

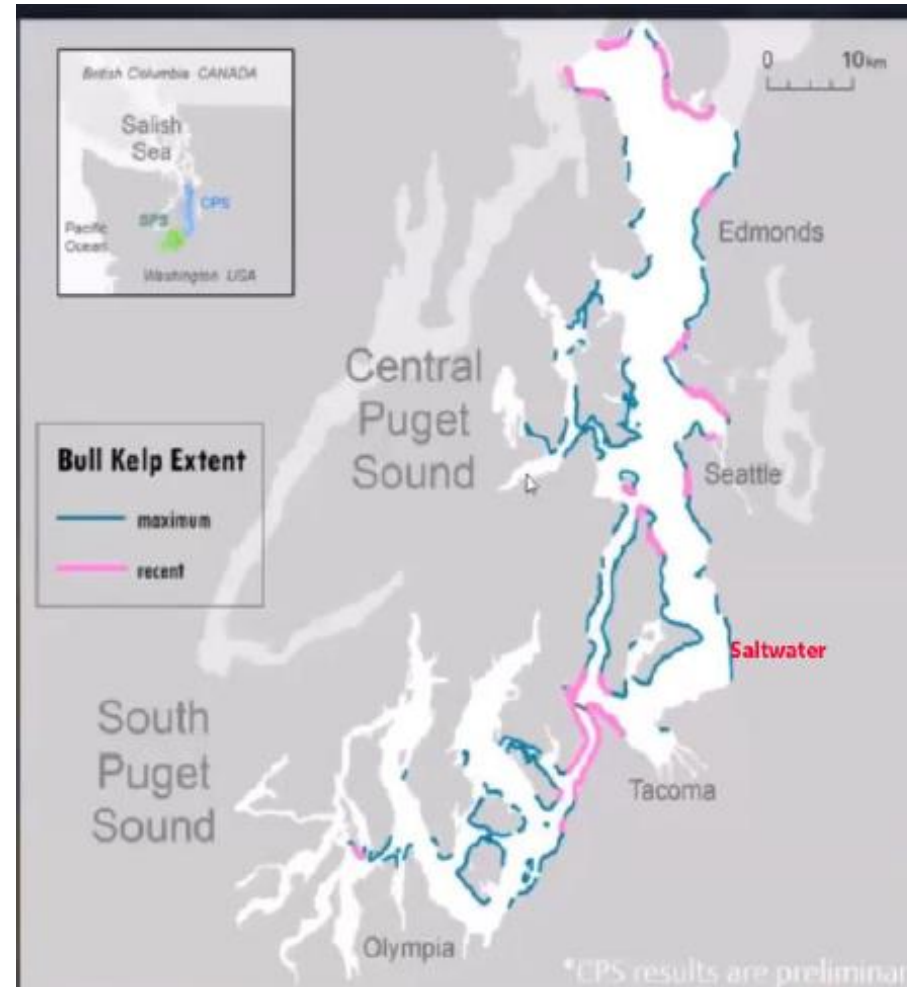
Kelp and marine restoration at Saltwater State Park



Historical vs. current bull kelp coverage



- 80% of coastline that once had bull kelp now does not.
- Central and South Puget Sound basins are the most severely affected in WA State.



*bull kelp linear extent
recent
(2017 or 2019)*

Recently, bull kelp found:

- Admiralty Inlet
- Central portion of Main Basin
- Tacoma Narrows
- Squaxin Island

