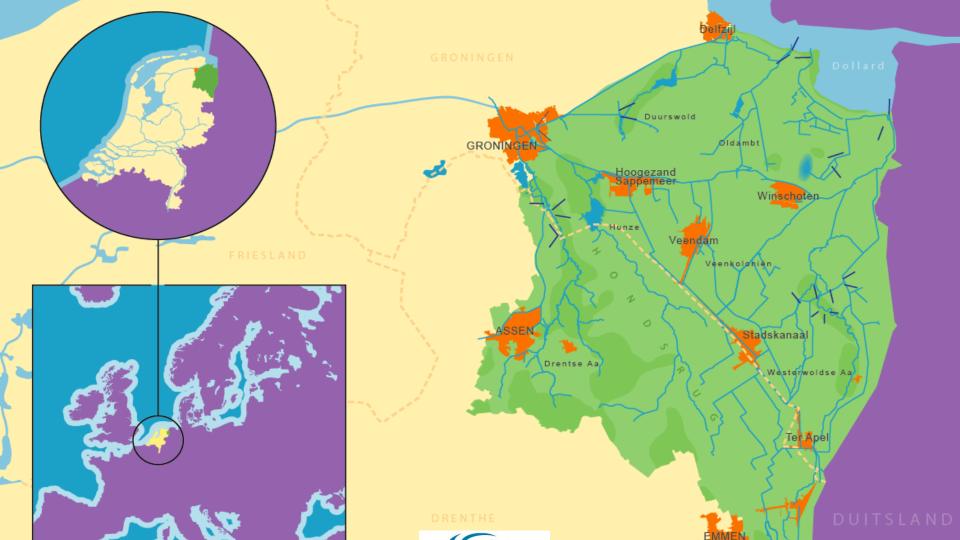


Herman Wanningen
Director
Strategy & Development





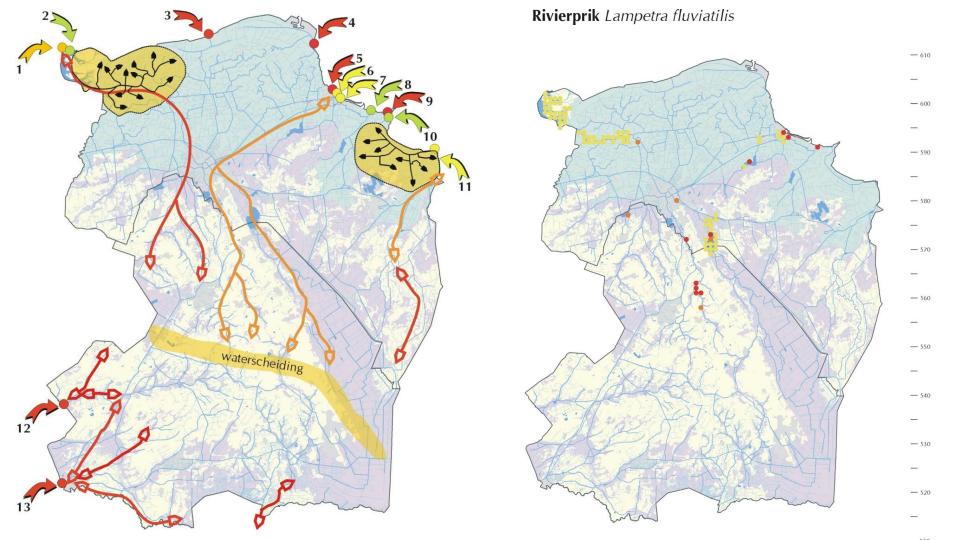












Herman Wanningen Aquatic Ecologist

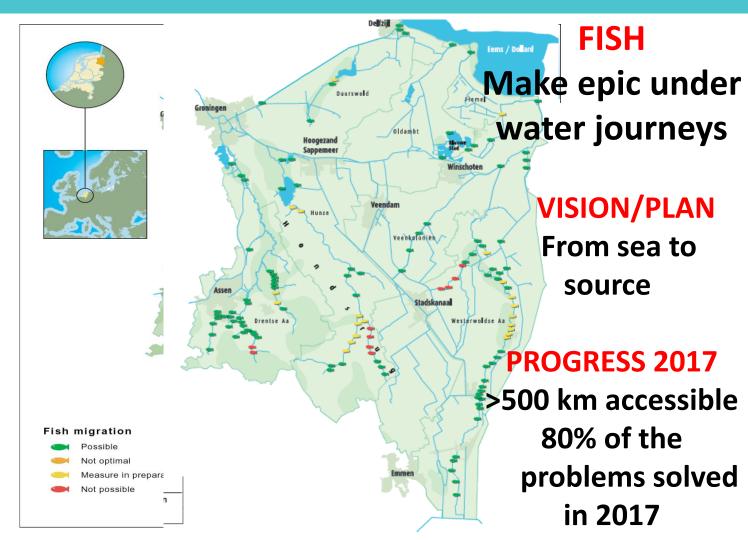






Peter Paul Schollema Aquatic Ecologist

