

Category II - Aquatic Ecosystems

Using Marine Derived Nitrogen in Tree Rings to Assess Nutrient Flux and Salmon Escapement

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EXECUTIVE SUMMARY:

Statement of critical state water research problem: Historically, California's anadromous salmon delivered substantial amounts of marine derived nutrients to their natal streams where they returned to spawn. Nutrients released from spawned-out carcasses were incorporated into both the aquatic and terrestrial environments and ultimately helped create more productive spawning and rearing grounds. The reduction or extirpation of anadromous salmon from many basins has likely altered critical nutrient cycling processes within and between the aquatic and terrestrial ecosystems.

A major focus of current salmonid restoration efforts is the amelioration of both instream and riparian habitat. The importance of streamside riparian zones to salmonid production has been well demonstrated in California and elsewhere. Most attention, however, has focused on the value of riparian zones as sources of shade, sediment filtration, woody debris and other material. Comparatively little is known about the critical role riparian zones play in cycling energy and material between the aquatic and terrestrial ecosystems. Knowledge concerning current and historic functionality and connectivity between the two adjacent systems will maximize restoration efforts for wildlife in both habitats.