Roman Gula, Katarzyna Bojarska, Jörn Theuerkauf
Wiesław Król & Henryk Okarma

The Vistula river as the borderline between recovering wolf populations in Europe

Museum & Institute of Zoology, Warszawa
Institute of Nature Protection, Kraków
Polish Academy of Sciences

Linnell et al. 2008: Guidelines for Population Level Management Plans for Large Carnivores

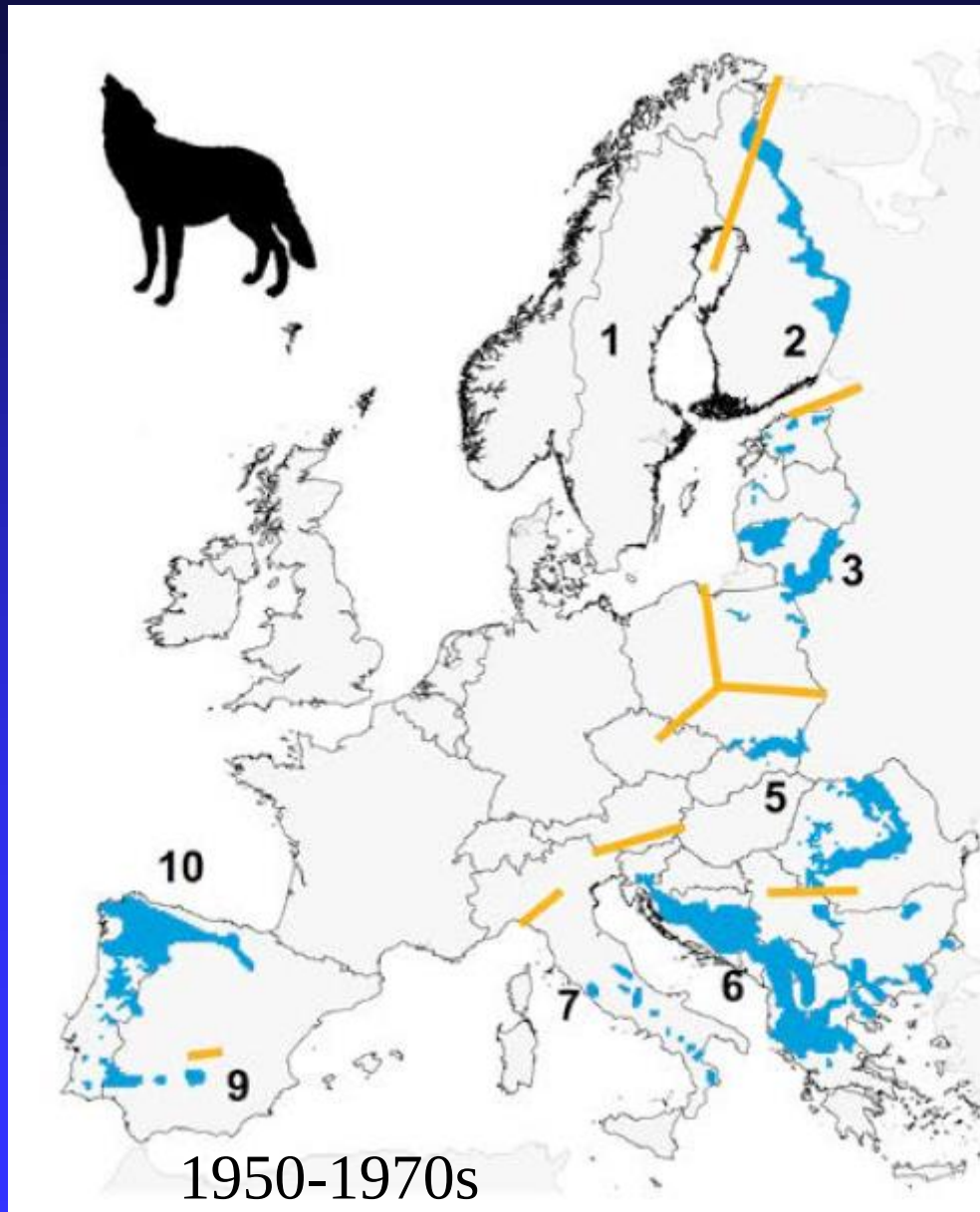
- The need for population level management
- Division of European wolf range into population management units

