



## Stowaways on transported boats

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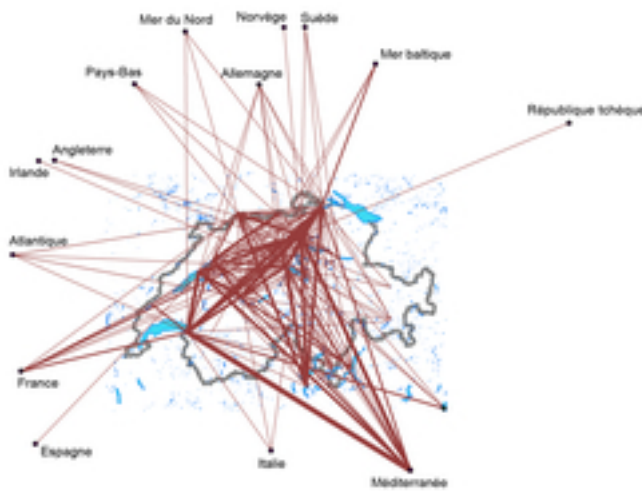
**When recreational boats are transported overland, they are often accompanied by zebra mussels, attached to the hull. This alien species, which first appeared in Switzerland in 1960, can thus invade other natural waters. An Eawag study which identified the main transport routes recommends various preventive measures that could at least slow the spread of invasive species. Meanwhile, quagga mussels have also been detected for the first time in the Rhine at Basel.**

In a Master's thesis written at Eawag, aquatic ecologist Nora Weissert shows that, on average, 60 per cent of boats that are kept in the water all year round are infested with zebra mussels; boats with dry berths are scarcely affected. Weissert found substantial differences between individual lakes: while levels of infestation are high in Lakes Zurich and Constance, they are low in Lakes Thun and Lucerne. Interestingly, two thirds of wet-berthed boats treated with antifouling paint were nonetheless encrusted with zebra mussels.

According to a survey of boat owners, which was used to prepare a map of Swiss boat movements, the most frequently used transport routes are between Lakes Zurich and Constance, and Lakes Geneva and Neuchâtel. Boats are frequently also transported to the Mediterranean. Weissert showed experimentally that the lower the temperature, the longer the tiny young mussels – measuring only 0.5–4 mm – can survive out of water, attached to boat hulls. At 12°C, a quarter were found to be still alive after 42 hours.

Weissert concludes that, before being transported, boats should be thoroughly cleaned or allowed to dry for several days. This is particularly important in view of the risk of another invasive species spreading across Switzerland: genetic material from the quagga mussel – known to be advancing up the Rhine – has just been detected by Eawag scientists in Basel for the first time. Both of these mussel

species can crowd out native species and give rise to high maintenance costs if they clog cooling systems or water intake pipes. Water suppliers are particularly concerned about the quagga mussel which, unlike the zebra mussel, can thrive at the depths from which cold water is withdrawn from lakes.



Virtually all of Switzerland's navigable waters are connected via overland boat movements – the thicker the lines, the more frequently the transport routes are used (left). Sterndrive encrusted with zebra mussels (right).

## Related Files

[Media Release](#) [pdf, 135 KB]

## Related Links

Invasive species spread by recreational boats transported overland, 6/2015 (available in German and French)

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