

## 15405 Glossary

### 15406 Access, Lateral

15407 the right to walk or otherwise move *along* a shore, once someone has reached the shore.

15408

### 15409 Access, Perpendicular

15410 a legally permissible means of reaching the shore from dry land.

15411

### 15412 Access Point

15413 a place where anyone may legally gain access to the shore; usually a park, the end of a  
15414 public street, or a public path. A place where perpendicular access is provided.

15415

### 15416 Accretion, Lateral

15417 the gradual or imperceptible increase or extension of land by natural forces acting over a  
15418 long periods of time, as on a beach by the washing-up of sand from the sea or on a  
15419 floodplain by the accumulation of sediment deposited by a stream.

15420

### 15421 Accretion, Vertical

15422 the vertical accumulation of a sedimentary deposit; the increase in thickness of a  
15423 sediment body as a result of vertical sediment accumulation.

15424

### 15425 Active Margin

15426 type of continental margin coinciding with the edge of a lithospheric plate where two  
15427 plates are colliding. Because these margins are largely confined to the rim of the Pacific,  
15428 this type of margin is also referred to as a pacific margin.

15429

### 15430 Armoring

15431 the placement of fixed engineering structures, typically rock or concrete, on or along the  
15432 shoreline to mitigate the effects of coastal erosion and protect structures. These structures  
15433 include seawalls, revetments, bulkheads, and rip-rap (loose boulders).

15434

### 15435 Astronomical Tides

15436 tides that result from the gravitational forces of the moon and sun on ocean waters.

15437

### 15438 Avulsion

15439 the loss of lands bordering on the seashore by sudden or violent action of the elements,  
15440 perceptible while in progress; a sudden and rapid change in the course and channel of a  
15441 boundary river. Neither of these changes works a change in the riparian boundary.

15442

### 15443 Barrier Island

15444 a long, narrow coastal landform composed of sand that is essentially parallel to the shore  
15445 and is usually separated by wetlands; protects inland areas from ocean waves and storms.

15446

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15448

15449 **Barrier Island Roll-Over**

15450 the landward migration or landward transgression of a barrier island, accomplished  
15451 primarily over geologic time through the process of storm overwash.

15452

15453 **Barrier Migration**

15454 refers to the whole scale movement of a barrier island or barrier spit in response to sea-  
15455 level rise, changes in sediment supply, storm surges or waves, or some combination of  
15456 each of these factors.

15457

15458 **Barrier Raising**

15459 the equivalent of a beachfill operation in the area landward of the beach. This is rarely  
15460 done as a large-scale operation. Individual lot owners sometimes import fill to raise their  
15461 lots, especially if they are prone to flooding.

15462

15463 **Barrier Spit**

15464 an elongate, wave-built accumulation of sand that built through longshore sediment  
15465 transport and attached to the mainland or a larger sediment accumulation at the updrift  
15466 end. A barrier island or barrier beach that is connected at one end to the mainland.

15467

15468 **Beach**

15469 the unconsolidated material that covers a gently sloping zone, typically with a concave  
15470 profile, extending landward from the low water line to the place where there is a definite  
15471 change in material or physiographic form (such as a cliff), or to the line of permanent  
15472 vegetation (usually the effective limit of the highest storm waves); a shore of a body of  
15473 water, formed and washed by waves or tides, usually covered by sand or gravel, and  
15474 lacking a bare rocky surface.

15475

15476 **Beachfills**

15477 a technique in which sediment from an external source is placed on a beach to restore the  
15478 beach back to an earlier condition, but they can also raise the terrain as well. Putting sand  
15479 where there is none necessarily raises the elevation, but engineered beaches can be  
15480 designed to have a volume and a height that a natural beach would never attain. Also  
15481 known as beach nourishment.

15482

15483 **Beach Nourishment**

15484 the addition of sand, usually dredged from offshore, to an eroding shoreline to enlarge or  
15485 create a beach area, offering both temporary shore protection and recreational  
15486 opportunities.

15487

15488 **Berm**

15489 a geomorphic feature usually located at mid-beach and characterized by a sharp break in  
15490 slope, separating the backshore from the seaward sloping foreshore.

15491

15492 **Bluff**

15493 an elevated landform, such as a cliff, composed of partially consolidated and  
15494 unconsolidated sediments, typically sands, gravel, and/or clays.