Linnell et al. 2008
Chapron et al. 2014
Nowak & Mysłajek 2016

Wolves of Polish Lowlands
divided into Baltic
and Central European Population

Should be managed as different
population units

CEP was extinct
Critically Endangered at present



1950-1970s

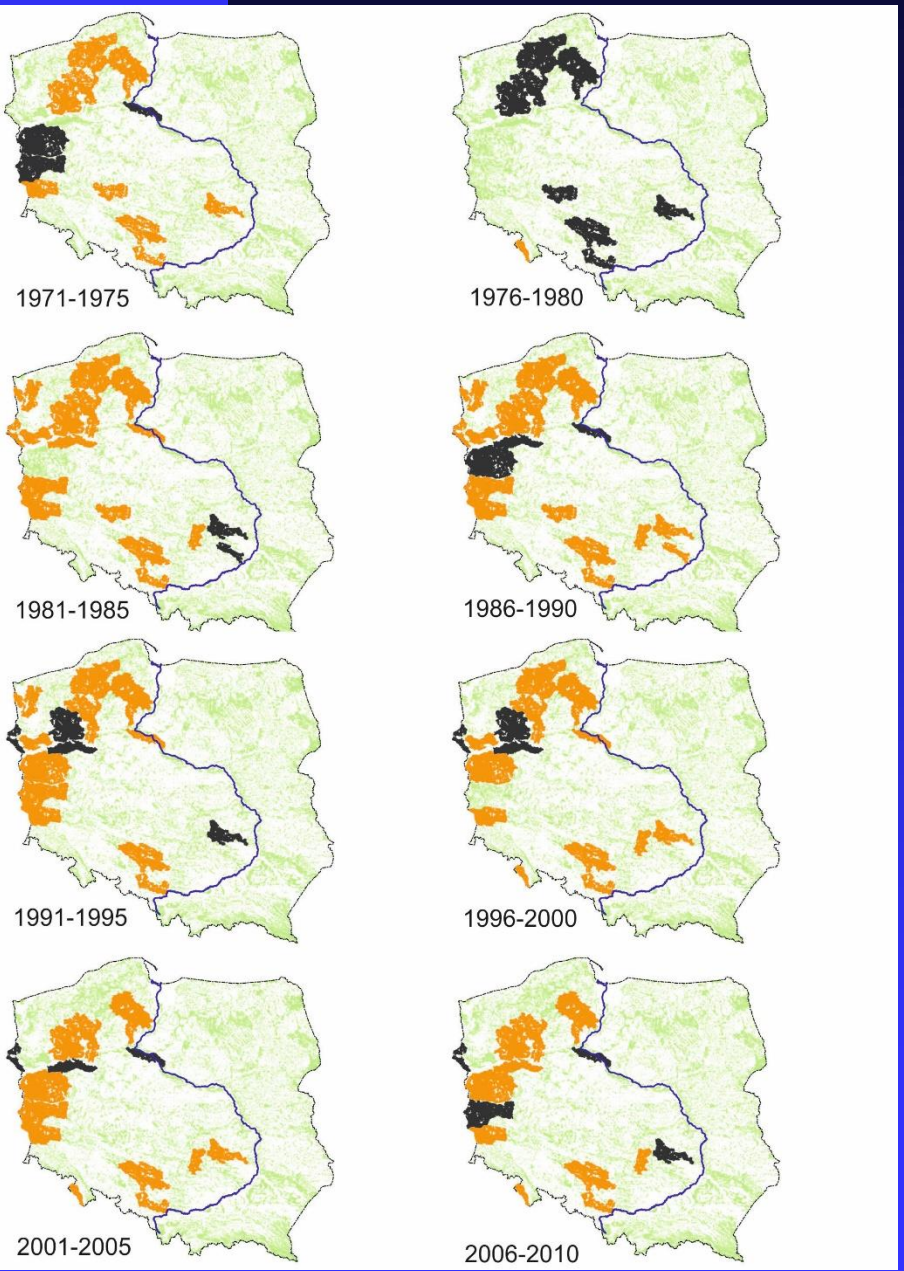

Baltic
Russia
Lithuania
Belarus
Germany
Ukraine
Czechia
Slovakia

We re-evaluated arguments for Baltic/Central European Populations Division

- By comparing the recovery stage on both sides of the Vistula river
- By comparing habitat characteristics and by evaluating dispersal corridors, dispersal distances and genetic evidence of a possible isolation
- By investigating the history of wolf occurrence in western Poland

