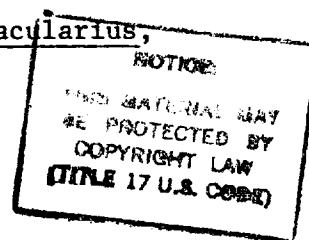


The Status of the Desert Pupfish, Cyprinodon macularius,
at the Salton Sea, California.

by Glenn Black
California Department of Fish & Game



The desert pupfish, Cyprinodon macularius, is the only species native to the Salton Sea area and has been reported as "abundant" as recently as 1958 by Barlow. However, incidental collections made in the last 15 years indicate that their distribution and numbers may have been severely reduced. This seems to have coincided with the introductions of several exotic species into the irrigation drains leading to the Salton Sea and to their movement into habitats utilized by desert pupfish. The above-mentioned exotic species include the sailfin molly, Poecilia latipinna, the shortfin molly, P. mexicana, the red shiner, Notropis lutrensis and Zill's cichlid, Tilapia zillii.

In order to determine the extent of the immigration of these exotic species into desert pupfish habitats, the California Department of Fish and Game has conducted three quarterly surveys at the Salton Sea. Live minnow traps and seines were used to sample fish populations in irrigation drains and tributaries to the Salton Sea as well as in shoreline pools (pools of Salton Sea water separated from the Sea by sand bars) and the Salton Sea proper.

Results from the three surveys have shown that 14 species of fish have been collected from the various habitats and that the most abundant and widely distributed of all species is the sailfin molly. The sailfin molly has made up 73%, 85% and 86% of the fish captured from the irrigation drains; 86%, 69% and 69% of the fish from the tributaries; 89%, 93% and 93% of the fish from the shoreline pools; and 74%, 90% and 97% of the fish from the Salton Sea proper during the three surveys. In contrast to this, the desert pupfish has contributed to less than 1%, 9% and 2% of the fish sampled from the irrigation drains during the three surveys; to less than 1% of the fish sampled in all three surveys of the tributaries; to 5%, 2% and less than 1% of the fish sampled in the surveys of the shoreline pools; and to 1% or less in the surveys of the Salton Sea proper.

Despite the fact that pupfish have been found in all four types of habitats sampled, they appear to be very restricted within each habitat, especially in irrigation drains. They prefer areas of irrigation drains that have a sand substrate, a water depth of less than 3 feet (0.9 m), turbidity of less than 100 JTU's and aquatic vegetation.

The three surveys clearly show that the desert pupfish is in serious trouble at the Salton Sea due to the introduction of exotic species. In addition to this, another serious threat exists in the form of possible permanent alteration of irrigation drain habitat through the concrete lining or piping of these drains by the irrigation districts surrounding the Salton Sea.

A bleak picture has been painted, but there may be some hope for the desert pupfish because in August of this year, we found a sizeable population in San Felipe Creek, a tributary to the Salton Sea. Even though there are several exotic species of fish present in the creek, they are relatively low in numbers. A survey was conducted in November of this year of a four-mile section of the creek and showed that pupfish made up 68% of the total catch, sailfin mollies 28%, mosquito fish, Gambusia affinis 3%, and shortfin mollies 1%. Land ownership in San Felipe Creek is two-thirds Bureau of Land Management land and one-third private land. Efforts will be made to purchase the remaining private land, especially since there is a possible threat of wells being drilled for irrigation in proximity to the creek. This could seriously affect the three springs that provide water to the creek and its associated marsh.

Due to these threats to the future existence of the desert pupfish at the Salton Sea, Fish and Game and State Park personnel established a second desert pupfish refugium pond within Anza-Borrego State Park at Palm Spring. Forty-five adult desert pupfish were placed in the refugium in May of this year and when checked in October the pond had numerous juvenile pupfish.

The Department of Fish and Game believes that artificial refugia are not the solution to the plight of the desert pupfish at the Salton Sea, but only a temporary measure. The answer lies in being able to ensure their survival within naturally occurring desert spring environments and San Felipe Creek may be the desert pupfish's last chance.