

Local conservation of freshwater mussels and the practical effects of species protection

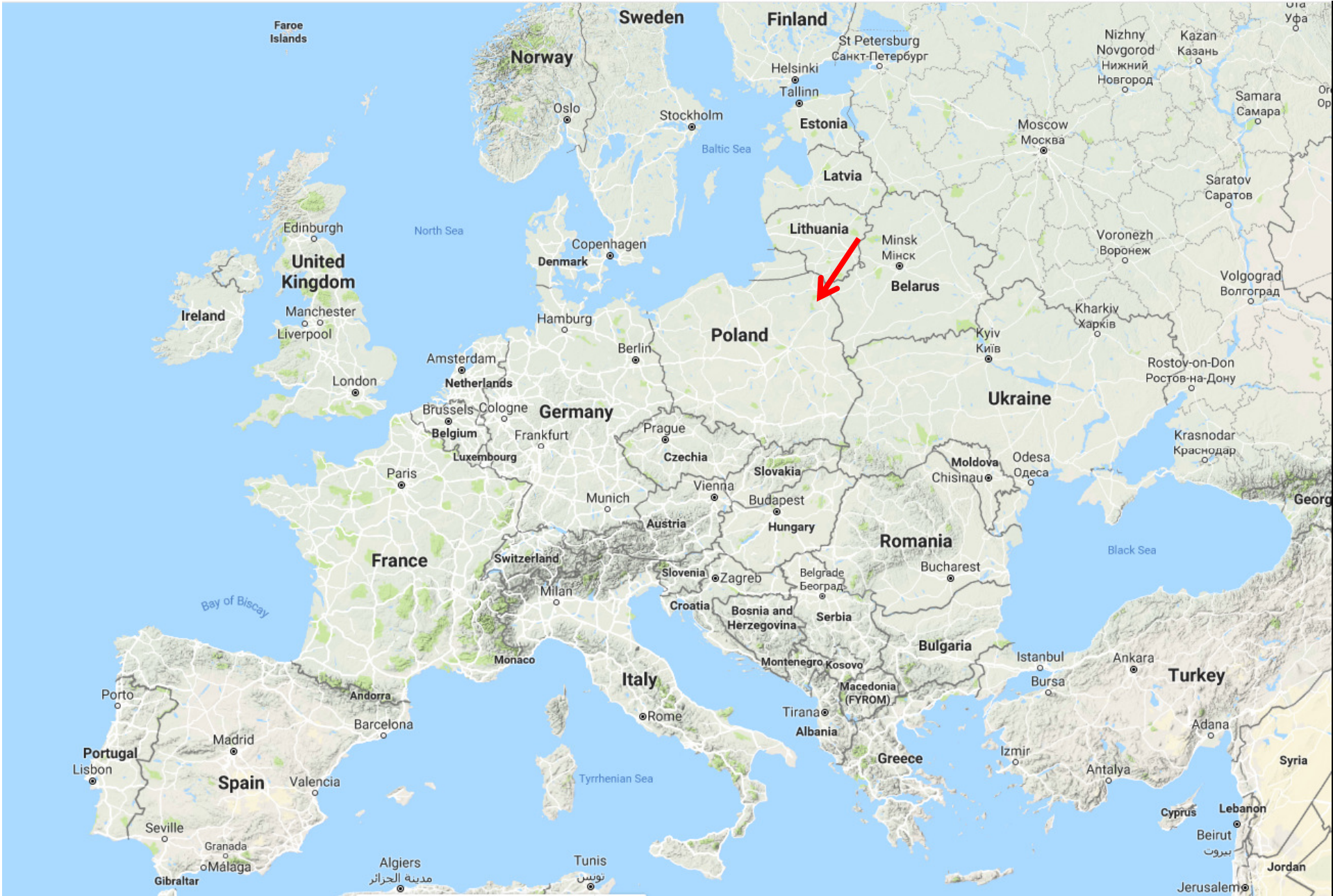
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Urszula Biereźnoj-Bazille
Andrzej Kamocki

Three mussel projects in north-eastern Poland:

1. Protecting a multispecies mussel community (including *Unio crassus*) in an unprotected river threatened by dredging and deepening of the river
2. Rescue relocation of mussels prior to the deepening of a river section
3. Remediation of an environmental damage resulting in a mass mortality of freshwater mussels (mainly *Anodonta cygnea*) and the European bitterling *Rhodeus amarus*.

