



Plotycze Lake (T. J. Chmielewski)



UNIVERSITY OF LIFE SCIENCES IN LUBLIN, POLAND

**DEPARTMENT OF LANDSCAPE ECOLOGY AND NATURE
PRESERVATION**

Veronica Maslanko

The background of the slide is a photograph of a pond. In the foreground, there are several large, green lily pads floating on the water. The water is a light blue-grey color. In the background, there is a dense line of green trees under a blue sky with some white clouds. The entire image has a fine, grid-like texture.

1. THE TITLE OF MY PhD DISSERTATION

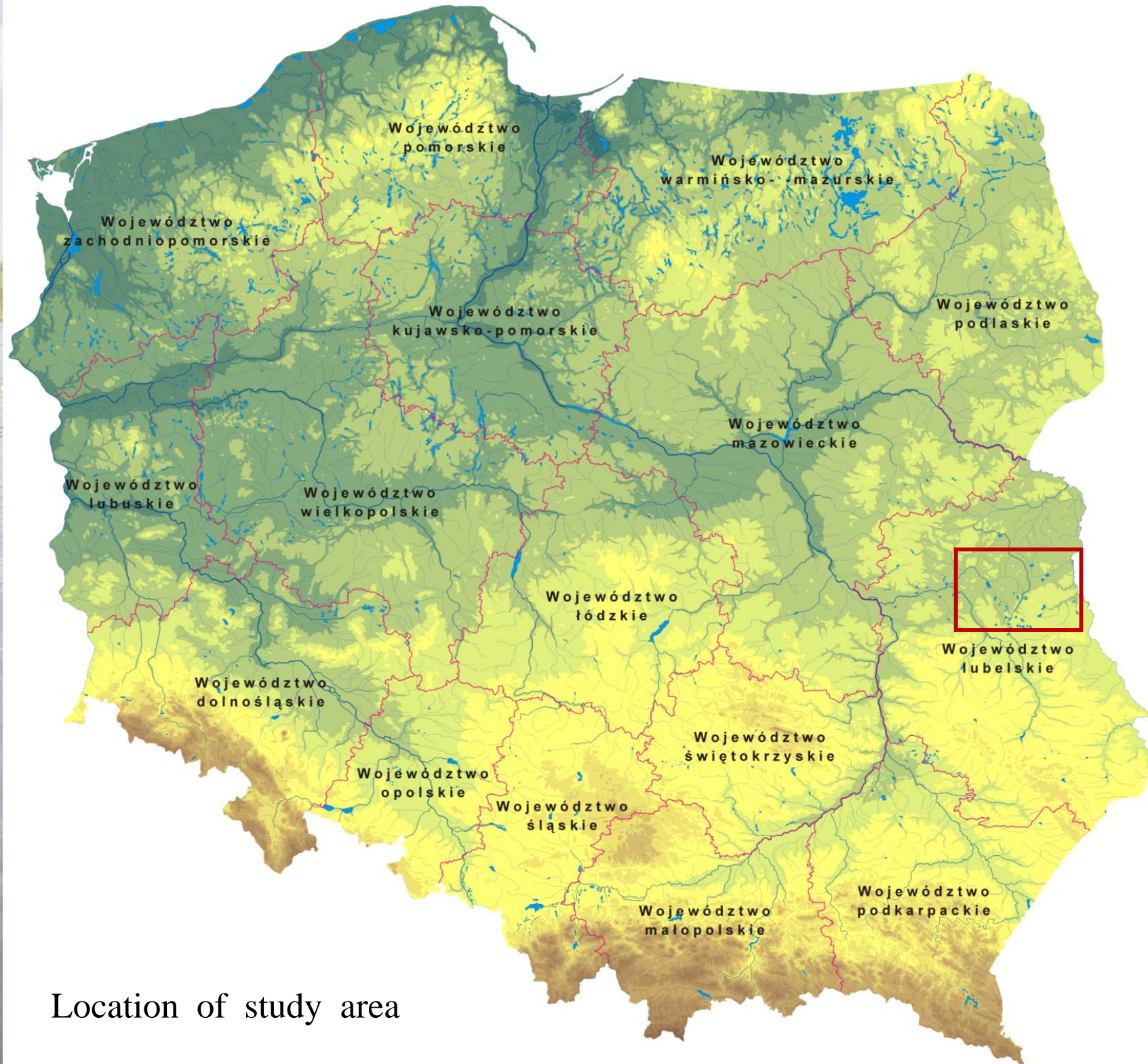
„Ecological corridors of big mammals in the ‘West Polesie’ Biosphere Reserve – identification, preservation and shaping.”

