



Coastal and Marine Spatial Planning

West Coast Vancouver Island Case Study

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September 11, 2012



Coastal and Marine Spatial Planning in the West Coast Vancouver Island, BC, Canada

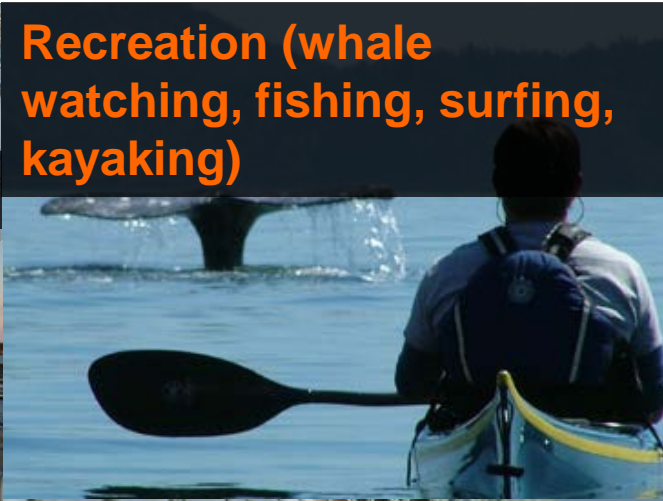
- analyzes current and anticipated uses
- identifies areas most suitable for various activities
- provides a process to better determine how oceans are sustainably used and protected



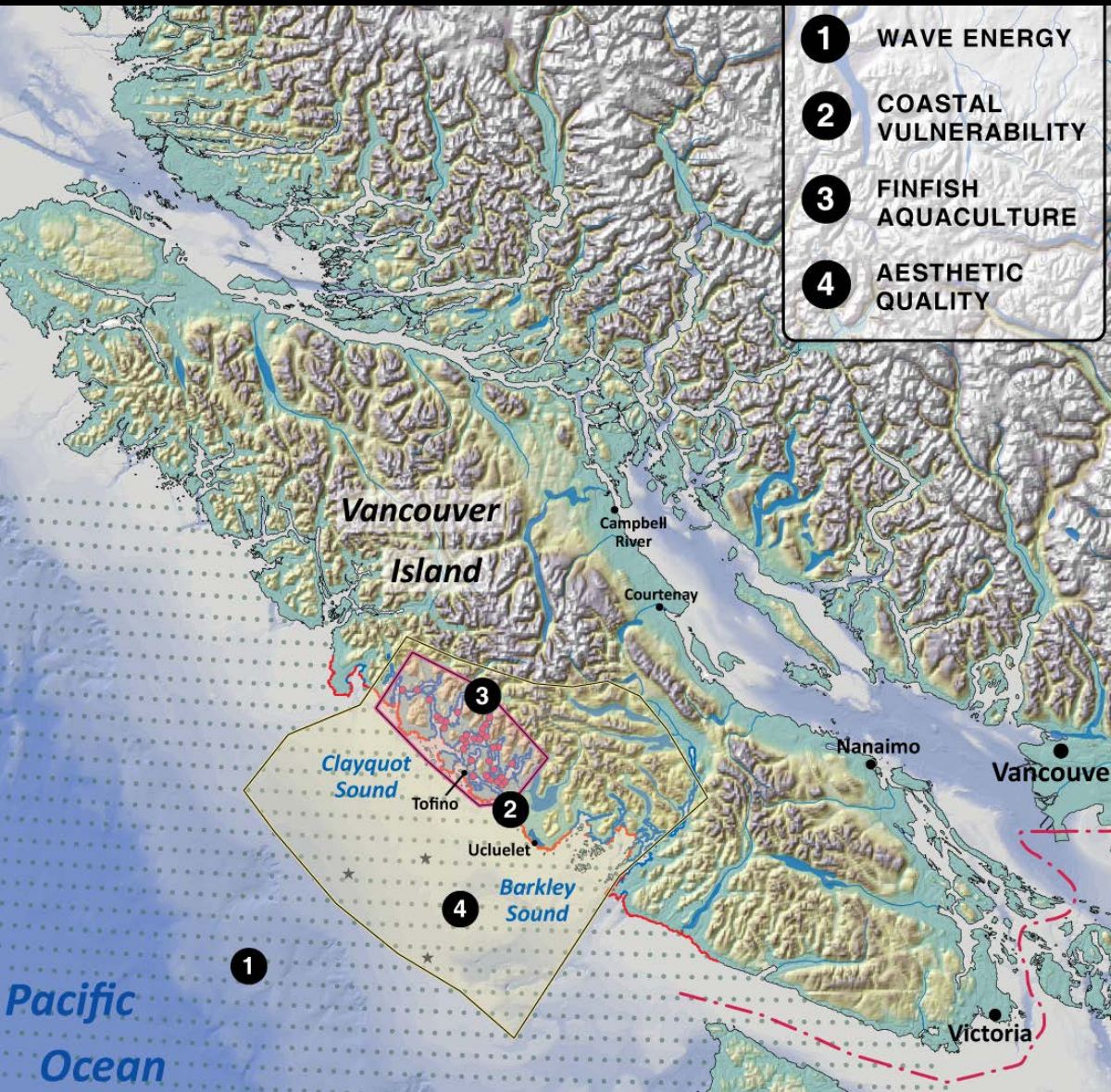
West Coast Aquatic Management Board

[Federal, Provincial, First Nation, and local governments]