Mussel species occurring in Poland:

1. *Unio crassus* (strictly protected)
2. *Anodonta cygnea* (partly protected)
3. *Pseudanodonta complanata* (partly protected)
4. *Unio tumidus* (unprotected)
5. *Unio pictorum* (unprotected)
6. *Anodonta anatina* (unprotected)
7. *Sinanodonta woodiana* (invasive, unprotected)



The Sidra River







Basing on our report on this survey
the Regional Directorate for
Environmental Protection refused to
issue a permit for the deepening
of the riverbed.

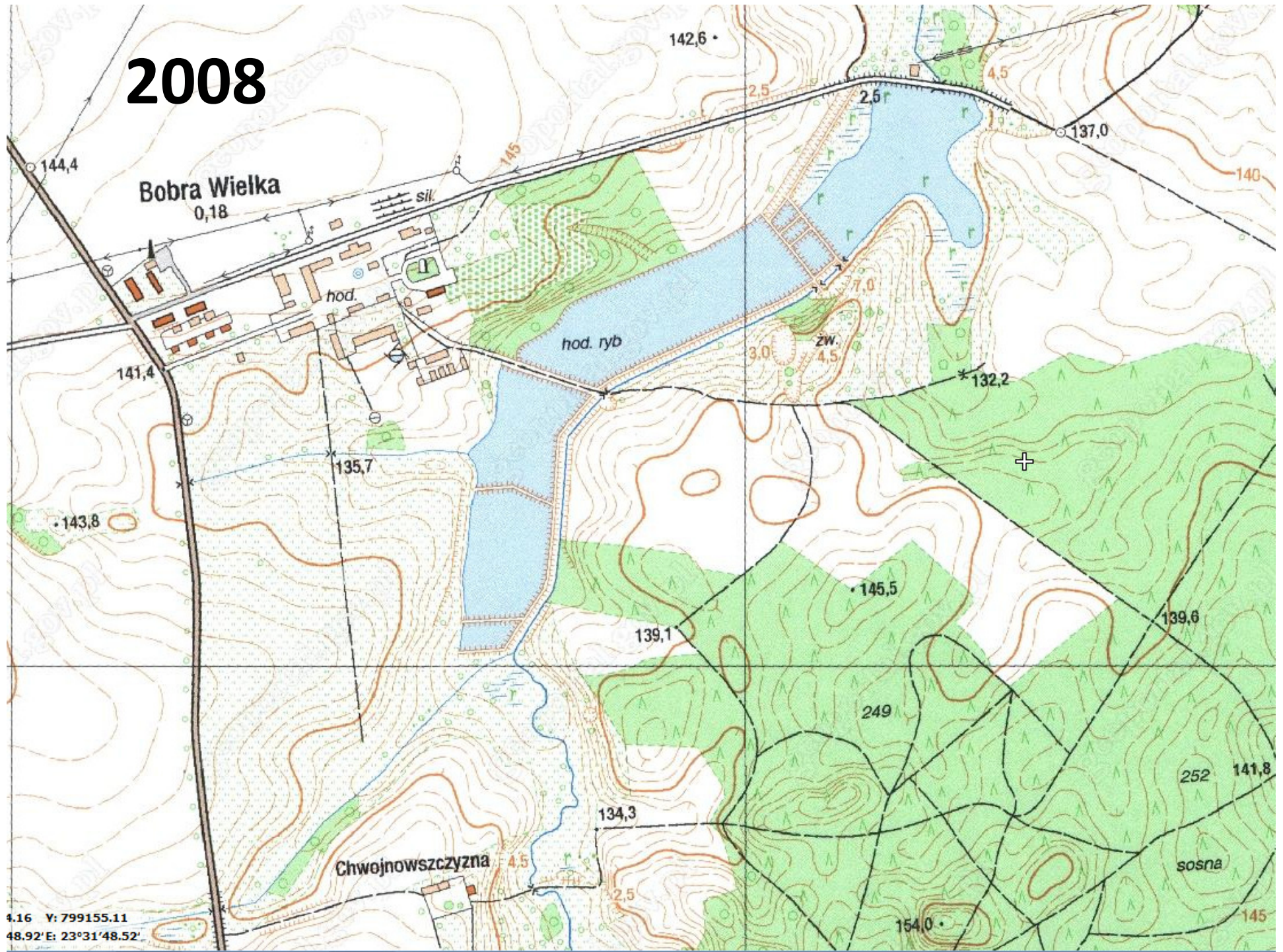
The pressure continues.







