Glossary

100-year flood
the standard used by the National Flood Insurance Program (NFIP) for floodplain management purposes and to determine the need for flood insurance; a structure located within a special flood hazard area shown on an NFIP map has a 26 percent chance of suffering flood damage during the term of a 30-year mortgage

access, lateral
the right to walk or otherwise move along a shore, once someone has reached the shore

access, perpendicular
a legally permissible means of reaching the shore from dry land

access point
a place where anyone may legally gain access to the shore; usually a park, the end of a public street, or a public path; a place where perpendicular access is provided

accretion, lateral
the extension of land by natural forces acting over a long period of time, as on a beach by the washing-up of sand from the sea or on a floodplain by the accumulation of sediment deposited by a stream

accretion, vertical
the vertical accumulation of a sedimentary deposit; the increase in thickness of a sediment body as a result of sediment accumulation

active margin
a continental margin characterized by volcanic activity and earthquakes occurring where the edges of lithospheric plates are colliding; because these margins are largely confined to the rim of the Pacific, this type of margin is also referred to as a Pacific margin; compare with *passive margin*

armoring
the placement of fixed engineering structures, typically rock or concrete, on or along the shoreline to mitigate the effects of coastal erosion and protect structures; such structures include *seawalls*, *revetments*, *bulkheads*, and *rip-rap* (loose boulders)

astronomical tides
the alternating rise and fall of the ocean surface and connected waters, such as estuaries and gulfs, that result from the gravitational forces of the moon and sun

avulsion
a sudden cutting off or separation of land by a flood or by and abrupt change in the course of a stream, as by a stream breaking through a meander or by a sudden change in

current whereby a stream deserts its old channel for a new one; OR rapid erosion of the shore by waves during a storm

barrier island, (or sometimes just barrier)
a long, narrow coastal sandy island that is above high tide and parallel to the shore, and that commonly has dunes, vegetated zones, and swampy terraces extending landward from the beach

barrier island roll-over
the landward migration or landward transgression of a *barrier island*, accomplished primarily over decadal or longer time scales through the process of storm overwash, periodic inlet formation, and wind-blown transport of sand

barrier migration
refers to the movement of an entire barrier island or barrier spit in response to sea-level rise, changes in sediment supply, storm surges or waves, or some combination of these factors

barrier raising
adding sediment to a barrier island or spit to increase its elevation; it is rarely done on a large scale (*e.g.*, the Galveston, Texas barrier island was raised after the hurricane of 1900) but individual lot owners sometimes import sediment to add elevation to their land, especially if the land is prone to flooding

barrier spit
a barrier island that is connected at one end to the mainland

bathymetry
the measurement of ocean depths and the mapping of the topography of the seafloor

beach
the unconsolidated material that covers a gently sloping zone extending landward from the low water line to the place where there is a definite change in material or physiographic form (such as a cliff), or to the line of permanent vegetation (usually the effective limit of the highest storm waves)

beach nourishment
the addition of sand, often dredged from offshore, to an eroding shoreline to enlarge or create a beach area, offering both temporary shore protection and recreational opportunities

berm
a commonly occurring, low, impermanent, nearly horizontal ledge or narrow terrace on the backshore of a beach, formed of material thrown up and deposited by storm waves

bluff
a high bank or bold headland with a broad, precipitous, sometimes rounded cliff face overlooking a plain or body of water

breakwater
an offshore structure (such as a wall or jetty) that, by breaking the force of the waves, protects a harbor, anchorage, beach or shore area

breach
(n.) a channel through a barrier spit or island typically formed by storm waves, tidal action, or river flow; breaches commonly occur during high storm surge cause by a hurricane or extra-tropical storm; (v.) to cut a deep opening in a landform

bulkhead
a structure or partition to retain or prevent sliding of the land; a secondary purpose is to protect uplands against damage from wave action

coastal plain
any lowland area bordering a sea or ocean, extending inland to the nearest elevated land, and sloping very gently seaward

coastal squeeze
the narrowing, potentially to the point of failure or elimination, of an environmental system (typically a beach or marsh) that is trapped between the transgressing sea on one side and an impassable barrier (*e.g.*, a sea wall or bulkhead) on the other

