

Welfare of fish during transport: some practical issues



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Farmed Fish: many different fish species, each with different lifecycles, living in different waters, at different temperatures, having different needs, farmed in different environments.



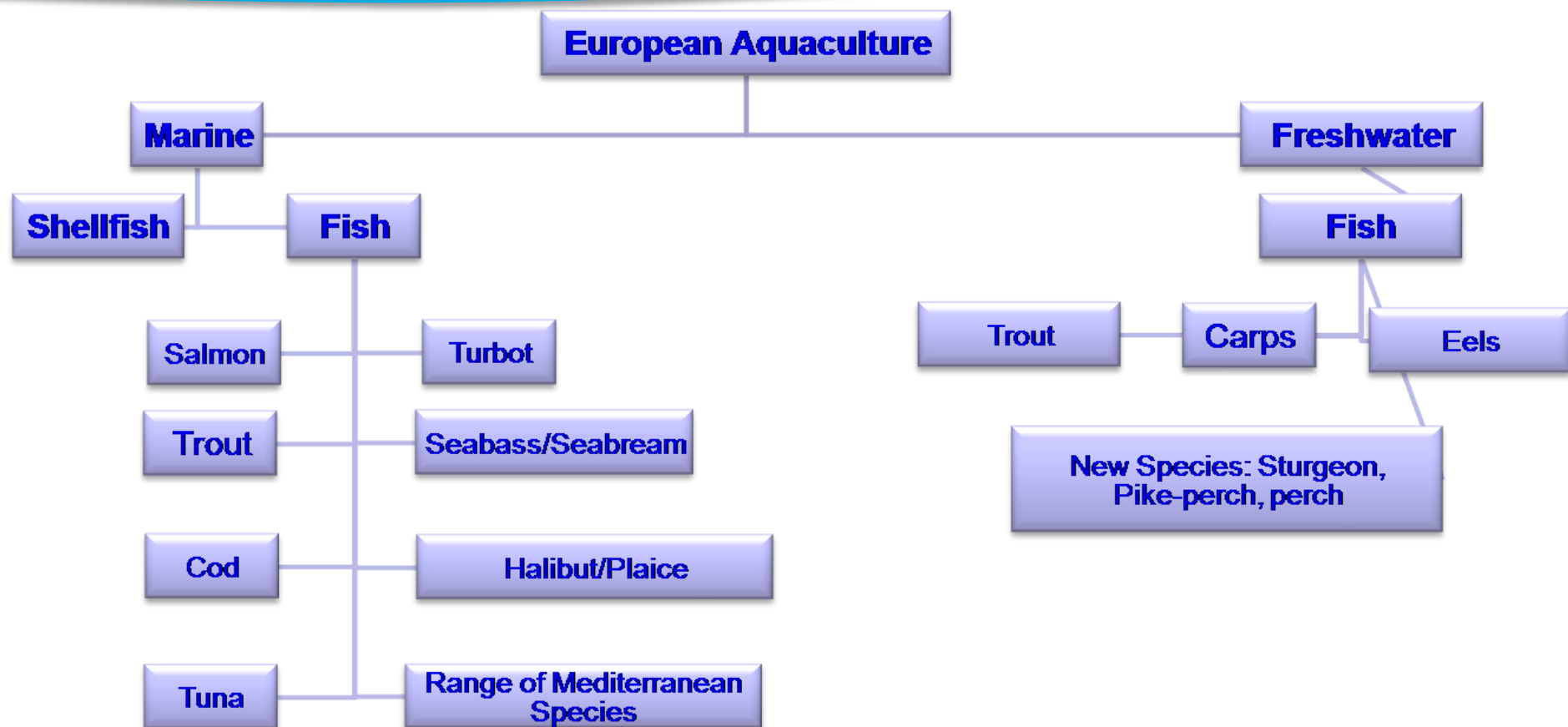
“Fish” is not one species but many such as salmon, trout, sea bass, sea bream, carp, sturgeon... and have to be considered separately.



Because of their various specificities, the welfare indicators, also during transport, cannot be the same for all fish species.



Still missing “scientific” data related to fish welfare during transport



More than 35 – fish & shellfish ...

