What can the Ocean Health Index tell us about Oceanography and Climate Change?

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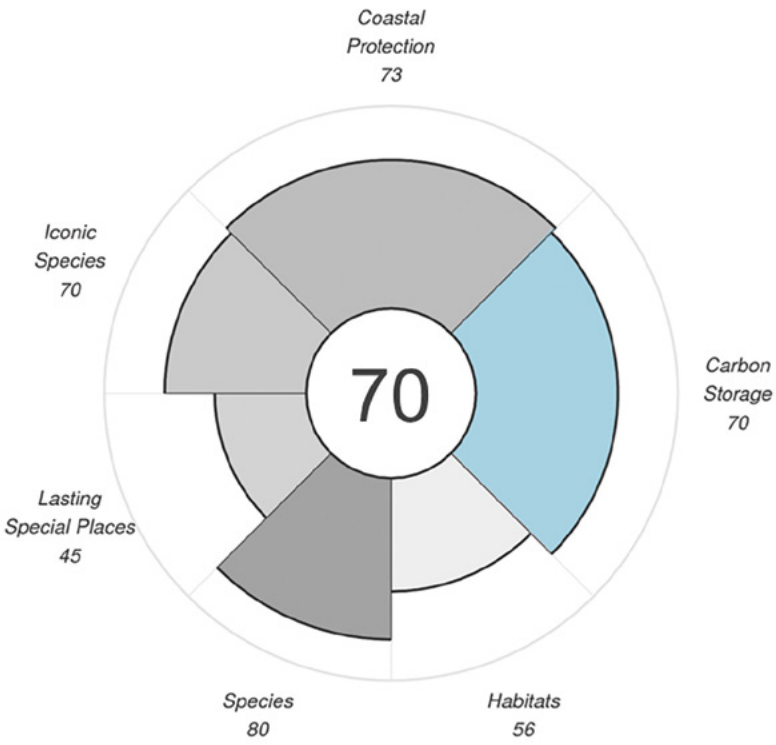
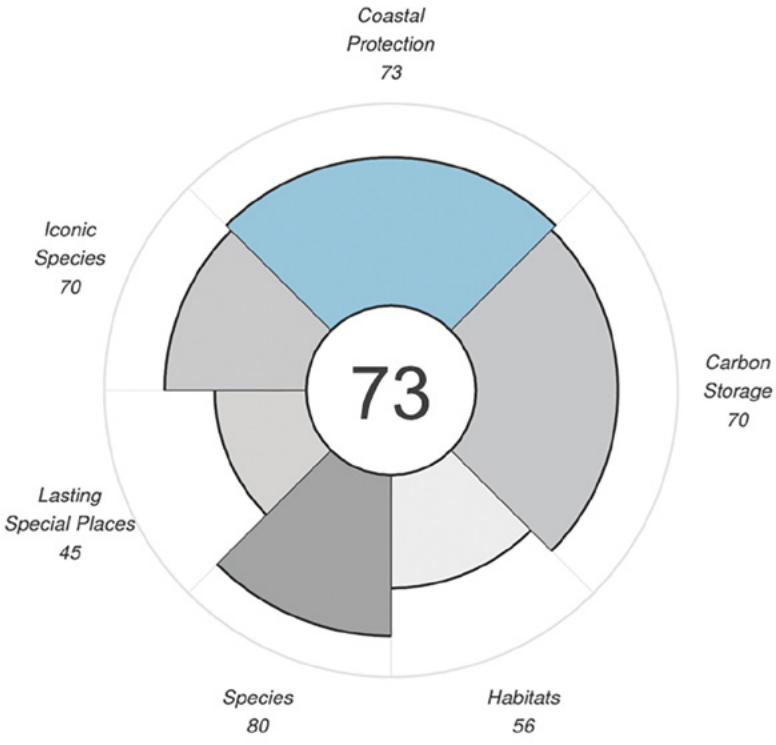
Two goals identified by OHI - Coastal Protection and Carbon Storage - fit into the Oceanography and Climate Change theme.

How did the Ocean Health Index define Coastal Protection and Carbon Storage?

Coastal Protection: A healthy ocean provides protection of our coasts from storm damage by living natural habitats, such as salt marshes and coastal forests.

Carbon Storage: A healthy ocean provides long-term storage of carbon in natural marine and coastal habitats, such as salt marshes and coastal forests.





Howe Sound scored 73 out of 100 for coastal protection and 70 out of 100 for carbon storage.

How did the Ocean Health Index measure Coastal Protection and Carbon Storage?

Coastal Protection: We measured how well the ocean and coasts are providing coastal protection in Howe Sound by measuring the condition of living habitats around the region that are known to provide coastal protection to natural and human environments. For this goal we were able to include the status of salt marshes and coastal forests. We then weighted the condition of each of the habitats by how much coastal protection they provide relative to one another; in this case coastal forests provide relatively more protection than salt marsh. This allowed us to put more value on habitats that provide more coastal protection benefit. Due to local data and information limitations we were not able to include seagrasses in this calculation.

Carbon Storage: We measured how well the ocean and coasts are providing carbon storage in Howe Sound by measuring the condition of carbon storing habitats around the Sound. For this goal we were able to include the status of salt marshes and coastal forests. We then weighted the condition of each of the habitats by how much carbon they are able to store relative to one another. This allowed us to put more value on habitats that provide more carbon storage benefit. Due to data and information limitations we were not able to include seagrasses in this calculation, but hope to be able to include them in future reports because they are an important contributor to Carbon Storage in the marine environment.

Salt Marshes: To assess the conservation status of salt marshes we used land-cover change data to look at how much saltmarsh has been lost in Howe Sound through time. Howe Sound is known to have lost ~30% of its salt marsh area before 1990[1] and we were able to use land-use change data to look in detail at how much has been lost since 1990. We used land-cover data for 2010 (last available year) and then included restoration efforts conducted since 2000 for our final calculations. This allowed us to look at net change in salt marsh coverage and we based our final calculations on these values. The target we used that would achieve a perfect score was zero loss of salt marsh in Howe Sound.

Coastal Forests: To measure how well coastal forests are being conserved in the region we used land-use change data spanning from 1990 to 2010. By using these data we were able to look at how much of the coastal forest was lost to development across Howe Sound since 1990. To achieve a perfect score for the conservation of this habitat our target was no loss in coastal forest habitat since 1990.

[1] Levings, C.D. and R.M. Thom. 1994. Habitat Changes in Georgia Basin: Implications for resource management and restoration. In Review of the Marine Environmental and Biota of Strait of Georgia, Puget Sound and Juan de Fuca Strait: Proceedings of the BC/Washington Symposium of the Marine Environment, January 13 and 14 1994. Pp. 330-351. Canadian Technical Report Fish. Aquat. Sci. no 1948.