coastal zone
the area extending from the ocean inland across the region directly influenced by marine processes

coastline
the line that forms the boundary between the coast and the shore or the line that forms the boundary between the land and the water

continental shelf
the gently sloping underwater region at the edge of the continent that extends from the beach to where the steep continental slope begins, usually at depths greater than 300 feet

contour interval
the difference in elevations of adjacent contours on a topographic map

datum
a quantity, or a set of quantities, that serves as a basis for the calculation of other quantities; in terms of surveying and mapping, a datum is a point, line or surface used as a reference in measuring locations or elevations

delta
a low relief landform composed of sediments deposited at the mouth of a river that commonly forms a triangular or fan-shaped plain of considerable area crossed by many channels from the main river; forms as the result of accumulation of sediment supplied by the river in such quantity that it is not removed by tidal or wave-driven currents

DEM (digital elevation model)
the digital representation of the ground surface or terrain using a set of elevation data

deposition
the laying, placing, or throwing down of any material; typically refers to sediment

depth of closure
a theoretical depth below which sediment exchange between the nearshore (beach and shoreface) and the continental shelf is deemed to be negligible

dike
a wall generally of earthen materials designed to prevent the permanent submergence of lands below sea level, tidal flooding of lands between sea level and spring high water, or storm-surge flooding of the coastal floodplain

discount rate

downdrift
refers to the location of one section or feature along the coast in relation to another; often used to refer to the direction of net longshore sediment transport between two or more locations (*i.e.*, downstream)

dredge and fill
a process by which channels are dredged through wetlands or uplands to allow small boat navigation, and dredge spoil is placed on the adjacent land area to raise the land high enough to allow development; sometimes referred to as "lagoon development" or "canal estates"; used extensively before the 1970s

dredge spoil disposal (dredged material placement)
dredged material, or spoil, is material consisting of sediment or rock, excavated or dredged from an underwater location and removed to a placement site or disposal area; in the United States, designated areas must be coordinated with the Environmental Protection Agency and resource agencies such as the U.S. Fish and Wildlife Service and the National Marine Fisheries Service for environmental compliance, and with local interests for capacity and acceptability

dune
a low mound, ridge, bank or hill of loose, wind blown material (generally sand) either bare or covered with vegetation, capable of movement from place to place but typically retaining a characteristic shape

ebb current
the tidal current associated with the decrease in height of the tide, generally moving seaward or down a tidal river or estuary

ebb-tide delta
a large sand shoal commonly deposited at the mouths of tidal inlets formed by ebbing tidal currents and modified in shape by waves

erosion
the mechanical removal of sedimentary material by gravity, running water, moving ice, or wind; in the context of coastal settings erosion refers to the landward retreat of a shoreline indicator such as the water line, the berm crest, or the vegetation line; the loss occurs when sediments are entrained into the water column and transported from the source

erosion-based setback
a setback equal to an estimated annual erosion rate multiplied by a number of years set by statute or regulation (*e.g.*, 30 years)

estuary
a semi-enclosed coastal body of water which has a free connection with the open sea and within which sea water is measurably diluted with freshwater from land drainage; an inlet of the sea reaching into a river valley as far as the upper limit of tidal rise, usually being divisible into three sectors; (a) a marine or lower estuary, in free connection with the open sea; (b) a middle estuary subject to strong salt and freshwater mixing; and (c) an upper or fluvial estuary, characterized by fresh water but subject to daily tidal action; limits between these sectors are variable, and subject to constant changes in the river discharge

eustatic sea-level rise
refers to worldwide rise of sea level that affects all oceans; eustatic rise has various causes, but typically result from thermal expansion of ocean waters, and additions of water from glaciers, ice caps, and ice sheets

extra-tropical storm
refers to cyclonic weather systems, occurring in the middle or high latitudes (*e.g.*, poleward of the tropics) that are generated by colliding airmasses; these weather systems often spawn large storms occurring between late fall and early spring

fetch
the area of the open ocean over the surface of which the winds blow with constant speed and direction, generating waves

flood current
the tidal current associated with the increase in height of the tide, generally moving landward or up a tidal river or *estuary*

