

Not Just a Pretty View

AN OVERVIEW OF WHAT THE OCEANS DO FOR US

While a crimson sunset on the beach can be breathtaking, this pretty view isn't all our oceans provide.



David
Suzuki
Foundation

SOLUTIONS ARE IN OUR NATURE



SIERRA
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BC



Healthy Oceans. Healthy Communities.



As the fundamental source of life on the planet, oceans give us food, oxygen, water, energy, and recreation.

We wouldn't have enough oxygen to breathe or protein to eat without healthy oceans, and the Earth's climate would be uninhabitable for human beings and many animals. Medicines, food, and drinking water are derived from ocean processes. These processes are sometimes referred to as "ecosystem services" or "ecosystem benefits" because they are provided by natural systems.

The value of these ecosystem services (economic and otherwise) is immeasurable – all the wealth in the world couldn't buy a substitute for the services that the ocean provides free of charge.

In the process of developing a conservation and management plan for Pncima it is important to consider the relevant ecosystem services the ocean provides.

PNCIMA IS . . .

An ecologically diverse and very productive ocean area ranging from Northern Vancouver Island up the Central Coast of B.C. to Prince Rupert and Haida Gwaii and to the southern border of southeast Alaska. The Canadian government named this region the Pacific North Coast Integrated Management Area, or Pncima (pronounced pin-see-ma), and selected it as one of five areas in the country's oceans to undergo an integrated planning process aimed at improving conservation and management practices and ensuring long-term marine ecosystem health.



THE OCEANS GIVE US . . .

Food

Food is the most obvious service we get from the sea. Seafood nourishes us, providing health, social, and economic benefits. First Nations communities in the Pncima have been harvesting seafood and using marine plants and animals in social and spiritual gatherings for thousands of years. The seafood industry in Pncima makes a significant contribution to the income of most communities, most notably in Sayward and the Central Coast, where up to one-quarter of employment income is derived from this sector.



MORE THAN 80 TYPES OF MARINE PLANTS AND ANIMALS IN B.C. ARE HARVESTED TO PROVIDE FOOD FOR LOCAL, NATIONAL, AND INTERNATIONAL POPULATIONS.

Photo: Lana Gunnlaugson

Water

We all know that water is critical to life on the planet. As individuals, we require it to digest and absorb food, transport oxygen and nutrients to our cells, maintain muscle tone, and cool the body. As communities, we need water for sanitation, crop irrigation, industry, and electricity generation.

Globally, our oceans are a critical element in the water cycle. What many people don't often consider is that oceans play a key role in maintaining our renewable supply of fresh water.

OCEANS PLAY A KEY ROLE IN MAINTAINING OUR RENEWABLE SUPPLY OF FRESH WATER THAT IS A NECESSITY OF LIFE.

Photo: Jodi Stark

Energy

Societies are increasingly turning to the oceans to help meet our energy needs as global demand rises. With growing concern over climate change, we are on the hunt for clean, renewable energy. There is significant potential in offshore wind power and a growing interest in tidal power. Production of diesel from microalgae is also being explored as an alternative energy source.

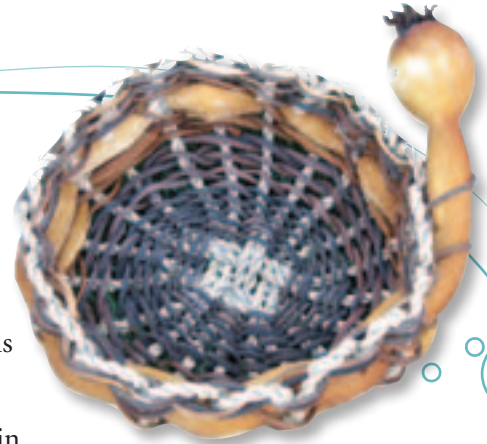
IN PNCIMA, THE HAIDA ENERGY FIELD HAS THE POTENTIAL TO PROVIDE THE EQUIVALENT OF 85 PER CENT OF THE CURRENT TOTAL ELECTRICITY PRODUCTION IN B.C.

Photo: Siemens Wind Power



Materials

Residents of Pncima have used raw materials from the ocean for thousands of years, in everything from houses to jewellery. The skin of marine mammals was traditionally sewn into clothing, while kelp is still woven into baskets and seashells worn or displayed as ornaments.



COASTAL PEOPLE MAKE
GOOD USE OF MANY
THINGS FROM THE SEA.

Photo: Gerri Swanson



INGREDIENTS FOR MEDICINES,
PHARMACEUTICALS, AND
COSMETICS ARE OFTEN
FOUND IN MARINE LIFE.

