Protocol	Functions/ Habitat	Purpose
Sediment size	Invertebrate and forage fish spawning habitat Beach structure	The physical structure of the beach may change depending on such actions as winter storms, restoration activities, and shoreline armoring. Sediment size can affect the type of invertebrates that live within and on top of the substrate. Beach spawning forage fish (surf smelt, sand lance) also target specific sediment sizes.
Beach profile	Beach structure	Characterizing the beach profile can give valuable information on the physical structure of the beach. This may change depending on winter storms, restoration activities, and shoreline armoring. The variability in beach topography and slope is indicative of physical forces acting on the beach and could affect associated algae and invertebrates.
Eelgrass	Lower beach habitat	Eelgrass beds are an important ecological component of the nearshore, providing food and shelter for juvenile salmon and other fishes, crabs, small invertebrates, birds, and spawning habitat for herring. Eelgrass is also an important fixer of carbon as a primary producer. Eelgrass roots stabilize sediments, and the blades provide structure for microalgae.
Beach wrack	Marine-terrestrial connectivity Upper beach habitat	Characterizing beach wrack can give valuable information on the habitat of the upper beach and marine-terrestrial connectivity. This may change depending on shoreline armoring, source material alterations, and winter storms. Beach wrack provides food and shelter for many invertebrates, and foraging habitat for shorebirds.
Logs and riparian vegetation	Marine-terrestrial connectivity Upper beach habitat	Characterizing logs and riparian vegetation can give valuable information on the habitat of the upper beach and marine-terrestrial connectivity. Logs provide shelter for many invertebrates such as beach-hopper amphipods, foraging habitat for shorebirds, and riparian vegetation provides habitat for terrestrial insects that are prey resources for juvenile salmon.
Vegetation	Marine-terrestrial connectivity Upper beach habitat	Characterizing shoreline vegetation such as dunegrass and willows can give valuable information on the habitat of the upper beach and marine-terrestrial connectivity. This may change depending on shoreline armoring, development in the uplands, and new plantings of vegetation at restoration sites. Vegetation stabilizes the shoreline and provides habitat for terrestrial insects that are prey resources for juvenile salmon.
Birds	Bird habitat	Characterizing the species, number, and behavior of birds along the shoreline gives valuable information on the use of beach areas. Shorebirds may respond to habitat characteristics such as riparian vegetation, wrack on the upper beach, or shoreline armoring and development. Foraging behavior may be particularly indicative of the health of a beach.
Insects	Marine-terrestrial connectivity Food web prey availability	Terrestrial insects are a good indicator of shoreline conditions and an important prey component for juvenile salmon. Using passive fallout traps to characterize the insect community simulates insects that could fall on the surface of the water and be available as fish prey. Insect communities may vary depending on the amount of riparian vegetation, shoreline armoring, and other habitat features.
Wrack invertebrates	Food web prey availability Upper beach habitat	Invertebrates associated with beach wrack are a good indicator of upper beach conditions and an important prey component for shorebirds and other animals. Invertebrate abundances may vary depending on the amount of beach wrack and logs, substrate type, shoreline armoring, and other habitat features.
Epibenthic invertebrates	Food web prey availability Lower beach habitat	Epibenthic invertebrates can be good indicators of beach conditions and certain species are important prey for juvenile salmon. They live at the interface of bottom sediments and the water and their populations are affected by sediment size, presence of eelgrass and algae, and stressors such as shoreline development.
Surface epifauna and algae	Food web prey availability Lower beach habitat	Characterizing surface epifauna and algae that live on intertidal substrates can give valuable information on the habitat of the lower beach. They are important components of the nearshore food web, and are good indicators of biodiversity and physical parameters.
Benthic invertebrates	Food web prey availability Lower beach habitat	Characterizing benthic invertebrates that live in intertidal sediments can give valuable information on the habitat of the beach. Benthic invertebrates are important components of the nearshore food web, and are good indicators of biodiversity and physical parameters. Invertebrate assemblages may change depending on shoreline armoring, sediment types, and movement of sediments.
Forage fish eggs	Forage fish spawning habitat Upper beach habitat	Surf Smelt and Pacific sand lance are both beach spawners, depositing their eggs in the sediments on the upper beach. Specific sediment sizes and tidal elevations are targeted by these fish, and successful spawning can be an indicator of a healthy beach. These fish are an important part of the food web, being preyed upon by larger fish (e.g., salmon), marine mammals, and birds.
Fish	Fish habitat	Improving habitat for out-migrating juvenile salmon is often a goal of nearshore restoration efforts. Direct observation of fish use of a site is desirable to assess function of the site. Surface snorkel surveys are recommended as an observational method that can generate data without handling fish. Observations are focused on juvenile salmon abundance, feeding behaviors, and records of other nearshore fishes.
Photo points	Habitat conditions	Taking photographs during sampling can be important to document habitat conditions that may change over time. Habitat conditions include natural (sediments/vegetation) and constructed parameters (bulkheads/docks). They may change depending on planned activities such as plantings of vegetation and construction of shoreline armoring, and unplanned activities such as sediment and log movement due to winter storms and landslides.