MASS MORTALITY OF MARINE AND ESTUARINE FISH IN THE SWARTVELEI AND WILDERNESS LAKE SYSTEMS, SOUTHERN CAPE.

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Summary

Two incidences of mass mortality of fish were recorded in two saline waterbodies (Swartvlei estuary and Rondevlei) in the Wilderness National Park. Species affected were the Kynsna seahorse (*Hippocampus capensis*) and longsnout pipefish (*Syngnathus acus*) in the Swartvlei estuary, and Cape stumpnose (*Rhabdosargus holubi*) and white steenbras (*Lithognathus lithognatus*) in Rondevlei. Comparison of water quality parameters during fish mortalities to past ranges and reported species tolerances indicated that the probable causes for the mortalities were high water temperature in the Swartvlei estuary, and low dissolved oxygen concentration in Rondevlei.

Two incidences of mass mortality of fish have recently been recorded in the Swartvlei estuary (34°01'50"S; 22°47'50"E) and Rondevlei (33°59'40"S; 22°42'40"E) - two saline waterbodies of the Swartvlei and Wilderness lake systems, respectively, in the Wilderness National Park.

**Swartvlei estuary**

A minimum of 3000 dead *Hippocampus capensis* Boulenger (Kynsna seahorse) were observed along the banks and among shallow submerged aquatic plants of the Swartvlei estuary between 18 and 25 February 1991, following the flooding and subsequent breaching of the estuary mouth on 17 February 1991. Dead *Syngnathus acus* Linnaeus, (longsnout pipefish) were also observed, and, although not individually counted, the total number of individuals was estimated not to exceed 1000. Dead fish were recorded throughout the length of the estuary, though the highest density occurred in the middle reaches.

Salinity, dissolved oxygen concentration and surface water temperature were measured during the fish mortalities to establish probable causes. Salinity ranged between 7.4 g kg⁻¹ in the upper reaches to 24.3 g kg⁻¹ near the mouth, which was within the normal range of 2.2 to 35.0 g kg⁻¹ recorded between January 1991 and December 1993 (National Parks Board unpublished data). Riley (1986) demonstrated that *H. capensis* can tolerate direct transfer from seawater to water with a salt concentration of 1 g kg⁻¹. Therefore, the observed mass mortality of *H. capensis* was unlikely to have resulted from a rapid reduction in salinity following the inflow of flood waters.

Although the oxygen consumption of several southern African marine and estuarine fish have been studied (Marais 1978; Talbot and Baird 1985; du Preez et al. 1986a; du Preez et al. 1986b; du Preez 1987), the tolerances of fish species of low oxygen concentrations appear poorly understood. Studies of North American fish species indicate that, on average, few nonanadromous marine species exhibit symptoms of oxygen distress at oxygen concentrations above 8.84 mg L⁻¹, symptoms of oxygen distress start to be exhibited at