

RESTORATION & MONITORING AT SEAHURST PARK

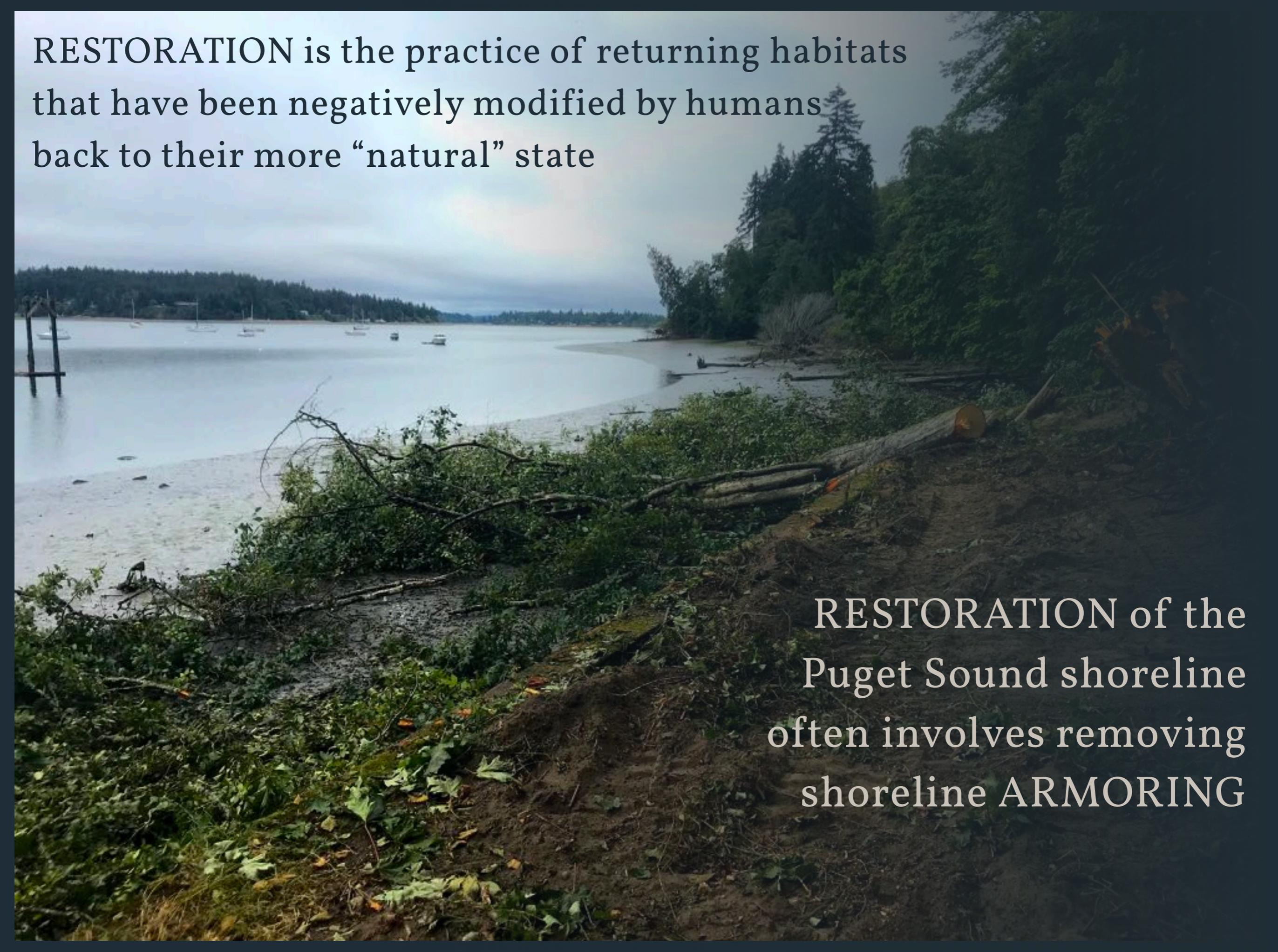
Simone Des Roches, PhD

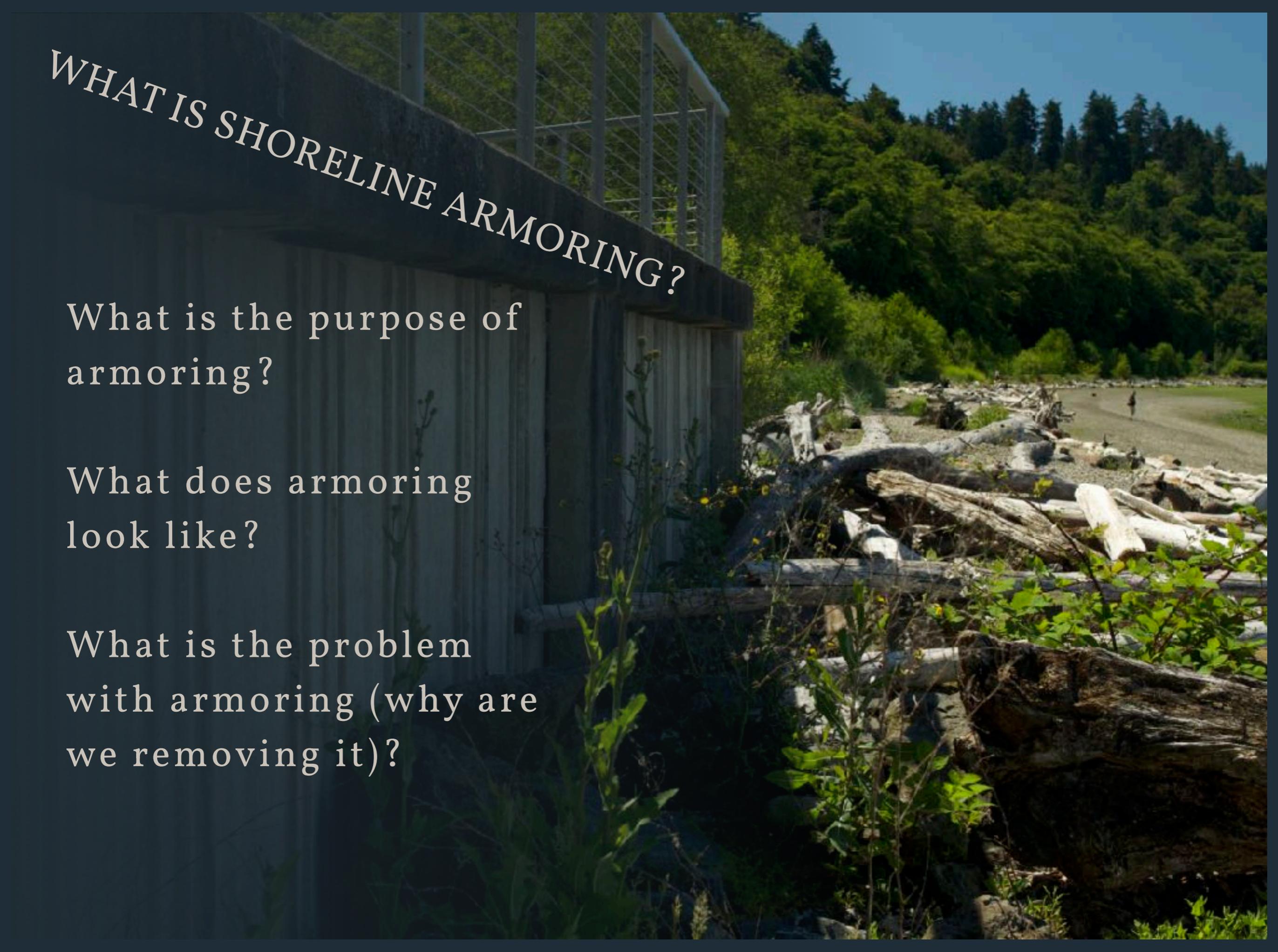
School of Aquatic and Fisheries Sciences
University of Washington



RESTORATION is the practice of returning habitats that have been negatively modified by humans back to their more “natural” state

RESTORATION of the Puget Sound shoreline often involves removing shoreline ARMORING



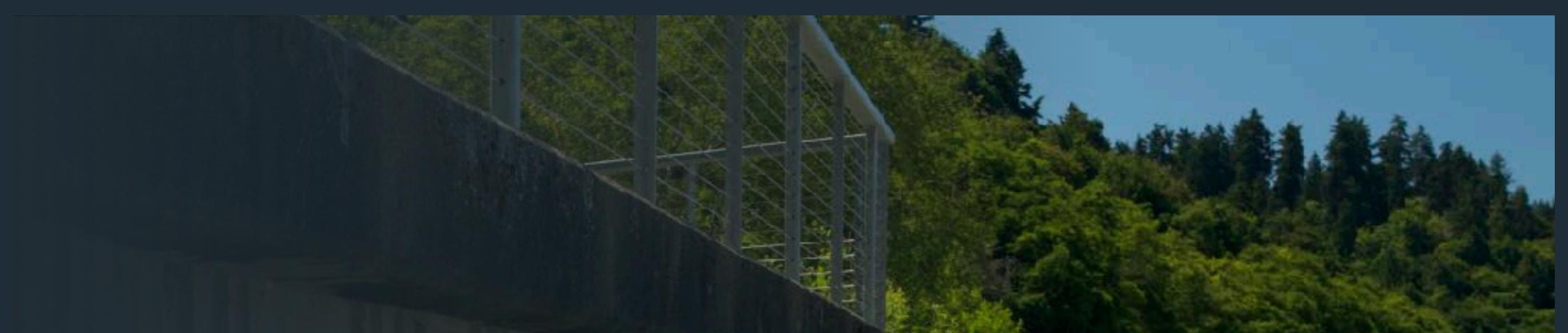
A photograph of a building with a balcony overlooking a shoreline. The building has a dark grey balcony railing and a light-colored wall. The shoreline is covered with large pieces of driftwood and some green plants. In the background, there is a dense forest of evergreen trees on a hillside under a clear blue sky.

WHAT IS SHORELINE ARMORING?

What is the purpose of armoring?

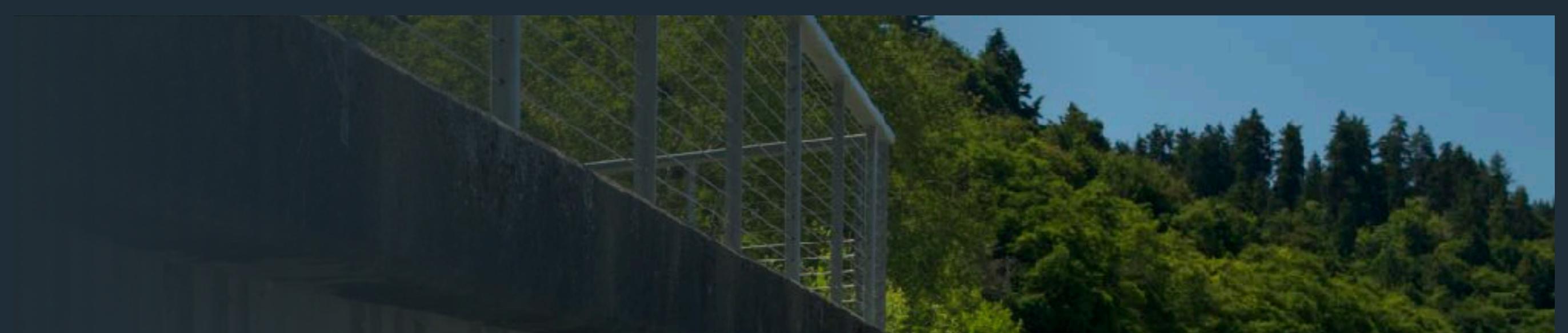
What does armoring look like?

What is the problem with armoring (why are we removing it)?



What is the purpose of
armoring?

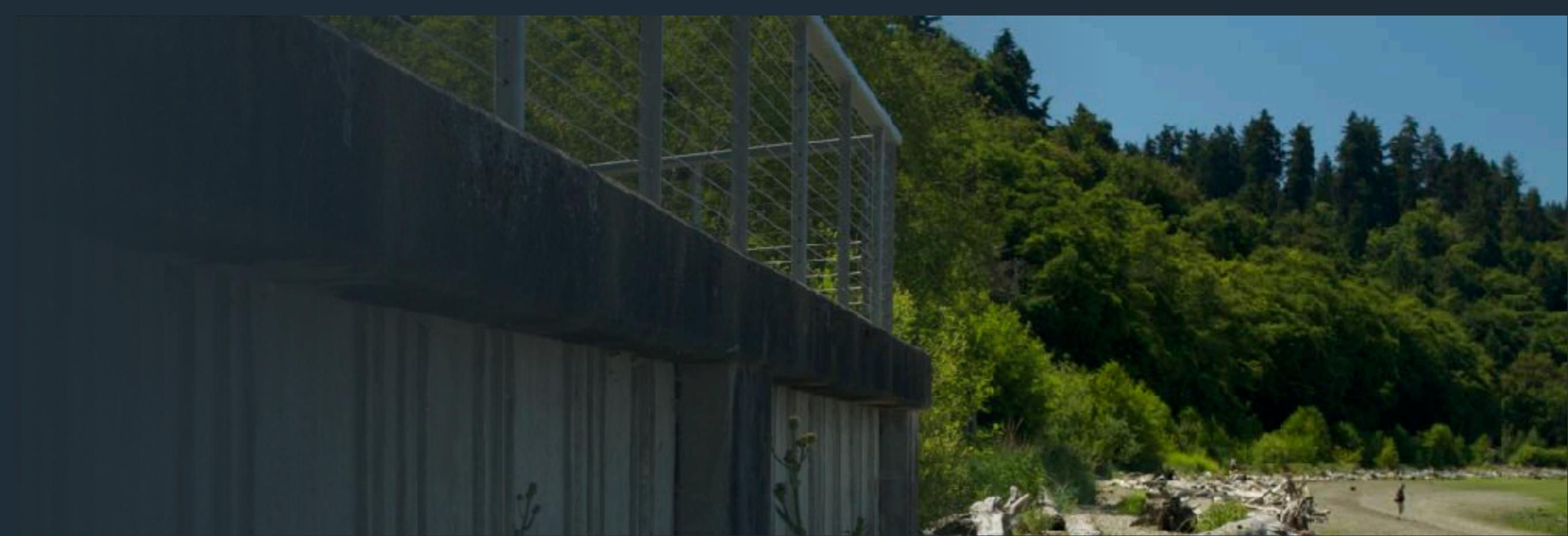




What is the purpose of armoring?

