**An overview of steelhead juvenile ecology and survival when they first enter the ocean in**

**relation to climate change**

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Steelhead (*Oncorhynchus mykiss*) smolts migrate to the ocean in late-spring and early summer, and unlike other salmon species, they do not spend much time in the estuary and nearshore areas. Instead, they move quickly offshore to oceanic feeding grounds, bypassing the normal coastal migration route used by other salmon species. Steelhead are the third most abundant salmonid caught in May in our annual surveys off the coasts of Oregon and Washington, yet little is known about how they utilize early marine habitats and food resources, and how this might relate to survival. We analyzed diet, distribution, and growth data collected between 2000 and 2011 to address these unknowns, and to look for any differences between hatchery and wild fish and estuary and ocean fish. Steelhead catches in the Columbia River estuary do not correlate well with catches in the ocean. Estuary fish showed little interannual differences in size but quickly had high variability in the ocean. Estuary fish also ate very little relative to ocean fish. In the ocean, juvenile steelhead were caught mostly north of the Columbia River and were consistently caught at the westernmost stations, indicating that we were not sampling at the western edge of their distribution. Tagging data indicated that Steelhead generally move westward upon ocean entry, but there were some exceptions to the pattern (N and S movement). In general, fork length, condition and stomach fullness increased with distance offshore. Hatchery fish were significantly longer than unmarked fish in most years, yet the unmarked fish had better body condition. Recent (2007-2011) feeding intensity has been above the 10-year mean and unmarked fish had more food in their stomachs relative to body weight than hatchery fish and fewer empty stomachs. Steelhead ate a wide variety of mostly neustonic prey. The main components of the diet were fish, euphausiids, and crab megalopae, accounting for more than 85% of the diet across all years. Unmarked and marked fish both had strong interannual variations in their growth hormone IGF-1 levels, and lastly, using otolith chemistry data, about half the fish had been in ocean waters an average of 10 days (±11) while the other half were newly arrived. These data are discussed relative to steelhead returns and implications of climate change on steelhead in the Columbia River will be speculated upon.