

Atlantic Salmon Summit

Bottlenecks and Solutions for migratory fish in the sea and the Rhine river basin

SAVE



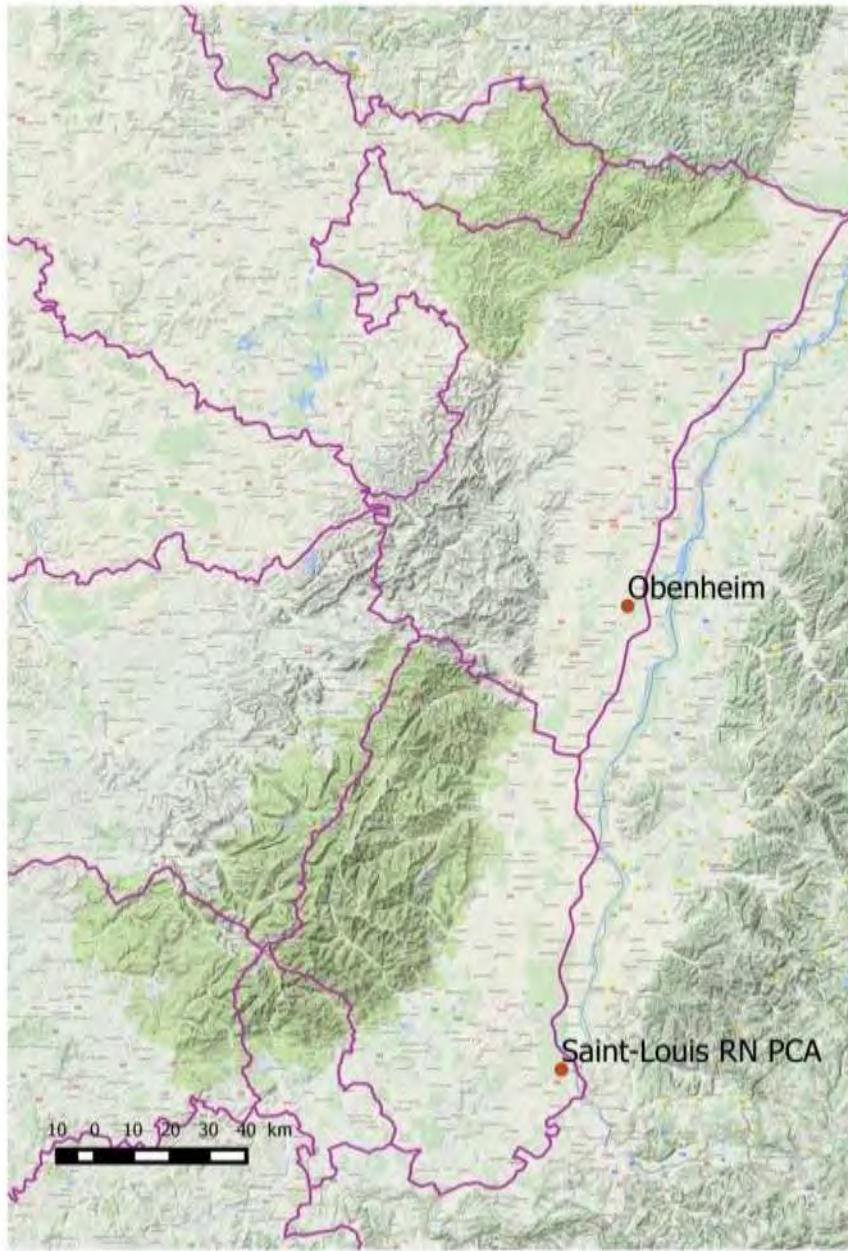
1 - 3 October 2015, Triangle in Huningue (France)



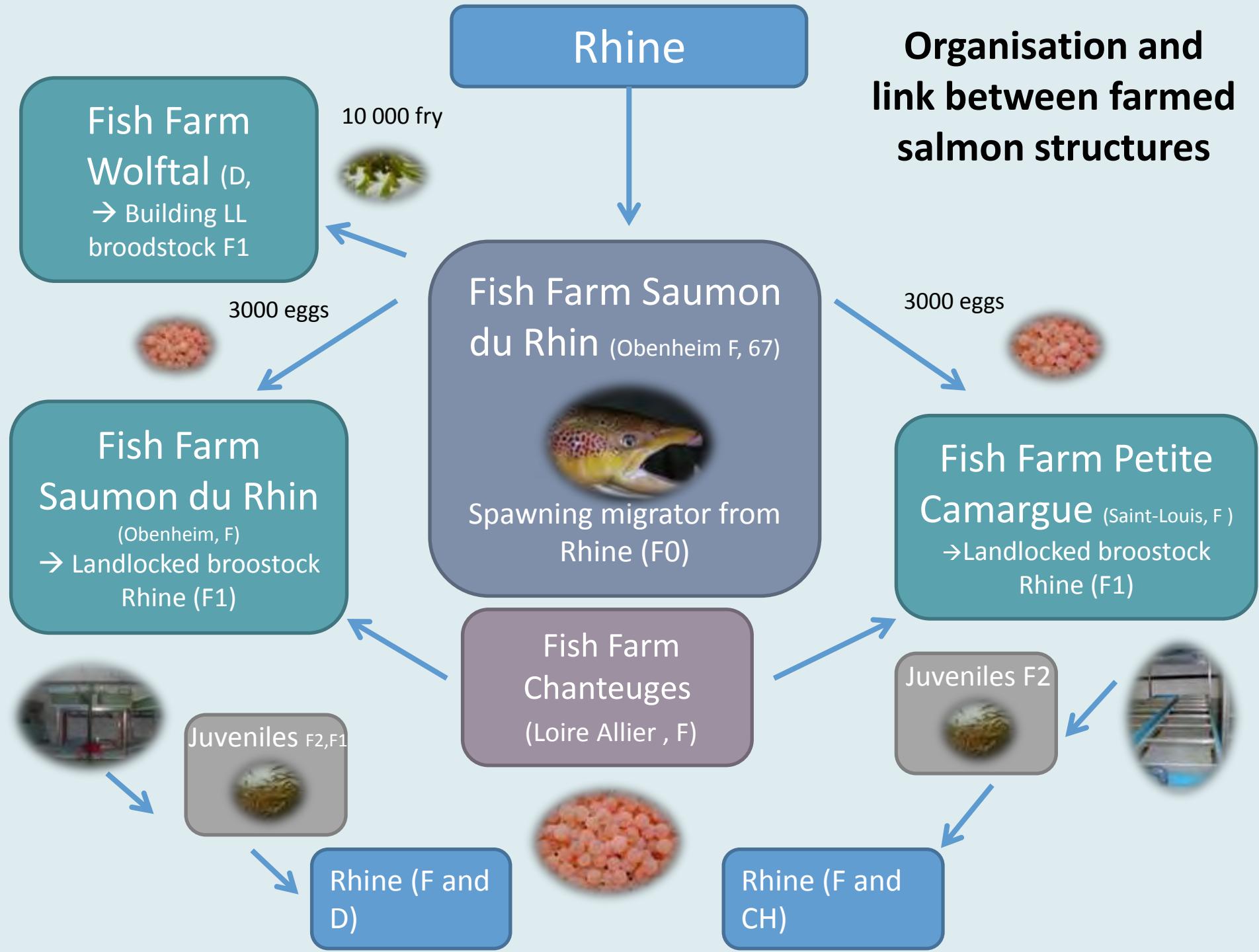
Breeding practices of juveniles
salmons in the Rhine