- prevents erosion
- enables construction right up to shoreline
- improves some types of beach access





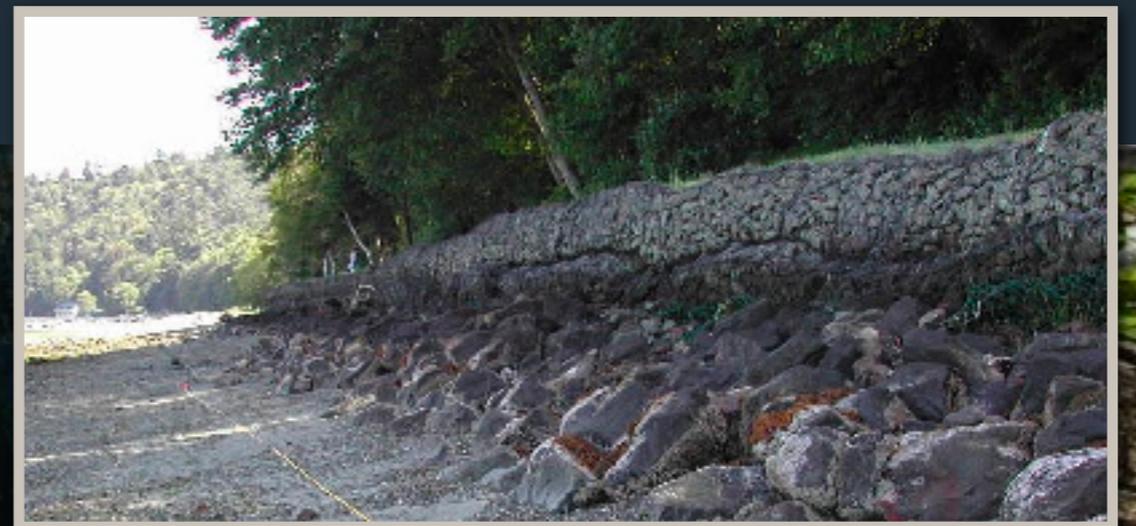
What does armoring
look like?





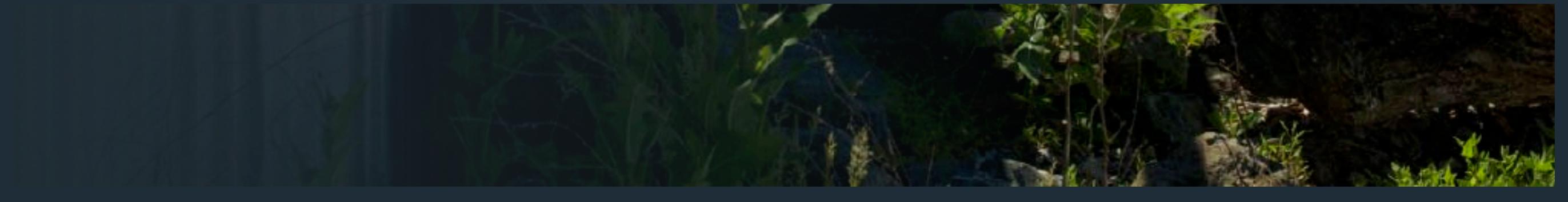
What does armoring
look like?

- seawalls & bulkheads
- riprap





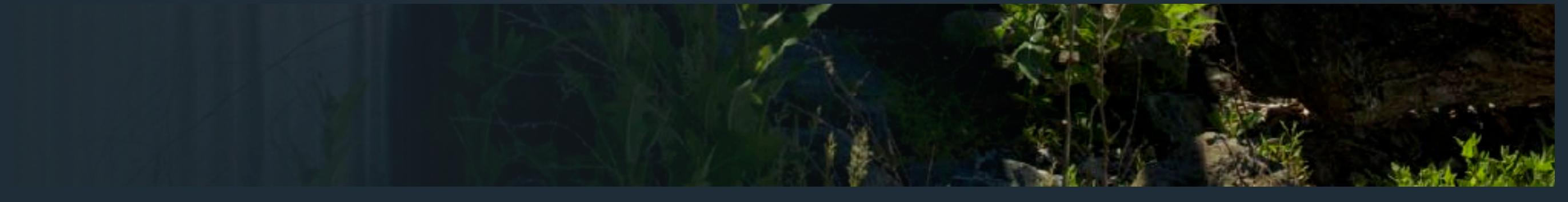
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What is the problem with armoring (why are we removing it)?

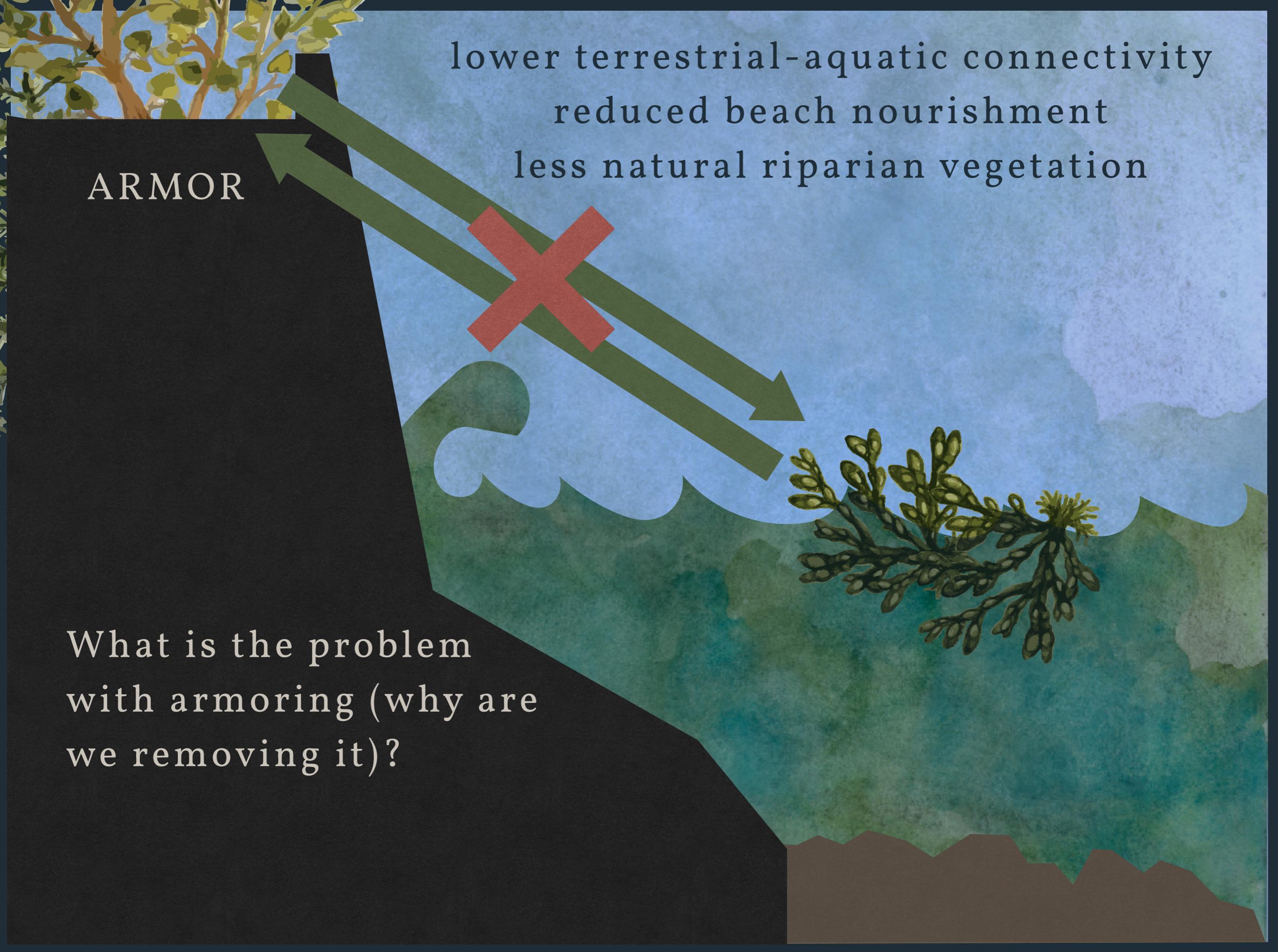
- less beach wrack deposited
- fewer beached logs
- fewer animals (e.g. insects)



lower terrestrial-aquatic connectivity
reduced beach nourishment
less natural riparian vegetation

ARMOR

What is the problem
with armoring (why are
we removing it)?



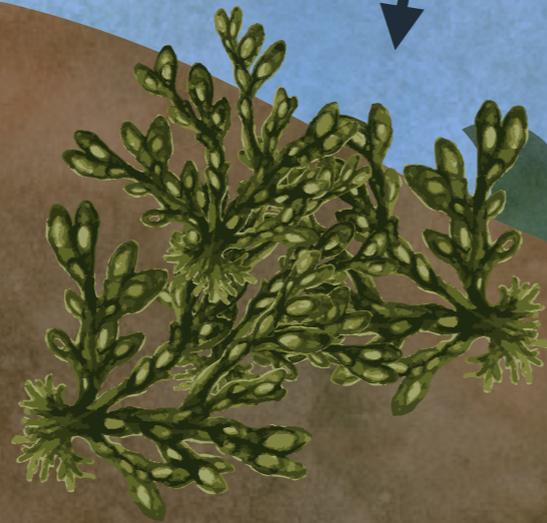
ARMOR

I. wrack cannot be deposited on the beach



What is the problem with armoring (why are we removing it)?

I. wrack is deposited on the beach



ARMOR

2. logs also stay floating in the ocean



What is the problem with armoring (why are we removing it)?

2. logs are left on the beach



ARMOR

3. there is no habitat for insects & other animals!



What is the problem with armoring (why are we removing it)?

3. there is more
habitat for animals
like insects!





once armor is removed, native trees,
grasses, and shrubs are planted to
stabilize the sediment

creating a **LIVING SHORELINE**

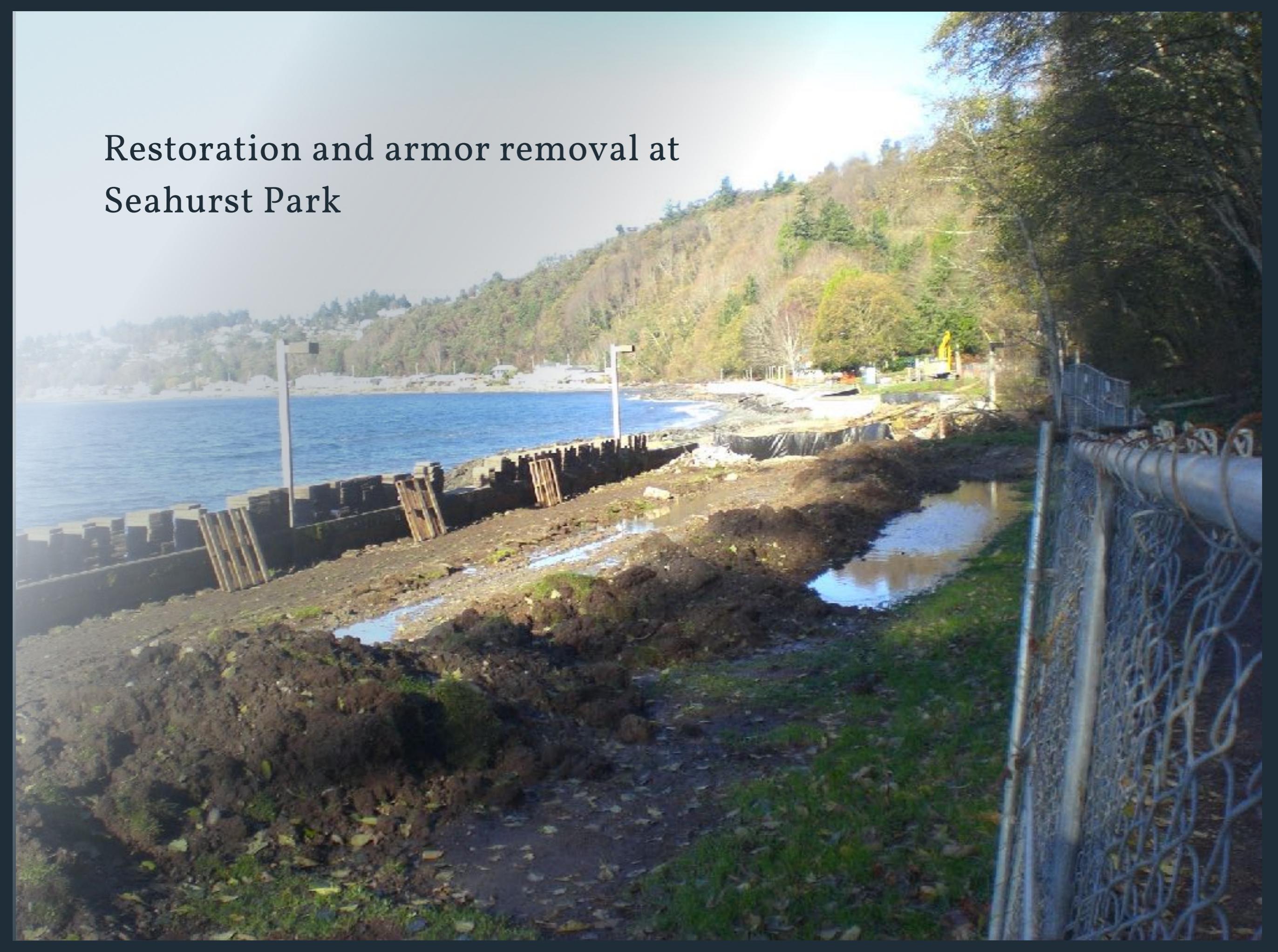


REMOVING ARMOR is a huge undertaking that at first can look very destructive!