flood-tide delta
a large sand *shoal* commonly deposited on the landward side of a tidal inlet formed by flooding tidal currents

floodproofing
a technique that is intended to limit the amount of damage that will occur to a building or its contents during a flood (see also *dry floodproofing* and *wet floodproofing*)

geologic framework
refers to the underlying geological setting, structure, and *lithology* (rock/sediment type) in a given area

geomorphic or geomorphology
the external structure, form, and arrangement of rocks or sediments in relation to the development of the surface of the earth

glacial rebound
uplift of land following deglaciation due to the mass of the ice being removed from the land surface which causes an isostatic response of the *lithosphere*

global sea-level rise
the worldwide average rise in mean sea level (see *eustatic sea level*)

groin
an engineering structure oriented perpendicular to the coast, used to accumulate littoral sand by interrupting longshore transport processes; often constructed of concrete, timbers, steel, or rock

high marsh
the part of a marsh that lies between the *low marsh* and the marsh's upland border; this area can be expansive, extending hundreds of yards inland from the low marsh area; soils here are mostly saturated but only flooded during higher-than-average tides

hydrodynamic climate
the characteristics of nearshore or continental shelf currents in an area that typically result from waves, tides, and weather systems

inlet
a small, narrow opening, recess, indentation, or other entrance into a coastline or shore of a lake or river through which water penetrates landward, commonly refers to a waterway between two barrier islands that connects the sea and a *lagoon*

intertidal zone
see *littoral*

inundation
refers to the submergence of land by water

isostasy
equilibrium condition whereby portions of the Earth's crust are compensated (floating) by denser material below

jetty
an engineering structure built at the mouth of a river or tidal inlet stabilize a channel for navigation; designed to prevent shoaling of a channel by littoral materials and to direct and confine the stream or tidal flow

lagoon
a shallow coastal body of seawater that is separated form the open ocean by a barrier or coral reef; the term is commonly used to define the shore-parallel body of water behind a barrier island or barrier spit

levee
a wall, generally of earthen materials, designed to prevent riverine flooding after periods of exceptional rainfall

lidar (LIght Detection And Ranging)
a remote sensing instrument that uses laser light pulses to measure the elevation of the land surface with a high degree of accuracy and precision

lithology
the description of rocks on the basis of characteristics such as color, mineral composition, and grain size

lithosphere
the solid portion of the Earth, including the crust and part of the upper mantle

littoral
zone between high and low tide in coastal waters or the shoreline of a freshwater lake

littoral cell
a section of coast for which sediment transport processes can be isolated from the adjacent coast; within each littoral cell, a sediment budget can be defined that describes sinks, sources, and internal fluxes

littoral drift
the sedimentary material moved in the littoral zone under the influence of waves and currents

littoral transport
the movement of littoral drift in the littoral zone by waves and currents; includes movement parallel and perpendicular to the shore

littoral zone
a term describing the region on the shore occurring between high and low water marks

living shoreline
refers to a shore protection concept where some or all of the environmental characteristics of a natural shoreline are retained as the position of the shore changes

long lived
having a long lifetime or a long expected lifetime; long-lived infrastructure means infrastructure that is likely to be in service for a long time

longshore current
an ocean current in the littoral zone that moves parallel to the shoreline, produced by waves approaching at an angle to the shoreline
longshore transport
movement of sediment parallel to the shoreline in the surf zone by wave suspension and the longshore current

low marsh
the seaward edge of a salt marsh, usually a narrow band along a creek or ditch which is flooded at every high tide and exposed at low tide (also see *high marsh* for comparison)

marsh
a frequently or continually inundated wetland characterized by herbaceous vegetation adapted to saturated soil conditions (see also *salt marsh*)

mean high water
a tidal datum; the average height of high water levels observed over a 19-year period

mean higher high water
the average of the higher high water height of each tidal day observed over the national tidal datum epoch (see national tidal datum epoch

mean sea level
the 'still water level' (*i.e.*, the level of the sea with high frequency motions such as wind waves averaged out) averaged over a period of time such as a month or a year, such that periodic changes in sea level (*e.g.*, due to the tides) are also averaged out; the values of MSL are measured with respect to the level of marks on land (called 'benchmarks')

