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TROPHIC OVERLAP AND GROWTH OF LEAN AND SISCOWET LAKE CHARR MORPHOTYPES ACROSS THEIR TROPHIC ONTOGENY: DOES OVERLAP MATTER?

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ABSTRACT:

We investigated the spatial overlap, diet similarity, and isotopic niches of juvenile lean and siscowet lake charr ecotypes across six ecoregions of Lake Superior. Based on survey catch data, juvenile lean and siscowet were found to have overlapping depth distributions. Leans were most abundant in shallow waters (<50m), whereas siscowet were most abundant in deep waters (>80m). The greatest levels of sympatry were observed in waters from 40-60m. Trophic position (as measured by $\delta^{15}\text{N}$) was similar for both ecotypes at small sizes (<300 mm), but siscowet exhibited a higher trophic position than lean lake charr at larger sizes (>400mm) and older ages (>5 years). Base of production (as measured by $\delta^{13}\text{C}$) was similar for lean and siscowet. Isotopes of sulfur ($\delta^{34}\text{S}$) indicated the profundal-benthic pathway was more important for siscowet whereas leans were more reliant on pelagic energy sources. Lean lake charr had greater length-at-age relative to siscowet. However, lean lake charr predicted weight at L350 did not show any clear pattern suggesting growth suppression. We provide evidence that an ontogenetic shift in which siscowet lake charr shift to feeding in deeper habitats at 400mm or age-5 facilitates resource partitioning between larger and older lake charr ecotypes in addition to a working hypothesis of the ecological and biological components influencing the life history of juvenile siscowet lake charr.