2. THE AREA OF THE RESEARCH

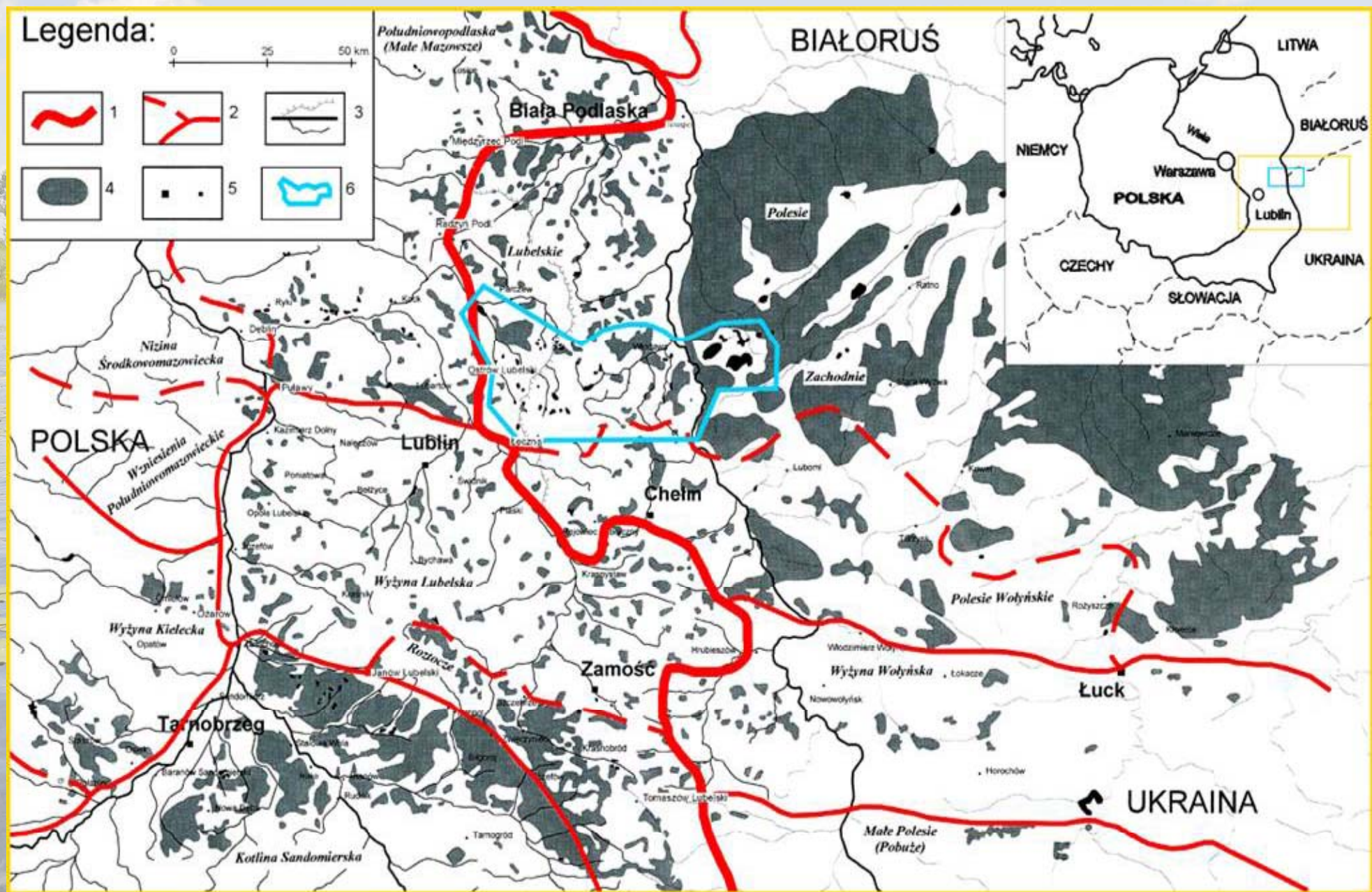


The 'West Polesie' Biosphere Reserve





Location of study area

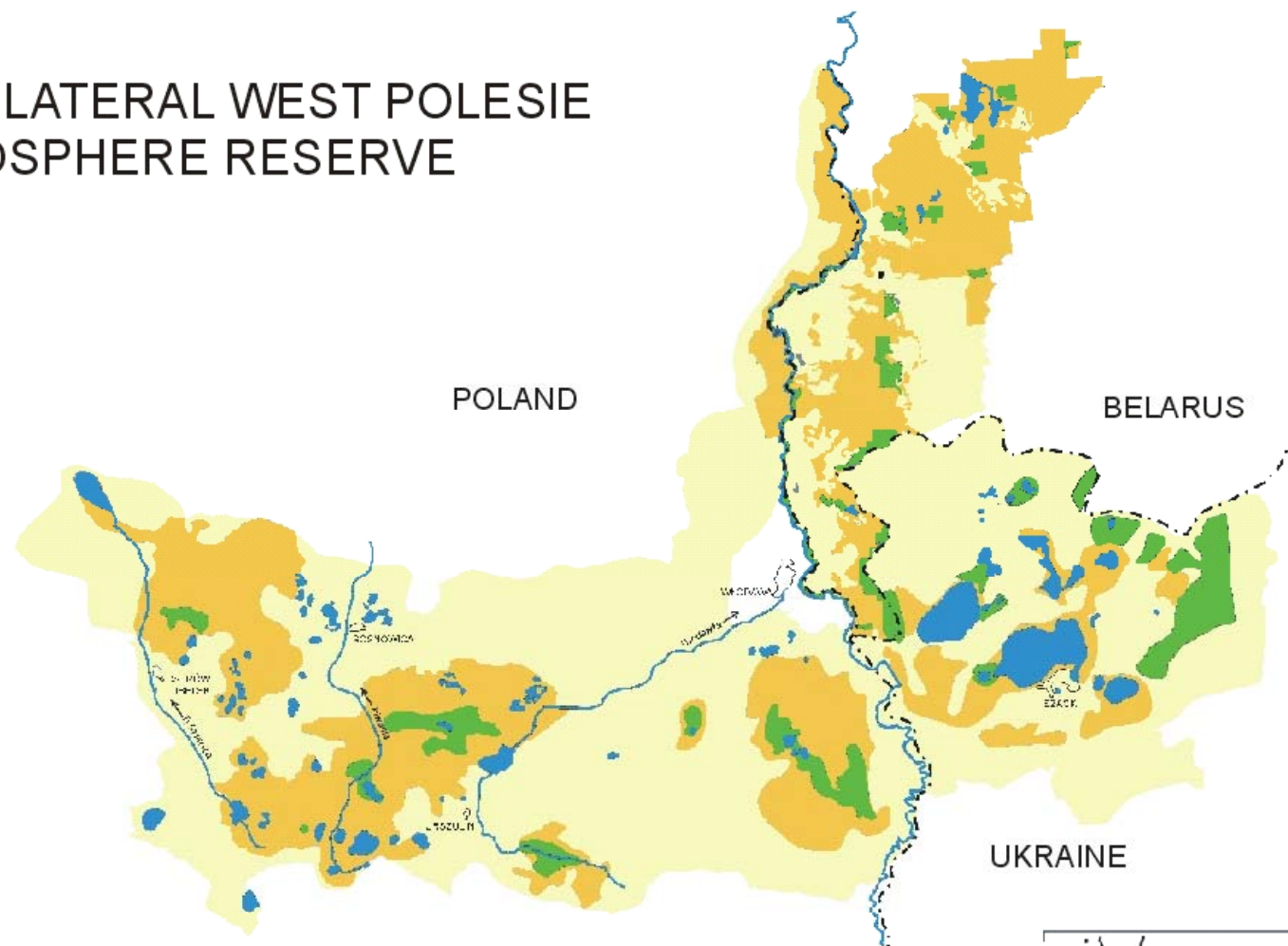


Location of the research area in the context of particular units of physiographic division



LEGEND:

The border of: 1- physiographic units of the 1st degree; 2- physiographic units of the 2nd and 3rd degree; 3 - main rivers and canals. 4 - forests. 5 - main locations. 6 - outer border (common for Poland and Ukraine) of the Biosphere Reserve.

TRILATERAL WEST POLESIE BIOSPHERE RESERVE



Legend

-  State border
-  Lakes and ponds
-  Rivers
-  Main settlements

-  Core zone
-  Buffer zone
-  Transitional zone

Opracował: Tadeusz J. Chmielowski, 2001



The West Polesie Biosphere Reserve was created in April 2002 on the area of 139.917 ha. It includes almost the whole physiographic subregion: Leczna – Wlodawa Lakeland and small fragments of three other subregions. It stretches from the River Bug in the south-east to the Tysmienica River valley in the north-west. One of the most important reasons for this biosphere reserve creation was the unique variety of nature in this part of Polesie and its location on the border of contrast physiographical and ecological structures, the abundance of lakes, bogs, moors and forests, the presence of many relicts and rare species and the unique importance of this region in the ecological structure of Europe. Forests (59,6 %) and fields (25,23 %) dominate in the land use structure, but the biggest share is occupied by meadows (7,79%), moors (4,54%), lakes, ponds and rivers (2,84%). Until present day 61 lakes with the surface over 1 ha have survived. Parts of this area are a miniature of European tundra and forest-tundra which is here the farthest advanced to the south-east in Europe (Fijalkowski, ed. 1960).