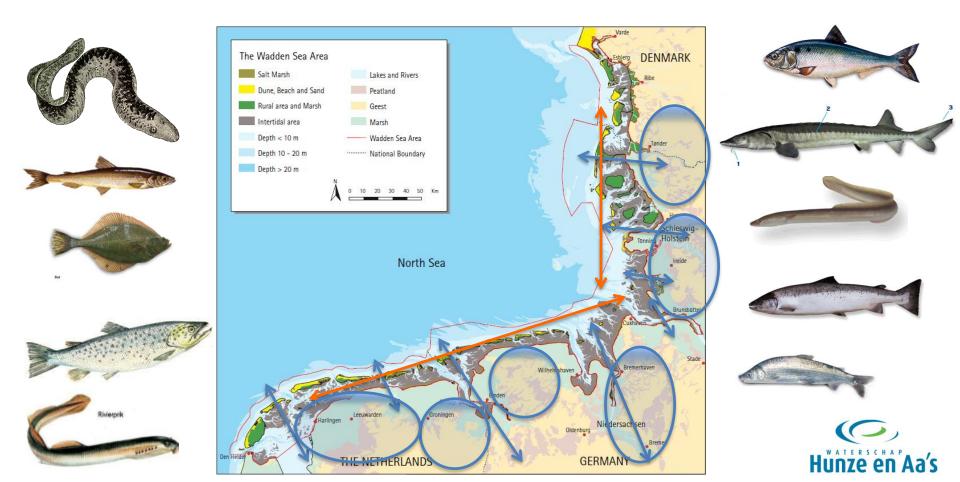








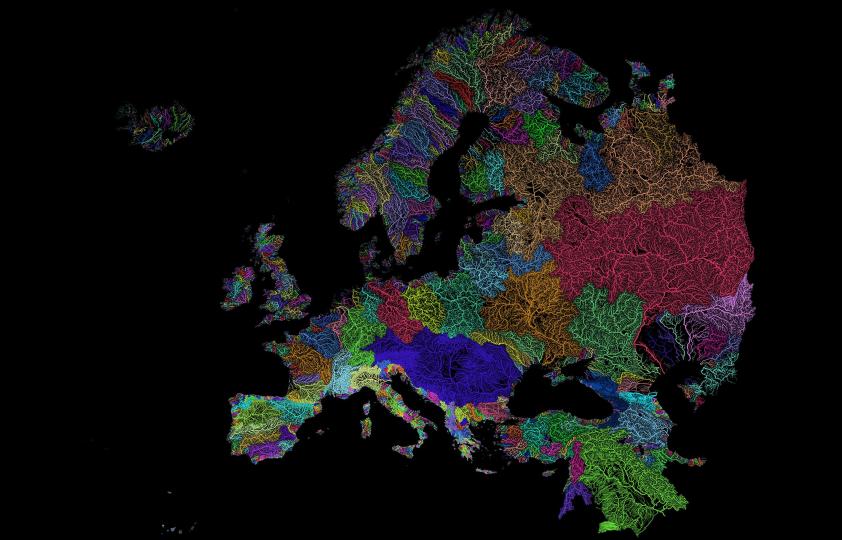
We are part of something bigger...



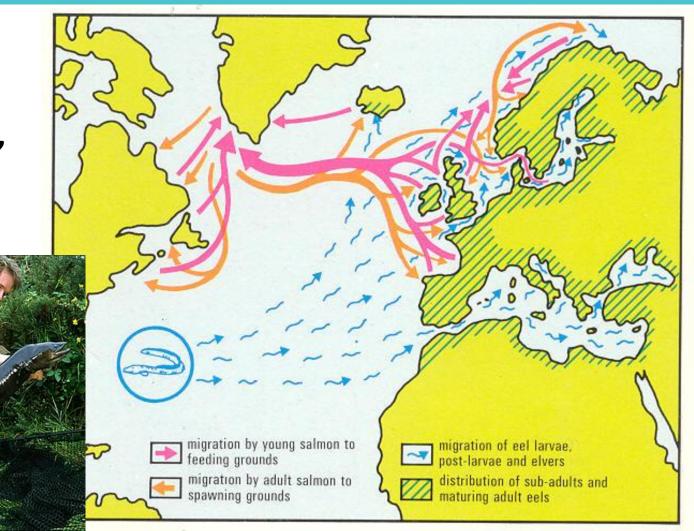


Swimway River Rhine



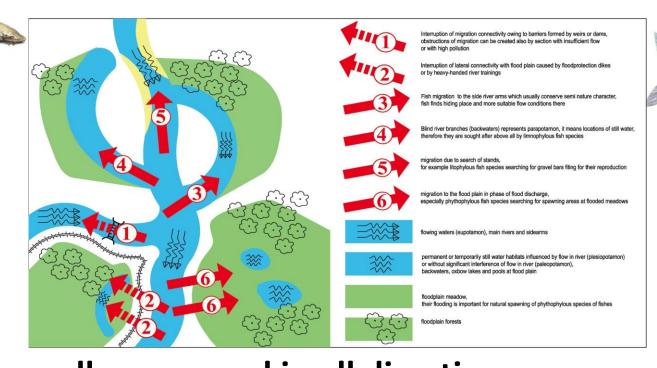


Making love
We want to
mate, 'mate'





Swimway: the highway of LOVE!











