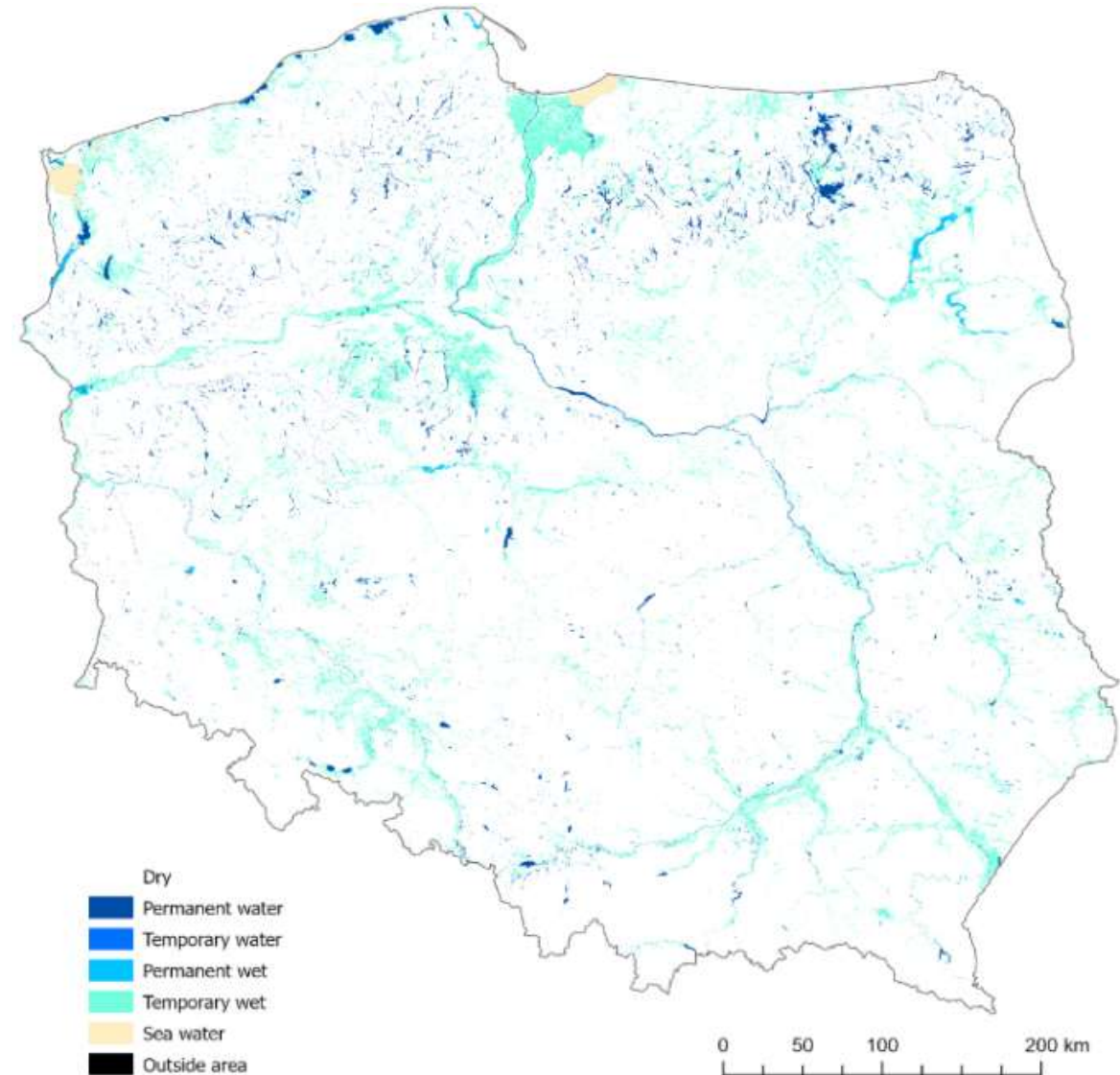
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WAW_2018_010m

WWPI_2018_010m

WAWCL_2018_010m

Analysis conducted at country scale



Assess the **potential** and **accuracy** of HRL-WAW for monitoring agricultural landscapes in particularly Ecological Focus Areas (EFA) and identifying and monitoring wetlands in Poland

Topographic database (BDOT10K)

Land Parcel Identification System - Ecological Focus Areas (EFA)

National wetland database – GIS Mokradła

Land Use/Cover Area frame Survey: LUCAS database

Database of protected peatlands



Common Agricultural Policy (CAP)

Three actions that EU farmers must put in place to receive the green direct payment are:

- crop diversification: a greater variety of crops makes soil and ecosystems more resilient,
- maintain permanent grassland: grassland supports carbon sequestration and protects biodiversity (habitats),
- dedicate 5% of arable land to areas beneficial for biodiversity: Ecological Focus Areas (EFA), for example trees, hedges, land left fallow, ponds that improves biodiversity and habitats

HRL WAW Classes

- Permanent water
- Temporary water
- Permanent wet
- Temporary wet

BDOT10K

Land Cover classes

- Fresh water
 - rivers & streams
 - lakes & ponds
- Sea water

Other classes

- Permanently wet
- Periodically wet

LPIS - EFA

- Ponds up to 1 ha

GIS Mokradla (wetlands)

