

FRIENDS OF FAMOSA SLOUGH



Edited extracts from a talk by Drew Talley, March 25, 1998

Many of the fish that utilize Pacific Coast wetlands have until recently received very little attention. People have long been concerned about the more profitable and glamorous species (salmon, halibut), but little attention has been paid to the more abundant but less charismatic fish, such as the California killifish or the long-jawed mudsucker. And yet these smaller fishes are critical to the function of wetlands. Even in a small wetland like Famosa Slough, there can be tens of thousands of small resident fish at any one time.

Local fishes

Let me begin by introducing some of the fish that live in Famosa Slough.

Mudsuckers (*Gillichthys mirabilis*)- these fish are pretty common in most of the wetlands of California and Baja. They are eaten by lots of birds, such as egrets and herons, and in turn mudsuckers live mostly on crabs, shrimp, and other fish. Mudsuckers are commercially harvested for use as bait, due to their tolerance for fresh or saltwater and ability to live in very low oxygen environments. Mudsuckers are considered "salt marsh residents", which means that they can spend their entire lives living in the marsh, as opposed to what are called "transient species", like halibut, who live in bays and estuaries when young, and then move offshore as they mature.

Another smaller goby that frequents these systems is the **Arrow Goby** (*Clevelandia ios*). Arrow gobies are well-known for their commensal relationships with other burrowing animals, such as the ghost shrimp. Arrow gobies share the burrow with the shrimp, using it as a refuge from other larger fishes.

Flatfish - there are a number of flatfish which use wetlands for at least part of their lives. Commonly, juvenile flatfish will live here, taking advantage of the large number of small fish and invertebrates that live in the marsh, and then as they grow older, the flatfish slowly migrate into deeper water, many eventually going well offshore to live in deep water.

Skates and Rays (most commonly the round stingray, *Urolophus halleri*)- while most of us are familiar with stingrays, it can be surprising the degree to which these fish use even higher, vegetated marsh at high tide. Most commonly, you see this at night, as the rays come in with the tide to eat crabs, clams, and worms that live in the marsh.

Smelt - there are two very similar looking species of smelt which you will see here, the **topsmelt** (*Atherinops affinis*) and the **jacksmelt** (*Atherinopsis californiensis*). Topsmelt are more commonly found in the flat marsh habitats than jacksmelt, but what they share in common is that they both tend to spawn in wetland habitats. Topsmelt feed on small floating animals in the water, as well as algae, and jacksmelt will eat small fish. As the

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age, both species tend to move offshore, and actually form a big part of the diet of seals, birds, etc.

Mullet (*Mugil cephalus*) are in many ways similar to the smelts, but also do quite a bit of nosing around on the bottom, sucking up the organic-rich muck in the slough as well as algae and digesting that.

Next is a trio of fish that are exotic species here in California—that is, species that have been either accidentally or intentionally introduced by man.

The **yellowfin goby** (*Acanthagobius flavimanus*) is a fish native to Japan, which looks vaguely like the mudsucker, but with a better set of teeth. The yellowfin is believed to have come to California in the ballast water of ships. This is a pretty common way for non-native marine species to get a foothold—big tankers or other ships need to take on a lot of water if they are going to be traveling empty, to help weigh them down and steady them while underway. So they fill up with ballast before leaving port, sucking in thousands of gallons of water and many small animals and larvae. Then, when they arrive at their destination, they release this water, inadvertently giving these animals a chance to try and get established in a new locale. Yellowfins were first found in the San Francisco Bay area in 1963, and then in So California in the late 70's. This species may be displacing other similar native species in California, such as the staghorn sculpin and the mudsucker.

Two other exotic species which are in Famosa slough are the **mosquitofish** (*Gambusia affinis*) and the **sailfin molly** (*Poecilia latipinna*). Mosquitofish are very similar in their diet and habits to one of our local fish, the California killifish, which I will speak more about in a moment. Mosquitofish were intentionally introduced into many areas, in an effort to control mosquito populations. Unfortunately, they seem to have not had much effect on mosquitos or mosquito-borne diseases, but have negatively affected lots of native fish populations, either by competing for food or other resources or by eating the young of native species.

Sailfin mollies seem to have been introduced mostly from people dumping their aquaria into streams or wetlands. Like the mosquitofish, these fish are hardy and can tolerate a big range in salinity, so can often have a negative effect on local wetland species.

The last fish I will mention is very abundant in southern CA wetlands, and is the focus of my own work, so you will have to excuse me if I sound a bit paternalistic when I talk about them. **California killifish** (*Fundulus parvipinnis*) live from central California down into the southern half of Baja, and are amazingly hardy and periodically wildly abundant fish. They are eaten by just about everything that wants to eat fish in wetlands, and they will in turn eat a variety of insects, worms, and even the larvae and juveniles of other fish and even their own species. The killifish spawn mostly at night on high tides,

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and they do so in very, very shallow water, almost beaching themselves like grunion when they lay their eggs. So the young use very high marsh habitats, and the adults use the larger creeks and subtidal areas, moving back and forth with the tides. They are trying to balance out the risks and benefits of each habitat that the wetland has to offer—the upper intertidal area, where pickleweed grows, is full of food, but has lots of wading birds, and there is always the danger of getting stranded. The deeper areas offer protection from birds and the ability to eat 24 hours a day, but are a dangerous place due to the bigger fish and diving birds. So there is quite a bit of this back and forth movement that killifish must do every day.