



**Georgia Basin - Puget Sound  
Indicators Working Group**

**Georgia Basin-Puget Sound  
Ecosystem Indicators:  
From Science to Change**

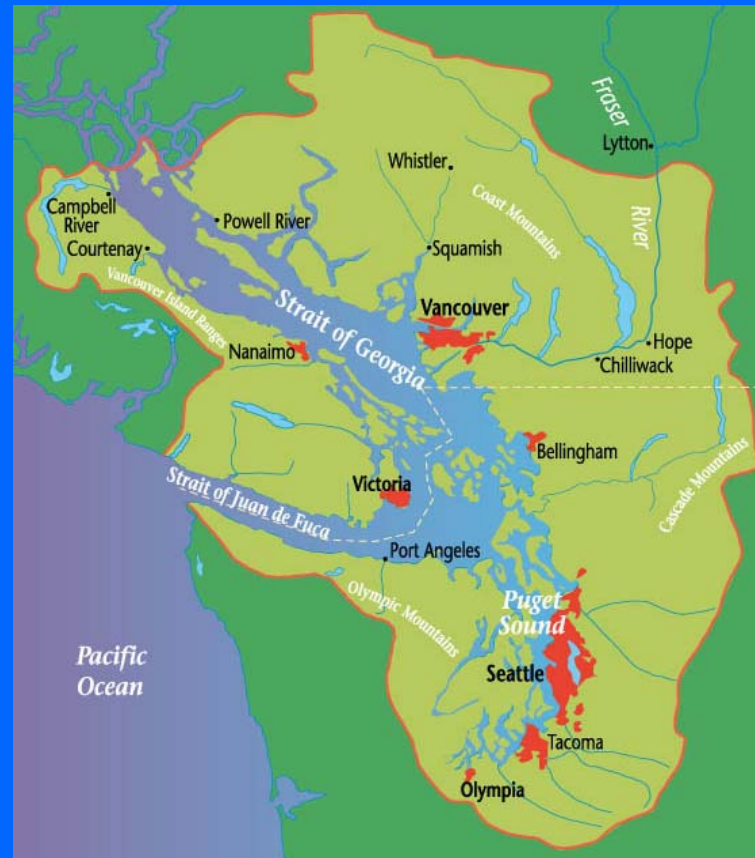
**April 2, 2003**

**BC-Washington Environmental Cooperation  
Council**

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# Georgia Basin/Puget Sound Ecosystem Indicators Report





# Background

- **Working Group established 1999**
- **Goal:** Develop transboundary environmental indicators and communicate to public and decision makers
- **Representatives from:**
  - BC Ministry of Water, Land and Air Protection
  - U.S. Environmental Protection Agency
  - Environment Canada
  - Department of Fisheries and Oceans
  - Washington Department of Ecology
  - Puget Sound Water Quality Action Team
- **Over 23 agencies contributed**



# Scope of the Report

## Six ecosystem indicators:

- Population Distribution & Growth
- Air Quality (PM<sub>10</sub>)
- Domestic Solid Waste
- Persistent Organic Pollutants in Harbour Seals
- Species at Risk
- Terrestrial Protected Areas

## Printed and web-based versions:

<http://wlapwww.gov.bc.ca/cppl/ecc>

<http://ecy.wa.gov>



# For Each Indicator...

- **Description, maps, graphs**
- **What is Happening?**
- **Why is it Happening?**
- **Why is it Important?**
- **How does it Compare?**
- **What is Being Done?**
  
- **Additional technical background documents available**



# Challenges

- **Data not available or incompatible**
- **Different institutional, governance models**
- **Different legal frameworks**
- **Low priority for transboundary work**



# Population in Georgia Basin/Puget Sound

- 7 million people lived here in 2000
- May reach 9 million by 2015
- Key driver of ecosystem problems



