Enhancing aquatic biodiversity of the Danube River Basin

IAD recommendations

Dr. Cristina Sandu – International Association for Danube Research
cristina.sandu@danube-iad.eu

Current conservation status – EU freshwater habitats and fish species (HD)

Most of freshwater habitats and fish species - unfavourable status (red, yellow dots)
Ecosystems need long time to recover

EUROPEAN COMMISSION

Brussels, 15.10.2020
COM(2020) 635 final

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL AND THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE

The state of nature in the European Union

Report on the status and trends in 2013 - 2018 of species and habitat types protected by the Birds and Habitats Directives

EEA Report | No 10/2020

State of nature in the EU
Results from reporting under the nature directives 2013-2018

European Environment Agency

Not likely to achieve WFD/HD goals without significant improvements

Legend: FV Favourable | XX Unknown | U1 Unfavourable-Inadequate | U2 Unfavourable-Bad

Current selection: 2013-2018, Freshwater habitats, overall assessment.

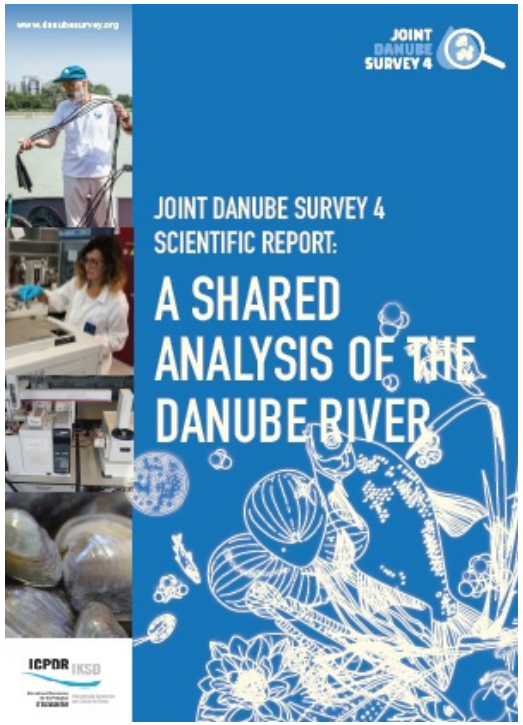
Habitats	Regions													
	ALP	ATL	BLS	BOR	CON	MAC	MED	PAN	MATL	MBAL	STE	MMAC	MMED	MBLS
3110 - Oligotrophic waters (Littorelletalia uniflorae)	FV	U2		U1	U1		U1							
3120 - Oligotrophic waters of West Med. with Isoetes spp.		U2					U2							
3130 - Oligo to mesotrophic waters (Littorelletea/Isoeto-Nano)	U1	U2	FV	U1	U2	U1	U2	U2			FV			
3140 - Hard oligo-mesotrophic waters with benthic Chara spp.	U1	U2	FV	U1	U2		U2	U1			FV			
3150 - Natural eutrophic lakes Magnopotamion/ Hydrocharition	U2	U2	U1	U1	U2	XX	U2	U1			FV			
3160 - Natural dystrophic lakes and ponds	FV	U2		U1	U1	FV	U2	U1			FV			
3170 - Mediterranean temporary ponds	XX	U1			U2	U2	U2							
3180 - Turloughs	U1	U1		U1	FV		XX							
3190 - Lakes of gypsum karst	FV	U2		XX	U2									
31A0 - Transylvanian hot-spring lotus beds								U2						
3210 - Fennoscandian natural rivers	FV			U1	U1									
3220 - Alpine rivers & herbaceous veg. along their banks	U1	XX		FV	U1	FV	XX							
3230 - Alpine rivers & ligneous veg. with Myricaria germanica	U2				U2		U1							
3240 - Alpine rivers & ligneous vegetation with Salix eleagnos	U1	U2			U1		U2							
3250 - Constantly flowing Med. rivers with Glaucium flavum	XX				U2		U2							
3260 - Water courses of plain to montane level (Ranunculion..)	U1	U2	U1	U2	U1		U1	U1			FV			
3270 - Rivers with muddy banks (Chenopodion rubri & Bidention)	U1	U2	FV	U1	U1		U1	FV			FV			
3280 - Constantly flowing Med. rivers (Paspalo-Agrostidion ..)	U1				U1		U2							
3290 - Intermittently flowing Med. rivers Paspalo-Agrostidion							U1							
32A0 - Tufa cascades of karstic rivers in the Dinaric Alps	U1				U1		U1							

Legend: FV Favourable | XX Unknown | U1 Unfavourable-Inadequate | U2 Unfavourable-Bad

Current selection: 2013-2018, Fish, overall assessment.