- Peatland (fen, bogs)
- Wetlands on mineral soil

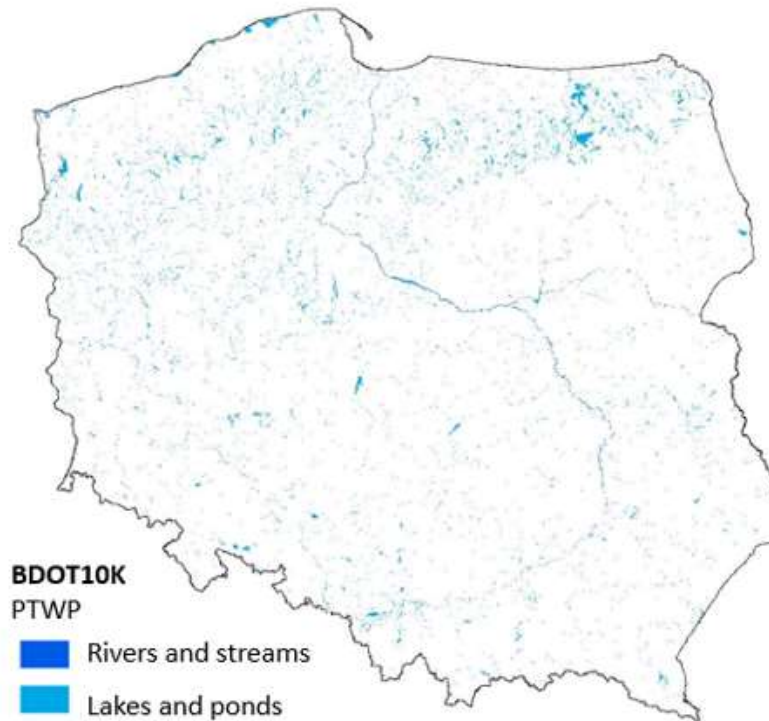
LUCAS

- Inland marshes
- Peatbogs

Topographic database (BDOT10K)

Water areas class:

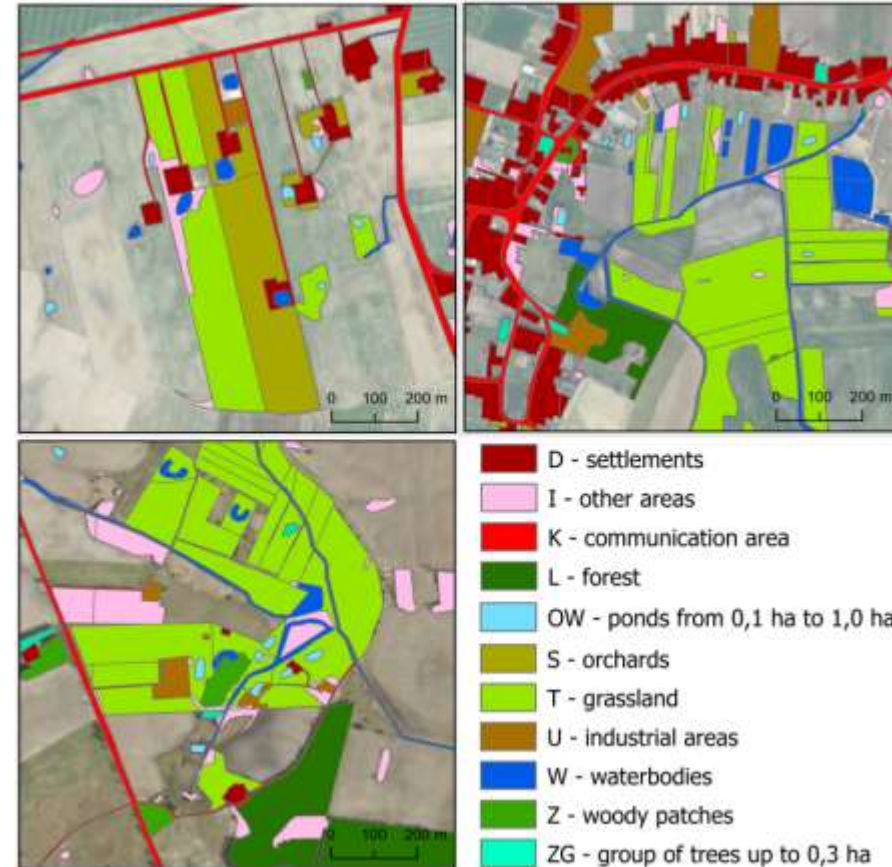
- Rivers and streams, with the minimum width of 5 m for running or standing water,
- Lakes and ponds, with the minimum width of 5 m and minimum area of 80 m², ponds smaller in size are included in other land cover classes.



Land Parcel Identification System (LPIS)

- LC layer called 'management fields',
- Ecological Focus Areas (EFA) elements:
 - group of trees up to 0.3 ha (compared vs SWF)

- ponds less than 0.01 ha
- ponds from 0.01 ha to 0.1 ha
- ponds from 0.1 ha to 1.0 ha



User accuracy: how often the WAW class is actually present in the national dataset, i.e. the percentage distribution of each WAW class amongst the national dataset classes (where 100 % is the total area in the WAW class).

Producer accuracy: how often water and wetness in the national dataset is correctly shown in HRL-WAW, i.e. the percentage distribution of each national water or wetness class among the WAW classes (where 100 % is the total area in the national water or wetness class).

