

Some Interpretations and Applications in Ethnobiology

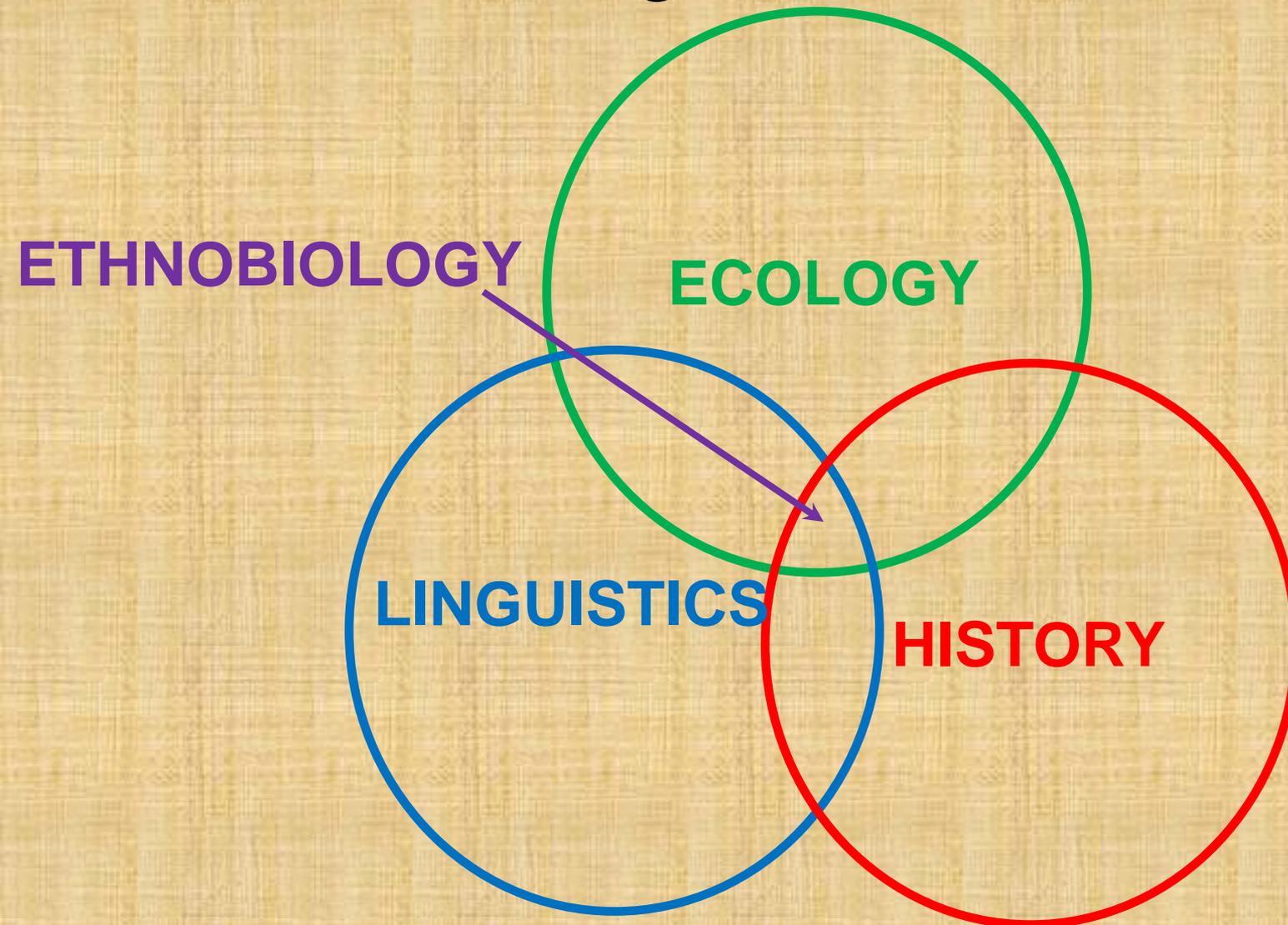
Carla M. Burton & Philip J. Burton

Modified from presentations made at the
Society of Ethnobiology 38th Annual Conference,
Santa Barbara, California, May 8th, 2015

Outline

- An analysis of traditional plant trade patterns among First Nations in northwestern B.C.
 - Their relationships to climate and biogeography
 - Potential clues in linguistics
- Examples of applying traditional resource management principles to sustainable forestry
 - “House Territories,” “traplines” and “watersheds”
- Ethnobiology as an interdisciplinary field, relevant to many modern problems

Framing the Discussion





Local sustainability coupled with trade = key to resilience.

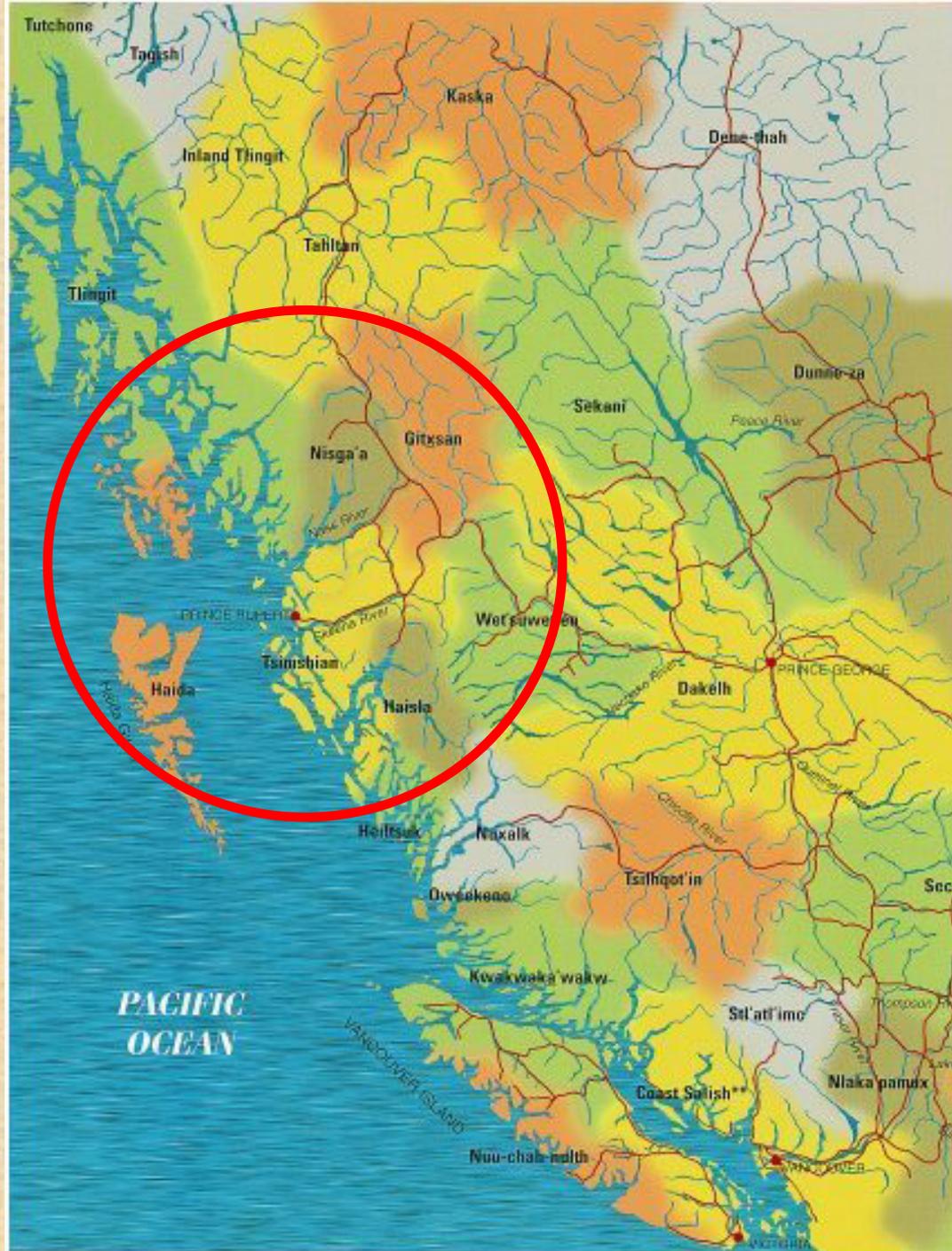
Trade of Plant Products in Northwestern British Columbia – Past, Present, and Future

Carla M. Burton & Philip J. Burton
Society of Ethnobiology 38th Annual Conference,
Santa Barbara, California
8 May, 2015

Resource Exchange in Northwestern BC

- a long history for trade of plant and animal products amongst First Nations in northwestern British Columbia
- trade of goods based on the distribution of important plant and animal species
- continued use and trade of the same or similar goods in the current day
- implications for the trade of such goods in the future

A Case Study:
Plant trade
among First
Nations in
Northwestern
British
Columbia



C.M. Burton,
2012, Using
Plants the
Nisga'a Way.
Ph.D.
Dissertation,
University of
Victoria.

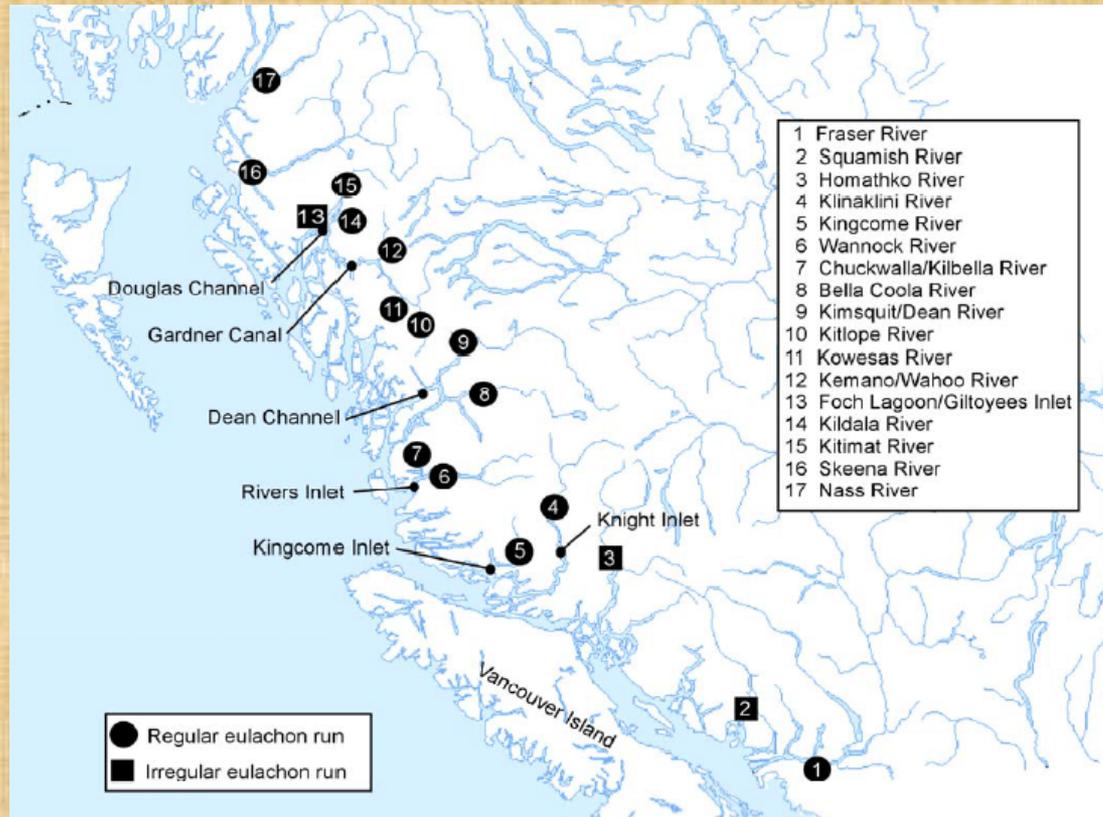
The Ecological Basis for Trade

- Most subsistence needs met by resources within well established territories, often individual house groups
- But many valued resources are restricted to, or more abundant in different ecological zones or neighboring territories



