

Appendix A

GLOSSARY OF TECHNICAL TERMS

This glossary provides non-technical definitions of technical terms, some of which are used in this manual. This is by no means an exhaustive list of all the terminology pertaining to tidal marshes. For more detailed reference to tidal marsh terminology, see the references listed in Appendix B.

accretion	the gradual build up of surface elevations due to the deposition of suspended sediments on the marsh surface
adsorb	the chemical adhesion of one substance to the surface of another (e.g., nutrients and pollutants may be adsorbed to the surface of sediment particles)
aquatic	in or near water in such habitats as ponds, lakes, rivers and oceans
avian	relating to birds
back-barrier marsh	a marsh that forms in the low-lying area behind a barrier beach formation
barrier beach	an elongated landform created by the deposition of sedimentary materials by wind and wave currents, usually parallel to the shoreline, with water on at least two sides, and composed of sand, gravel, or cobblestones
benthic	relating to or occurring on the bottom of a body of water
best management practice	design or construction standards that are recommended to minimize the impact of development on the environment
biota	living organisms (plant, animals, etc.) in an ecosystem
brackish marsh	tidal marshes where the average water salinity is less than 18 parts per thousand (ppt) but greater than 0.5 ppt which is the upper limit of salinity in a freshwater tidal wetland
buffer zone	an undeveloped area bordering on a wetland that serves to lessen the impact of disturbance (e.g., urban development)
carrying capacity	the population of a species that an area can support without deterioration
chart datum	The datum to which soundings on a chart are referred. Since 1989, chart datum has been defined as mean lower low water for all marine waters of the United States
cobble	a rock fragment larger than a pebble but smaller than a stone (2.5 to 10 inches in diameter)
current	Generally, a horizontal movement of water. Currents may be classified as tidal and nontidal. Tidal currents are caused by gravitational interactions between the Sun, Moon, and Earth and are part of the same general movement of the sea that is manifested in the vertical rise and fall, called tide. Nontidal currents include the permanent currents in the general circulatory systems of the sea or rivers as well as temporary currents arising from more pronounced meteorological variability
datum (vertical)	For marine applications, a base elevation used as a reference from which to reckon heights or depths. It is called a tidal datum when defined in terms of a certain phase of the tide. Tidal datums are local datums. See chart datum.
day	The period of rotation of the Earth. There are several kinds of days depending on whether the Sun, Moon, or other object or location is used as the reference for the rotation, such as lunar day and solar day.
declination	Angular distance north or south of the celestial equator. The Sun passes through its declinational cycle once a year, reaching its maximum north

	<p>declination of approximately $23\frac{1}{2}^{\circ}$ about June 21 and its maximum south declination of approximately $23\frac{1}{2}^{\circ}$ about December 21. The Moon has an average declinational cycle of $27\frac{1}{3}$ days which is called a tropical month. Tides occurring near the times of maximum north or south declination of the Moon are called tropic tides, and those occurring when the Moon is over the Equator are called equatorial tides or equatorial currents. The maximum declination reached by the Moon varies from 28 to $18\frac{1}{2}^{\circ}$ over an 18.6-year cycle.</p>
deepwater habitats	permanently flooded areas deeper than 6.6 feet (e.g., lakes)
degraded	characterized by loss of natural ecological structure or function
detrital food chain	food chain dependent upon decomposed plant and animal material as the source of energy
detritus	particles that result from the disintegration of organic material
diurnal	An event that occurs on a daily basis, such as “diurnal flooding”
dominant plant community	a single species or association of plants that are indicative of the ecology of an area, (e.g., in a cattail marsh the dominant plant community is cattails)
drainage pattern	the paths followed by surface runoff from precipitation within a watershed
ebb current (ebb)	The movement of a tidal current away from shore or down a tidal river or estuary related to the falling or ebb tide.
ecology	the study of interactions between living things and their environment
ecological integrity	the natural (undisturbed) quality of an ecosystem
ecosystem	a community of plants and animals and the physical environment they inhabit (such as estuaries and tidal wetlands) which results from the interactions among soil, climate, vegetation, and animal life
emergent vegetation	<p>erect, rooted, herbaceous plants that can tolerate flooded soil conditions, but not prolonged periods of being completely submerged; these include grasses, sedges, rushes, and rooted aquatic plants; there are two types of emergent plants:</p> <p><i>persistent</i> - emergent plants whose stems remain standing through the winter until the beginning of the next growing season (i.e., they persist), (e.g., cattails or bulrushes)</p> <p><i>non-persistent</i> - emergent plants whose stems and leaves break down at the end of the growing season; from late fall to early spring there are no visible traces of these plants above the surface of the water (i.e., they do not persist)(e.g., smooth cordgrass)</p>
estuarine wetlands	habitats partially enclosed by land but having an opening to the ocean where saltwater from the ocean mixes with freshwater from inland rivers and surface runoff.
exemplary community	an area selected by the Maine Natural Heritage Program as being an outstanding example of the natural plant and animals found in a particular ecosystem
fill	material, usually associated with the dredging of a harbor or inlet, placed on the surface of the marsh; the change in elevation caused by the disposal of this material in the marsh can lead to the loss of the area as a functioning tidal marsh
finger marsh	An elongated channel or riverine marsh with high marsh area large compared to size of channel. See fringe marsh
flood current (flood)	The movement of a tidal current toward the shore or up a tidal river or estuary related to the rising or flood tide.

