



# Protected areas and fisheries management on the Serbian side of the common Croatian- Serbian Danube section

Kopačevo, CRO - September 27, 2023

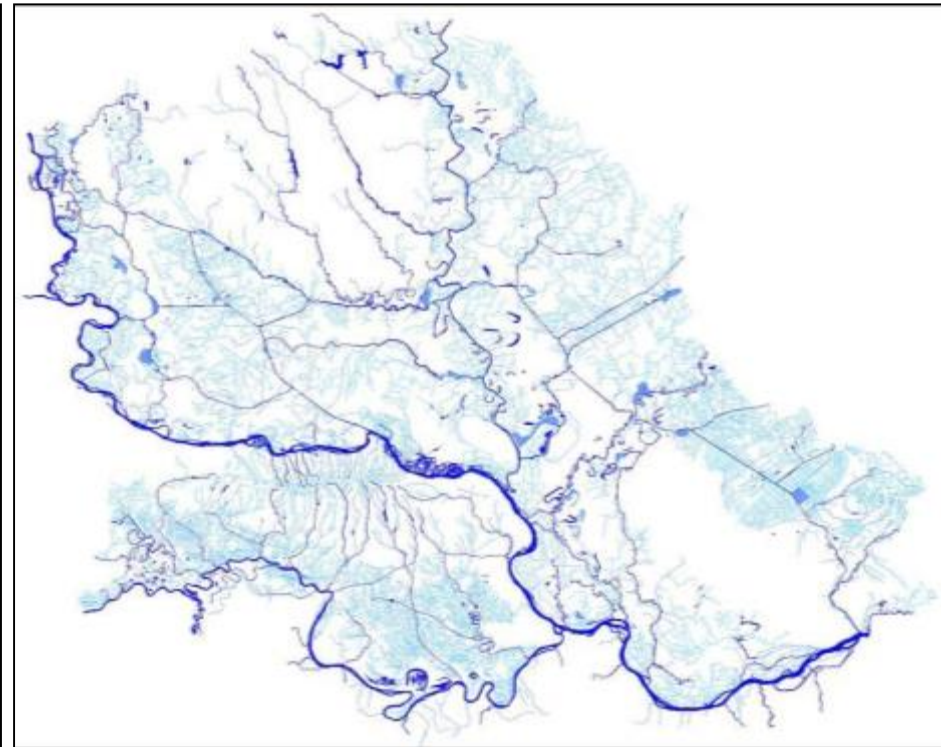
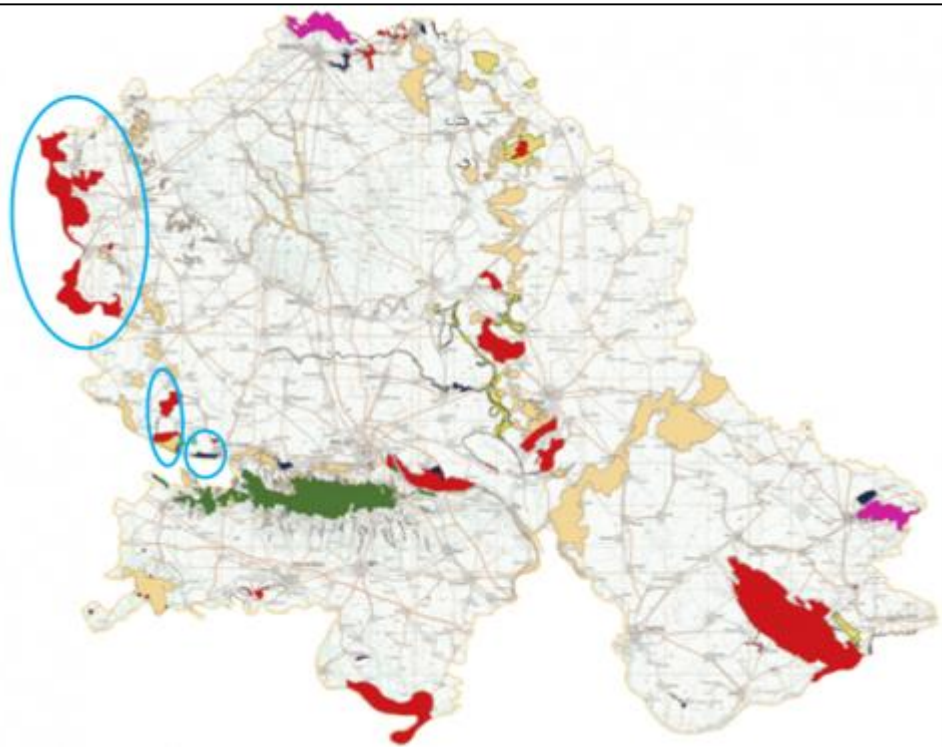
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(1869-1887)

