

FLOG – Using Top-Level Predators to Evaluate System Productivity

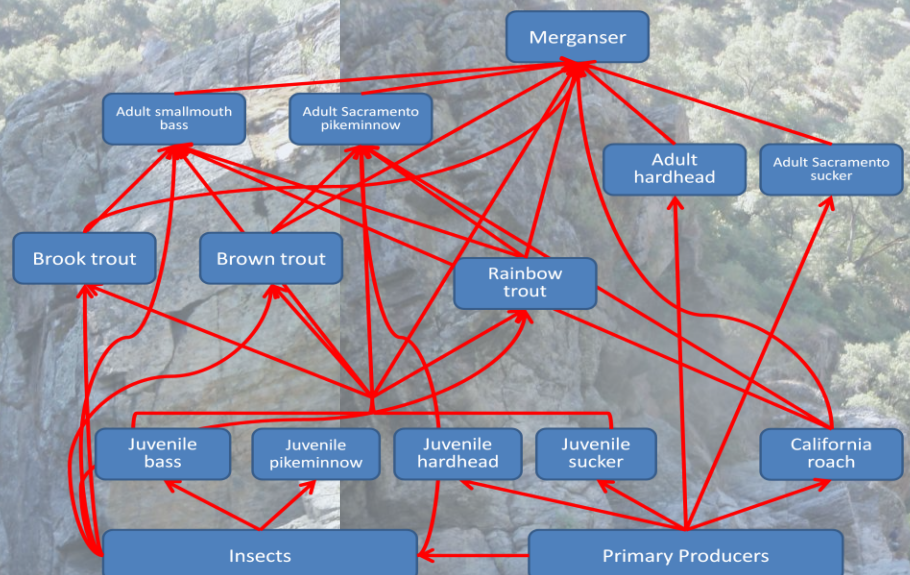
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When dealing with aquatic ecosystems it is unfortunately all-too-easy to focus exclusively on everything that falls within the relevantly physical domain. Many aquatic food webs are depicted as being exclusively dominated by piscivorous fish. In some systems other mostly aquatic species are represented, such as otters.

When discussing the Tuolumne before our first trip we were concerned primarily with fish-fish interactions. These interactions, although interesting are not always indicative of the true nature of the system. During the course of our first trip in April 2009 we noticed that there was a noticeable lack of piscivorous birds. Over three days, two nights, and 18 miles of river we only saw one pair of Common Mergansers. There were no piscivorous birds of prey or wading birds of any kind. This dearth of avian predators was interesting in its absence.

This inspired a great deal of thought and rampant speculation, mostly centered around the possibility of an extremely unproductive system, incapable of supporting high densities of predators. We decided to pay close attention to the numbers and types of predaceous birds, and word was passed among the class. The first trip in June 2009 yielded a total of two Great Blue Herons and twelve Common Mergansers observed. Five mergansers were adult, and there was a brood of seven young. The second trip yielded similar numbers with two Great Blue Herons and eleven Common Mergansers. Again, there was a brood of seven young Mergansers. This consistency in values suggests that the numbers obtained were an accurate representation of the numbers of birds within the system. During both trips, adult Mergansers were observed repeatedly flying up and down the tributaries. They were most likely moving up the tributaries to take advantage of higher fish densities.

Although there were significantly more birds spotted during the two June trips, these are still not extremely high densities. The overall productivity of the mainstem system is still likely low, especially because of the foraging behavior observed near the tributaries. The presence (or absence) of non-fish consumers can give evidence to the overall productivity of the system.



Simplified food web for the mainstem Tuolumne River, from New Don Pedro Reservoir to Meral's Pool.