SAN FRANCISCO BAY SUBTIDAL HABITAT GOALS REPORT

Appendix 1-4: Glossary of Terms

I. Glossary of Terms

Planning Definitions:

Vision: A general summary of the desired state or ultimate condition of the project area or scope that a project is working to achieve. A good vision statement meets the criteria of being relatively general, insightful and brief.

Goal: A goal is an observable and measurable end result having one or more strategies to be achieved within a more or less fixed timeframe. Goals should be broad but achievable, relevant and time limited. Goals are generally strategic in nature, and may be thought of as "a dream with a deadline." Because a goal is at a high-level, it may take more than one objective to achieve. It may take many objectives over a long period of time to achieve the goal.

Objective: Measurable, defined, operational, simple steps, and specific. Objectives contribute to the fulfillment of specified goals. The objective should be written at a lower level than a goal, so that it can be evaluated at the conclusion of a goal to see whether it was achieved or not.

- Note that the objective is much more concrete and **specific** than the goal statement.
- The objective is **measurable** in terms cost, speed, quantity and / or quality.
- We must assume that the objective is **achievable** and **realistic**.
- The objective is **time-bound**, and should be completed by a specific date.

Action: Actions break the work towards an objective into manageable, measurable actions you will take.

Science: For the Subtidal Habitat Goals Project, the term science is meant to include all forms of information gathering, including mapping, monitoring, assessments, and research.

Protection: For the Subtidal Habitat Goals Project, the term protection is meant to include both management of human-induced stressors and protection of habitats or ecosystem functions.

Restoration: Restoration is defined as actions taken in a converted or degraded natural habitat that result in the reestablishment of ecological processes, functions, and biotic/abiotic linkages and lead to a persistent, resilient system integrated within its ecological landscape. For the Subtidal Habitat Goals Project, the term restoration is also meant to include actions such as create, enhance, remediate and rehabilitate.

Habitat Definitions:

Soft-Bottom and Other Mobile Substrates: Soft-bottom habitat includes sediments that range in size from clay (0.001 - 0.0039 mm) to silt (0.0039 - 0.0625 mm), and sand (0.0625 - 2 mm). "Mud" refers to clay and silt together. All of these particles can readily be moved by tidal currents. Larger particles such as gravel (2 - 64 mm) and cobble (64 - 256 mm), are somewhat mobile and are also included in this category. Deposits of bivalve shells can be mobile and are also considered in this section.

These substrates are characterized by their lack of large, stable surfaces for plant and animals to attach themselves to. Although they may shift due to currents and tides, they still provide habitat for invertebrates, fish, mammals, and birds. This sediment harbors most of the estuary's benthic organisms (but probably not most of its species), serves as a reservoir for organic matter, nutrients, and contaminants, and provides microenvironments to support most of the biogeochemical transformations in the estuary.

Sand: Sediment dominated by particles 0.062 to 2 mm in diameter. The ecosystem services supported by sand habitat are not readily apparent. Nevertheless some species such as halibut may use mainly sand habitats, and sand habitats provide some similar functions as unconsolidated mud bottom habitats for invertebrate epifauna and infauna, fish, birds, and marine mammals, and provide for bed load transport.

Rocky Habitat: Hard bottom substrate includes boulders, rock face outcrops, and low relief rock. This also includes sediment dominated by pebbles, cobbles, and gravel (particles 2 to 256 mm in diameter). These habitats are found primarily in Central San Francisco Bay, where soft sediment has been scoured by tidal flow. Hard substrate provides habitat for an assemblage of marine algae, invertebrates, and fishes, and foraging areas for birds and marine mammals.

Artificial Substrate: Artificial substrates include both structures that are in use and those that are no longer used. Artificial substrates include pilings, docks (stationary and floating), boat ramps, vessels of all kinds, shoreline riprap and concrete or other hard, dumped debris, breakwaters, jetties, pipelines, cables, piers and wharfs, duck blinds, buoys, moorings, anchors, sea walls and bulkheads, transmission towers and power lines, power plants, outfall structures, houseboats, oyster shells used in restoration projects (including bags, pallets, individual shells, hanging lines, etc.), and miscellaneous large debris (such as shopping carts, tires, and dumped equipment).