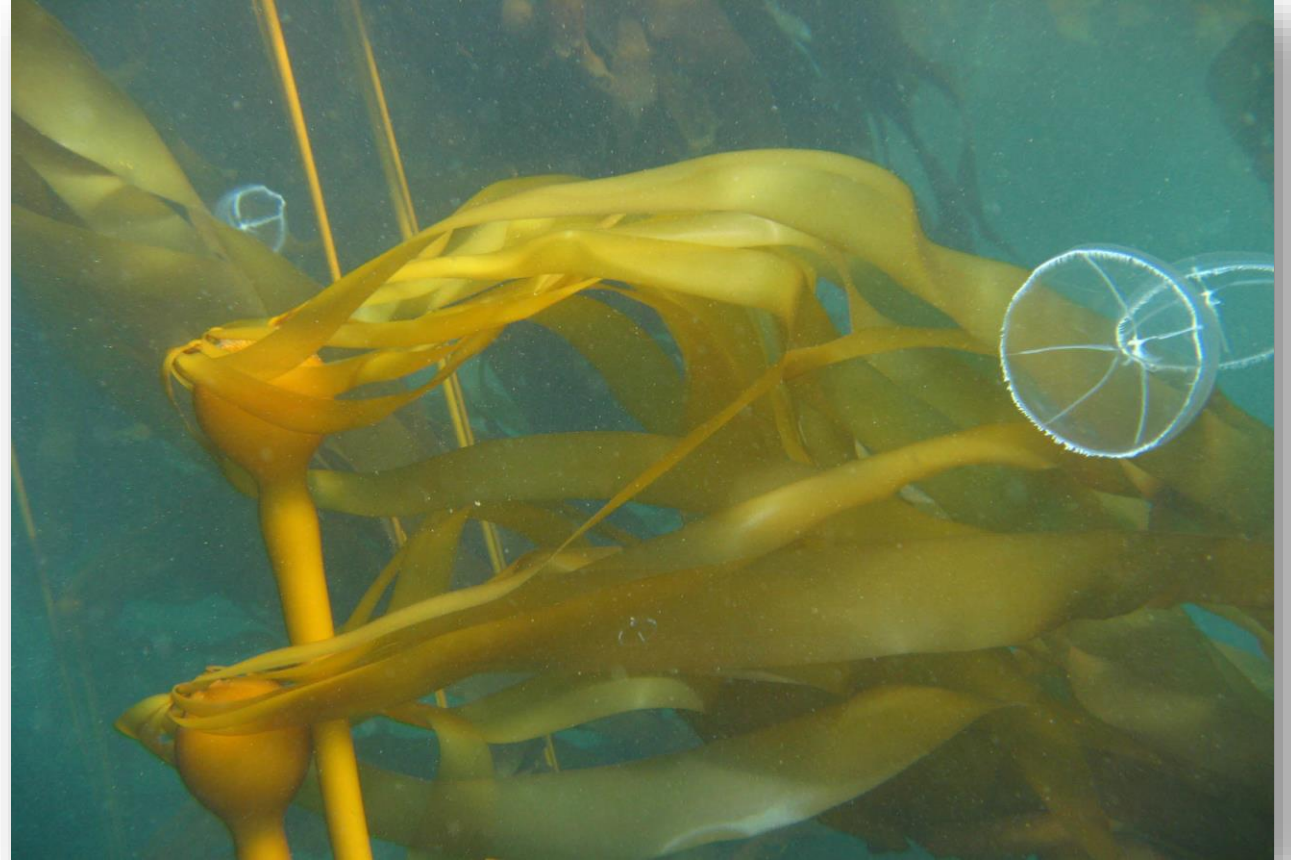
% of 1 km segments with bull kelp recorded recently (vs maximum extent):