# Why the need for protection?

- Vojvodina AP (21.500 km<sup>2</sup>) land use: ~ 80% of agriculture
- Drastic habitat loss in the past 150 years: river regulation works, flood protection dikes, embankments, levees, drainage channel system (app. 22.000 km), agriculture, urban development, forestry, industry...
- Biodiversity hotspots, remaining natural (semi natural) habitats
- ~ 6.5% protected areas



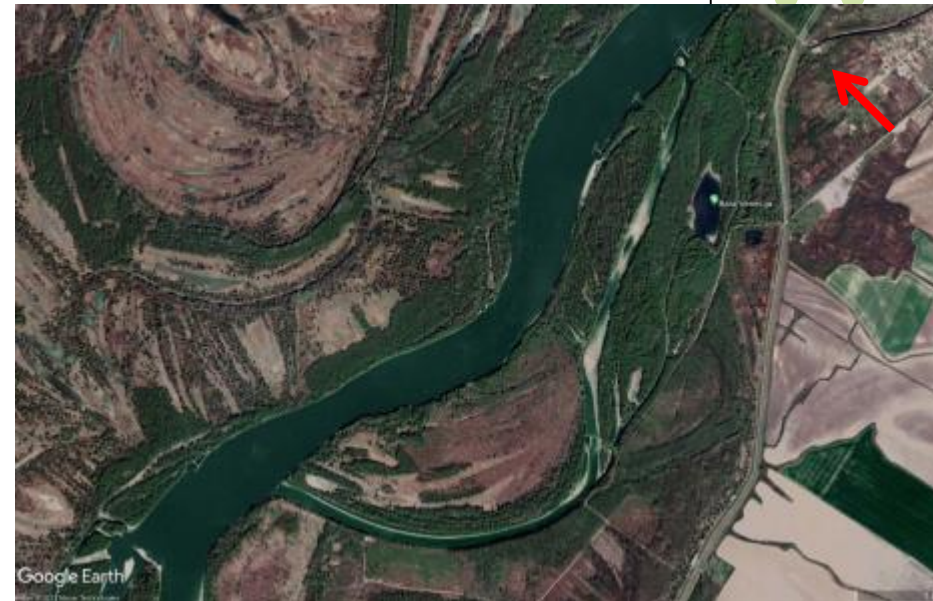
## Protection status



	Gornje podunavlje	Karadjordjevo	Tikvara	Danube River
Law on Nature Protection	Special Nature Reserve	Special Nature Reserve	Nature Park	
Ecological network of Serbia (Areas of ecological importance)	+	+	+	International ecological corridor
IPA	+			
IBA	+	+	+	
PBA	+			
RAMSAR	+			
Emerald	+	+	+	
	UNESCO 5-country biosphere reserve Mura-Drava-Danube			



Impact of river regulations: habitats loss »  
species loss, ecosystem deterioration



## Other threats:

- Invasive species (plants, fish)
- Poaching (fish and game)
- Overfishing (non-compliance with limitations, fishing ban [minimum size, time periods])
- Climate changes/unfavorable hydrological regime [lack of spring/early summer floods], low water levels-spawning, migration
- Forestry (culverts, siltation, invasive species, plantation growing, branches, driftwood)
- Pollution (urban waste, wastewater via groundwater)
- Unfavorable hydrological regime behind the flood protection dikes (levees not sufficient) » siltation, eutrophication, shallow water, submerged/floating/emerged vegetation



### Habitat changes:

- impact the fish warden service effectiveness (accessibility)
- „favorable“ to poachers















## Relations between Nature protection and Fishery management

### Law on Protection and sustainable use of the fish resources (fish, mussels, crayfish)

- Fishery management plan for a 10 year period » annual fishery management plans
  - Gornje podunavlje SNR
  - Karadjordjevo SNR
  - Tikvara NatP
  - Danube river between 1433 rkm and 1297 rkm (part of Bačka fishery)
- Based on Nature conservation provisions handed by INCVP or Ministry for environmental protection
- Types of fishing
  - Recreational (angling): GPSNR, KSNR, TNatP, Danube
  - Commercial fishing: GPSNR (10 permits), Danube (up to 40 permits max)
- Threats
- (very) General protection measures!!!
- Fishing limitations (according to: Order of measures for the preservation and protection of the fish stock, The Decree of fishing tools, fishing methodology and facilities for commercial fishing, as well as on the method, tools, equipment and means used for recreational fishing), sometimes site specific measures
- **Special habitats for fish** – spawning, nursing and feeding grounds (areas important for biological cycles of fish) – all activities prohibited



	Gornje podunavlje	Karadjordjevo	Tikvara	Danube River
No. of species	37	25	24	40
Total no. of species	46 (!!!)			