- 15495 **Breakwater**  
15496 an offshore structure (such as a wall or jetty) that, by breaking the force of the waves,  
15497 protects a harbor, anchorage, beach or shore area.  
15498
- 15499 **Breaching**  
15500 formation of a channel through a barrier spit or island by storm waves, tidal action, or  
15501 river flow. Usually occurs after a greater than normal flow, such as during a hurricane.  
15502
- 15503 **Bulkhead**  
15504 a vertical wall along the shore designed either to create a vertical shore for navigation  
15505 purposes, or to prevent erosion in areas with minor wave action.  
15506
- 15507 **Coastal Plain**  
15508 any lowland area bordering a sea or ocean, extending inland to the nearest elevated land,  
15509 and sloping very gently seaward it may result from the accumulation of material.  
15510
- 15511 **Coastal Squeeze**  
15512 the narrowing, potentially to the point of failure or elimination, of an environmental  
15513 system (typically a beach or marsh) that is trapped between the transgressing sea on one  
15514 side and an impassable barrier (e.g., a sea wall or bulkhead) on the other.  
15515
- 15516 **Coastal Zone**  
15517 the area extending from the ocean inland across the region directly influenced by marine  
15518 processes.  
15519
- 15520 **Coastline**  
15521 the line that forms the boundary between the coast and the shore or the line that forms the  
15522 boundary between the land and the water.  
15523
- 15524 **Continental Shelf**  
15525 the gently sloping surface at the edge of the continent that extends from the beach to  
15526 where the steep continental slope begins, usually at depths greater than 300 ft.  
15527
- 15528 **Contour Interval**  
15529 the difference in elevations of adjacent contours on a topographic map. The smaller the  
15530 contour interval, the more precise the map.  
15531
- 15532 **Delta**  
15533 a low relief landform resulting from sediments deposited from rivers over time at the  
15534 coast.  
15535
- 15536 **DEM (Digital Elevation Model)**  
15537 a set of elevation estimates corresponding to a grid with a given cell size, usually 10 or 30  
15538 meters. The term often refers to the output of an interpolation model, not the model  
15539 itself.  
15540

- 15541 **Deposition**  
15542 the process of sediment settling out of the water column and being deposited.  
15543
- 15544 **Depth of Closure**  
15545 a theoretical depth below which sediment exchange between the nearshore (beach and  
15546 shoreface) and the continental shelf is deemed to be negligible.  
15547
- 15548 **Dike**  
15549 a wall generally of earthen materials designed to prevent the permanent submergence of  
15550 lands below sea level, tidal flooding of lands between sea level and spring high water, or  
15551 storm-surge flooding of the coastal floodplain.  
15552
- 15553 **Downdrift**  
15554 the direction of net longshore sediment transport at the coast over time.  
15555
- 15556 **Dredge and Fill**  
15557 used extensively before the 1970s to elevate estuarine shorelines to a height that allows  
15558 construction for homes. Commonly known as lagoon development, channels are dredged  
15559 through tidal wetlands to allow small boat navigation, and dredge spoil is placed on the  
15560 remaining marsh to raise the marsh high enough to allow development. Also known as  
15561 “canal estates” in some locations.  
15562
- 15563 **Dredge Spoil Disposal**  
15564 similar to sediment broadcasting but is a way of disposing of spoils from the dredging of  
15565 navigation channels onto nearby salt marshes in a way that also achieves environmental  
15566 benefits of helping nearby salt marshes to survive.  
15567
- 15568 **Dune**  
15569 a landform characterized by an accumulation of wind-blown sand, often vegetated, along  
15570 the coast.  
15571
- 15572 **Ebb Current**  
15573 the tidal current that occurs when the tide is going out.  
15574
- 15575 **Ebb-Tide Delta**  
15576 Curved to elongate-shaped shoal on the seaward side of an inlet formed by ebb-tide  
15577 currents (resulting from a falling tide) and modified by waves and flood-tide currents  
15578 (associated with a rising tide).  
15579
- 15580 **Erosion**  
15581 the loss of sediment, sometimes indicated by the landward retreat of a shoreline indicator  
15582 such as the water line, the berm crest, or the vegetation line. The loss occurs when  
15583 sediments are entrained into the water column and transported from the source.  
15584  
15585  
15586

