Table 1. *Distribution of Subclasses within the classification hierarchy.*

	System and Subsystem[a]										
	Marine		Estuarine		Riverine				Lacustrine		Palustrine
Class/Subclass	ST	IT	ST	IT	TI	LP	UP	IN	LM	LT	–
Rock Bottom											
Bedrock	X		X		X		X		X	X	X
Rubble	X		X		X		X		X	X	X
Unconsolidated Bottom											
Cobble-Gravel	X		X		X	X	X		X	X	X
Sand	X		X		X	X	X		X	X	X
Mud	X		X		X	X	X		X	X	X
Organic			X		X	X			X	X	X
Aquatic Bed											
Algal	X	X	X	X	X	X	X		X	X	X
Aquatic Moss					X	X	X		X	X	X
Rooted Vascular	X	X	X	X	X	X	X		X	X	X
Floating Vascular			X	X	X	X	X		X	X	X
Reef											
Coral	X	X									
Mollusk			X	X							
Worm	X	X	X	X							
Streambed											
Bedrock				X	X			X			
Rubble				X	X			X			
Cobble-Gravel				X	X			X			
Sand				X	X			X			
Mud				X	X			X			
Organic				X	X			X			
Vegetated								X			
Rocky Shore											
Bedrock		X		X	X	X	X			X	
Rubble		X		X	X	X	X			X	
Unconsolidated Shore											
Cobble-Gravel		X		X	X	X	X			X	X
Sand		X		X	X	X	X			X	X
Mud		X		X	X	X	X			X	X
Organic		X		X	X	X	X			X	X
Vegetated					X	X	X			X	X
Moss-Lichen Wetland											
Moss											X
Lichen											X
Emergent Wetland											
Persistent				X							X
Nonpersistent				X	X	X	X			X	X
Scrub-Shrub Wetland											
Broad-leaved Deciduous				X							X
Needle-leaved Deciduous				X							X
Broad-leaved Evergreen				X							X
Needle-leaved Evergreen				X							X
Dead				X							X

Table 1. Continued.

	System and Subsystem[a]										
	Marine		Estuarine		Riverine				Lacustrine		Palustrine
Class/Subclass	ST	IT	ST	IT	TI	LP	UP	IN	LM	LT	–
Forested Wetland											
Broad-leaved Deciduous				X							X
Needle-leaved Deciduous				X							X
Broad-leaved Evergreen				X							X
Needle-leaved Evergreen				X							X
Dead				X							X

[a]ST = Subtidal, IT = Intertidal, TI = Tidal, LP = Lower Perennial, UP = Upper Perennial, IN = Intermittent, LM = Limnetic, LT = Littoral.

mangle) and eastern oysters (*Crassostrea virginica*), are also included in the Estuarine System.[3]

Limits. The Estuarine System extends (1) upstream and landward to where ocean-derived salts measure less than 0.5‰ during the period of average annual low flow; (2) to an imaginary line closing the mouth of a river, bay, or sound; and (3) to the seaward limit of wetland emergents, shrubs, or trees where they are not included in (2). The Estuarine System also includes offshore areas of continuously diluted sea water.

Description. The Estuarine System includes both estuaries and lagoons. It is more strongly influenced by its association with land than is the Marine System. In terms of wave action, estuaries are generally considered to be low-energy systems (Chapman 1977:2).

Estuarine water regimes and water chemistry are affected by one or more of the following forces: oceanic tides, precipitation, freshwater runoff from land areas, evaporation, and wind. Estuarine salinities range from hyperhaline to oligohaline (Table 2). The salinity may be variable, as in hyperhaline lagoons (e.g., Laguna Madre, Texas) and most brackish estuaries (e.g., Chesapeake Bay, Virginia-Maryland); or it may be relatively stable, as in sheltered euhaline embayments (e.g., Chincoteague Bay, Maryland) or brackish embayments with partly obstructed access or small tidal range (e.g., Pamlico Sound, North Carolina). (For an extended discussion of estuaries and lagoons see Lauff 1967.)

Subsystems.

Subtidal.—The substrate is continuously submerged.

Intertidal.—The substrate is exposed and flooded by tides; includes the associated splash zone.

[3]The Coastal Zone Management Act of 1972 defines an estuary as "that part of a river or stream or other body of water having unimpaired connection with the open sea, where the sea-water is measurably diluted with freshwater derived from land drainage." The Act further states that "the term includes estuary-type areas of the Great Lakes." However, in the present system we do not consider areas of the Great Lakes as Estuarine.

Classes. Rock Bottom, Unconsolidated Bottom, Aquatic Bed, Reef, Streambed, Rocky Shore, Unconsolidated Shore, Emergent Wetland, Scrub–Shrub Wetland, and Forested Wetland.

Riverine System

Definition. The Riverine System (Fig. 4) includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts in excess of 0.5‰. A channel is "an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water" (Langbein and Iseri 1960:5).

Limits. The Riverine System is bounded on the landward side by upland, by the channel bank (including natural and man-made levees), or by wetland dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens. In braided streams, the system is bounded by the banks forming the outer limits of the depression within which the braiding occurs.

The Riverine System terminates at the downstream end where the concentration of ocean-derived salts in the water exceeds 0.5‰ during the period of annual average low flow, or where the channel enters a lake. It terminates at the upstream end where tributary streams originate, or where the channel leaves a lake. Springs discharging into a channel are considered part of the Riverine System.

Description. Water is usually, but not always, flowing in the Riverine System. Upland islands or Palustrine wetlands may occur in the channel, but they are not included in the Riverine System. Palustrine Moss–Lichen Wetlands, Emergent Wetlands, Scrub–Shrub Wetlands, and Forested Wetlands may occur adjacent to the Riverine System, often on a floodplain. Many biologists have suggested that all the wetlands occurring on the river floodplain should be a part of the Riverine System because they