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Marine shoreline armor mapping, change analysis (2009-2019) and regulatory compliance and effectiveness assessment for San Juan County, Washington

Tina Whitman

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Marine shoreline armor mapping, change analysis and regulatory review for San Juan County, Washington



Tina Whitman, MS
Science Director



Friends *of the*
San Juans

Andrew Reding Image

Why Care about Shoreline Armor?

Armor disrupts sediment supply and transport processes.

Armored sites have:

- Reduced riparian vegetation
- Lower surf smelt egg survival
- Less wrack, large woody debris, invertebrates
- Steeper beach profile
- Coarser beach substrate
- Less food for juvenile salmon
- Less resilience to sea level rise



Project Approach

Boat-based Armor Survey in 2019

Change Analysis: 2009 to 2019

Regulatory Review for New Armor

Engagement with Managers

Reports, Geodatabase, Webinar (June)

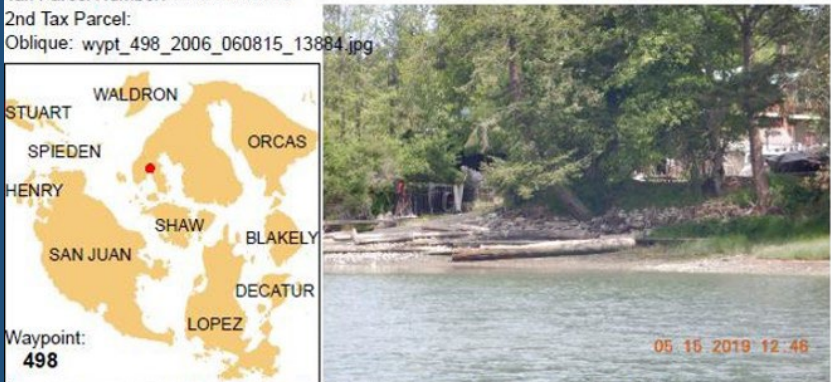


Thanks to the Samish Indian Nation's natural resources dept. for survey boat support

Mapping & Change Analysis Methods



ISLAND: Orcas Mapped Length: 36.19
Tax Parcel Number: 260724003000
2nd Tax Parcel:
Oblique: wypt_498_2006_060815_13884.jpg



Document Path: Z:\GIS\data\files\MAPS\MAPBOOKS\ArmorChange_2019\ArmorNewMAPBOOK.mxd

Boat based survey of armor location, extent, condition, tidal elevation, material and association.

