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| --- | --- | --- | --- | --- | --- |
| ***Drivers*** | ***Variables*** | ***Total # of Connected Nodes*** | ***Number of Influencing Nodes*** | ***Minimum Nodal Distance to Survival*** | ***Description*** |
| *Environmental* | Sunlight | 4 | 2 | 3 | Solar radiation |
|  | Winter Storms | 5 | 1 | 4 | Commonly occurring winter storm events |
|  | Precipitation | 5 | 2 | 3 | Annual total precipitation |
|  | Upwelling | 5 | 2 | 3 | Oceanographic upwelling driven by wind and currents in the coastal waters |
|  | Stratification | 8 | 6 | 3 | Formation of layers in the water column resulting from ocean conditions |
|  | Temperature | 11 | 5 | 2 | Water temperature within the Salish Sea (generalized, but upper portion of the water column where salmon occur) |
|  | River Flow | 4 | 2 | 2 | Annual streamflow |
|  | Turbidity | 4 | 3 | 1 | Relative clarity of the water within the Salish Sea |
|  | Dissolved Oxygen | 9 | 7 | 2 | Amount of oxygen available in Salish Sea waters |
| *Production* | Nutrients | 5 | 5 | 4 | Total nutrients (generalized to be anthropogenic sources of N) |
|  | Microplankton | 9 | 6 | 4 | Dinoflagellates, e.g. *Noctiluca* spp. |
|  | Microbial Detritivores | 7 | 6 | 3 | Generalized microbes, including bacteria |
|  | Diatoms | 11 | 9 | 3 | Autotrophic phytoplankton |
| *Food web* | Zooplankton | 10 | 9 | 2 | Energy-rich zooplankton (e.g., copepods, krill, amphipods) |
|  | Gelatinous Zooplankton | 6 | 5 | 3 | Zooplankton including ctenophores, medusae, and salps |
|  | Forage Fish | 9 | 9 | 2 | Herring, smelt, and other small-bodied fishes |
|  | Ichthyoplankton | 7 | 6 | 2 | Immature stages of fish, residing in the water column |
|  | Other Salmon | 10 | 10 | 2 | Chum, Pink, and Sockeye Salmon |
|  | Piscivorous Fish | 7 | 6 | 1 | Any fish-eating fish; characterized by gadids and scorpaenids in the Salish Sea |
|  | Piscivorous Birds | 5 | 4 | 1 | Any fish-eating bird, such as cormorants and auklets |
|  | Marine Mammals | 7 | 6 | 1 | Generally harbor seals, sea lions, orcas, and dolphins |
| *Anthropogenic* | Hatcheries | 4 | 1 | 2 | Production, through human intervention, of large numbers of juvenile fish through breeding programs, specifically salmon |
|  | Harvest | 2 | 1 | 3 | Catch of fish, specifically Steelhead, Coho, and Chinook salmon; generalized to include both recreational and commercial take |
|  | Habitat Loss | 5 | 1 | 2 | Loss on intertidal and subtidal habitats for spawning or rearing |
|  | CO2 | 5 | 5 | 4 | Input of carbon dioxide via anthropogenic activities |
|  | Global Warming | 3 | 1 | 2 | The general warming trend of the earth’s atmosphere |
|  | Contaminants | 6 | 1 | 2 | Exposure to common toxins like PCBs, PBDE, etc., as well as contaminants of emerging concern (e.g. pharmaceuticals) |
|  | Disease | 3 | 2 | 2 | Exposure to diseases such as *Nanophyetus* and bacterial kidney disease |
| *Salmon Traits* | Residence Time | 6 | 5 | 1 | The amount of time an outmigrating salmon spends in the Salish Sea |
|  | Size | 6 | 5 | 1 | Overall size of salmon |
|  | Fitness | 7 | 6 | 1 | Overall health of salmon |
|  | Abundance | 11 | 4 | 2 | Number or biomass of salmon |
|  | Survival | 8 | 7 | - | Successful completion of the marine life stage by individuals of a population |