

Fish Production & Aquatic Ecosystem Responses to Long-Term Additions of Lake Coarse Woody Habitat

Suitable habitat is key to sustainable fisheries management. WDNR promotes fish structural habitat additions such as tree drops, but their efficacy is uncertain. Do these additions merely attract fish and anglers, or do they actually increase the carrying capacity (production) of fish populations?

TIMELINE

Launch: July 2015
Completion: June 2023

FUNDING

Federal Aid in Sportfish
Restoration

DNR PARTNER BUREAU

Fisheries Management

EXTERNAL STAKEHOLDERS

Dairymen's, Inc.
UW-Stevens Point
UC-Davis
UM-Duluth
Wright State
Anglers & fishing guides of WI

Previous research suggests that much of the carbon found in fish from Wisconsin's northern lakes derives from terrestrial sources (degradation of coarse woody habitat and leaf litter). Such carbon inputs have declined as lakeshore residential development thins the riparian forest and lakeshore property owners physically remove coarse woody habitat from lakes, decreasing terrestrial inputs of carbon. Tree drop additions (also called "fish sticks") have been used to mitigate the lakeshore development process to benefit fisheries.

OAS and collaborators, along with Dairymen's, Inc., initiated a long-term tree drop addition study on Sanford Lake in Vilas County to study whether coarse woody habitat increases fish production. We will test for fish community and aquatic ecosystem responses to long-term, whole-lake tree drop additions. Fish metrics include production, recruitment, abundance, diet, growth and habitat use. Aquatic ecosystem metrics include zooplankton, benthic macroinvertebrates, nutrients, limnology and aquatic macrophytes.



Key Points

- » Phase one of coarse woody habitat addition to Sanford Lake began late spring of 2018. 160 trees of various coniferous and deciduous species were added to the lake.
- » Previous studies were on small lakes with simple fish communities (largemouth bass-bluegill). This study is unique for its diverse fish community composition (walleye, muskellunge, smallmouth bass, yellow perch, panfish) and lake size.
- » We will use classic radio telemetry techniques to actively monitor fish habitat use. We will also use novel Passive Integrated Transponder tag technology to track habitat use by littoral-zone fish in relation to the tree drops.
- » Pre-study monitoring suggests that Sanford Lake's fish community has low productivity. We hypothesize that coarse woody habitat addition will increase the productive capacity of the Sanford Lake fish community.

SPOKESPERSON

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