Percent of total population



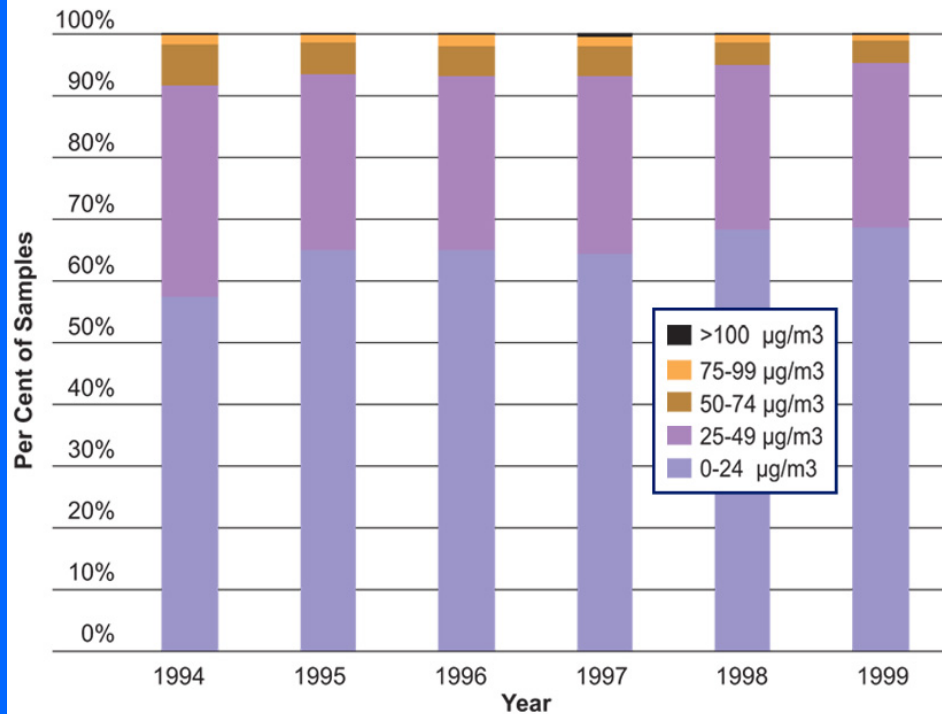
Source: Environment Canada; BC Statistics; Washington State Office of Financial Management 2001.



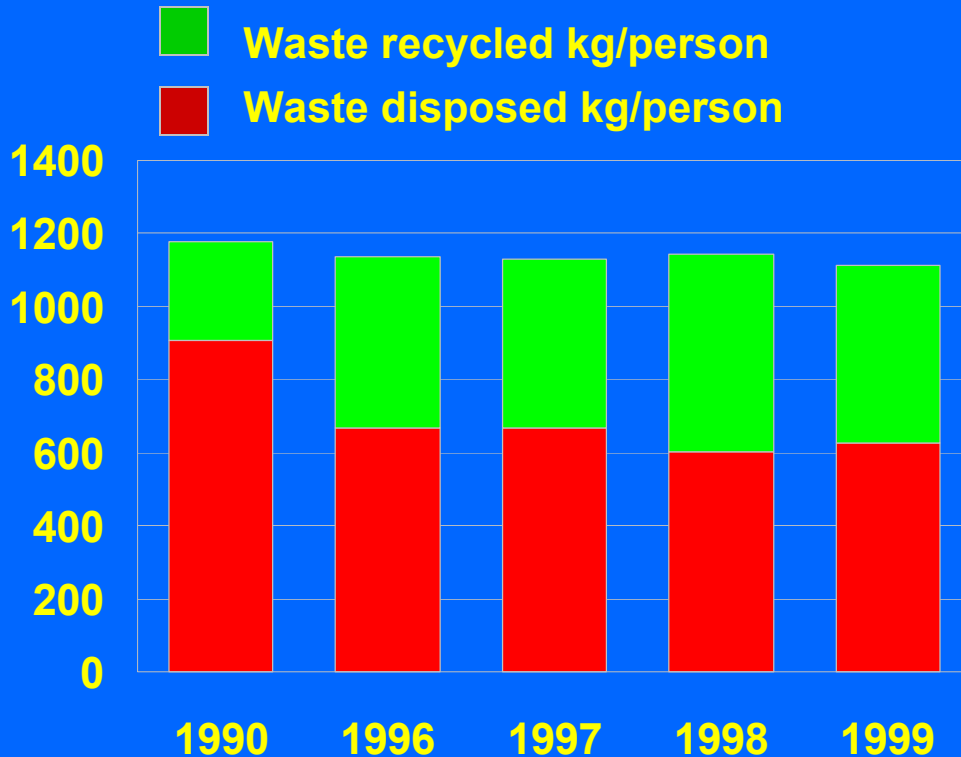
# Air Quality (PM<sub>10</sub>)

•PM<sub>10</sub> levels slightly improved

PM<sub>10</sub> LEVELS IN PUGET SOUND, 1994-1999



# Domestic Waste



- >40% per capita waste recycled annually—nearly double since 1990.