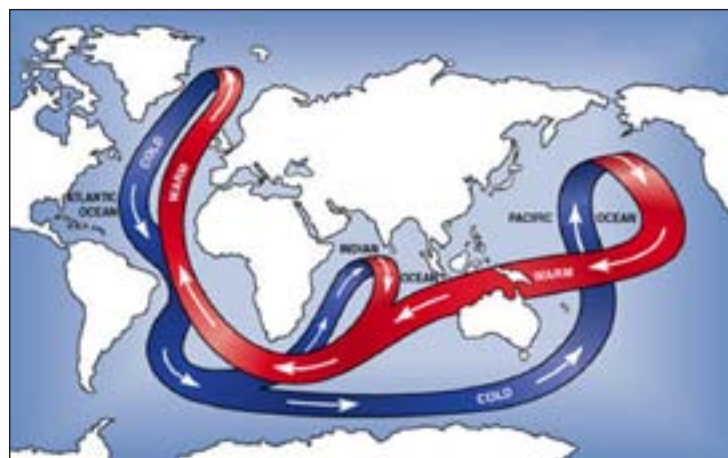
Photo: HoneyCombs Industries

Biochemical & Genetic Resources

Many marine organisms offer potential therapeutic uses in antioxidant, antiviral, anti-inflammatory, anti-fungal, or antibiotic medicines. Some have even shown resistance against HIV, tuberculosis, malaria, and some forms of cancer.

Climate Regulation

The ocean regulates our climate by absorbing heat and redistributing it around the world through currents, evaporation, condensation, and precipitation. It also absorbs heat and gases that cause climate change (such as carbon dioxide), thus slowing down the impacts of global warming.



WITHOUT THE OCEAN
ABSORBING AND
REDISTRIBUTING HEAT,
THE EARTH WOULD BE
UNBEARABLY HOT DURING
THE DAYLIGHT HOURS AND
FRIGIDLY COLD AT NIGHT.

Image concept: Wallace Broecker



MARINE PLANT COMMUNITIES CAN ACT AS A BUFFER FOR COASTAL REGIONS IN THE EVENT OF EXTREME WEATHER EVENTS AND NATURAL DISASTERS.

Photo: Rachel Yerbury

Natural Disaster Regulation

Natural disasters and extreme weather events are on the rise globally. Pncima is particularly susceptible to flooding, storm surges, sea-level rises, landslides, and tsunamis. Coastal features such as beaches, bluffs, and rocks can ease waves and storm action, and marine life, including kelp stands and eelgrass beds, has been shown to reduce the impact of waves on coastal environments.

Waste Treatment

Oceans and wetlands treat our waste. They can detoxify some pollutants and store, bury, and recycle others. This natural waste treatment plays an important role in regulating disease by purifying water and reducing the concentration of toxics in the seafood we eat. One only needs to think of the millions of dollars it would cost to build these treatment facilities to realize how valuable this service is to us.

As the amount of waste and pollution we are putting into our oceans increases, the ability of the natural system to purify and treat it is compromised.

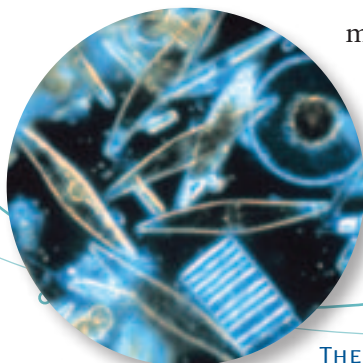


OUR OCEANS AND WETLANDS HELP TREAT OUR WASTE, BUT EXCESSIVE LEVELS CAN NEGATIVELY AFFECT ECOSYSTEM HEALTH.

Primary Production

Primary production is the conversion of energy to organic matter, which is done in our oceans by plankton.

All life on earth directly or indirectly relies on this primary production as these tiny organisms in the ocean produce more than half of the world's oxygen and form the base of the ocean food web, of which humans are a part.



THE TINY PLANTS AND ANIMALS IN THE OCEAN FORM THE BASE OF THE FOOD WEB, SUPPORTING THE DIVERSITY AND ABUNDANCE OF LIFE IN THE OCEAN.

UNDERWATER KELP FORESTS PROVIDE FOOD, SHELTER, OXYGEN, AND NURSERY ENVIRONMENTS FOR A VARIETY OF SEA LIFE.

Photo: Will Chen

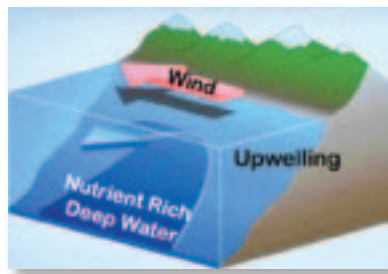


Living Habitat

Marine life such as seagrass beds, kelp forests, and deep-water corals provides homes for other marine species. These habitats are used as breeding and nursery spaces, hiding spots for juvenile fish and invertebrates, and feeding grounds.