Current restoration project at Bowman Bay (Deception Pass)



Restoration and armor removal at Seahurst Park



HOW ARE WE MONITORING RESTORATION EFFECTIVENESS?

we partner with organizations & community scientists to monitor shoreline restoration at over 50 sites in Puget Sound



HOW ARE WE MONITORING RESTORATION EFFECTIVENESS?

There are 3 basic types of site:

natural

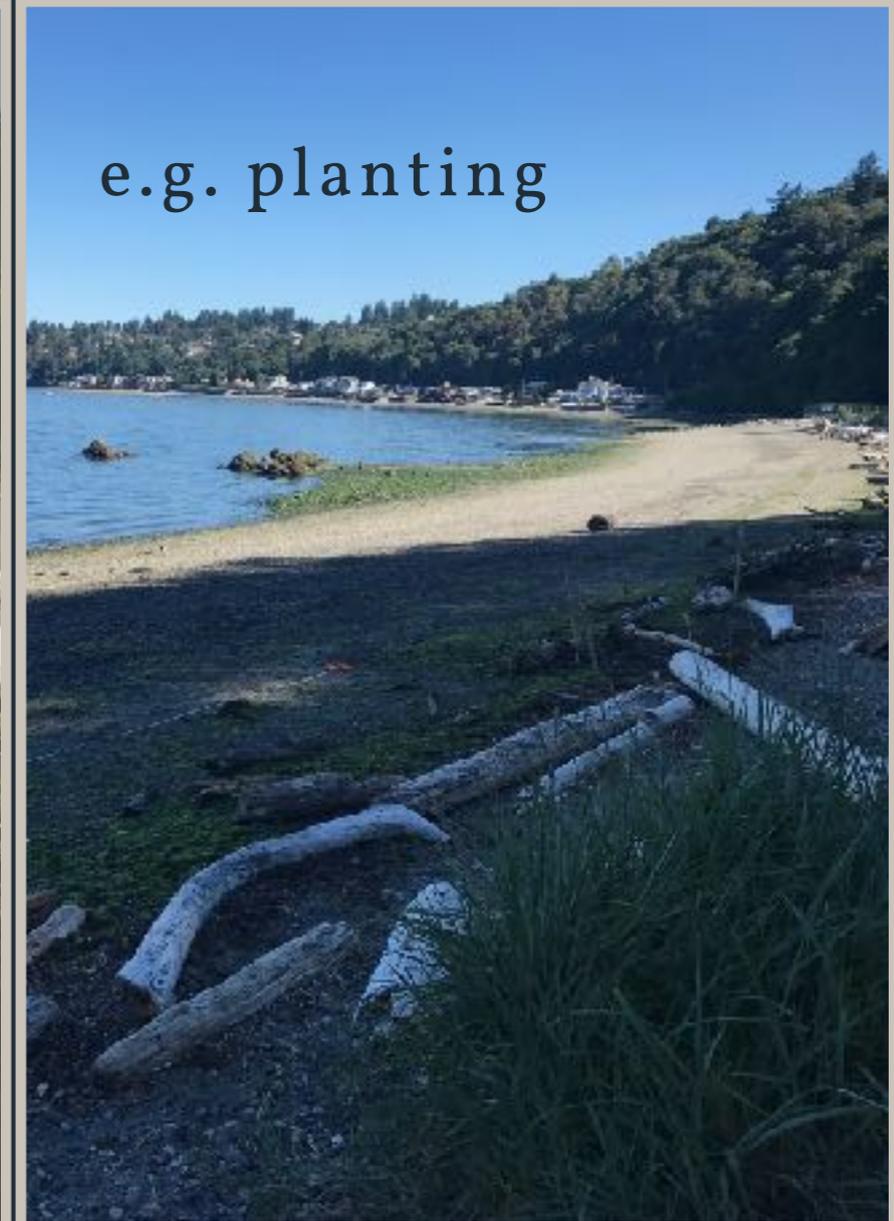
has never been armored

armored

with seawall, riprap...

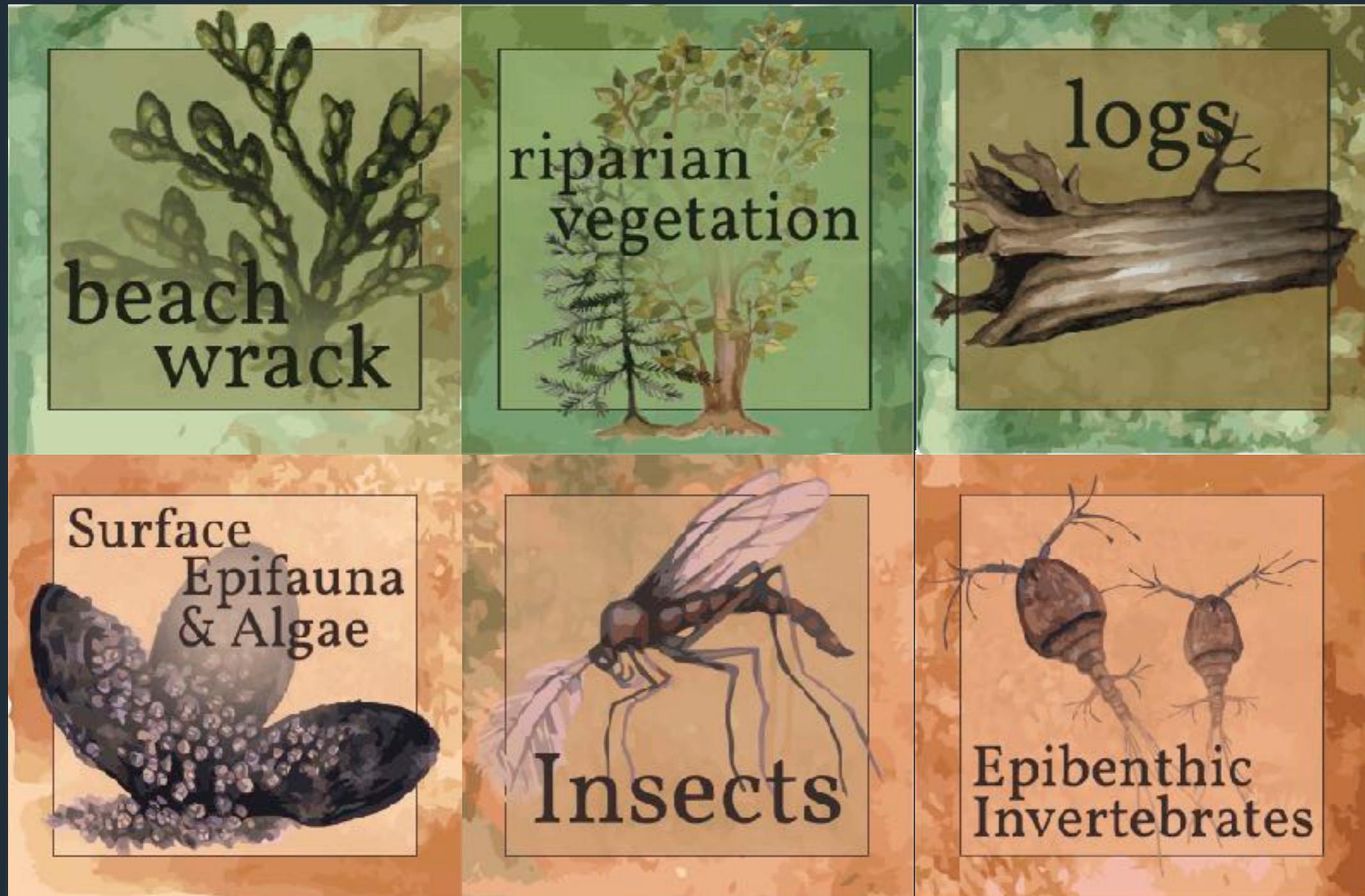
restored

armor removed
(& often other efforts)



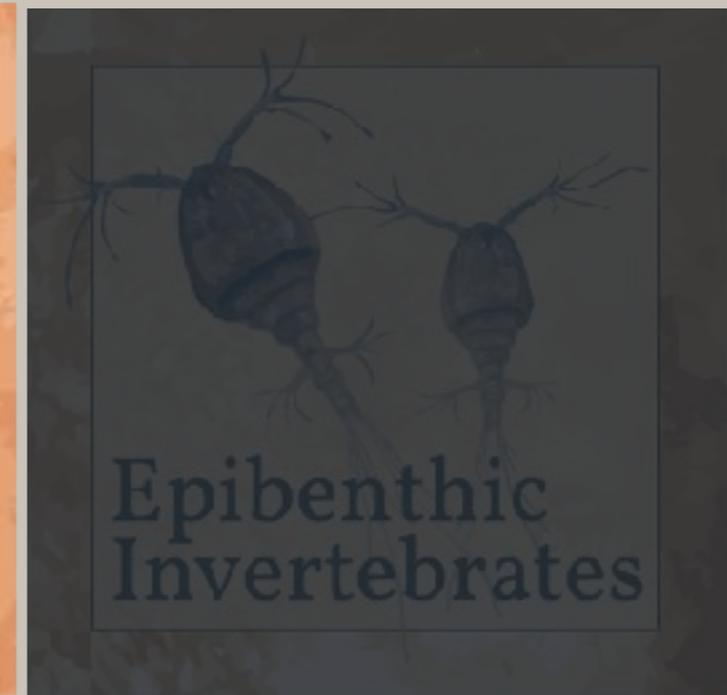
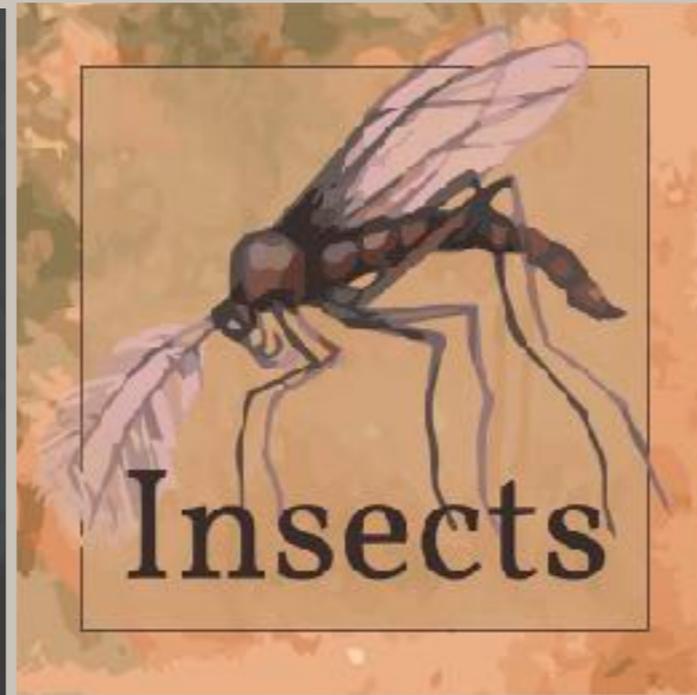
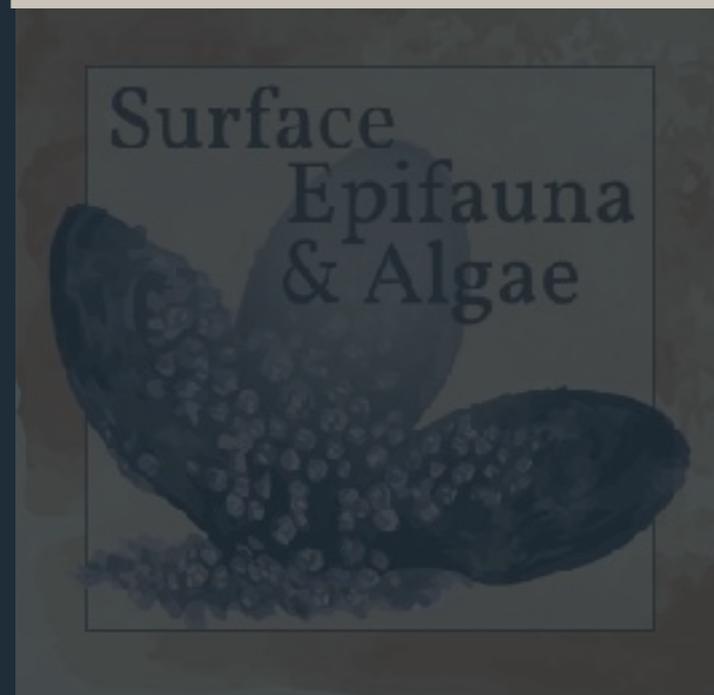
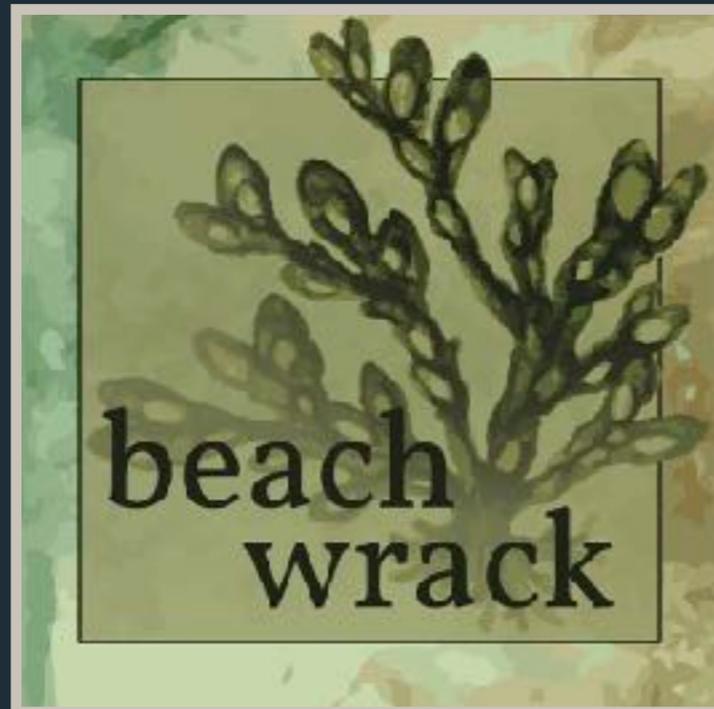
HOW ARE WE MONITORING RESTORATION EFFECTIVENESS?

we have many protocols for measuring different biological and physical responses



HOW ARE WE MONITORING RESTORATION EFFECTIVENESS?

how do we take these measurements?