Create a marine spatial plan that balances interests of multiple stakeholders



Model Applications to the West Coast of Vancouver Island



5. Human Uses for
Recreation and Fisheries

6. Habitat Risk Assessment

7. Water Quality

Policy step

InVEST Contribution

Scoping

Identify visions and values

Explore existing human uses

Develop governance structure

Assess existing conditions

Identify hotspots of human uses and risk

Identify hotspots of benefits

Develop scenarios

Assess future conditions

Assess status of ES under alternative future scenarios

Develop spatial management plan

Identify management strategies

Implementation

Monitoring and evaluation

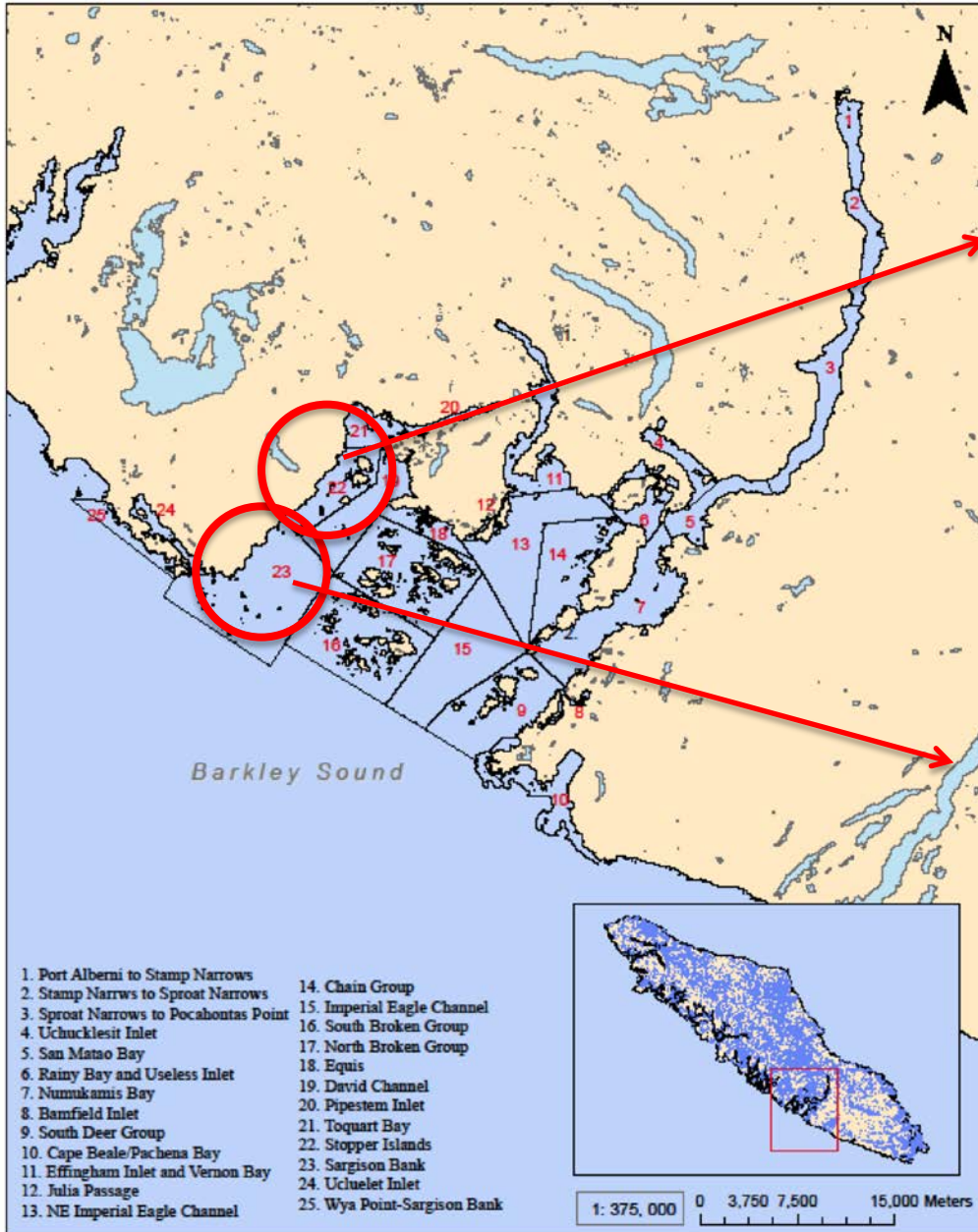
Inform monitoring plans

Adaptation

Re-work initial scenarios, run models again...iterative

Barkley Sound Marine Planning Units

Date Created- April 9, 2011



Plan Recommendations:

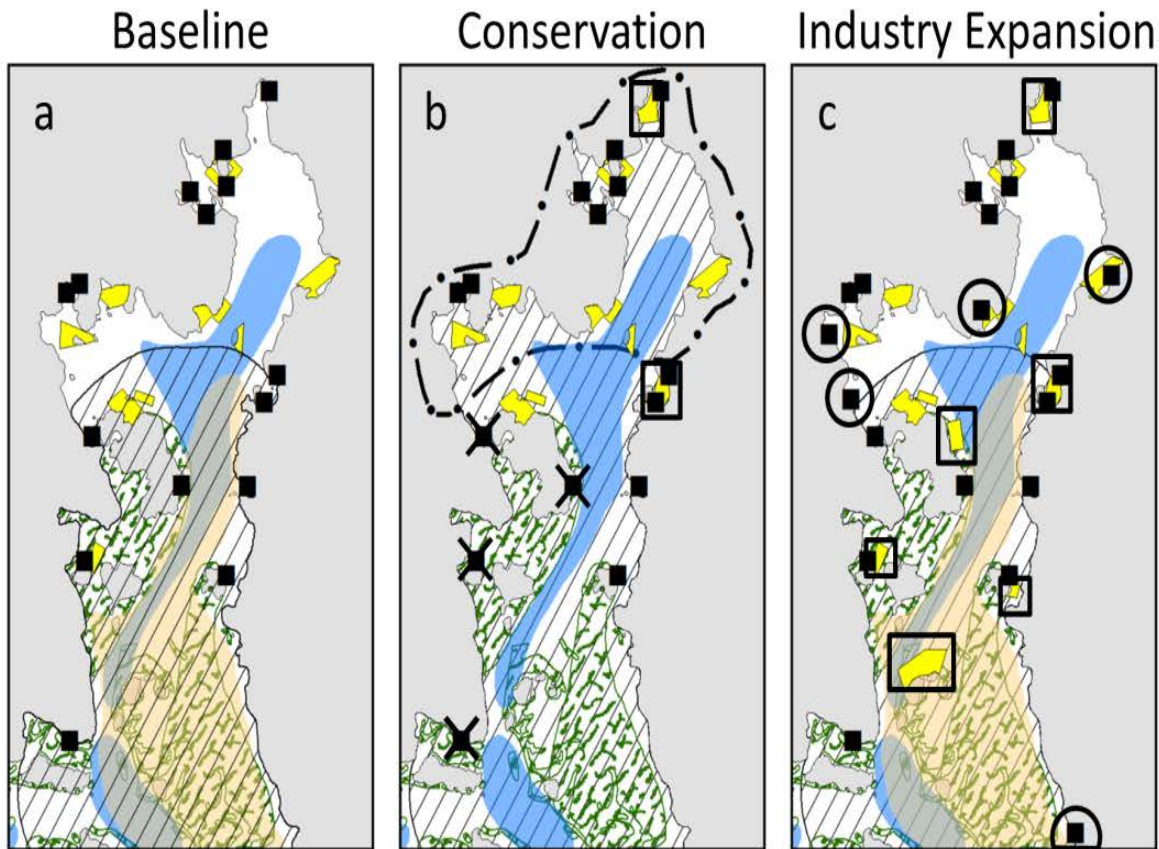
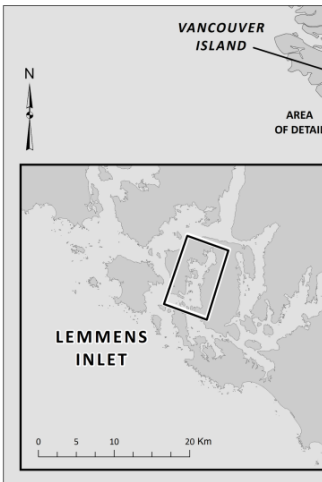
Tenured Uses