CPS*	21%
SPS	20%

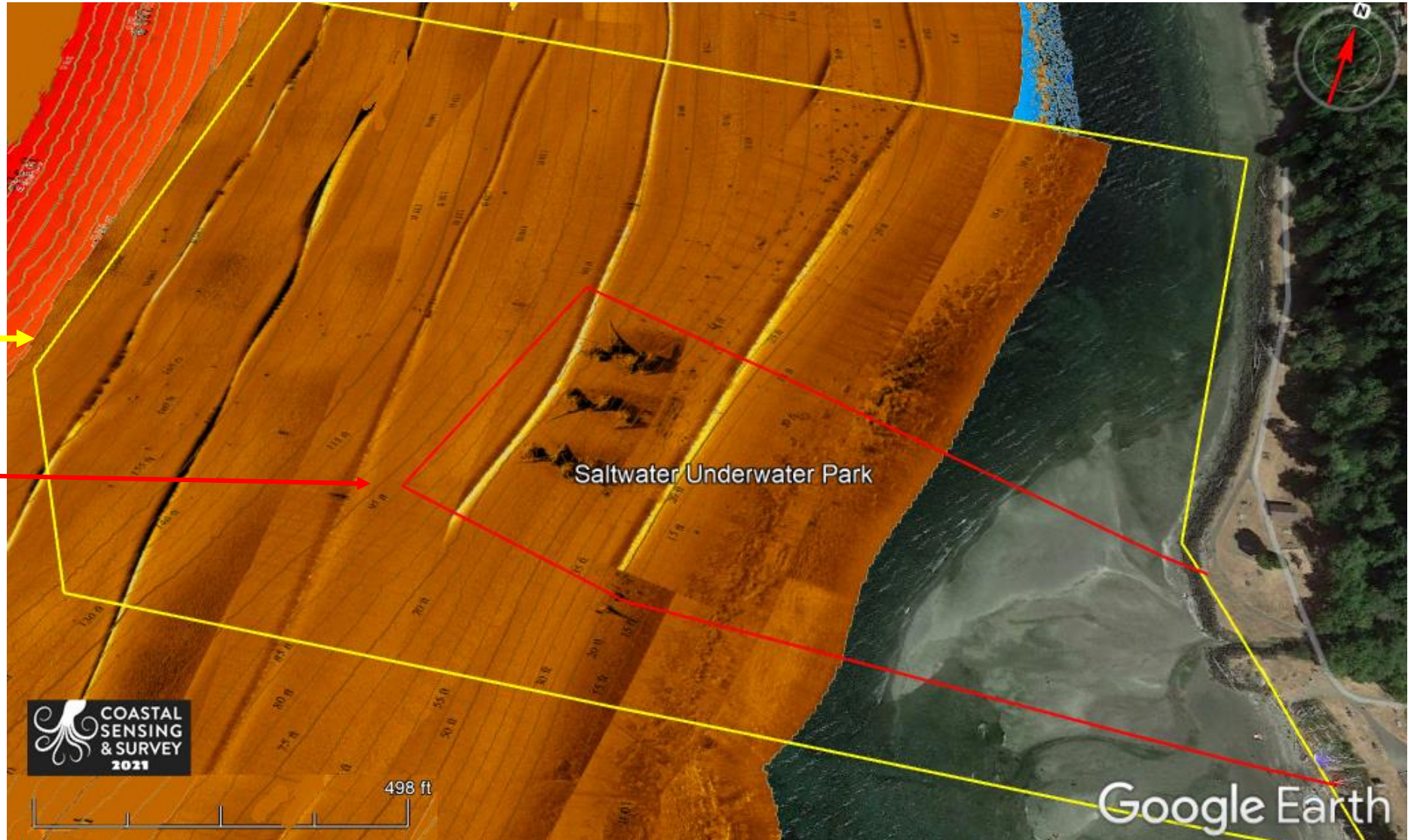
Benefits Of Bull Kelp Forest Restoration



- Kelp benefits:
 - Provides food and shelter for marine life
 - Dissipates waves
 - Reduces shoreline erosion
 - Sequesters CO₂
 - Enhances marine enthusiast experience



Underwater sonar of Saltwater State Park



Saltwater state park boundary

Red shows marine protected area



Tire reefs are poor habitat

- Specific tire leachate components recently shown harmful to marine life
- Limited shelter and poor aesthetics
- Over 3,000 tires at depths between 12 and 70 ft



- Opportunity to replace tires with more beneficial structure, like seaweeds and rock.
- Many marine organisms can be manually transplanted before tire removal.



Mitigation: bull kelp forest restoration



- Collaborating with Puget Sound Restoration Fund, Marine Science and Technology Center, and Point Defiance Zoo Aquarium in propagation techniques.