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how do we take these measurements?



a 50 meter
transect

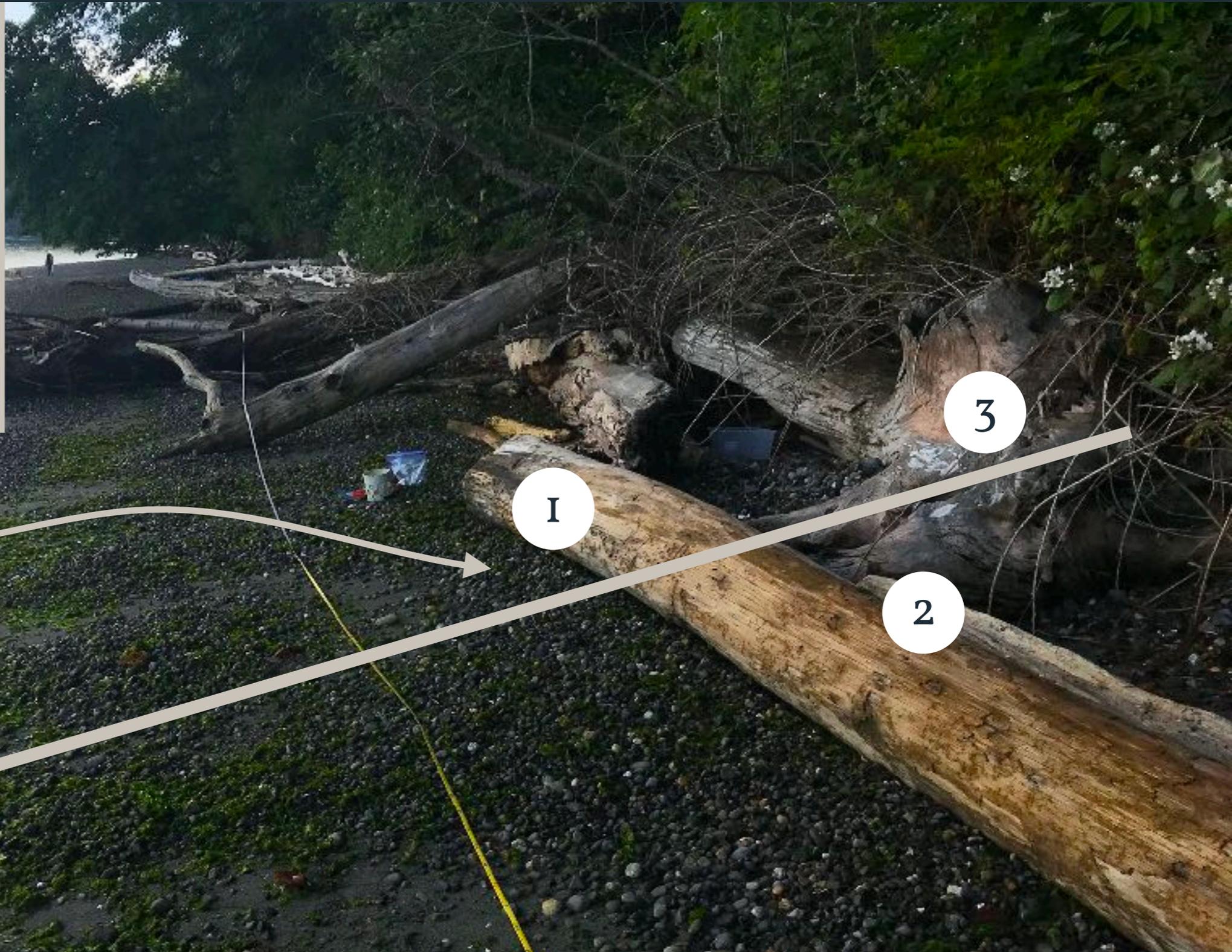
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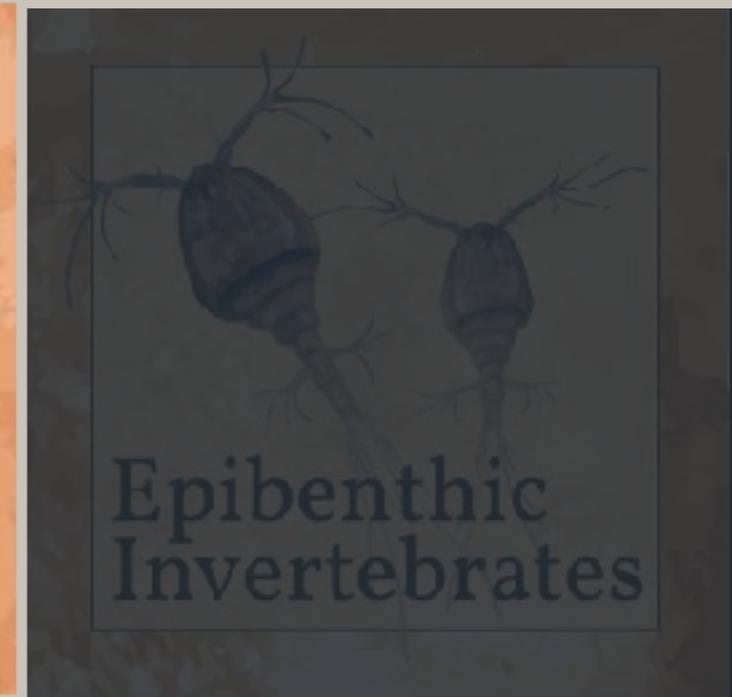
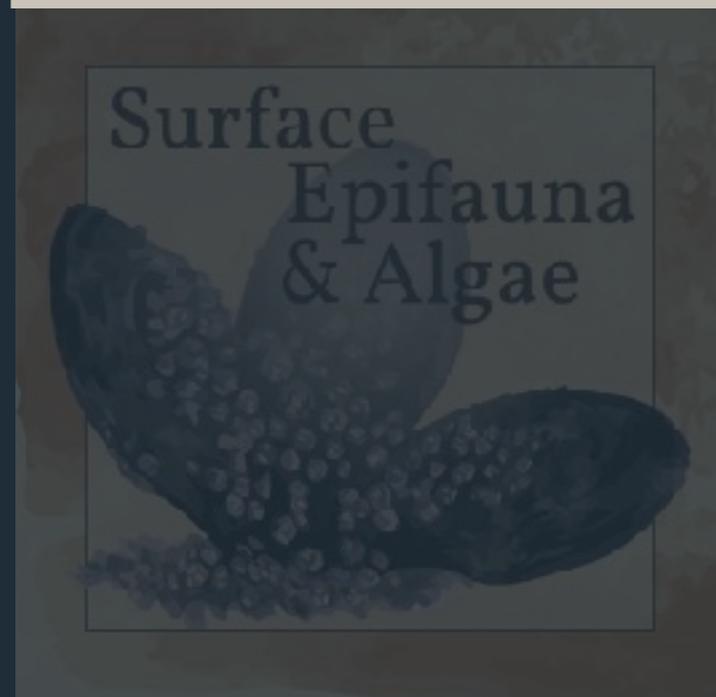
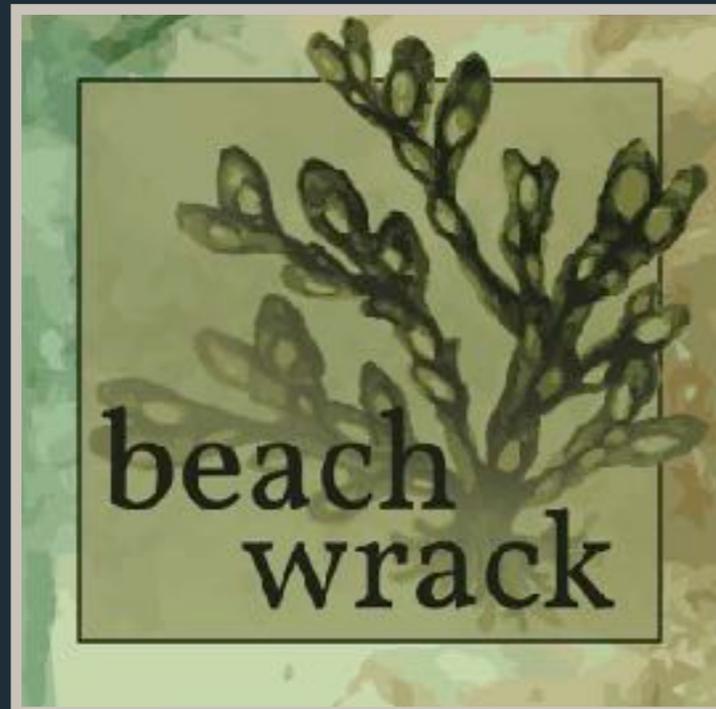
HOW ARE WE MONITORING RESTORATION EFFECTIVENESS?

how do we take these measurements?



HOW ARE WE MONITORING RESTORATION EFFECTIVENESS?

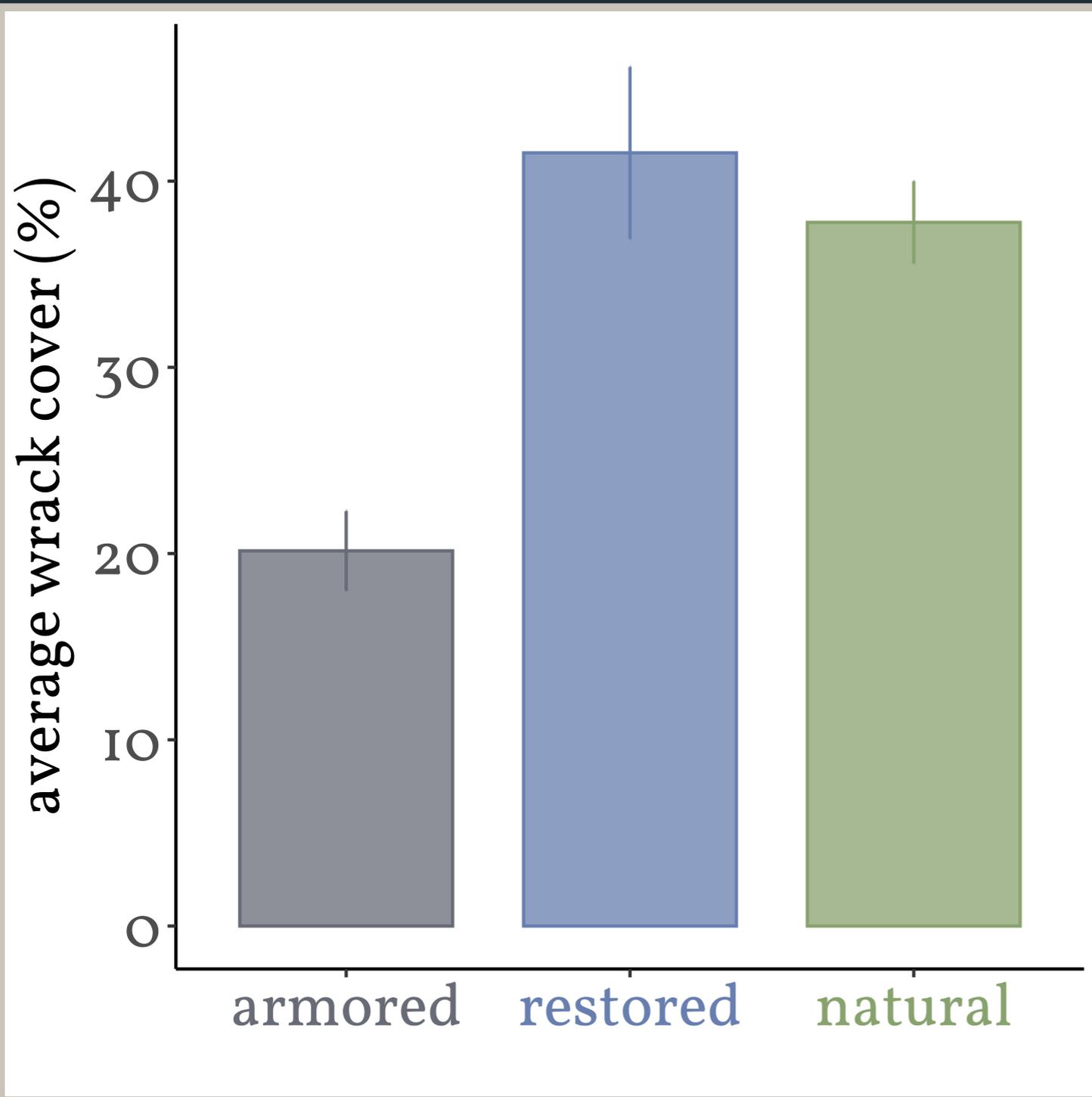
let's look at some data for a few of these responses!



