DRBMP

Towards "good ecological status" in the Danube River Basin

Jürg Bloesch

International Association for Danube Research
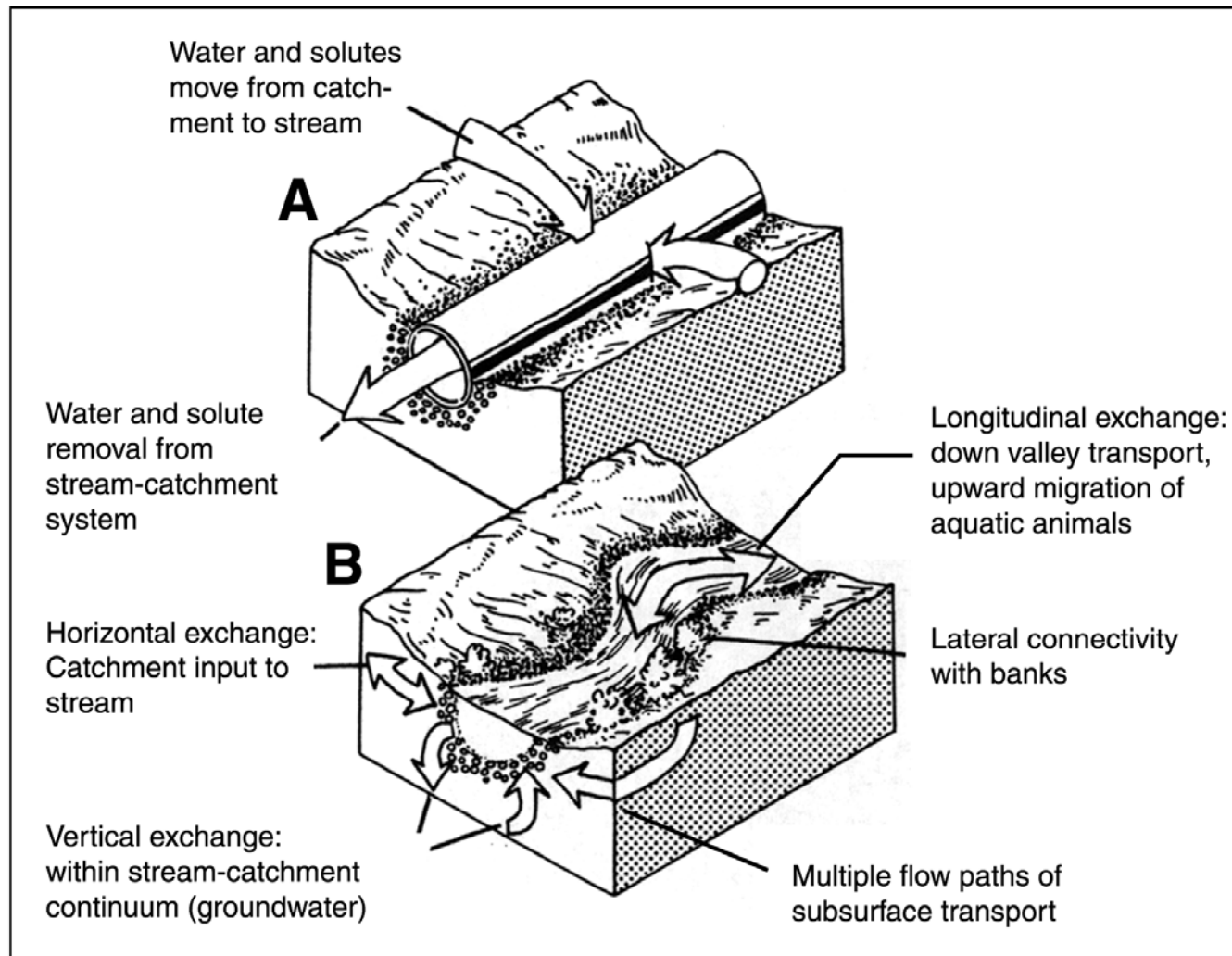
Draft DRBMP – widely accepts

| Key issues	Status
Hydromorphology (habitat for biota) – the same importance as pollution (water quality) with respect to ecosystem function	Clean water in destroyed channels (Upper Danube) Polluted water in more intact channels (Lower Danube)
Floodplains – providing ecosystem services (flood mitigation, nutrient retention, biodiversity "hot-spots")	Threatened by navigation, flood protection, hydropower plants, dredging – ecosystem services are at risk
Fish migration & natural fish reproduction – good indicators of "good ecological status"	Decreasing populations – due to a cocktail of stressors (e.g., loss of habitat, pollution, etc)