- 15587 **Erosion-based setback**  
15588 a setback equal to an estimated annual erosion rate multiplied by a number of years set by  
15589 statute or regulation (e.g. 30 years).  
15590
- 15591 **Eustatic Sea-Level Rise**  
15592 results from changes in global sea level relative to a vertical datum. Eustatic changes  
15593 represent global sea level. The causes can be complex, such as ice sheet melting,  
15594 increasing temperature of surface waters, and increasing volume of seafloor due to  
15595 tectonic processes. – worldwide change in sea level resulting from a change in the  
15596 volume of the oceans or the size of the ocean basins.  
15597
- 15598 **Extra-Tropical Storm**  
15599 a cyclonic weather system that travels northward along the east coast of the United States  
15600 and Canada producing strong winds and waves from the northeast; see nor'easter.  
15601
- 15602 **Fetch**  
15603 the distance that a wave travels from the point of origin to the shore where it breaks. In  
15604 sheltered areas, the fetch corresponds to the distance across a span of water over which  
15605 wind-generated waves may grow before breaking on the opposing shore.  
15606 Distance over which the wind blows.  
15607
- 15608 **Flood Current**  
15609 the tidal current that occurs when the tide is rising.  
15610
- 15611 **Flood-Tide Delta**  
15612 horseshoe to multilobate shaped sand shoal located landward of a tidal inlet, formed by  
15613 flood tide currents (associated with rising tide) and modified by ebb-tide currents  
15614 (associated with falling tide). Some flood tide deltas are a product of storm processes.  
15615
- 15616 **Geologic Framework**  
15617 refers to the underlying geological setting, structure, and lithology (rock/sediment type)  
15618 in a given area.  
15619
- 15620 **Glacial Rebound**  
15621 uplift of land following deglaciation due to the mass of the ice being removed from the  
15622 land surface; an isostatic response of the lithosphere.  
15623
- 15624 **Global Sea Level Rise**  
15625 the worldwide average rise in mean sea level.  
15626
- 15627 **Groins**  
15628 an engineering structure normal to the coast, used to accumulate littoral sand by  
15629 interrupting longshore transport processes. A groin is often constructed of concrete,  
15630 timbers, steel, or rock.  
15631  
15632

- 15633 **Hydrodynamic Climate**  
15634 refers to the characteristics of nearshore or continental shelf currents in an area that  
15635 typically result from waves, tides, and weather systems.  
15636
- 15637 **Inlet**  
15638 the narrow waterway between two barrier islands that connects the sea and a lagoon.  
15639
- 15640 **Inundation**  
15641 refers to the submergence of dry lands when there is a rise of the sea surface.  
15642
- 15643 **Isostacy**  
15644 equilibrium condition whereby portions of the Earth's crust are compensated (floating)  
15645 by denser material below.  
15646
- 15647 **Jetty**  
15648 an engineering structure extending into the ocean, designed to prevent shoaling of a  
15649 channel by littoral materials and to direct and confine the stream or tidal flow. Jetties are  
15650 built at the mouths of rivers or tidal inlets to help stabilize a channel for navigation.  
15651
- 15652 **Lagoon**  
15653 shallow coastal body of seawater that is separated form the open ocean by a barrier or  
15654 coral reef. The term is commonly used to define the shore-parallel body of water behind a  
15655 barrier island or barrier spit.  
15656
- 15657 **Levee**  
15658 a wall generally of earthen materials designed to prevent riverine flooding after periods  
15659 of exceptional rainfall.  
15660
- 15661 **LIDAR (Light Detection and Ranging)**  
15662 a remote sensing instrument that is able to measure the elevation of the land surface with  
15663 a high degree of accuracy and precision. LIDAR relies on laser-based instruments that are  
15664 flown over the land surface from planes. LIDAR have been very useful in producing  
15665 high-quality data of regions surrounding the shoreline.  
15666
- 15667 **Littoral Cell**  
15668 sections of coast for which sediment transport processes can be isolated from the adjacent  
15669 coast. Within each littoral cell, a sediment budget can be defined that describes sinks,  
15670 sources, and internal fluxes (sediment transport).  
15671
- 15672 **Littoral Drift**  
15673 the sedimentary material moved in the littoral zone under the influence of waves and  
15674 currents.  
15675
- 15676 **Littoral Transport**  
15677 the movement of littoral drift in the littoral zone by waves and currents. Includes  
15678 movement parallel and perpendicular to the shore.