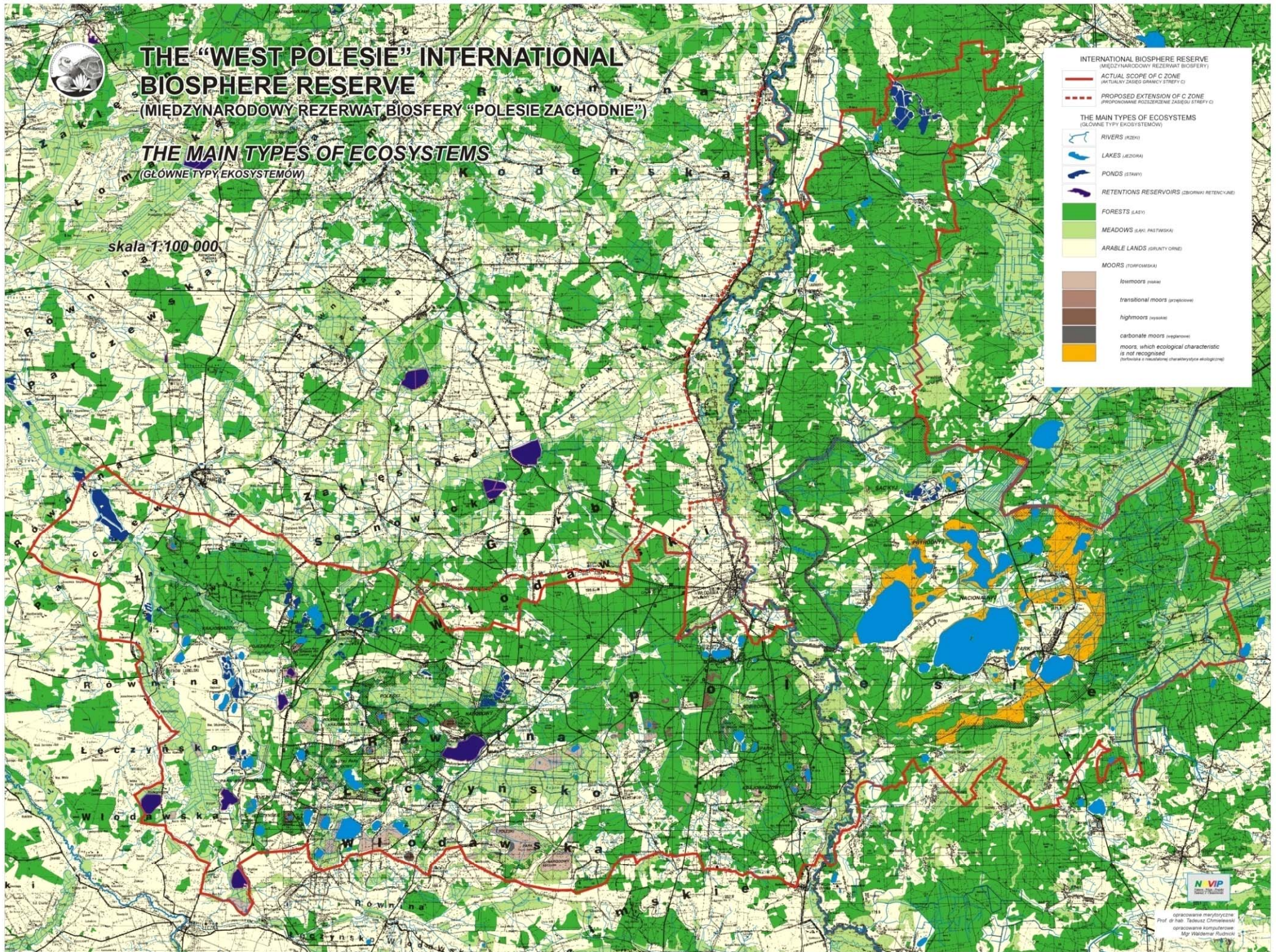
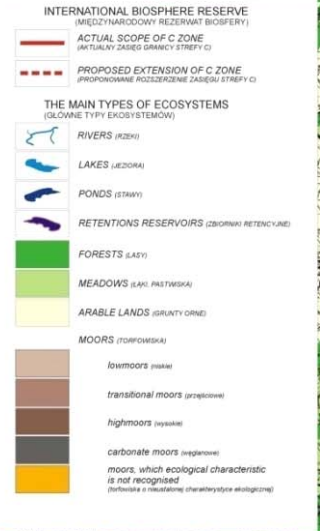
This is the area of unusual variety of highmoors, transitional moors, lowmoors and – in some places – very unique carbonate moors. Large collection of northern plant species (150 species) and simultaneous presence of many plants from Atlantic zone (25 species), east continental zone (43 species) create a curiosity on European scale (Fijalkowski, ed. 1986). In the region of Leczna – Włodawa Lakeland there appear 1466 species of vascular plants, including 12 species from European CORINE list and 10 species from “Polish Plant Red Data Book”. The animal life is also abundant here. 98 species of the region’s fauna are listed on the European CORINE list and 25 are in the “Polish Red Book of Animals” (Chmielewski, ed. 1999). Central part of the Biosphere Reserve constitute the Polesie National Park. It is surrounded by 3 landscape parks: Leczna Lakeland L.P. in the west, Polesie L.P. in the center and Sobibor L.P. in the east, joined together with the Polesie Landscape Protected Area.