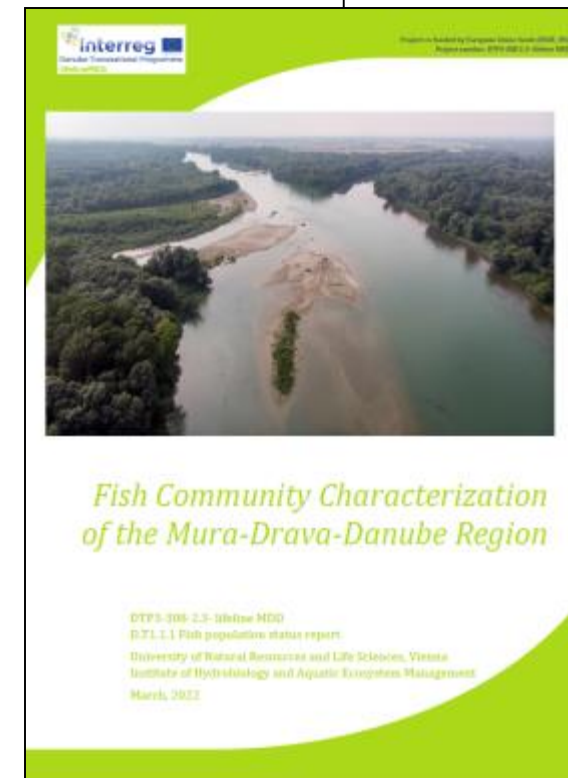
- Data from 10 year period Fisheries management plan
- *Acipenser nudiiventris*, Danube River, near Apatin (rkm 1390), 31.10. 2003.
- Simonović et al., 2005 (Biologia Bratislava, 60 (2): 231 - 233)





# Additional data on fish species and habitats

- Fish Community Characterization of the Mura-Drava-Danube Region – aimed to investigate vertical, lateral and longitudinal connectivity within the Mura-Drava-Danube bio-corridor
- 2018. – WWF: Sterlet in the Danube an overview (identification of significant sterlet habitats) – benthic organisms, sediment type and granulometry, historical data on sterlets



КЕЧИГА У ДУНАВУ – пресек стања

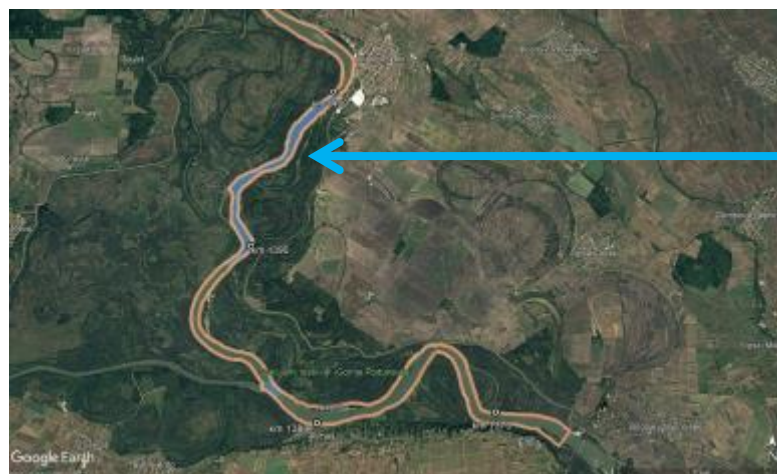
- анализа -

др Мирослав Никчевић, др Бранислав Мићковић

Анализ „Кечига у Дунаву – пресек стања“ израђена је у оквиру WWF програма „Воде слободу Дунава“. Београд, 2018. година



