Half pounders, Climate Change and Blob blob blob….

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Typically, steelhead spend little time in the California Current, with most stocks emigrating rapidly to the North Pacific where they remain until their return spawning migration, always in a narrow range of sea surface temperatures (SST typically 8-14°C). However NOAA ship surveys off Oregon and Northern California recently observed steelhead in late June through August in the Klamath region where a ‘micro-climate’ corresponding to steelhead preferred SST persists throughout summer before warming by September. This cooler SST in the Klamath region may explain the presence of a life history, known as ‘half-pounders’. If spring smolts remain in this cool coastal region for the summer, they are eventually cut-off from North Pacific migratory pathways with preferred SST. We hypothesize that fish may choose to retreat into local rivers to avoid warming fall oceans, despite rivers being warmer- creating the half-pounder life history. This avoidance of marine temperatures raises a question of whether steelhead (and Pacific salmon) have different thermal thresholds in salt versus fresh water. Regardless, this has implications at larger spatial scales, as the 2014-2015 “warm blob”, which was warmer than 14°C south of the Golden Gate, may have blocked thermal migratory corridors during winter and spring migrations for southern steelhead stocks. Expanded warming periods could lead to disruptions in the space-time continuum of these marine pathways with respect to acceptable SST’s, restricting anadromous life histories access to ocean ecosystems. A question for California steelhead is whether migration pathways will remain stable, or could connectivity to North Pacific waters change under potential climate change scenarios?