Salmon farms location



Organisation and link between farmed salmon structures

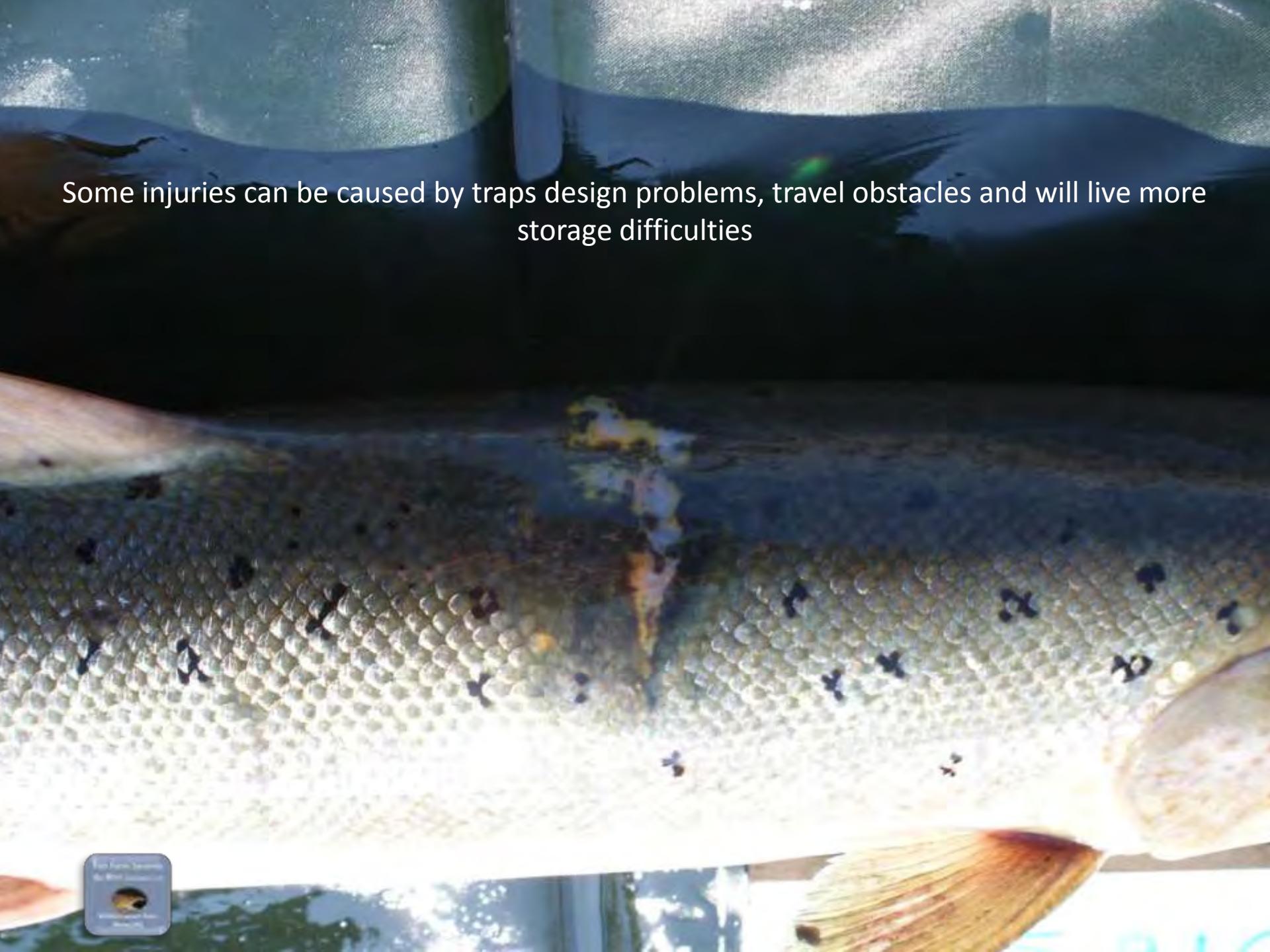


First step, salmon on spawning migration are caught in Iffezheim/Gambsheim







A close-up photograph of a fish's body, likely a trout, showing significant damage to its scales. A large, irregularly shaped piece of metal or plastic has embedded itself deep into the flesh, causing extensive tissue damage and loss of scales. The surrounding area is discolored and appears painful. The fish is lying on a dark, textured surface.

Some injuries can be caused by traps design problems, travel obstacles and will live more storage difficulties