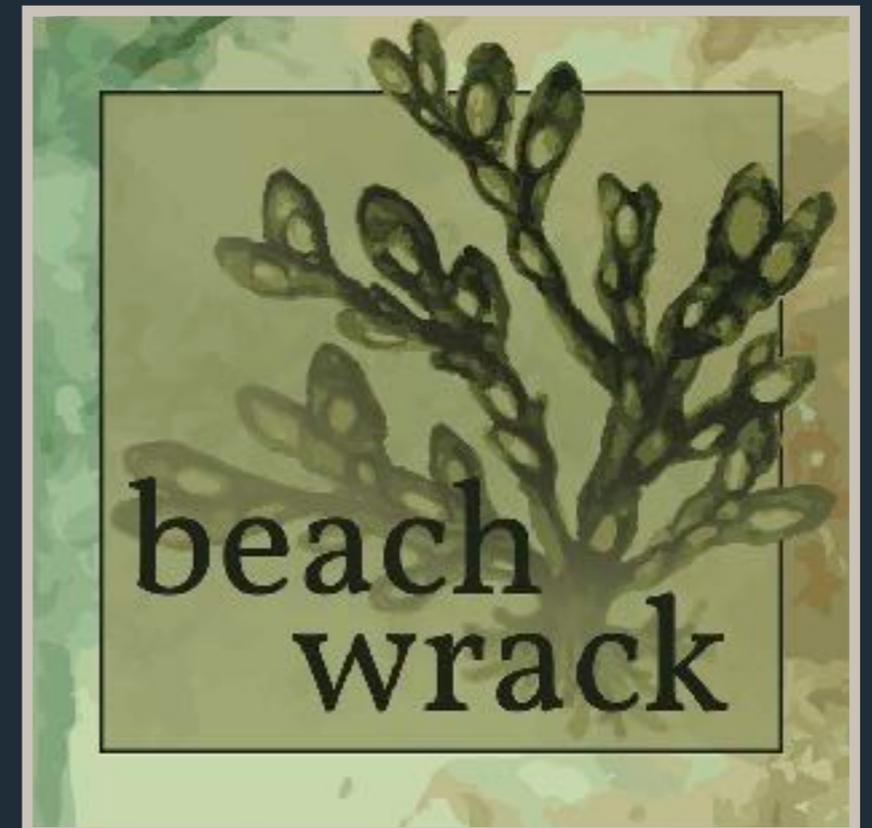
DATA FROM ACROSS PUGET SOUND

~ 50 sites with restored areas

+ 50 more with just armored/natural

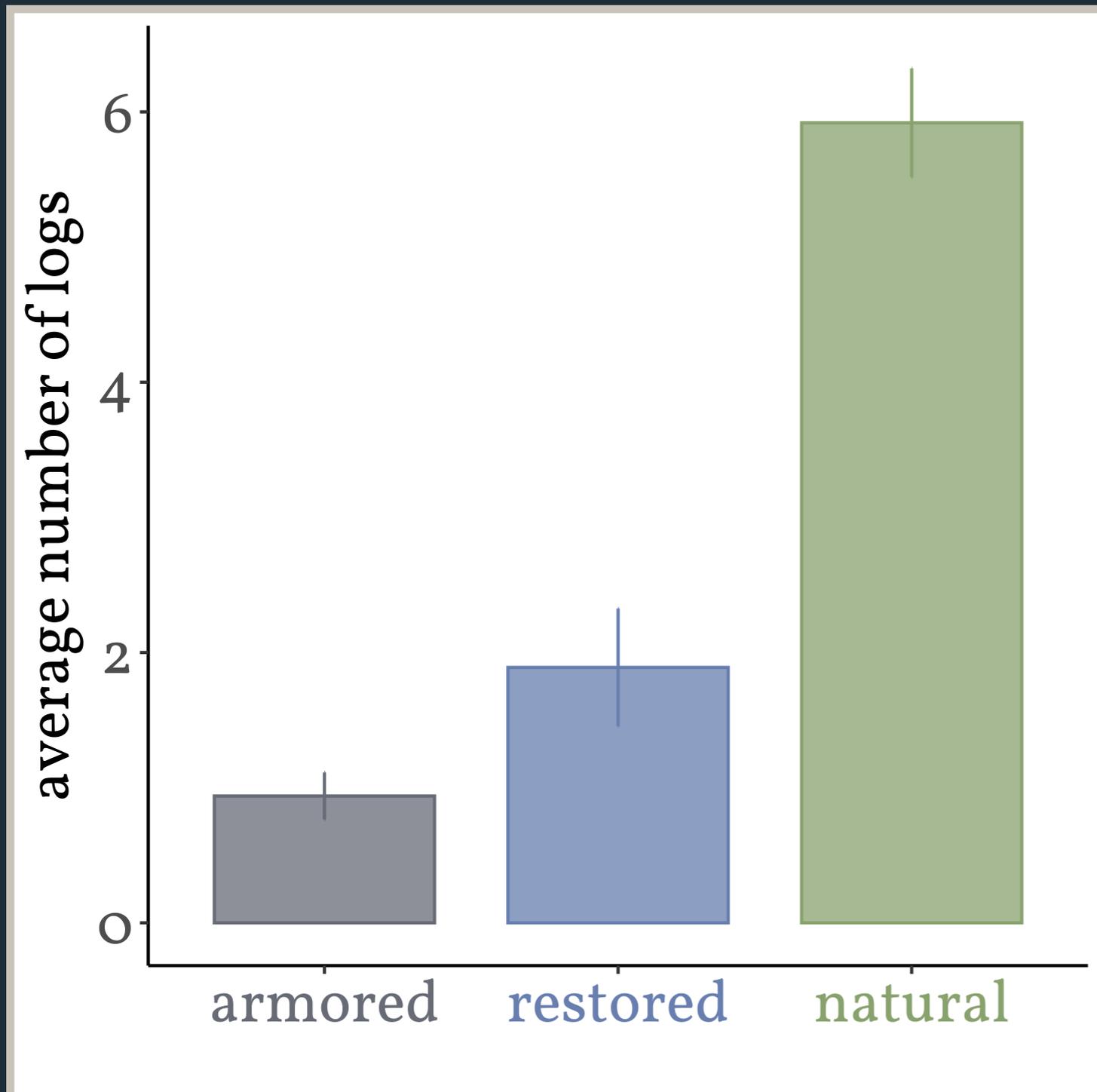


wrack is one of the first things to come back after restoration

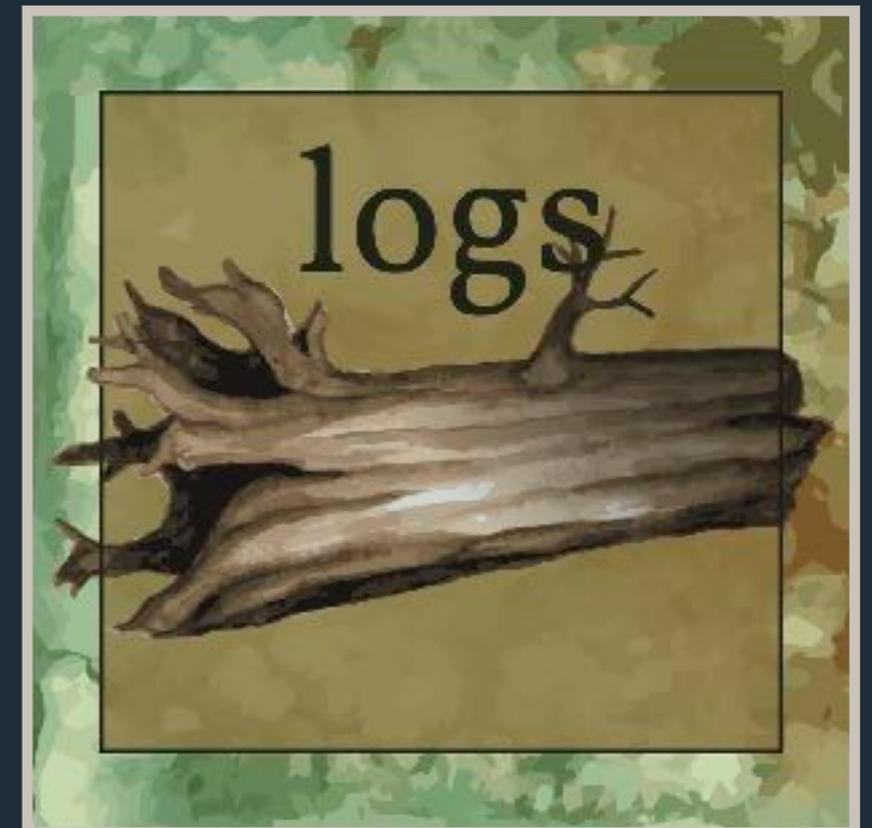


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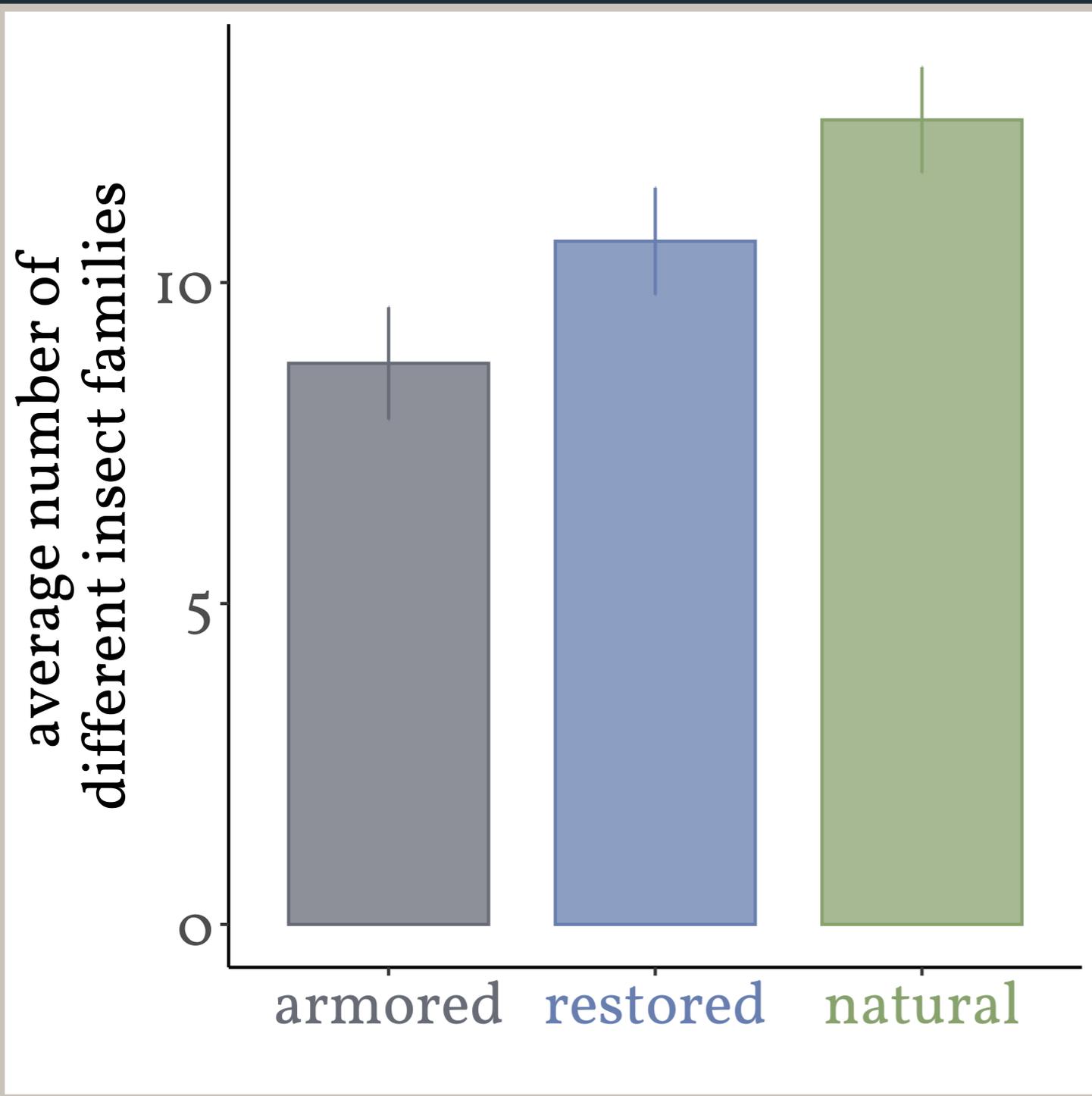
it takes a little longer for logs
to settle on the beach



DATA FROM ACROSS PUGET SOUND

~ 50 sites with restored areas

+ 50 more with just armored/natural



insects start to colonize,
especially if vegetation has
been planted



HOW DOES THIS COMPARE TO SEAHURST PARK RESTORATION?

Seahurst Park
has 2 main
restoration sites:

One where armor
was removed in
2014

One where armor
was removed in
2005



There is also an
unrestored,
armored site

... and a natural
(never armored)
site

HOW DOES THIS COMPARE TO SEAHURST PARK RESTORATION?

before restoration

just after restoration

years after restoration



2004



2006



2019



2010



2015



2019

HOW DOES THIS COMPARE TO SEAHURST PARK RESTORATION?

restoration at Seahurst Park is more than just armor removal...