Chronology of wolf occurence in western Poland 1971-2010

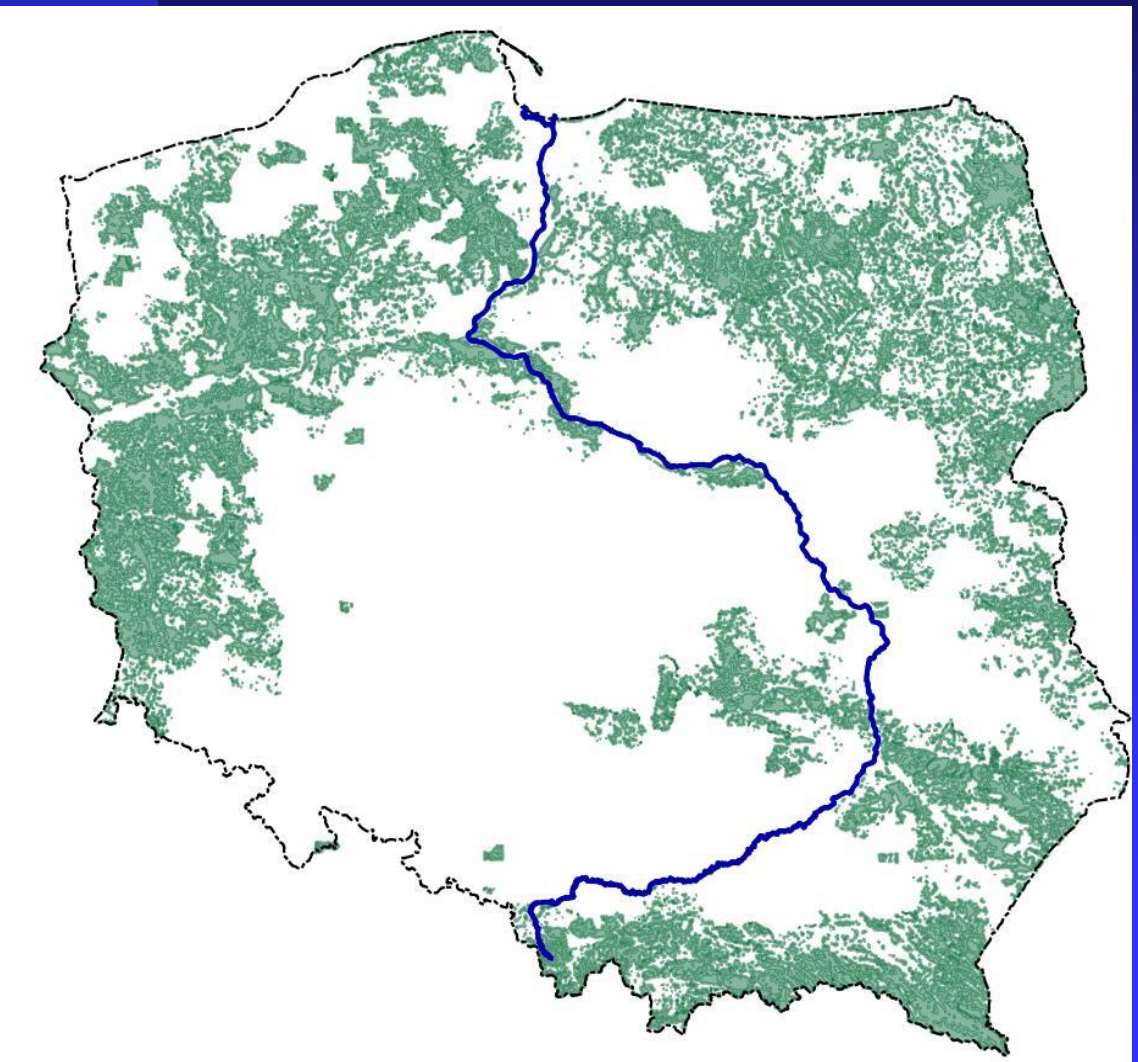
- Wolves were continuously present west of the Vistula river