335 2185
81,5 cm 4,6 kg







Wild fish storage in Obenheim before spawning





Storage will last from february to
december in cold water conditions





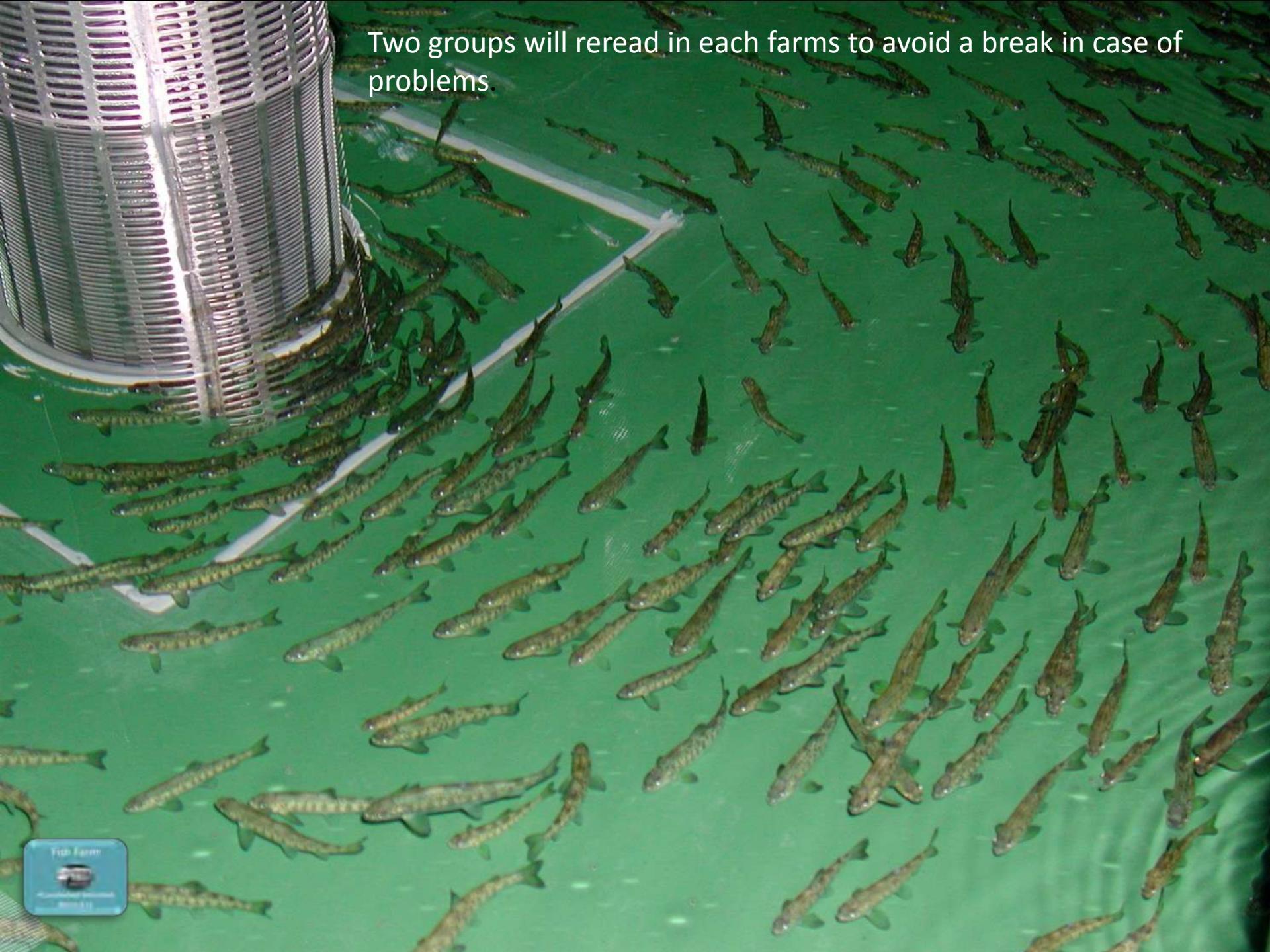


The small number of returning salmon require creation
of landlocked salmons F1



A large, dense school of young salmon, known as fry, is swimming in a clear, light-colored tank. The fish are elongated and have a mottled pattern of dark spots and stripes on a lighter background.

F1 farmed salmon will stay one year in tanks until smoltification



Two groups will reread in each farms to avoid a break in case of problems.

Pre smolts will storage in cage early spring after one year growing in tanks



Smolts will grow 1 or 2 years in polar circle structures located in freshwater system



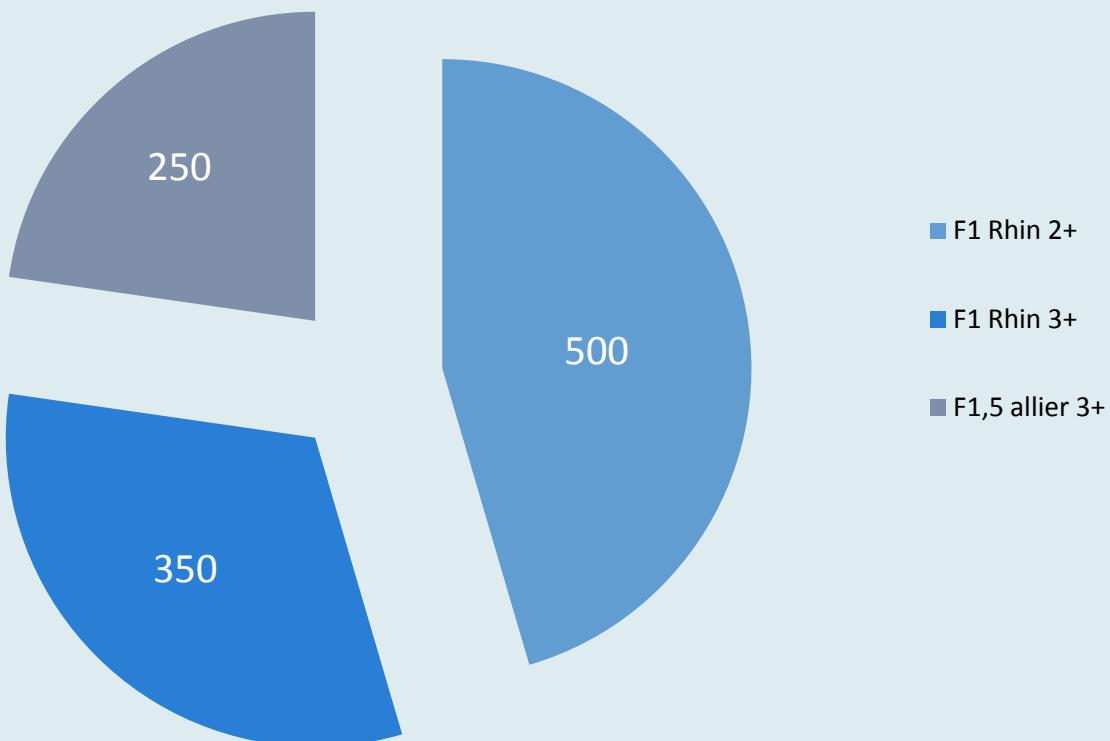
Polar circles close to Petite Camargue and Saumon du Rhin fish farms





