

Why native fish matter

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Fish are fun for students and instructors



What does the rest of the world think?



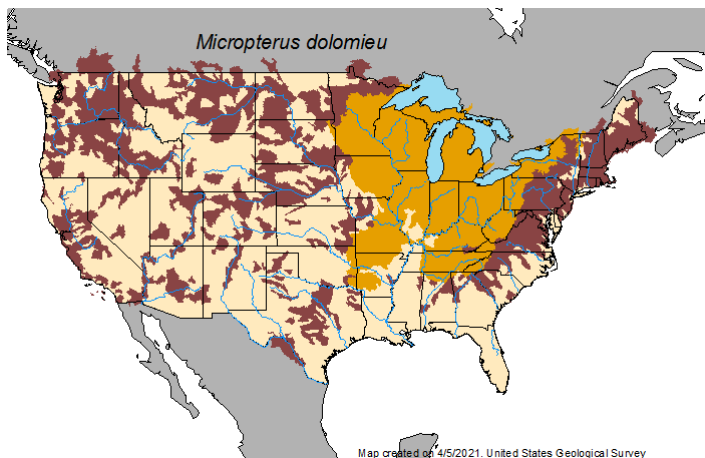
Human ties to native fish



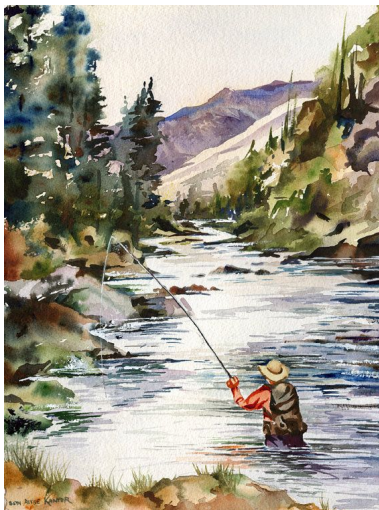
Local ties to native fish



Local(?) ties to native fish



Local ties to native fish



Economically valuable ties in NY

- \$1.9 b industry in 2011
- Licensing
- Gear
- Travel expenditures

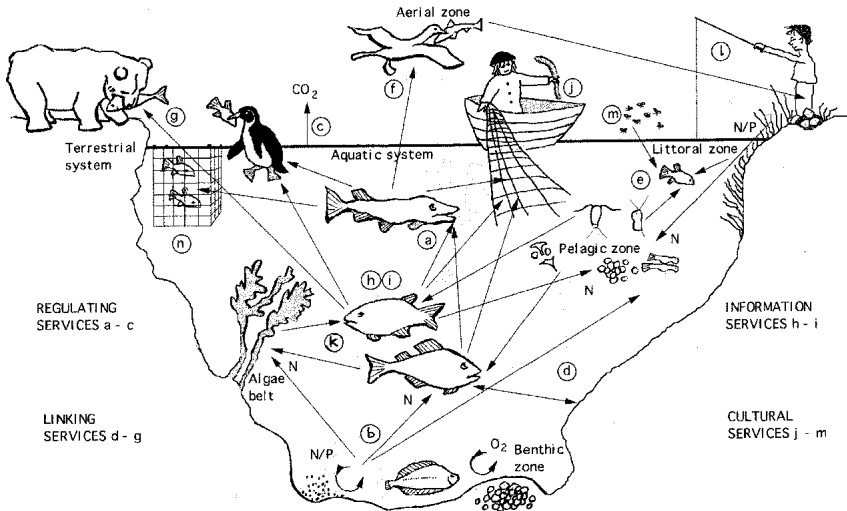


Everyday life?



Ecosystem Services

Other services that fish provide?

SUNY
ONEONTA

Ecosystem functions

Ecosystem functions of freshwater residents

Journal of Freshwater Ecology >

Volume 31, 2016 - Issue 1

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Note

A survey of macroinvertebrates colonizing bluehead chub nests in a Virginia stream

Meredith C. Swartwout, Fiona Keating & Emmanuel A. Frimpong ✉

Pages 147-152 | Received 28 Dec 2014, Accepted 29 Mar 2015, Published online: 24 Apr 2015

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Ecosystem functions of freshwater residents



Ecosystem functions

Ecosystem functions of freshwater residents



Ecosystem functions of sea lamprey

Freshwater Biology

Freshwater Biology (2014) 59, 1294–1307

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Anadromous sea lampreys (*Petromyzon marinus*) are ecosystem engineers in a spawning tributary

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SUMMARY

1. Sea lampreys (*Petromyzon marinus*) disturb the substratum during nest construction and alter the physical habitat, potentially affecting other stream organisms. We quantified differences in depth, velocity, fine-sediment coverage, embeddedness, intragravel permeability and benthic invertebrate assemblages (density and diversity) among nest mounds, nest pits and undisturbed reference locations over a 4-month period after June spawning.

2. In 2010 and 2011, immediate and persistent effects of nest construction were assessed in summer (July) and in autumn (late September to early October), respectively. Randomly selected nests were sampled annually (25 each in summer and autumn).

3. Nest construction increased stream-bed complexity by creating and juxtaposing shallow, swift, rocky habitat patches with deep, slow, sandy habitat patches. Mounds had a 50–143% less cover of fine sediment, and a 30–62% reduction in embeddedness, compared to pits and reference locations. These physical changes persisted into the autumn (almost 4 months).

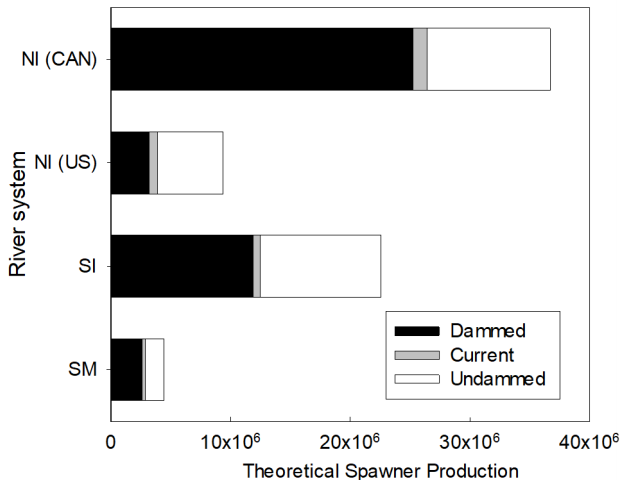
Ecosystem functions of alewife

DOES WHAT GO UP ALSO COME DOWN? USING A RECRUITMENT MODEL TO BALANCE ALEWIFE NUTRIENT IMPORT AND EXPORT

4.1. Chapter Abstract

Migrating adult alewives are a source of marine-derived nutrients on the east coast of North America, importing nitrogen and phosphorus into freshwater habitats. Juvenile migrants subsequently transport freshwater-derived nutrients into the ocean. We developed a deterministic model to explore the theoretical nutrient dynamics of alewife migrations at differing spawner abundances. Net nutrient balance was calculated relative to these abundances along the spawner-recruit curve. The ecological consequences of these subsidies in a particular watershed depend on the magnitude of adult escapement relative to the habitat's carrying capacity for juveniles. At low escapement levels and assuming complete habitat access, the number of recruits produced per spawner was high and juvenile nutrient export dominated. At high escapement levels, fewer recruits were

Why does it all matter?



Why native fish matter

- Cultural, economic importance
- Provide other services to humans
- Ecosystem functions that affect lakes
- Many species or populations not doing well