<input checked="" type="checkbox"/>	Shellfish Beach Aquaculture	<input checked="" type="checkbox"/>	Public Docks
<input checked="" type="checkbox"/>	Shellfish Deep Water Aquaculture	<input checked="" type="checkbox"/>	Float Homes
<input checked="" type="checkbox"/>	Marine Plant Aquaculture		Marine Telecommunications and Utilities
	Finfish Aquaculture		Commercial Recreation and Guiding
	Log Handling, Storage and Infrastructure	<input checked="" type="checkbox"/>	Floating Lodges and Base Camps
	Private Docks		Conservation
	Commercial and Industrial Docks		

Plan Recommendations:

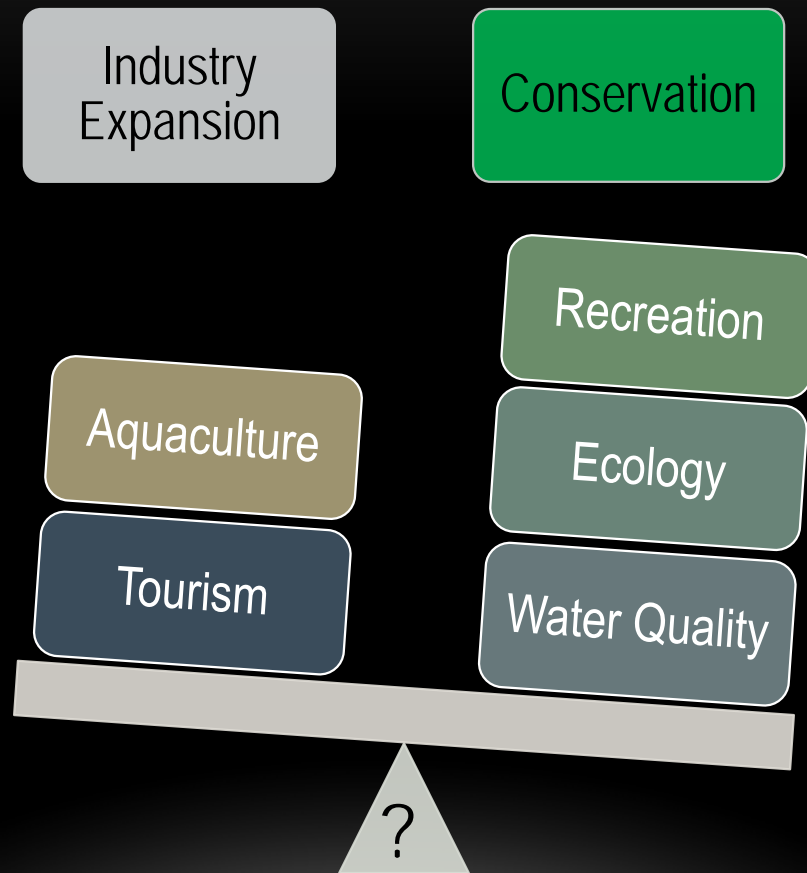
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	Log Handling, Storage and Infrastructure		Floating Lodges and Base Camps
	Private Docks		Conservation
	Commercial and Industrial Docks		



- Float Homes
- ▨ Recreational Kayaking
- ▭ Increased Kayaking
- Shellfish Aquaculture
- Geoduck Harvest
- Crab Harvest
- Eelgrass

	Baseline	Conservation	Industry Expansion
Recreational Float Homes (#)	15 floathomes	Remove 4 floathomes	Add 5 new floathomes
Recreational Kayaking	In the south region	South + North (57%)	South region
Shellfish Harvest	- Oyster farms - Geoduck Harvest	- 2 new oyster tenures - No geoduck harvest	5 new oyster tenures Geoduck Harvest

