

Designing a Future

for Canada's Coastal Rainforest

CONSERVATION AREAS DESIGN - An Ecological Solution Based on Science



Photo: Ian McAllister/Raincoast

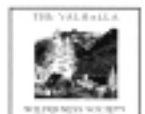
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DESIGNING A FUTURE for Canada's Coastal Rainforest



Photo: Ian McAllister/Raincoast

In 1997, conservation groups intent on protecting British Columbia's largest remaining rainforest from clearcut logging approached a team of internationally-renowned conservation biologists with an ambitious request. *Identify a system of conservation areas that will maintain and*

restore the biological diversity of this coastal temperate rainforest ecosystem.

It was a daunting task, first of all because of the size of the area. This area, known as the Great Bear Rainforest, extends nearly 500 kilometres along the B.C. coast, from Knight Inlet near the northern tip of Vancouver Island to the Alaskan Panhandle. It covers almost 7 million hectares - over 20 times the size of Clayoquot Sound.

Daunting finally, because it had never been done before. Conservationists and industry typically battle over one valley, one river, one species. Conservation targets, such as B.C.'s 12% target for protected areas, are based not on science, but on politics and economics.

Over 35% of B.C.'s protected areas are located in the rock and ice of alpine-tundra zones, and over 75% are smaller than 1000 hectares - about twice the size of Vancouver's Stanley Park. Over time, these small, isolated patches do not protect species or preserve ecosystems. Instead, they become islands, cut off from similar ecosystems and leading to the extirpation of local wildlife populations.

INTRODUCTION

Setting a New Standard



Photo: Ian McAllister/Raincoast

layers of information that can be incorporated into a larger ecosystem-based planning process, aimed at protecting all the values of the Central Coast.

The team of Canadian and U.S. scientists assembled by Round River Conservation Studies set to work studying and mapping, consulting with local biologists, conservationists, First Nations and others who knew the coast so well. They identified 'keystone' and 'indicator' species such as the salmon and grizzly bear, and determined what had to be preserved to maintain the ecological integrity of the rainforest.

They have developed and mapped layers of information that can be incorporated into a larger ecosystem-based planning process, aimed at protecting all the values of the Central Coast.

After three years of work, the Conservation Areas Design (CAD) for B.C.'s Central Coast is complete, and phase two, mapping the Northern portion of the rainforest, is underway. It's not a complete solution, but it is a huge start. As new scientific data becomes available it will be incorporated into the design. The CAD must be reviewed by First Nations who are the traditional stewards on the coast; their interests and cultural values will then be integrated. Equally important, consultation must take place with all other stakeholders. But for now, we know what it will take to preserve the ecological integrity of B.C.'s Central Coast rainforest, and can begin to structure human economic activity to fit within that framework.

The Link to Land Use Planning



Photo: Simon Jackson

For the first time in B.C., there is a science-based regional conservation plan - the Conservation Areas Design - that defines the ecological foundations upon which a sustainable economic structure can be built in consultation with First Nations, eco-foresters, tourism operators and the

rest of people of British Columbia.

An Ecosystem Based Approach

The conservation community advocates an ecosystem-based approach to land-use planning in B.C. This approach is being successfully developed in Clayoquot Sound on Vancouver Island and the Slocan Valley in B.C.'s interior. It involves three steps: (1) determine the character and condition of the planning area; (2) identify what parts of the landscape need to be protected; and (3) design a diverse, ecologically sustainable and community-based economy.

Conservation Biology

Conservation biology uses science to determine the requirements for protection of species and ecosystems. It is generally accepted that this requires a system of interconnected protected areas, with management of human activities outside these reserves. Species protection depends on the conservation areas being the right size (bigger is better), the right shape (the more "middle" and less "edge" the better), the right configuration (connected is better) and in the right place (habitat for the whole life cycle of species is better).

Forest ecologist Herb Hammond, has been commissioned to identify areas on the Central Coast that are suitable for logging. However, neither this analysis nor the CAD addresses culturally significant areas, such as First Nations burial grounds or areas used for tourism and other economic purposes. The next big step in planning for the area will be to gather and add this information, which will help define what is available for communities to transition to a more diverse and sustainable conservation-based economy.