Species	Regions													
	ALP	ATL	BLS	BOR	CON	MAC	MED	PAN	MATL	MBAL	STE	MMAC	MMED	MBLS
Achondrostoma arcasii	U1	U1					U1							
Achondrostoma occidentale							U1							
Achondrostoma oligolepis		U1					U1							
Achondrostoma salamantinum							U2							
Acipenser gueldenstaedtii			U2		U2						U2			U2
Acipenser naccarii					U2		U2							
Acipenser nudiventris					XX									
Acipenser oxyrinchus					U2									
Acipenser ruthenus	U2				U2			U2			U2			
Acipenser stellatus			U2		U2		U2				U2			U2
Acipenser sturio		U2			U2		U2		U2				XX	
Alburnus albidus					FV		U2							
Alburnus mandrensis			U1		U1									
Alburnus mento	U1				FV									
Alburnus sarmaticus	XX				U1									
Alburnus schischkovi			FV		XX									
Alburnus vistonicus							U2							
Alburnus volviticus							U1							
Alosa agone	FV				XX		FV							
Alosa alosa		U2			U2		U2							
Alosa fallax		U2		FV	U2		U2							
Alosa immaculata			U1		U1						U1			XX
Alosa killarnensis		FV												
Alosa macedonica							FV							
Alosa tanaica			U1		U1						U1			XX

Environmental friendlier detection methods available – eDNA



Detects DNA traces left in the environment by aquatic organisms

Water filtration required, no capture/trauma of target organisms

One sample – detection of numerous species

Particularly effective in case of endangered species (rare) and benthic fish species (e.g. sturgeons), difficult to capture

Assessment of ecological status based on eDNA (e.g. presence-absence of MZB species) congruent to traditional methods