THE "WEST POLESIE" INTERNATIONAL BIOSPHERE RESERVE (MIĘDZYNARODOWY REZERWAT BIOSFERY "POLESIE ZACHODNIE")

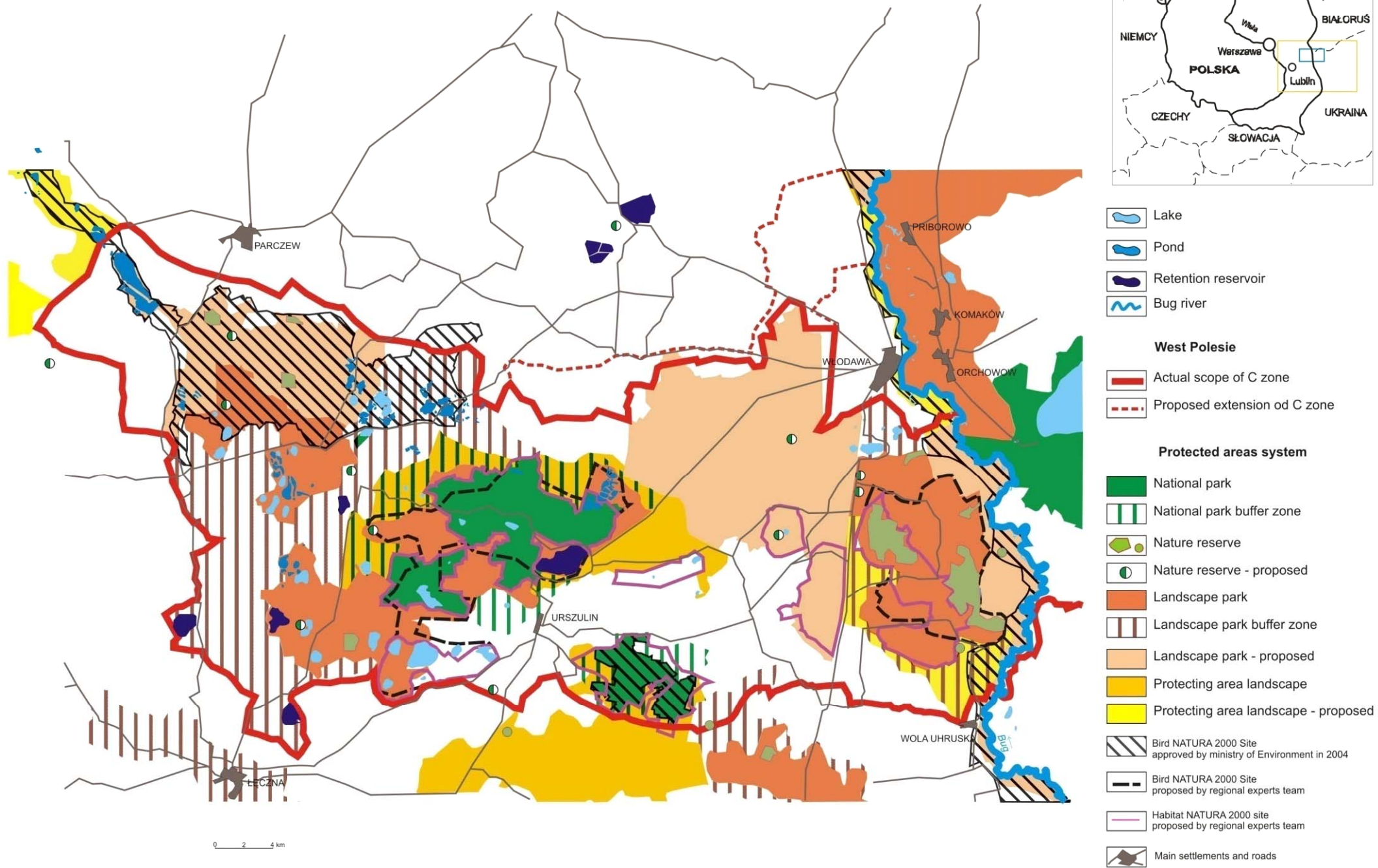
THE MAIN TYPES OF ECOSYSTEMS (GŁÓWNE TYPY EKOSYSTEMÓW)

skala 1:100 000



opracowanie merytoryczne
Prof. dr hab. Tadeusz Chmielewski
opracowanie komputerowe
Mag. Wiesława Ruchalski

Fig. 1.
System of protected areas associated with the West Polesie Biosphere Reserve



3. THE SPECIES OF THE RESEARCH

The species under examination will be moose *Alces alces*.



