Biomanipulating streams - DTU Orbit (07/02/2019)

Biomanipulating streams: a supplementary tool in lake restoration

Removal of cyprinid fish is a widely used biomanipulation tool to transform turbid shallow eutrophic lakes in north temperate regions into a clear water state. We here evaluate the removal of cyprinids from streams as a supplement to lake fishing. Since cyprinids often aggregate in high densities in lake inlet/outlet streams during winter migration, removal of fish in this space-confined habitat may be cost-efficient as compared to fish removal in the lake habitat. In two consecutive years, we annually removed up to 35% of the dominant cyprinids from an inlet stream to a lake and argue that this could easily be increased with a more targeted fishing effort. Concurrently, we monitored species- and length-specific variation in migration propensity, to explore how this relates to efficient fish removal. Smaller planktivores generally had a much higher migratory propensity than larger benthivores. Hence, stream fishing specifically targets species and size groups that are less efficiently controlled with traditional lake fishing methods. As a rule of thumb, stream fishing is most efficient when water temperature is 2–6°C. Prior to implementing fish removals from streams, the potential evolutionary consequences of the targeted removal of migratory phenotypes should be considered.

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