

# WASHINGTON SEA GRANT

Helping people and marine life thrive through research, technical advice and education supporting the responsible use and conservation of coastal ecosystems.

Eighty percent of Washington residents live along a 3,000-mile coastline that is physically, culturally and economically shaped by the sea. Washington's maritime sector employs 57,000 people, generating \$15.2 billion in direct revenues, and Washington's fishing fleets and shellfish farms produce the nation's largest, most prized catches and cultured harvests.

Washington Sea Grant (WSG) works to assure that state residents understand, protect and prosper from our marine riches and are prepared for coastal hazards. With 25 communicators, educators and field agents located in eight coastal counties whose expertise ranges from oceanography and fisheries to economics and urban planning, WSG is uniquely prepared to serve coastal residents.

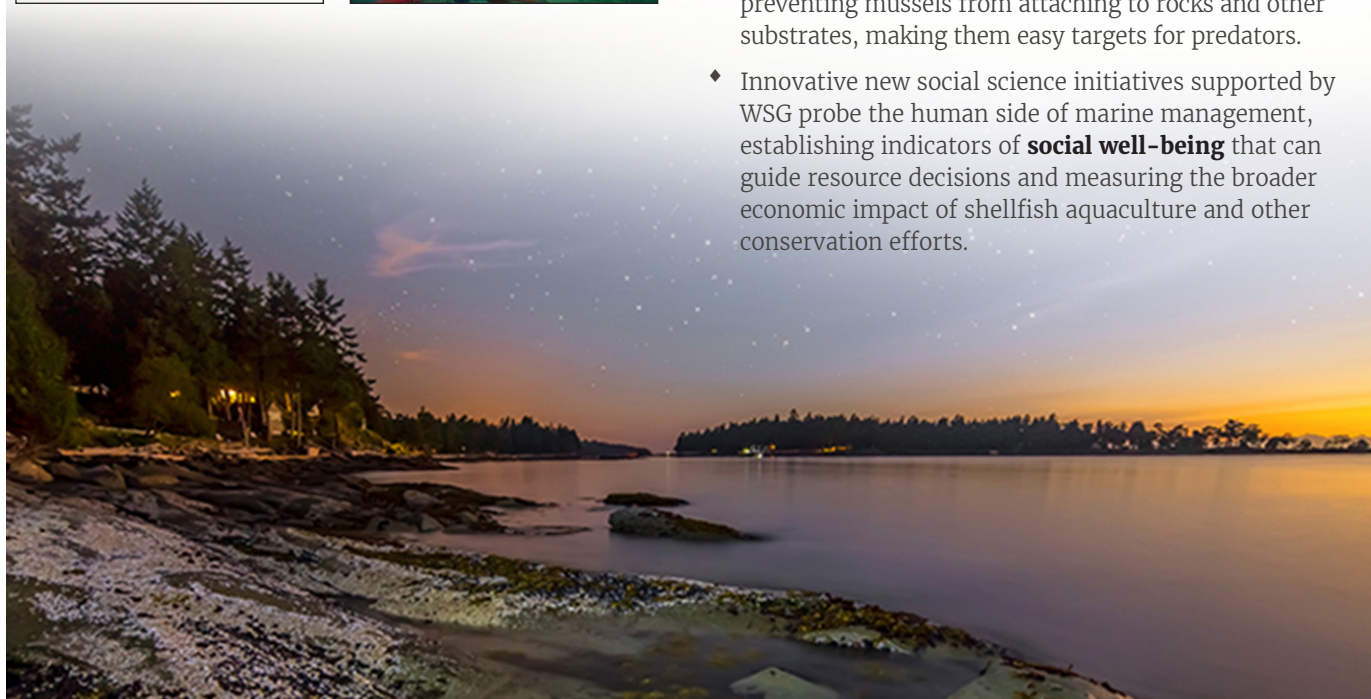


## RESEARCH

### LEVERAGING SUPPORT, SEEDING TRANSFORMATION

*Washington Sea Grant brings academic, government, tribal, industry and citizen scientists together to answer today's tough questions — and tomorrow's.*