Alces alces (M. Wójcik)

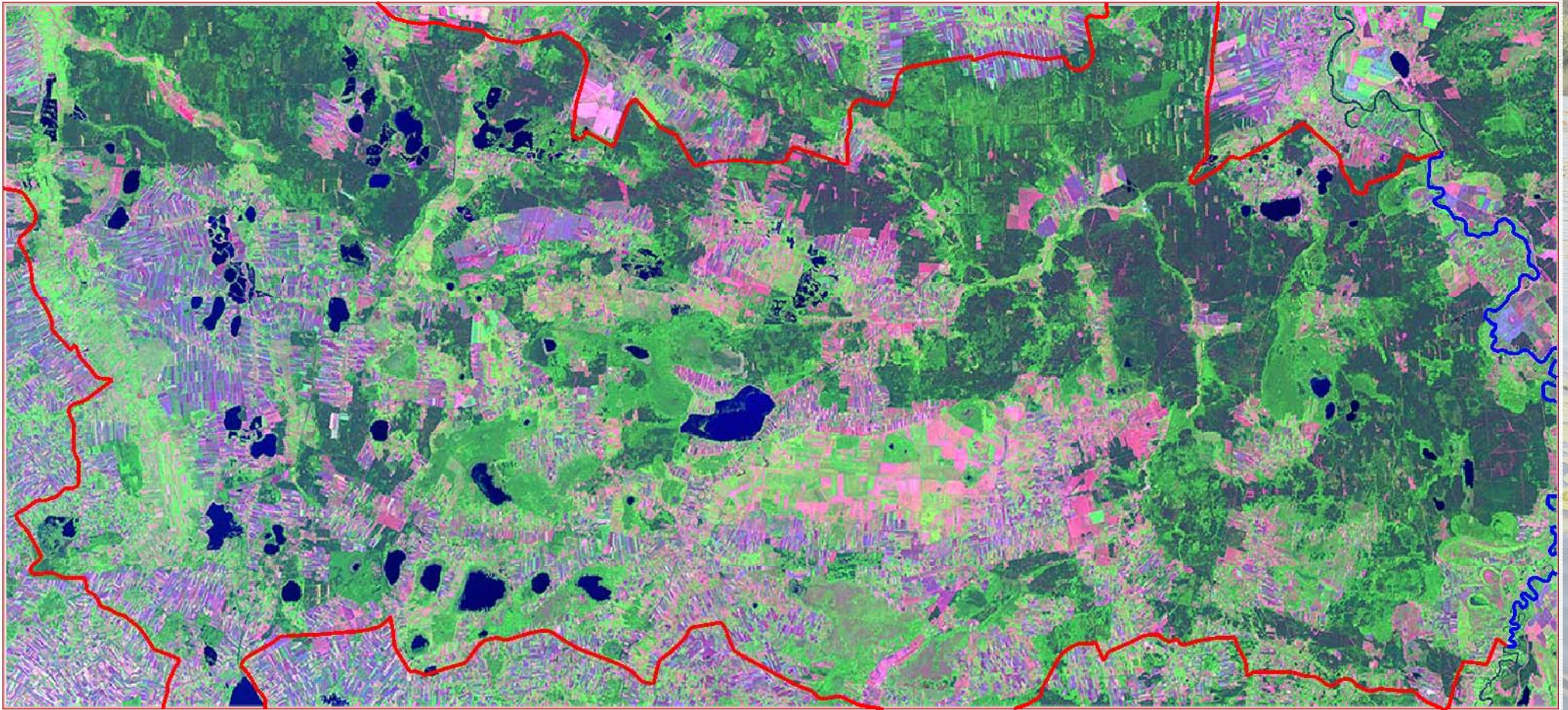
4. THE GOAL OF THE DISSERTATION

The goal of the dissertation is to identify presumable and already existing ecological corridors meant for the chosen species of big mammals on example of European moose *Alces Alces*, to migrate onto the area of the Biosphere Reserve 'West Polesie'. It will be very important to point out its farther potential continuation in the East (Belarus and the Ukraine) and West directions. The marking of such routes has a significant meaning for the preservation and sustainable management of the resources of big mammals. Such a task gains even more importance in the context of the growing intensity of road traffic and the development of the recreation on this area.