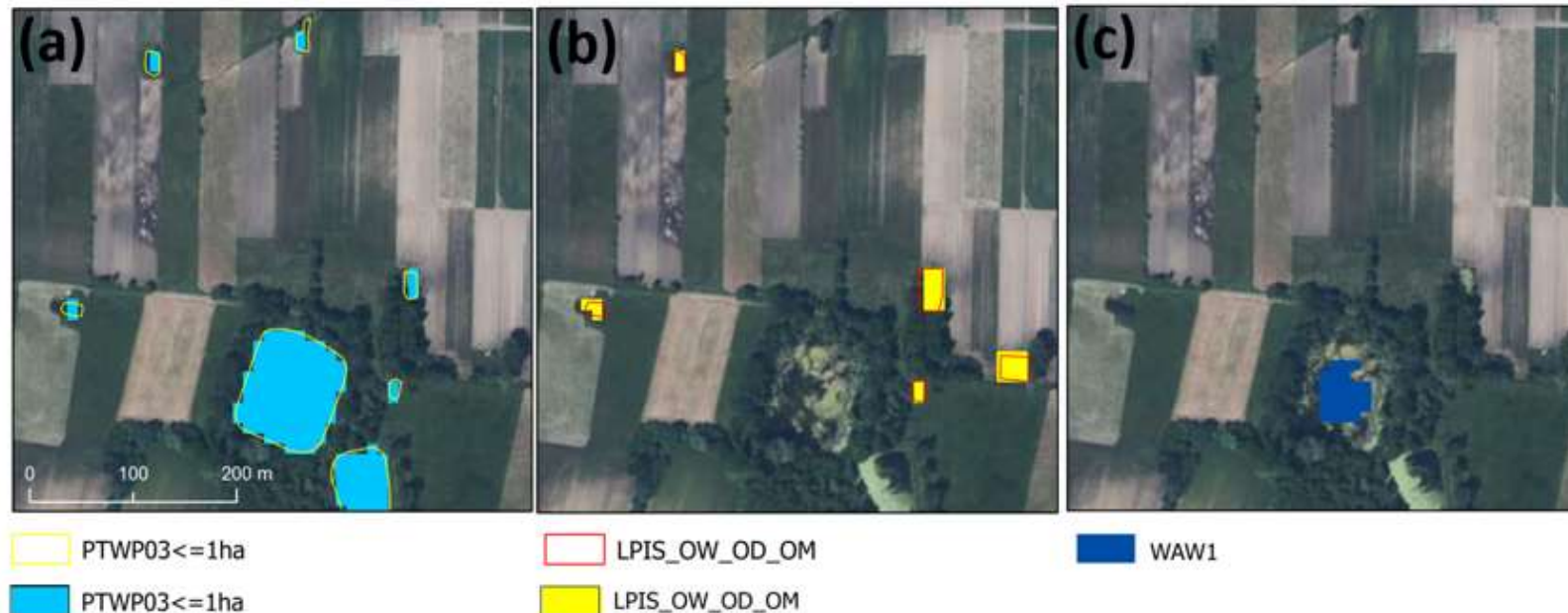
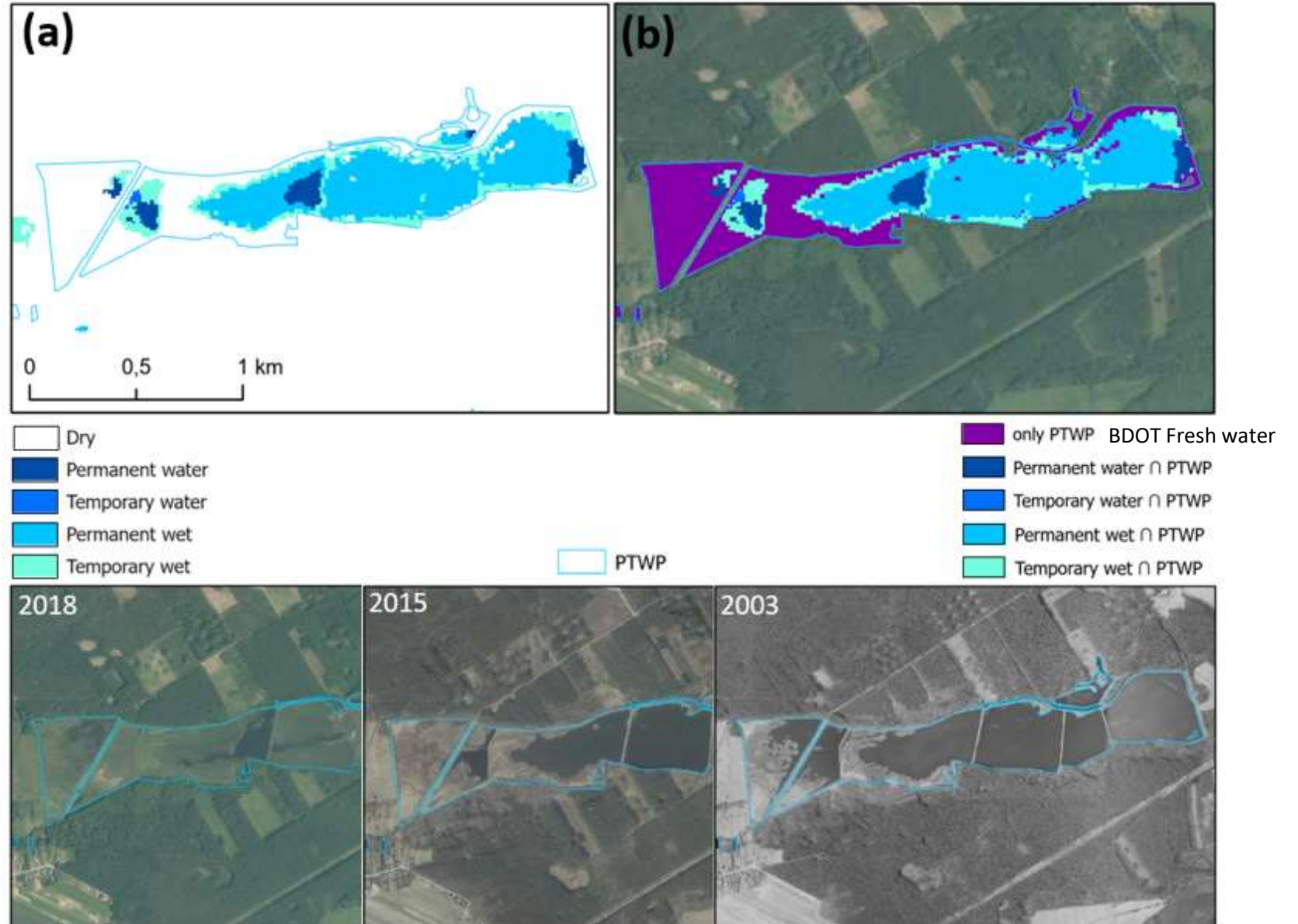


