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Sustainable Aquaculture for a Secure Future

Title: **Circulating levels of plasma IGF-I during recovery from size-selective harvesting in *Menidia menidia***

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Selection for growth-related traits in domesticated fishes often results in predictable changes within the growth hormone-insulin-like growth factor (GH-IGF-1) axis. Little is known about the mechanisms controlling changes in growth capacity resulting from fishery-induced evolution. We took advantage of a long-term study where *Menidia menidia* were selected for size at age over multiple generations to mimic fisheries-induced selection. This selection regime produced three populations with significant differences in intrinsic growth rate. These growth differences partially rebounded, but persisted even after selectionwas relaxed, resulting in fast, intermediate, and slow-growing lines. Plasma IGF-1 was measured in these populations as a potential target of selection on growth. IGF-1 was significantly correlated with current length and mass, and was positively correlated with growth rate (g d−1) in two lines, indicating it may be an appropriate indicator of growth capacity. The slow-growing line exhibited higher overall IGF-1 levels relative to the depressed IGF-1 seen in the fast-growing line, contrary to our prediction. We offer possible explanations for this unusual pattern and argue that somatic growth is likely to be under control of mechanism(s) downstream to IGF-1. IGF-1 provides an interesting basis for understanding endocrine control of growth in response to artificial selection and recovery.

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