metadata
a file of information which captures the basic characteristics of a data or information resource; representing the who, what, when, where, why and how of the data resource; geospatial metadata are used to document geographic digital resources such as Geographic Information System (GIS) files, geospatial databases, and earth imagery

metes and bounds
the boundary lines and limits of a tract that is described and characterized by placing all data in the tract description as opposed to other references such as maps or plats

mixed energy coast
a coast in which the coastal landforms are shaped by a combination of wave and tidal currents

moral hazard
a circumstance in which insurance, lending practices, or subsidies designed to protect against a specified hazard induce people to take measures that increase the risk of that hazard

mudflat
a level area of fine silt and clay along a shore alternately covered and uncovered by the tide or covered by shallow water

national geodetic vertical datum of 1929 (NGVD29)
a fixed reference adopted as a standard geodetic datum for elevations; it was determined by leveling networks across the United States and sea-level measurements at 26 coastal tide stations; this reference is now superseded by the North American vertical datum of 1988 (NAVD88)

national tidal datum epoch (NTDE)
the latest 19-year time period over which NOAA has computed and published official tidal datums and local mean sea-level elevations from tide station records; currently, the latest NTDE is 1983-2001

nearshore zone
refers to the zone extending from the shoreline seaward to a short, but indefinite distance offshore, typically confined to depths less than 5 meters (16.5 feet)

nontidal wetlands
wetlands that are not exposed to the periodic change in water level that occurs due to astronomical tides

nor'easter (northeaster)
name given to the strong northeasterly winds associated with extra-tropical cyclones that occur along East Coast of the United States and Canada; these storms often cause beach

erosion and structural damage; wind gusts associated with these storms can approach and sometimes exceed hurricane force in intensity

North American vertical datum of 1988 (NAVD88)
a fixed reference for elevations determined by geodetic leveling, derived from a general adjustment of the first-order terrestrial leveling networks of the United States, Canada, and Mexico; NAVD88 supersedes NGVD29

ordinary high water mark
a demarcation between the publicly owned land along the water and privately owned land which has legal implications regarding public access to the shore; generally based on mean high water, the definition varies by state; along beaches with significant waves, it may be based on the line of vegetation, the water mark caused by wave runup, surveys of the elevation of mean high water, or other procedures

overwash
sediment that is transported from the beach across a barrier, and is deposited in an apron-like accumulation along the backside of the barrier; overwash usually occurs during storms when waves break through the frontal dune ridge and flow landward toward the marsh or lagoon

outwash plain
braided stream deposit beyond the margin of a glacier; it is formed from meltwater flowing away from the glacier, depositing mostly sand and fine gravel in a broad plain

passive margin
type of continental margin occurring in the middle of a tectonic plate, consequently tectonic activity is minimal; these margins are typified along the margins of the Atlantic Ocean and often so it is often termed an Atlantic margin

pocket beach
a typically small, narrow beach formed between two littoral obstacles, such as between rocky headlands or promontories that occur at the shore

Public Trust Doctrine
a legal principle derived from English Common Law; the essence of the doctrine is that the waters of the state are a public resource owned by and available to all citizens equally for the purposes of navigation, hunting, fowling, and fishing, and that this trust is not invalidated by private ownership of the underlying land

relative sea-level rise
the rise in sea level measured with respect to a specified vertical datum relative to the land, which may also be changing elevation over time; typically measured using a tide gauge

retreat
the act of moving inland

revetment
a sloped facing of stone, concrete, etc., built to protect a scarp, embankment, or shore structure against erosion by wave action or currents

river diversion
engineering approaches used to redirect the flow of water from its natural course for a range of purposes; commonly used to by-pass water during dam construction, for flood control, for navigation, or for wetland and floodplain restoration

rip-rap
loose boulders placed on or along the shoreline as a form of *armoring*

riverine flooding
flooding of lands caused by the elevation of nontidal or tidal waters resulting from the drainage of upstream areas, usually after periods of exceptional rainfall

roll-over
see *barrier island roll-over*

rolling easement
an interest in land (by title or interpretation of the *Public Trust Doctrine*) in which a property owner's interest in preventing real estate from eroding or being submerged yields to the public or environmental interest in allowing wetlands or beaches to migrate inland