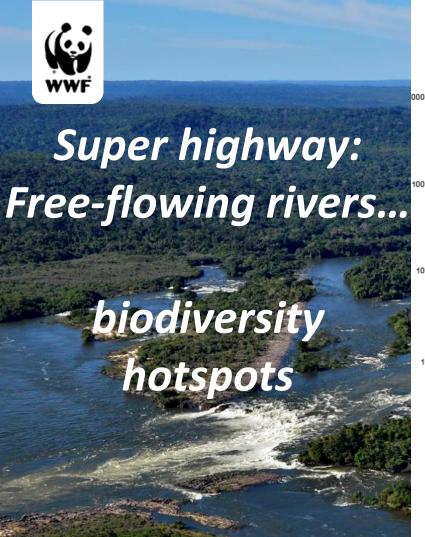
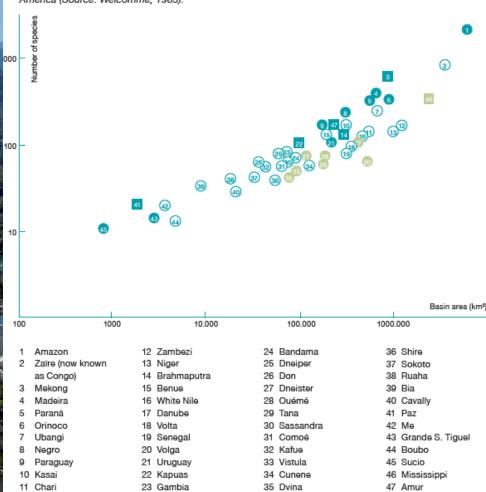


Figure 2.2 Number of species of fish present in major river systems

Plotted according to their basin areas: (•) South America; (•) Africa; (•) Asia; (•) Europe; (■) North America (Source: Welcomme, 1985).



Our human hobby Putting roadblocks in swimway





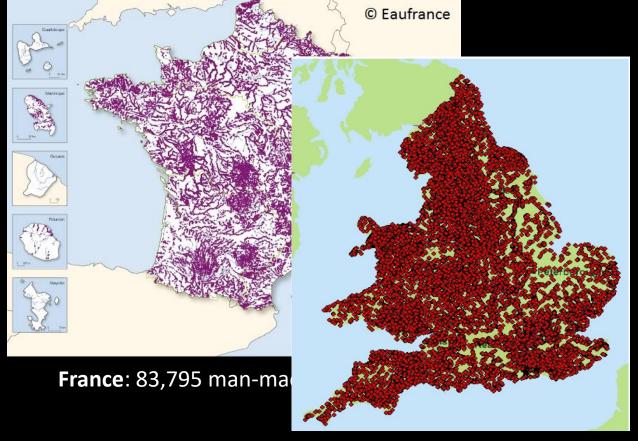


>800.000 HP dams

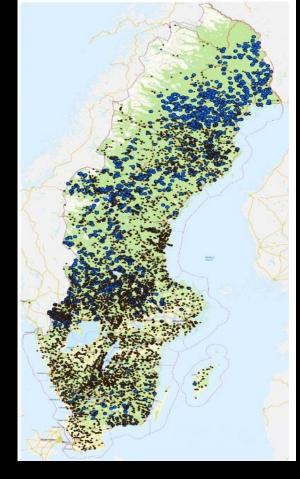
>50.000 large (>15m)

Thousands planned or under construction





UK: 22,000 man-made obstacles



SWEDEN: 9,298 barriers

Impact

- 90% of the (small) hydropower dams produce
 10% of the energy
- 10% of the (big) hydropower dams produce 90% of the energy

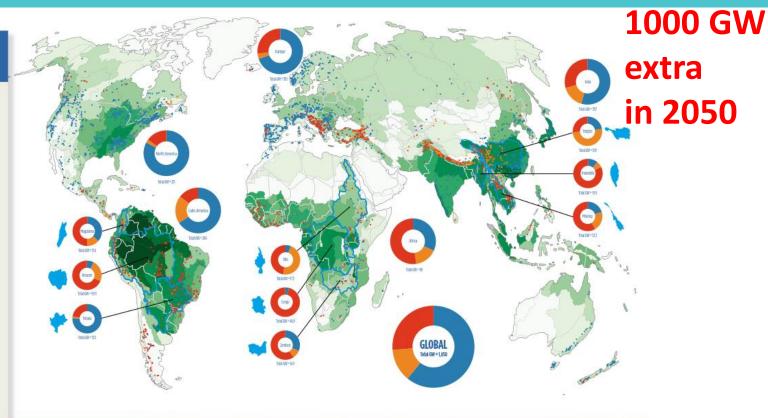
•

Figure 1.2 Global Context

Dams under construction
(orange dots) and planned dams
(red dots) occur in many of the
river basins with the greatest
freshwater species richness
(dark green indicates high
richness of fish species). River
basins projected to undergo
major expansion of hydropower
include the Mekong, Nile and
Amazon.