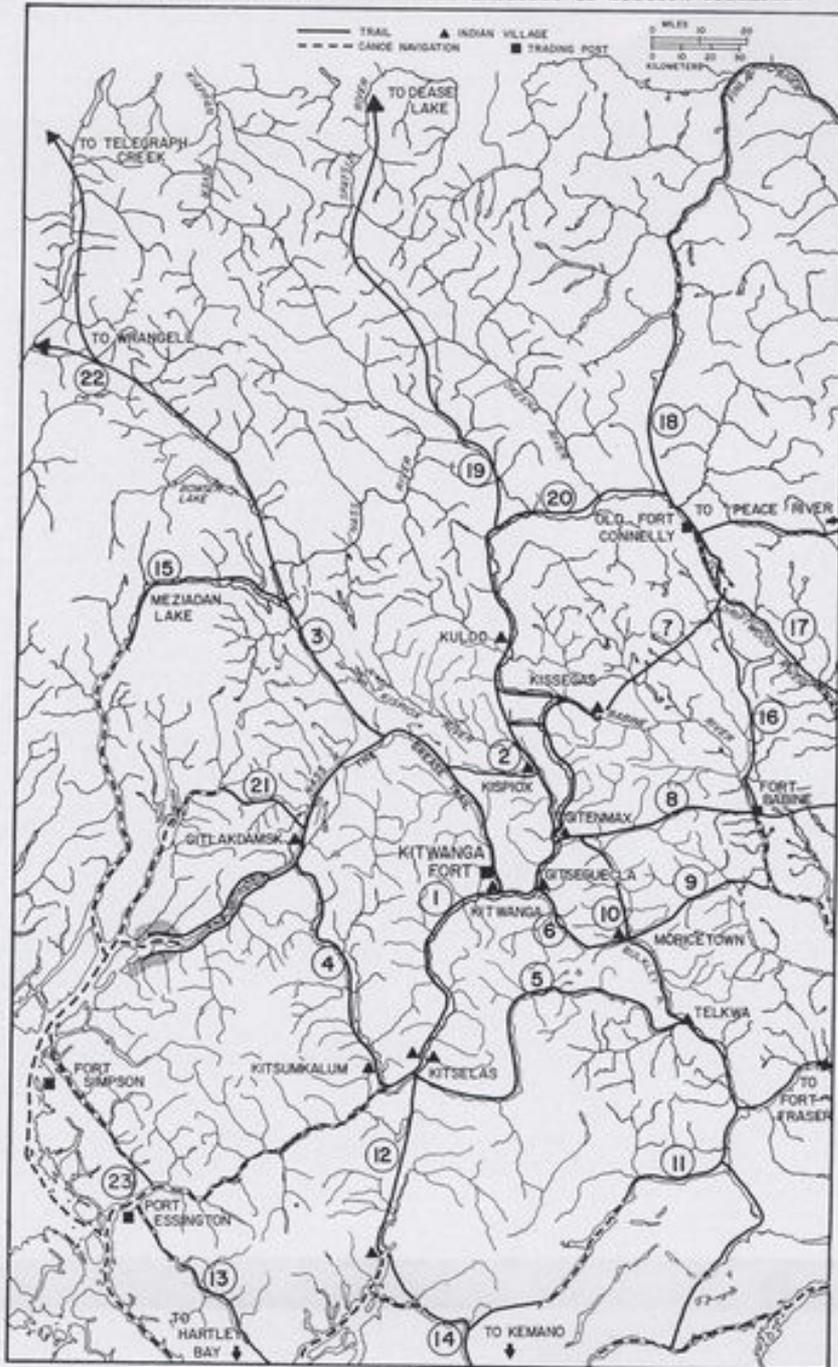
Eulachon fishery,
estuary of the
Nass River

Historic Eulachon Fisheries



Map from Northwest Fisheries Science Center, Seattle. 2008 report

- Eulachons (oolichans) a highly desired food and condiment.
- Stored and shipped dried, or reduced to an oil, = “grease”

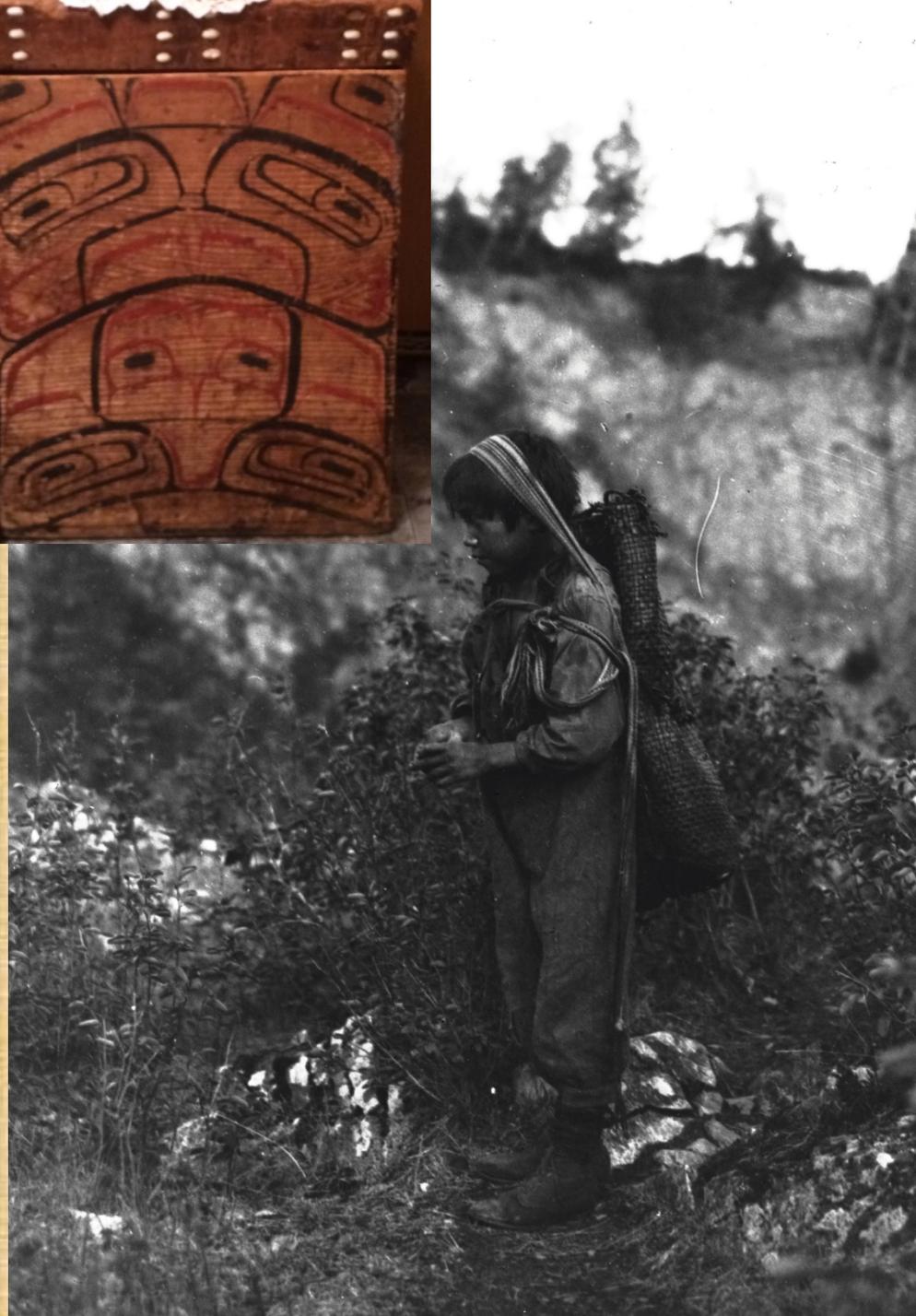


Pre-contact Trade



- A network of rivers and “Grease Trails” linked coastal and interior villages
- carried important products, people and information, much like today’s highways

“We met many of the Kitsegyukla Indians returning from the great feast at Kitwancool; more than one hundred have passed us, and they were without a single exception, not only men, but also women and children, laden with large cedar boxes, of the size and shape of tea-chests, which were filled with the rendered grease of the candle fish caught in the Nass waters.”
(Charles Horetsky 1872, in *McDonald 2006*)



Some Key Trade Species of the NW

eulachon (*Thaleichthys pacificus*) – dried fish, grease



black huckleberry (*Vaccinium membranaceum*) – berry cakes, fresh berries



western yew (*Taxus brevifolia*)
wood (technological, esp.
bows, tools, medicinal)



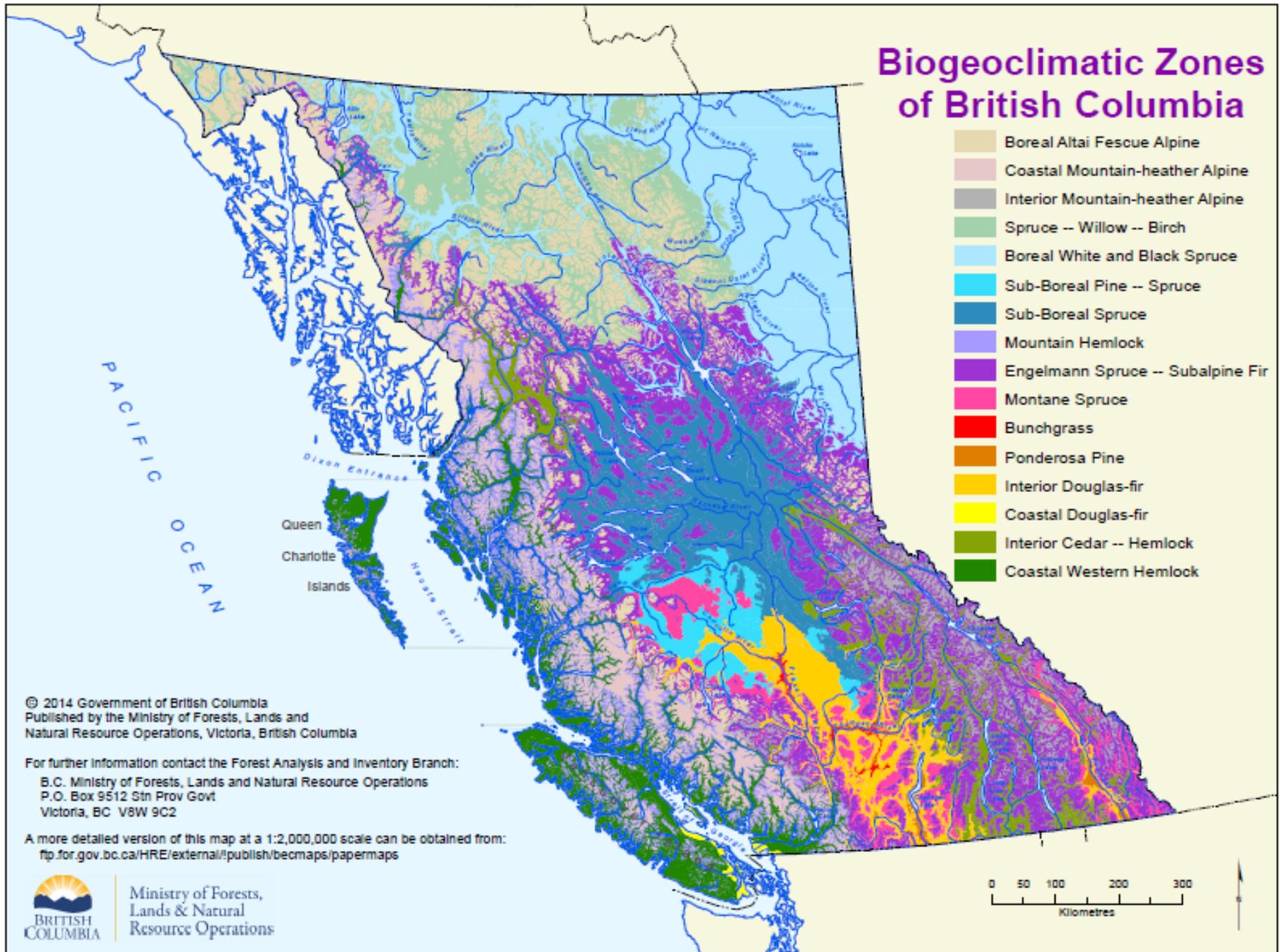
devil's club, (*Oplopanax
horridus*) inner bark, roots
(medicinal, spiritual)



soapberry (*Shepherdia
canadensis*) berries (food, esp.
ceremonial, medicinal)