Table 5: Producer accuracy: how often the BDOT10K Land Cover is correctly shown in HRL-WAW, i.e. the percentage distribution of each LC class among the WAW classes, where 100 % is the total area in each BDOT LC class (row sums); grey cells are sub-classes under the main category 'Fresh water'.

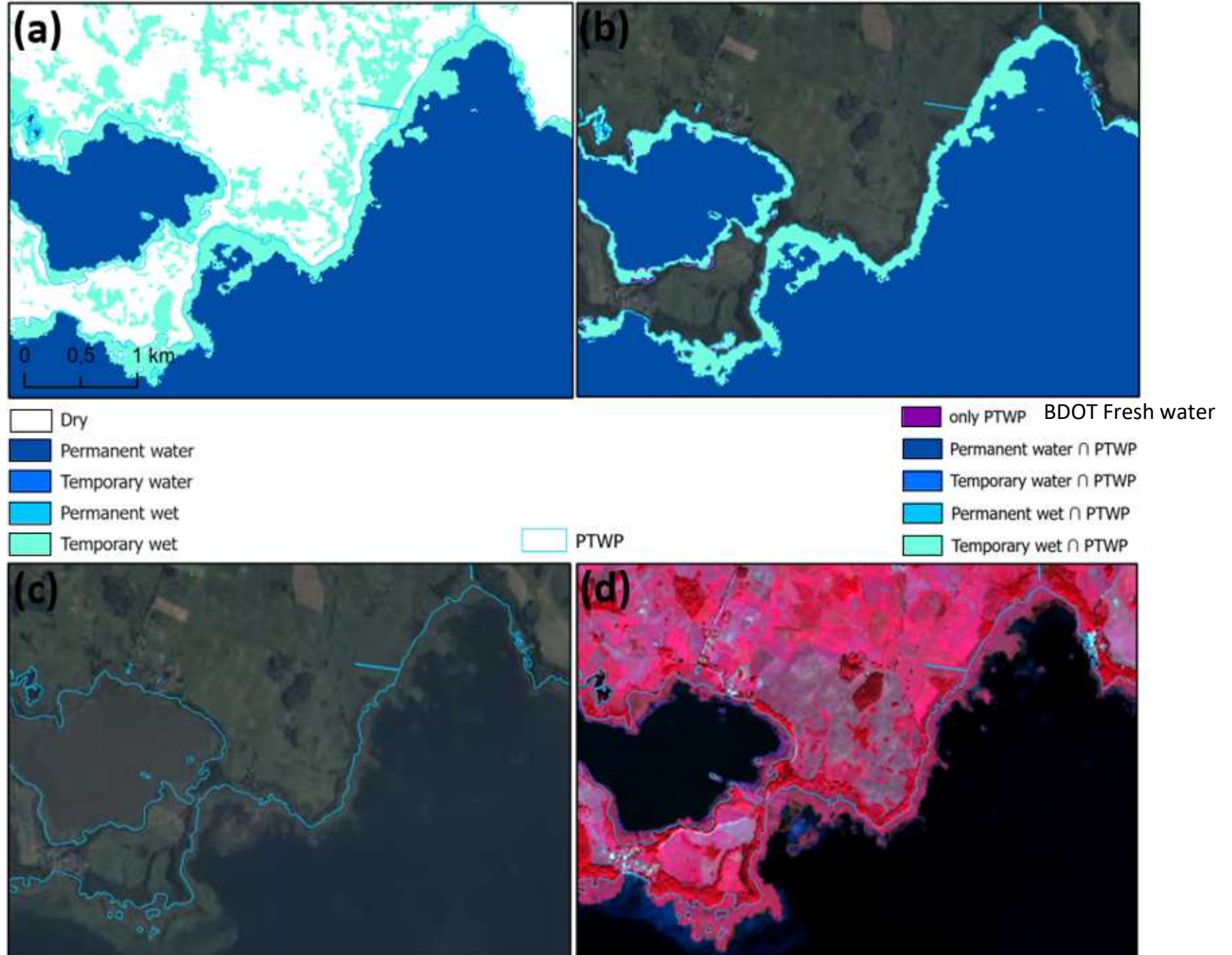
	Dry	Permanent water	Temporary water	Permanent wetness	Temporary wetness	Sea water	SUM
Built-up areas	99.6	0.0	0.0	0.0	0.4	0.0	100.0
Forest, and tree cover land	99.5	0.0	0.0	0.2	0.3	0.0	100.0
Permanent crop	98.0	0.0	0.0	0.0	2.0	0.0	100.0
Agricultural land	90.9	0.0	0.0	0.4	8.7	0.0	100.0
Unused land	91.4	2.6	0.6	0.3	4.0	1.2	100.0
Mine, dumps	88.9	3.4	2.4	0.7	4.5	0.0	100.0
Other non-built-up areas	94.8	3.0	0.5	0.1	1.6	0.0	100.0
Fresh water	19.9	69.2	0.8	1.5	8.3	0.3	100.0
Rivers and streams	28.7	55.0	1.0	2.4	12.8	0.1	100.0
Lakes, ponds	18.1	72.2	0.7	1.3	7.4	0.3	100.0
Sea water	1.2	0.7	0.0	0.4	0.1	97.7	100.0
SUM	92.7	1.4	0.0	0.3	5.3	0.2	100.0