food chain	an arrangement of organisms of an ecological community according to the order of production and consumption; at the bottom of the food chain are photosynthetic plants and phytoplankton; zooplankton and animals that feed on plants form the next level on the food chain, while predators form the highest levels
formerly tidal marshes	coastal wetlands that were once connected to tidal flow but have since been isolated from tidal waters by the construction of a man-made obstruction
freshwater source	the point of origin of nontidal waters including rivers, streams and surface runoff
freshwater tidal marshes	marshes that are tidally influenced, but where the average water salinity is less than 0.5 parts per thousand
fringe marsh	An elongated marsh with marsh area small compared to size of the adjacent water body. Limited high marsh development. See finger marsh
geomorphology	the study of the natural processes involved in the creation of landforms such as tidal marshes and barrier beaches
habitat	the environment in which the requirements of a specific plant or animal are met
half-tide level	A tidal datum. The arithmetic mean of mean high water and mean low water. Same as mean tide level.
head of tide	The inland or upstream limit of water affected by the tide. For practical application, head of tide is the inland or upstream point where the mean range becomes less than 0.2 foot.
heavy metal	a group of dense metals, including mercury, lead, cadmium, and others, that share the characteristic of being accumulated in organisms and tend to become increasingly concentrated in organisms higher up on the food chain
herbaceous plant	a non-woody plant with a soft stem (e.g., bulrushes and cattails)
high marsh	areas of tidal marshes that are irregularly flooded (frequently beyond the reach of daily flooding) and are typically dominated by salt hay grass (<i>Spartina patens</i>)
high tide	Same as high water (HW), the maximum height reached by a rising tide. The high water is due to the periodic tidal forces and the effects of meteorological, hydrologic, and/or oceanographic conditions.
hydric soil	a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic (oxygen deficient) conditions in the upper part of the soil. Hydric soils are generally poorly drained or very poorly drained. <i>poorly drained</i> - water is removed from the soil so slowly that the soil is saturated periodically during the growing season or remains wet for long periods <i>very poorly drained</i> - water is removed from the soil so slowly that water remains at or near the surface during most of the growing season; this is the most dominant soil drainage class of tidal marshes
hydrology	the scientific study of the properties, circulation, and distribution of water as it occurs in the atmosphere and at the earth's surface as streamflow, precipitation, soil moisture, and ground water
hydrologic regime	the frequency and duration of flooding and/or saturation
hydroperiod	the duration of typical flooding/saturation events; in tidal marshes, the hydroperiod can range from daily flooding to irregular flooding (e.g.,