...it has also involved:
beach nourishment
addition of logs
planting of native vegetation

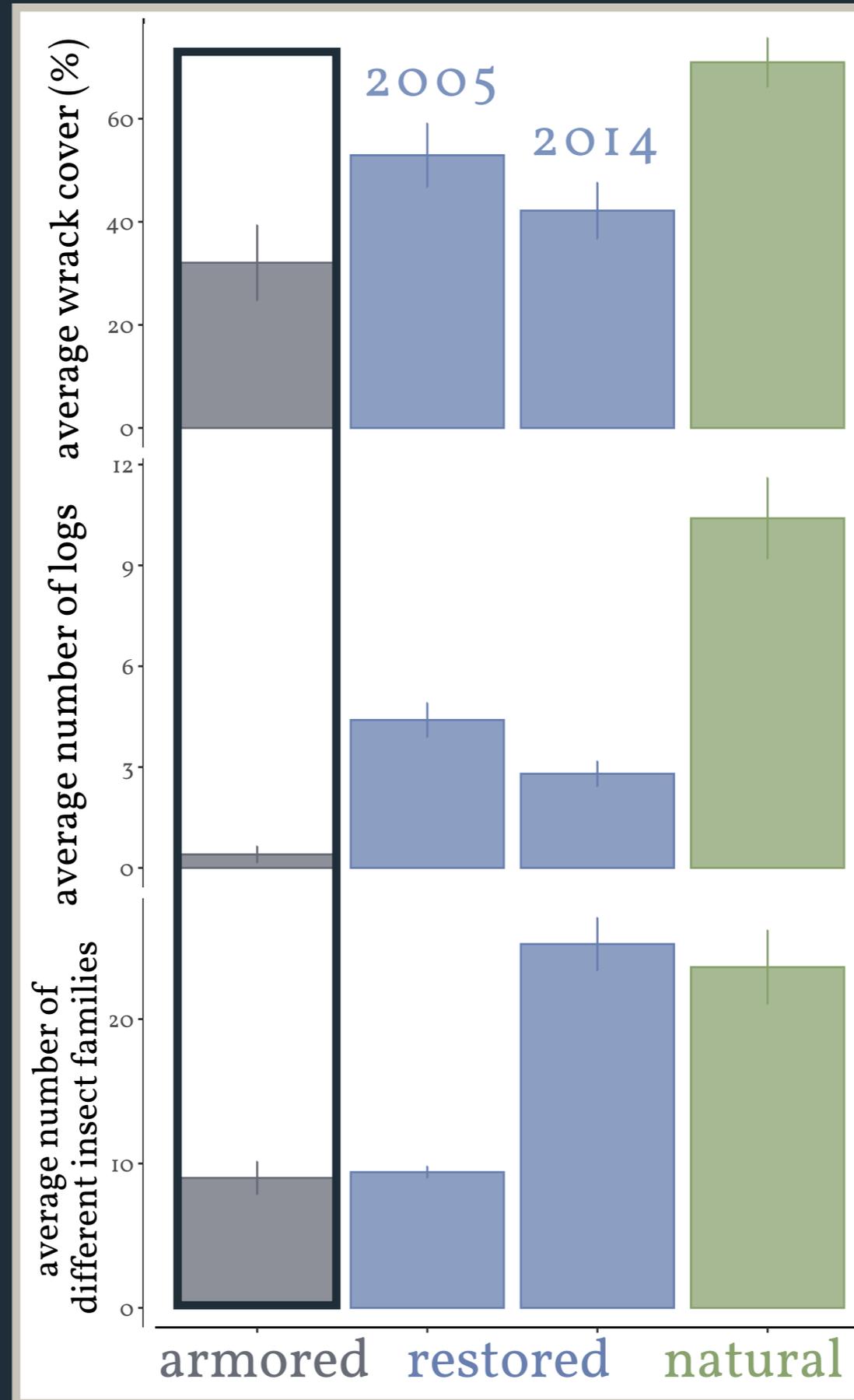
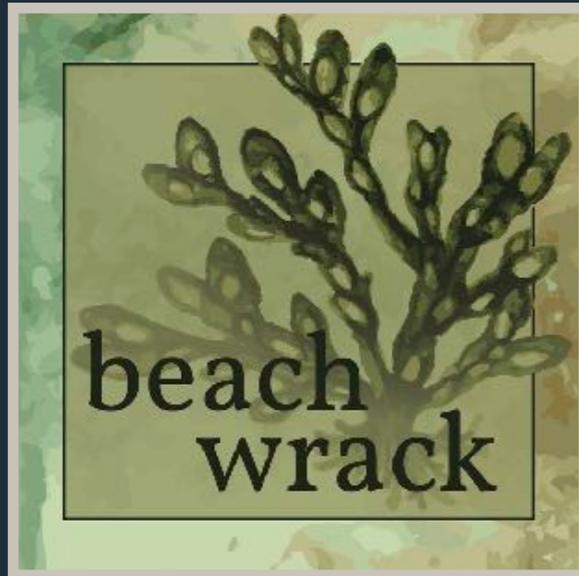


2019



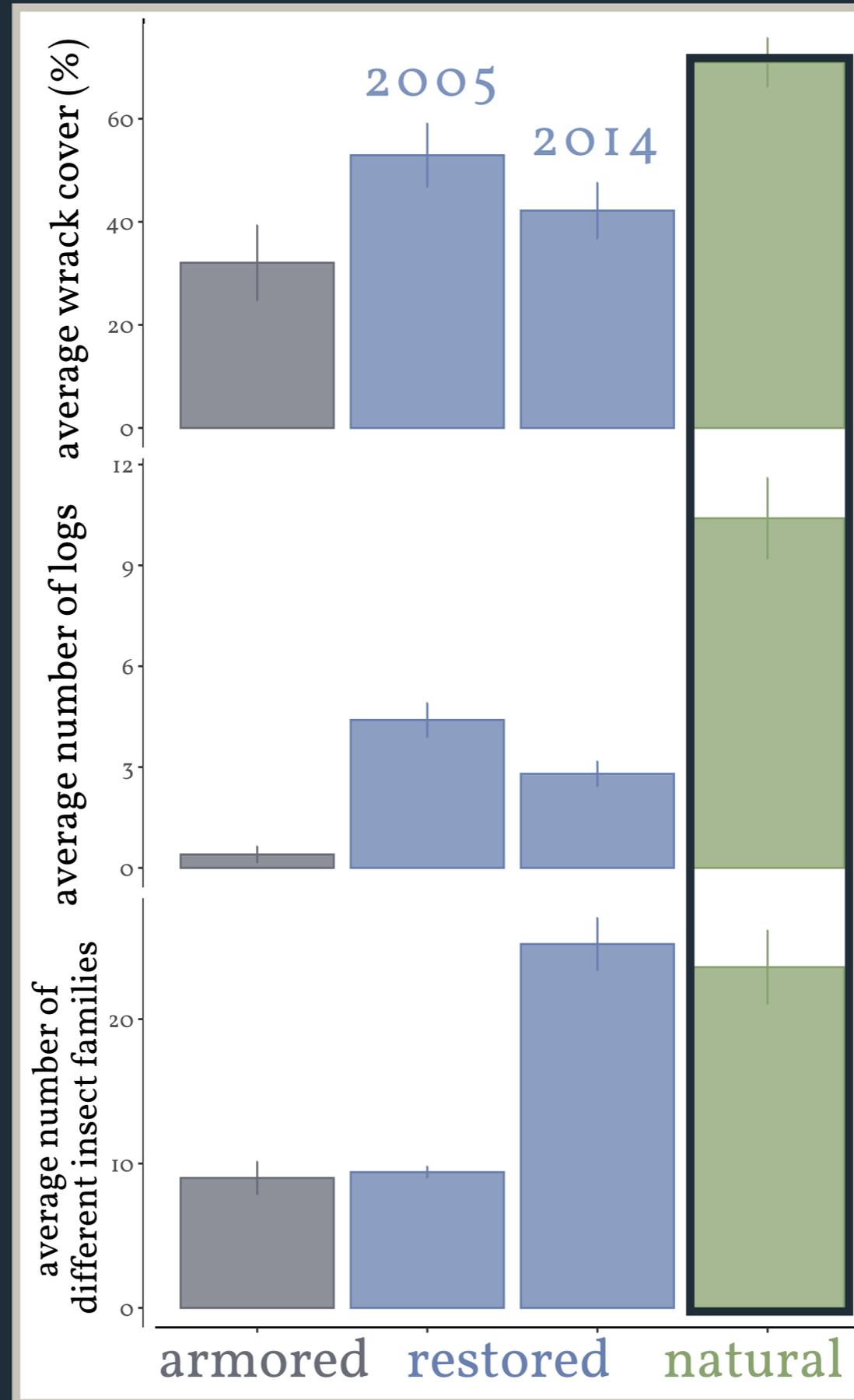
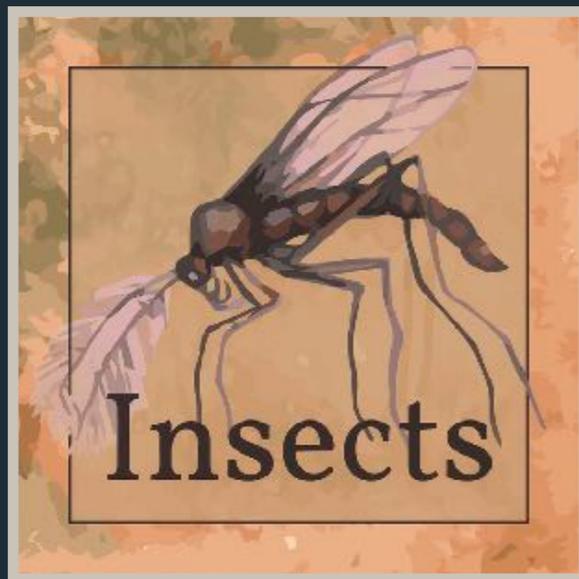
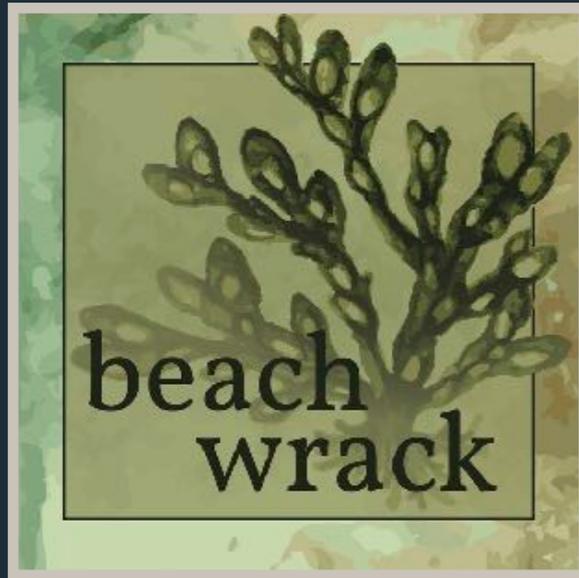
2019

DATA FROM SEAHURST PARK



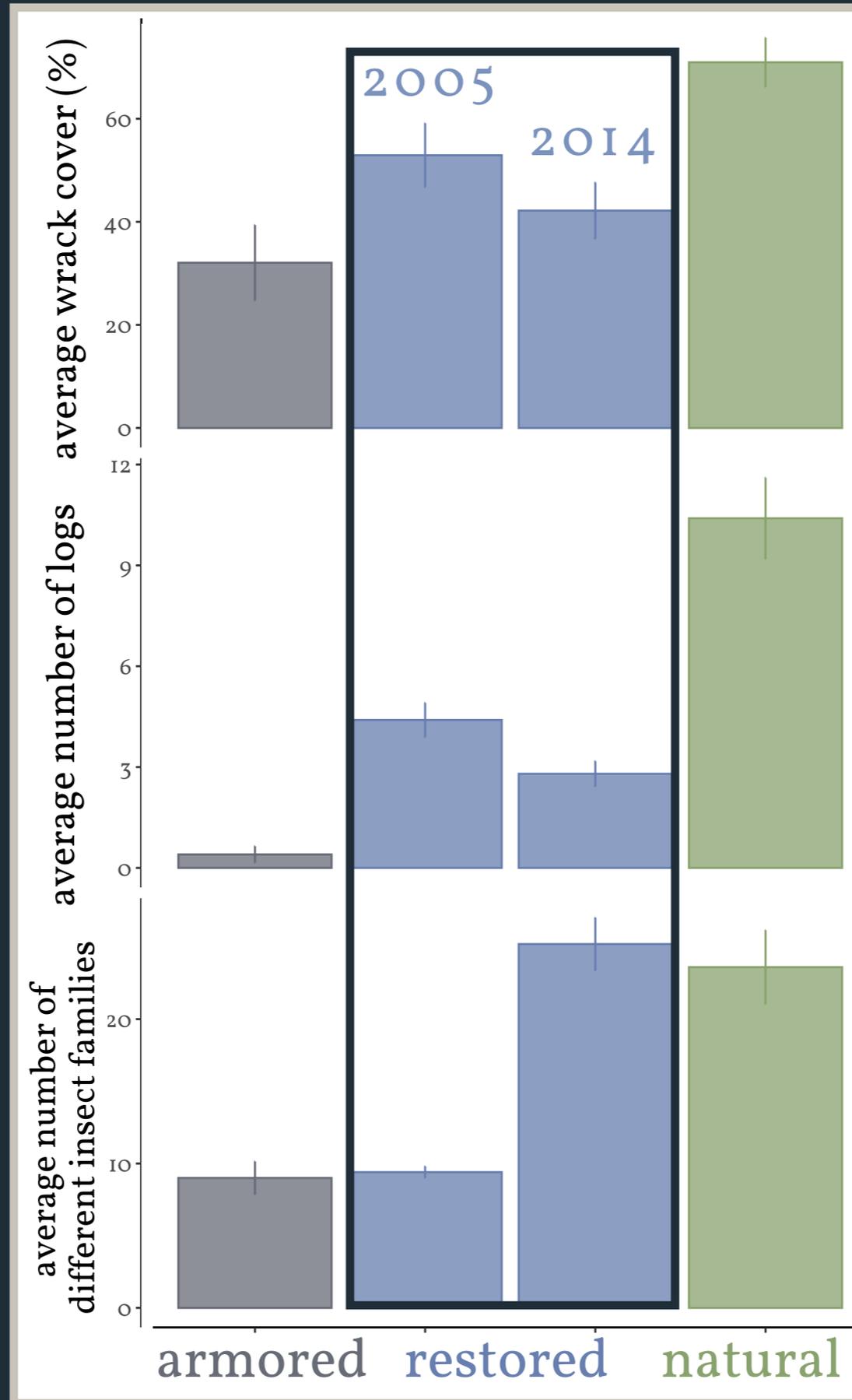
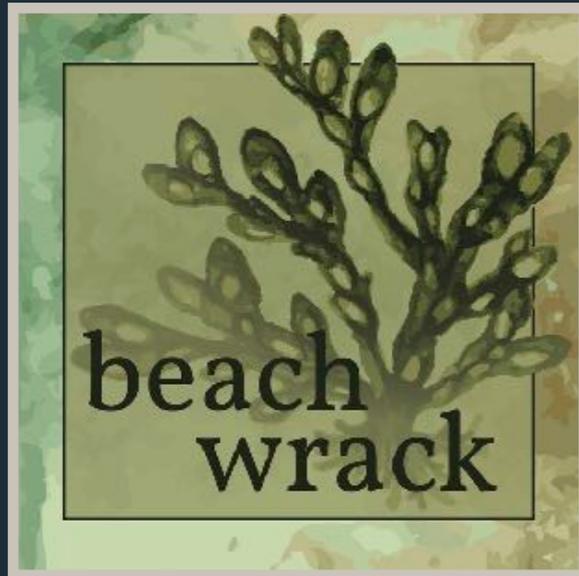
again, armored sites have the least wrack, fewest logs, and lowest insect diversity...