Temporary water class covers only 118 km² – underestimation



Lake shoreline

Temporary water class covers only 118 km² – underestimation



Comparison of HRL-WAW (class 1+2) with BDOT lakes and ponds, for waterbodies in different size classes

Class range [m2]		Number of objects PTWP (lakes, ponds) in a given class range	% of objects PTWP (lake, pond) containing at least one pixel of WAW cl.1 or cl.2	% of area WAW cl.1 and cl. 2 contained in PTWP (lake, pond) in a given class range
min	max	#	[%]	[%]
100	1 000	398 570	0,23	0,18
1 000	2 000	80 644	1,51	0,78
2 000	4 000	42 640	8,50	3,97
4 000	6 000	14 996	25,09	10,93
6 000	8 000	7 712	39,34	17,89
8 000	10 000	4 895	50,38	23,65
10 000	20 000	10 258	65,31	33,04
20 000	30 000	3 819	81,59	44,25
30 000	40 000	2 128	89,00	51,47
40 000	50 000	1 394	90,82	54,68
50 000	60 000	990	93,43	58,50
60 000	70 000	774	95,87	62,19
70 000	80 000	603	95,02	63,46
80 000	90 000	478	95,61	66,10
90 000	100 000	376	97,07	66,47
100 000	200 000	2 177	97,93	70,58
200 000	400 000	1 418	99,29	76,82
400 000	600 000	576	99,65	80,36
600 000	800 000	291	100,00	82,49
800 000	1 000 000	178	99,44	84,25
1 000 000	2 000 000	340	100,00	86,42
2 000 000	4 000 000	166	100,00	87,59
4 000 000	6 000 000	48	100,00	89,46
6 000 000	8 000 000	23	100,00	92,48
8 000 000	10 000 000	13	100,00	91,70
10 000 000	150 000 000	43	100,00	93,19
Sum		575 550		72,91

- Small lakes are not detected in HRL-WAW
- 50% of lakes of 0.8 – 1ha in size are detected
- Lakes > 2 hectares are detected
- The area of WAW water exceeded 80 % of lake area first for lakes larger than 40 hectares

HRL WAW Classes

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- Permanent wet
- Temporary wet

BDOT

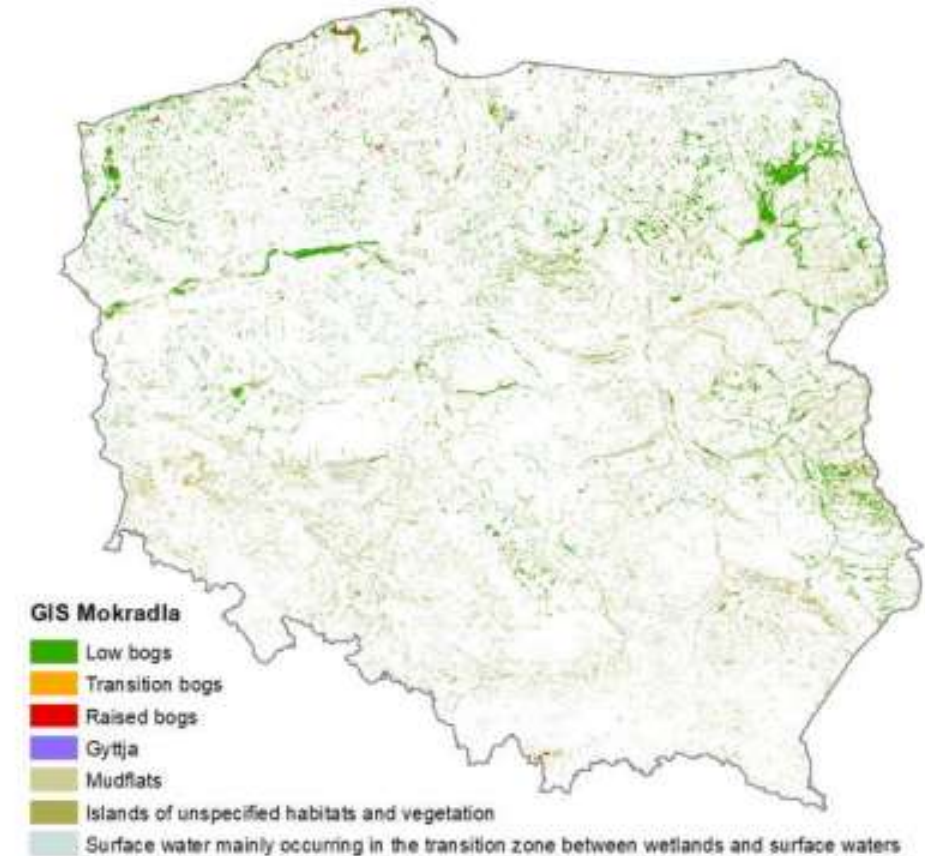
- Permanently wet
- Periodically wet

GIS Mokradla (wetlands)