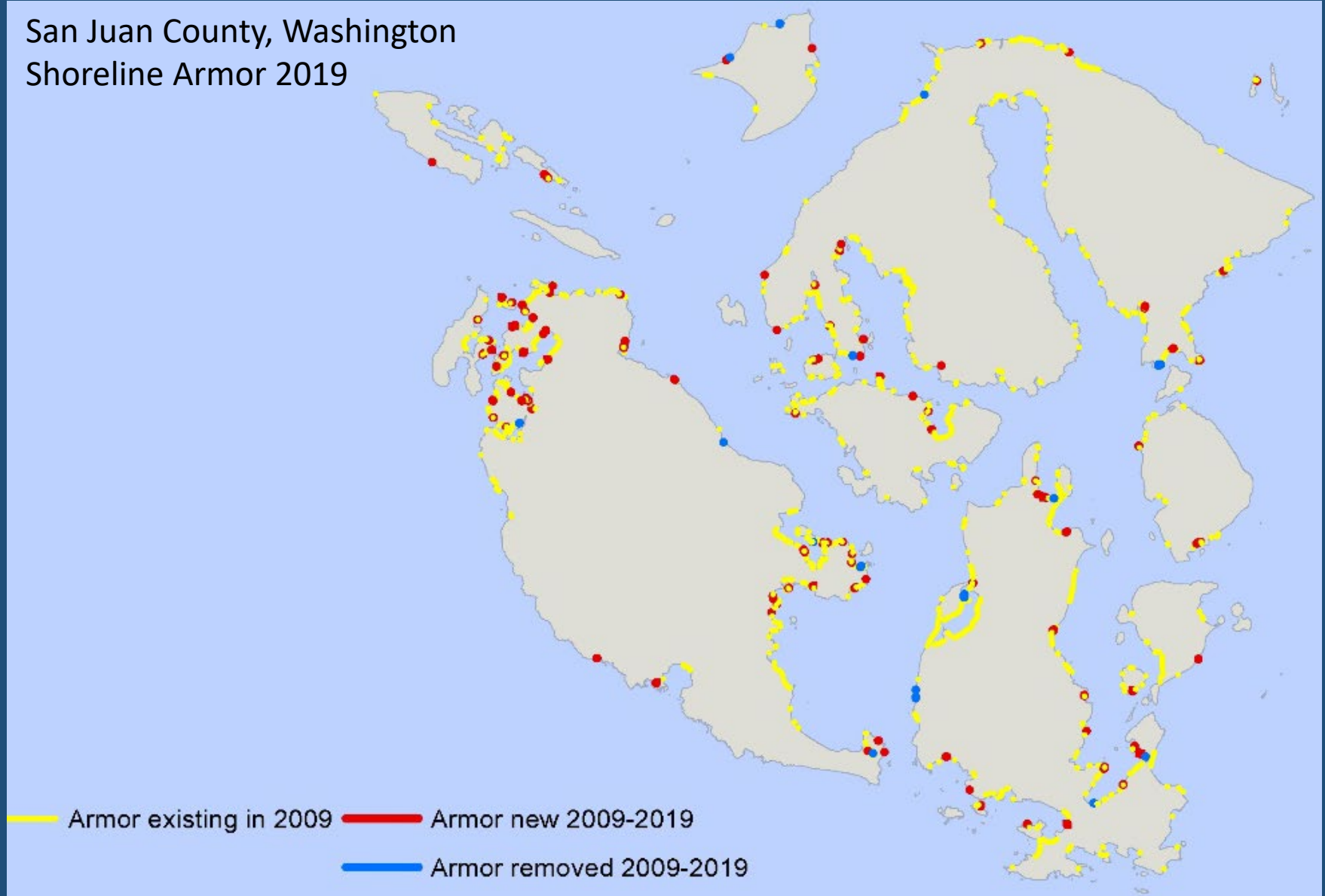
Review of 2009 and 2019 survey images and data, oblique and vertical air photos, field re-visit to identify all Existing, New, and Removed Armor 2009-2019.

Mapping & Change Analysis Results

SJC Shoreline Armor	Count	Length in feet	Length in miles
NEW Mapped in 2019 not 2009	108	9,800	1.9
EXISTING Mapped in 2019 & 2009	875	132,500	25.2
REMOVED Mapped in 2009 not 2019	17	1,287	0.24
TOTAL Armor in 2019	984 segments	142,300 ft.	27 miles

Mapping & Change Analysis Results

San Juan County, Washington
Shoreline Armor 2019



Regulatory Review Methods

Reviewed local shoreline (San Juan County, WA) and Hydraulic Code (WA Dept. of Fish and Wildlife) authorizations to determine:

- How many sites had permits?
- For those sites with permits, what can we learn from the record about the effectiveness of the permit process?

HYDRAULIC PROJECT APPROVAL

Washington Department of Fish & Wildlife
PO Box 42324
Olympia, WA 98506-2324
(360) 902-2200

Issued Date: October 17, 2014 Permit Number: 2014-4-308401
Project End Date: December 31, 2016 FPA/C Public Notice Number: WA Application ID: 1347

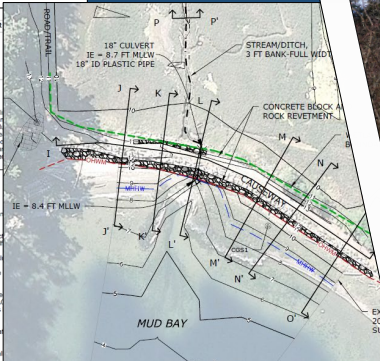
PERMITTEE	AUTHORIZED AGENT OR
Friends of the San Juans ATTENTION: Tina Whitman PO Box 1344 Friday Harbor, WA 98250	

Project Name: HPA #13330 Brown Island Foreshore Bluff Restoration Project
Project Description: Remove outdated and unnecessary rock armoring from multiple shores to improve coastal habitat. Upper intertidal, washstone and marine sponge forming processes (reworked sediment supply from armored foreshore bluffs) to include removal of beach rock (15 cubic yards along 200' intertidal rock (than 600 square feet of beach where degraded barns are exposed), as well as invasive species (barn plants) removal, a small re-nourishment (40 cubic yards) and beach and bank vegetation enhance.

