Microsatellite diversity in sympatric reproductive ecotypes of Pacific steelhead (*Oncorhynchus mykiss*) from the Middle Fork Eel River, California

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Abstract

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Genetic differentiation between two reproductive ecotypes of anadromous steelhead found in the Middle Fork Eel River in northern California was tested using 16 microsatellite loci. Twelve of these loci showed significant differences in allelic frequency between the two Middle Fork Eel River steelhead populations (Fisher's exact $P<0.05$). Fisher's combined test for independence also supported significant genetic separation between the two reproductive ecotype ($P< 0.001$). Analysis of molecular variance indicated that only 1% of the overall microsatellite allelic variation contributed to differences between summer- and winter-run steelhead in the Middle Fork Eel River. Variation found among individuals within the two runs equaled 18.2%. Analyses showed less genetic distance between the two populations of steelhead in the Middle Fork Eel River than in comparisons made with geographically proximate coastal winter-run fish. Divergence time based on genetic distance for the two within-basin reproductive ecotypes was estimated to be 16,000–28,000 years ago.