Polymer tagging help to manage broodstock groups

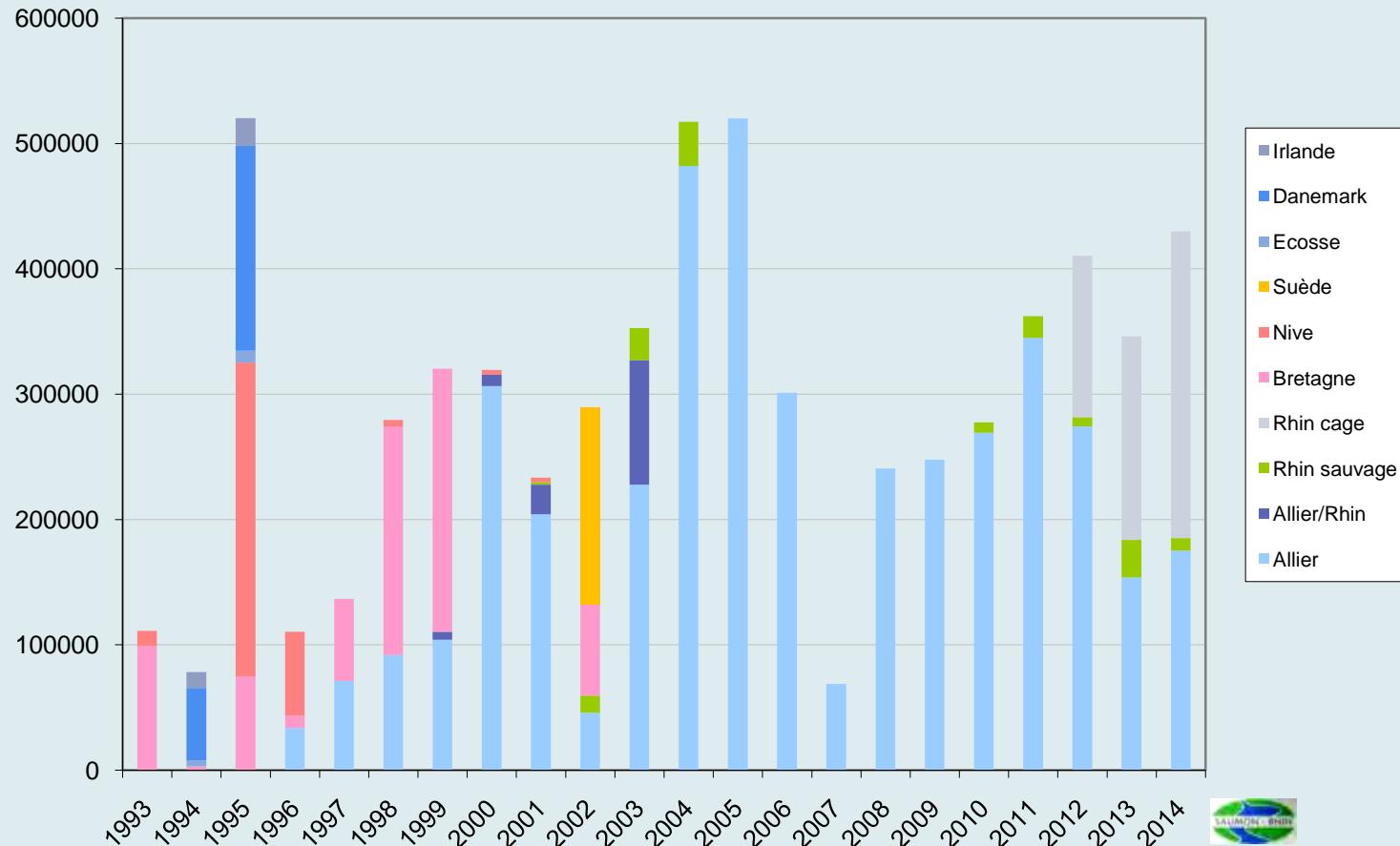
Genetic organization of landlocks spawners in 2012



Genetic distribution of broodstock and reared fry

Evolution des repeuplements en saumon en fonction de l'emploi des souches d'origine des géniteurs

Nombre d'individus











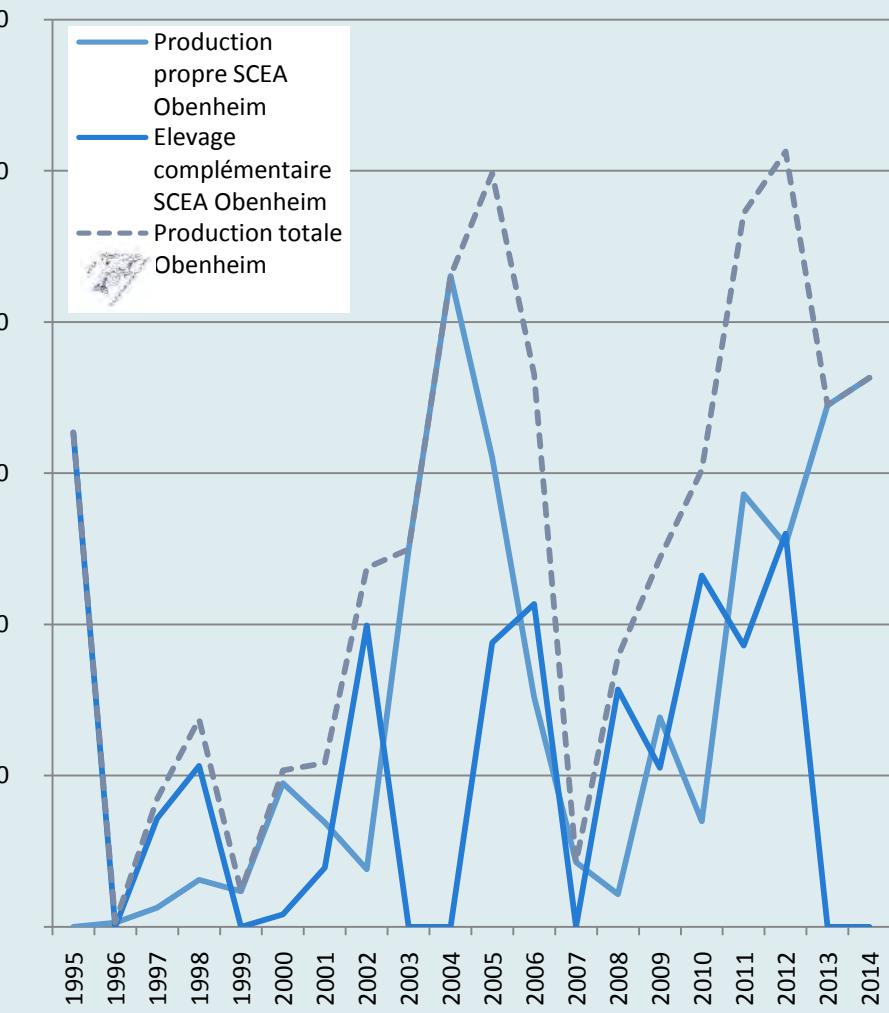
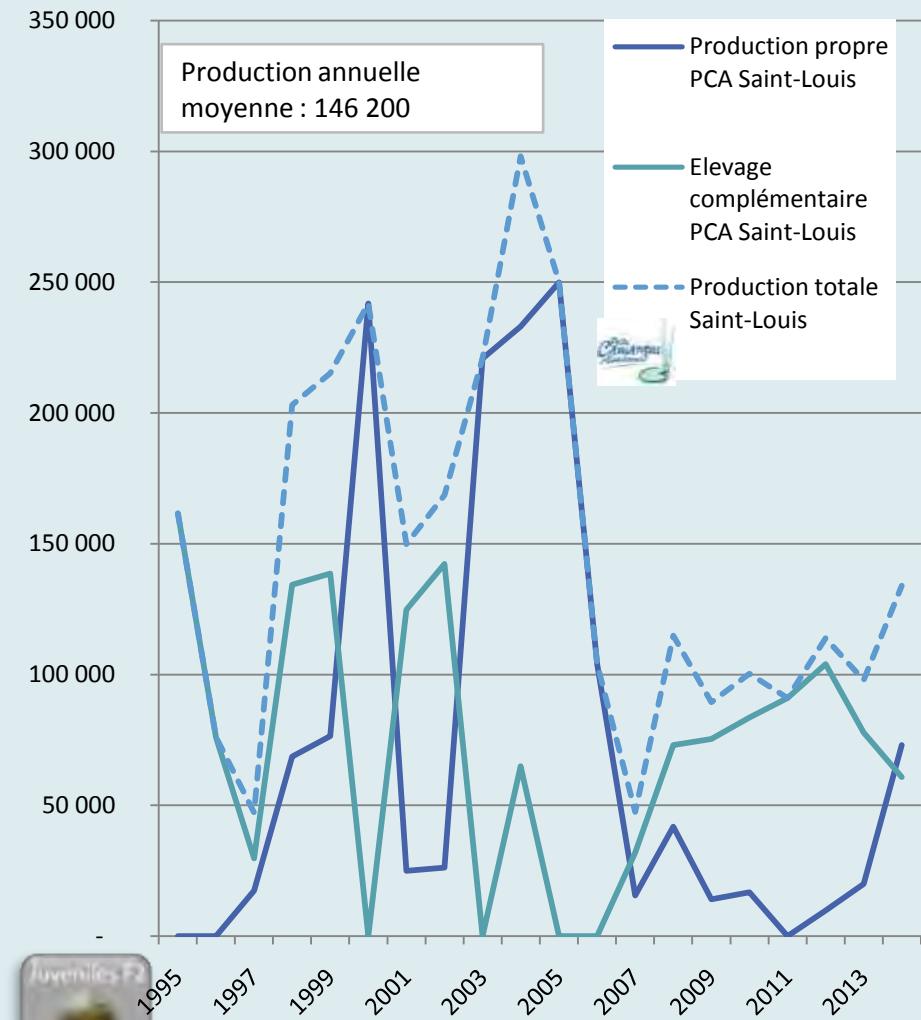
Artificial spawning results are not steady,
interaction between various factors can affect these
results