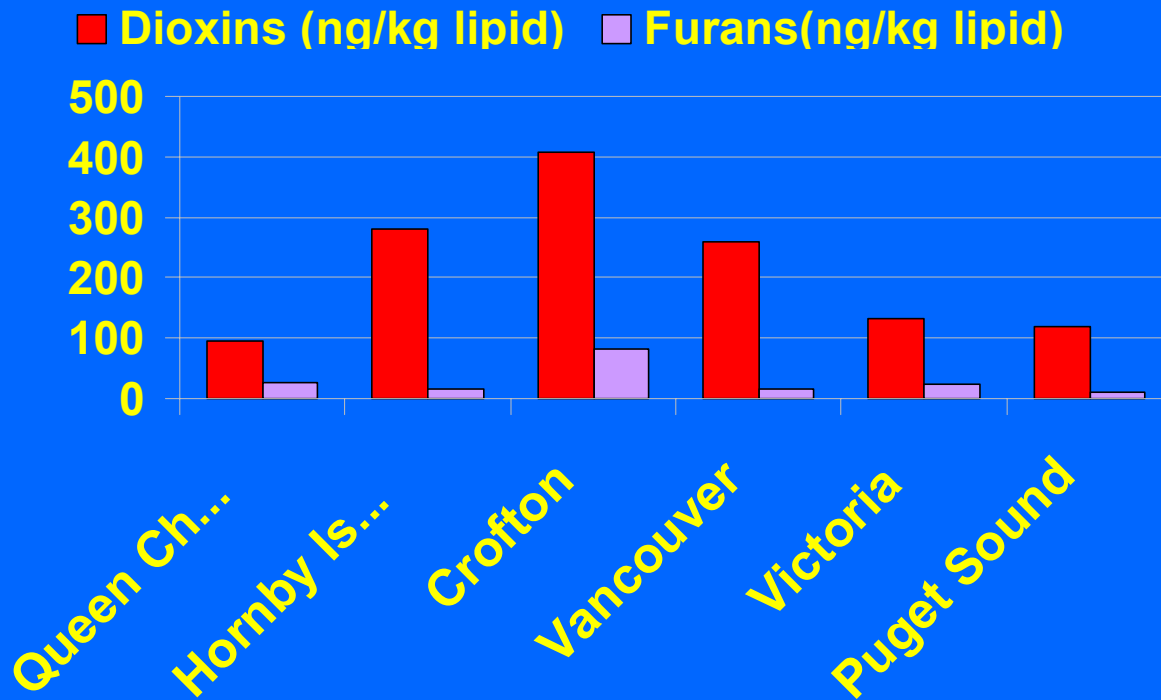
- Amount per person has leveled off

- Total waste continues to grow

Source: Ministry of Environment, Lands and Parks, Pollution Prevention and Remediation Branch 2000.