root mean square error
a measure of statistical error calculated as the square root of the sum of squared errors, where error is the difference between an estimate and the actual value; if the mean error is zero, it also equals the standard deviation of the error

salt marsh
a grassland containing salt tolerant vegetation established on sediments bordering saline water bodies where water level fluctuates either tidally or nontidally (see also *marsh*)

saltwater intrusion
displacement of fresh or ground water by the advance of salt water due to its greater density, usually in coastal and estuarine areas

sand bypassing
hydraulic or mechanical movement of sand from the accreting updrift side to the eroding downdrift side of an inlet or harbor entrance; the hydraulic movement may include natural movement as well as movement caused by man

seawall
a structure, often concrete or stone, built along a portion of a coast to prevent erosion and other damage by wave action, often it retains earth against its shoreward face; a seawall is typically more massive and capable of resisting greater wave forces than a *bulkhead*

sediment(s)
solid materials or fragments that originates from the break up of rock and is transported by air, water or ice, or that accumulates by other natural agents such as chemical precipitation or biological secretions; solid material that has settled from being suspended as in moving water or air

sediment broadcasting
a technique in which sediment from an external source is spread onto salt marshes to supply mineral material to enhance their growth

sediment supply
refers to the abundance or lack of sediment in a coastal system that is available to contribute to the maintenance or evolution of coastal landforms including both exposed features such as beaches and barrier islands, and underwater features such as the seabed

setback
the requirement that construction be located a minimum distance inland from tidal wetlands, tidal water, the primary dune line, or some other definition of the shore

shoal
a relatively shallow place in a stream, lake, sea, or other body of water; a submerged ridge, bank, or bar consisting of or covered by sand

shore
the narrow strip of land immediately bordering any body of water, especially a sea or large lake; the zone over which the ground is alternately exposed and covered by the tides or waves, or the zone between high and low water

shoreface
the narrow relatively steep surface that extends seaward from the beach, often to a depth of 30 to 60 feet, at which point the slope flattens and merges with the continental shelf

shoreline
the intersection of a specified plane of water with the shore or beach; on National Ocean Service nautical charts and surveys, the line representing the shoreline approximates the mean high water line

shoreline armoring (see *armoring*)
a method of shore protection that prevents shore erosion through the use of hardened structures such as seawalls, bulkheads, and revetments

shore protection
refers to a range of activities that focus on protecting land from inundation, erosion, or storm-induced flooding through the construction of various structures such as jetties, groins, or seawalls, or the addition of sediments to the shore (*e.g.*, beach nourishment)

significant wave height
the average height of the highest one-third of waves in a given area

sill
semicontinuous structures placed along the edge of a marsh in order to diminish wave erosion of the marsh, usually made of stone; similar to breakwaters, except that breakwaters are generally farther from the shore and have larger open spaces between them

soft shore protection
a method of shore protection that prevents shore erosion through the use of materials similar to those already found in a given location, such as adding sand to an eroding beach or planting vegetation whose roots will retain soils along the shore

spit
a fingerlike extension of the beach that was formed by longshore sediment transport; typically, it is a curved or hook-like sandbar extending into an inlet

spring high water
the average height of the high waters during the semi-monthly times of spring tides (occurs at the full and new moons)

storm surge
an abnormal rise in sea level accompanying a hurricane or other intense storm, whose height is the difference between the observed level of the sea surface and the level that would have occurred in the absence of the cyclone

subsidence
the downward settling of material with little horizontal movement; the downwarping of the earth's crust relative to the surroundings

submergence
a rise of the water level relative to the land, so that areas that were formerly dry land become inundated; it is the result either of the sinking of the land or a net rise in sea level

supratidal zone
the shore area just above the high-tide level

surf zone
the zone of the nearshore region where bore-like waves occur following breaking waves, extending from the point where waves break to the wet beach

taxon (plural, taxa)
a general term applied to any taxonomic element, population, or group irrrespective of its classification level

threshold
in climate change studies, a threshold generally refers to the point at which the climate system begins to change in a marked way because of increased forcing; crossing a climate threshold triggers a transition to a new state of the system at a generally faster rate

