Genetic Inventory of Marine Organisms of the Salish Sea
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Why conduct a genetic inventory?
Our goal is to identify stocks, i.e., genetically distinctive groups of a species that may have unique evolutionary and/or adaptive back-grounds. Stocks may respond differently to environmental or man-made changes whether sudden or gradual. A multi-species inventory will identify any concordant zoogeographic boundaries and centers of diversity. These data are used to
• monitor ecosystem response to environmental change
• help select representative stocks for experimental work re. ocean acidification and climate change
• contribute to managing the ecosystem for intra-/inter-species diversity in marine protected areas (MPA).

Genetics Primer
• The goal is to identify collections of organisms that have the same (statistically non-significant) frequency for a (suite of) gene character(s).
• The patterns of similarity are illustrated with a "tree" diagram where similar animals share a branch.

(Available pie diagrams below illustrate the frequency of two genetic characters in each collection of 100 animals.)

Available Results from studies that have examined the null hypothesis—populations of a species in the Salish Sea are panmictic, i.e., one interbreeding population.

Patterns of Variability
Isolation by distance...
...hake
...rockfish, both species
-geoduck clam
Local ("gem") populations
...Dungeness crab
...Pacific herring
Low-level chaos
...sea urchin
...geoduck clam

To-do List: Data Gaps
• all the principal forage fish (Pacific herring, sand lance, and surf smelt) as they are a critical portion of the marine food chain
• eel grass inhabitants (sculpins, surfer perch, sand dollar, kelp crab, Pandalus shrimp) as these animals constitute a key marine nursery area
• eel grass Zostera (see above)
• pelagic invertebrates (squid and moon jellyfish) that are affected directly by changes in water chemistry and freshwater input
• "flats and rats," i.e., flatfishes and ratfish as they are the dominant biomass in Puget Sound (Palsson et al 1997, WDFW)
• six gill shark

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