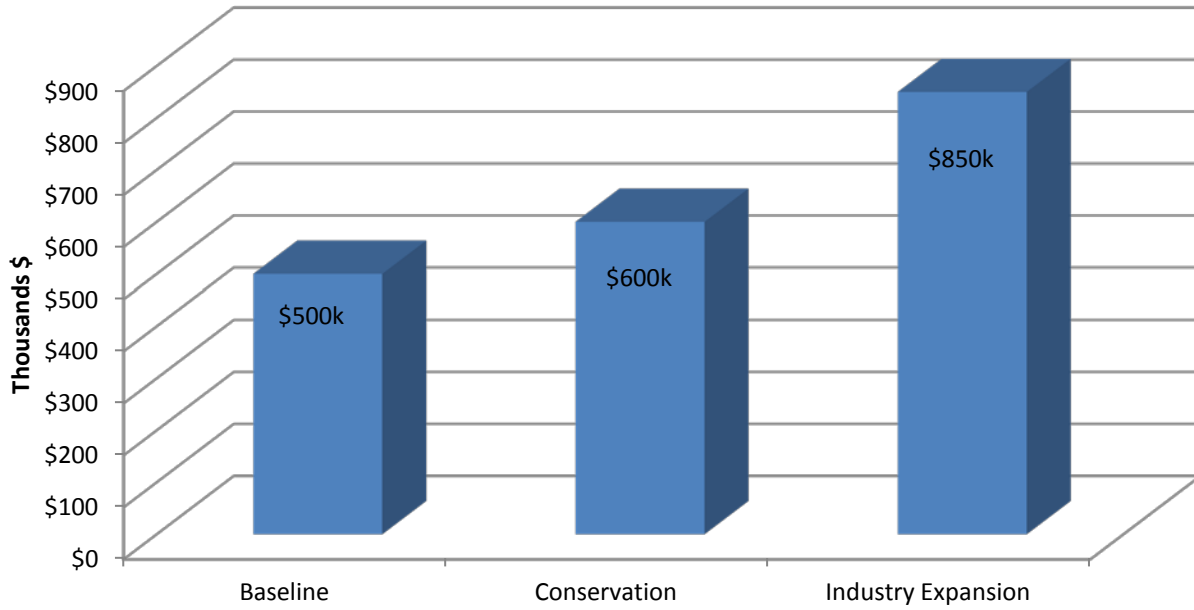


ECOSYSTEM SERVICE TRADE-OFFS

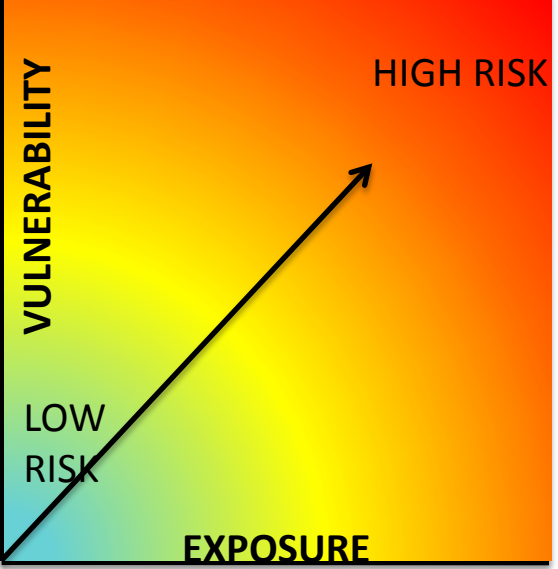


InVEST: Aquaculture Farm Model

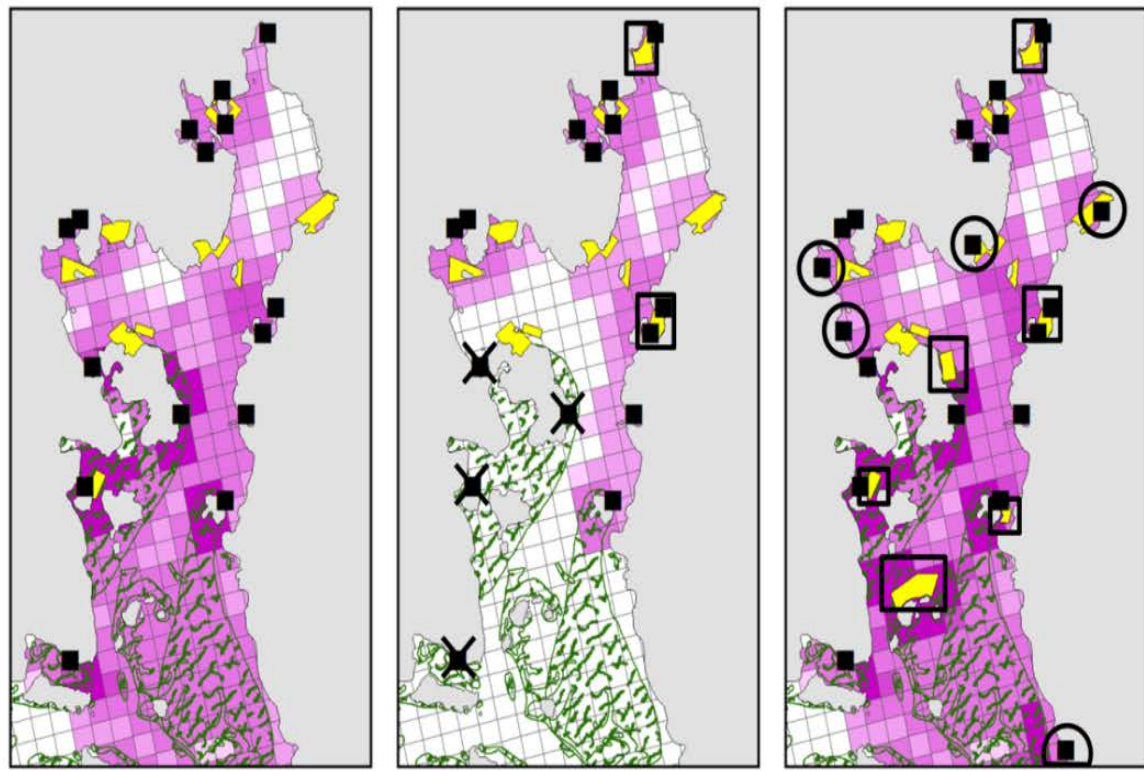
Value of annual oyster Harvest



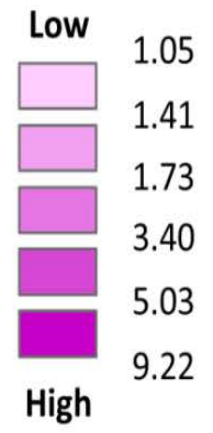
InVEST: Habitat Risk Assessment



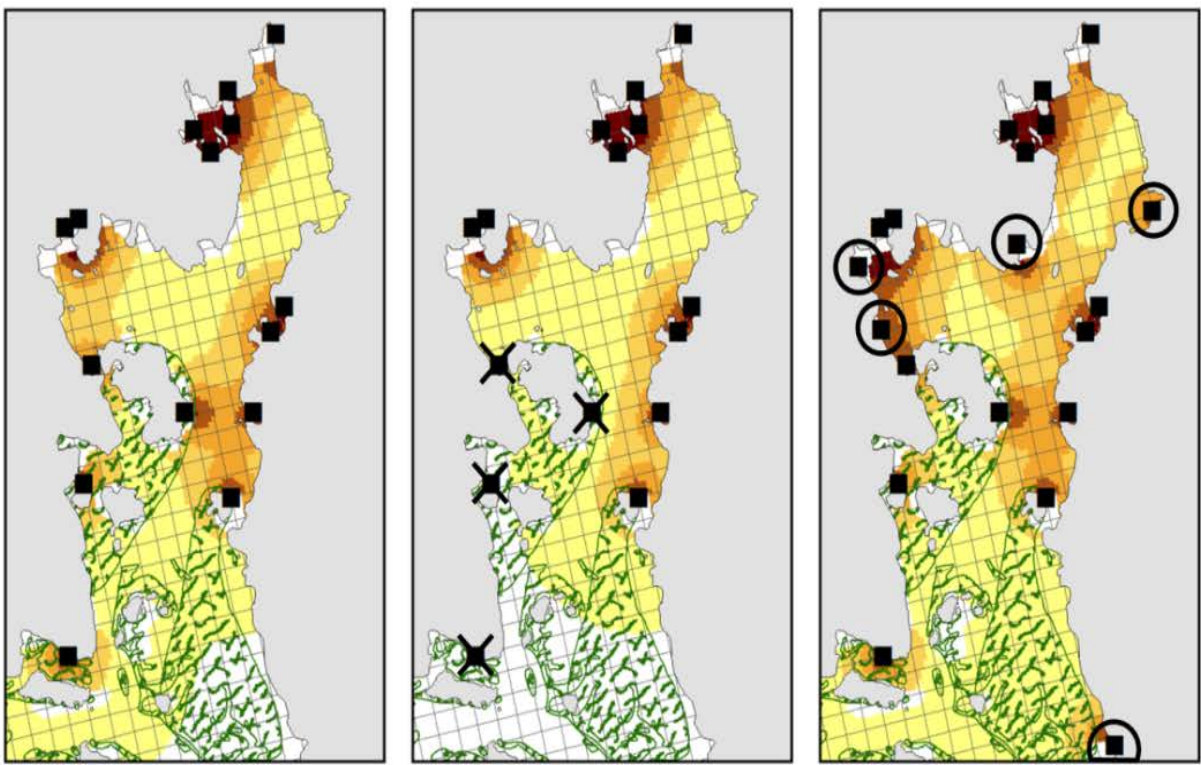