PROVISIONS

1. The project may begin immediately and shall be completed by December 31, 2016.
2. Work below the ordinary high water line shall not occur from March 15 through June 14 of any migrating juvenile salmonids.
3. POST-CONSTRUCTION NOTIFICATION REQUIREMENT: The permittee, agent or contractor shall contact the Washington Department of Fish and Wildlife by email to HPApplications@dnr.wa.gov, Office Box 23224, Olympia, Washington 98503-1321, or by fax to (360) 902-2200 within seven (7) days of completion of the work. The notification shall include the permittee's name, project location, construction date for the work, and the Hydraulic Project Approval control number. The department may conduct a compliance inspection. However, the department will notify the permittee or agent prior to the inspection.
4. Work shall be accomplished per plans and specifications submitted with the JARPA approval. Department of Fish and Wildlife waived TROUVIN ISLAND BLUFFS REMOVAL AND BEACH FINAL DESIGN REPORT sheets 1 of 6, dated February 8, 2014, except as modified by this Approval. A copy of these plans shall be available on the during construction.
5. The existing rock bulkhead shall be removed from the beach and deposited upland such that does not enter waters of the state.
6. All quarry spoil type rocks (6-inch diameter) that have migrated down the beach slope shall be removed and disposed of upland such that they do not enter waters of the state.
7. The beach waterward of the removed bulkhead shall be rounded with gravel in compliance with the following specifications.

Page 1 of 6



Technical Memorandum

To: Friends of the San Juans
Attn: Ms. Tina Whitman
P.O. Box 1344
Friday Harbor, WA 98250

From: Scott J. Rozenbaum, M.S. Soil Science, B.S. Geology
Professional Wetland Scientist (Cert. # 490), Certified Professional Soil Scientist (Cert. # 24803)

Re: Wetland Delineation and Fish & Wildlife Habitat Conservation Area Assessment on Tax Parcel Number 282351001000, on Sucia Island Marine State Park, Washington State

Date: December 21, 2018

From: Rozewood, Tina
To: Tina Whitman
Date: Wednesday, June 14, 2018 9:48 AM
Attachments: [Cultural Resources Assessment Report](#)

Dear Tina Whitman:

Good Morning! Thank you for your further response to your public records request, PRA No. 20028. We are currently reviewing the report for sensitive information and will provide a response to your request, PRA No. 20028, as soon as possible. Once you have responded to the request, you will have the opportunity to provide any questions or concerns. We will respond to your request within 30 days after your request has closed. If you have any questions or concerns, please contact me at (360) 972-6706 or by email at tina@rozewoodenv.com.