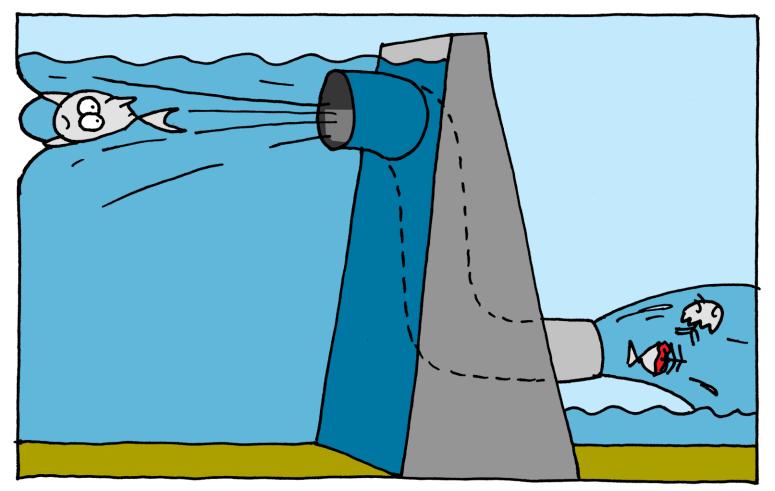


- a. Fish species richness from Freshwater Ecoregions of the World
- Distribution of existing hydropower dams from Global Resenvoirs and Dams (GRanD) database (Lehner et al. 2011).
- Distribution of under construction and planned hydropower dams
 (capacity > 25 MW) from Zarfl et al., (2015).
- d. For capacity values of continents: existing capacity from International Hydropower Association, under construction from Zarff (2015), and planned is derived from the 2010 *2 degree* soemain of the International Energy Agency (2012). As in Includes Australia, New Zealand and Oceana.
- For capacity values of basins: under construction and planned are from Zarfl (2015), existing data collected from various sources.





THE DANGER OF DOWNSTREAM MIGRATION





River Ecosystem

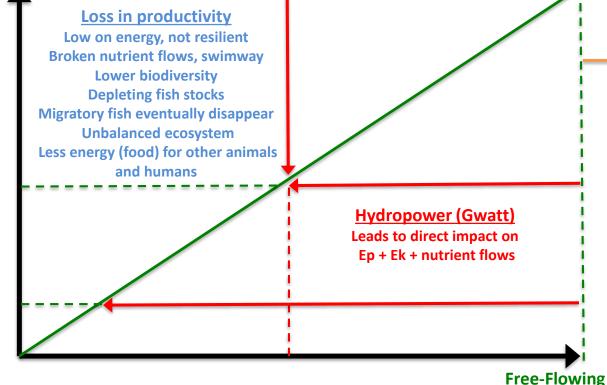
Optimal for all trophic levels,

balanced, resilient, high productivity,

high biodiversity, high fish stocks, healthy ecosystems



Productivity maximum depends on the size of the river basin



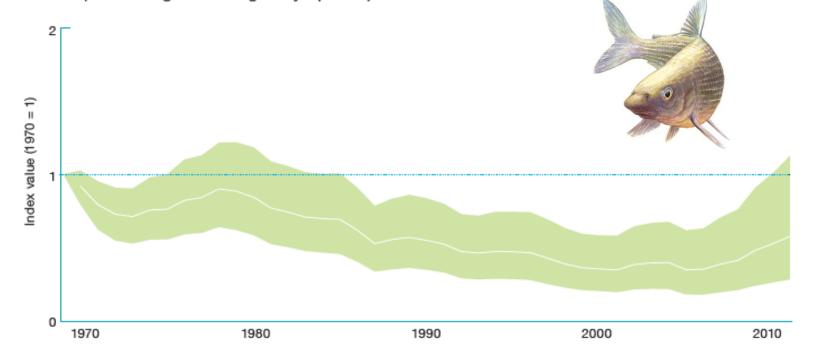
Energy (Gwatt)

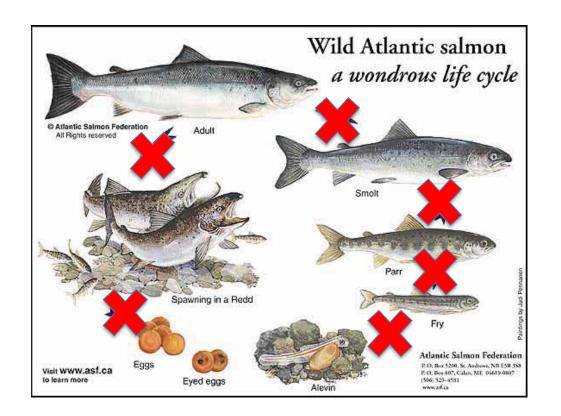
ESun + Ep + Ek +
Nutrient flow
(erosion/sedimentation)



Living Planet Index (40% decline)

Living Planet Index for migratory fish from 1970 to 2012 (WWF, 2016). The LPI from the 2016 report comprised catadromous, anadromous, potamodromous and amphidromous species as categorised by GROMS (Global Register of Migratory Species).