- Confirmed breeding except 1976-1980
- Wolves occured in 8 – 18 out of 19 forest complexes (42%-95%)
- All information is extracted from published resources

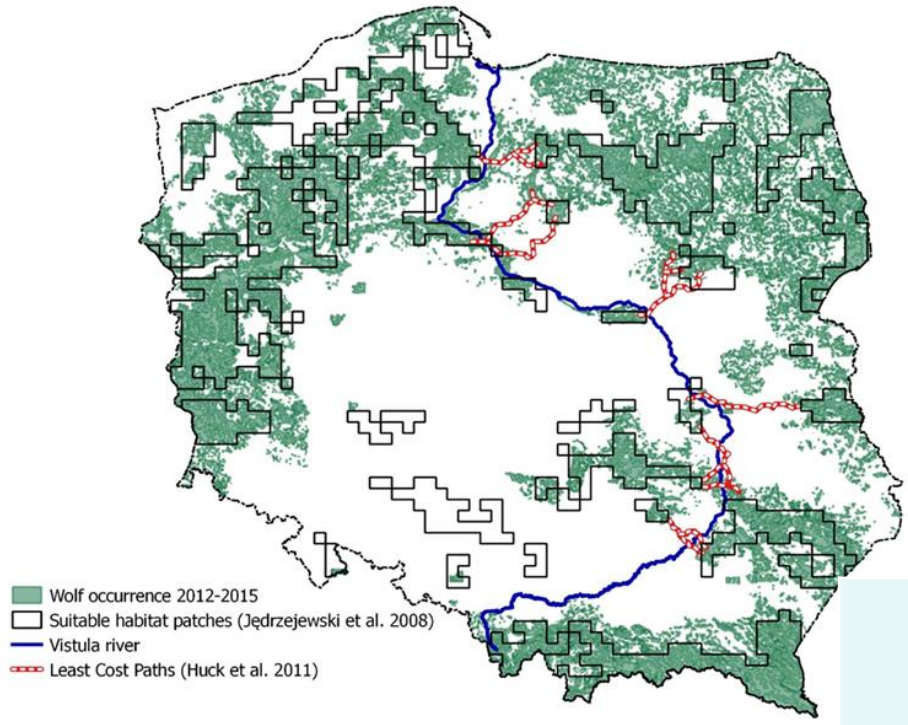
Light grey: forest
Orange: wolves present
Black: wolf breeding

Range on both sides of Vistula 2015



- ✓ Range 56 600 km^2
- ✓ 46% in the lowlands west of Vistula
- ✓ 40% in lowlands east of Vistula
- ✓ 16% in Carpathians