Importance of river connectivity
- the 3 (4) dimensions of rivers (Bencala, 1993) -

Water and solutes move from catchment to stream

A

Water and solute removal from stream-catchment system

B

Horizontal exchange: Catchment input to stream

Vertical exchange: within stream-catchment continuum (groundwater)

Longitudinal exchange: down valley transport, upward migration of aquatic animals

Lateral connectivity with banks

Multiple flow paths of subsurface transport

Action Plan for the Conservation of Sturgeons (Acipenseridae) in the Danube River Basin

**Aim: to close the natural Sturgeon life-cycle
→ needs joint and simultaneous actions in the Upper, Middle
    and Lower Danube**
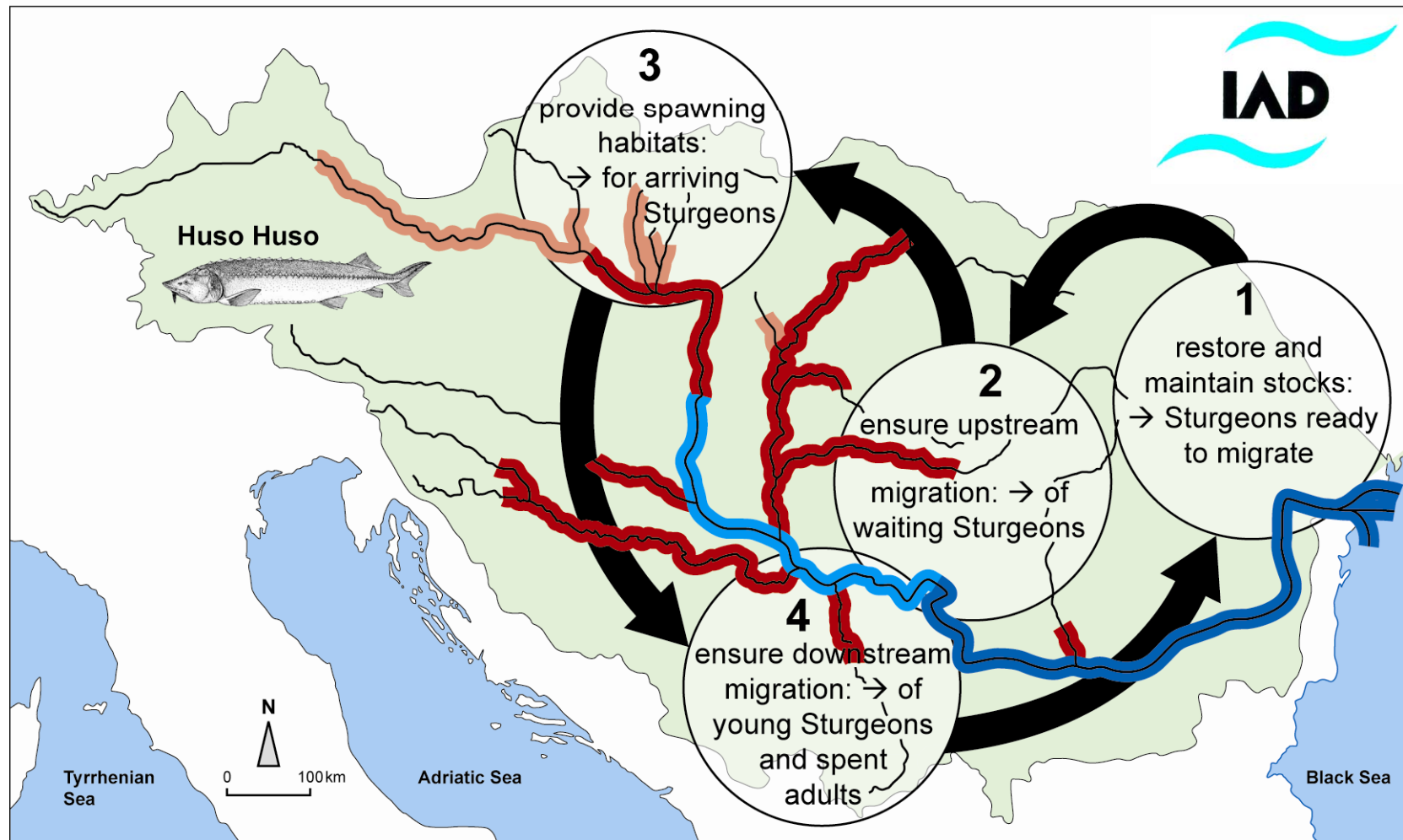
Draft DRBMP – lacks

