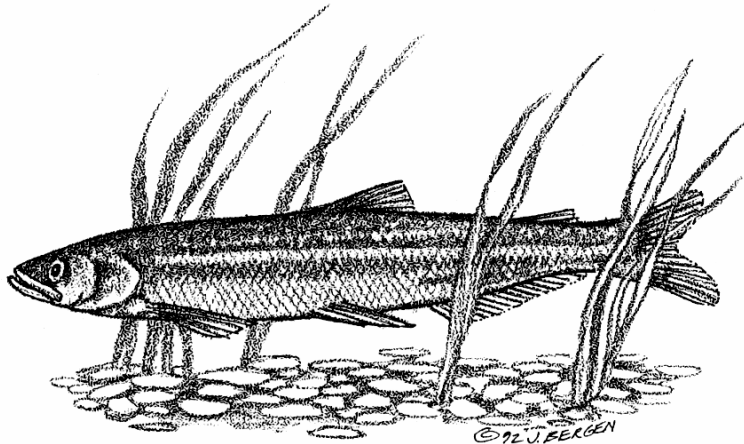


Estuarine Dependence

by Kenn Oberrecht



Estuaries--those diverse and productive areas where rivers end in a tidal swirl of fresh and salt water are environments shrouded in mystery. We know they're important, but wonder how important. We know many estuaries have been damaged by adjacent urban and industrial development and growth, but we're not sure how badly. We know that most commercially and recreationally important

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Although entirely estuarine-dependent species are relatively few, many fishes and shellfishes have evolved life histories that indicate at least a partial or temporary dependence. This is especially apparent in ways the nekton, the aggregate of free-swimming aquatic-animal organisms, uses the estuaries as nursery grounds. Many animals have developed complex mechanisms for living in estuaries.

One such mechanism enables passively drifting or weakly swimming larvae, incapable of moving against currents, to find their way into estuaries. Another assists eggs and non-swimming or feeble larvae in reaching estuaries from ocean spawning grounds that might be many miles away.

To illustrate, salt water, which is denser than fresh water, usually enters an estuary in the shape of a wedge that points upstream, with the lighter fresh water flowing over it. Many crab, shrimp, and fish larvae settle to the bottom and ride the salt-wedge currents into the estuaries.

Some even develop daily cycles that enable them to take advantage of such currents in the estuary. For example, as soon as young striped bass are able to swim weakly, they begin moving to the bottom during the day and into the surface layer at night. So they're swept seaward from the head of the estuary at night, and back again during the day, which allows them to remain within a particular area, even though they are not yet strong enough to swim against the current.

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In the Gulf of Mexico, where salt-wedge and tidal currents are relatively weak and insignificant to migrating larvae, some species have evolved winter spawning habits. That's the season of regular onshore winds on the gulf, which result in shoreward currents sufficient to carry larvae into the estuaries and lagoons.

It's no accident that here on the Pacific Coast many species that lay pelagic eggs spawn from November through March. That's our storm season, when prevailing winds are usually onshore. So the same winds that deliver Japanese glass floats and other treasures to beachcombers also help transport larval fish to the estuaries.

Although many of the estuaries' inhabitants and visitors seem to be as mysterious as the estuaries themselves, it appears that a large number of them are not only dependent upon estuaries, but have also developed ways to convey their young to these nutrient-rich nurseries.

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