- 15679 **Littoral Zone**  
15680 used as a general term for the coastal zone influenced by wave action, or, more  
15681 specifically, the shore zone between high and low water marks.  
15682
- 15683 **Living Shoreline**  
15684 a type of shore protection that retains some or all of the environmental characteristics of a  
15685 natural shoreline.  
15686
- 15687 **Longshore Current**  
15688 an ocean current in the nearshore zone produced by waves approaching the coast at  
15689 various angles.  
15690
- 15691 **Longshore Transport**  
15692 sediment transport parallel to the shoreline, caused by longshore currents driven by  
15693 waves approaching obliquely to the shoreline. Movement of sediment along the coast in  
15694 the surf and breaker zones by wave suspension and the longshore current.  
15695
- 15696 **Marsh**  
15697 low-lying vegetated wetlands occurring in the upper intertidal to supratidal zone. Salt  
15698 marshes occur in protected environments such as behind barriers. In these regions salt  
15699 grasses and succulent plants colonize them.  
15700
- 15701 **Mean High Water**  
15702 a tidal datum. The average height of all high water heights observed over a 19-year  
15703 period.  
15704
- 15705 **Mean Sea Level**  
15706 average water level position measured over a 19-year period, which takes into account  
15707 natural tidal oscillations. Often computed by the arithmetic mean of observed hourly  
15708 heights over a 19-year period. Local mean sea level is determined relative to the local  
15709 land at a tide station. Global mean sea level is the average level of the global ocean.  
15710
- 15711 **Metes and Bounds**  
15712 the boundary lines and limits of a tract that is described and characterized by placing all  
15713 data in the tract description as opposed to other references such as maps or plats.  
15714
- 15715 **Mixed Energy Coast**  
15716 coast in which the morphology has developed through a combination of wave and tidal  
15717 processes.  
15718
- 15719 **Moral Hazard**  
15720 a circumstance in which insurance, lending practices, or subsidies designed to protect  
15721 against hazard induces people to take measures that increase the hazard.  
15722  
15723  
15724

- 15725 **Mudflat**  
15726 a level area of fine silt and clay along a shore alternately covered or uncovered by the tide  
15727 or covered by shallow water.  
15728
- 15729 **Nanotidal Wetlands**  
15730 wetlands that are irregularly flooded by wind-generated tides in estuaries with little or no  
15731 astronomic tides. These wetlands are often classified as nontidal wetlands; but like tidal  
15732 wetlands, their frequency of inundation is controlled directly by sea level.  
15733
- 15734 **National Geodetic Vertical Datum of 1929 (NGVD29)**  
15735 a fixed reference adopted as a standard geodetic datum for elevations determined by  
15736 leveling networks across the U.S. and sea-level measurements at 26 coastal tide stations.  
15737 Now superseded by North American vertical Datum (NAVD88).  
15738
- 15739 **National Tidal Datum Epoch (NTDE)**  
15740 the latest 19-year time period over which NOAA computes and publishes official tidal  
15741 datums and local mean sea-level elevations from tide station records. The latest NTDE is  
15742 1983-2001.  
15743
- 15744 **Nearshore Zone**  
15745 zone from the shoreline seaward to a point just beyond the breakers.  
15746
- 15747 **Nontidal wetlands**  
15748 wetlands that are not flooded by astronomic tides.  
15749
- 15750 **North American Vertical Datum of 1988 (NAVD88)**  
15751 a fixed reference for elevations determined by geodetic leveling, derived from a general  
15752 adjustment of the first-order terrestrial leveling networks of the United States, Canada,  
15753 and Mexico. NAVD88 supersedes NGVD29.  
15754
- 15755 **Northeaster (Nor'easter)**  
15756 type of extra-tropical cyclone that travels northward along the east coast of the United  
15757 States and Canada producing strong winds and waves from the northeast.  
15758
- 15759 **Ordinary High Water Mark**  
15760 a demarcation between the publicly owned land along the water and privately owned  
15761 land. Generally based on mean high water, the definition varies by state. Along beaches  
15762 with significant waves, it may be based on the line of vegetation, the water mark caused  
15763 by wave runup, surveys of the elevation of mean high water, or other procedures.  
15764
- 15765 **Overwash**  
15766 sediment that is transported from the beach across a barrier, and is deposited in an apron-  
15767 like accumulation along the backside of the barrier. Overwash usually occurs during  
15768 storms when waves break through the frontal dune ridge and flow toward the marsh or  
15769 lagoon.  
15770  
15771