Consequences

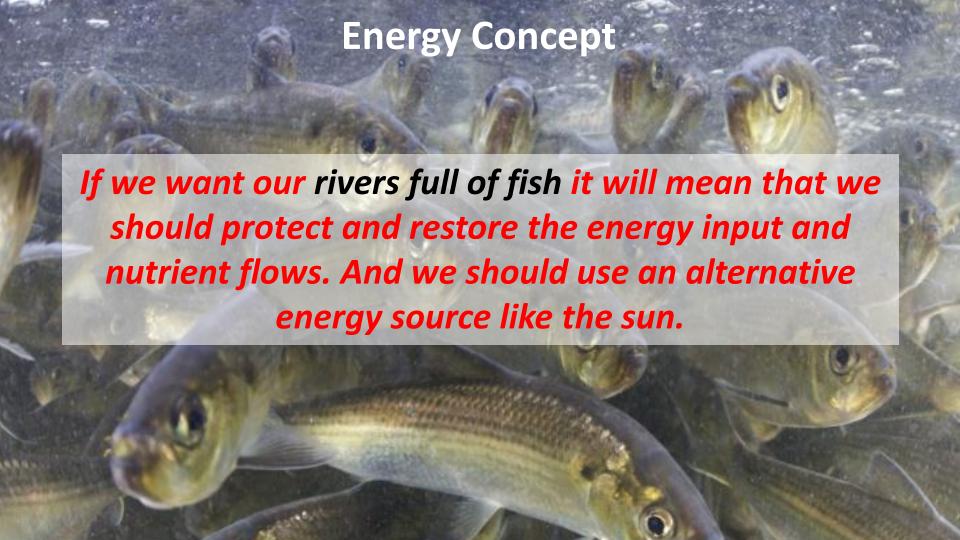
Life cycle blocked **Habitat damaged Species disappear** River health at stake **Food problems for** humans











Driving forces for protecting and restoration...