The Scientific Team



Photo: Ian McAllister/Raincoast

The Conservation Areas Design report was prepared by Round River Conservation Studies, a firm of leading conservation biologists based in Salt Lake City. The team of leading Canadian and U.S. scientists that prepared the report include:

M.A. Sanjayan received his Ph.D. from the University of California at Santa Cruz, where he studied under the dean of Conservation Biology, Dr. Michael Soulé. Sanjayan

currently serves on the governing board for the Society of Conservation Biology.

Richard M. Jeo received his Ph.D. in Biology from the California Institute of Technology (Caltech) where he currently also works as a postdoctoral scholar.

Dennis Sizemore holds a Bachelor of Science from New Mexico State University, and a Masters of Science in Wildlife Biology from the University of Montana.

In addition, the following scientists peer-reviewed the CAD: Tom Reimchen, University of Victoria; Jim Pojar, B.C. Ministry of Environment; Dr. Michael Soulé, University of California at Santa Cruz; Dr. Reed Noss, Conservation Biology Institute; Dr. Jody Holmes, B.C. Wild; Wayne McCrory, Bear Biologist, Dr. James Bergdahl, Conservation Biology Institute; Dr. David Mattson, University of Idaho; Dr. Paul Paquet, University of Calgary, and others.

Key Concepts

CORE AREAS

Central to the Conservation Areas Design is the concept of Core and Linkage Areas. *Core Areas* - composed of intact watersheds, relatively intact watersheds with prime grizzly bear and salmon habitat, and partially logged watersheds that are restorable - are areas of critical importance where industrial logging should not be allowed.

Photos: Ian McAllister/
Raincoast



LINKAGE AREAS

Linkage Areas connect the Core Areas, so species with large territorial needs, such as grizzlies and other large carnivores, can move from one Core to another.



UMBRELLA SPECIES

Because it's impossible to inventory every species in an ecosystem, scientists usually concentrate on a few key or focal species. For example, if animals at the top of the food chain are given enough protected area, chances are that species that are less visible and therefore less known will be protected as well. These top-level creatures are known as *Umbrella Species*.



KEYSTONE SPECIES

Additionally, scientists look for species that play a critical role in regulating the health of the entire ecosystem. These are known as *Keystone Species*.

INDICATOR SPECIES

Finally, because it's so important to know whether a plan is working, scientists look for species whose health reflects that of the surrounding ecosystem. In scientific terms, these proverbial canaries-in-the-coal mine are known as *Indicator Species*.



The CAD scientific team analyzed the available data, and determined that the CAD should identify how to maintain or restore:

- 1 Viable Populations of Large Carnivores (especially grizzly bears)
- 2 Viable populations of all salmon stocks (keystone & indicator species)
- 3 Representation of all native ecosystem types (at different stages in their development across their natural range)
- 4 Natural Landscape Connectivity

THE GRIZZLY

Rainforest Umbrella Species



Photo: Ian McAllister/Raincoast

As top predators, grizzlies are especially vulnerable to disturbances in their habitat and food supply and thus serve as an excellent indicator species for the "wildness" and the overall health of the coastal ecosystem. Grizzly bears are also an excellent umbrella species because they require large home ranges.

Grizzlies thrive in low-elevation habitats, and depend on old growth trees for denning and bedding sites, for security and for the abundant food supply contained in the rich understory. They are most often found on river banks (i.e. riparian areas) or in estuaries. Grizzlies fare poorly in areas with many roads, which fragment habitat and facilitate access by hunters, poachers and other traffic. The CAD team looked for areas with low road density (defined as less than 0.35 km of road in each km²) and which also possessed grizzly-friendly elements such as estuaries, old growth forests and, especially, salmon.

Indeed, so inextricably linked are salmon and grizzlies that habitats for the two can be combined. Together, these two zones comprise 7.9% of the study areas or 370 thousand hectares.

On the map, Core Grizzly Bear/Salmon Habitats are shown either in dark green (for intact habitats) or light green (for restoration habitats).

