Kelp

Kelp refers to several types of brown algae. They range in depth from mid intertidal to subtidal zones. The BC coast is known to host 27 species of kelp, including the largest known marine algae, bull kelp (*Nereocystis spp.*) and giant kelp (*Macrocystis spp.*).[1]

Kelp beds in temperate areas are some of the most biologically productive ecosystems in the world; they provide complex and essential habitat for a large quantity of organisms. In particular, they provide spawning and nursery habitat for fish and invertebrates, and provide carbon to nearshore ecosystems.[1,2]

Kelp beds provide complex and essential habitat for many different organisms

Kelp beds have been identified as major nearshore habitats due to their productivity and sensitivity to human activities.[1,2] Kelp is sensitive to changes in water temperature, nutrient and chemical levels, and reduction of water quality and clarity.[3]

Notable species that use kelp beds include crabs, sea urchins, abalone, sand lance, surf smelt, rockfish, herring and salmon. Kelp beds are used in many different species life stages. For example, herring eggs are found among kelp; lingcod larvae settle onto bottom substrates near beds in inshore areas; northern abalone use kelp beds for spawning, rearing juveniles and foraging; invertebrates, and juvenile salmon and herring use them for cover and shelter from predators; and sea otters use them for resting and foraging. Kelp also provides habitat for black rockfish.[1,2]

Photo: Neil Davis

Bull kelp. *Photo: Neil Davis*

Kelp beds slow local currents, generate turbulence and thereby increase the amount of phytoplankton drifting in the water, a fundamental component of the marine food web.[2]

Large kelp species are the most harvested aquatic algae in BC, largely to support the spawn on kelp fishery.[4]

Kelp Mapping

Most of the PNCIMA coast has not been surveyed for kelp, so absence on the map does not necessarily signify absence of kelp.[1] Most historic kelp assessments have focused on commercially harvested bull and giant kelp species, for which the total standing stock is approximately one million tonnes.[3]

The data in the accompanying map are presented as "kelp". This includes bull kelp and giant kelp but also includes data sets in which there was no indication of species.

Kelp. *Photo: Hilary Ibey*

Data displayed on the accompanying map include kelp data compiled by the BCMCA in 2009 as well as data from the Province of BC's Shorezone Mapping System. BCMCA data were collected, merged, and dissolved by species using the following sources: provincial (Land Use Coordination Office) kelp data based on aerial overflights and Canadian Hydrographic Service chart data, Living Oceans Society kelp data, and Parks Canada Pacific Rim data. Data from the Province of BC's Shorezone Mapping System are displayed using bioband shoreline units where either giant kelp or bull kelp were observed and coverage was rated as either 'patchy' (visible in less than 50% of the shoreline unit) or 'continuous' (visible in greater than 50% of the shoreline unit).

Data displayed on the map were collected over a wide date range (BCMCA: 1897 to 2008; Shorezone Mapping System: 1979-2008) by many people for different purposes, using different survey techniques and methods. Survey effort is not consistent throughout all areas and some species tend to be under-represented by some survey methods. Areas in which no data are displayed may not have been surveyed; these data gaps are not necessarily indicative of an absence of kelp.[5]

Material presented is drawn from the following, including literature reviews which contain primary references:
1 Lucas, B.G., Johannessen, D. and Lindstrom, S. 2007. Appendix E: Marine plants. In Ecosystem overview: Pacific North Coast Integrated Management Area (PNCIMA). Edited by Lucas, B.G., Verrin, S., and Brown, R. Can. Tech. Rep. Fish. Aquat. Sci. 2667: iv + 23 p.
2 Lucas, B.G., Verrin, S. and Brown, R. (Editors). 2007. Ecosystem overview: Pacific North Coast Integrated Management Area (PNCIMA). Can. Tech. Rep. Fish. Aquat. Sci. 2667: xiii + 104p.
3 Steneck, R.S., Graham, M.H., Bourque, B.J., Corbett, D., Erlandson, J.M., Estes, J.A. and Tegner, M.J. 2002. Kelp forest ecosystems: biodiversity, stability, resilience and future. Env. Cons. 29(4): 436-459.
4 MacConnachie, S., Hillier, J. and Butterfield, S. 2007. Marine use analysis of the Pacific North Coast Integrated Management Area. Can. Tech. Rep. Fish. Aquat. Sci 2677: viii + 188p.
5 British Columbia Marine Conservation Analysis Project Team. 2011. Marine atlas of Pacific Canada: a product of the British Columbia Marine Conservation Analysis. Available from www.bcmca.ca (Accessed March 2011).

16 Kelp Distribution