... compared to 1 cow, 1 pig, 1 chicken

Transport is obviously stressful to fish, but it is needed for transfer fish:

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- The diagram illustrates the life cycle of salmon, divided into several stages around a central circle. The stages and their corresponding months and weights are as follows:
- YNGEL** (Egg): NOV. (15 gr)
 - PLOMMESEKKYNGEL** (Ploegsegg): MAI (0,1 gr)
 - ØYEROGN** (Eyrog): APRIL
 - NYBEFRUKTET ROGN** (Nybefruktet rogn): NOV. (5000 rogn/l)
 - STAMFISK** (Stamfisk): MAI (4 kg)
 - SLAKTEPERIODE** (Slakteperiode): NOV.
 - MATFISK** (Matfisk): MAI (1,5 kg)
 - SMOLT** (Smolt): MAI (40 gr)
- Illustrations surrounding the diagram include:
- YNGEL**: A small fish at the top.
 - PLOMMESEKKYNGEL**: A small fish with a yellow egg at the top right.
 - ØYEROGN**: A small orange egg at the top right.
 - NYBEFRUKTET ROGN**: A small orange egg at the top right.
 - STAMFISK**: A large fish at the bottom right.
 - SLAKTEPERIODE**: A large fish at the bottom.
 - MATFISK**: A large fish at the bottom left.
 - SMOLT**: A large fish at the top left.
 - BRØNNBÅT**: A boat at the top left.
 - FLYTEM/ERER**: A large fish at the top left.
 - FØRING**: A large fish at the top left.
 - STRYKING**: A fish being weighed at the bottom right.

- **OIE Aquatic Animal Health Code (2010)**
CHAPTER 7.2.
- **Regulation (EC) N° 1/2005 on the protection of animals during transport and related operations**
 - (Directive 2006/88/EC)
- **Codes of Good (Best) Practice**



Responsibilities: ensuring fish have a suitable environment to enter at their destination that ensures their welfare is maintained.



Trucks



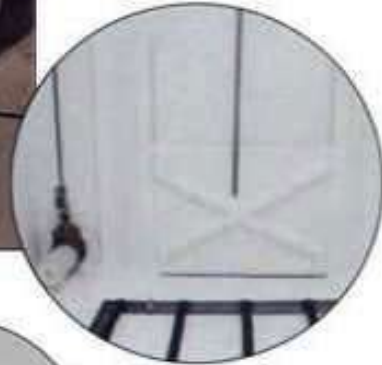
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Vehicles and containers used for transport of fish:

- should be appropriate to the species, size, weight and number of fish to be transported.
- should be maintained in good mechanical and structural condition to prevent predictable and avoidable damage that may directly or indirectly affect the welfare of transported fish.
- should have adequate circulation of water and equipment for oxygenation as required to meet variations in the conditions during the journey and the needs of the animals being transported, including the closing of valves for biosecurity reasons.
- *The fish should be accessible to inspection en route, if necessary.*
- Documentation should include a transport logbook of stocks received, contact information, mortalities and disposal/storage logs.



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- Water quality (e.g. oxygen, CO₂ and NH₃ level, pH, temperature, salinity) should be appropriate for the species being transported and method of transportation.
- Equipment to monitor and maintain water quality may be required depending on the length of the transport.







Containers: pools must be of inert material; should be disinfected and thoroughly rinsed before each transport.

Density: Maximum density values are influenced by species, life stage, destination,

Temperature: species specific; please ensure the instantaneous temperature difference which they are subjected should not exceed 4°C.

Security systems for loading, unloading and closure of the tanks

Fasting: must be respected an appropriate period of fasting before transport

Oxygen: it must be ensured an adequate oxygen concentration. (optimal saturation between 60-110%).

Water: The water used must be of good quality.

Broodstock transport: (anesthesia?)

Transport to destination must be done in the shortest possible time.

- Emergency procedures
- Replacement of water for the purpose of well-being in compliance with the animal health rules (Directive 2006/88/EC)
- Documentation - transport logbook
- Transport times with regard to law on the safety of workers (drivers)





THANKS FOR YOUR ATTENTION!