- Peatland classes:
(fen, bogs)
- Wetlands on mineral soil

LUCAS

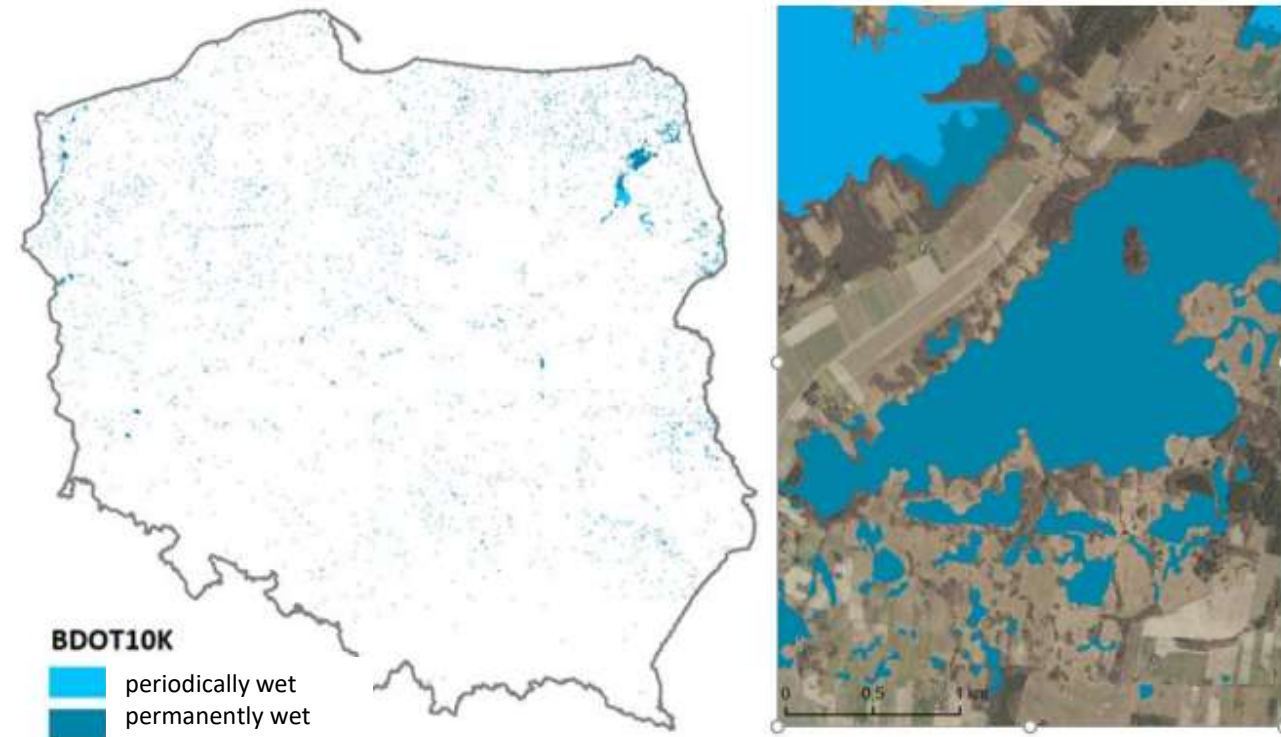
- Inland marshes
- Peatbogs



Note, the forest areas were masked from BDOT10K, GIS Mokradla and HRL-WAW using the HRL-DLT (Dominant Leaf Type) 2018 product.

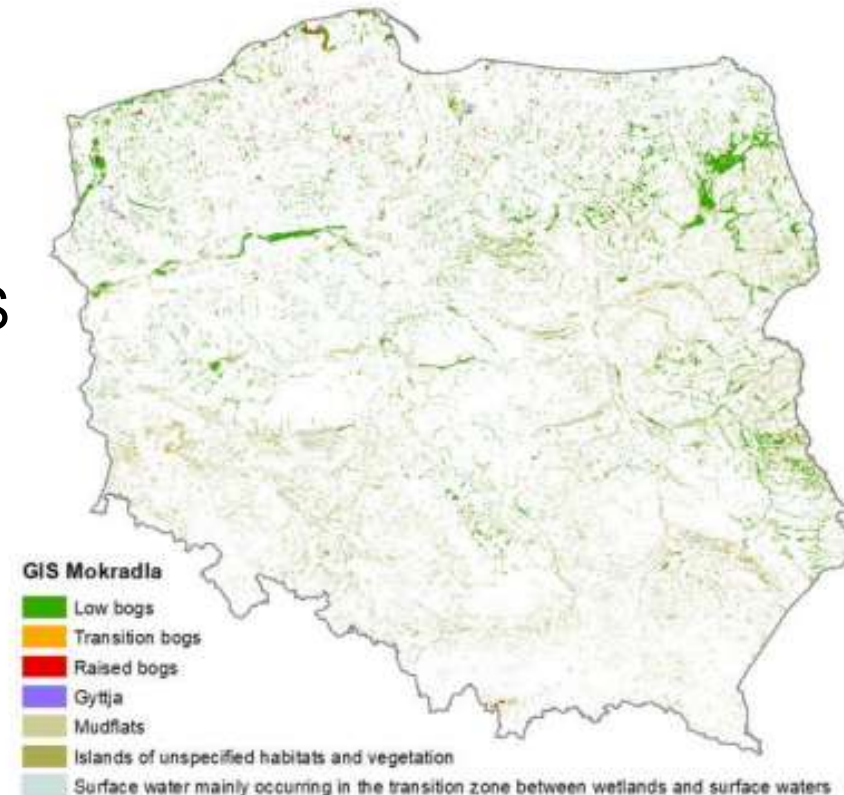
The non-forested wet areas in BDOT covers 0.8 % of country area (permanently & periodically wet areas)