hydrophyte	every few days, weeks, or months); depends on the marsh elevation a plant that is adapted for life in water or in periodically flooded and/or saturated anaerobic (oxygen poor) soils (e.g., cattails, saltwater cordgrass)
intertidal emergent plant	an erect rooted herbaceous plant growing in the intertidal zone
intertidal riverine wetland	Wetlands within a river channel that are tidally influenced, but where the average water salinity is less than 0.5 parts per thousand. See Fresh Water Marsh
intertidal unconsolidated bottom	wetlands that have at least 25% cover of particles smaller than stones, less than 30% vegetative coverage, and are only intermittently exposed, such as pannes and tidal creeks
intertidal unconsolidated shore	wetlands which have at least 75% coverage of stones, boulders or rocks, less than 30% vegetative coverage, and are alternately flooded and exposed by tides
intertidal zone	areas that are alternately exposed and flooded by tides
invasive species	plant species that, when introduced to an ecosystem, can disturb the natural balance and habitat diversity by invading and dominating the natural tidal marsh plant community, frequently establishing dense monotypical (single species) stands of vegetation
low marsh	areas of marsh that are flooded twice a day and are dominated by saltwater cordgrass (<i>Spartina alterniflora</i>)
low tide	Same as low water (LW), the minimum height reached by a falling tide. The low water is due to the periodic tidal forces and the effects of meteorological, hydrologic, and/or oceanographic conditions.
lunar day	The time of the rotation of the Earth with respect to the Moon, or the interval between two successive upper transits of the Moon over the meridian of a place. The mean lunar day is approximately 24 hours 50 minutes long.
lunar month	Same as synodical month. The average period of the revolution of the Moon around the Earth with respect to the Sun, or the average interval between corresponding phases of the Moon. The lunar or synodical month is approximately 29.5 days.
marine	relating to ocean environments
marine wetlands	Wetlands adjacent to or in open ocean such as beaches, mud flats and rocky shores
Marsh	intermittently to continually flooded wetland characterized by emergent herbaceous vegetation adapted to saturated soil conditions
marsh hydrology	this term describes (1) the hydrologic pathways such as precipitation, surface runoff, ground water, tidal fluctuations and flooding rivers which transport nutrients to and from wetlands; (2) the water depth; (3) frequency and duration of flooding in tidal marshes
marsh peat	the organic soil formed by the accumulation of dead marsh plant material and trapped sediments from tidal waters
marsh restoration	Improvement of existing marsh condition by reversing some of the adverse impacts caused by human activities
marsh system	an area of marsh associated with a single opening to the ocean, a single freshwater input, or adjacent to and contiguously along the shore of a tidal river or bay
mean high water	a tidal datum. The average of all the high water heights observed over

(mhw)	the National Tidal Datum Epoch.
mean low water (mlw)	A tidal datum. The average of all the low water heights observed over the National Tidal Datum Epoch.
mean lower low water (mllw)	A tidal datum. The average of the lower low water height of each tidal day observed over the National Tidal Datum Epoch
mean tide level (mtl)	Same as half-tide level. The arithmetic mean of mean high water and mean low water.
mitigation	activities taken to minimize or offset wetland impacts due to development or construction; restoration and enhancement of existing wetlands or creation of new wetlands are forms of impact mitigation
national tidal datum epoch	The specific 19-year period adopted by the National Ocean Service as the official time segment over which tide observations are taken and reduced to obtain mean values (e.g., mean lower low water, etc.) for tidal datums. The present National Tidal Datum Epoch is 1960 through 1978.
neap tides	Tides of decreased range occurring semimonthly as the result of the Moon being in quadrature (first or last quarter).
non point source	a pollution source that does not come from a single point; typical non-point sources include parking lots, roads, and agricultural fields
open water	areas within or adjacent to a marsh that are below mean low water and greater than 100 meters wide (330 feet); this book uses an arbitrary division of 100 meters to distinguish between open water and tidal creeks
organic matter	a combination of decayed and decaying plant and animal residue
organic soil	soil consisting of at least 18% organic material (by dry weight)
overland flow	a term to describe the sheet-like flow of water over a land surface, not concentrated in individual channels; usually associated with areas of low infiltration such as paved surfaces or surfaces lacking vegetation (see also surface runoff)
pannes	shallow ponds that form on the surface of the marsh and hold salt water between tides
point source	a pollution source that comes from an identifiable point, such as a factory discharge pipe or septic system outlet
preservation	Natural resource policy that emphasizes the aesthetic aspect of the target resource and tends to favor leaving it in an undisturbed state
primary consumer	animals that eat plant material as their main source of energy
primary production	the generation of plant material by photosynthesis
range of tide	The difference in height between consecutive high and low waters. The mean range is the difference in height between mean high water and mean low water.
reference station	A tide station for which independent daily predictions are given in the "Tide Tables" and from which corresponding predictions are obtained for subordinate stations by means of differences and ratios
riverine	of or pertaining to a river
riverine emergent	riverine wetlands dominated by erect rooted herbaceous hydrophytes
salinity	The relative concentration of salts, usually sodium chloride, in a given water sample. It is usually expressed in terms of the number of parts per thousand (ppt) of chlorine (Cl). Although the measurement takes into account all of the dissolved salts, sodium chloride (NaCl) normally constitutes the primary salt being measured. As a reference, the salinity of seawater is approximately 34 ppt
salt marsh	Vegetated tidal wetland with salinity between 18 and 34 parts per thousand