Winter shelter



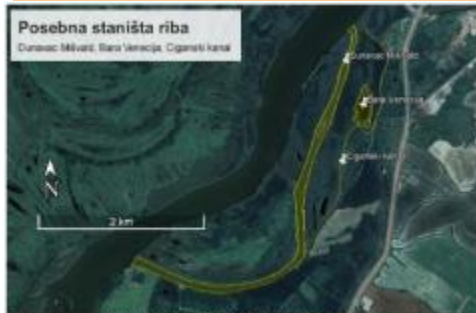
Spawning grounds

**\*\*Feeding grounds\*\***

# Fishing limitations:

## GPSNR

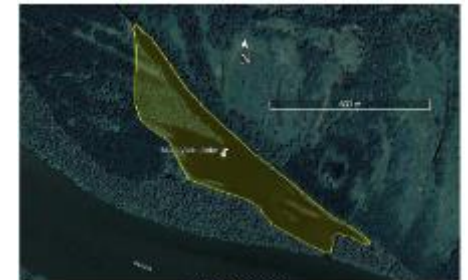
- Permanent ban on 13 locations (Special habitats for fish)
- Limitation of commercial fishing tools (types of tools, period of the day, period of the year)
  - enabling fish migration to the floodplain and back
- Catch and release sites



Ciganki kanal, Mirvaldski danavac, Bara Venecija



Čotacovo, Bara Dlinišča i Ribolov bara



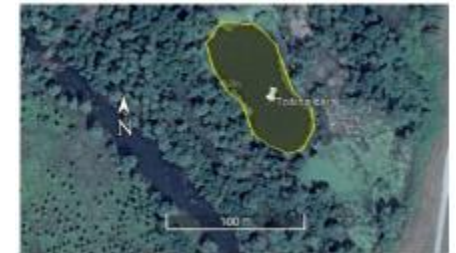
Mali i Veliki Adler



Petreški danavac



Staklana ka bagja



Tolosa bara



Duguševac bara, Patajna bara, Orlova bara



Srebrenički danavac



# Fishing limitations:



## KSNR

- Permanent ban on 1 location (Special habitats for fish)
- No commercial fishing



## TNatP

- Permanent ban on 1 location (Special habitats for fish)
- No commercial fishing



- Danube River (part of Bačka Fishery) - Permanent ban on 1 location (Special habitats for fish) between 1333-1334 rkm



## Implemented restoration works



- GPSNR: outside of the active floodplain: Bestrement in 2014 and Strbac in 2015 (with WWF) – vegetation removal (trees, shrubs, reed) deepening of the pond
- KSNR: lifelineMDD – Lovrenac channel 2021/2022 (sediment and vegetation removal)



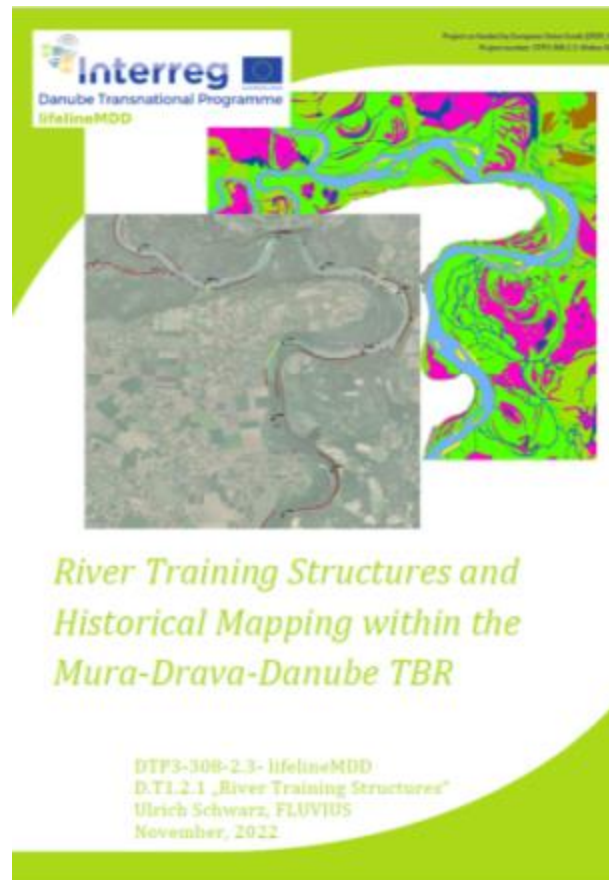
- 2023: GPSNR – planned works to improve special habitats for fish on at least 5 locations (hydrology)





## Considerations:

- Further analysis of the current state – if existing river training structures are necessary (climate changes, navigation route changes)
- How will the planned fairway improvement works effect the floodplains/wetland habitats/fish spawning grounds
- Active conservation measures needed





***Thank you for your attention!***

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