

# THE THREADFIN SHAD, *Dorosoma pefenense* (Gunther)

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## INTRODUCTION

Threadfin shad were first taken in the Salton Sea on September 13, 1965 at several stations widely scattered along the eastern shore. On September 14, one was recovered at the southwest corner of the Sea. Other specimens were taken in small numbers during the fall and winter of 1955 in netting and seining operations all around the Sea, but principally along the east side. They were taken less frequently in shore seining as winter progressed. This was also true of bairdiella, apparently because the fish moved into deeper waters during the colder part of the year. As spring progressed, increasing numbers of shad were taken along shore.

The threadfin shad was introduced to California from Tennessee by the California Department of Fish and Game in November 1953 (Kimsey, 1954). They were first held and bred in ponds near San Diego, but in November 1954 and in March 1955, 600 and 550 respectively were planted in the Colorado River at Lake Havasu (the lake behind Parker Dam) about 20 miles below Topock, Arizona (personal communication, Richard Beland, 1955). The fish reproduced successfully and spread throughout the river system. By late summer of 1955, small schools of them were in the canal system of the Imperial Valley, a minimum of 200 miles via the All-American Canal and the Colorado River from the planting site. In early October 1955, I collected 19 with a dip net from a school of at least 100 in a pool behind a headgate on the Vail Canal, about 4 miles north of Westmoreland, California, and about 10 miles from the south end of the Salton Sea.

The presence of this freshwater fish in the Salton Sea is not too surprising since it is taken fairly commonly in trawling operations along the Louisiana coast (Gunter, 1938).

The shad seemed to do well in the Salton Sea as all fish captured appeared in good health and in good condition. No abnormalities were observed, such as occurred in bairdiella following its introduction and subsequent explosive increase. Perhaps the two cases aren't strictly comparable since the shad have not been nearly as abundant as the bairdiella. Further, it is not likely that the shad is as free from predation as was bairdiella, since the shad occurring in the Sea were spawned in fresh water where they would have been subjected to predation from various freshwater fishes and other predators in that environment.

The mean size of the shad captured in the Salton Sea increased during the seven months they were under observation (Table 26). The largest of several taken in an experimental gill net on January 6, 1960, had a total length of 22.3 cm (8.78 in.) and a standard length of 17.3 cm.

No spawning was observed, nor is any expected, in the Salton Sea. Since they are freshwater spawners it is unlikely that their delicately-

adjusted demersal eggs and fry could tolerate salinities as great as those in the Salton Sea. Their recruitment would appear to depend on fish spawned in freshwater.

In April 1956, a large concentration of shad was in the mouth of the Coachella spillway, a freshwater inlet, attempting to move upstream. Due to the strong current they were unsuccessful. It was thought that this may have been an attempt on the part of the fish to return to freshwater in response to a spawning urge. However, the gonads of several varied from poorly- to well-developed and a few were interpreted as being spent. These latter fish, if truly spent, probably had spawned in the canal system or in the quiet water at the lower end of the Coachella spillway.

The diet of the threadfin shad consists largely of planktonic species. Haskell (1959), reporting on their diet in an Arizona lake, noted that diatoms and unicellular green algae were the principal constituents during the winter months. In spring and summer, the algal species were still important but the planktonic animals, principally rotifers and crustaceans, formed the bulk of their diet.

No detailed food studies were made during this investigation. cursory examinations revealed a variety of algae (diatoms and dinoflagellates were chiefly recognizable), and portions of copepods, rotifers, and barnacle nauplii in the digestive tract.

Shad occurred commonly in the corvina stomachs. Considering the relative numbers of shad to bairdiella, based on seine and gill-net sampling, it would appear that shad were a favored food item. On several occasions, shad were eaten to the exclusion of bairdiella, by grebes and corvinas, in areas where gill nets captured many bairdiella but no shad.

No estimate was made of their abundance or numbers. They were distributed over the entire Sea but the greatest numbers occurred along the eastern shore. They were most abundant in the vicinities of freshwater inlets.

This species promises to be a valuable forage fish if recruitment remains at a satisfactory level.

TABLE 26  
Lengths of 338 Threadfin Shad Captured in the Salton Sea From  
September 13, 1955 to April 17, 1956

Date	Number of Fish	Mean Length in mm	Range of Length in mm
13 Sept. 1955.....	38	34.7	25.5- 45.1
18 Oct. 1955.....	77	39.5	32.8-91.4
17 Apr. 1956.....	221	106.0	35.2-125.5