# Dioxin and Furan Levels in Harbour Seals



- Dioxins, furans levels are higher in Georgia Strait seals

- PCB levels in Puget Sound seals are highest in US

Source: Canadian Department of Fisheries and Oceans 2001

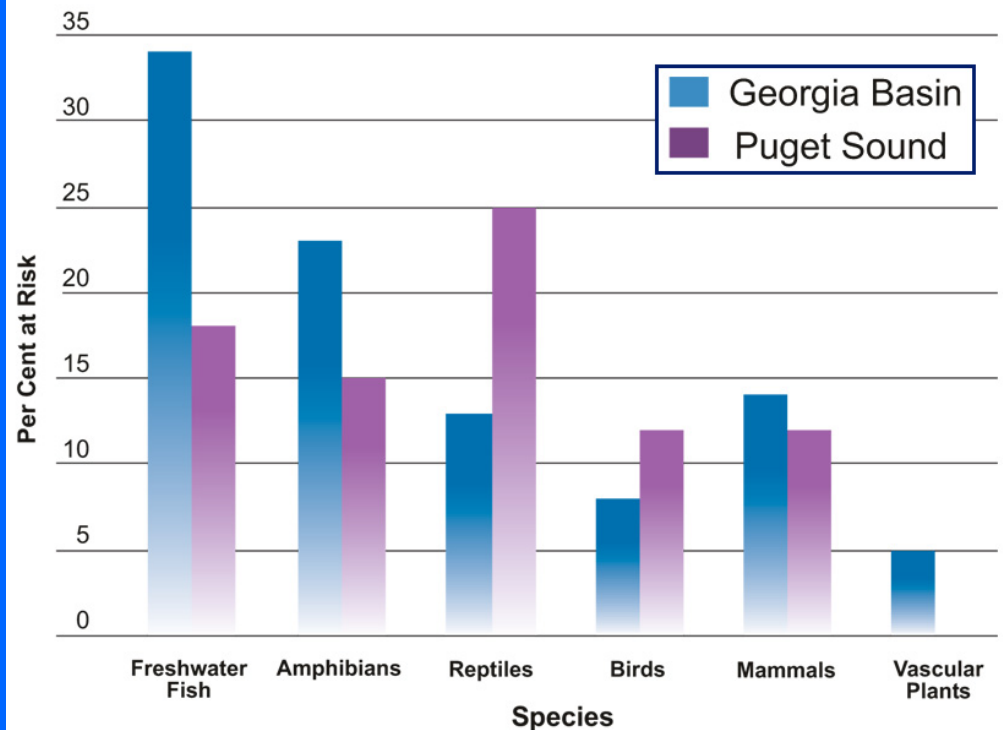


# Species at Risk

- Numbers of grave concern, especially in high population & farmed areas

- Half of all 'at risk' vertebrates, 1/3 of 'at risk' plants in BC are in Georgia Basin

SPECIES AT RISK IN THE GEORGIA BASIN AND PUGET SOUND  
(AS A PERCENTAGE OF NATIVE BREEDING SPECIES)