Biogeoclimatic Zones of British Columbia

-  Boreal Altai Fescue Alpine
-  Coastal Mountain-heather Alpine
-  Interior Mountain-heather Alpine
-  Spruce -- Willow -- Birch
-  Boreal White and Black Spruce
-  Sub-Boreal Pine -- Spruce
-  Sub-Boreal Spruce
-  Mountain Hemlock
-  Engelmann Spruce -- Subalpine Fir
-  Montane Spruce
-  Bunchgrass
-  Ponderosa Pine
-  Interior Douglas-fir
-  Coastal Douglas-fir
-  Interior Cedar -- Hemlock
-  Coastal Western Hemlock



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For further information contact the Forest Analysis and Inventory Branch:
 B.C. Ministry of Forests, Lands and Natural Resource Operations
 P.O. Box 9512 Stn Prov Govt
 Victoria, BC V8W 9C2

A more detailed version of this map at a 1:2,000,000 scale can be obtained from:
ftp.for.gov.bc.ca/HRE/external/publish/becmaps/papermaps



Ministry of Forests,
 Lands & Natural
 Resource Operations

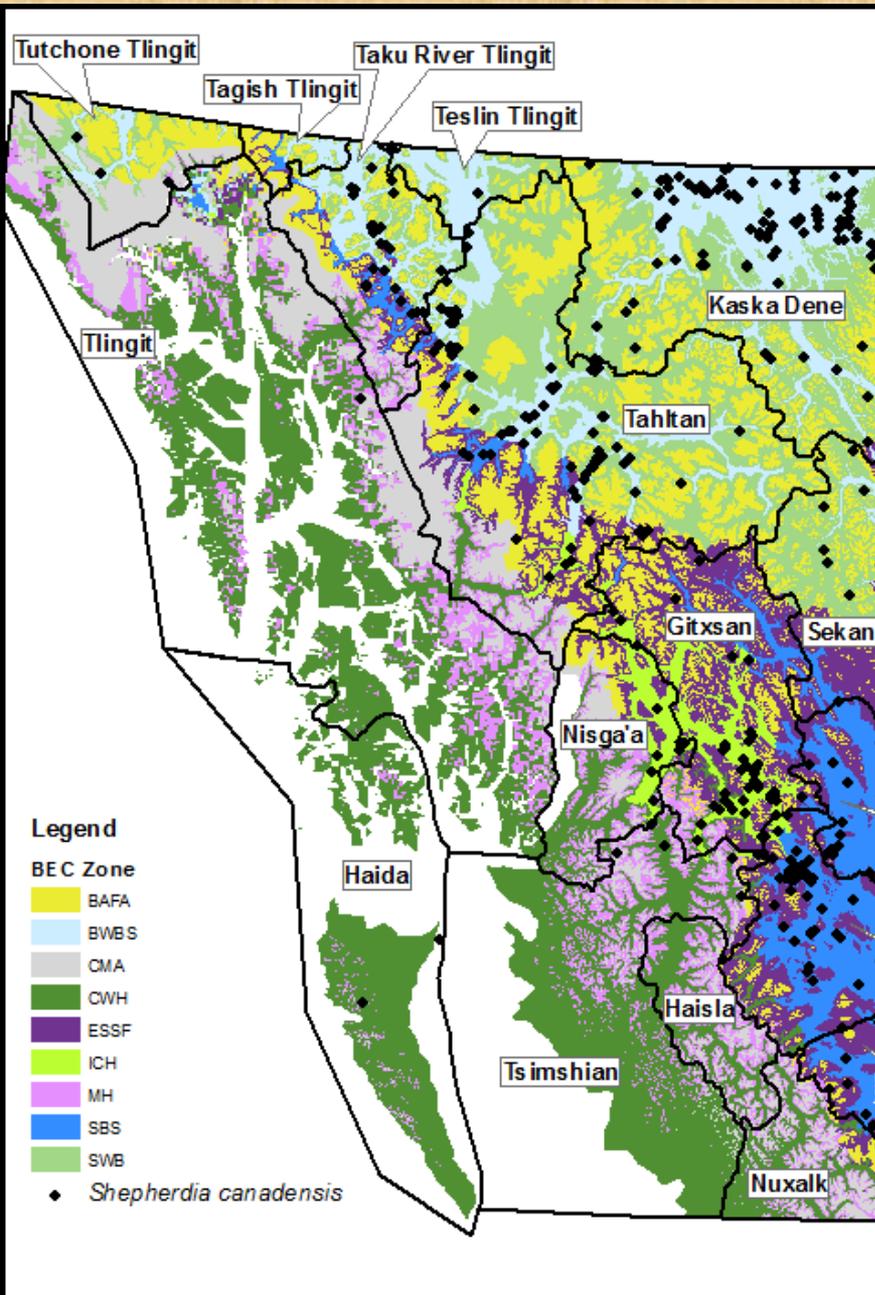


“Biogeoclimatic zones” denote an ecological classification of climax ecosystems, especially the dominant plant species that are in balance with their local geology and climate.

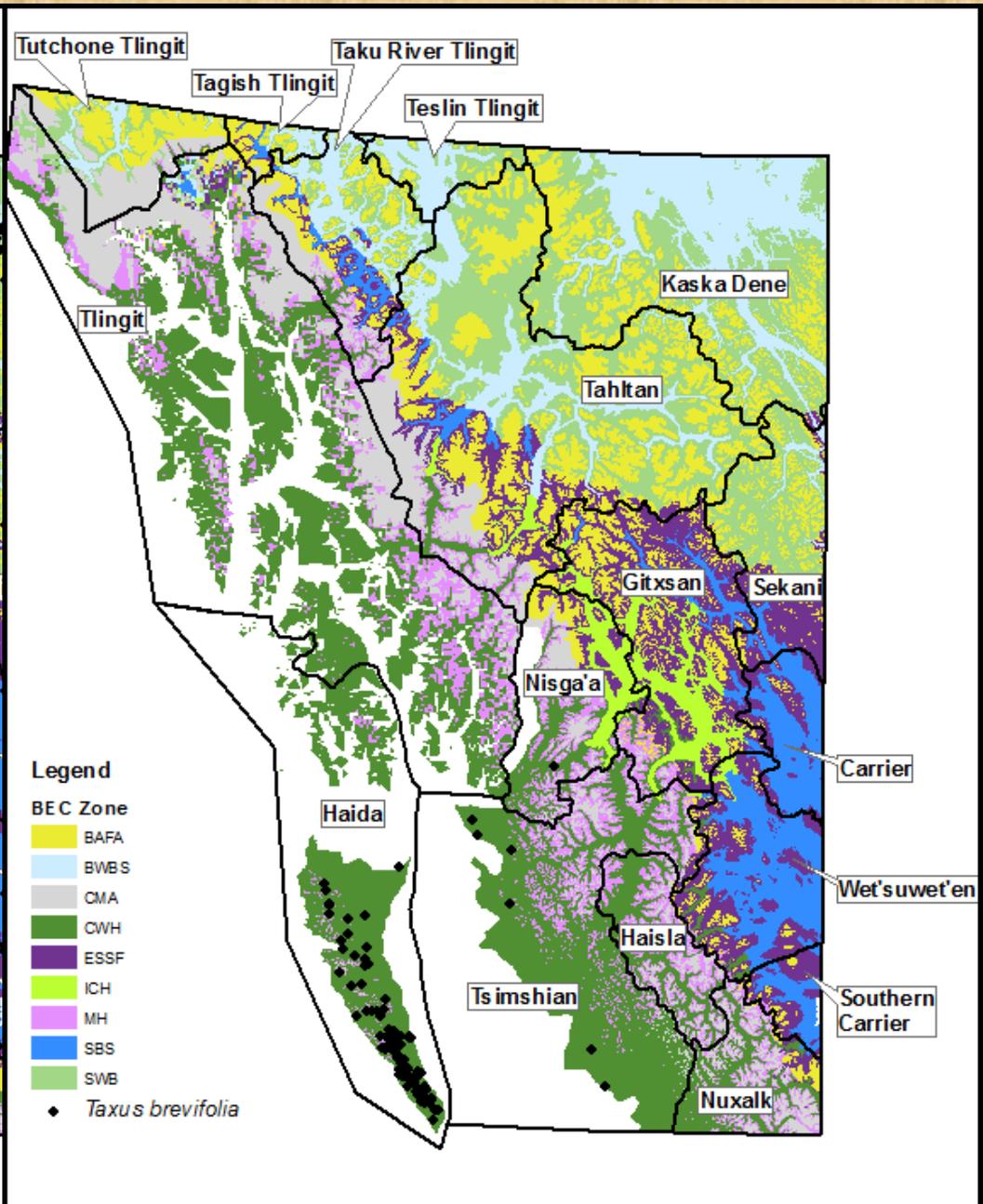
Hence “bio” (living things), “geo” (earth), and “climatic.”

This system was developed by Vladimir Krajina in the 1970s, and has been adopted by BC government agencies and resource management professionals.

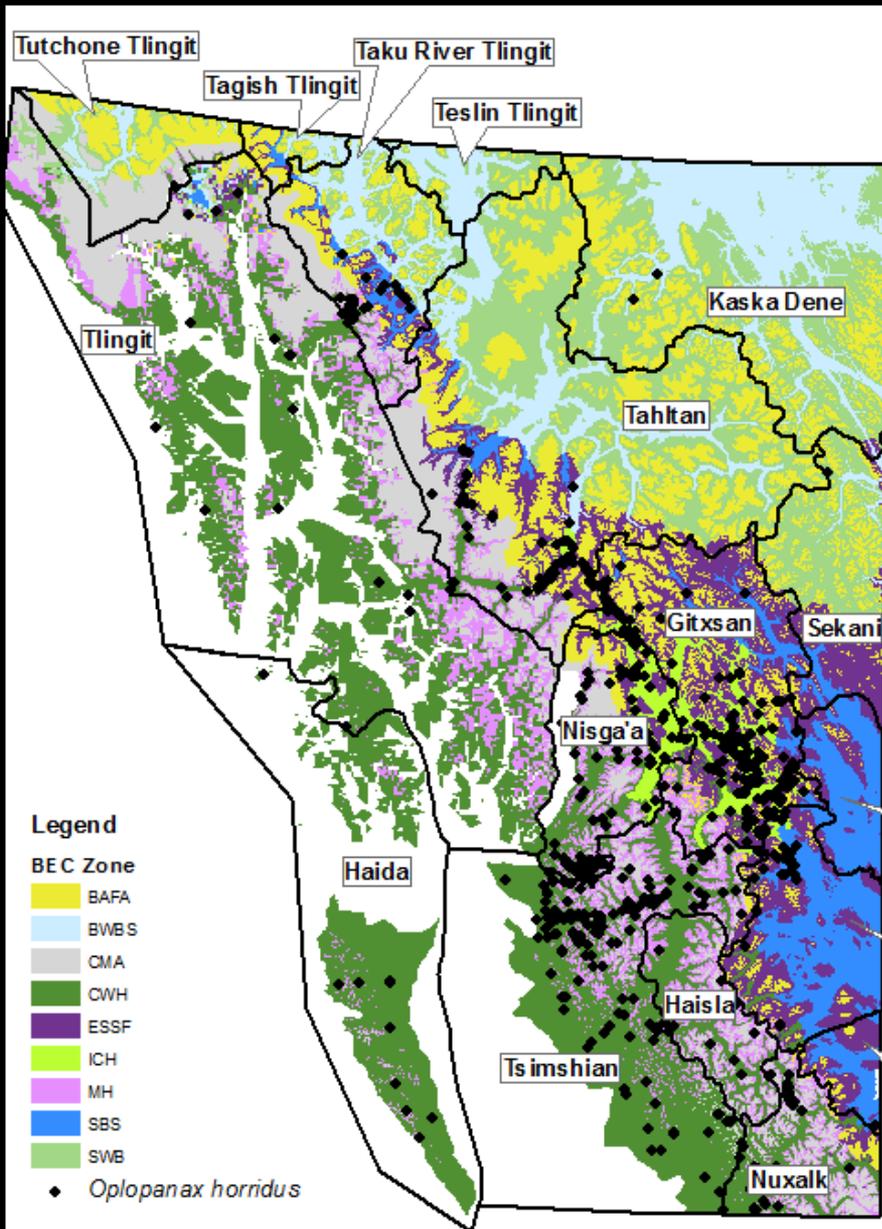
Although biogeoclimatic classification was not devised by First Nations people prior to contact, today it is considered by many to be a useful standardized tool, based on careful field analysis of ecosystems, for comparing plant species found on traditional territories.



