

# PUGET SOUND

## National Estuary Program

### Shorelines Support Marine Food Webs

San Juan County's marine shorelines support forage fish and provide critical rearing habitat for juvenile salmon. Erosion rates in the San Juans are relatively low and unnecessary shoreline armoring is harming habitat. Shoreline armoring (bulkheads, revetments, seawalls, and groins) negatively impacts coastal processes and habitats, limiting the recovery of marine food webs for salmon and the Southern Resident orca.

### Armor Mapping & Change Analysis for San Juan County, WA

In 2019, Friends of the San Juans conducted a boat-based survey of San Juan County's 400+ miles of marine shoreline. Data was collected on the location, material, and condition of shoreline armoring.



Photo by Jess Newley, Friends of the San Juans

### Tracking Progress Towards Recovery

Project results were used to evaluate changes in armor conditions on the ground since the last mapping effort in 2009. To evaluate compliance with shoreline protection policies, a permit review was conducted for the 1.8 miles of new armor installed during the 10 years between surveys. Please see back page for results.



Photo by Jess Newley, Friends of the San Juans

### What You Can Do

Protect natural beaches and avoid hard armoring by retaining shoreline vegetation and setting development well back from the shoreline. If your waterfront property already has armoring, you can request free technical assistance to find out if there are habitat friendly options to remove or reduce armor impacts that can protect your investment and support marine food webs.

### About Friends of the San Juans

Friends of the San Juans has worked to protect and restore the San Juan Islands and the Salish Sea for people and nature since 1979. We implement on-the-ground beach and wetland habitat restoration actions and advocate for local and regional policies that support healthy seas, natural shorelines, and thriving communities.

### FOR MORE INFORMATION

[www.sanjuans.org](http://www.sanjuans.org)

Friends of the San Juans

360-378-2319

Project based on NTA 2018 0828



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### Project Outcomes

In 2019, all 400+ miles of marine shoreline in San Juan County were surveyed resulting in the mapping of 27 miles of hard shoreline armor, including:

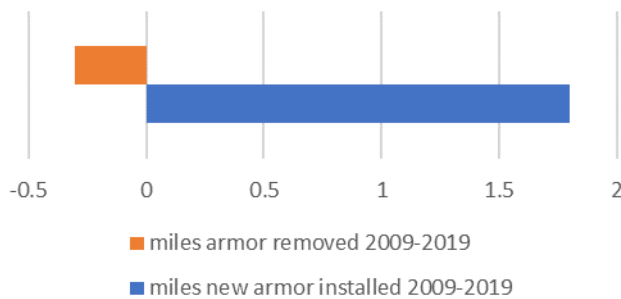
- **25 miles of existing armor**  
(present in both 2009 and 2019)
- **1.8 miles of new armor**  
(present in 2019 but not in 2009)
- **0.3 miles of removed armor**  
(present in 2009 but not 2019)

Results demonstrate that **new armor being installed greatly outpaces armor removals** despite increased understanding of the negative impacts of hard armor and programs to remove armor to restore beaches.



Photo by Captain Carli Whale Watching

SJC Armor Change 2009-2019



The project also found that new hard armor continues to be installed at priority locations such as feeder bluffs and documented spawning beaches. **As of the 2019 survey, 22% of feeder bluffs and 27% of forage fish spawning beaches in San Juan County were armored.**

### Future Opportunities

Project results have been provided to local and regional regulators, managers, and restoration and protection project practitioners to improve the effectiveness of shoreline management and salmon recovery.

Permit records for new armor installed 2009-2019 showed very low compliance with local and state regulations.

- **74% of the new armor was installed without any permits.**
- **Less than 10% of new armor had all required local and state authorizations before being constructed.**

Results illustrate the **value of monitoring on-the-ground conditions** in addition to permit records when evaluating armor trends. Results also support that a **more proactive approach to compliance** could help ensure fair, effective, and consistent application of shoreline protection policies.

SJC Armor Permit Compliance 2009-2019