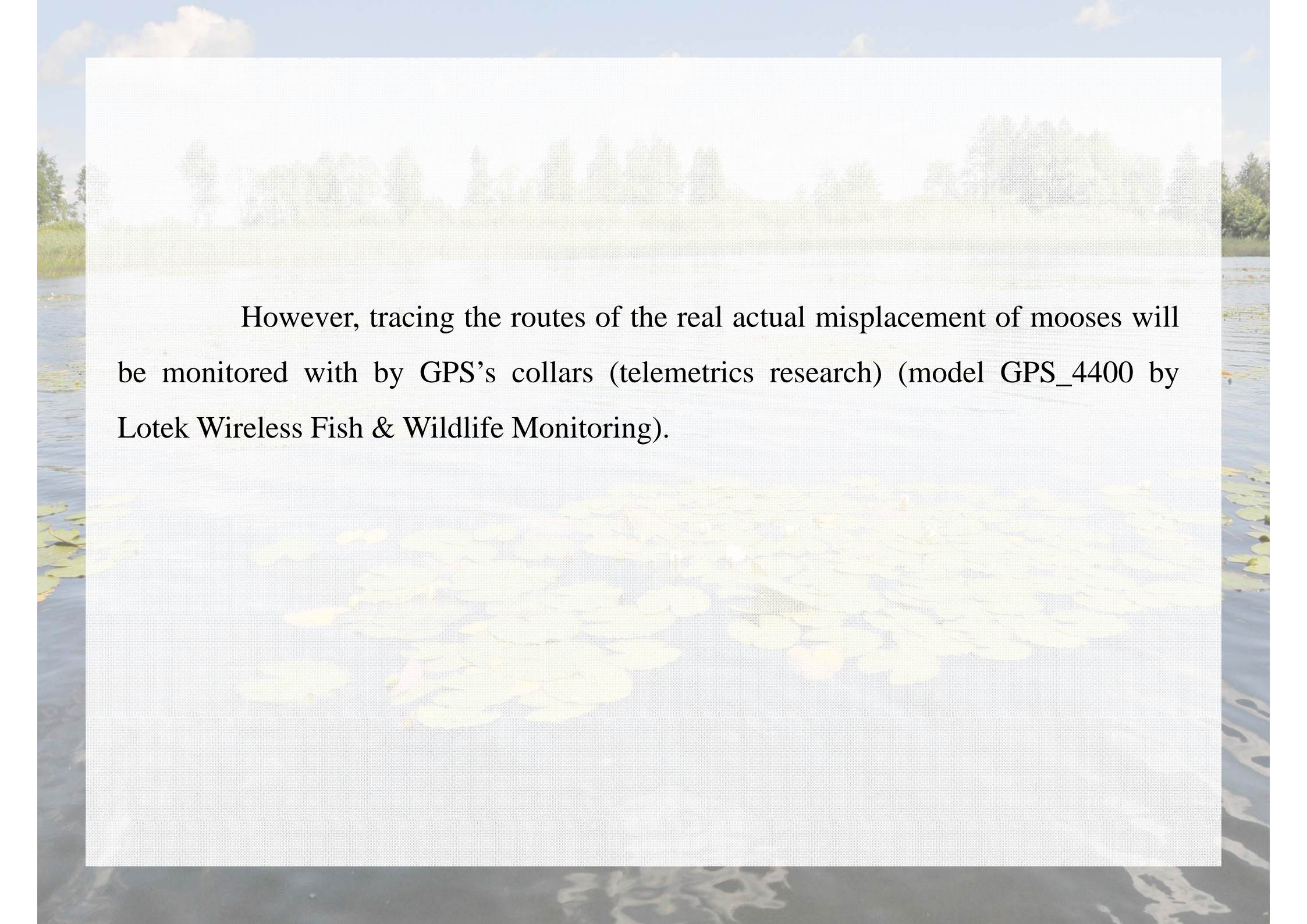
5. THE METHODS OF THE RESEARCH

The methods of the research will be based on the analysis of habitats preferred by the mooses, using the multispectral aerial photos (2007).

Next stage of the analysis will be realised using the computer „Wildlife Simulation Models” (WSM), constructed by Canadian experts and initially tested in Podkarpacie Region in highland and piedmont areas. The WSM computer model is used for identification of presumed ecological corridors of big mammals in the landscape.



The example of habitat analysis on the study area the multispectral aerial photos (2007)

The background of the slide is a photograph of a pond. In the foreground, there are several large, green lily pads floating on the water. The water is a light blue-grey color. In the background, there is a dense line of green trees under a clear blue sky with a few small white clouds. The entire image has a fine, grid-like texture overlay.

However, tracing the routes of the real actual misplacement of mooses will be monitored with by GPS's collars (telemetrys research) (model GPS_4400 by Lotek Wireless Fish & Wildlife Monitoring).

Collars for Wildlife with 2-Way Communication



Lotek's GPS_4400 automatic tracking and monitoring system provides position and other sensor data ideally suited to wildlife behaviour and habitat utilization studies.

In addition, the GPS_4400 Series of collars allows remote data download and collar reprogramming. This capability is invaluable when decisions must be made promptly and instant access to collected data is needed.

The GPS_4400 Series collars are capable of tracking the fine-scale movements of individual animals through a variety of habitats. Using collars with differential correction, you can obtain highly accurate position readings with an error of less than five metres. Furthermore, by taking advantage of our flexible scheduling option, your study can be customized to your particular research needs.

As a result, you can determine a very accurate map of the travel paths and behaviour patterns of a variety of animals.

Based on the proven design of our other GPS systems, the GPS_4400 Series of remote tracking collars with user replaceable batteries can collect 12,000 data records when taking 24 fixes per day. Using the high speed UHF modem and/or a GSM cellular modem, data records can be downloaded and schedules can be changed at the user's convenience. For migratory species, a collar can be equipped with an Argos transmitter so that GPS data can be transmitted via satellite and ultimately sent to you at your desk. This significantly improves the efficiency and cost-effectiveness of any wildlife study.

