Smelt Disappearing

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- **Smelt (Osmerus eperlanus) was deterred from the River Elbe by pollution and oxygen depletion in the last century.**
- **When water quality improved, smelt returned from the North Sea and replenished its habitat.**
- **Smelt was caught by commercial fisheries from 1995 till 2015 with a constant annual catch of 60 t, then it dropped to less than 10 t/a.**
- **Smelt is the food base for fish and birds within the limits of the estuary, as well as for migrating fish passing through.**
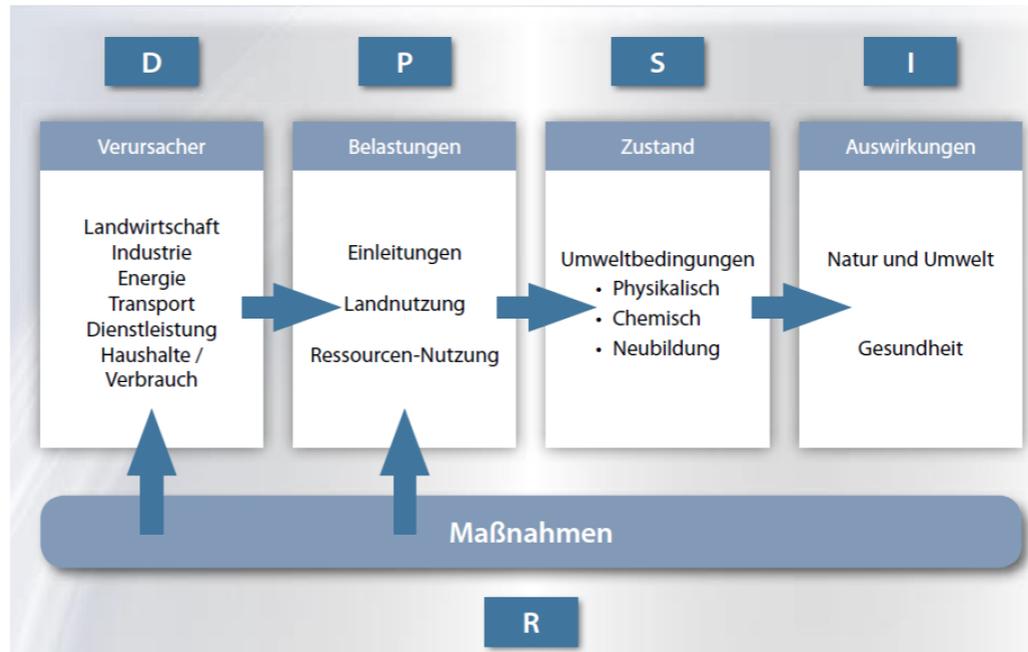- **The decline of smelt coincides with enhanced dredging in the port of Hamburg.**

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DPSIR Scheme

Pressure: suction of sediment and biota in and around dredging site.

State: increased turbidity, oxygen depletion.

Driver: dredging the shipping channel and port of Hamburg more than doubled in volume since last deepening 1999. Dredging was extended from winter to summer season since 2014.

Impact: pressure meets the ecosystem in the most sensitive time of the year. Hatch of smelt develops in April and May, juvenile smelt then is drifted downstream. It is too weak to avoid or to escape dredging sites. Fishermen reported hard losses of catch since 2015.

D	P	S	I
Verursacher	Belastungen	Zustand	Auswirkungen
Landwirtschaft Industrie Energie Transport Dienstleistung Haushalte / Verbrauch	Einleitungen Landnutzung Ressourcen-Nutzung	Umweltbedingungen • Physikalisch • Chemisch • Neubildung	Natur und Umwelt Gesundheit

Maßnahmen

R

bildung 0.1.4: Der DPSIR-Ansatz (Quelle: „Grundwasserschutz in Europa", Europäische Komm , 2008, ISBN 978-92-79-09815-4)

Response: Incompetent authorities were caught by surprise. They could not check their fish monitoring data, nor did they believe the fishermen. A consulting office was engaged, which confirmed decrease of smelt population (Sept. 2019). Another study was ordered to evaluate causes of smelt decline, but dredging is not part of the working program. Results are expected for 2025.
Hamburg Port Authority labeled dredging "flexible and adaptive", as a means to reach good ecological status (potential). No response in the sense of the word is planned.

Principles for RBM

- **Control drivers.**

- **Implement permanent risk analysis into River Basin Management Plan to detect new and enhanced pressures timely.**

- **Impose cost of measures in excess of the RBMP to drivers.**

- **Develop fish-DNA sequencing of water samples for monitoring state of fish stock more efficiently and evaluation-friendly. The method is already established in the salmon rehabilitation program of the river Rhine.**

- **Check fish species similar to smelt.**

- **Next, apply these principles to the problems of fishpasses at Geesthacht.**

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Smelt with its cucumber-flavour is a special treat. If no more smelt is available, carve a cucumber, add salt and pepper, and put it on a slice of another salmonide.
Delicious, but <u>not</u> the good ecological state