(stressors) **Baseline** **Conservation** **Industry Expansion**



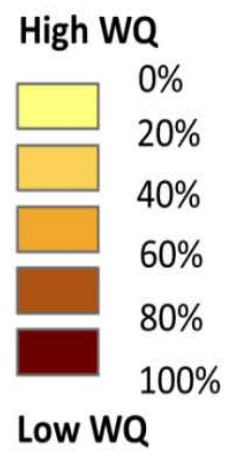
Ecosystem Risk
(cumulative risk to habitats)



InVEST: Water Quality Model



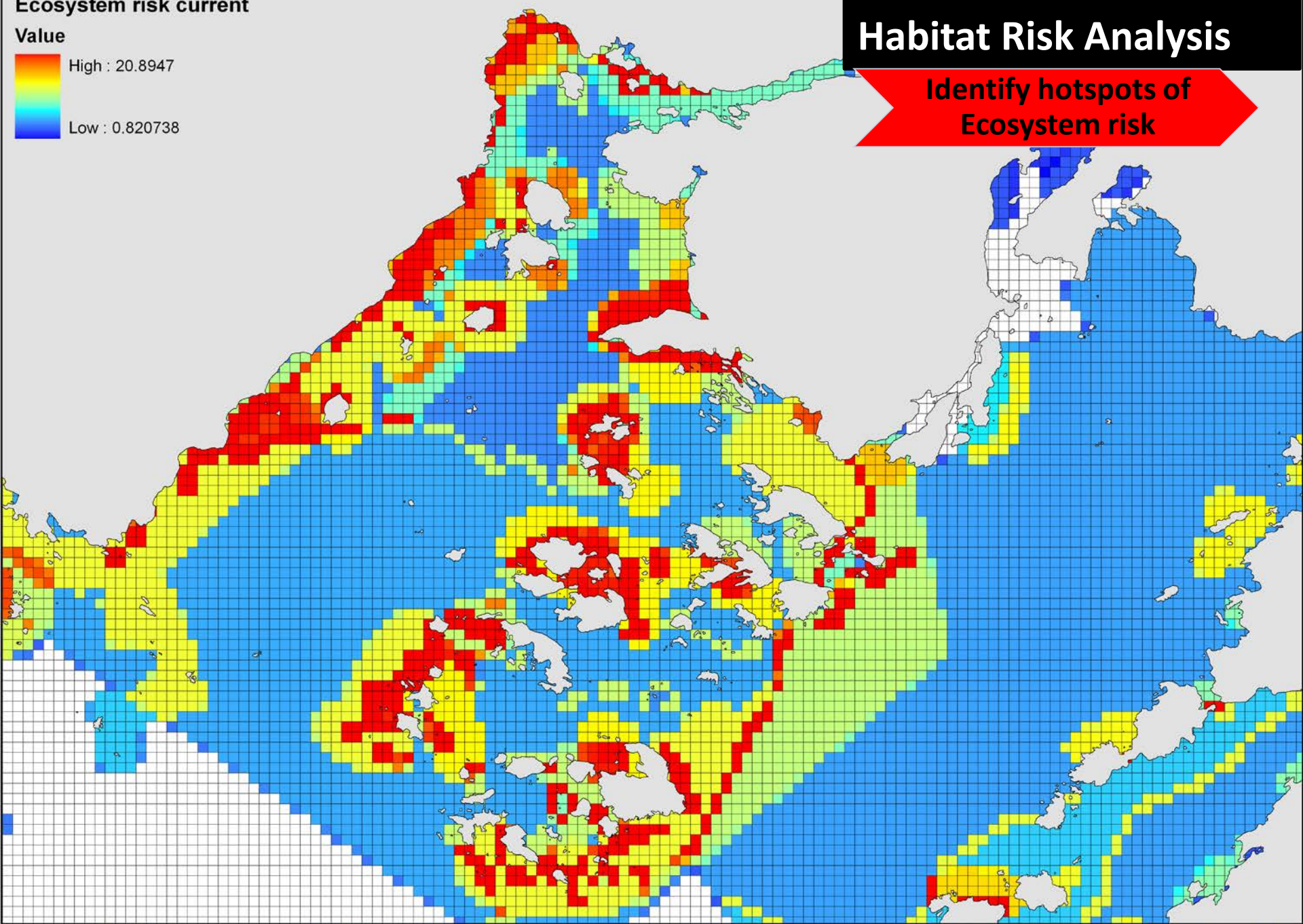
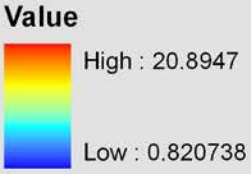
Water Quality Index
(relative to the source concentration of fecal coliform bacteria)