2008



4.16 Y: 799155.11
48.92° E: 23°31'48.52'

2008

Biebrza



2008



Photo C. Werpachowski

2008



Photo C. Werpachowski

2008



Photo C. Werpachowski

2008



Photo C. Werpachowski

2008



Photo C. Werpachowski

2012



Photo C. Werpachowski

2012



2012



Photo C. Werpachowski

2012

Photo C. Werpachowski



2012



2012



Photo C. Werpachowski



Photo: R. Kujawa

European Bitterling *Rhodeus amarus* and *Anodonta anatina*

2014



Photo A. Kamocki

2014



Photo A. Kamocki

2014



2015



Photo U. Bierežnoj-Bazille

2015

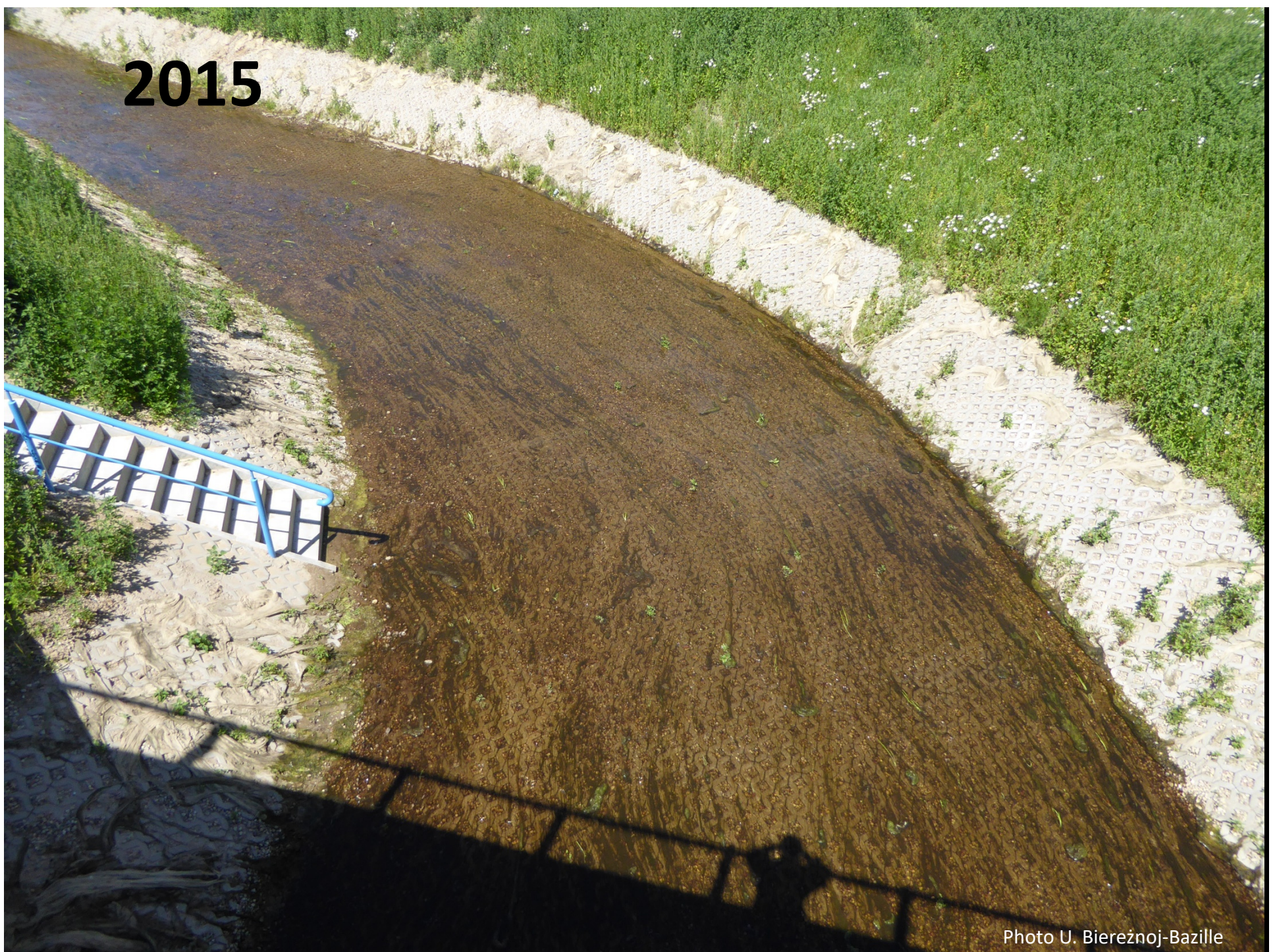


Photo U. Bierežnoj-Bazille

2015



Photo Urszula Biereżnoj-Bazille

2015



REMEDIATION PLAN

2017

For the reproduction of *Rhodeus amarus*, introduce 5,000 freshwater mussel individuals: *Unio pictorum*, *U. tumidus*, *Anodonta anatina*

2018

Monitoring of water parameters, *R. amarus* population, and freshwater mussels. If recovery exceeds 30% of introduced AND 60% are alive, introduce 300 *Anodonta cygnea*. All *A. cygnea* individually marked.

2019

Monitoring of water parameters, *R. amarus* population, and freshwater mussels. If recovery exceeds 30% of introduced AND 60% are alive, introduce 1,000 *A. cygnea*. All *A. cygnea* individually marked.

2020

Monitoring of water parameters, *R. amarus* population, and freshwater mussels. If recovery exceeds 30% of introduced AND 60% are alive, introduce 4,000 *A. cygnea*. All *A. cygnea* individually marked.

2021 – 2025

Annual monitoring of freshwater mussels. All juveniles individually marked. Success of remediation if steady population growth.