Recovery vs prediction of Jędrzejewski et al.'s 2008 model



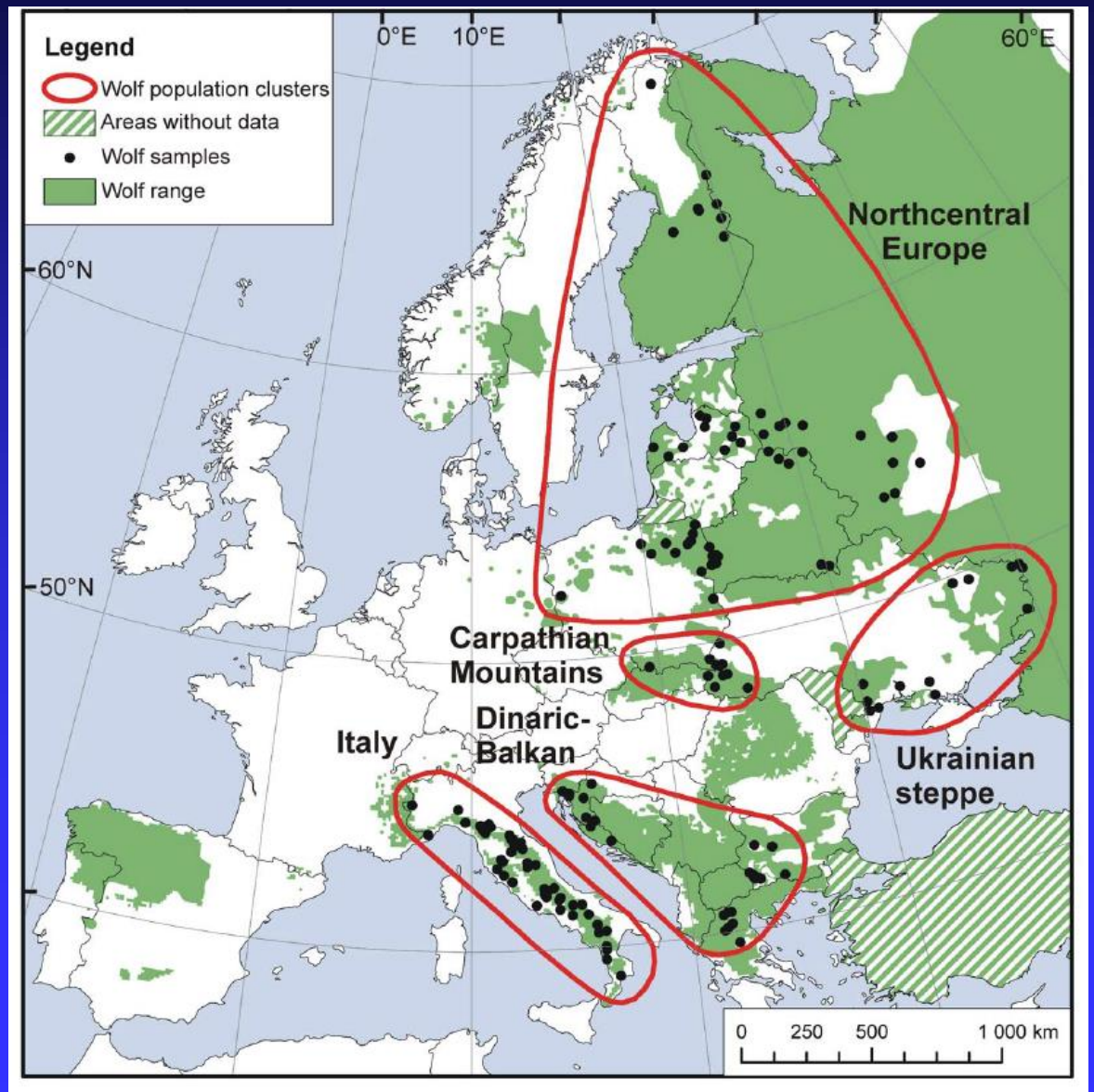
Area of forest	Lowlands west of Vistula	Lowlands east of Vistula
Suitable for wolves	26.088	12.521
Area of occurrence - total	26.182	22.540
Area of occurrence - inside SHP	17.290	11.409
Area of occurrence - outside SHP	8.891	11.130

Quality of the habitat

Habitat parameter	West of Vistula river	East of Vistula river
Total area (km^2)	171,725	114,251
Forest (%)	32	27
Major road density (km/km^2)	0.17	0.14
Urbanized area (%)	7.4	5.9
Cultivated land (%)	61	67
Habitat fragmentation:		
Splitting index S	183.64	1431.25
Effective mesh size m	9.35×10^8	7.98×10^7
Ungulate biomass (kg/km^2)*	210	156

Genetic clustering – Europe

n-177, 64 SNP Stronen et al. 2013



Conclusions

- Wolf habitat quality in eastern and western Poland is similar
- Wolves on both sides of the Vistula river occupy woodland patches large enough to support a few packs each
- Both sides of Vistula river are interconnected by dispersal corridors
- Gene flow is bi-directional

Conclusions

- The only habitat advantage that might cause a faster rate of recolonization in eastern Poland is the shorter distance to the continental wolf population of Russia

Conclusions

- The two assumed populations represent a continuum in genetic structure, spatial distribution, and habitat characteristics

Conclusions

- The division of the wolf population into a Central European and a Baltic separated by the Vistula river has no biological basis

Conclusions

- Central European and Baltic wolf populations should be viewed as a metapopulation, consisting of numerous subpopulations inhabiting large, interconnected woodland patches

Recommendations

- We recommend to remove the division for Baltic and Central European Wolf populations from the EU Guidelines
- The division has no biological basis and no practical meaning

- Polish National Science Centre:

Grants: NCN 2011/01/B/NZ8/04233 & NCN 2012/05/N/NZ8/00860

- SAVE Wildlife Conservation Fund

NATIONAL SCIENCE CENTRE
POLAND

SAVE
Wildlife Conservation Fund