natural & cultural heritage, angling, tourism,



safety, healthy water quality, human & animal consumption

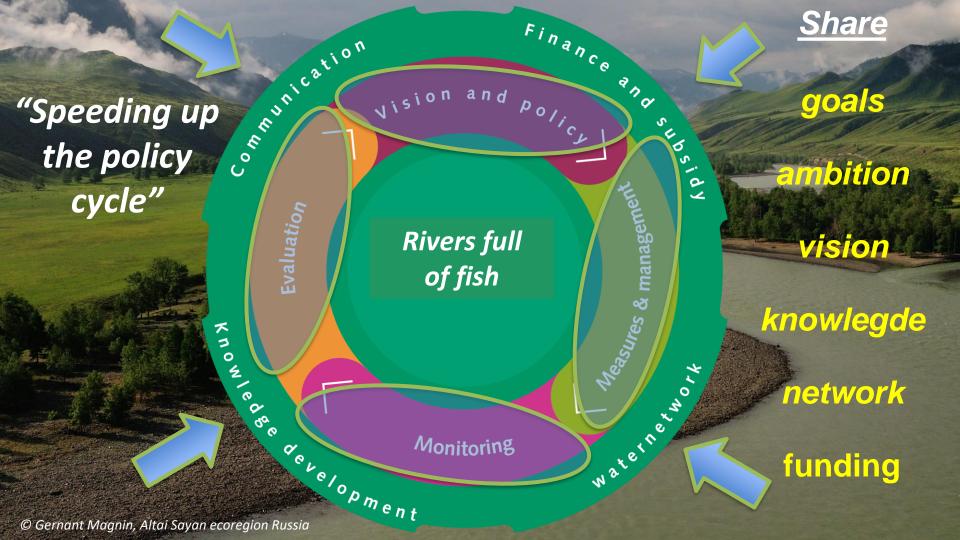




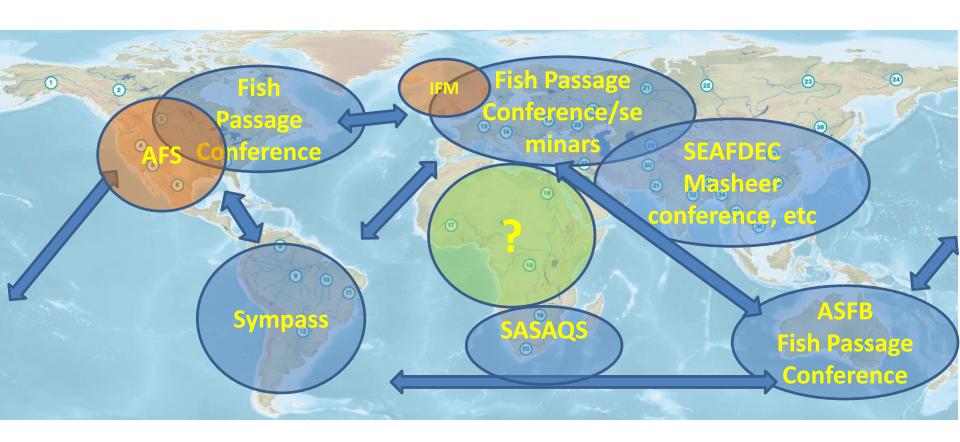








Connecting networks and experts



SABIE SWIMWAYS



Fish play an important role in the food chain of the Kruger National Park (KNP), A healthy fish population contributes to a natural equilibrium in the river ecosystem. Fish are part of the menu of several bird species, crocolides and other fish. If the fish populations decline, there will be a direct negative influence on wildlife in the area. To maintain this natural equilibrium it is important, that the fish how clean, flowing rivers, not only within KNP, but also far beyond. Many fish need hundreds of kilometers of clean flowing river habitus to the second of the control of kilometers of clean flowing river habitus to the control of the control of kilometers of clean flowing river habitus to the control of the control of kilometers of clean flowing river habitus to the control of the control of kilometers of clean flowing river habitus to the control of the control of kilometers of clean flowing river habitus to the control of the control of kilometers of clean flowing river habitus to the control of the control

River Management

The KNP is committed to the conservation of its natural heritage and biodiversity and manages the life veins of the park 24/7. SANParks in partnership with various stakeholders e.g. Catchment Management Agencies, Water boards, farmers and local communities, together manage the 6 major rivers in the park by continuous monitoring, research collaboration and communication.

Conserving the Sabie River

The Sable River is one of KNP's flaghlip riven and is one of the few river systems in South Africa that still has a near natural ecology. There is a high diversity of fish, invertebrates, birds and other wildlife that depend on this system for survival. With increasing impacts from industry, population growth, dam construction and climate change, it is essential to protect and conserve this blodiversity and ensure a clean and healthy river system.

A bigger initiative

In an effort to improve and protect the water quality and habitat conditions in the Sabie River, a long term programme is being planned as a part of a bigger "Summay South Africa" initiative. The programme aims to activate managers, governments and stakeholders, develop best practice guidelines, facilitate improved communication with users and public, initiate restoration and conservation projects and collaborate with international















Swimways is about protecting and managing migratory fish. To make this possible we need to:



Raise awareness, share knowledge and create



Develop management strategies, optimise policies, develop best practices and



Mitigate the socio-ecological consequences of fish migration disruptions through river resour















without barriers and flowing...