2017



Photo M. Özgo

2017



Photo A. Kamocki

2017



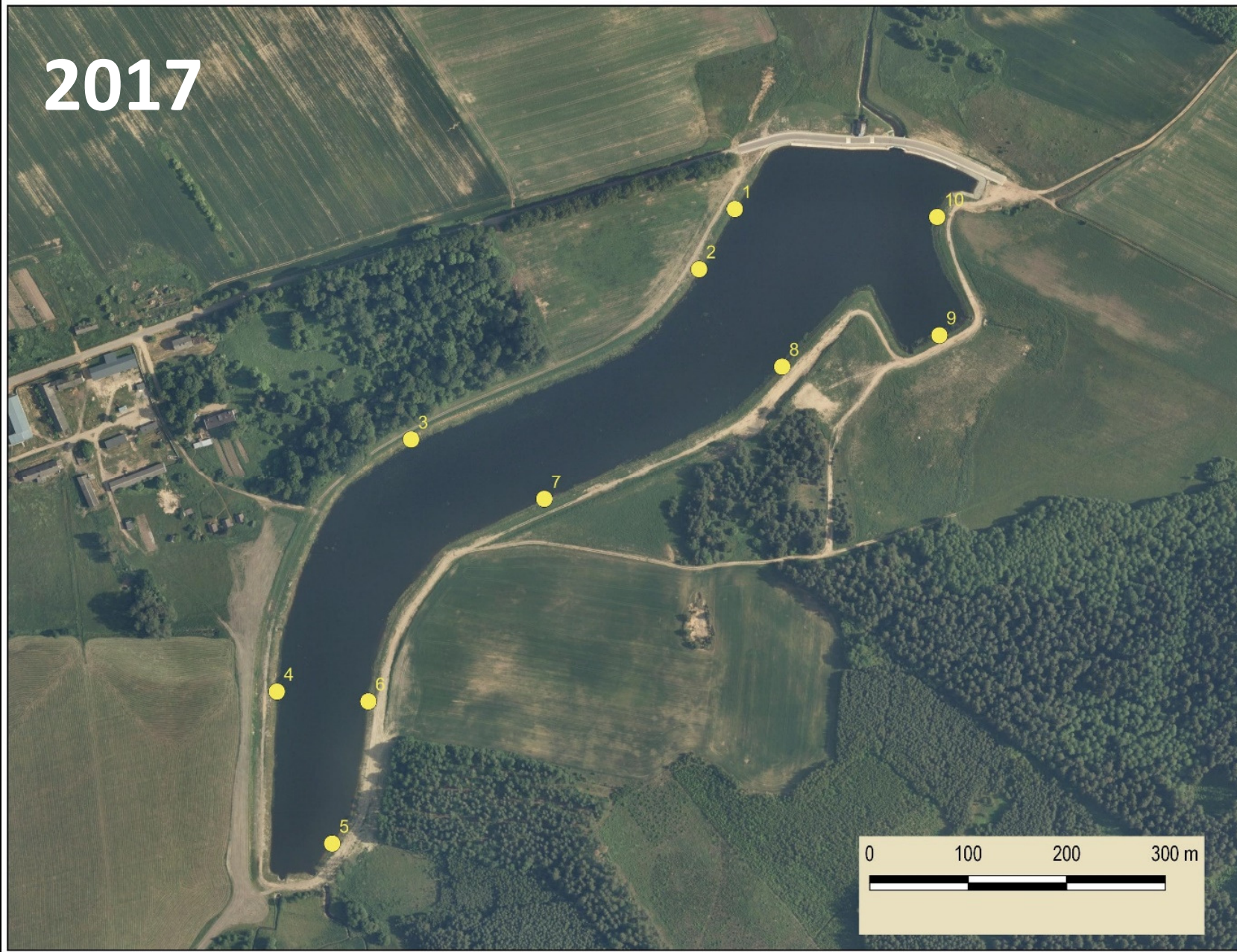
Photo A. Kamocki

2017



Photo: A. Kamocki

2017



2017



Photo A. Kamocki

2017

Photo A. Kamocki



2017

Photo: A. Kamocki



2017



2017



2017



Photo A. Kamocki

OZMIESZCZENIE STANOWISK POŁOWOWYCH NA ZBIORNIKU BOBRA WIELKA I RZECIE BIEBRZA