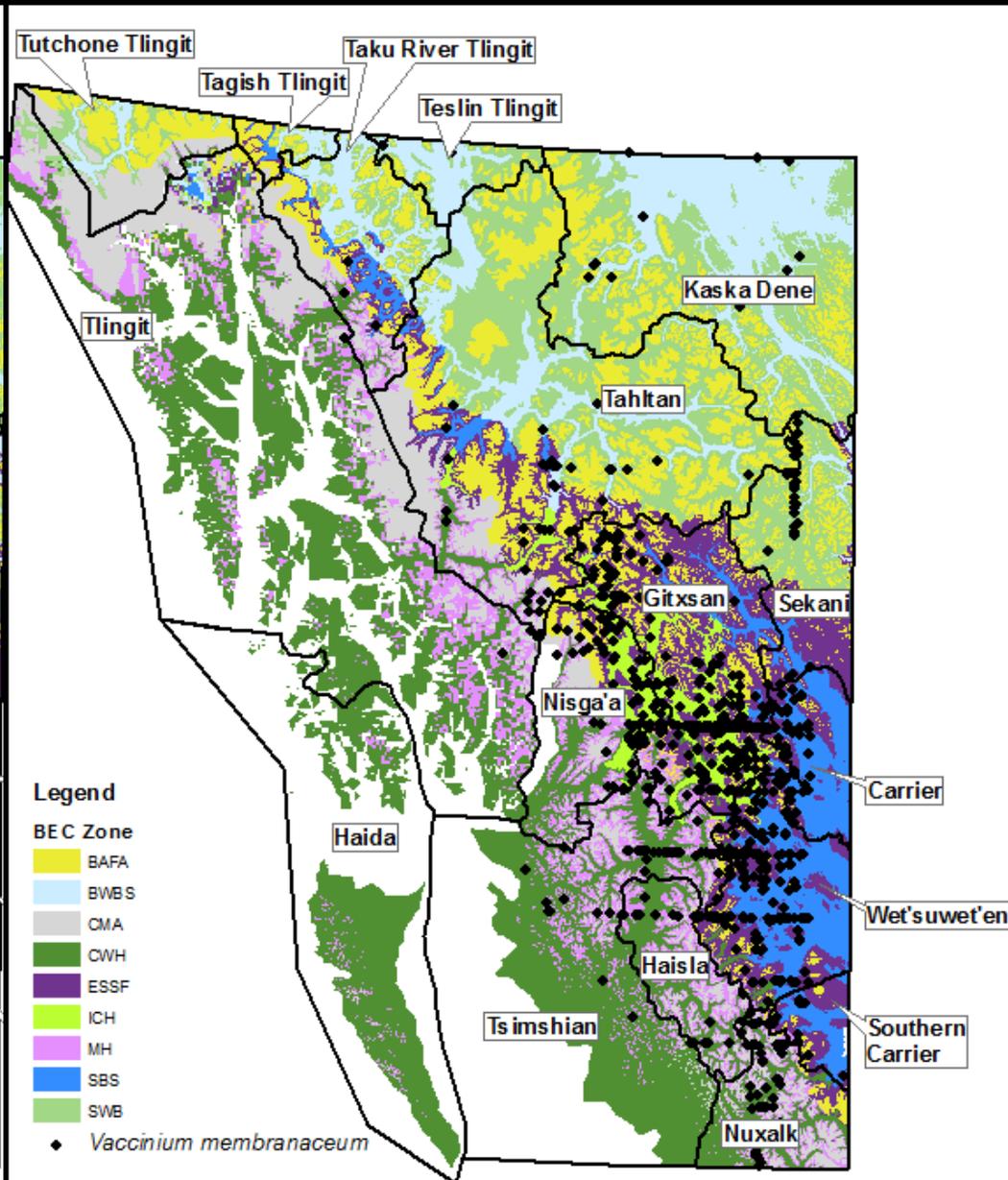
soapberry



western yew



devil's club



black huckleberry

List of plant words in northwest native languages

Species	English name	Nisga'a	Western Gitksan	Tsimshian	Skidegate Haida	Masset Haida
<i>Oplopanax horridus</i>	devil's club	wa'ums	wa'umst	wooms	ts'iihlInjaaw	ts'iihlanjaaw
<i>Shepherdia Canadensis</i>	soapberry	'is	'is	'as	'as	xagutl'iid (Tlingit xákwl'ee)
<i>Taxus brevifolia</i>	Pacific yew	haxwdakw	haxwdakw	sahakwdak	hlgiiid	hlgiiid
<i>Vaccinium membranaceum</i>	black huckleberry	simmaay	sim maa'y,	maay,	none recorded	none recorded

North American Trade

Widespread trading networks and hubs of exchange.

Especially sea shells, baskets, furs, dried fish, pemmican, obsidian, copper



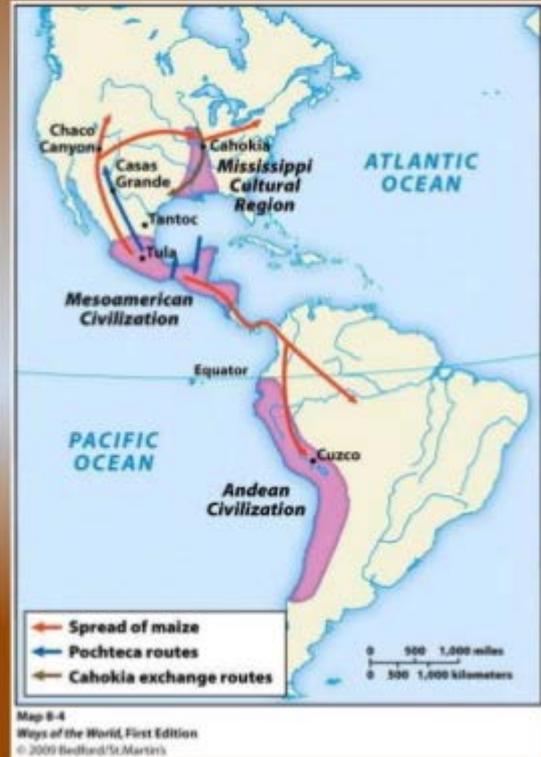
Evidence For Long-Distance Coastal Trade

V. An American Network: Commerce and Connection in the Western Hemisphere

A. No sustained interaction occurred between the Western and Eastern hemispheres before the voyages of Columbus.

B. American trade networks were not as dense as Afro-Eurasian ones.

1. important limitations:
 - a. lack of domesticated large mammals, wheeled vehicles, large oceangoing ships
 - b. geographical or environmental obstacles, including north/south orientation
2. local and regional commerce flourished, but not long-distance trade
3. cultural traditions did not spread as widely as in Eastern Hemisphere

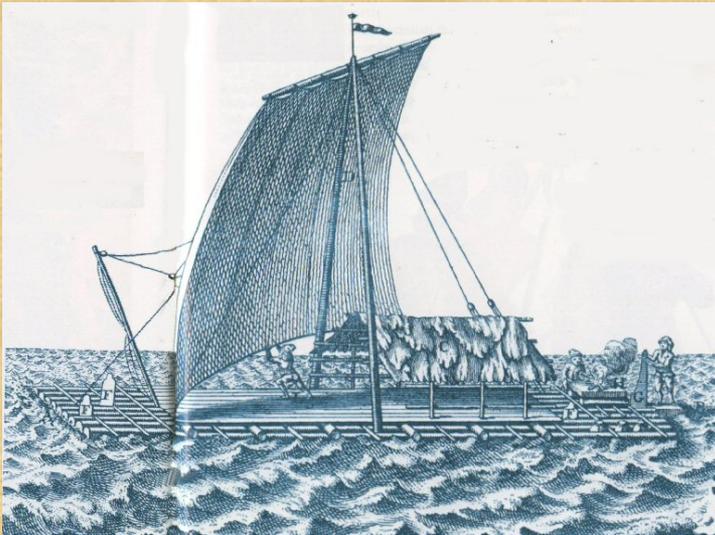


Nicotiana quadrivalvis var. *multivalvis*, Haida Tobacco, likely originated from California stock (Turner & Taylor 1972).

<http://www.slideshare.net/jmseymou/ap-world-history-strayer-ch-7-commerce-and-culture>

Maize clearly transported from N. America to South.

From South America to North America?



<http://www.atlantisbolivia.org/>



<http://www.tierraunica.com/>

The Haida may have hilled potatoes as well as tobacco before European contact.

Also linguistic evidence:

Corongo Quechua – “*ashku*” or “*akshu*”



?intermediaries on Mexico, U.S. coast



Salish – “*skä’us*” or “*ska’uc*”



Haida – “*sqiisiid*”

Tsimshian – “*squsiiit*”

Gitxsan – “*squsiiit*” or “*susiit*”

Nisga’a – “*squusiit*”

(C.M. Burton, 2006, unpublished)

In the present day – use and trade of these botanical products continues – primarily through cash exchange, but also through barter and familial exchange



Future for These and Other Species

- Ongoing subsistence use and commercial opportunities



Commercial Trade in Wild Plants and Plant Products Continues Today, But Often Needs Regulation and Conservation



<http://www.startribune.com/>

Wild Rice (*Zizania palustris*) – harvested sustainably in Saskatchewan, Manitoba, NW Ontario, Minnesota, Wisconsin.

Many ornamental plants, such as orchids and cacti, harvested illegally from dwindling populations.