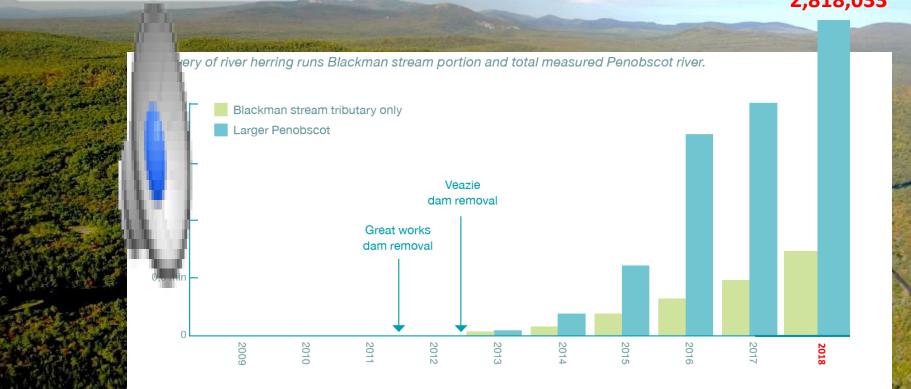


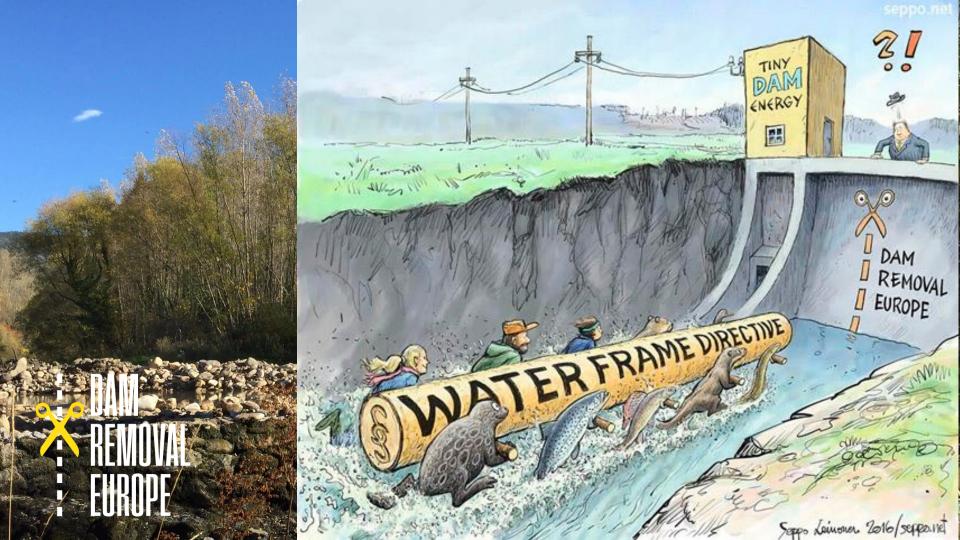


Assessing Ecological Impacts

3220 km river opened up

2,818,033











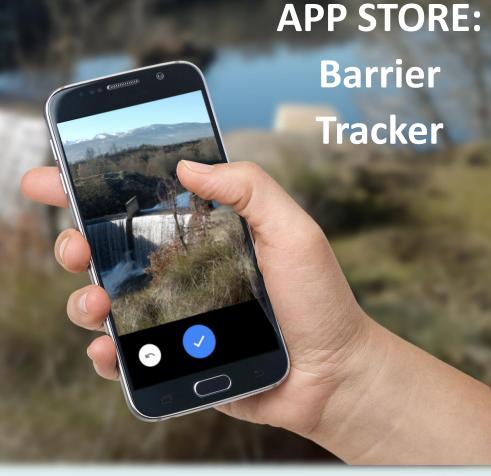
Track barriers
with the barrier tracker
and help reconnect
European rivers

AMBER Citizen Science project

LET IT FLOW









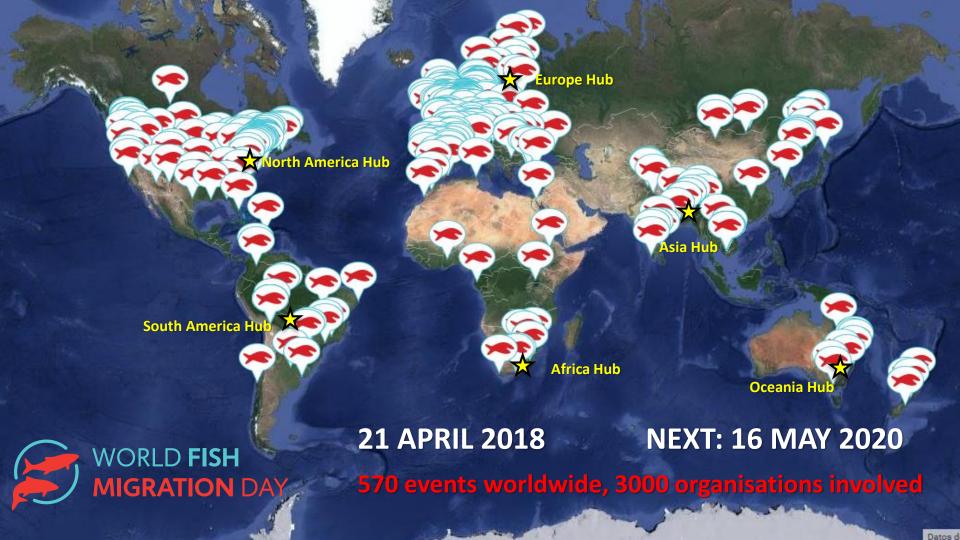




Create awareness and commitment for free flowing rivers and open swimways for migratory fish

Activate citizens and our colleagues around the world to join and create impact





Only together we create impact...

				/
Activate & awareness	2014	2016	2018	2020
Events	273	450	570	>1000
Organizations	1,200	2,000	3,000	4,000
Countries	53	63	63	75
Visitors	50,000	100,000	200.000	300,000
Media reach	2 mln.	70 mln.	>50 mln.	100 mln.
Celebrations to open up rivers	30	15	15	70









PECES, RÍOS Y GENTE CONECTÁNDO A LA CULTURA

Día Mundial de la Migración de los Peces 2018

Es una celebración mundial coordinada por la BS una celebración mundar coordinada por la World Fish Migration Foundation, para crear conciencia sobre la importancia de los rios saludables y los peces migratorios, conectando

19 y 20 Abril 2018 Salón Tupac Katari (GADLP) Calle Comercio Esq. Ayacucho 21 Abril 2018 Museo Nacional de Historia Natural (Calle 26 de Cota Cota

