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	4400M	4400S
Dimensions (L x W x H)	120 x 86 x 126	69 x 49 x 74
The collar contains	GPS receiver (16 channels) UHF radio modem GSM cellular modem (optional) VHF tracking beacon UHF tracking beacon Computer/memory module Argos transmitter (optional)	GPS receiver (16 channels) UHF radio modem N/A VHF tracking beacon UHF tracking beacon Computer/memory module N/A
Options	Mortality Temperature 2 axis activity Hibernation feature Drop off compatible Default or advanced scheduler Basic or advanced differential correction	
Handheld command unit	Function: To command, control and interrogate GPS4400 collars. Interfaces with PC; includes built-in GPS receiver and electronic compass and rechargeable battery.	
Total collar weight	Approx. 950g (dependent on belt type and size)	Approx. 450g (dependent on belt type and size)
Operational life/battery pack** 3hr fix schedule (8 fixes per day)	More than 2 years*	Approx. 14 months
1hr fix schedule (24 fixes per day)	500 days or approx. 12,000 fixes	Approx. 6 months 4,320 fixes
Data download speed	Non differential is 10 records/second Differential is 3 records/second	
User replaceable battery pack	Yes	
User programmable Via cable with download link	GPS & Beacon Schedule Mortality Delay Time	
Field upload by radio	GPS & Beacon Schedules Time	
Field download	Data & diagnostics	
Data link operating frequency	420-460 MHz	
Data modulation baud rate	2400 baud, direct FM	
Bandwidth	18 kHz	
Approximate UHF range	2 - 8 km ground to air, depending on the terrain	
VHF beacon frequency	Customer specified 148-174 MHz	
UHF beacon frequency	420-460 MHz	
Operating temperature range	-30°C to +50°C	
Software Interface (includes host software & training video)	Windows 98® or higher recommended	

7. PRESUMED COOPERATION

- Polesie National Park,
- Polish Society of Hunters,
- Geomar Consulting LTD - disposer of WMS computer programme.

8. THE RESULTS OF THE RESEARCH

The results of the research will be important and useful for many Polish institutions, especially for Spatial Planning System to achieve harmony between human and nature. Final results will not only allow to get to know the ecological structure of the landscape in the Biosphere Reserve 'West Polesie' better, particularly hydrogenics settlements, but also to establish settlements preferences of the examined species of mammals and routes of their migration. These results can be use in practice of preservation and creation of the Biosphere Reserve 'West Polesie' 's landscape because the marking of such routes has a significant meaning for the preservation and balanced management of the resources of big mammals. Such a task gains even more importance in the context of the growing intensity of traffic, a huge habitat fragmentation and the development of the recreation in the area.

The research:

- has a significant meaning for marking and effective preservation of transborder ecological corridors of all Polesie megaregion,
- will enable us to verify computer model by telemetrics research,
- will be helpful in compiling project of protection, conservation and increasing connectivity of ecological corridors network on the area of ‘West Polesie’ Biosphere Reserve,
- will be useful in phrasing conclusions for Local Management Planning System and Local Sustainable Development Strategy.

The expected results of the PhD dissertation :

- identification of main sites of species *Alces Alces* in structures of the West Polesie Biosphere Reserve,
- identification of habitats preferred by *Alces Alces* to long-time stay and routes of migration,
- identification of habitats which are favourable for its life and migration and which have been transformed in a negative way and need a restoration,
- indication of ecological corridors which demand a strict protection,
- indication of ecological corridors which need a biological enrichment,
- indication of ecological corridors which demand a strengthening of connectivity,
- indication of ecological corridors which need a restoration because of destruction,
- creation of new, alternative corridors, where strengthening and restoration isn't possible.



Usciwierz Lakes complex (T. J. Chmielewski)





Moszne Lake (T. J. Chmielewski)



Piaseczno Lake (T. J. Chmielewski)



„Staw” peatbog – a part of a very unique carbonate moors (T. J. Chmielewski)



The Bug River (T. J. Chmielewski)



Rhizomes of *Nymphaea alba* L. in disappearing Moszne Lake

(T. J. Chmielewski)



Alder carr (T. J. Chmielewski)



Lukie Lake (T.J. Chmielewski)



Krugle Moors near Zaglebocze Lake (T.J. Chmielewski)



Parczew Forests (T. J. Chmielewski)



Agriculture landscape of West Polesie (T. J. Chmielewski)



Sumin Lake (T.J. Chmielewski)

A sunset scene over a body of water, with a large white halftone box in the center. The sky is a mix of purple, blue, and orange, with some clouds. The water is dark, and the horizon is visible. The text "Thank you for attention !!!" is centered within the white box.

Thank you for attention !!!