Useful to compile invasive alien species taxa lists in the Danube Basin

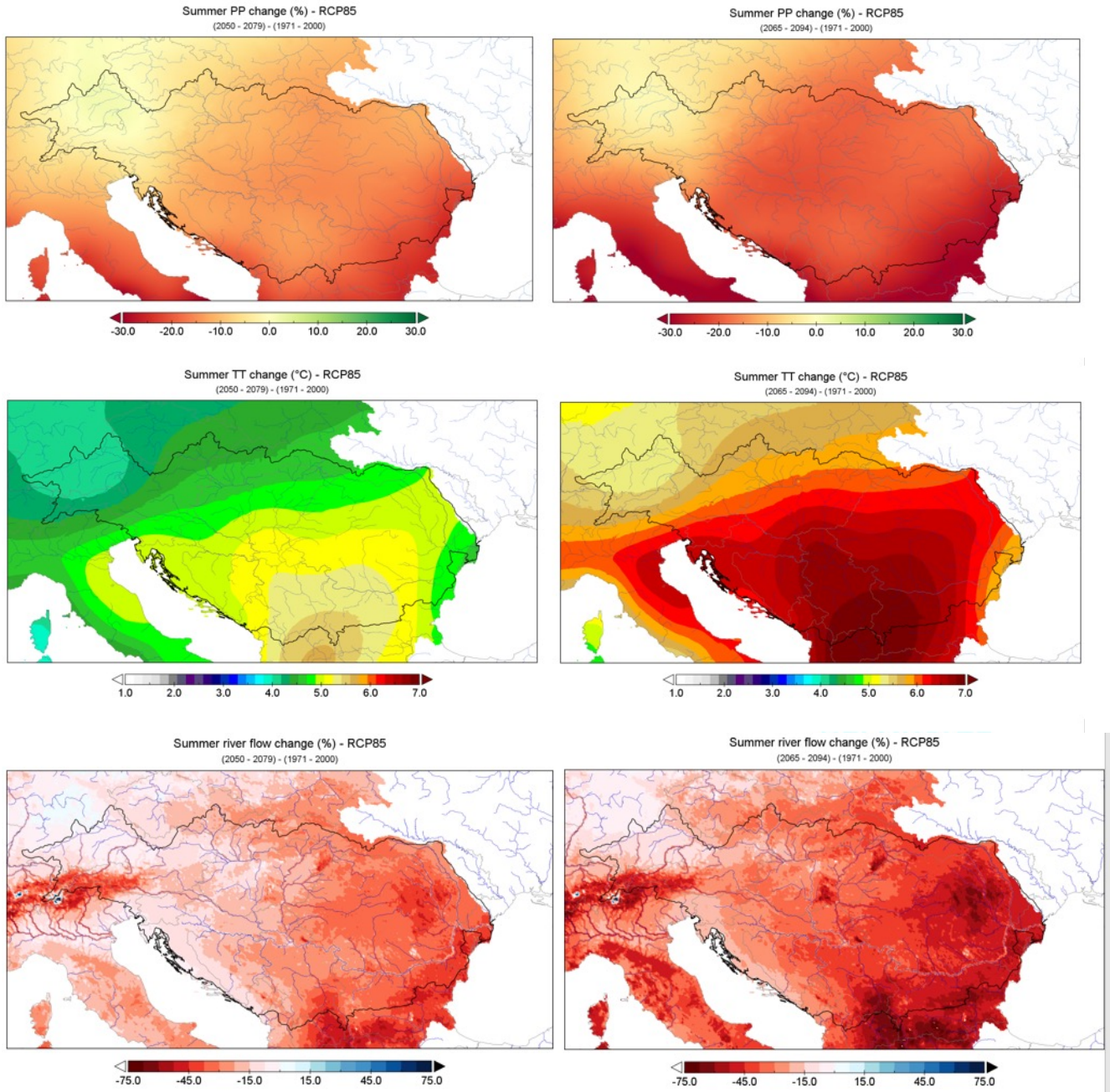
No need to further remove rare individuals from the environment and jeopardize species conservation

Projections of climate change impacts in the Danube River basin

If climate targets are not met, dramatic changes will occur in summer by the end of the century:

- Decrease of precipitation – up to 30%
- Increase of temperatures – up to 7°C
- Decrease of Danube discharge – up to 75%

Nature based solutions for adaptation to climate change – to be urgently implemented



(Ionita et al, 2021)

HELMHOLTZ

Adaptation to climate change - Nature-based solutions

Climate related events, biodiversity loss and water crisis rated among the top five global risks (WEF, 2020).

Ecosystem preservation/restoration - enhance resilience and mitigation of climate change impacts.

Working with nature and enhancing ecosystem services is at the centre of nature-based solutions to climate change adaptation and disaster risk reduction

Participatory approach and inclusion of stakeholders perspectives – fundamental for ensuring effectiveness and public acceptance

Nature based solutions – a key element of EU climate adaptation policy

EUROPEAN COMMISSION

Brussels, 24.2.2021
COM(2021) 82 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change

Implementing nature-based solutions on large scale - increase climate resilience and contribute to multiple Green Deal objectives.

Nature-based solutions are essential for sustaining healthy water, oceans and soils.

Europe needs to leverage more investments in nature-based solutions to generate gains for adaptation, mitigation, disaster risk reduction, biodiversity, and health

Ensuring freshwater availability in a sustainable manner is fundamental for climate resilience.

IAD recommendations

- Use the financial and legal tools provided under the EU Green Deal and the new MFF to **implement more nature restoration solutions and increase resilience to climate change (adequate funding in the JPM)**
- Establish a **Freshwater Biodiversity Task Group** within the ICPDR - integration of water and nature directives
- Assess **aquatic biodiversity status** in the Danube River Basin and **identify key actions to improve the conservation status** of species/habitats
- **Adaptive management** - gradually **include the identified measures addressing biodiversity integration** in the DRBMP
- **Maintain the hydromorphological integrity** of freshwater habitats and **establish ecological corridors**
- Explore the possibility to **declare freshwater biodiversity a Significant Water Management Issue (SWMI)** in the Danube Basin.