- 47% of WAW Permanent wet is classified as wet areas in BDOT
... but only 18% of BDOT wet areas is classified as WAW Permanent wet
- 30% at BDOT wet areas are classified as WAW Temporary wetness
... but 51% as WAW Dry class

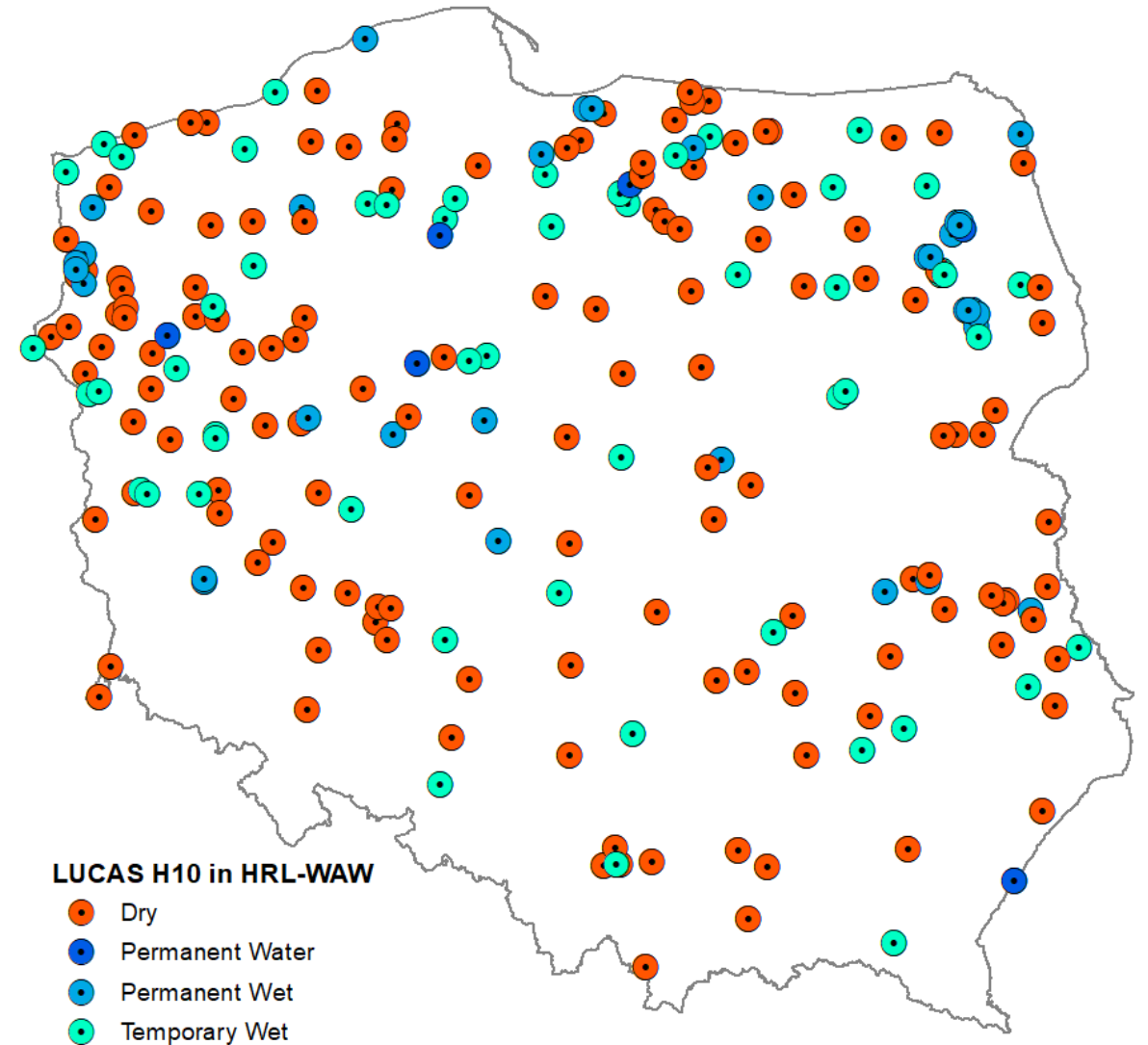


GIS Mokradla, wetland area covers 9.5 % of the country, where 2.6 % are covered by peatlands and around 7 % by wetland on mineral soil.

- 63% of WAW Permanent wet is classified as wetlandsGIS ... but only 5% of GIS wetland is classified as Permanent wet
- 42% at WAW Temporary wet is classified as wetlands in GIS
- 35% of GIS peatlands and 19% as GIS non-peat wetlands are classified as WAW Temporary wetness ...but 60% of GIS peatlands and 79% of non-peat wetlands are WAW Dry
- WAW Temporary wetness seems to be overestimated



- 60 % of LUCAS wetland points are classified as Dry
- 37 % as Permanently or Temporary wet in WAW
- 3 % Permanent water



- 11 % of protected peatlands are classified as WAW Permanent wet, 5 % as Temporary wet
- ...but 83 % as WAW Dry