Northwest BC Conclusions

- Trade in key resources was historically important among Northwest First Nations
- Many trade practices can be explained by relative differences in abundance and scarcity, associated with ecological zonations
- Modified trading practices continue today and serve an important cultural role
- Opportunities exist for further expanded market access and commercial development

Forest Planning Adjustments to Protect Traditional Non-Timber Resources in Northern British Columbia

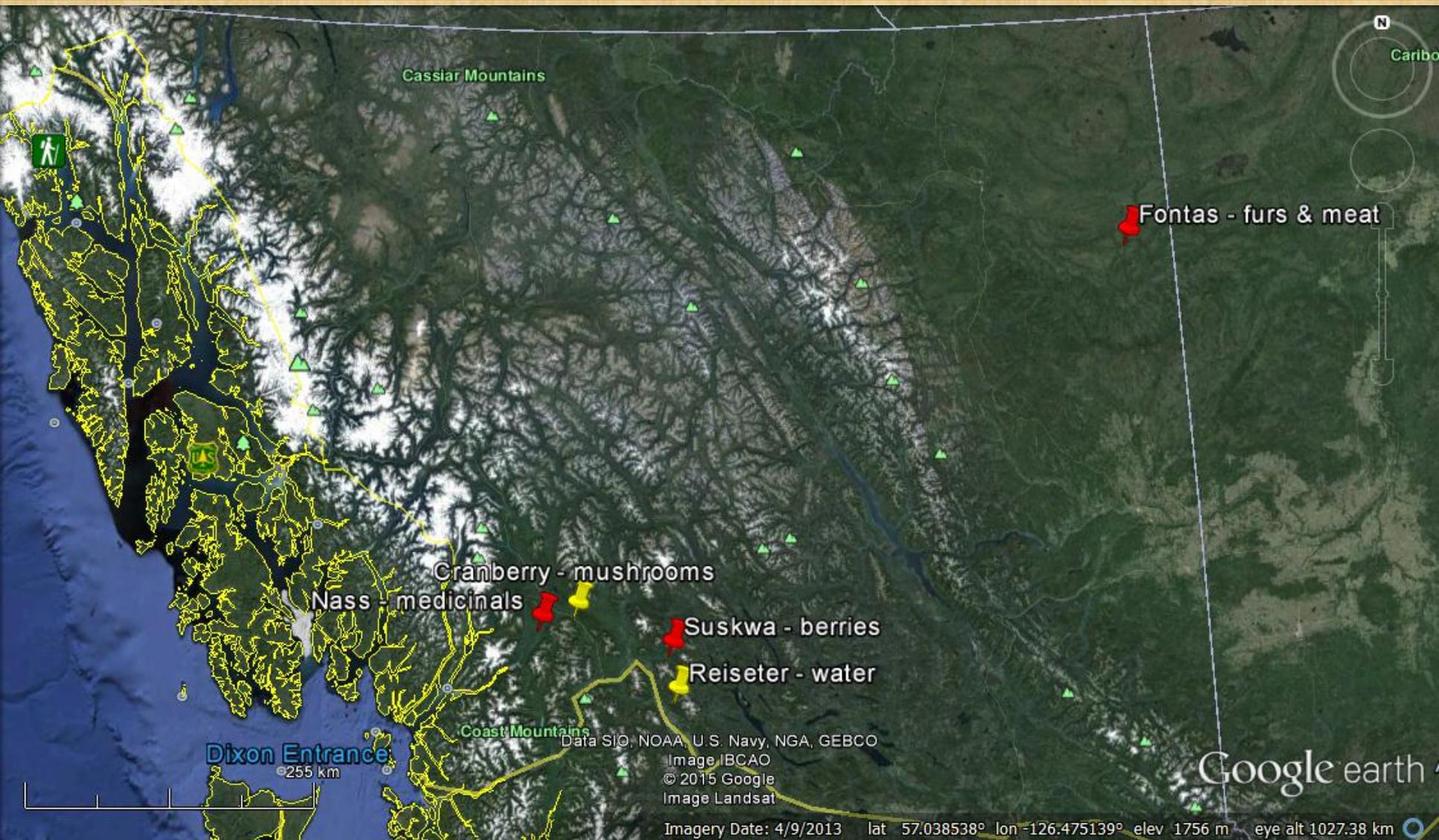
Philip J. Burton & Carla M. Burton
University of Northern British Columbia
Terrace, British Columbia

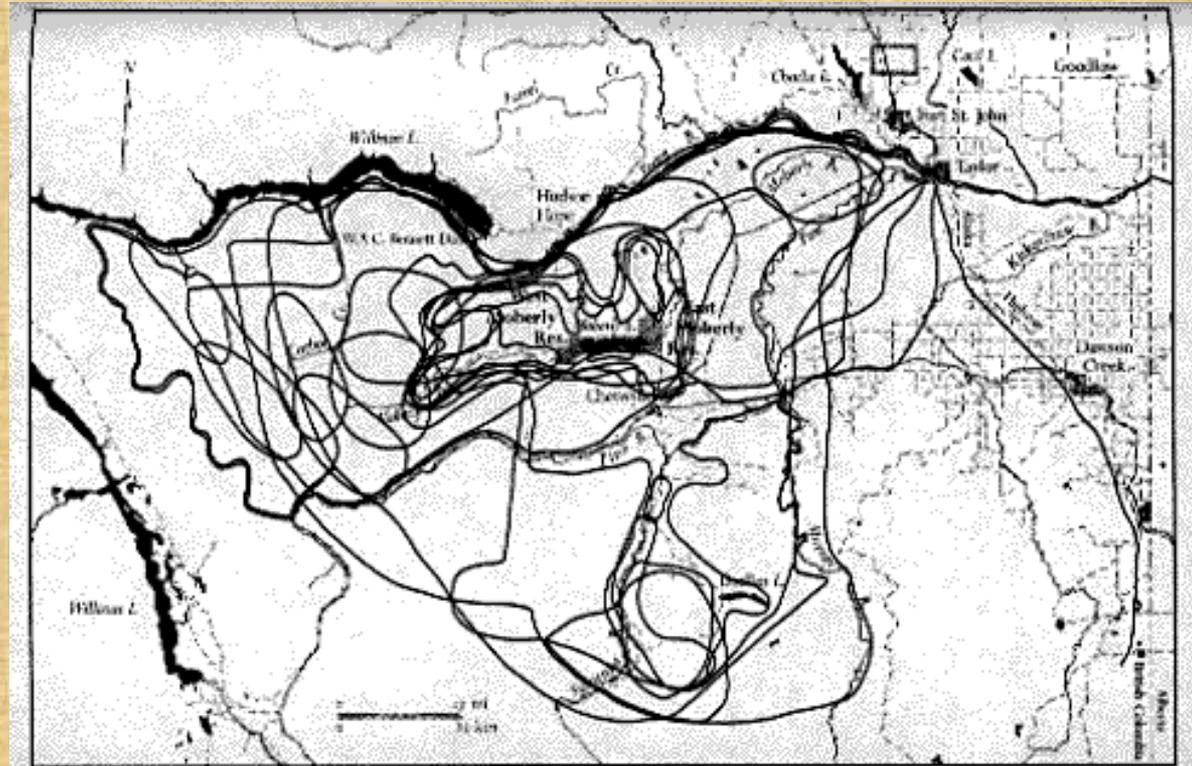
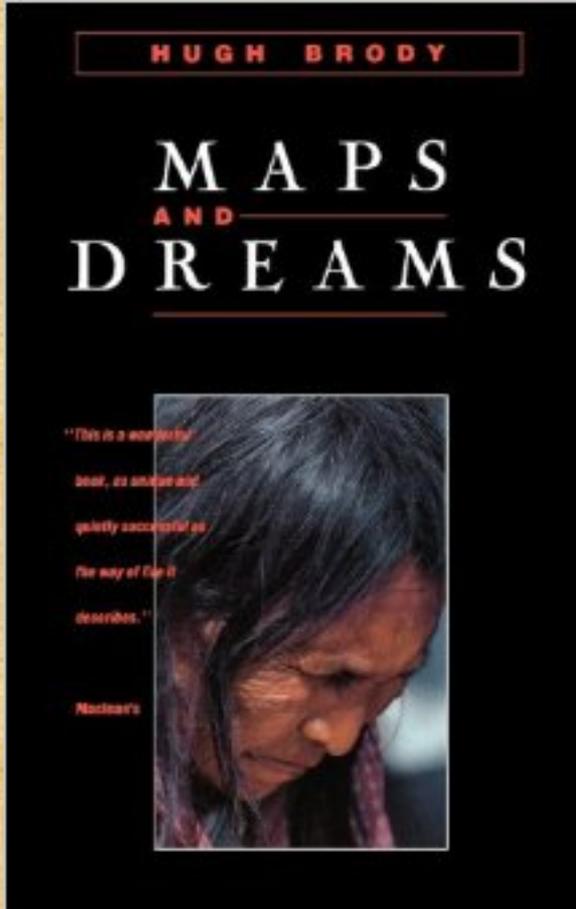
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Overview

- Rationale
- Traditional resources
- Recent issues
- Common solutions
- Fall-back arrangements







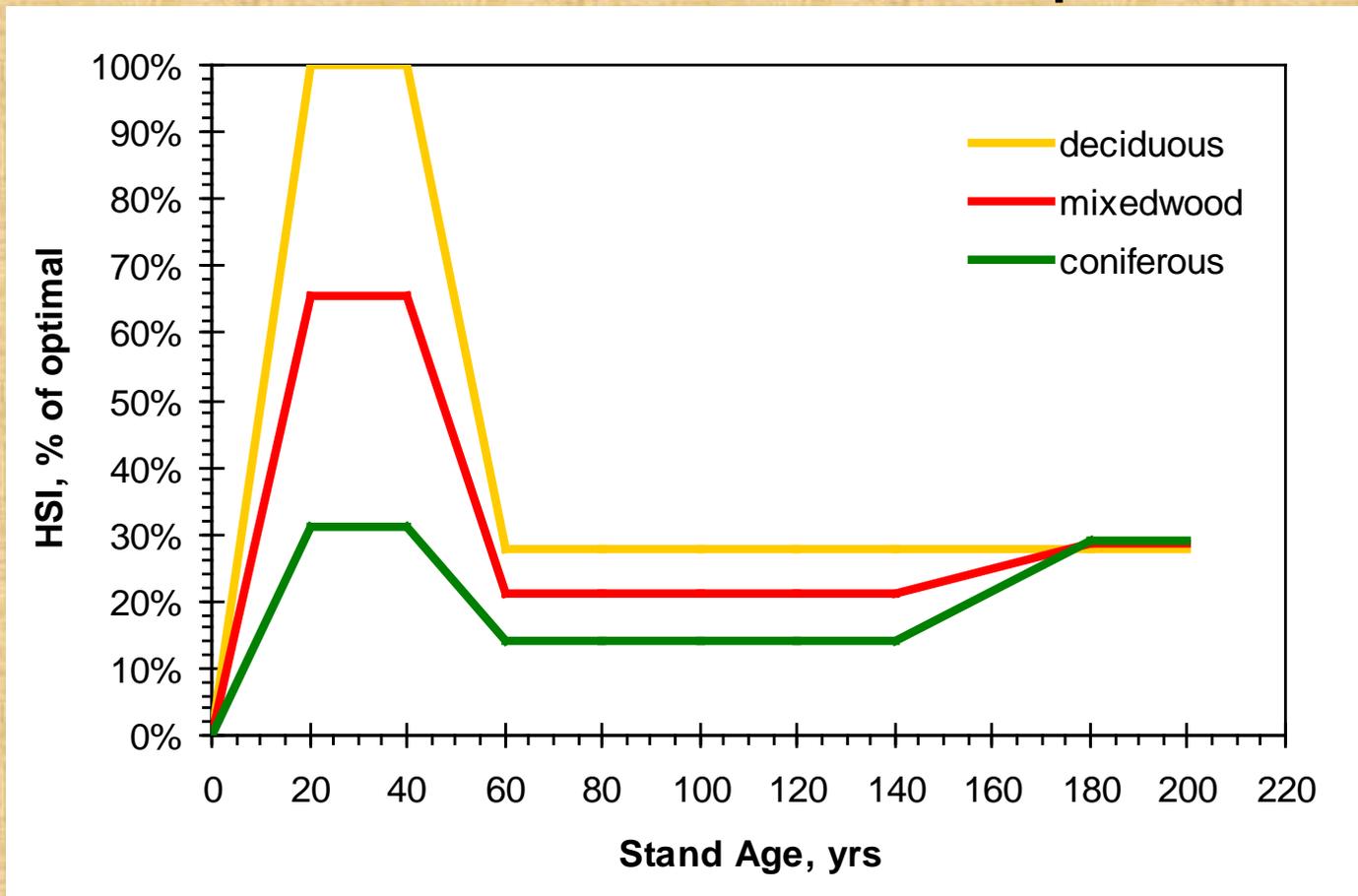
**Traplines support the entire seasonal
round**



Wildlife species to
be sustained
across each
“trapline”