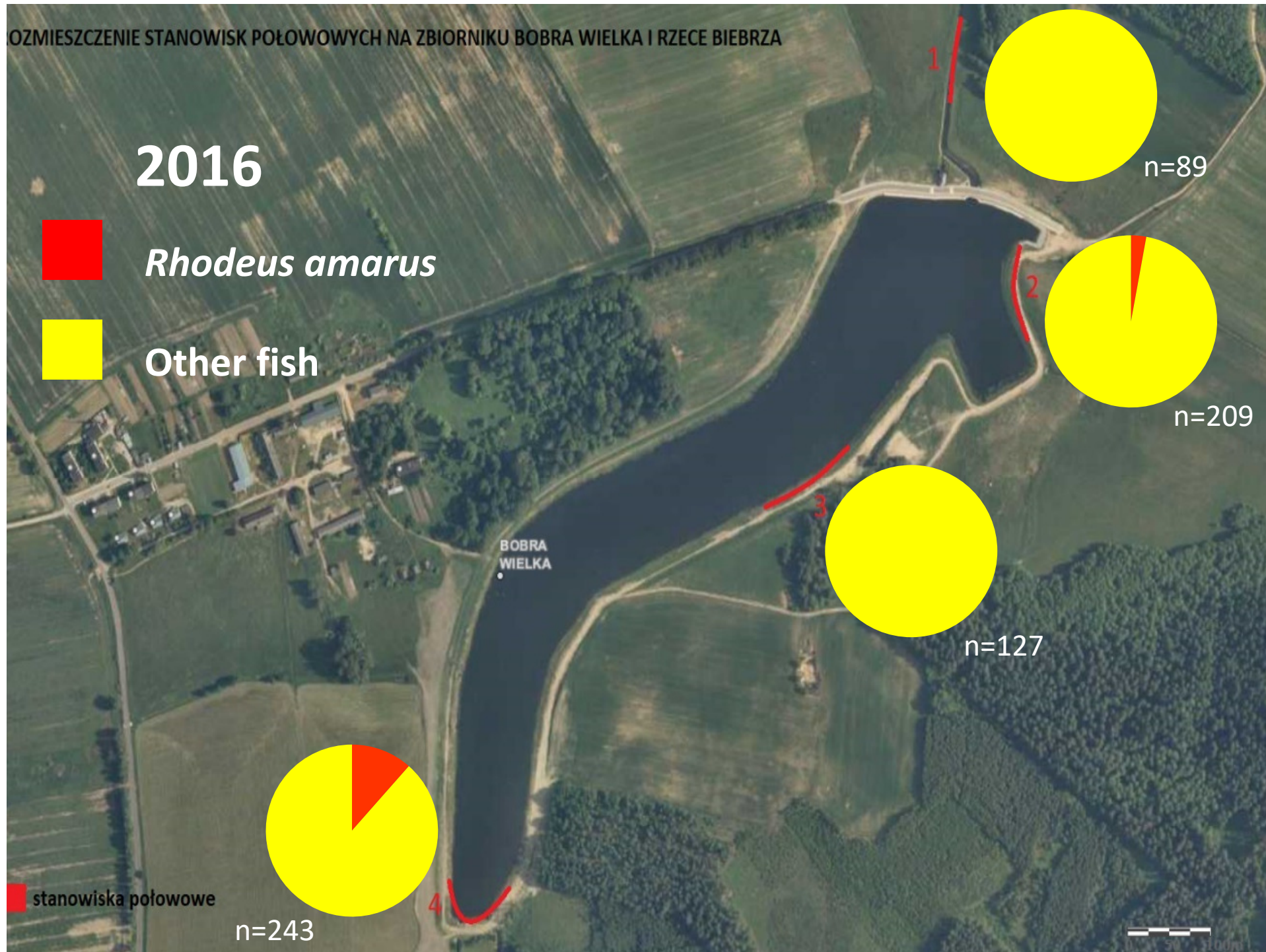
2016



Rhodeus amarus

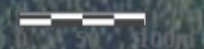


Other fish



stanowiska połowowe

n=243



OZMIESZCZENIE STANOWISK POŁOWOWYCH NA ZBIORNIKU BOBRA WIELKA I RZECIE BIEBRZA

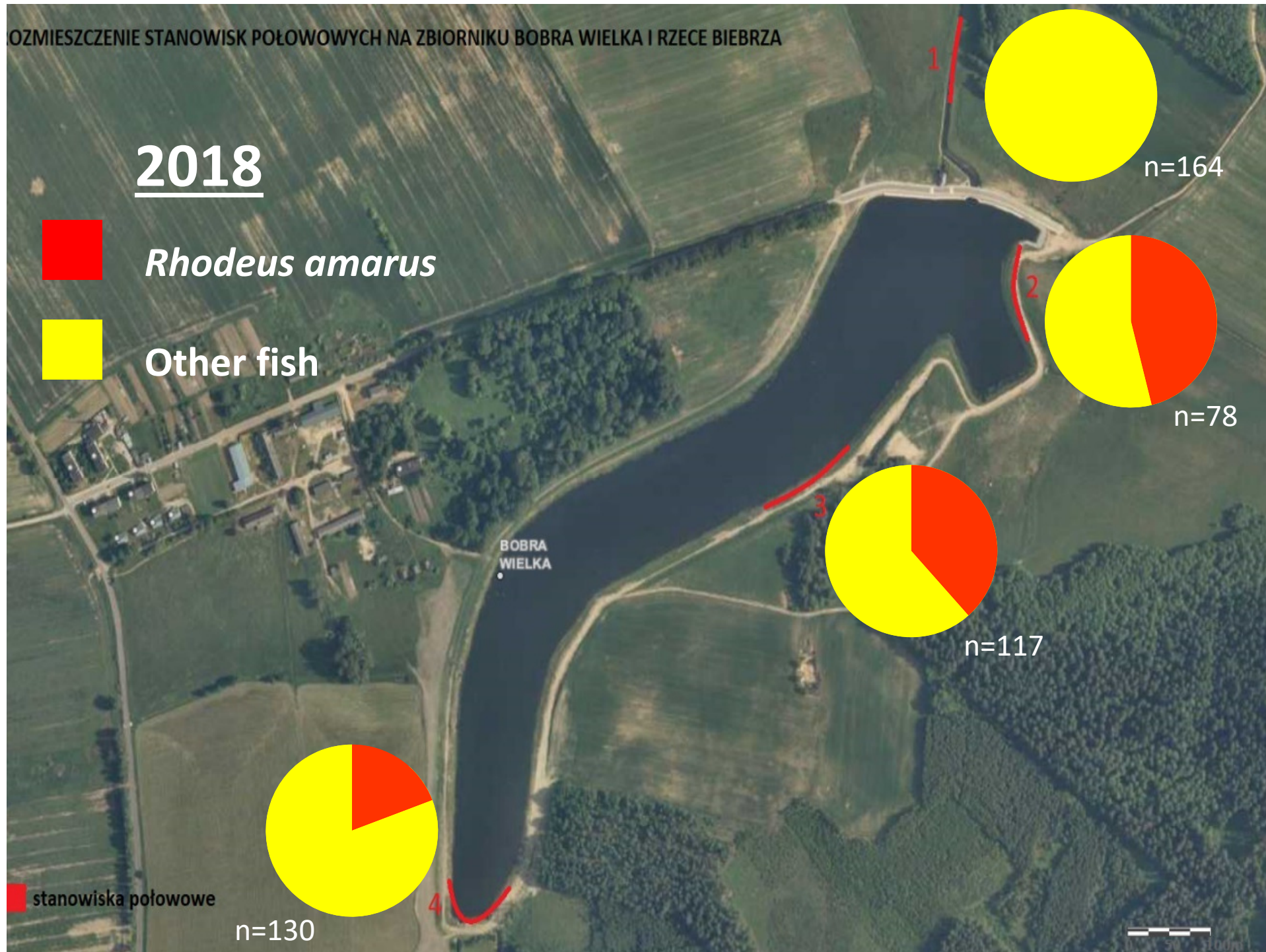
2018



Rhodeus amarus

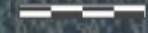