DATA FROM SEAHURST PARK



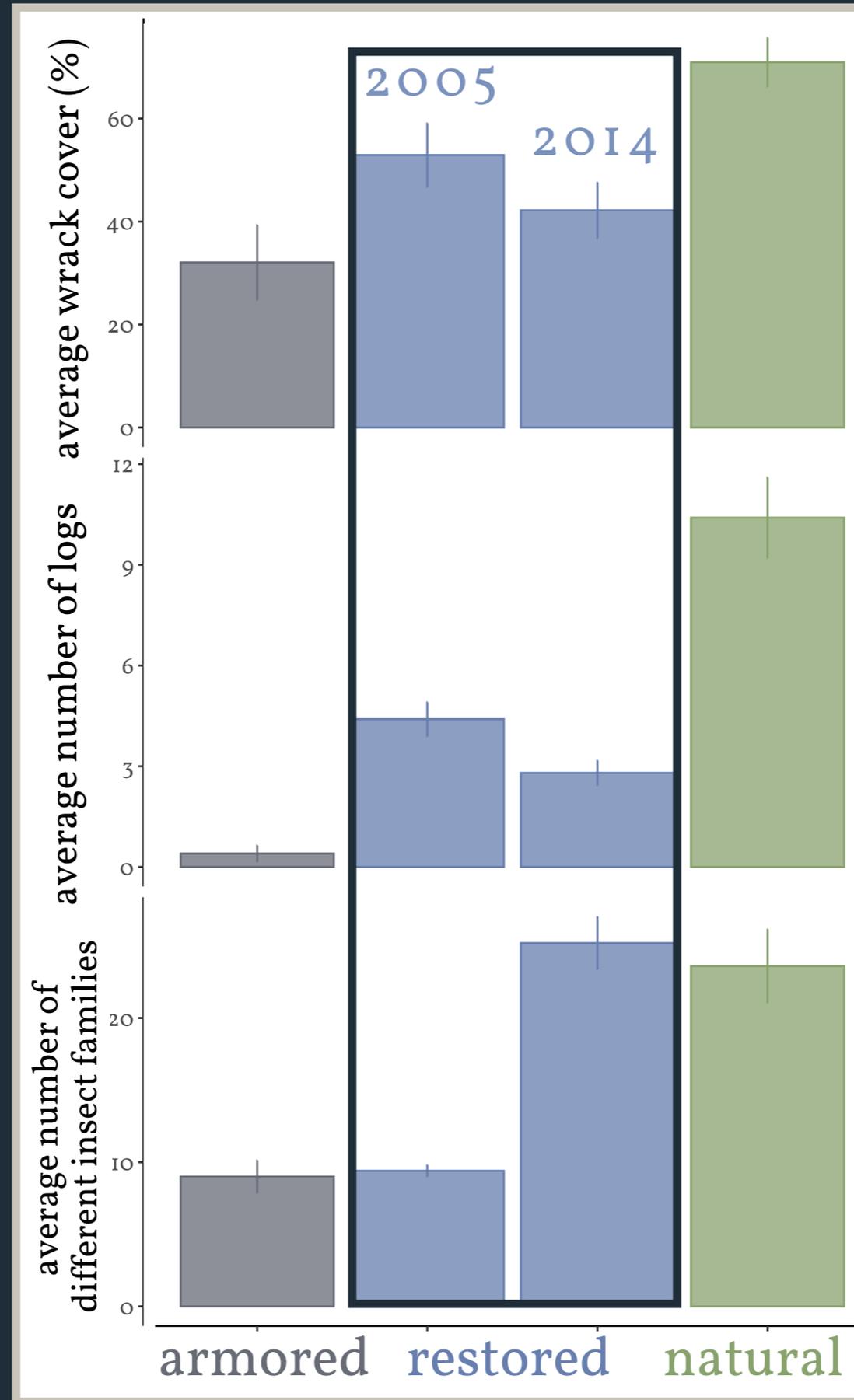
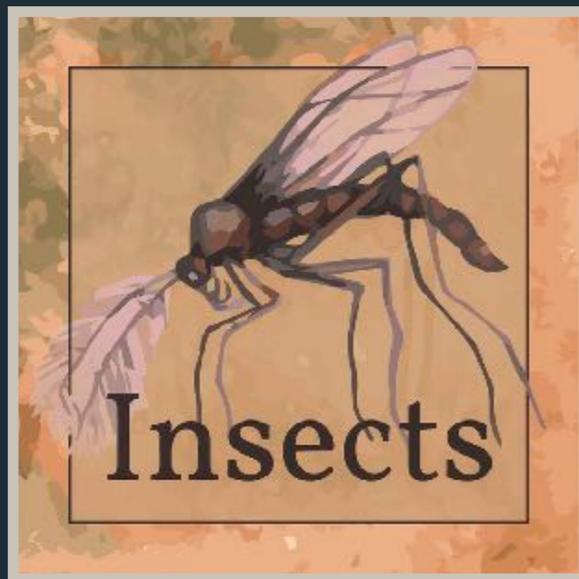
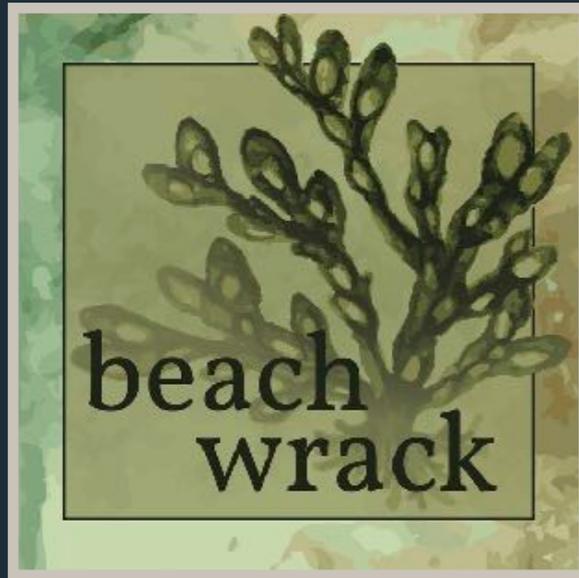
...natural sites typically have more wrack, logs, and higher insect diversity...

DATA FROM SEAHURST PARK



... the two restored sites usually have moderate levels of wrack, logs, and insect diversity...