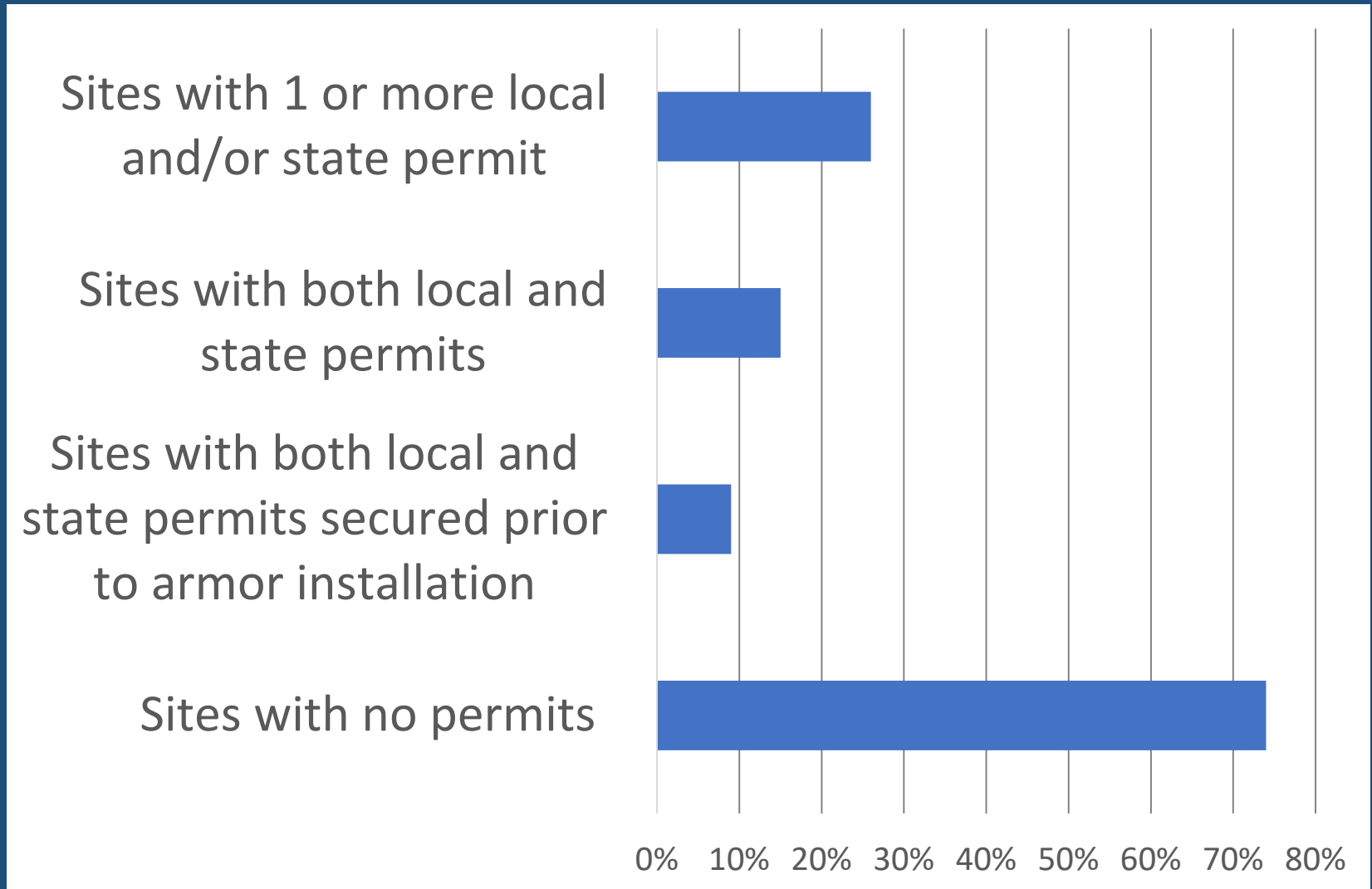

Special thanks to policy intern Madeline Feaster for permit research

Regulatory Review Results - *Compliance*

Permits	Count	Percent
Sites with 1 or more local and/or state permit	28	26%
Sites with both local and state permits	16	15%
Sites with both local and state permits secured <i>prior</i> to armor installation	10	9%
Sites with no permits	80	74%

Regulatory Review Results - *Compliance*



Regulatory Review Results – *Effectiveness*

- Limited evidence of site inspections or interagency coordination, all linked to violations.
- Limited instances where mitigation was required. No evidence of mitigation being implemented.
- Some unauthorized armor to be removed. No evidence of any armor removed to date.
- All consultant reports concluded no impact / no net loss.



Armor Impacts

Armoring in SJC, WA	Total Armor 2009	New Armor 2009-2019	New Armor 1 or more permit	New Armor No permit	Total Armored 2019
Feeder Bluffs (29 miles)	6 miles	1,365 ft.	322 ft.	1,043 ft.	6.26 miles 22%
Pocket Beaches (48 miles)	7.5 miles	4,256 ft.	1,561 ft.	2,695 ft.	8.31 miles 17%
Forage Fish Spawning Beaches (12 miles)	2.94 miles	1,013 ft.	172 ft.	841 ft.	3.13 miles 29%

Total new armor 2009-2019 = 1.86 miles

Management Implications - *Regulatory Compliance*

Periodic monitoring of on-the-ground conditions is needed.

Complaint driven code enforcement systems do not catch most violations.

Enforcement is very slow and often authorizes the impact to remain.

Lack of compliance is limiting the effectiveness of regulatory and voluntary habitat protection and restoration programs.



Management Implications - *Regulatory Effectiveness*

Monitor cumulative impacts and connect to policy.

Improve transparency and access to public information.

Implement project inspections.

Enforce existing policies and procedures.

Track mitigation implementation and outcomes.

Increase capacity of regulators to critically review applications.



Questions? Contact: tina@sanjuans.org



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and the Washington Department of Fish and Wildlife (NTA 2018-0828)*

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