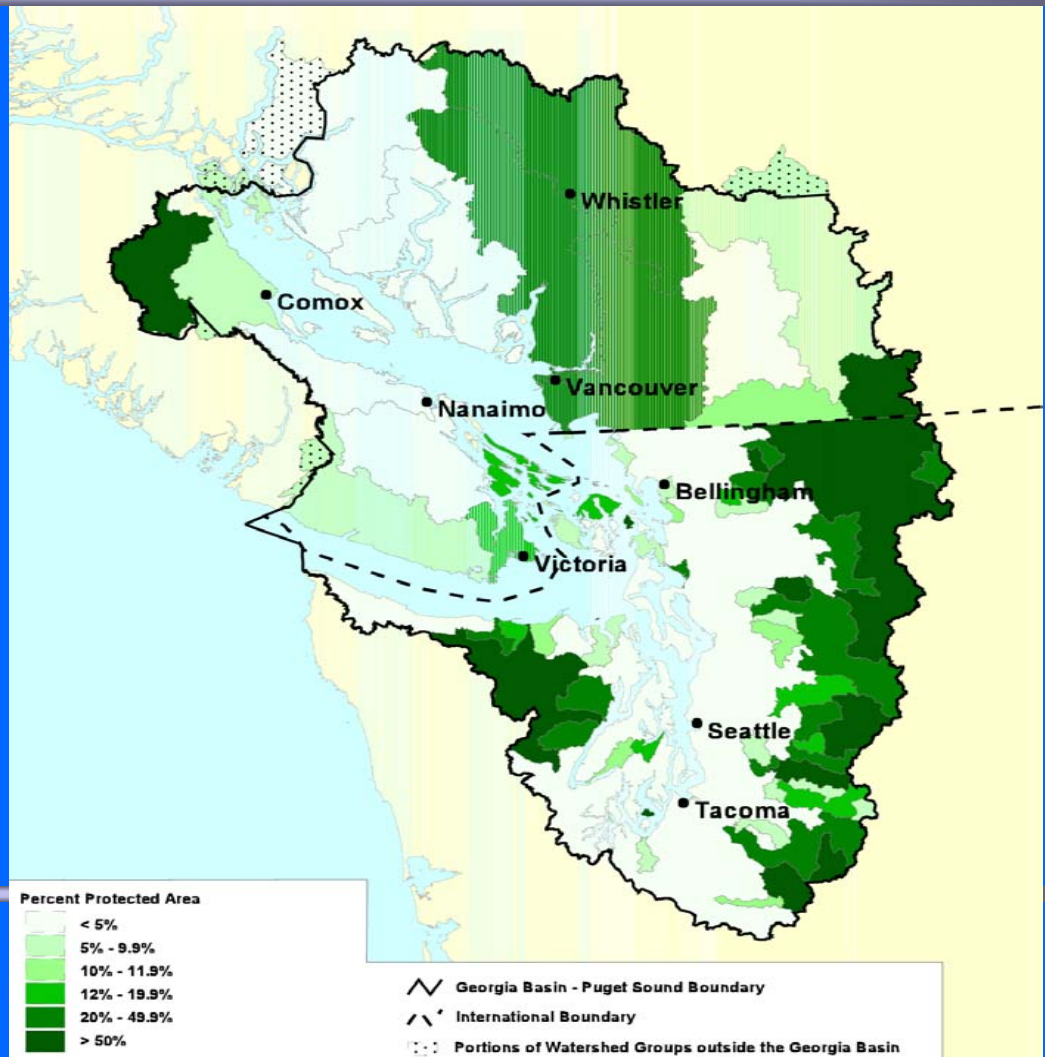


# Protected Areas

• Protected areas under-represented in critical areas:

– Low elevations (<3000 ft. in Puget Sound)

– Marine and freshwater habitats





# The Story so Far...

- **Impact of large, rapidly growing population in the region:**
  - Air quality
  - Water quality and hydrology
  - Wildlife habitat and biodiversity
- **Impact of consumption habits of population:**
  - Waste production
  - Resource consumption (e.g., habitat)



# Analyzing Trends Indicators:

- **Air quality:  $PM_{10}$  levels decreased since 1990's**
  - Emission control regulations and programs
- **Waste disposed per capita decrease; recycling increased**
  - Curbside recycling programs, public education, product stewardship programs
- **Decline in PCB and DDT contamination in seals**
  - Large drop after use restricted in 1972



# Analyzing Trends Indicators:

- **Per capita recycling and waste disposed has leveled off:**
  - What is needed to get these trends going in the desired direction again?
- **Decline in PCB and DDT in seals leveled off after initial drop**
  - Effect of long range transport, contaminated sediments?



# Analyzing Status Indicators:

- **Proportionally more freshwater fish, amphibian and reptile species are at risk**
  - **Loss of aquatic, wetland and riparian habitats**
- **Area and size of protected areas lowest at low elevations**
  - **Highest concentrations of human development**



# Much more to the story....

- **Six indicators are only a beginning**
- **State of our knowledge continually improves (e.g., future focus on  $PM_{2.5}$ )**
- **Communicating doesn't stop with publication of a report**
- **Indicator information must be integrated into policy development**



# Getting Value from the Report

- **Strategic marketing and distribution to the public**
- **For government decision-makers:**
  - Assess or interpret indicator information
  - Develop policy recommendations for strategic responses
- **Use environmental information effectively to evaluate results of management plans**



# Improving the Process

- **Secure institutional & staff commitments upfront**
- **Articulate objectives, audience & purpose**
- **Involve the audience and external parties early**
- **Build bi-national capacity, trust, relationships**
- **Enhance relevance by balancing science, community, economic and other values**



# Effecting Change

- Realize that reporting is the first step towards change
- Change applies to values, personal behavior, policies and laws
- There is a data-policy-interpretation-action continuum
- Evaluate programs and perform attribution analysis
- Use behavioral change tools to enable people to make change at all scales



# Effecting Change

- Collaborate with outside agencies, businesses, community groups, and NGOs
- Consider multiple world views; incorporate approaches from behavioral psychology, the arts, and risk communication
- Work with communities where change is most likely
- Co-develop tools across all scales so change is easily accomplished



# Working Group: Next Steps

- **Strategically distribute remaining reports**
- **Align agency commitments: Terms of Reference drafted**
- **Workshop at GB-PS Conference begins work on next set of indicators: surface and marine water quality, shellfish contamination, land use development patterns, water use and appropriation**
- **Next working group meeting: June 2003**



# Discussion Questions

- Was information in the report conveyed in a way that is useful to you?
- How would you use this information....  
personally?  
to further objectives in your work?
- How do you see environmental indicator information being used in policy development?