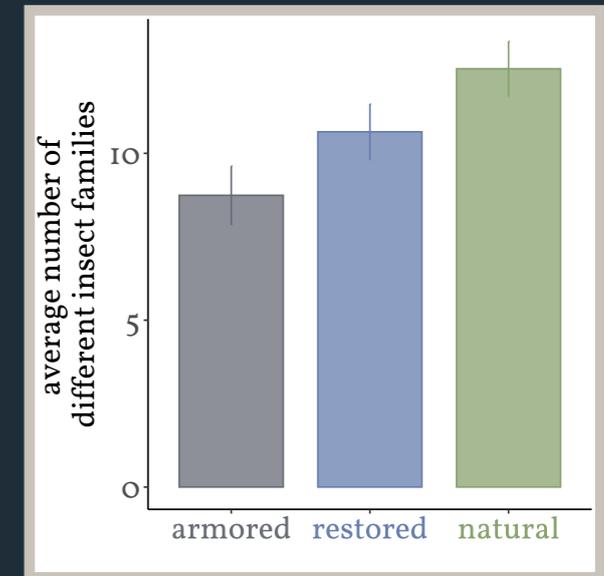
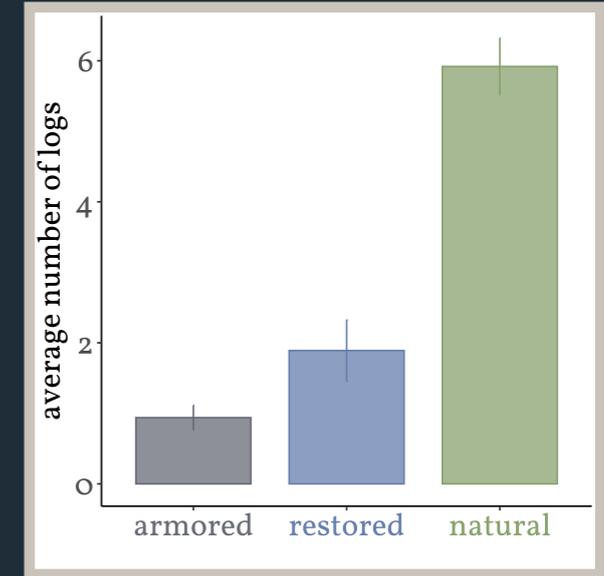
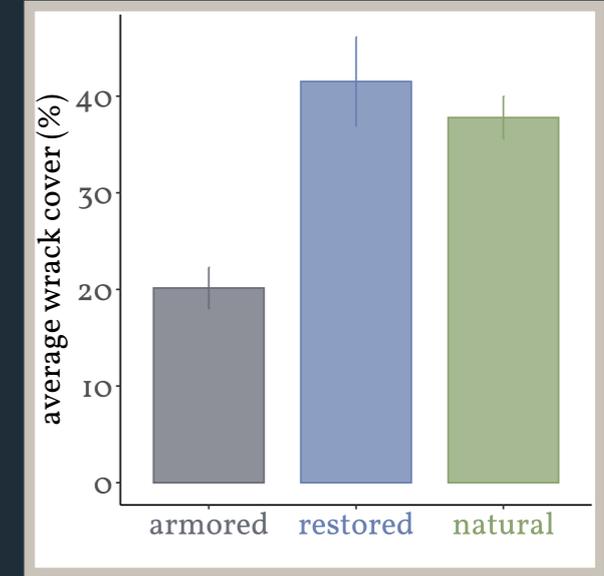
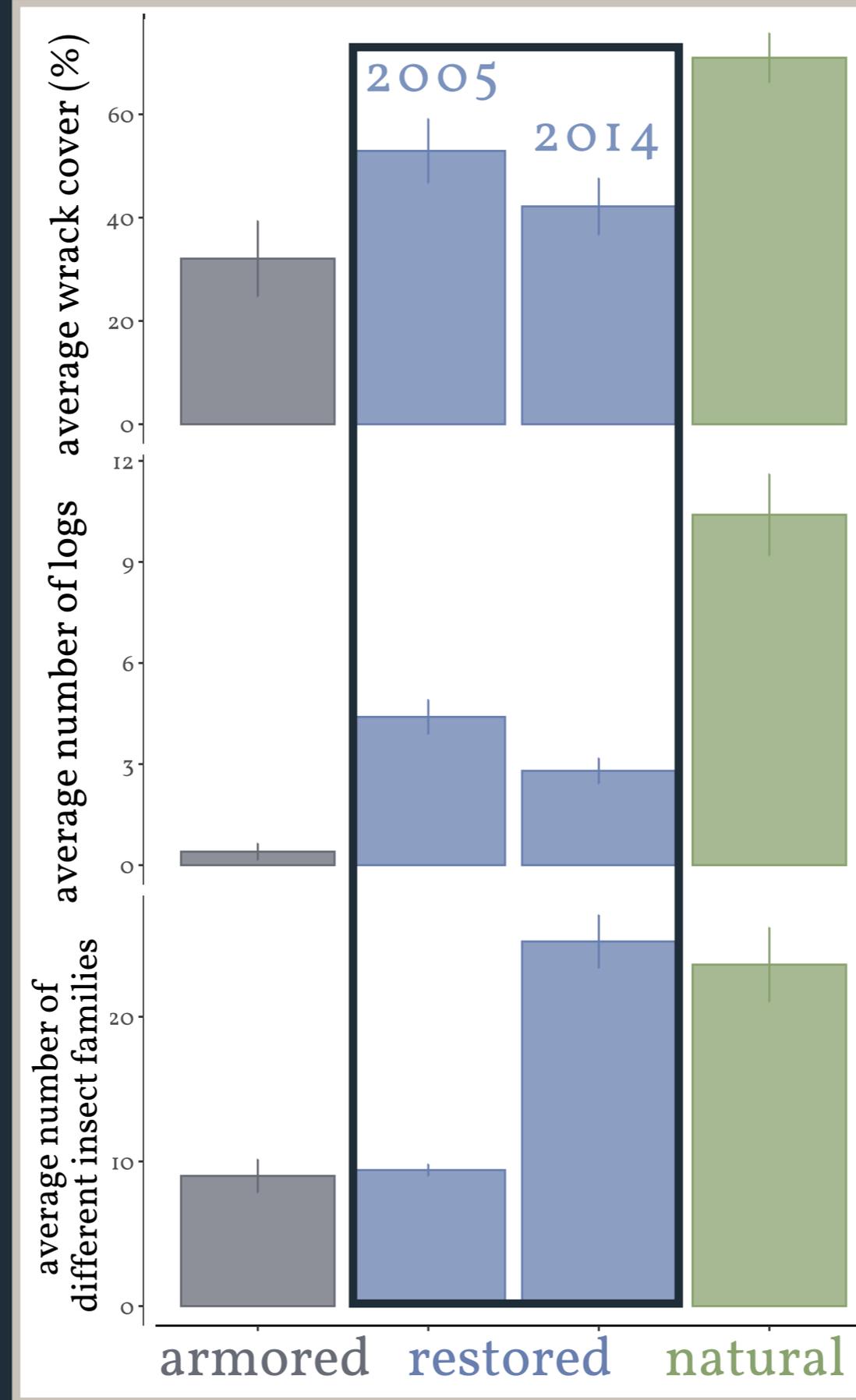
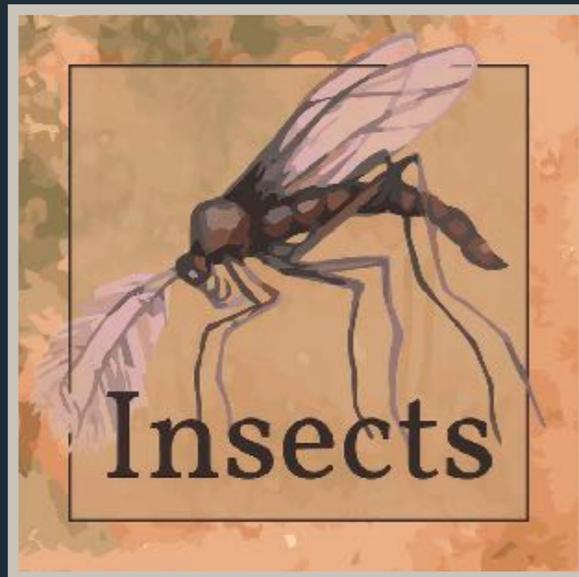
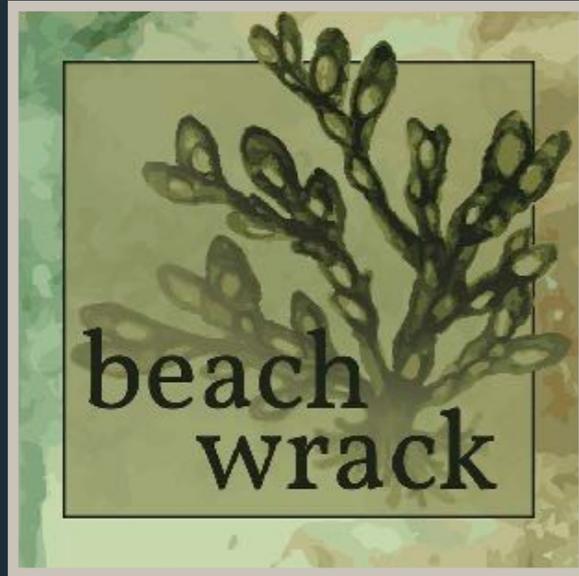
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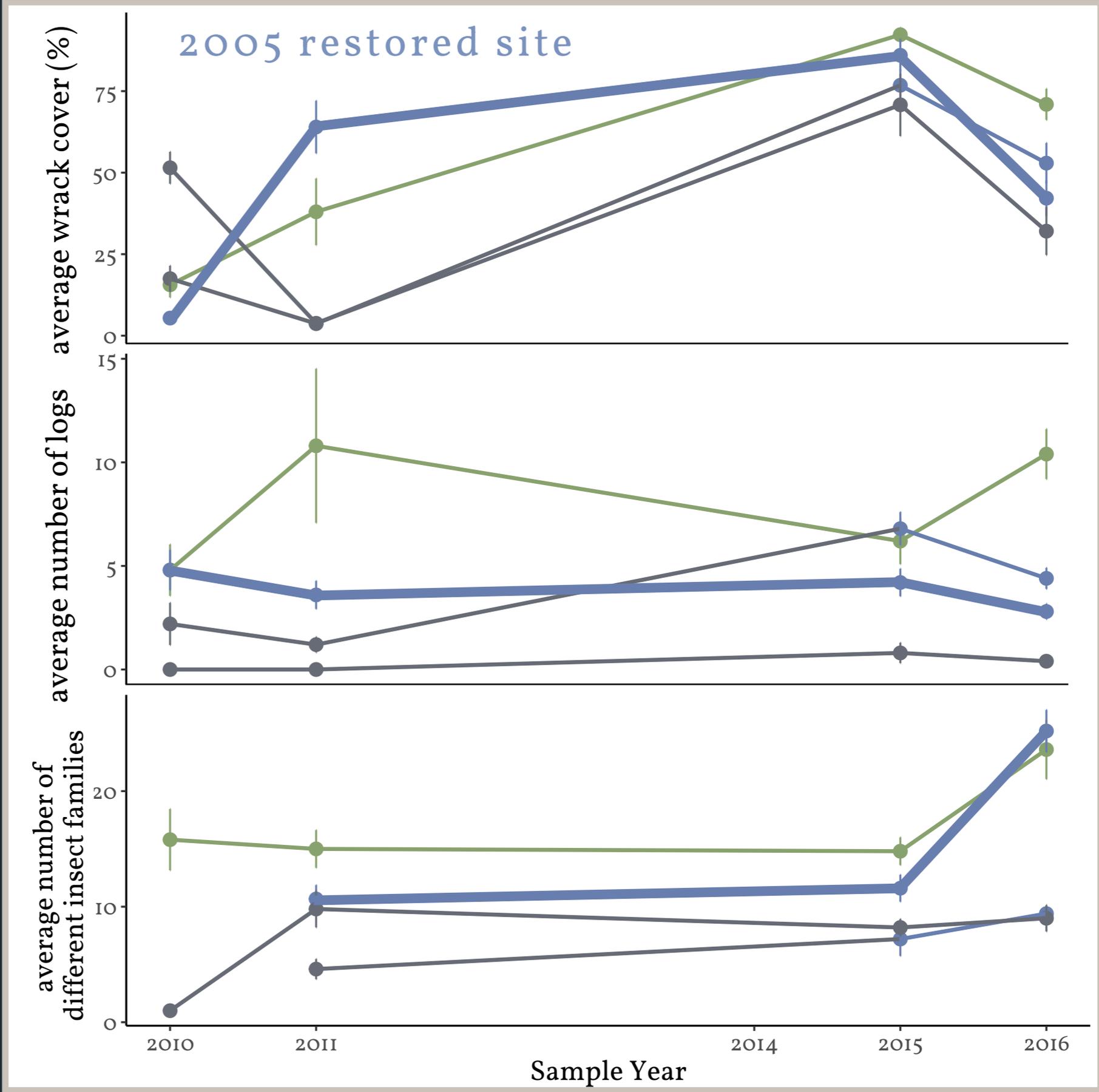
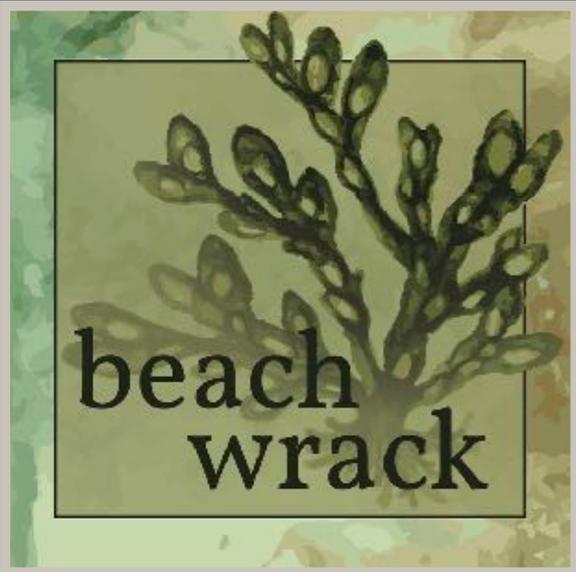
...the site restored in 2005 has more wrack and logs, but the site restored in 2014 has the highest level of insect diversity!

SEAHURST PARK

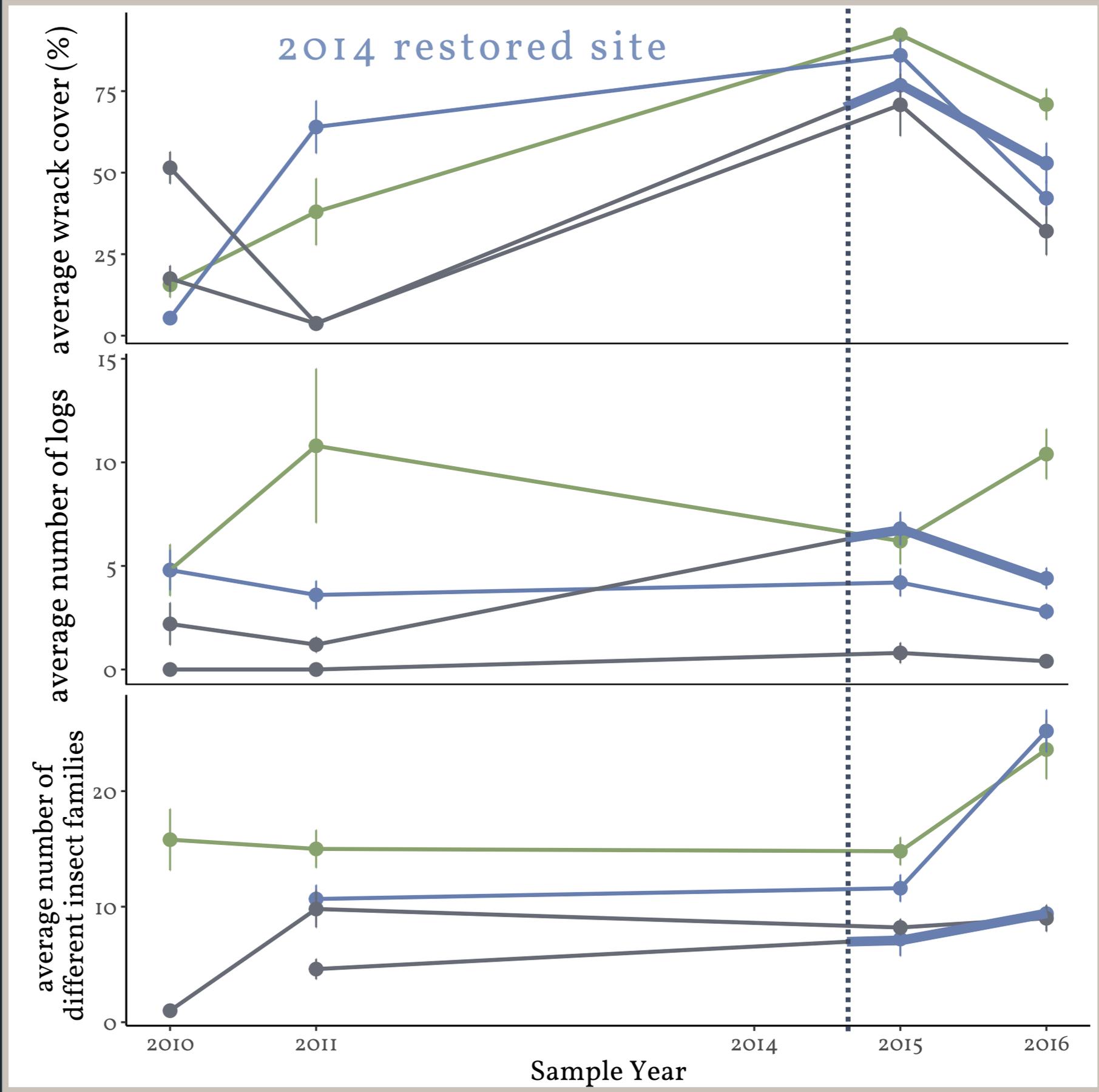
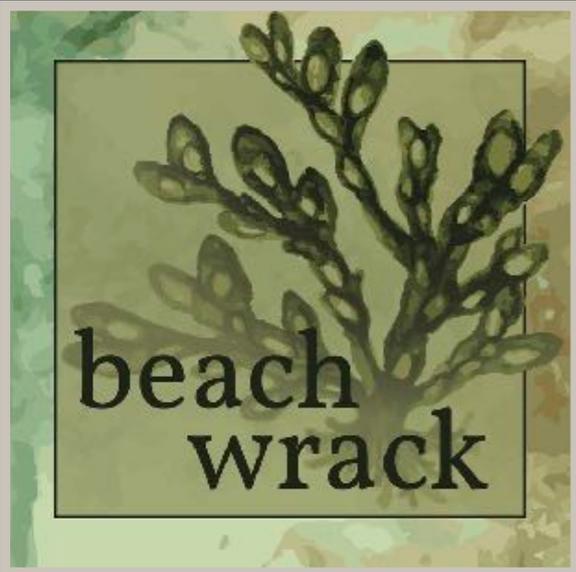
ALL SITES



Seahurst Park is a special site because we have 10 years of data!



Seahurst Park is a special site because we have 10 years of data!



The background of the slide is a photograph of a rocky beach. The foreground is filled with grey and brown pebbles and rocks of various sizes, interspersed with patches of bright green algae. In the middle ground, the beach meets a calm body of water. The background features a dense forest of evergreen trees on a hillside under a clear, light blue sky.

WHAT IS SO SPECIAL ABOUT THE SEAHURST PARK RESTORATION PROJECT?

Seahurst Park has over ten years of data so we can track restoration effectiveness over time!

Seahurst Park has two locations that were restored at different times so we can track how long certain biological variables take to respond!

Seahurst Park is a public area where everyone can benefit from restoration efforts!

HOW CAN YOU GET INVOLVED?

WEBSITE: www.shorelinemonitoring.com

EMAIL: simonedr@uw.edu (me)

tofty@uw.edu (Jason Toft)

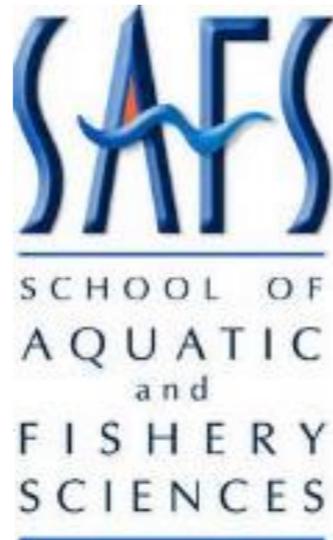


Welcome to the Shoreline Monitoring Database.

A resource to upload data from standardized protocols for monitoring shorelines in Puget Sound, WA.

ACKNOWLEDGEMENTS:

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NEP Habitat Strategic Initiative



PUGET SOUND ECOSYSTEM
MONITORING PROGRAM



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