Shellfish Beds: The Subtidal Habitat Goals Project recognizes five types of shellfish that may occur in San Francisco Bay: native Olympia oysters (*Ostrea lurida*), native California mussels (*Mytilus californianus*), hybridized Bay mussels (*Mytilus trossulus/galloprovincialis*), non-native ribbed horsemussel (*Geukensia demissa*), and non-native green bagmussel (*Musculista senhousia*). Individual shellfish do not constitute shellfish habitat, rather several individuals must form a bed that acts as a habitat feature.

Macroalgal Beds: The Subtidal Habitat Goals Project recognizes four types of macroalgae that form beds and occur as floating drift in San Francisco Bay, including *Ulva* (sea lettuce), *Gracilaria pacifica* (red spaghetti alga or agar), *Fucus gardneri* (rockweed), and non-native *Sargassum muticum* (brown alga).

Submerged Aquatic Vegetation**:** The Subtidal Habitat Goals Project recognizes three types of Submerged aquatic vegetation (SAV) that form beds, including *Zostera marina* (eelgrass), *Ruppia maritima* (widgeon grass) and *Potamogeton pectinatus* (sago pondweed).

Water Column: The water covering a submerged substrate, including all volume between the substrate and the water surface.

General Definitions:

Activities: Human work, deeds, or actions that may result in stressors to subtidal habitat.

Adaptive Management: A process originally developed to manage natural resources in large scale ecosystems by deliberate experimentation and systematic monitoring of the results. More broadly, it is the incorporation of a formal learning process into conservation action. Specifically, it is the integration of design, management, and monitoring to systematically test assumptions in order to learn and adapt.

Benthic: In close relationship with the substrate bottom of the bay or ocean.

Certainty: Level of confidence surrounding a judgment or determination. For the Subtidal Habitat Goals Project, an individual or group of individuals must be at least 50% confident to make a determination or judgment. Certainty above 50% is then described as High, Medium, or Low.

Conservation Action Planning (CAP): The Nature Conservancy's process for helping conservation practitioners develop strategies, take action, measure success, and adapt and learn over time.

Current Condition: An assessment of the current "health" of a habitat as expressed through the most recent measurement or rating of an evaluator for a key function.

Desired Condition: A measurement or rating of an evaluator for a key function that describes the level of "health" that the project intends to achieve.

Evaluators: Measurable entities related to a specific function, and used to assess the current and desired condition of a habitat function.

Function: Ecological role or job provided by a given habitat.

Habitat: Aquatic areas and their associated physical, chemical, and biological properties that are used by organisms during all or a portion of their life cycle, including the water column, unconsolidated sediment, hard bottom, structures underlying the waters, submerged aquatic vegetation, native shellfish, and associated biological communities.

Habitat Diversity: Variation of habitat types within a given ecosystem. Measures of diversity account for both abundance and evenness of habitat types.

Irreversibility: One of the criteria used to rate the impact of a stressor; the degree to which the habitat can be restored or recovered from the stress. Typically includes an assessment of both the technical difficulty and the economic and/or social cost of restoration.

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 High Water (MHW): A tidal datum. The average of all the high water heights observed over the National Tidal Datum Epoch.

Mean Higher High Water (MHHW): A tidal datum. The average of the higher high water height of each tidal day observed over the National Tidal Datum Epoch.

Pelagic: Within the water column of the bay or ocean.

Scope: (in the context of stressor evaluation): One of the measurements used to rate the impact of a stressor. Most commonly defined spatially as the proportion of each habitat occurrence likely to be affected by a threat within 10 years.

Severity: One of the criteria used to rate the impact of a stressor. The level of damage to the conservation target that can reasonably be expected within 10 years under current circumstances (i.e., given the continuation of the existing situation).

Species Richness: The number of species within a biological community.

Stakeholders: Individuals, groups, or institutions who have a vested interest in the natural resources of the project area and/or who potentially will be affected by project activities and have something to gain or lose if conditions change or stay the same.

Stressors: Human-induced factors that directly or indirectly degrade habitats. The Subtidal Habitat Goals Project has identified 4 major stressors: input of sediment to the water column, input of contaminants, direct disturbance or removal of benthic habitat, placement of structures in habitats. The project also considers climate change, freshwater inflow, sediment supply, invasive species, and oil spill stressor impacts.

Sustainable: a method of harvesting or using a resource so that the resource is not depleted or permanently damaged.