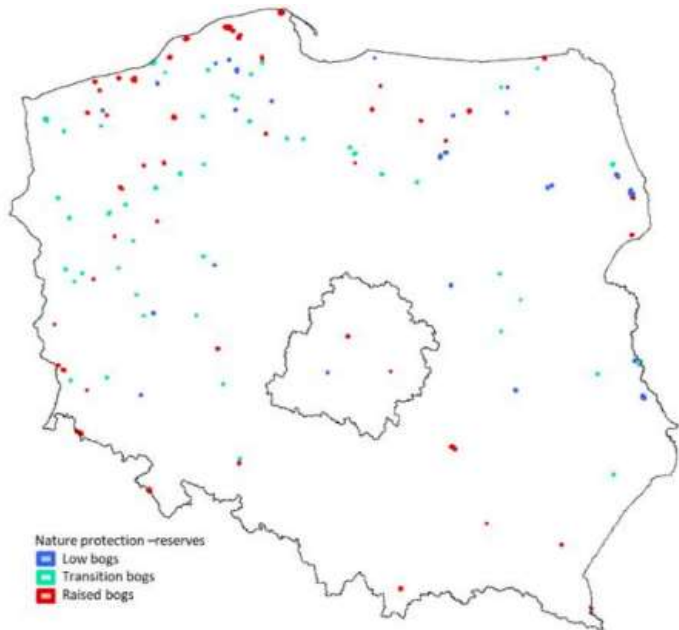
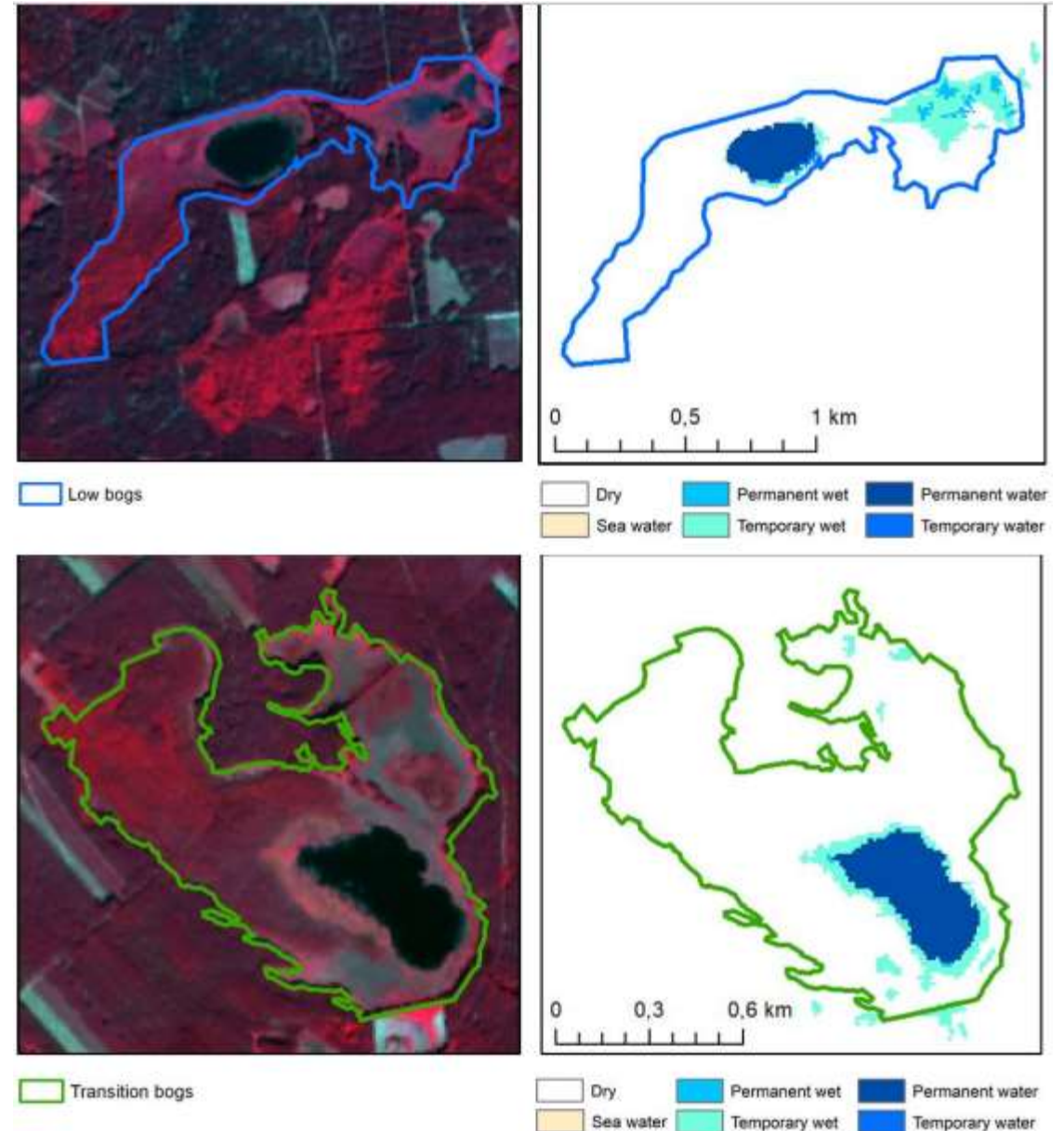


Figure 5: Location of the peat-bog nature reserves in Poland.



- The current HRL-WAW is not sufficient to map and monitor ponds at the Ecologically Focus Areas - ponds < 1 ha are not detected by WAW; lakes above 2 hectares are accurately identified.
- The current HRL-WAW is not sufficiently accurate and reliable to assist delineation and monitoring wetlands
- There is still a need for more sufficient and reliable product that could support the delineation and assessment of the status of the wetland ecosystems
- WAW wetness classes may play a more important role, especially if some of the current weaknesses and errors can be resolved in the next version.

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