SALMON

Keystone of the Coast



Photo: Ian McAllister/Raincoast

Salmon are keystone species in the rainforest. Not only are they a critical fall food source for the grizzly bear, wolves, eagles and otters, but they also act as fertilizer for the trees. In addition, because spawning is highly sensitive to stream temperature and sedimentation, salmon act as an indicator species for the overall health of the ecosystem.

Salmon are highly dependent on the quality freshwater and riparian habitat found in intact old growth forests. When forest cover is removed from a watershed, run-off increases, which changes the timing, amount and quality of water flowing

into a stream. As noted above, the freshwater habitat found in the rainforest is the same kind of habitat favoured by grizzlies.

The combined Core Grizzly/Salmon habitat areas are shown on the map in dark green (intact areas) and light green (restoration areas).

The conservation team also identified areas that, while too roaded to be considered prime grizzly habitat, were important areas for salmon, either as spawning grounds or as areas the salmon traverse on the way to spawning. **Shown in dark turquoise, these Salmon/Riparian Linkage Areas** require streamside reserves of a minimum of two tree lengths (100 m) for fish-bearing streams and one tree length (50 m) for non-fish bearing streams.

TREES

Old Growth Representatives



Photo: Ian McAllister/Raincoast

Old growth temperate rainforests are extraordinarily complex ecosystems, filled with thousands of species, many of which have yet to be even identified. In order to preserve this diversity, the team focused on tree species. Tree distribution is well known, and in protecting representative stands of old growth sitka spruce, red and yellow cedar, western hemlock, amabilis fir and Douglas fir, the scientific team felt confident they would also be protecting the thousands of other rainforest species whose names are not yet known.

The Core Intact Areas selected by the team make up 57% (1.35 million hectares) of the study area. These are watershed where less than 10% of forested area has been logged, with low road density (less than 0.2 km of road in each km²) and presence of old growth structures (defined by trees older than 250 years, and taller than 37.5 m).

On the map, the Core Intact Areas are shown in mid-green.

LINKING IT ALL TOGETHER



Photo: Ian McAllister/Raincoast

The concept of connectivity is one of the most important developments in the field of conservation biology over the past two decades. Scientists have determined that unless protected areas and refuges are linked together via quality habitat corridors, creatures in any one refuge face a much greater risk of extinction.

The Linkage Watersheds (light turquoise) identified in this study generally consist of high elevation tundra, and are thus not prime habitat, but serve as linkage corridors for large carnivores.

The Salmon/Riparian Linkage Areas (see Salmon above) also serve a linking function. **On the map they're coloured dark turquoise.**

WHAT'S NOT WORKING

Our Parks System



Photo: Ian McAllister/Raincoast

We look to the parks system to provide protection for biodiversity and wilderness. However, recent research indicates that all but one (the Banff Jasper - Yoho complex) of the large park complexes in North America have lost species within the last 80 years. One park in New Brunswick

has lost over three dozen species since its creation 40 years ago (*Parks Canada*).

Small and Disconnected Areas

Only 4% of our parks are large enough to sustain large carnivores. Since the BC government announced its Grizzly Bear Conservation Strategy in 1995, no core grizzly habitat has been protected. The area needed to sustain viable populations of wide-ranging species is much greater than previously thought. One study concluded that maintaining a viable population of as few as 390 grizzlies in the Rockies may require a total area of 11,700 square miles (31,440 square kilometres). This does not mean that we need to create parks this size, but that we must ensure connections between our protected areas.



Photo: Ian McAllister/Raincoast

Clearcutting the Rainforest



Photo: Ian McAllister/Raincoast

53% of the original temperate rainforest in B.C. has already been lost to logging and clearcutting, and less than 7% of our prime ancient rainforest is protected from future destruction. Despite widespread international disapproval, 97% of industrial logging in Canada's Great

Bear Rainforest is still done by clearcutting. Clearcutting exposes rainforest soils to sunlight, wind and rain resulting in extreme dryness and soil loss. Instability and soil erosion on steep slopes often results in slides and increased sediment in stream-beds, seriously degrading fish habitat. Clearcutting also provides access to hunters and poachers, and inevitably leads to other forms of development.

So Where Can Logging Occur, and How?