	thousand.
scrub-shrub	Woody vegetation less than 20 feet in height including true shrubs, saplings and trees and shrubs stunted by environmental conditions
sea level	the level of the surface of the ocean at its mean (average) position between high and low tide
sheet flow	Unchannelized flow of water across the surface of a marsh or upland
shell middens	a pile of shells remaining from the harvesting of shellfish by Native Americans and early settlers; shell middens are historic relics
site specific method	an evaluation method which examines only the subject area without comparison to any other area
slack water (slack)	The state of a tidal current when its speed is near zero, especially the moment when a reversing current changes direction and its speed is zero. The term also is applied to the entire period of low speed current near the time of turning of the current when it is too weak to be of any practical importance in navigation. The relation of the time of slack water to the tidal phases varies in different localities.
spit	a small point of land, especially sand or gravel, formed by the deposition of material by wind and water currents that runs into a body of water
spoils	Dredged or excavated soil
spring high tide	tides associated with the full and new moon that are higher and lower than the average tide
spring tides	Tides of increased range occurring semimonthly as the result of the Moon being new or full. (szyzgy)
staddle	a structure consisting of numerous pilings driven into the marsh on which to stack salt hay to keep it above the tidewaters until it could be hauled off
station	The geographic location at which tidal or current observations are conducted. independent daily predictions are given in the "Tide Tables" and "Tidal Current Tables for "reference stations." Corresponding predictions for "subordinate stations" are calculated by applying differences and ratios from the tables to the reference station predictions.
Stone	a rock fragment larger than a cobble but smaller than a boulder (10-24 inches)
Subordinate tide station	A station listed in the Tide Tables from which predictions are to be obtained by means of differences and ratios applied to the full predictions at a reference station. See reference station.
subsidence	a sinking of the marsh surface, through compaction and degradation of marsh peat; often occurs when <i>Spartina patens</i> is deprived of tidal flow
substrate	the type of bottom sediments such as sand, gravel, peat
surface runoff	the movement of water over the land surface (usually in defined channels), resulting from rainfall or snowmelt; percentage of precipitation that becomes runoff varies depending on the slope of the area, the degree of soil saturation, amount of vegetated coverage, or type of surface (e.g., paved areas)
syzygy	Position of the Moon when it is new or full.
tidal amplitude	the variations in the height of tides caused by the lunar cycle, elevation above sea level, the barometric pressure, tidal restrictions and the seasons
tidal creeks	streams in the tidal marsh that are less than 100 meters wide at mean low water and whose water level and flow is dominated by tidal action

tidal flats	areas that are irregularly exposed and are devoid of emergent vegetation, also called mud flats or unconsolidated bottom
tide range	The difference in height between consecutive high and low waters.
Transgression	The spread or extension of marsh or sea over land areas, and the consequent evidence of such advance such as where the new marsh deposits are spread over the former land surface.
transition zone	area surrounding a wetland where conditions gradually change from wetland biota to upland biota
Turbidity	the clarity of the water column as determined by the presence of suspended particles making the water cloudy
upland islands	areas of upland soils and vegetation located within a tidal marsh
upland peninsula	areas of upland soils and vegetation that extend into the tidal marsh, and are surrounded on three sides by the tidal marsh
vegetated tidal marsh	marshes dominated by emergent vegetation and influenced by the tides
water column	the habitat that exists in standing or flowing water extending in a column from the surface of the water to the surface of the substrate
Watershed wetlands	the area from which all water including precipitation, streams and rivers drain to a single point those areas that are inundated or saturated by surface or ground water, support a prevalence of vegetation adapted to life in saturated conditions (i.e., hydrophytes), and are characterized by hydric soils; these include bogs, marshes, swamps, wet meadows, and similar areas
Wetland	A wet habitat transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water.
zone of influence	area surrounding a wetland in which the activities that take place have an impact on the wetland; the Return the Tide program considers a 1/2 mile Zone of Influence, with particular focus on activities within the 250 foot shoreland Zone