SOUTHWEST FISHERIES SCIENCE CENTER
SECOND QUARTER REPORT-FY 2003
For the Period Jan 1-March 30, 2003

Submitted by: John Hunter, Division Director, Fisheries Resources Division

Title of Accomplishment or Milestone: Complete study of brown rockfish population genetics.

Current Status: For brown rockfish, data complete, analysis complete, manuscript in final edit for Conservation Genetics.

Background Information: NMFS was petitioned to list several stocks of rockfish living in Puget Sound Proper and the Greater Puget Sound Basin as sufficiently depleted to be worthy of protection under the Endangered Species Act. The Act provides for protection over the entire range of a species or for a Distinct Population Segment (DPS). Available data were not sufficient to determine if Puget Sound populations were DPS's and if so, what were the appropriate boundaries between DPS's. Additional funding and research needs were provided by the State of California under the Marine Life Management Act. The State wished to determine if the decision to manage brown rockfish as three Regions (North, Central, and South) reflected the basic population biology and genetics of this species.

Purpose of Activity: This study was, 1) To determine the degree of separation between brown rockfish populations within the Puget Sound, the Greater Puget Sound Basin, and the outer coast, and 2) to determine if rockfish species in Puget Sound are at risk of extinction via introgressive hybridization with copper rockfish, *Sebastes caurninus*, and quillback rockfish, *S. maliger*.

Description of Accomplishment and Significant Results: The manuscript: ÒAsymetric stepping stone disperal and introgressive hybridization may influence population genetic structure of coastal and Puget Sound populations of brown rockfish, *Sebastes auriculatus*. This work includes data for 6 microsatellite loci in 447 fish from 9 collection locations ranging from Mexico to Puget Sound taken over 12 years. This was truly a Herculean and exhaustive study.

Significance of Accomplishment: Results confirm that Puget Sound populations of brown rockfish are genetically distinct and worthy of consideration as a separate DPS. Introgressive hybridization is an added concern for brown rockfish since remaining stocks can be diluted to extinction by potential outbreeding with other more abundant species. Along the outer coast there was evidence that pelagic stages tended to disperse asymmetrically (more readily from north to south rather than south to north). Highest genetic diversity was in the south. This suggests that northern populations would be unlikely to be replenished from areas south of Pt. Conception.

Problems: None

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