- 15772 **Outwash plain**  
15773 braided stream deposit beyond the margin of a glacier. It is formed from meltwater  
15774 flowing away from the glacier, depositing mostly sand and fine gravel in a broad plain.  
15775
- 15776 **Passive Margin**  
15777 type of continental margin occurring in the middle of a lithospheric plate, and hence no  
15778 tectonic plate interaction and little tectonic activity. Because these margins are found  
15779 rimming the Atlantic Ocean, this type of margin is also termed an Atlantic margin.  
15780
- 15781 **Pocket Beach**  
15782 a beach usually small in a coastal re-entrant or between two littoral barriers.  
15783
- 15784 **Public Trust Doctrine**  
15785 a legal principle derived from English Common Law. The essence of the doctrine is that  
15786 the waters of the state are a public resource owned by and available to all citizens equally  
15787 for the purposes of navigation, hunting, fowling, and fishing, and that this trust is not  
15788 invalidated by private ownership of the underlying land.  
15789
- 15790 **Relative Sea-Level Rise**  
15791 the rate of sea-level change measured with respect to a specified vertical datum relative to  
15792 the land, which may also be changing elevation over time.  
15793
- 15794 **Revetment**  
15795 a sloped facing of stone, concrete, etc., built to protect a scarp, embankment, or shore  
15796 structure against erosion by wave action or currents.  
15797
- 15798 **River Diversions**  
15799 used to reestablish the floodplain of rivers that once supplied sediment to marshes.  
15800 Usually a river is not “diverted” to flow into the marsh; instead it is allowed to once again  
15801 flow onto the marsh as it used to. This is usually accomplished by breaching levees that  
15802 were once used to train the river or by allowing floodwaters to get onto the marshes in  
15803 another controlled way.  
15804
- 15805 **Riverine Flooding**  
15806 flooding of lands caused by the elevation of nontidal or tidal waters resulting from the  
15807 drainage of upstream areas, usually after periods of exceptional rainfall.  
15808
- 15809 **Roll Over**  
15810 see “barrier island roll-over.”  
15811
- 15812 **Rolling Easement**  
15813 an interest in land (by title or interpretation of the public trust doctrine) in which a  
15814 property owner’s interest in preventing real estate from eroding or being submerged  
15815 yields to the public or environmental interest in allowing wetlands or beaches to migrate  
15816 inland.  
15817

- 15818 **Root Mean Square Error**  
15819 a measure of statistical error calculated as the square root of the sum of squared errors,  
15820 where error is the difference between an estimate and the actual value. If the mean error  
15821 is zero, it also equals the standard deviation of the error.  
15822
- 15823 **Saltwater Intrusion**  
15824 increases in salinity of groundwater or surface water.  
15825
- 15826 **Sand Bypassing**  
15827 hydraulic or mechanical movement of sand from the accreting updrift side to the eroding  
15828 downdrift side of an inlet or harbor entrance. The hydraulic movement may include  
15829 natural movement as well as movement caused by man.  
15830
- 15831 **Sand Dunes**  
15832 mounds or ridges of sand. They are formed from sand this is transported and deposited by  
15833 the wind.  
15834
- 15835 **Sea-Level Rise**  
15836 in this report, relative sea-level rise. In other contexts, the term may refer to global sea-  
15837 level rise.  
15838
- 15839 **Seawall**  
15840 a structure separating land and water areas, primarily designed to prevent erosion and  
15841 other damage from wave action.  
15842
- 15843 **Sediments**  
15844 fine particles of soil, sand, rock, and similar materials.  
15845
- 15846 **Sediment Broadcasting**  
15847 a technique in which sediment from an external source would be spread onto salt marshes  
15848 to supply the mineral material needed to enhance their ability to survive.  
15849
- 15850 **Sediment Supply**  
15851 refers to the abundance or lack of sediment in a coastal system that is available to be  
15852 reworked and contribute to the maintenance or evolution of coastal landforms including  
15853 both exposed features such as beach and barrier islands as well as the seabed in a coastal  
15854 region.  
15855
- 15856 **Setback**  
15857 requirement that construction be located a minimum distance inland from tidal wetlands,  
15858 tidal water, the primary dune line, or some other definition of the shore.  
15859
- 15860 **Shore**  
15861 the narrow strip of land in immediate contact with the sea, including the zone between  
15862 high and low water lines. A shore of unconsolidated material is usually called a beach.  
15863  
15864