- ✓ Storage and spawning temperatures
- ✓ Quality food
- ✓ Broodstock age
- ✓ Swimming effect
- ✓



Low F2 eggs production, impact to fry stocking disponibility



To produce more and stable number of eggs, farms need other storage structures and water process

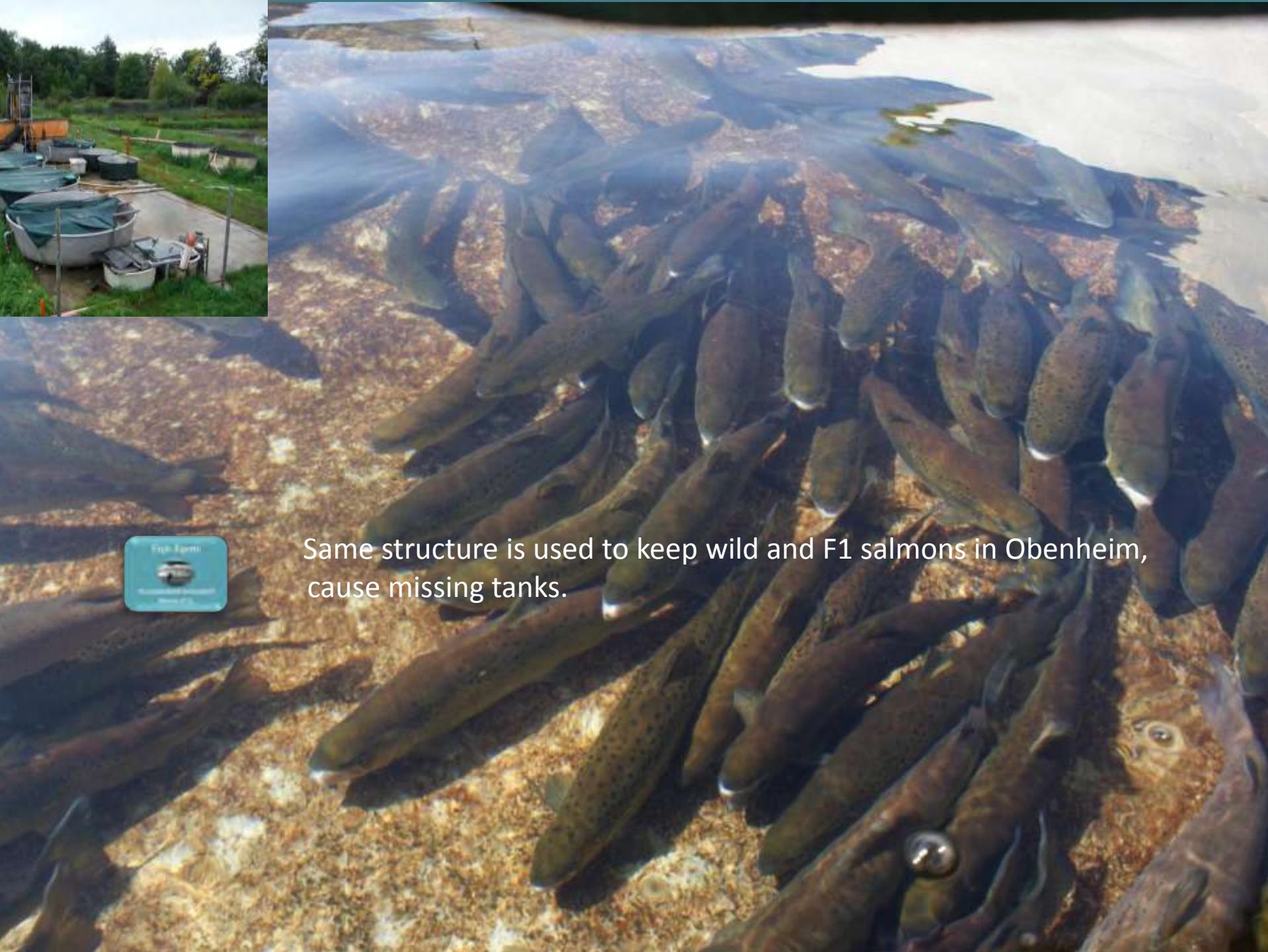


- ✓ Circular tanks
- ✓ Cold water for storage/ spawning
- ✓ Water process with sterilisation, degassing, oxygenation...
- ✓ Important financial sponsoring to built structures



F1 Rhin experiment module in EDF hydropower





Same structure is used to keep wild and F1 salmons in Obenheim,
cause missing tanks.