- a WFD oriented classification of **HMWBs**

- a WFD oriented treatment of **FIPs**

- a sound rating & monitoring of **fish passes**

- an adequate rating & treatment of **neozoans**

WFD – good ecological status of waterbodies

Heavily modified

Source: Bloesch & Sieber, Large Rivers 2003

Near natural (Reference)

Source: A.Galie, NARW, 2009 - Biowetman wks Bucharest

Future infrastructure projects along Lower Danube

IAD

ISPA 1, ISPA 2, BYSTROE – KYLIA channel

Future affected stretches along Lower Danube > 60 (mostly in protected areas: NATURA 2000, RAMSAR, Danube Delta Biosphere Reserve) + 17 along Tisza (its most important tributary)

➡ SEA & EIA needed

Fish passes: rating & monitoring

- Function is a matter of correct construction (general requirements are known, cf. DWA 2006)

- Apart from construction: appropriate attractive currents for fish are crucial to find entrance

- Monitoring, success control: difficult as actual fish populations are not precisely known in large rivers

- Implementation: if function is not ensured, reconstruction needs to be implemented and paid (user pay principle)

Neozoans & Navigation waterways

Dikerogammarus villosus
in Rhine/Danube
(Schöll & König 2008)

- Great impact on the Rhine food web – replaced the native benthic fauna
- Together with *Corophium curvispinum* make up 80–90% of the Rhine's macroinvertebrate community

* Similar impact on Upper and Middle Danube – dominate up to 90-100%

* Not yet dominant in the Lower Danube
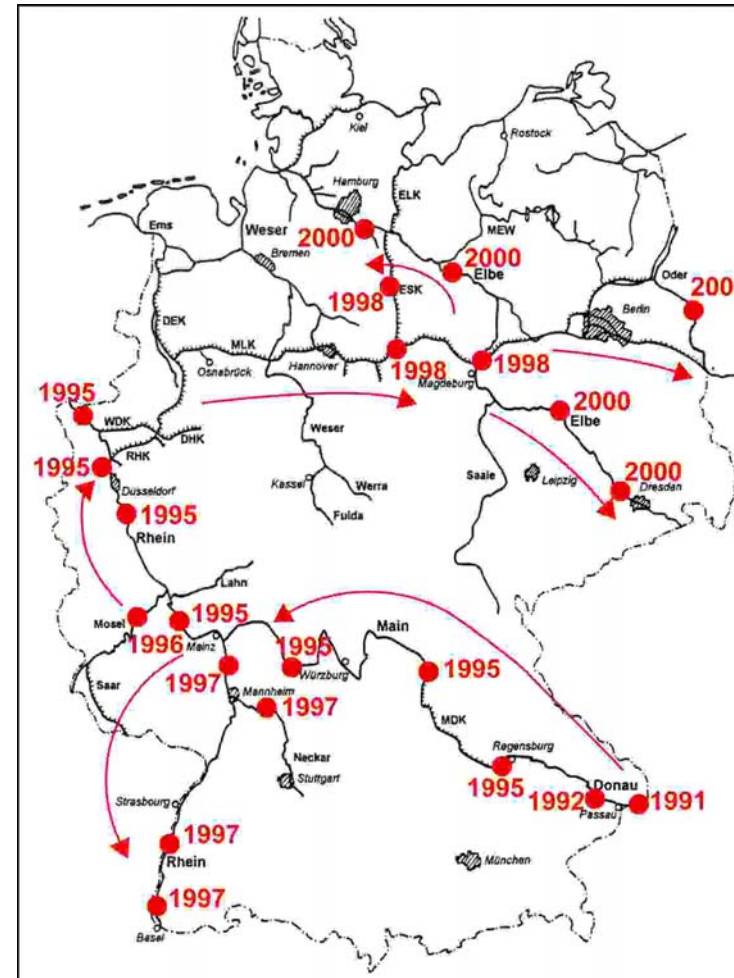
Draft DRBMP – needs improvement

- **Hydromorphology (p.39)** — Definition of HMWBs, how and when to achieve GEP; economy: costs of engineering construction vs restoration; ES-services

- **FIPs (p.25)** — conflicting and not harmonized (e.g., ISPA vs Iron Gate sturgeon passage); quantity <u>&</u> quality

- **Fish passes (p.71)** — BAT, monitoring, implementation

- **Neozoans (p.27)** — are more than a "possible" pressure

- **Groundwater (p.29)** — areas in DRB, protection zones (legal instrument), use (registers), phreatic fauna, link to floodplains, **sediments (p.27)** = SWMI