- 15865 **Shore Retreat**  
15866 managed or planned retreat allows the shoreline to advance inward unimpeded. As the  
15867 shore erodes, buildings and other infrastructure are either demolished or relocated inland.  
15868
- 15869 **Shoreface**  
15870 the narrow relatively steep surface that extends seaward from the beach, often to a depth  
15871 of 30-to-60 ft, at which point the slope flattens and merges with the continental shelf.  
15872
- 15873 **Shoreline**  
15874 the intersection of a specified plane of water with the shore or beach. The line delineating  
15875 the shoreline on national ocean service nautical charts and surveys approximates the Mean  
15876 High Water line.  
15877
- 15878 **Shoreline Armoring**  
15879 a method of shore protection that prevents shore erosion through the use of hardened  
15880 structures such as seawalls, bulkheads, and revetments.  
15881
- 15882 **Shore Protection**  
15883 an activity that protects land from inundation, erosion, or storm-induced flooding.  
15884
- 15885 **Significant Wave Height**  
15886 the average height of the highest one-third of waves in a given area.  
15887
- 15888 **Soft Shore Protection**  
15889 a method of shore protection that prevents shore erosion through the use of materials  
15890 similar to those already found in a given location, e.g., adding sand to an eroding beach,  
15891 planting vegetation whose roots will retain soils along the shore.  
15892
- 15893 **Spit**  
15894 a fingerlike extension of the beach that was formed by longshore sediment transport;  
15895 typically, it is a curved or hook-like sandbar extending to an inlet.  
15896
- 15897 **Spring High Water**  
15898 the average height of the high waters during the semi-monthly times of spring tides (full  
15899 and new Moons).  
15900
- 15901 **Storm Surge**  
15902 a rise above normal water level on the open coast due to the action of wind stress on the  
15903 water surface. Storm surge resulting from a hurricane also includes that rise in level due  
15904 to atmospheric pressure reduction as well as that due to wind stress.  
15905
- 15906 **Subsidence**  
15907 the downward settling of material with little horizontal movement; the downwarping of  
15908 the Earth's crust relative to the surroundings.  
15909  
15910

- 15911 **Submergence**  
15912 a rise of the water level relative to the land, so that areas that were formerly dry land  
15913 become inundated; it is the result either of the sinking of the land or a net rise in sea level.  
15914
- 15915 **Surf Zone**  
15916 the zone landward of the breaker zone where breaking waves create a turbulent form of  
15917 water toward the beach.  
15918
- 15919 **Tidal Inlet**  
15920 an opening in the shoreline through which water penetrates the land, thereby providing a  
15921 connection between the ocean and bays, lagoons, and marsh and tidal creek systems. The  
15922 main channel of a tidal inlet is maintained by tidal currents.  
15923
- 15924 **Tidal Range**  
15925 the vertical difference between normal high and low tides often computed as the  
15926 elevation difference between mean High Water and Mean Low Water. Spring tide range  
15927 is the elevation difference between spring high water and spring low water.  
15928
- 15929 **Tidal Wetlands**  
15930 wetlands that are flooded by high tides and exposed at low tides. In some context, this  
15931 term refers to vegetated wetlands (e.g., marshes and swamps) but not non-vegetated  
15932 wetlands such as tidal mudflats and beaches. In other contexts it may refer to both  
15933 vegetated and non-vegetated wetlands.  
15934
- 15935 **Tide-Dominated Coast**  
15936 coast where the morphology is primarily a product of tidal processes.  
15937
- 15938 **Tidelands**  
15939 lands that are flooded during ordinary high water, and hence available to the public under  
15940 the public trust doctrine.  
15941
- 15942 **Transgression**  
15943 the landward and upward repositioning of the water line as a result of sea-level rise. It  
15944 can occur by erosion, by simple immersion without a profile change, or by a combination  
15945 of erosion and immersion. Ecosystems can also transgress as the environment adjusts to  
15946 the new hydrologic conditions caused by the transgression of the water line.  
15947
- 15948 **Updrift**  
15949 the direction opposite that of the predominant movement of littoral materials.  
15950
- 15951 **Wave-Dominated Coast**  
15952 coast where the morphology is primarily a product of wave processes.  
15953
- 15954 **Wave Refraction**  
15955 the bending of waves as they come ashore, begin to feel bottom, and slow down.  
15956