Photo: Ian McAllister/Raincoast

Once critical wildlife habitat, First Nations' cultural sites and other important areas such as high quality recreation areas, have been set aside, certain logging methods can be carried out. Logging can occur in designated areas, such as the less sensitive Linkage Areas, provided it doesn't compromise their ecological function. The CAD recommends that no logging be done by clearcutting, on steep slopes or close to streams due to their devastating ecological effects. Eco-forestry is an acceptable harvesting method. This kind of logging means leaving some trees standing, both young and old, in a given area, while cutting others in a way that avoids harming the fragile soils of the rainforest. Timber logged in this fashion would be eligible for eco-certification, which is in high demand in markets around the world.

Coastal First Nations

The First Nations of the B.C. Central Coast possess a storehouse of knowledge about the rainforest that is several thousand years old. In addition, several of the coastal nations have recently begun inventories and detailed mapping of their traditional territories, using their traditional ecological knowledge and the kind of western science and geographic information systems that forms the basis of this Conservation Areas Design. When



Photo: Garth Lens/Earth Witness

these inventories and the settlement of aboriginal rights and title are complete, coastal First Nations will be able to exercise their options for a sustainable future. These options shouldn't be closed off now by a fire sale clearcutting of the entire coastal rainforest.

The Coastal Economy: Tourism Up, Forestry Down



Photo: Ian McAllister/Raincoast

Critics will likely say we can't afford to preserve the rainforest. They'll argue that the restrictions required to respect the ecological integrity of the coast will cripple the economy. But the fact is, the forest industry isn't making money anyway.

According to a Ministry of Environment report published in January 2000, companies logging in the region lost an average of about \$11 for every cubic metre of timber cut. Internal company documents from logging company Interfor put the losses at \$37 a cubic meter. As the logging industry tries to log in more and more remote areas, the costs to access and log these areas continues to escalate.

Meanwhile, activities that make profitable, sustainable use of the rainforest are expanding. The tourism sector is one of the fastest growing sectors of the B.C. economy, producing jobs at twice the pace of all other industries. In 1998, the tourism sector generated 8.8 billion dollars in revenue. Almost one million tourists cruised past the Great Bear Rainforest in 1999, enroute to Alaska. Tourists will only keep coming, however, if they can continue to experience a British Columbia that truly is super, natural.

WHAT YOU CAN DO



Photo: Ian McAllister/Raincoast

To become a reality, this vision needs to work for both the human and non-human inhabitants of the coast. Expanding and linking protected areas will maintain the ecological integrity of the area, which in turn opens up the possibility of long-term economic sustainability. A key part of the solution will be community stewardship of resources. No system of conservation areas will be created or maintained over time without broad public support.

Write Letters

The fate of the Great Bear Rainforest could be decided this year so letters are urgently needed. Write or call to the Premier of B.C. (fax: 250-387-0087; email: premier@gov.bc.ca; phone: 250-387-1715) and your MLA, at Parliament Buildings, Victoria, B.C. V8V 1X4. To send a free fax, go to:

www.trees2k.org

Key Points to Mention

- ✓ Low elevation intact old growth forests, grizzly bears, spirit bears and salmon are in need of protection in the Great Bear Rainforest.
- ✓ Honour First Nations' rights and title.

- Many species require large connected wilderness and ancient forests for their survival. To ensure the survival of grizzly bear, wolf, spirit bear and salmon on the coast of B.C., we must protect their habitats.
- ✓ Protection of this area must be based on science.
 - ✓ The amount of logging must fall to accommodate protection, and should be the result of an ecosystem-based planning process.

The government's decision to protect the Great Bear Rainforest will be based on the height of a stack of personalized letters. Make it a mountain!

Join Us

Become a member of or volunteer with one of the organizations listed at the bottom.

Support the "Good Wood" Campaign

The Forest Stewardship Council (FSC) sets the current global standards for eco-certification standards, which are recognized and supported by the major environmental groups. For more information, see

www.fscoax.org

www.silvafor.org

www.oldgrowthfree.org

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for Canada's Coastal Rainforest

Conservation Areas Design

for the Central Coast Region of British Columbia, Canada

