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WINTER FLOUNDER STOCK ENHANCEMENT: DEFICITS IN CULTURED FISH

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The survival of hatchery-reared juveniles in a stock enhancement program is of paramount importance, however, post-release survival of cultured fish may be impaired by behavioral, morphological, and physiological differences to their wild counterparts. For flatfish, high mortality is directly related to their conspicuousness to predators. Abnormal coloration, lack of burying abilities, and behavioral anomalies increase their visibility, and thus their vulnerability to predators.

The cryptic abilities of cultured juvenile winter flounder, *Pseudopleuronectes americanus*, were examined in the laboratory by investigating the rate of burial and color change. Both abilities increased with time. The majority of cultured fish completely buried in sediment after 48 hours, and flounder color-adapted from the light, rearing tank color to the dark, release site sediment color over 3 months.

Cultured juvenile winter flounder were compared to wild conspecifics in a series of laboratory and field experiments. Non-cryptic, cultured flounder were more vulnerable to piscivorous and avian predation than cryptic, cultured flounder indicating that appropriate coloration is paramount in predator avoidance. Additionally, cryptic, cultured fish were more vulnerable to avian predation than cryptic, wild fish suggesting that behavioral differences exist between cultured and wild flounder. When behavioral comparisons were made between cultured and wild flounder in the presence of cues from potential predators, differences were observed between fish types (cultured, wild) and their reactions to cues (activity level, degree of burying).

Augmenting the cryptic abilities of cultured flounder prior to stocking may be an effective way to increase post-release survival by reducing the mortality due to predation.