- 15957 **Wave Run-Up**  
 15958 the upper levels reached by a wave on a beach or coastal structure, relative to still-water  
 15959 level.  
 15960  
 15961 **Wetland Accretion**  
 15962 a process by which the surface of wetlands increases in elevation. See Accretion,  
 15963 Vertical.  
 15964  
 15965 **Wetland Migration**  
 15966 a process by which tidal wetlands adjust to rising sea level by advancing inland into areas  
 15967 previously above the ebb and flow of the tides.  
 15968

<b>Scientific Names - Chapter 4 Species</b>	
American black duck	<i>Anas rubripes</i>
American oystercatcher	<i>Haematopus palliatus</i>
Atlantic menhaden	<i>Brevoortia tyrannus</i>
Atlantic silverside	<i>Menidia spp.</i>
bald eagle	<i>Haliaeetus leucocephalus</i>
bay anchovy	<i>Anchoa mitchilli</i>
belted kingfisher	<i>Ceryle alcyon</i>
black rail	<i>Laterallus jamaicensis</i>
black skimmer	<i>Rynchops niger</i>
bladderwort	<i>Utricularia spp.</i>
blue crab	<i>Callinectes sapidus</i>
bluefish	<i>Pomatomus saltatrix</i>
brant	<i>Branta bernicla</i>
canvasback duck	<i>Aythya valisineria</i>
carp	<i>Family Cyprinidae</i>
catfish	<i>Order Siluriformes</i>
clapper rail	<i>Rallus longirostris</i>
common tern	<i>Sterna hirundo</i>
crappie	<i>Pomoxis spp.</i>
diamondback terrapin	<i>Malaclemys terrapin</i>
eastern mud turtle	<i>Kinosternum subrubrum</i>
elfin skimmer (dragonfly)	<i>Nannothemis bella</i>
fiddler crab	<i>Uca spp.</i>
Forster's tern	<i>Sterna forsteri</i>
fourspine stickleback	<i>Apeltes quadracus</i>
grass shrimp	<i>Hippolyte pleuracanthus</i>
great blue heron	<i>Ardea herodias</i>
gull-billed tern	<i>Sterna nilotica</i>
herring	<i>Clupea harengus</i>
horseshoe crab	<i>Limulus polyphemus</i>
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>

laughing gull	<i>Larus atricilla</i>
least bittern	<i>Ixobrychus exilis</i>
meadow vole	<i>Microtus pennsylvanicus</i>
minnows	Family Cyprinidae
mummichog	<i>Fundulus heteroclitus</i>
naked goby	<i>Gobiosoma boscii</i>
northern pipefish	<i>Syngnathus fuscus</i>
piping plover	<i>Charadrius melodus</i>
red drum	<i>Sciaenops ocellatus</i>
red knot	<i>Calidris canutus</i>
red-winged blackbird	<i>Agelaius phoeniceus</i>
ribbed mussel	<i>Geukensia demissa</i>
sand digger	<i>Neohaustorius schmitzi</i>
sand flea	<i>Talorchestia spp.</i>
sandpiper	Family Scolopacidae
sea lettuce	<i>Ulva lactuca</i>
sea trout	<i>Salvelinus fontinalis</i>
shad	<i>Alosa sapidissima</i>
sheepshead minnow	<i>Cyprinodon variegatus</i>
shiners	Family Cyprinidae
spot	<i>Leiostomus xanthurus</i>
striped anchovy	<i>Anchoa hepsetus</i>
striped bass	<i>Morone saxatilis</i>
striped killifish	<i>Fundulus majalis</i>
sundew	<i>Drosera spp.</i>
sunfish	Family Centrarchidae
threespine stickleback	<i>Gasterosteus aculeatus</i>
tiger beetle	<i>Cicindela spp.</i>
weakfish	<i>Cynoscion regalis</i>
white croaker	<i>Genyonemus lineatus</i>
white perch	<i>Morone americana</i>
widgeon grass	<i>Ruppia maritima</i>
willet	<i>Catoptrophorus semipalmatus</i>

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