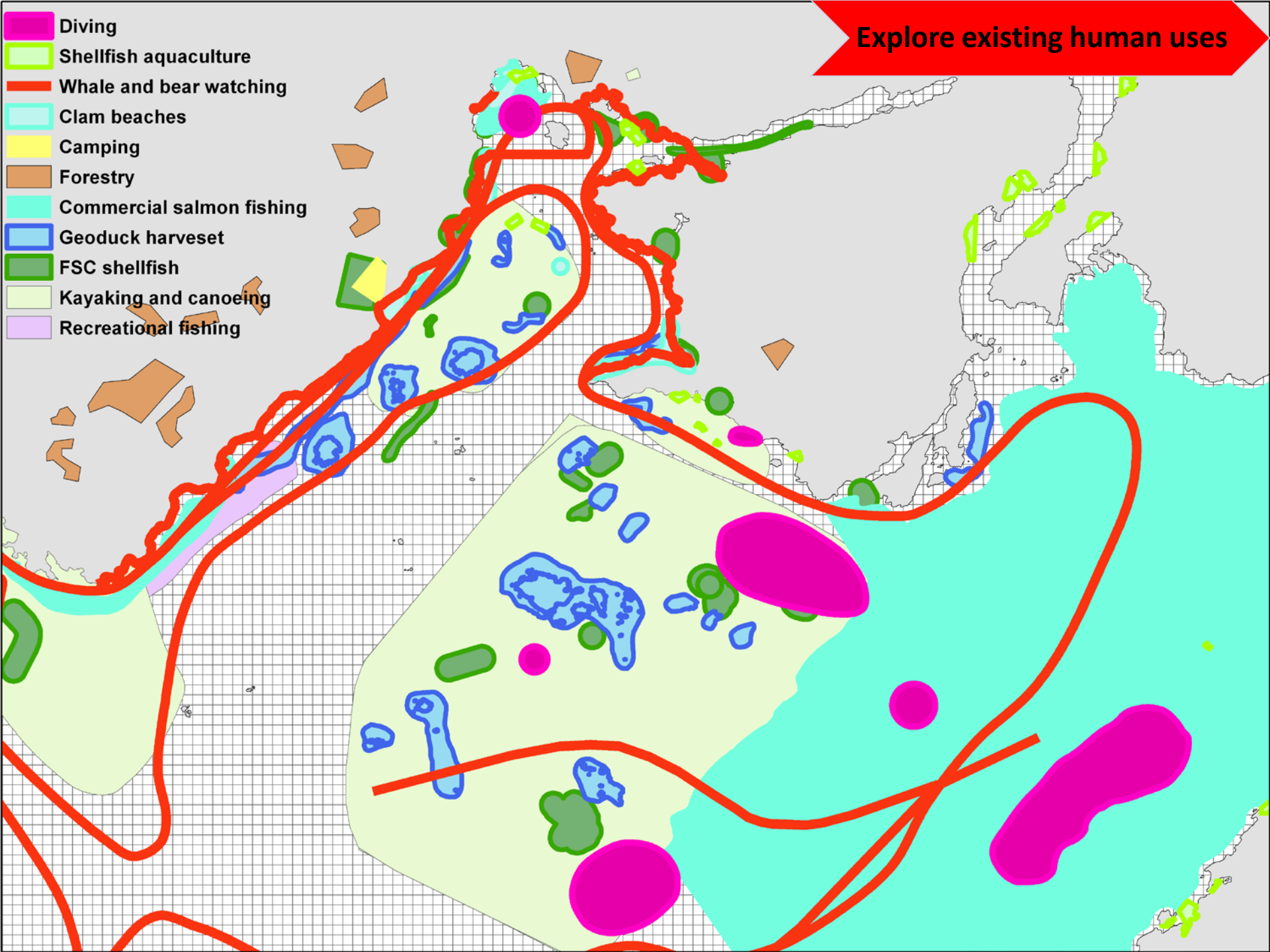
InVEST: Habitat Risk Analysis

Identify hotspots of
Ecosystem risk

Ecosystem risk current



Explore existing human uses



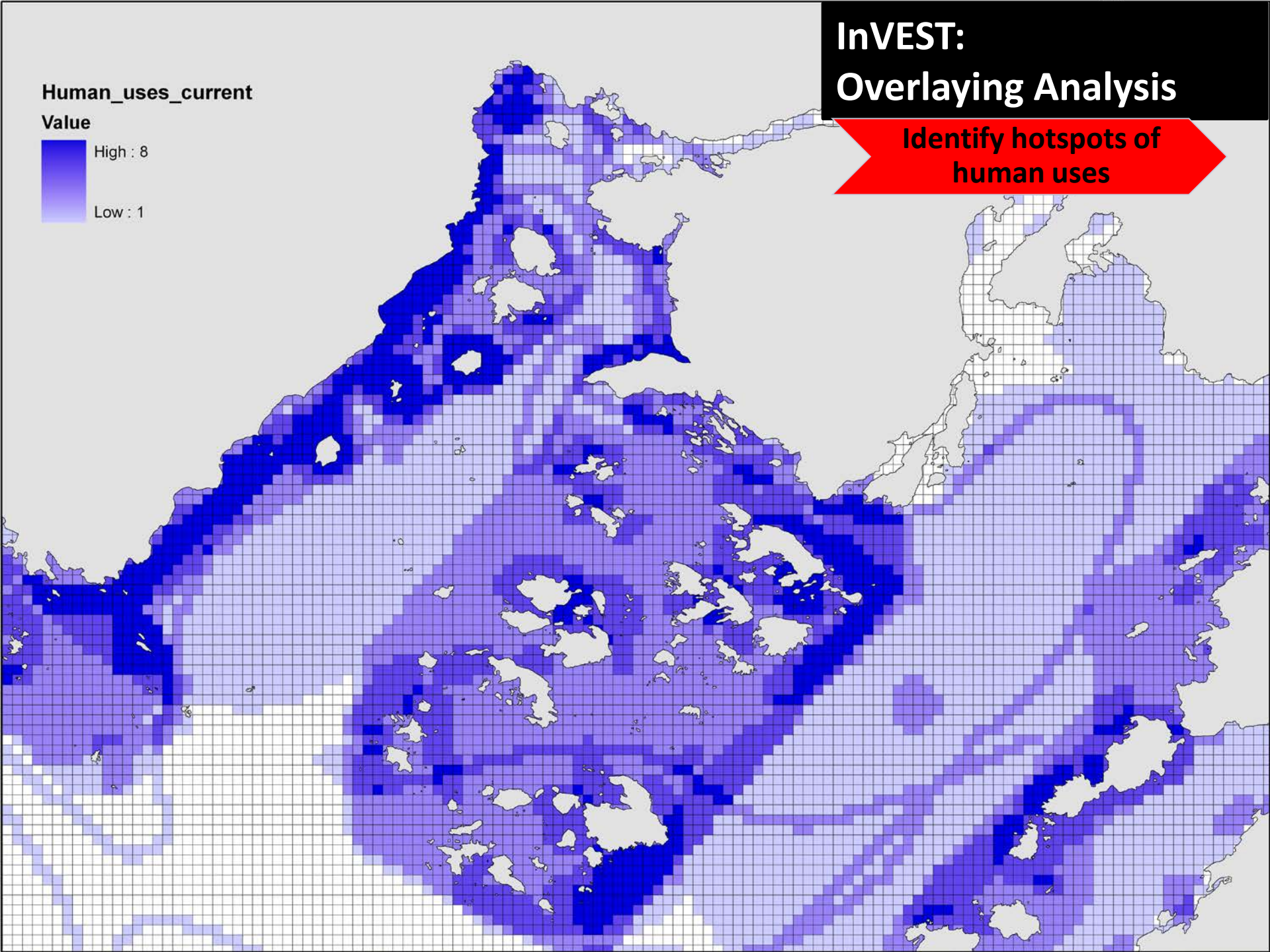