Nutrient Cycling

Pncima is rich in nutrients. Here, strong winds push surface water away from the coast, drawing up the nutrient-rich water from great depths. Eddies, currents, and strong tidal mixing in the narrow passages and channels circulate these nutrients throughout the ecosystem. Salmon and other anadromous fish return the nutrients to the coastal rivers and forests from where they came.



THE OCEANIC CONDITIONS IN PNCIMA PLAY A KEY ROLE IN DISTRIBUTING ESSENTIAL NUTRIENTS THROUGHOUT THE MARINE ECOSYSTEM.

Spiritual, Aesthetic, & Inspirational

Humans have long regarded the natural movements, sounds, and life forms of the ocean as sources of rejuvenation and a means of obtaining perspective. It is not surprising that many religions attach spiritual and religious values to these ecosystems and their unique features.

Pncima has long served as a bastion for artistic communities made up of musicians, painters, craftspeople, carvers, and writers. The influence of the ocean is apparent in many of their works, such as Emily Carr's *Beach and Sky*, the carvings of Bill Reid, and countless other cultural works that have helped craft a special sense of coastal pride and identity here.



PNCIMA PROVIDES A RICH SOURCE OF INSPIRATION FOR ART, MUSIC, FOLKLORE, NATIONAL SYMBOLS, AND ARCHITECTURE.

Sculpture by Bill Reid · Photo: Sarah and Allan Jeffries

Recreation & Tourism

The marine and coastal ecosystems offer endless ways to refresh and stimulate the body and mind. Sea kayaking, beachcombing, sport fishing, surfing, whale watching, sailing, cruising, scuba diving, and numerous other pursuits draw people to Pncima, providing recreation and local employment opportunities. As our growing population finds more time for leisure activities, the demand for travel and recreation in natural landscapes is also on the rise.



MARINE-BASED RECREATION CONTRIBUTES APPROXIMATELY \$55 MILLION ANNUALLY TO THE LOCAL ECONOMY IN PNCIMA.

Photo: Jodi Stark

Health benefits



OCEANS CAN HELP KEEP PEOPLE HEALTHY, HAPPY, CALM, AND STRONG.

Photo: Jodi Stark

The oceans and coasts provide humans with many health benefits. Contact with nature has been shown to decrease levels of stress, mental fatigue, and aggression, while lessening the need for health-care services. Alternatively, many who interact with nature benefit from higher levels of activity, as well as greater productivity and creativity in the workplace.

Children who regularly engage in outdoor activities are also said to benefit from improved motor development.

Science & Education

Pncima is one of only a handful of relatively healthy marine environments left in the world. This region holds vast potential for scientific research. Yet-to-be discovered marine organisms may eventually help us develop a greater understanding of ecosystem processes and increase our ability to understand trends and develop new medicines.

OUR SEAS ARE A VASTLY UNEXPLORED AND UNKNOWN WORLD, WITH THE MAJORITY OF MARINE SPECIES NOT HAVING BEEN DISCOVERED OR UNDERSTOOD.

Photo: John Rix



This brochure summarizes a more detailed report, *Ecosystem Services in Pncima (Pacific North Coast Integrated Management Area)*, published in order to inform discussions about how to implement an integrated oceans management strategy in Pncima.

The concept of ecosystem goods and services – the resources and processes provided by natural systems – should be used as a foundation for sustainable economic and social development. This requires clear accounting of the ecosystem services provided by the coastal and marine environments within Pncima.

To download the full report, *Ecosystem Services in Pncima*, please visit: www.davidsuzuki.org/Publications/esreport

You can find out more about our oceans and their conservation needs by visiting:

- David Suzuki Foundation: www.davidsuzuki.org/Oceans/
- Sierra Club of BC: www.sierraclub.bc.ca
- Living Oceans Society: www.livingoceans.org
- www.PncimaMatters.ca
- *BC's Bountiful Sea: Heritage Worth Preserving*, by Jodi Stark: www.davidsuzuki.org/Publications/Bountiful_Sea.asp

For more information about ecosystem services, we recommend the following reading:

- *Nature's Services: Societal Dependence on Natural Ecosystems* by Gretchen C. Daily, 1997 (Island Press).
- Millennium Ecosystem Assessment: www.millenniumassessment.org/en/index.aspx
- Economic Contribution of the Oceans Sector in British Columbia by GSGislason & Associates Ltd: www.env.gov.bc.ca/omfd/reports/oceansector-economics.pdf

This document was prepared by Jodi Stark, Michelle Molnar, Bill Wareham, and Sutton Eaves of the David Suzuki Foundation.