Other fish



stanowiska połowowe

n=130

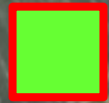


OZMIESZCZENIE STANOWISK POŁOWOWYCH NA ZBIORNIKU BOBRA WIELKA I RZECIE BIEBRZA

2016



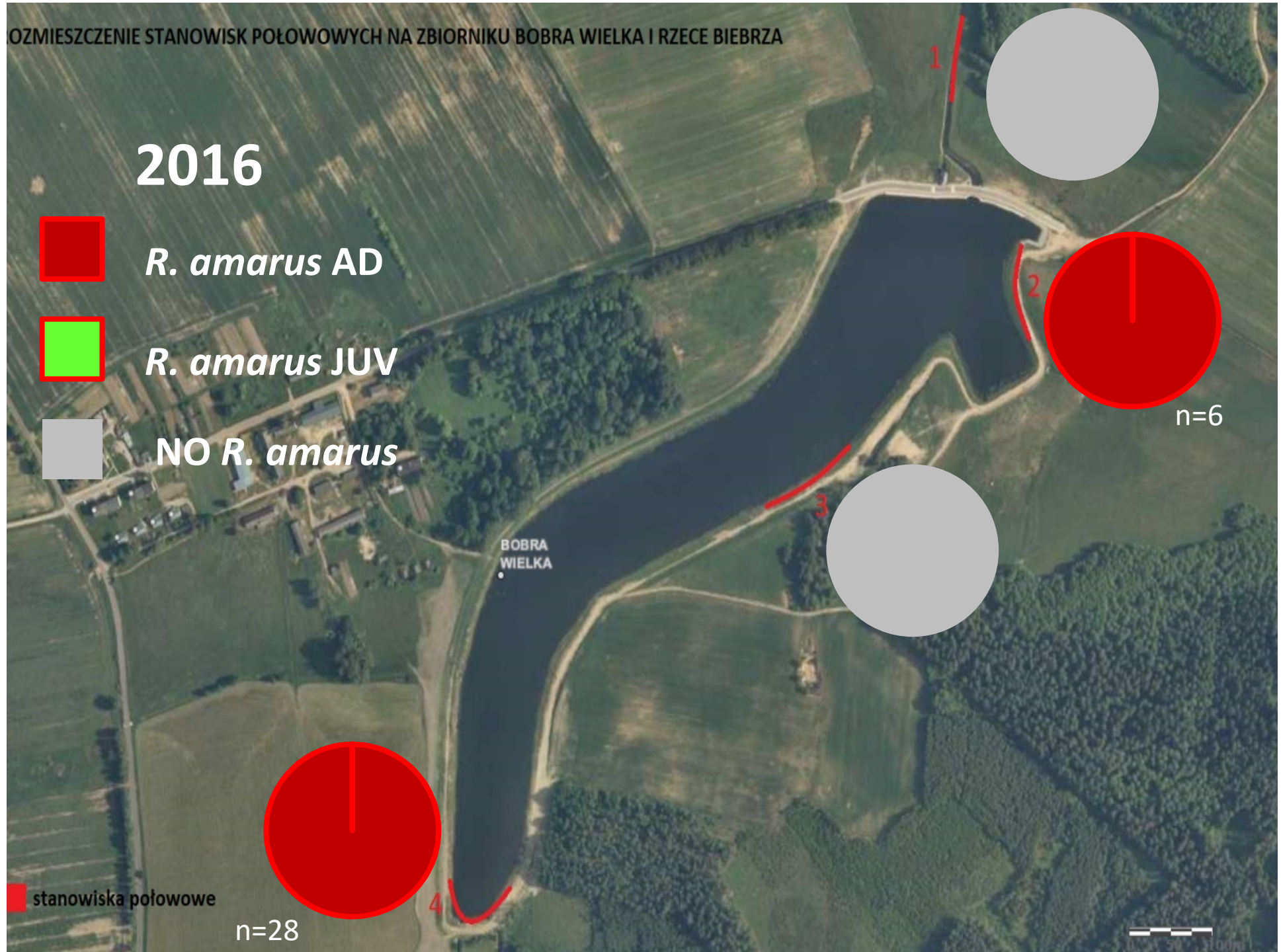
R. amarus AD



R. amarus JUV



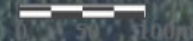
NO *R. amarus*



stanowiska połowowe