tidal datum
a base elevation used as a vertical from which to reckon heights or depths; called a tidal datum when defined in terms of a certain phase of the tide

tidal freshwater marsh
marsh along rivers and estuaries close enough to the coastline to experience significant tides by nonsaline water, vegetation is often similar to nontidal freshwater marshes

tidal inlet
an opening in the shoreline through which water penetrates the land, thereby providing a connection between the ocean and bays, lagoons, and marsh and tidal creek systems; the main channel of a tidal inlet is maintained by tidal currents

tidal range
the vertical difference between normal high and low tides often computed as the elevation difference between mean high water and mean low water; spring tide range is the elevation difference between spring high water and spring low water

tidal wetlands
wetlands that are exposed to the periodic rise and fall of the tides (see *wetlands*)

tide-dominated coast
coast where the morphology is primarily a product of tidal processes

tide gauge
the geographic location where tidal observations are conducted and consisting of a water level sensor, data collection and transmission equipment, and local bench marks that are routinely surveyed into the sensors

tidelands
lands that are flooded during ordinary high water, and hence available to the public under the *Public Trust Doctrine*

tipping point
a critical point in the evolution of a system that leads to new and potentially irreversible effects at a rate that can either be much faster or much slower than forcing

transgression
the spread or extension of the sea over land areas, and the consequent evidence of such advance; also, any change such as a rise in sea level that brings offshore deep-water environments to areas formerly occupied by nearshore, shallow-water environments or that shifts the boundary between marine and nonmarine deposition away from deep water regions

updrift
refers to the location of one section or feature along the coast in relation to another; often used to refer to the direction of net longshore sediment transport between two or more locations (*i.e.*, upstream)

wave-dominated coast
coast where the morphology is primarily a product of wave processes

wave refraction
the process by which a water wave, moving in shallow water as it approaches the shore at an angle, tends to be turned from its original direction so that the wave crest is more parallel to shore; also can refer to the bending of wave crests by currents

wave run-up
the upper levels reached by a wave on a beach or coastal structure, relative to still-water level

wet floodproofing

wetlands
specifies those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils; wetlands generally include swamps, marshes, bogs, and similar areas

wetland accretion
a process by which the surface of wetlands increases in elevation; see also *accretion, vertical*

wetland migration
a process by which tidal wetlands adjust to rising sea level by advancing inland into areas previously above the ebb and flow of the tides

Scientific Names—Chapter 5 Species

American black duck	*Anas rubripes*
American oystercatcher	*Haematopus palliatus*
Atlantic menhaden	*Brevoortia tyrannus*
Atlantic silverside	*Menidia spp.*
bald eagle	*Haliaeetus leucocephalus*
bay anchovy	*Anchoa mitchilli*
belted kingfisher	*Ceryle alcyon*
black rail	*Laterallus jamaicensis*
black skimmer	*Rynchops niger*
bladderwort	*Utricularia spp.*
blue crab	*Callinectes sapidus*
bluefish	*Pomatomus saltatrix*
brant	*Branta bernicla*
canvasback duck	*Aythya valisineria*
carp	*Family Cyprinidae*
catfish	*Order Siluriformes*
clapper rail	*Rallus longirostris*
common tern	*Sterna hirundo*
crappie	*Pomoxis spp.*
diamondback terrapin	*Malaclemys terrapin*
eastern mud turtle	*Kinosternum subrubrum*
elfin skimmer (dragonfly)	*Nannothemis bella*
fiddler crab	*Uca spp.*
Forster's tern	*Sterna forsteri*
fourspine stickleback	*Apeltes quadracus*
grass shrimp	*Hippolyte pleuracanthus*
great blue heron	*Ardea herodias*
gull-billed tern	*Sterna nilotica*
herring	*Clupea harengus*
horseshoe crab	*Limulus polyphemus*
Kemp's ridley sea turtle	*Lepidochelys kempii*
laughing gull	*Larus atricilla*
least bittern	*Ixobrychus exilis*
meadow vole	*Microtus pennsylvanicus*
minnows	*Family Cyprinidae*
mummichog	*Fundulus herteroclitus*
naked goby	*Gobiosoma bosci*
northern pipefish	*Syngnathus fuscus*
piping plover	*Charadrius melodus*
red drum	*Sciaenops ocellatus*
red knot	*Calidris canutus*
red-winged blackbird	*Agelaius phoeniceus*
ribbed mussel	*Geukensia demissa*