- Beginning in 2022 multiple restoration techniques are being test by divers in Saltwater Marine Protected Area



Bull kelp life cycle

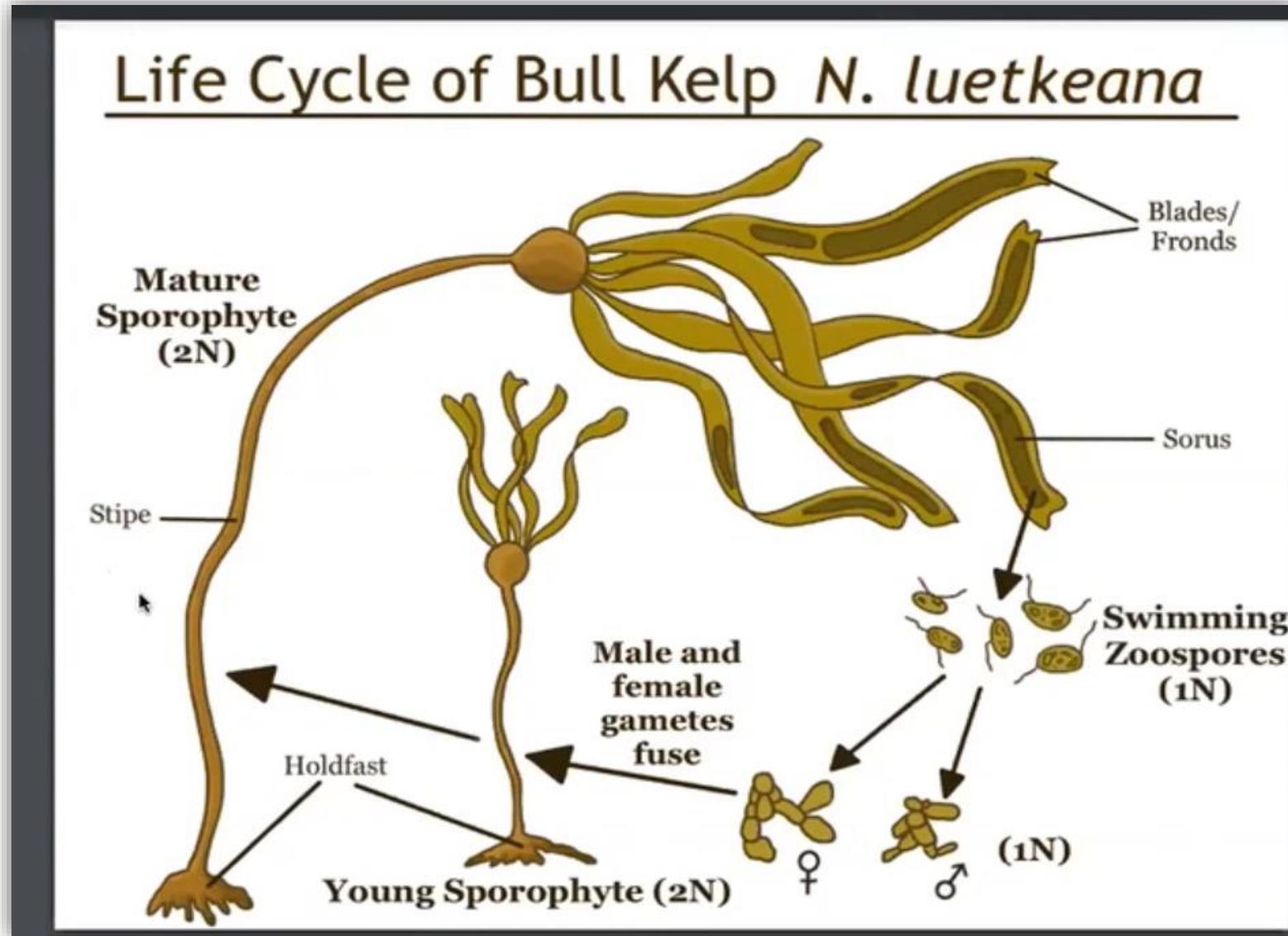


Diagram by
Charlotte Collins

Sori collection

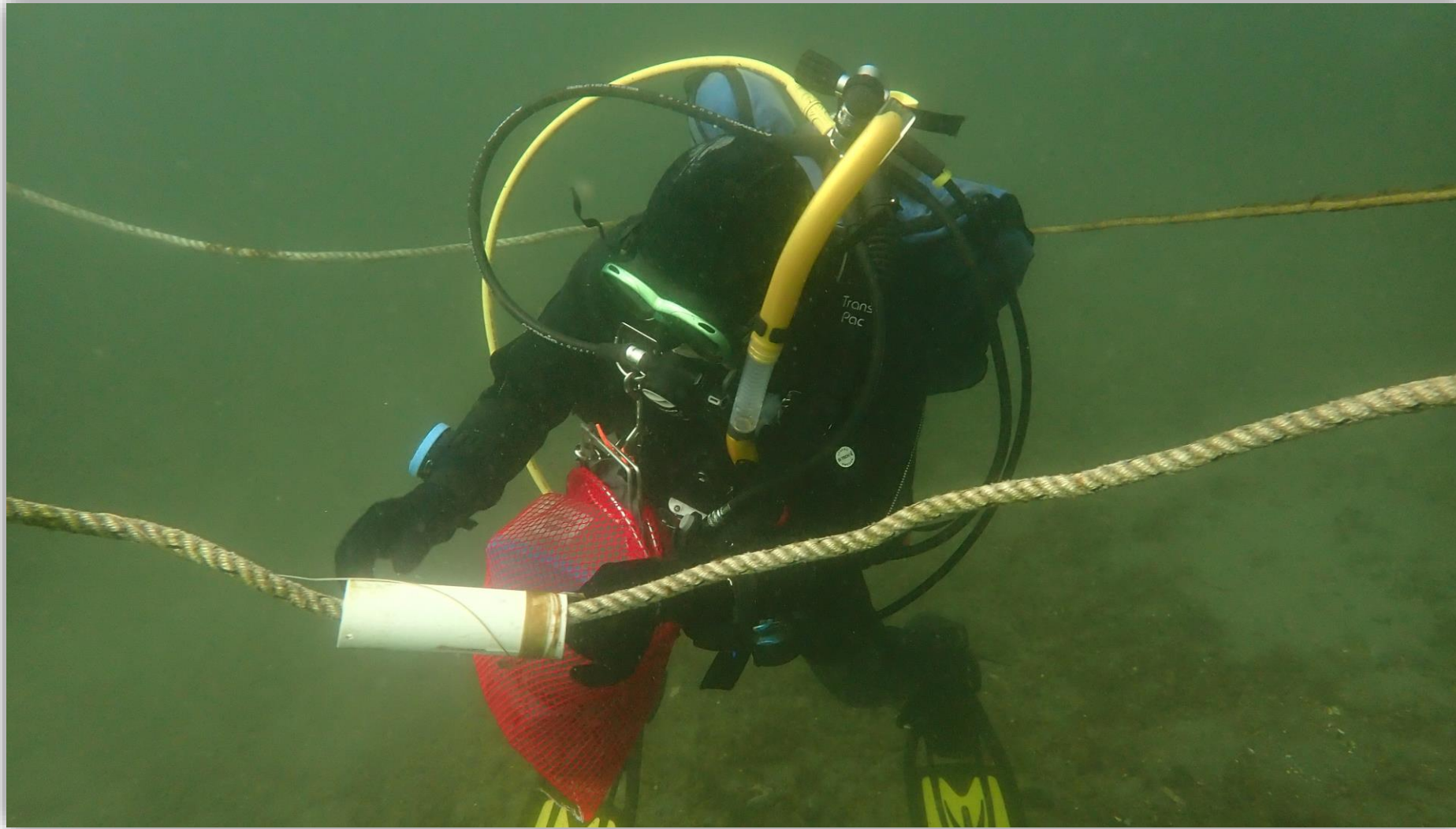


Growing kelp on twine





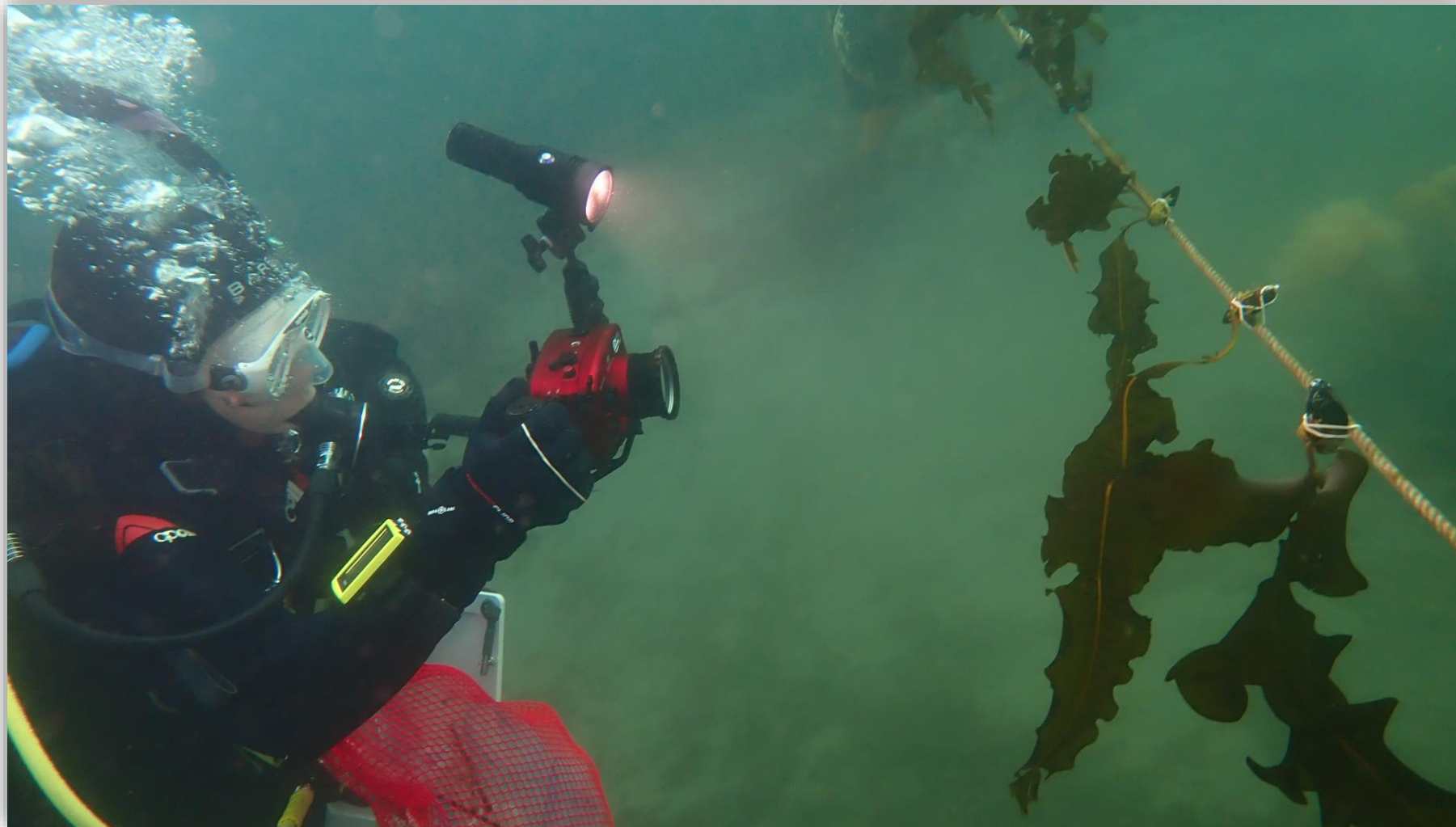
Unfurling the seeded twine