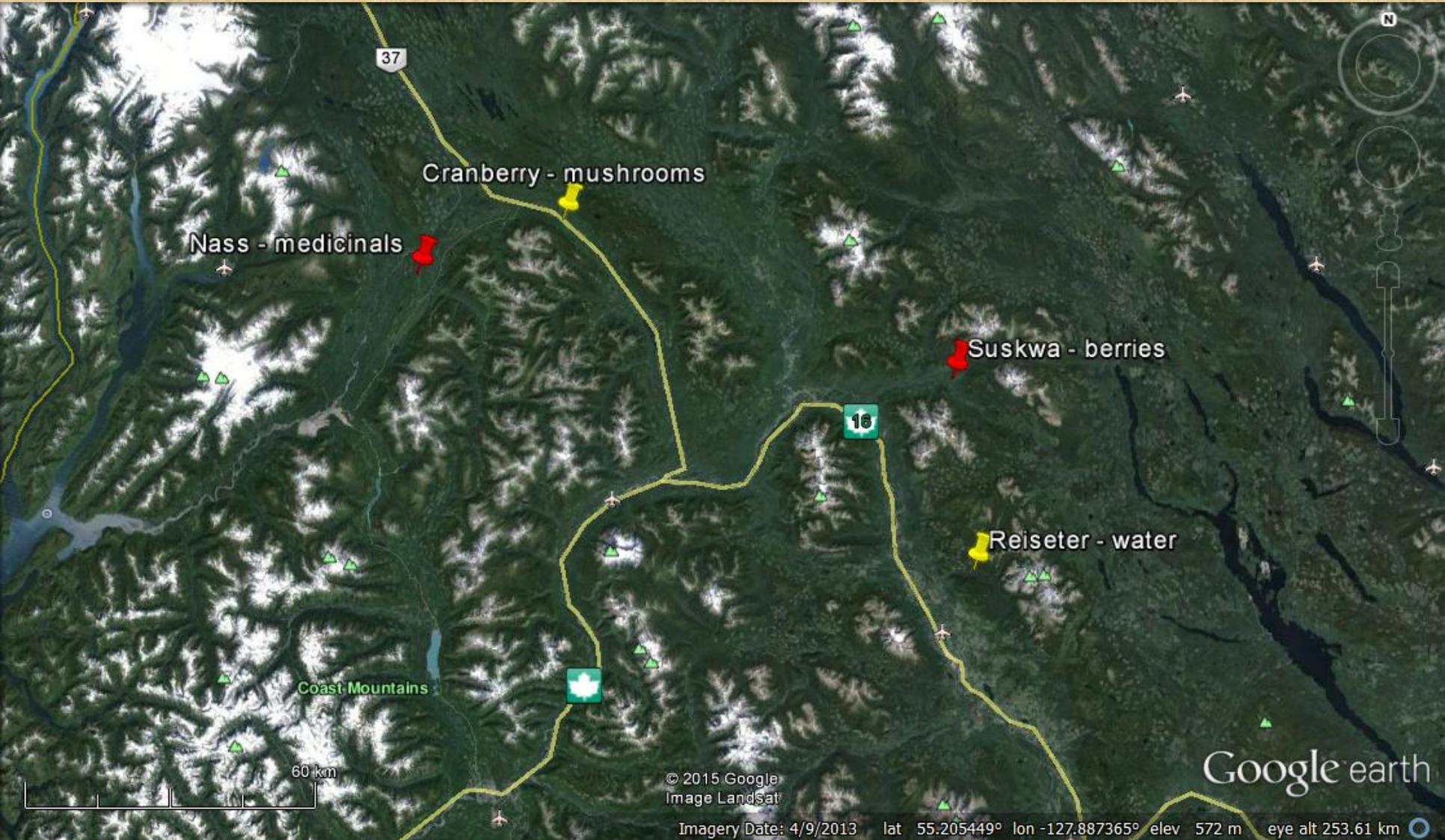
Moose Habitat Suitability: Trends With Stand Development



756T002 Forest Age Class Structure

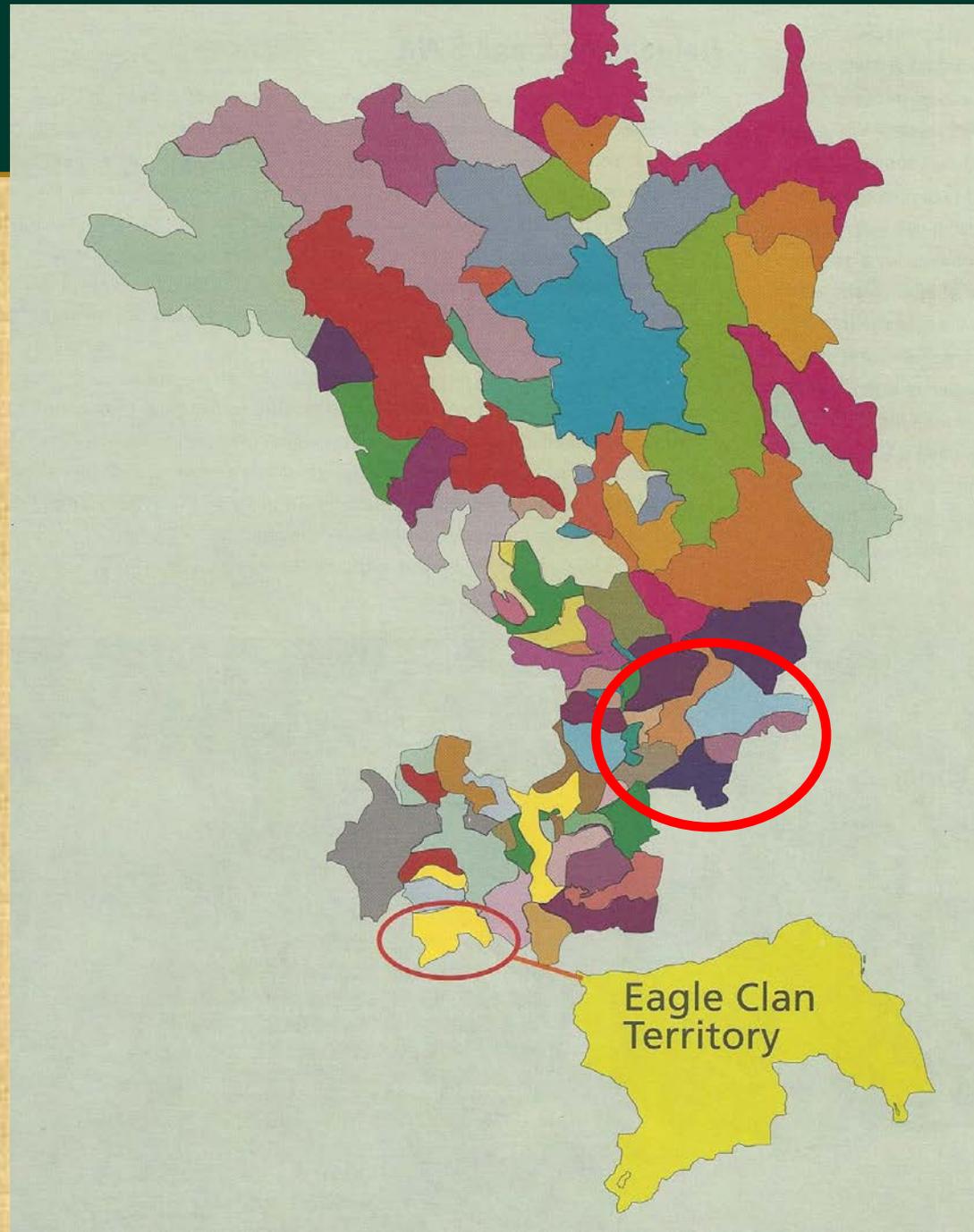


**Redirect
logging
from old
growth
to
middle
age
classes**



Gitksan House Territories

- Often based on drainage basins
- Provide(d) salmon, berries, medicinals, game
- Suskwa Sustainability Project

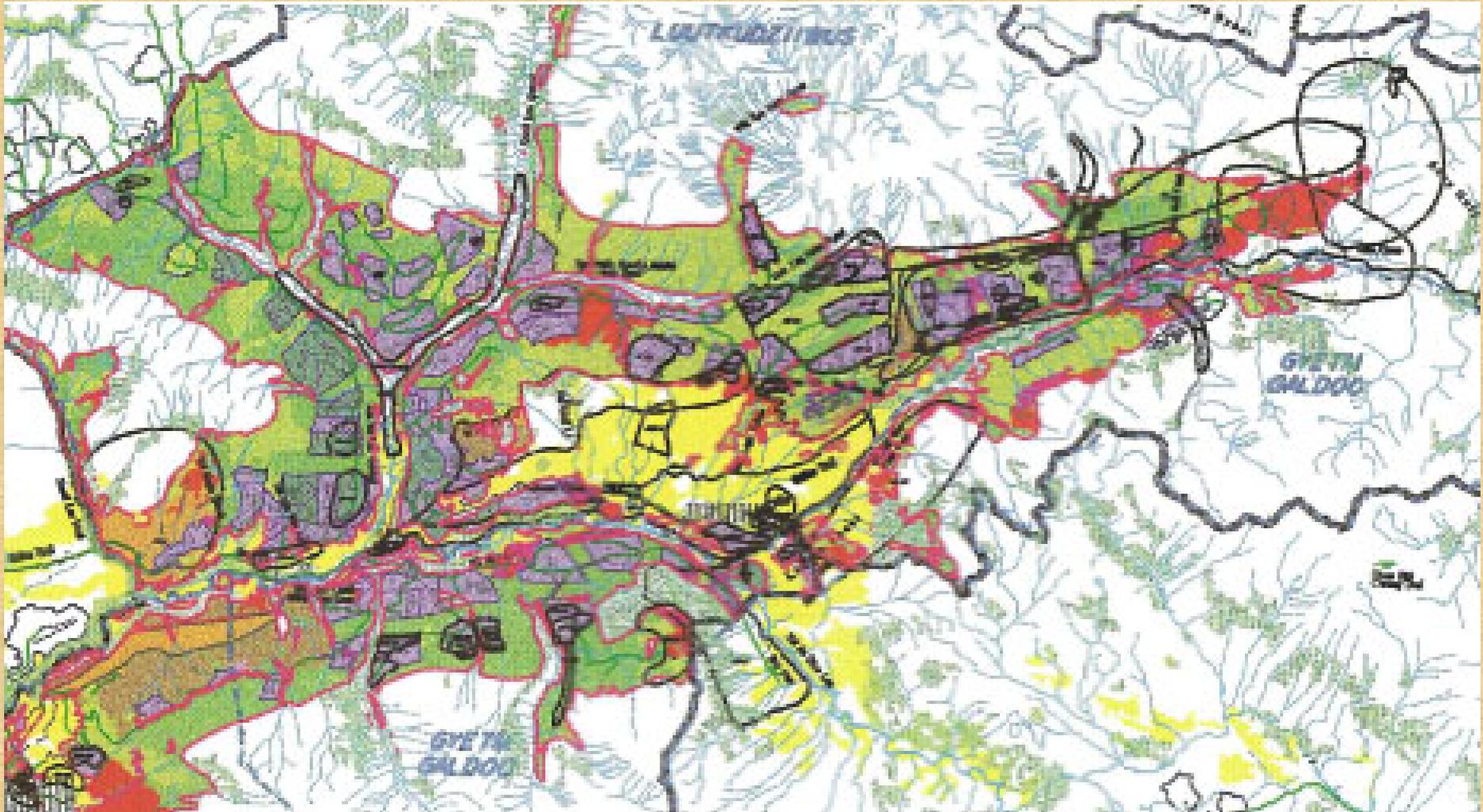


Wild Berries as a Focal NTFP:

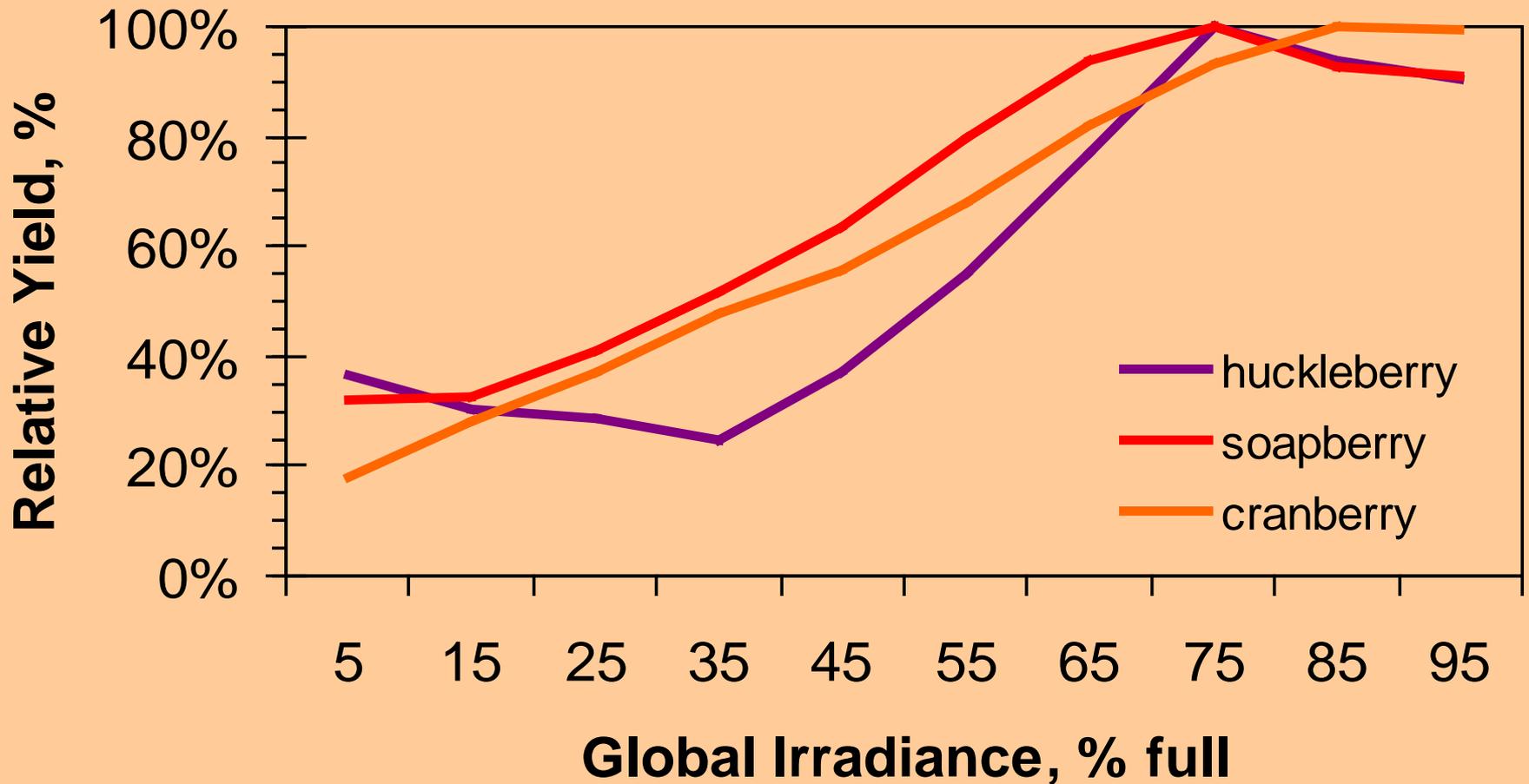
- Important to First Nations – food, trade, TEK, culture
- Keystone resource for wildlife, esp. bears
- Widespread abundance and diversity in our forests
- Widespread utilization for subsistence, recreation, cash trade
- Opportunities for enhanced productivity and economic activity



Mapped Use of Berry Patches



Yield Response Functions Used

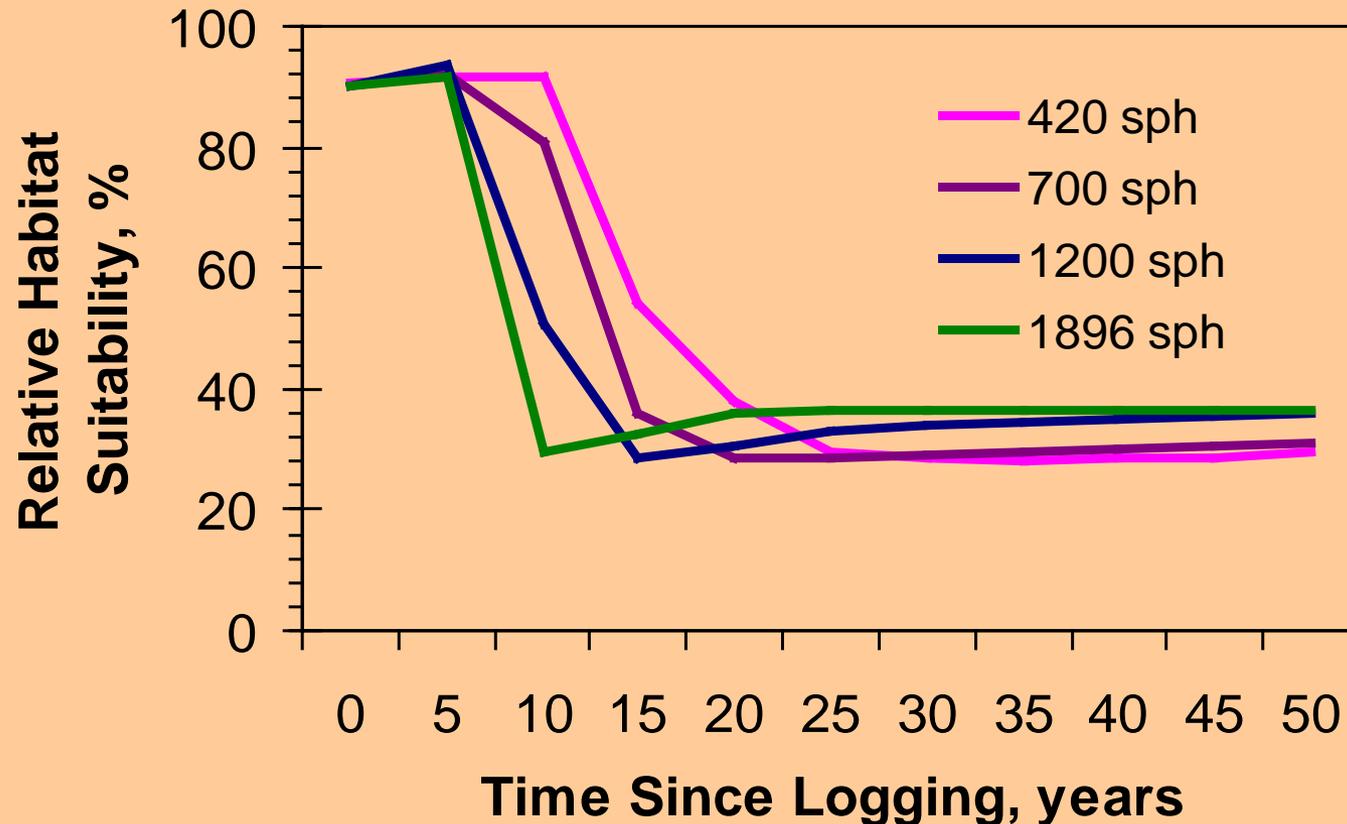


Reduce Overhead Shading



Co-ordination Through Reduced Conifer Stocking

**SORTIE/BC Simulation of ICHmc2 Stand
Development, *Vaccinium membranaceum***



A wild berry management decision matrix.

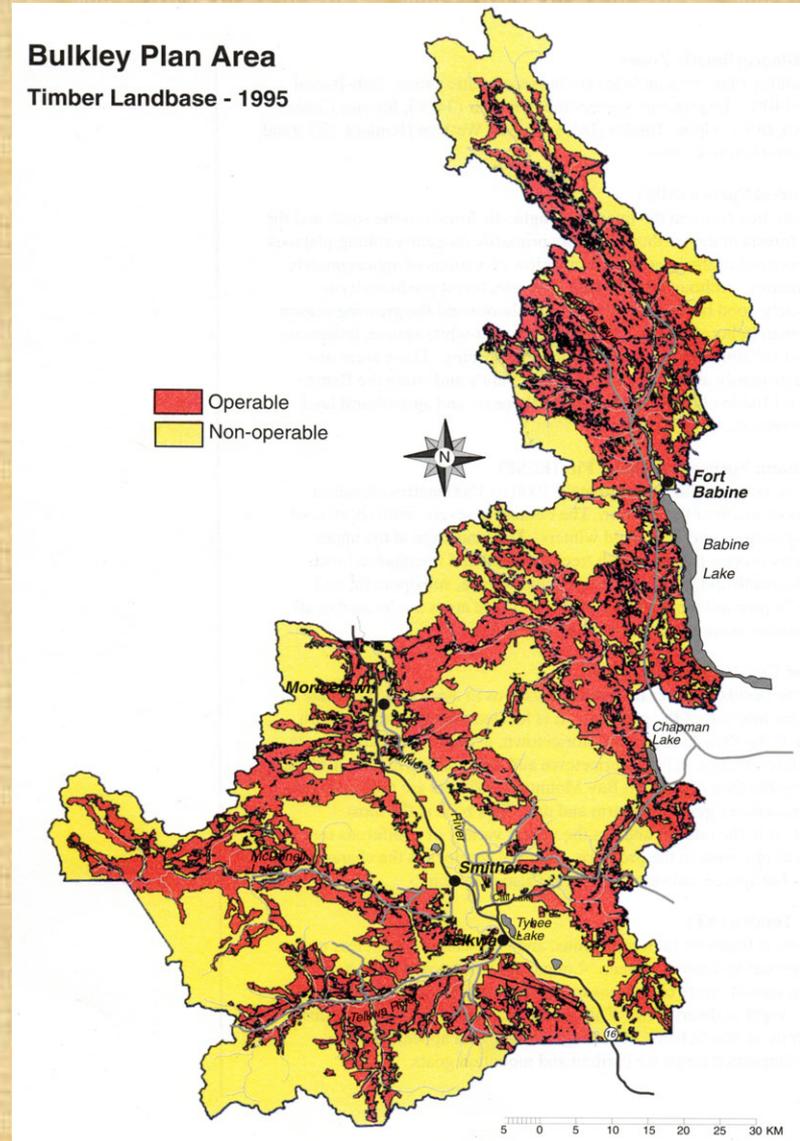
Management Emphasis	Treatment Options		
	Harvest	Silviculture	Culturing
Minimize Damage	low-impact harvesting	avoid herbicides, cutting berry bushes	n/a
Maintain	approp. silv. system, low-impact harvesting	low intensity burn, avoid cutting berry bushes, use sheep for B&W, space to low densities	n/a
Enhance	approp. silv. system, low-impact harvesting	low intensity burn, restock to low densities, use sheep, space to low densities	prescribed burning (off THLB), plant cuttings (off THLB), brush around berry bushes,

B&W = brushing and weeding

THLB = timber harvesting land base

Co-ordination & Planning:

- Zoning to avoid conflicts by managing off the timber harvesting land base (THLB)
- Maintain a steady supply of early-seral habitat through logging or fire



To Be Taken Seriously...