sand digger	*Neohaustorius schmitzi*
sand flea	*Talorchestia spp.*
sandpiper	*Family Scolopacidae*
sea lettuce	*Ulva lactuca*
sea trout	*Salvelinus fontinalis*
shad	*Alosa sapidissima*
sheepshead minnow	*Cyprinodon variegatus*
shiners	*Family Cyprinidae*
spot	*Leiostomus xanthurus*
striped anchovy	*Anchoa hepsetus*
striped bass	*Morone saxatilis*
striped killifish	*Fundulus majalis*
sundew	*Drosera spp.*
sunfish	*Family Centrarchidae*
threespine stickleback	*Gasterosteus aculeatus*
tiger beetle	*Cicindela spp.*
weakfish	*Cynoscion regalis*
white croaker	*Genyonemus lineatus*
white perch	*Morone americana*
widgeon grass	*Ruppia maritima*
willet	*Catoptrophorus semipalmatus*

ACRONYMS AND ABBREVIATIONS

A–P	Albemarle–Pamlico
ABFE	Advisory Base Flood Elevations
AEC	Areas of Environmental Concern (
ASFPM	Association of State Floodplain Managers
BFE	base flood elevation
CAFRA	Coastal Facility Review Act
CAMA	Coastal Area Management Act
CBRA	Coastal Barrier Resources Act
CCMP	Comprehensive Coastal Management Plan
CCSP	Climate Change Science Program
CORS	continuously operating reference stations
CRC	Coastal Resources Commission
CTP	Cooperative Technical Partnership
CVI	Coastal Vulnerability Index
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DDFW	Delaware Division of Fish and Wildlife
DEC	Department of Environmental Conservation
DEM	Digital elevation Model
DFIRM	digital flood insurance rate maps
FEMA	Federal Emergency Management Agency
FGDC	Federal Geographic Data Committee
FIRM	Flood Insurance Rate Maps
FIS	Flood Insurance Studies
GAO	General Accounting Office (1982)
GAO	General Accountability Office (2007)
GEOSS	Global Earth Observation System of Systems
GIS	geographic information system
GCN	greatest conservation need
GPS	Global Positioning System
HOWL	highest observed water levels
IDA	intensely developed area
IOOS	Integrated Ocean Observing System
IPCC	Intergovernmental Panel on Climate Change
IPCC CZMS	Intergovernmental Panel on Climate Change Coastal Zone Management Subgroup
LDA	limited development area
LMSL	local mean sea level
MHHW	Mean Higher High Water
MHW	Mean High Water
MLW	Mean Low Water
MLLW	Mean Lower Low Water
MSL	mean sea level
NAI	No Adverse Impact

NAS	National Academy of Sciences
NAVD	North American Vertical Datum
NCDC	National Climatic Data Center
NERRS	National Estuarine Research Reserve System
NDEP	National Digital Elevation Program
NED	National Elevation Dataset
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NHP	National Heritage Program
NHS	National Highway System
NLCD	National Land Cover Data
NMAS	National Map Accuracy Standards
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRC	National Research Council
NSSDA	National Standard for Spatial Data Accuracy
NTDE	National Tidal Datum Epoch
NWR	National Wildlife Refuge
NWS	National Weather Service
PORTS	Physical Oceanographic Real-Time System
RCA	resource conservation area
RMSE	root mean square error
RPA	resource protection area
SAV	submerged aquatic vegetation
SFHA	Special Flood Hazard Area
SRTM	Shuttle Radar Topography Mission
SWFL	still water flood level
TNC	The Nature Conservancy
USACE	United States Army Corps of Engineers
U.S. EPA	United States Environmental Protection Agency
U.S. FWS	United States Fish and Wildlife Service
U.S. DOT	United States Department of Transportation
USGS	United States Geological Survey
VA PBB	Virginia Public Beach Board
WRCRA	Waterfront Revitalization and Coastal Resources Act