InVEST: Overlaying Analysis

Human_uses_current

Value



Identify hotspots of human uses



Coastal Vulnerability Index

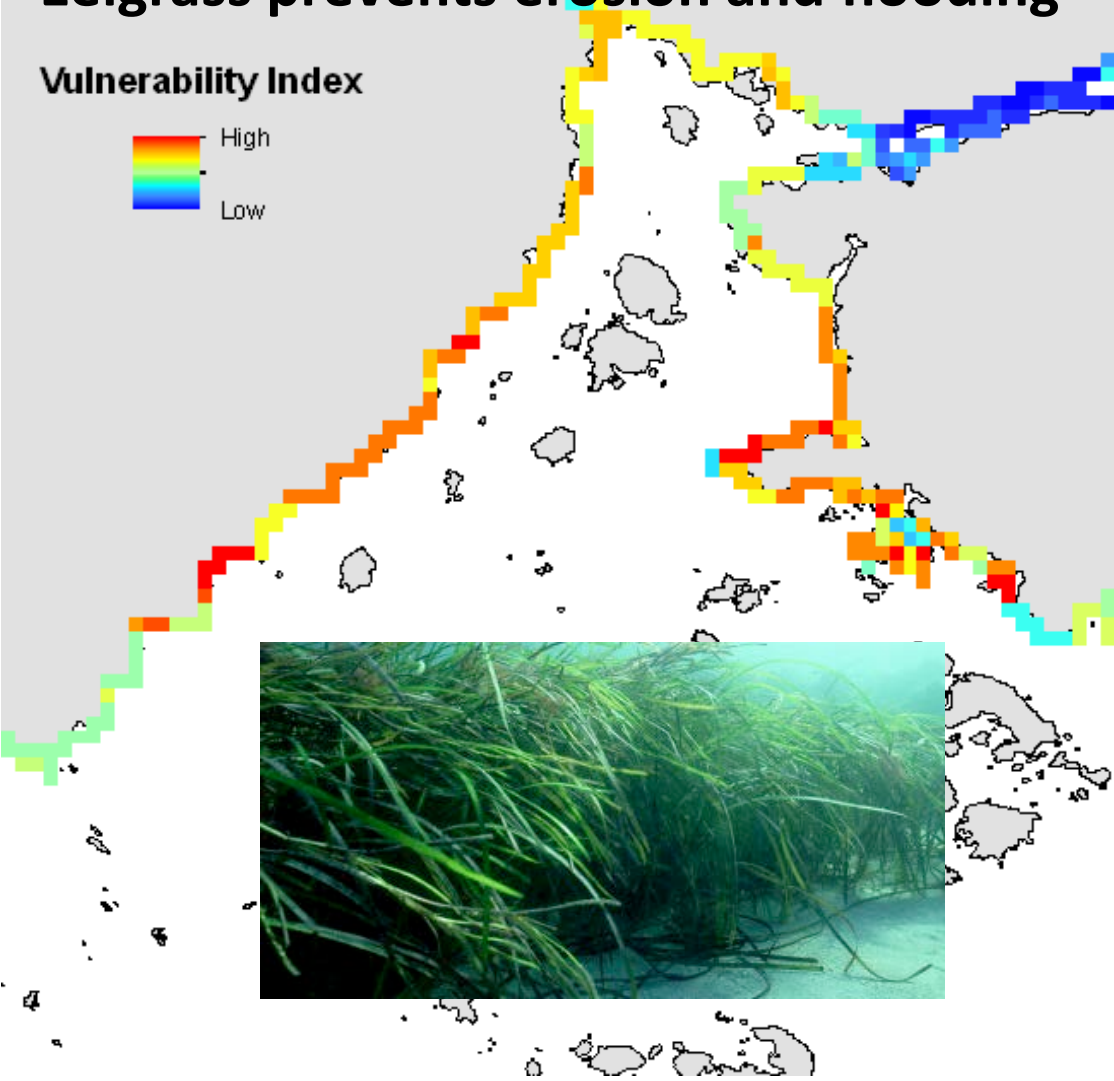
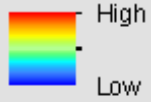