- ♦ WSG research supports Washington's \$108 million, 44,000-ton **shellfish industry** by identifying geoduck farming's ecological impacts, Washington's shellfish carrying capacity and ocean acidification's effects on oyster breeding.
- ♦ WSG researchers developed new, inexpensive imaging technologies using **remote sensors** to monitor and measure algae that cause harmful blooms, minimizing the risk to human health and reducing economic damage to finfish and shellfish businesses.
- ♦ When the century-old **Elwha River dams** came down, WSG participated in a dynamic team chronicling the restoration of local salmon runs and the surprisingly rapid recovery of an eroded delta. The group's findings support tribal and federal management of evolving shorelines.
- ♦ WSG researchers found evidence that ocean acidification threatens the global **mussel farming industry** by preventing mussels from attaching to rocks and other substrates, making them easy targets for predators.
- ♦ Innovative new social science initiatives supported by WSG probe the human side of marine management, establishing indicators of **social well-being** that can guide resource decisions and measuring the broader economic impact of shellfish aquaculture and other conservation efforts.



# OUTREACH

## FINDING WIN-WIN SOLUTIONS

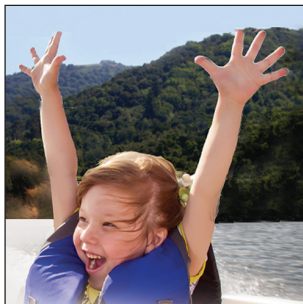
*Washington Sea Grant experts provide scientific and technical assistance to resolve complex marine issues.*

- ♦ WSG brings crab fishermen and tug-and-barge operators together to negotiate **safe, efficient sea lanes** that conserve fuel and prevent costly propeller fouling and lost crab pots. The WSG-mediated accords save fishermen and maritime operators about \$1.7 million a year and have opened new fishing grounds.

- ♦ WSG's bird-scaring streamer lines dramatically reduce **seabird bycatch** in Alaska, West Coast, and international longline fisheries, protecting endangered albatrosses and saving valuable fisheries from closure. Since adoption, streamer lines in Alaska are estimated to have saved roughly 9,400 albatrosses and 141,000 other seabirds in fisheries valued today at nearly \$400 million.



- ♦ **Pumpout Washington**, a WSG partnership with Washington State Parks, prevents dumping of raw sewage from boats and keeps Washington waters clean for recreation, shellfish and wildlife. In 2016 boaters set a new state record, diverting 10 million gallons of sewage to shoreside pumpout stations.



- ♦ WSG leads a NOAA-funded team of researchers, planners and managers focused on strengthening **community resilience to coastal hazards** such as tsunamis and sea-level rise. Focusing initially on Island County, Tacoma and salmon restoration pilot projects, the team will fill critical information gaps, extending findings to coastal communities throughout Washington.

- ♦ A highly visible WSG citizen science project tracks the **invasive European green crab**; trained WSG Crab Team volunteers were the first to find the crab in Puget Sound. Working with state managers, the team seeks to implement an intensive monitoring response and is planning next steps in the defense against this destructive invader.



- ♦ The WSG-coordinated SoundToxins program combines citizen science monitoring with cutting-edge technological innovation to **protect shellfish consumers** from potentially lethal algal blooms and to prevent possible shellfish harvesting closures.

# EDUCATION

## ADVANCING OCEAN LITERACY, MARINE CAREERS AND WORKFORCE DEVELOPMENT

*Washington Sea Grant instills marine stewardship and leadership at every age.*

- ♦ WSG builds **maritime workforce capacity** — and helps commercial and tribal fishermen increase revenues — through technical assistance to improve fish handling and direct marketing.
- ♦ WSG **trains commercial fishermen** in sea safety, rescue, first aid, and weather and marine technologies, making fishing safer and more efficient.
- ♦ Hundreds of WSG-sponsored beachwalks, classes, festivals and school partnerships inspire **young ocean stewards** each year.
- ♦ WSG **fellowships** immerse university students in real-world marine policy, research and communications.
- ♦ Budding ocean scientists in middle school and high school gain marine science experience through the annual **NOAA Science Camp** and **Orca Bowl**.



## FOR MORE INFORMATION

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