GLOSSARY OF TERMS

Amphihaline Capable of surviving in freshwater and seawater.

Euryhaline Capable of surviving in a wide range of salinity.

Stenohaline Capable of surviving in only a narrow range of salinity.

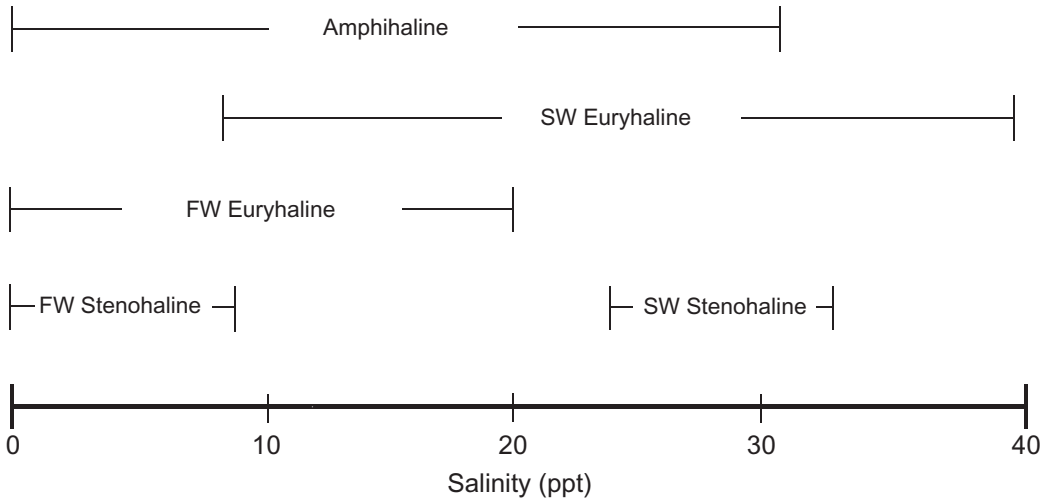
Diadromous Truly migratory fishes which migrate between the sea and freshwater.

Anadromous Diadromous fishes which spend part of their lives in the sea and migrate to freshwater to breed.

Catadromous Diadromous fishes which spend part of their lives in freshwater and migrate to the sea to breed.

Amphidromous Diadromous fishes that reproduce in freshwater, pass to the sea as newly hatched larvae where they feed and grow, then return to freshwater as juveniles for another period of feeding and growth, followed by reproduction.

Ionocyte Specialized cell in the gill and skin that transports ions to maintain internal (blood) homeostasis.



McDowell (1988) gives an excellent overview of the terminology used in this field in his book *Diadromy of Fishes*. Myers (1949) was the first to explicitly define diadromy, anadromy, and catadromy; these terms were endorsed by McDowell (1988) and his definitions are used verbatim in the above glossary with only one exception: we utilize ''part'' rather than ''most'' to define the period spent in freshwater and seawater for anadromy and catadromy, respectively. The use of ''most'' unnecessarily excludes species that may spend more time in their initial habitat, but nonetheless have a growth phase in the second environment and return to the first for breeding. An example would be Atlantic salmon that spend on average 2.5 years in freshwater and 1–2 years in seawater. The definition of amphidromy is abbreviated from McDowell (2007).

The term euryhaline has been used by various authors to mean either the capacity to survive in a wide range of salinities (as its name implies and is used here) or the capacity to survive in freshwater and seawater. In our view there is a need to distinguish between these two meanings, and we have chosen to refer to the latter as amphihaline (able to survive in freshwater and seawater). It should be noted that the term amphihaline has been used by Fontaine (1975) to describe movement ''from salt to fresh water'' at ''well defined stages of their life cycle''. This usage does not appear to be substantially different from the types of diadromy defined above. Furthermore, since the categorization of fishes as euryhaline or stenohaline is based upon physiological capacities, the same should apply for amphihaline. Using these definitions, all amphihaline species are also euryhaline, but not all euryhaline species are amphihaline.

In the figure above, we have further categorized stenohaline and euryhaline relative to freshwater (FW) and seawater (SW) habitats. FW stenohaline fishes can survive in only a narrow range of salinity that includes FW. SW stenohaline fishes can survive in only a narrow range of salinity that includes SW (35 ppt). FW euryhaline fishes can survive in a wide range of salinity that includes FW. SW euryhaline fishes can survive in a wide range of salinity that includes SW (35 ppt). The terms defined here are used throughout the volume for consistency.

The term ionocyte is being used with increasing frequency in the physiological literature and provides a functionally relevant name for epithelial cells involved in ion transport. Therefore, ionocyte has been adopted here in favor of ''chloride cell'' and ''mitochondrion-rich cell'', terms that are still in use. ''Chloride secreting cell'' was the first term introduced by Keys and Willmer (1932), but its subsequent modification to the more general ''chloride cell'' does not correctly apply to the wide range of cells that have been found to transport other major ions such as sodium, calcium, and protons. The term ''mitochondrion-rich cell'' has been widely

used, but does not communicate a functional attribute. Furthermore, the property of numerous mitochondria is not often used to identify ionocytes, nor are ionocytes the only cell with this property. Thus, ionocyte provides a specific and functional name for specialized cells in the gill and skin that are involved in ion homeostasis.

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