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What is a Salt Marsh?

Salt marshes serve as the transition from the ocean to the land, where fresh and salt water mix. Salt marsh plants are salt tolerant and adapted to water levels that fluctuate with the tide. Tides carry in nutrients that stimulate plant growth in the marsh and carry out organic material that feeds fish and other organisms. Over time, salt marshes accumulate organic material into a dense layer called peat.



Salt marshes are among the most productive ecosystems on earth, rivaling that of an Iowa cornfield. The position of salt marshes on the landscape and their productivity makes them important not only as a part of the natural world but also to humans. There are about 6,200 acres of salt marsh in New Hampshire, many of which have been damaged by restricted

tidal flow, filling, ditching, and increased freshwater flows.

Salt Marsh Habitat Zonation

Salt marshes can be extremely difficult places to live because of wide daily fluctuations in salinity, water, temperature, and oxygen. Few plants have evolved adaptations to cope with the extreme conditions of salt marshes. Plant zonation in a salt marsh results from species-specific adaptations to physical and chemical conditions. Looking out on a healthy salt marsh in full summer growth, one can observe distinct zones of plant growth. Bands of tall grasses inhabit the saturated banks of creeks and bays, and this zone is bordered by a flat "meadow" of grasses and sedges that may extend landward for a great distance before transitioning into upland habitats where there is a greater diversity of shrubs, flowering plants, and grasses.

The Low Marsh

The low marsh is located along the seaward edge of the salt marsh. It is usually flooded at every tide and exposed during low tide. It tends to occur as a narrow band along creeks and ditches, whereas the high marsh is more expansive and is flooded less frequently. The predominant plant species found in the low marsh is the tall form of smooth cordgrass (*Spartina alterniflora*). This species can reach a height of six feet and is very tolerant of daily flooding and exposure.

The High Marsh

The high marsh lies between the low marsh and the marsh's upland border. It can be very expansive in some areas, sometimes extending hundreds of yards inland from the low marsh

area. Soils in the high marsh are mostly saturated, and the high marsh is generally flooded only during higher than average high tides. Plant

diversity is low (usually less than 25 species), with the dominant species being the grasses and rushes such as salt hay grass (*Spartina patens*), spike grass (*Distichlis spicata*), black grass (*Juncus gerardii*), and the short form of *Spartina alterniflora*. Other plant species commonly found in the high marsh are perennial salt marsh aster (*Aster tenuifolius*), and sea lavender (*Limonium nashii*).

Pannes and Pools



Pannes are shallow depressions located within in the high marsh. They hold standing water and typically dry out during extended dry periods, such as at the end of the summer season. Salinity can reach extremely high concentrations in pannes and only the most salt-tolerant species can exist at panne edges including common glasswort (*Salicornia europaea*), seaside plantain (*Plantago maritima*), and the short form of *Spartina alterniflora*, as well as some blue-green algae. There are some larger, deeper, and more

permanent depressions (called pools) in the high marsh that can be vegetated with submerged aquatic species such as widgeon grass (*Ruppia maritime*) and are inhabited by salt marsh fish. Both pools and pannes (when not entirely dried out to cracked, dry mud) are very valuable habitat for migratory water birds.

Upland Border

The marsh border is located at the salt marsh's upland edge and other isolated areas on the marsh where elevations are slightly above the high marsh. The marsh border is usually only flooded at extreme astronomical tides and under irregular conditions such as storm surges or wind-driven tidal inundations, and does not experience waterlogged conditions or severe salt stress. A high diversity of herbs, shrubs, and even trees exists in the marsh border. Marsh elder (*Iva frutescens*), sweet gale (*Myrica gale*), seaside goldenrod (*Solidago sempirvirens*), and switchgrass (*Panicum virgatum*) are just some of the many marsh border plants.