

Altered Energetic Pathways: The Effect of Yellow Perch (*Perca flavescens*) on the Resource Use of Lentic Brook Trout (*Salvelinus fontinalis*)

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We determined the trophic position and resource use of brook trout (*Salvelinus fontinalis*) in six Algonquin Park lakes which varied in fish community composition from cyprinids only, to cyprinids and white sucker (*Castostomus commersoni*), to cyprinids, white sucker and yellow perch (*Perca flavescens*). Brook trout showed distinct changes in trophic position and resource use between community types. The presence of yellow perch resulted in higher trophic position of brook trout, an increased use of profundal prey and a high degree of piscivory on yellow perch. Mean trophic position of brook trout <25cm fork length was 3.2 in all community types. The trophic position of brook trout >25 cm fork length remained constant at 3.2 in cyprinid only communities, increased to 3.5 when white sucker was present and to 3.9 when both yellow perch and white sucker were present in the lake. Gut content analysis indicated a significantly higher occurrence of piscivory in lakes containing yellow perch with perch being the preferred prey. Carbon isotopic signatures of brook trout tissue indicated brook trout utilize pelagic resources in cyprinid only communities, a mixture of pelagic and benthic resources in white sucker communities, and a mixture of benthic and profundal resources in communities containing yellow perch. Gut content analysis indicated a reduced occurrence of chaoborus, trichoptera, odonata, and ephemeroptera when yellow perch were present in the lake. Brook trout dramatically alter their resource use and trophic position in response to the presence of potential competitors such as white sucker and yellow perch in the fish community. This alteration of food web position will have implications for growth, population stability and the effect of fishing pressure on brook trout populations.

Additional Readings

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