First new bull kelp



Newly transplanted kelp

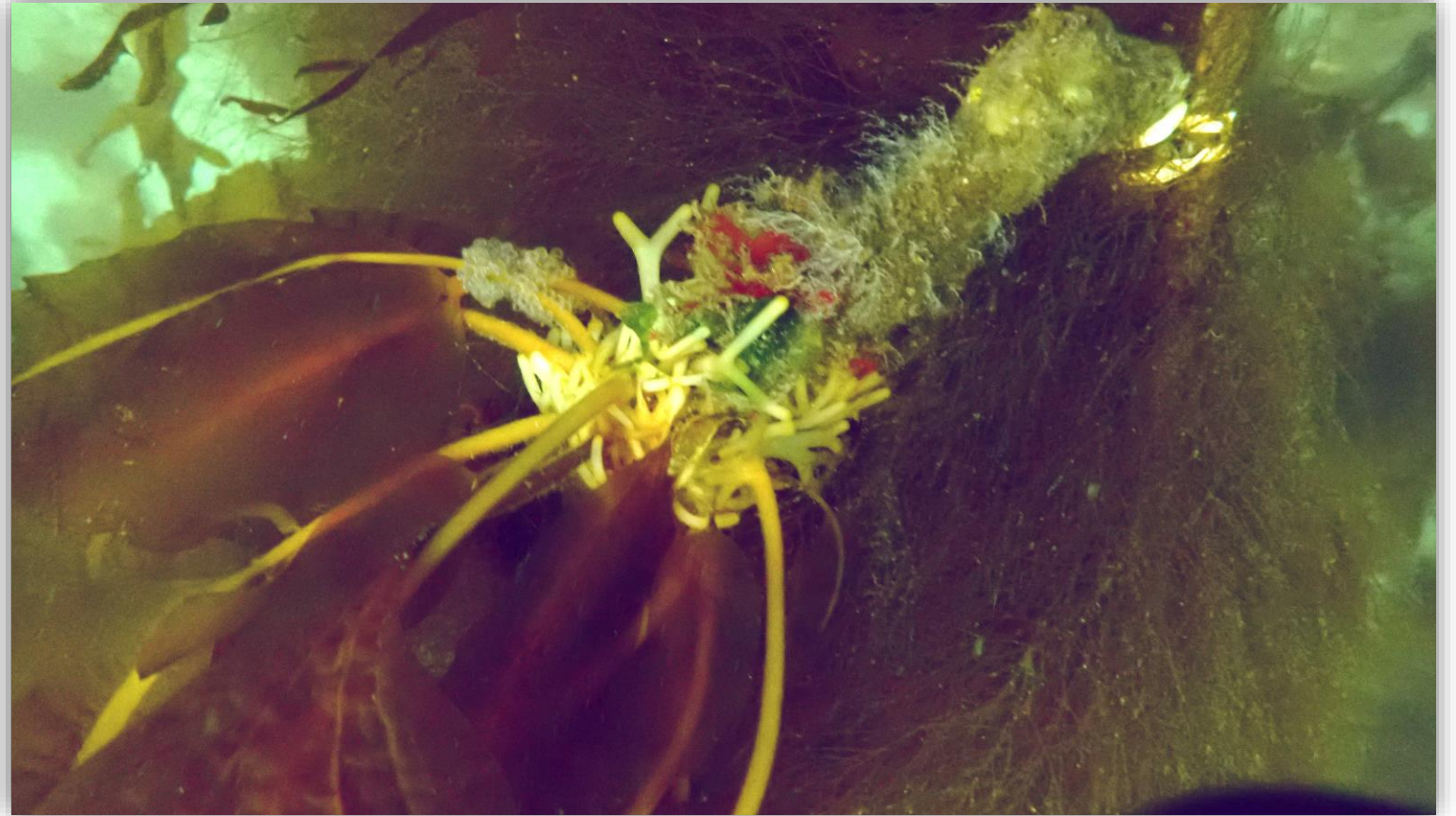




Wing kelp sori packets



Growing kelp in nursery



Wrapping sori on line



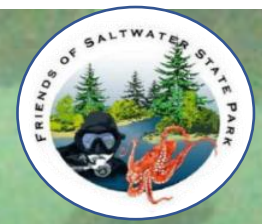
Thanks to supporters, collaborators and partners



Bandito Boat Charters
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Point Defiance Zoo Aquarium
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Public Donations
Puget Sound Restoration Fund
SeaYa Boat Charters
Saltwater State Park
Washington Scuba Alliance



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Robin Webster, Mikiko Williams, Randol Williams, Myra Wisotzky



Friends information

- FriendsSaltwater.org
- Friends.Saltwater.StatePark@gmail.com
- Deploying twine Feb 11, 2023 https://youtu.be/hvrR_IPGmjA
- Kelp transplant Mar 26 2023 https://youtu.be/7n7_D_FqOBY
- Growing kelp in beds Sep 2022 <https://youtu.be/zwEqimuCmc0>
- Retrieving kelp line Mar 30 2023 <https://youtu.be/tEJl2td6PjQ>
- Kelp on a line Apr 24 2023
https://www.youtube.com/watch?v=hS8e_WNxaGw