Rank	Very Low	Low	Moderate	High	Very High
	1	2	3	4	5
Geomorphology	Rocky; high cliffs; fiord; fiard	Medium cliff; indented coast	Low cliff; glacial drift; alluvial plain	Cobble beach; estuary; lagoon; bluff	Barrier beach; sand beach; mud flat; delta
Relief	> 90th Percentile	> 75th Percentile	Average value	< 25th Percentile	< 10th Percentile
Natural Habitats	Coral reef; mangrove; coastal forest	High dune; marsh	Low dune; oyster reef	Seagrass; kelp	No habitat
Sea Level Change	Net decrease		±1		Net rise
Wind Exposure	< 10 th Percentile	< 25 th Percentile	Average value	> 75 th Percentile	> 90 th Percentile
Wave Exposure	< 10 th Percentile	< 25 th Percentile	Average value	> 75 th Percentile	> 90 th Percentile
Surge Potential	No exposure	< 25 th Percentile	Average value	> 75 th Percentile	> 90 th Percentile

Qualitative assessment of vulnerability based on mixture of **relative and absolute** rankings

Eelgrass prevents erosion and flooding

Vulnerability Index



InVEST: Coastal Vulnerability

Identify hotspots
of benefits

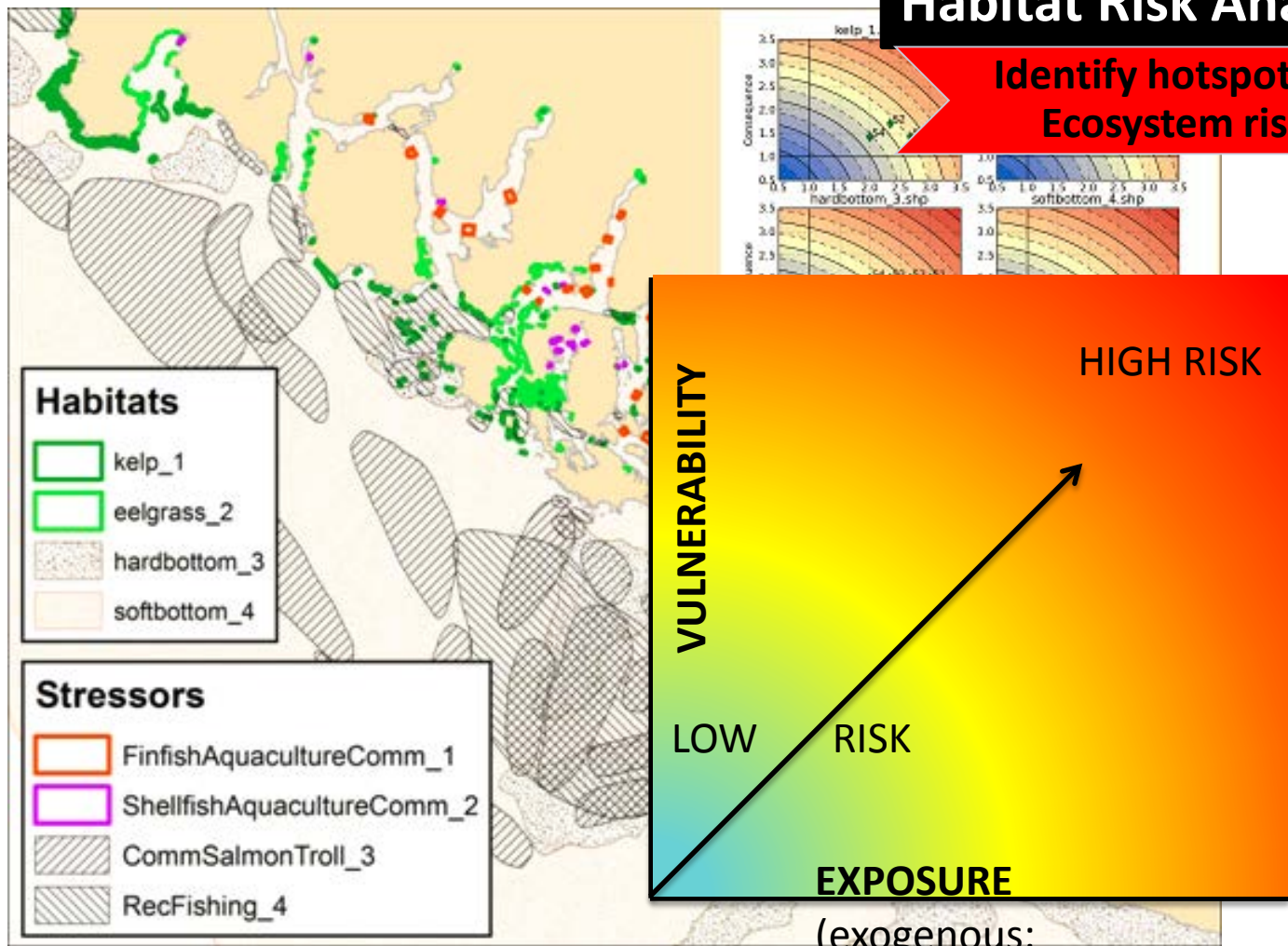
- geomorphology
- presence of habitats
- sea level change
- wind-wave exposure
- surge potential



loss of public & private property

InVEST: Habitat Risk Analysis

Identify hotspots of
Ecosystem risk



(exogenous:
management,
intensity, timing etc)

Special Places

Where places in
Inlet Harbour/Barkley Sound
are important to you?



VISION

IN 20 YEARS WHAT
DO YOU WANT TO SEE IN
THE ALBERNI INLET/BARKLEY SOUND?

a thriving salmon fishery under local
control - First Nations mainly.

✓ HEALTHY OCEAN / SALMON

✓ TIDAL WAVE ENERGY IF
ENVIRONMENTALLY SOUND

✓ - A MGMT. COMMITTEE

✓ - Healthy Salmon system
- Integrated Synergies & Ethical
Resource Mgt

- Salmon

Photos: WCA