n=28

n=6

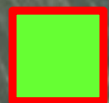


OZMIESZCZENIE STANOWISK POŁOWOWYCH NA ZBIORNIKU BOBRA WIELKA I RZECIE BIEBRZA

2018



R. amarus AD



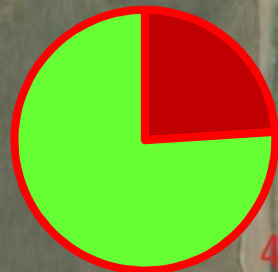
R. amarus JUV



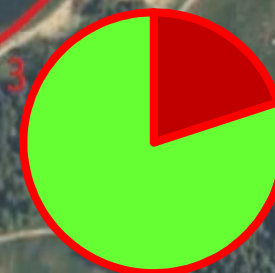
NO *R. amarus*

stanowiska połowowe

n=25

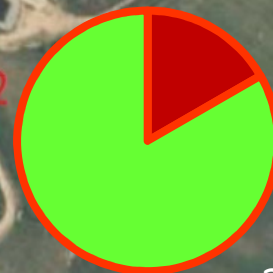


4



n=45

3

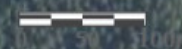


n=36

2



1



All sites	2016		2018
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<i>R. amarus</i>	5%	→	22%
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<i>R. amarus</i> JUV	0%	→	80%
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Thank you

