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science for a changing world

University of Washington

Washington State Department of Ecology

Washington Department of Fish and Wildlife

Washington State Department of Health

Washington State Department of Natural Resources

Sound Science:
Synthesizing Ecological and Sociological Information About the Puget Sound Ecosystem

"Sound Science" is

- A unique "state of the science" report about the Puget Sound ecosystem—**the way all of the natural and human parts work together.**
- A collaborative statement from over 30 authors, 12 regional institutions, and over 100 natural and social science reviewers.
- Based on our understanding of ecological, economic and social systems.
- A strong foundation for ongoing collaborative scientific work to help identify actions that support Puget Sound as a natural source of social, cultural, and economic benefits.
- A summary of gaps in our scientific knowledge and a strong starting point for a comprehensive research plan for Puget Sound.
- Based on our understanding of ecological, economic and social systems.
- A description of the current interactions between all elements of the ecosystem, and a look forward under current trends in climate and human population growth.
- A result of scientists looking holistically at the Puget Sound region to help inform broad management goals.

Relationship between Sound Science and other regional reports

- *Sound Science* describes 'what we know' about the interactions between all the components of the ecosystem of the Puget Sound region and identifies likely future threats.
- *State of the Sound* and the *Puget Sound Update* are detailed 'status and trends' reports on the health of the Puget Sound ecosystem produced by the Puget Sound Action Team.
- A number of reports, including the *Puget Sound Salmon Recovery Plan* (Shared Strategy), the *Guidance for Protection and Restoration of the Nearshore Ecosystems of Puget Sound* (PSNERP), and the *Puget Sound Conservation and Management Plan* (PSAT), provide recommendations for management actions needed for individual species or habitats.
- Each of these documents provides a separate piece of the foundation of ultimate comprehensive management and research plans for Puget Sound.

Photo: Leo J. Shaw

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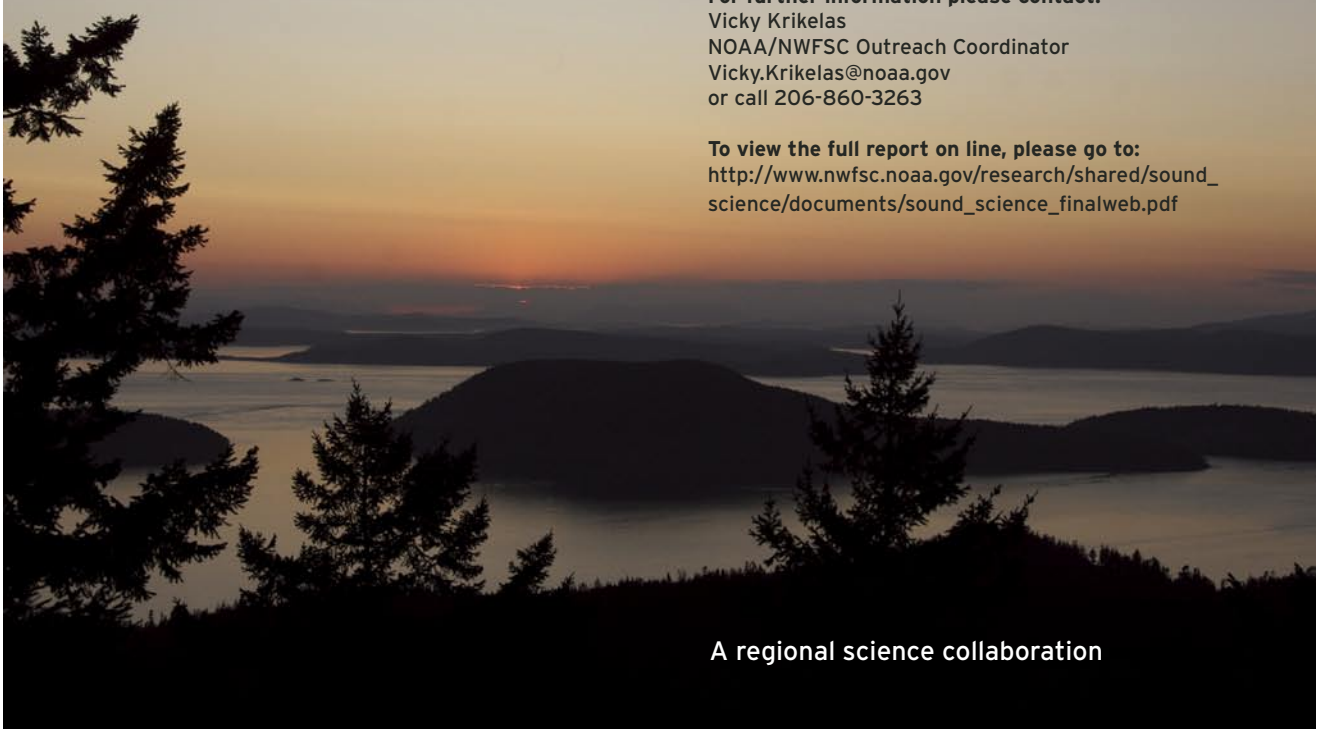
To view the full report on line, please go to:
http://www.nwfsc.noaa.gov/research/shared/sound_science/documents/sound_science_finalweb.pdf



A regional science collaboration

Key Findings

- An understanding of the whole ecosystem is needed to support complex management decisions that involve trade-offs between alternative ecosystem goals.
  - New decision analytic tools that include natural and social science information can help our managers balance goals for natural resources and other human needs.
- The health of humans is inextricably linked to ocean and broader ecosystem health.
  - Input of toxic chemicals, and increases of marine biotoxins and pathogens are threats to human health and our economy.
- Marine and fresh waters in the Puget Sound region are under local stress - and these stresses will increase as global climate changes.
  - Climate change will result in significant weather, rainfall, flooding and other changes, affecting what species can prosper in the Sound, our livelihoods and quality of life. Consideration of climate scenarios with management decisions will help increase the chance of achieving ecosystem goals.
  - Habitats, the places where the species live, are diminishing due to climate change and human population growth. Protection and restoration strategies can take such changes into account to increase the value of habitats we count on.
- Population growth and the patterns of land use and development, waste disposal and other resource uses are increasing demands on the ecosystem.
  - Our population growth and development are decreasing forest cover, increasing water runoff and causing other impacts that affect ecosystem function and value. Planning for a future in which human and wildlife species needs are considered together can identify 'win-win' situations.
- Ecosystem food webs and functions have been significantly altered but we need to know much more about how those changes impact goods and services the ecosystem provides.
  - Human actions can rapidly disrupt food webs: species at risk include rockfishes, Pacific salmon, orcas, herring, shorebirds, and Pacific cod.

Conclusion

Sound Science pulls together information about both human and natural systems to help:

- Support ecologically-sound decisions
- Predict the Sound's response to different decisions
- Develop proactive strategies to reverse or halt the continued declines
- Prioritize science funding and get more "bang for our buck"

Some examples of the goods and services supplied by the Puget Sound region

Salmon and other edible fish
Timber
Water supply
Clams, oysters, and other shellfish
Shorebirds
Waste treatment
Orcas
Commercial and recreational fishing
Agricultural crops and livestock
Aesthetic value (beauty)
Flood control
Recreation (boating, swimming, diving, hiking, birding, fishing)
Property values
Transportation
Energy (e.g. hydropower)