Genetic monitoring during spawning for Swiss

Nurseries



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Juve = 165 F2



Juveniles F2





Hatching by night



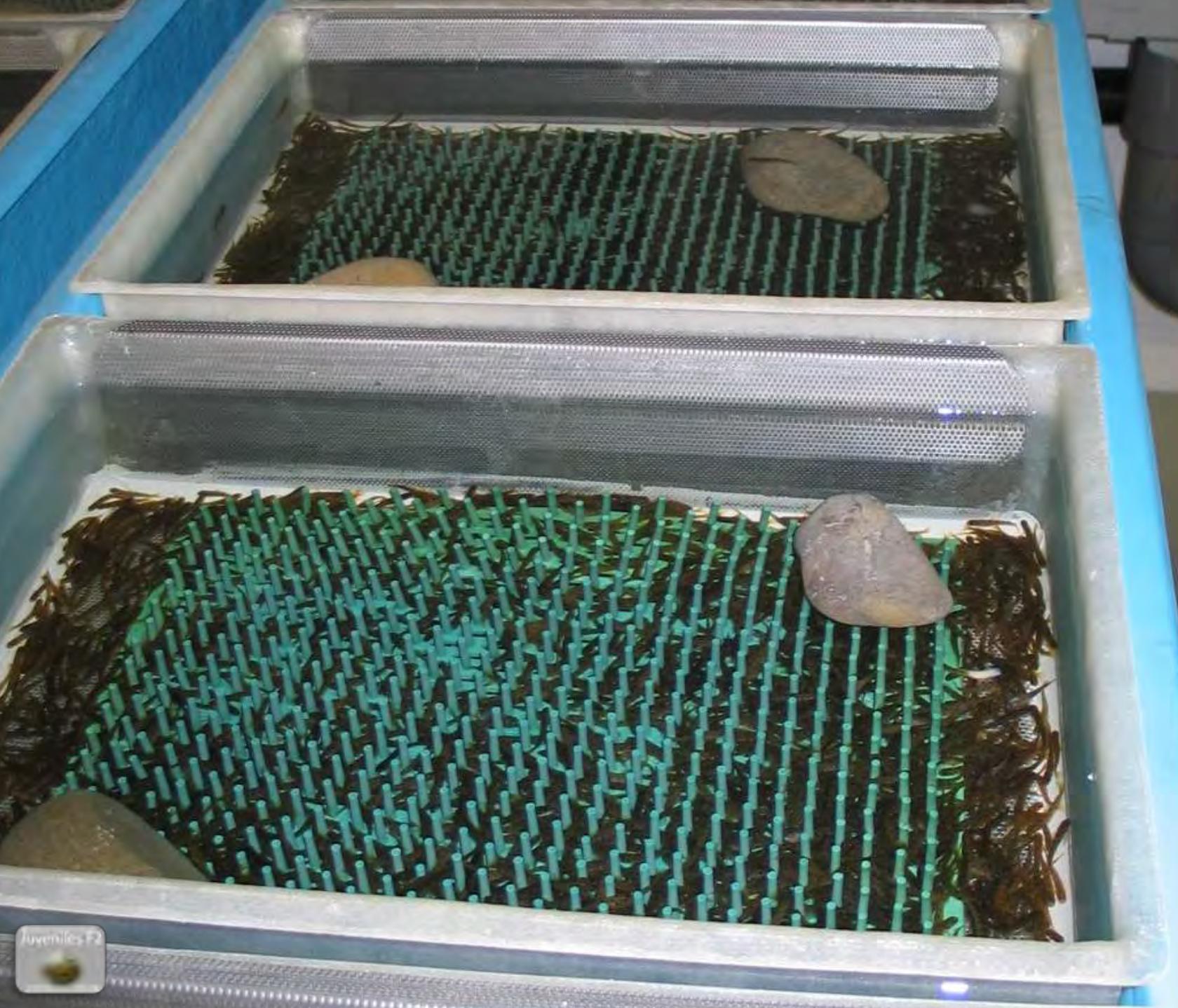


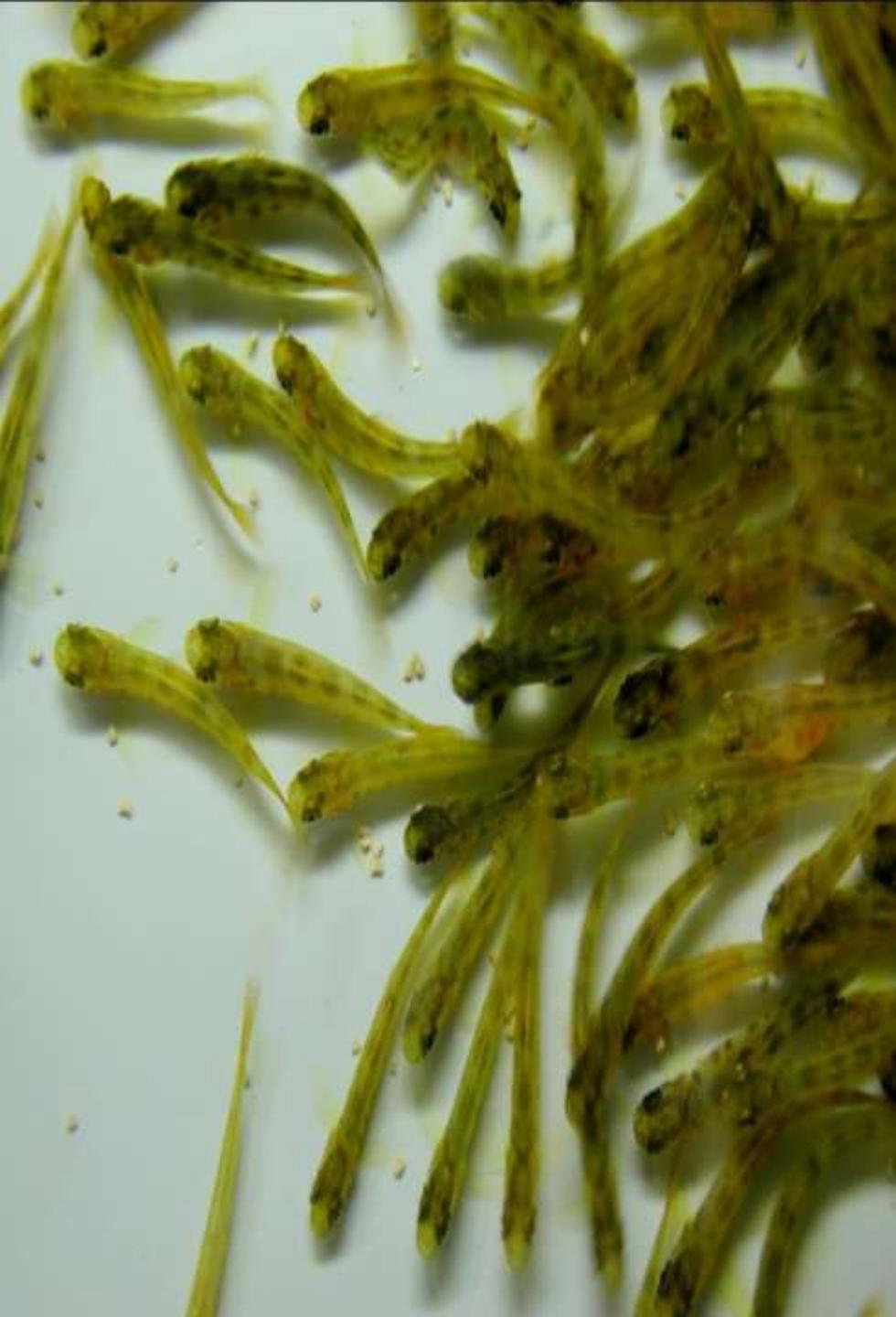


Juveniles 72

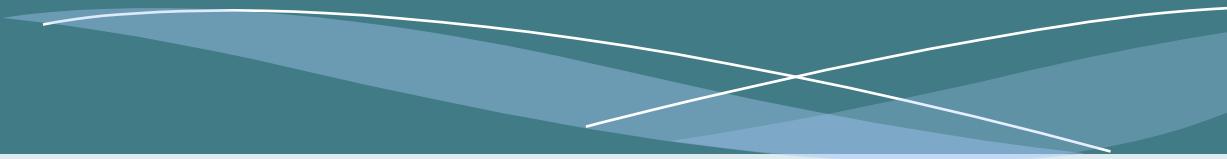
©M







Exit from nursery and two directions:



- ✓ Yolk resorbed fry stocking
- ✓ Transfert in feeding structure





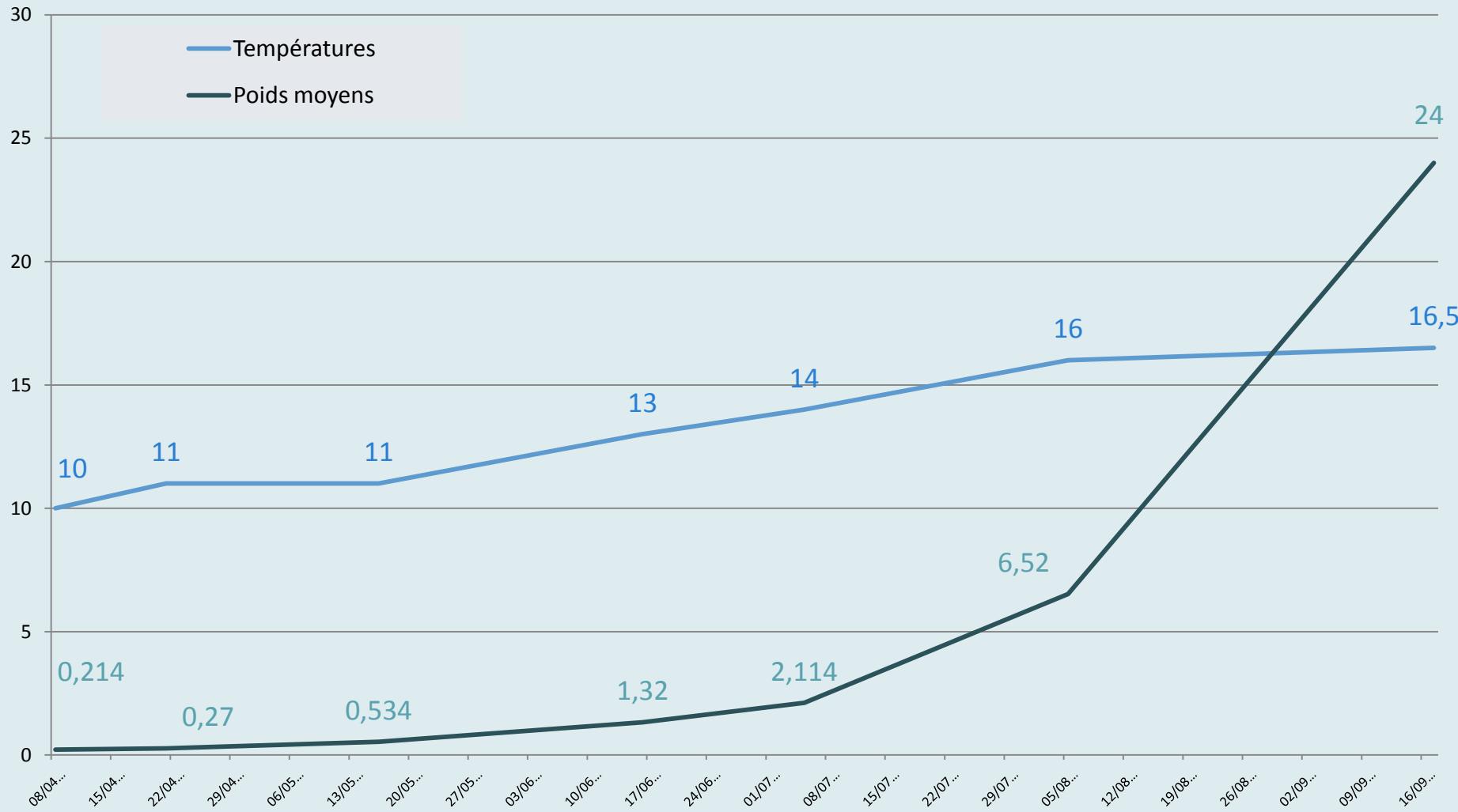
Feeding structures until june







F2 salmon grow curve in tanks between april and september





Juveniles 57

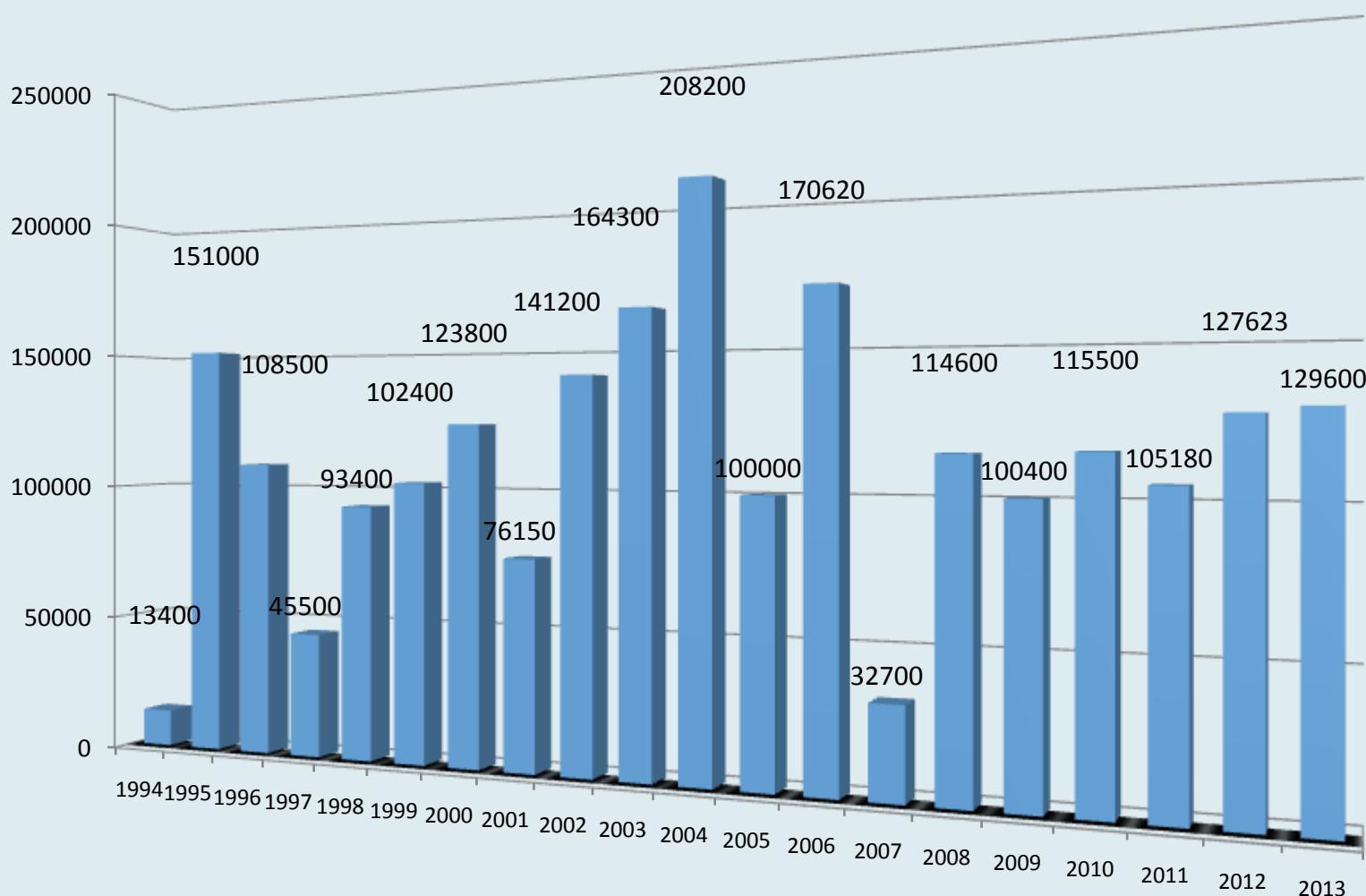




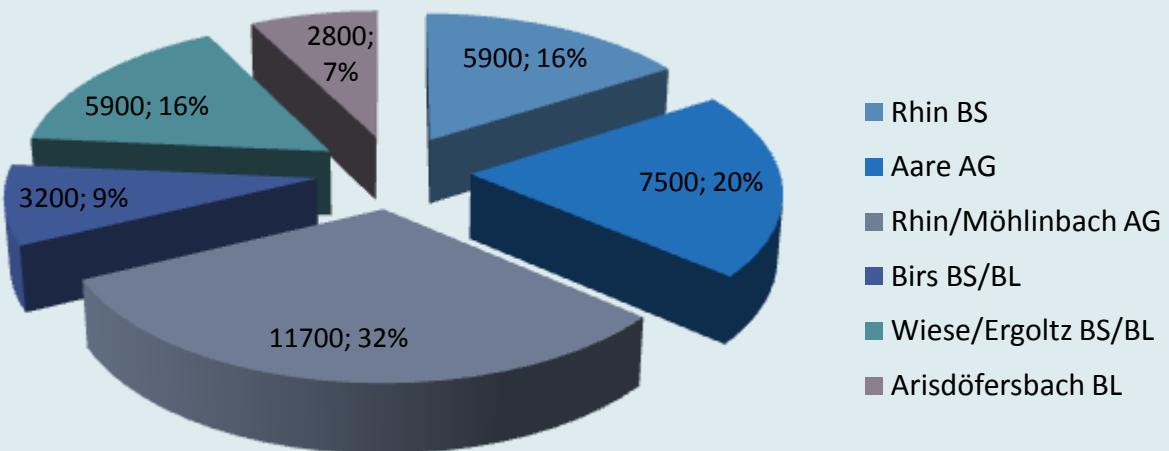
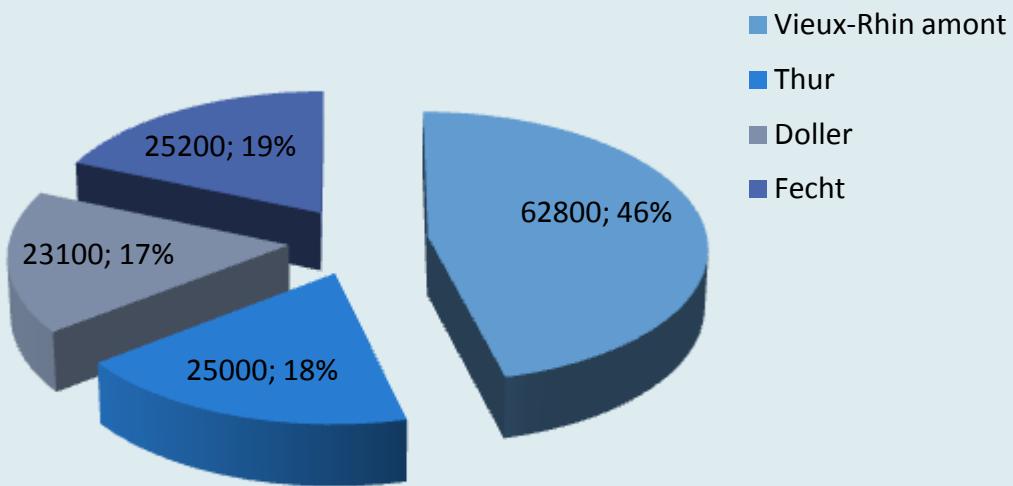




Fry reared and stocking from PCA between 1994 to 2013



Fry distribution in swiss and french rivers in 2014



Electrofishing





Result from electrofishing

Our technical partners

- Association Saumon Rhin



- EDF



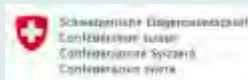
- Fédération de pêche du Haut-Rhin
- Fédération de pêche du Bas-Rhin



- Fischerreiaufsicht : Canton Bâle
- DE Landesfischerreiverband



- OFEV



Pisciculture Petite Camargue Alsacienne

Pisciculture Saumon du Rhin



Thanks for your attention

and hope for a definitive comeback...