... \$

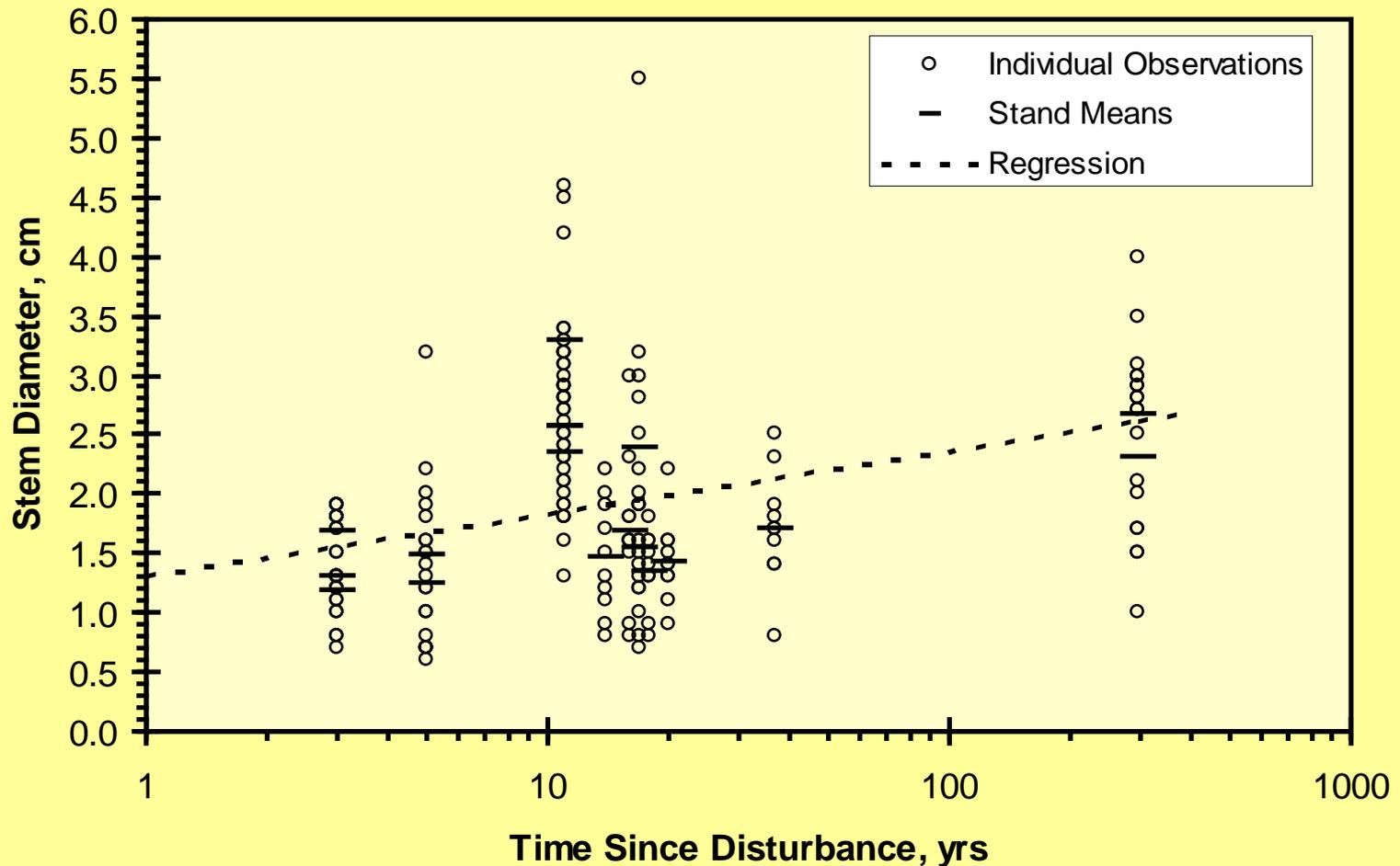
Case Study #3:

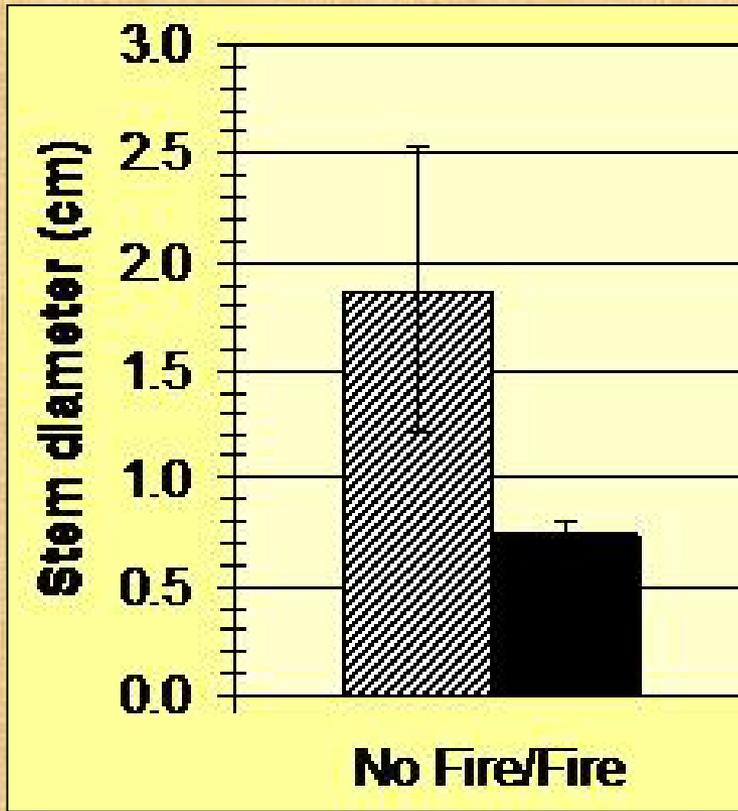
Devil's Club, *Oplopanax horridus*

- Widely used medicinal, tonic; current research as cancer treatment
- Typically harvested from old-growth forests
- Concern about population destruction, habitat loss associated with clearcutting



Results of Field Chronosequence Study





Protecting Devil's Club in Forestry Operations

- Flag and protect healthy populations of devil's club in green-tree retention patches or machine-free zones;
- Scattered slash can provide protection in clear cuts;
- Burn piles and slash burning should not be located in devil's club patches

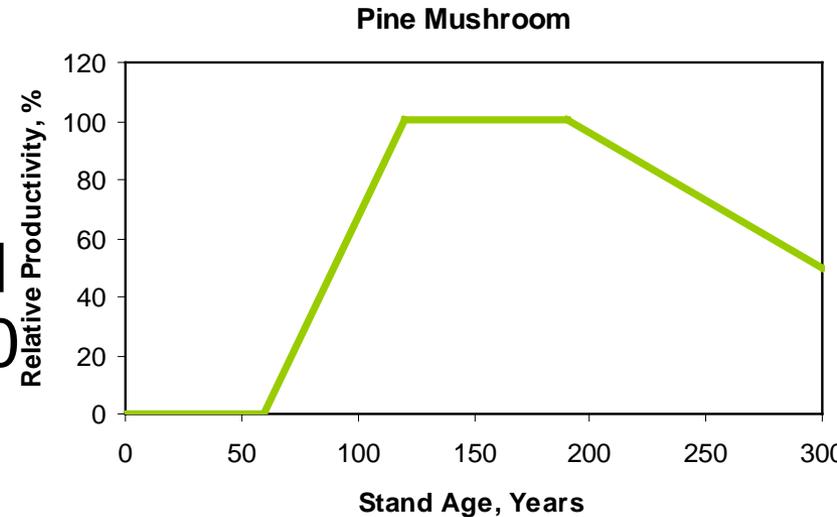
Yet to be tested:
need for shade
increases with
continentiality?



New, Increasingly Important Non-Timber Forest Values

e.g., Mushrooms

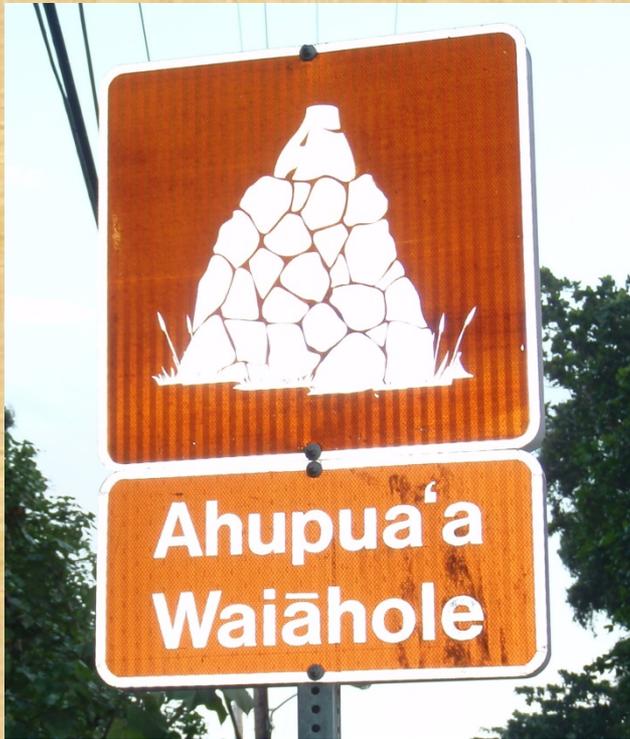
- Pine mushroom production optimal in sub-mesic even-aged pine & hemlock stands, 120-200 yrs old;
- Some species are especially abundant after forest fires, e.g., morels
- Many other mushrooms (e.g., boletes, chantarelles) are more abundant in uneven-aged stands, old-growth forest with small gaps





Lessons Learned

- Traditional land management systems over small scales provide a valuable template for sustaining multiple values;
- There must be a supportive policy framework; even then, many values will have different management needs;
- You have to be assertive, yet speak the same language as foresters: e.g., rotations, yield curves, retention, stocking;
- Redirect logging or non-timber activities across a landscape in a strategic manner; zoning helps;
- Use partial cutting, variable retention, flexible stocking & selective brushing to provide appropriate light/shade;
- Use or avoid use of fire appropriate to the ecology.

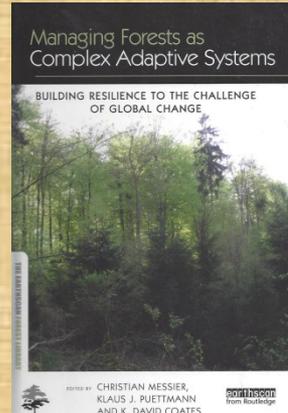
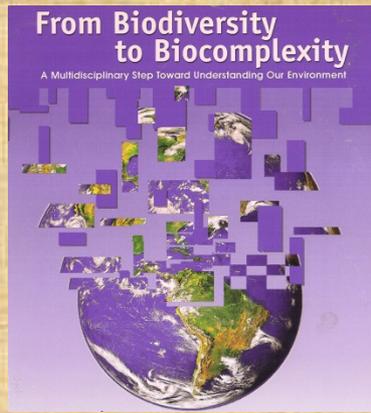
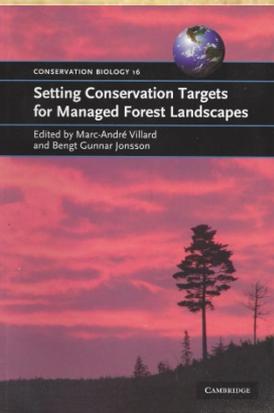


Self-contained sustainability units widespread in traditional societies, e.g., ancient Hawai'i



A Few Added Benefits ... and Risks ...

- Ecological as well as socio-cultural benefits;
- Many diverse management units provide resilience → the landscape as a complex adaptive system;
- But large-scale disturbances (e.g., forest fire, insect outbreaks) can compromise entire small-scale management units → necessitating contingency planning, e.g., trade with neighbors



Overall Conclusions

- Most traditional, subsistence-based societies obtained most necessities over relatively small areas
- Trade exists where resources exceed local needs, and are less abundant or temporarily lacking elsewhere, typically associated with ecological zonation
- Local-scale sustainable management also provides a good model for biodiversity conservation and the protection of non-commercial values.
- Many of historic trade routes and products are part of our globalized economy today
- Yet the degree to which people (especially in rural and remote communities) still depend on subsistence resource use is poorly document and appreciated.

Conclusions and Connections

HISTORY

PHARMACOLOGY

MEDICINE

**ECONOMIC
BOTANY**

LINGUISTICS

LAND

MANAGEMENT

ETHNOBIOLOGY

ECOLOGY

**LAW &
TITLE**

RELIGION

EXPLORATION

AGRICULTURE

GEOGRAPHY

CUISINE

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- Northwest Institute for Bioregional Research
- Bulkley Valley Community Resources Board

Thank-you!

symbios@telus.net
phil.burton@unbc.ca