Bolivia











waterschap amstel gooi en vecht







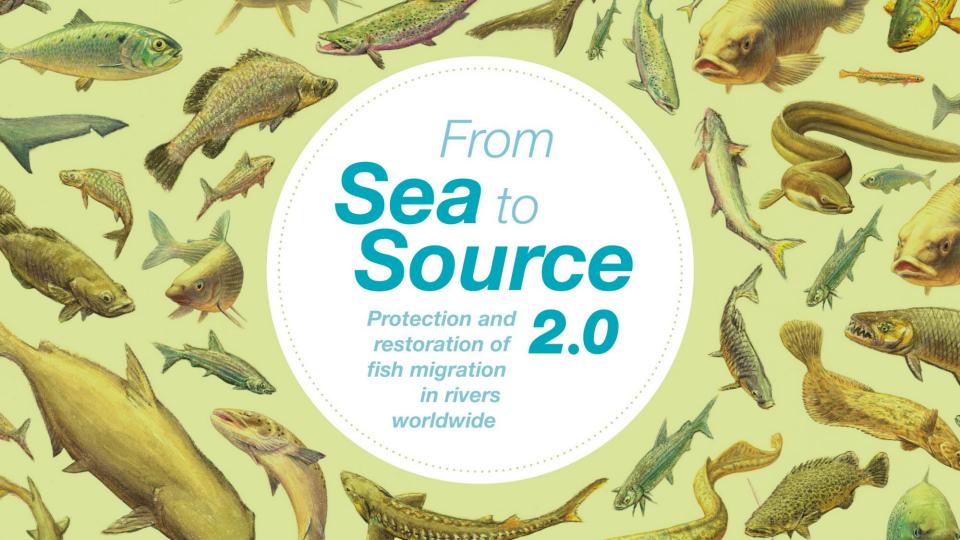








16 May 2020 #worldfishmigrationday #HAPPYFISH LOVE THEIR RIVERS WILD Seppo Leinonen 2017/ Seppo.net















provinsje fryslân provincie fryslân





































American Rivers

Rivers Connect Us







CDM Smith





















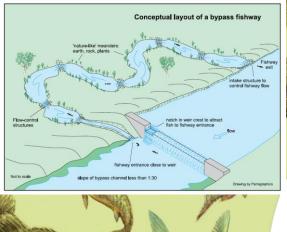




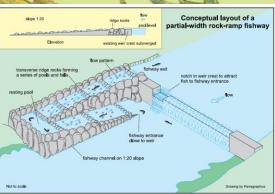






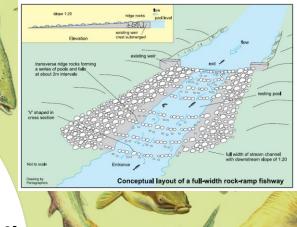


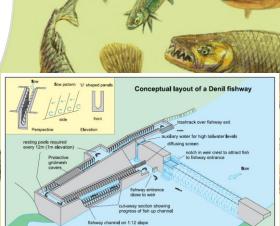




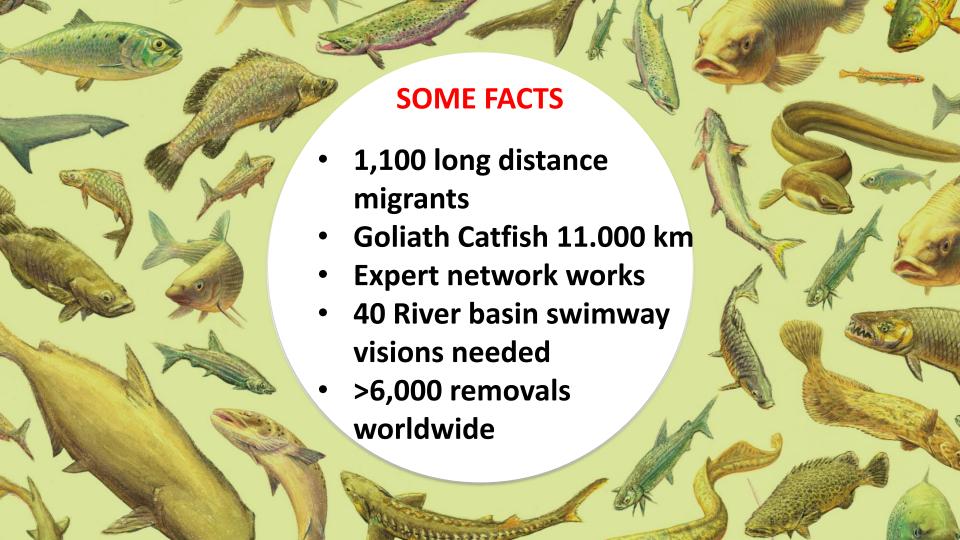
FISHWAYS

- Fit all fish species
- Need to be updated
- Finding entrance (crucial)
- No delays in the fishway
- Evaluation is essential
- Working 24/7 up-down
- After passage...
 - fish need habitat











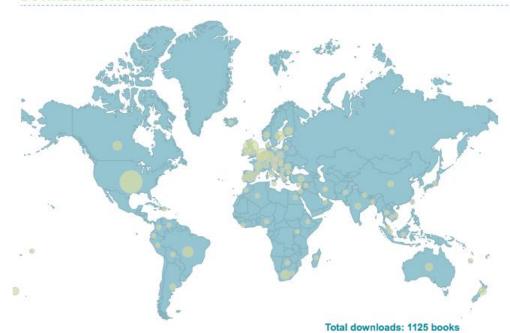
From Sea to Source 2.0 Protection and restoration of fish

migration in rivers worldwide

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