



Tiny Crabs, Big Impacts: Long-Term Monitoring for Healthy Dungeness Populations

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Pacific
Shellfish
Institute

Dungeness Crab in Washington

Most profitable fishery in WA State

- Co-Managed by State and Treaty tribes

Cultural Importance

- Tribal harvest and recreational fishing

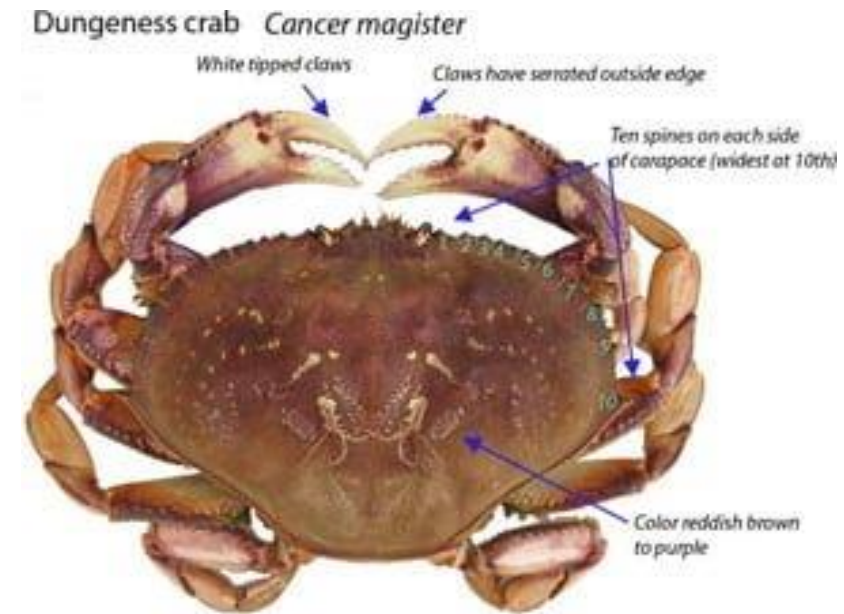
Ecological Role

- Key predator (adult) and prey (juveniles) -
food for salmon and rockfish



Biology and Ecology of Dungeness Crab

- *Cancer magister*
 - Order Decapoda - 10 legs!
- Chelipeds = claws
- Carapace = shell, size determines age
- Live for about 8-13 years
 - Harvest size at 4 years, 6¼” shell width
- Molt shells when grow too large





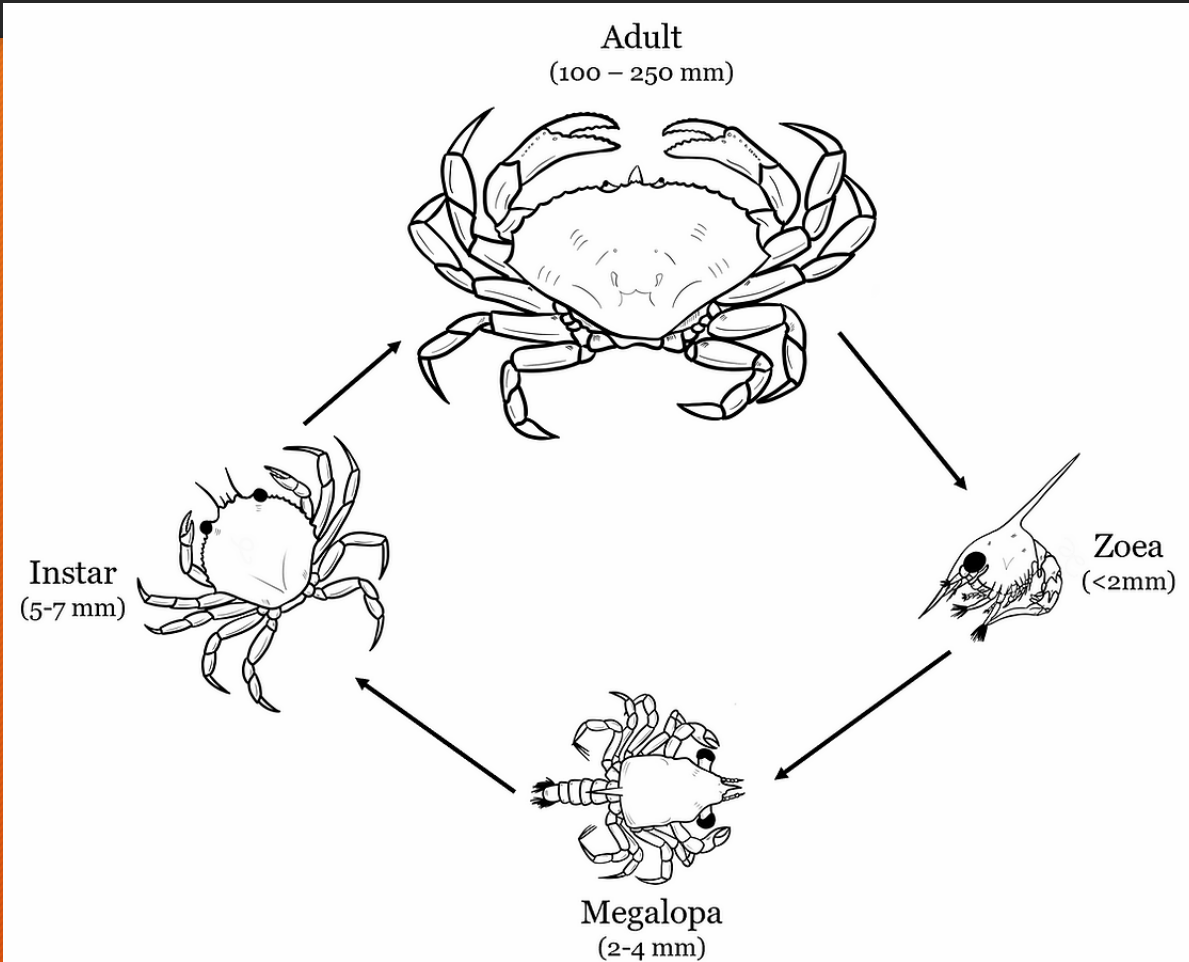
HABITAT



PREDATORS

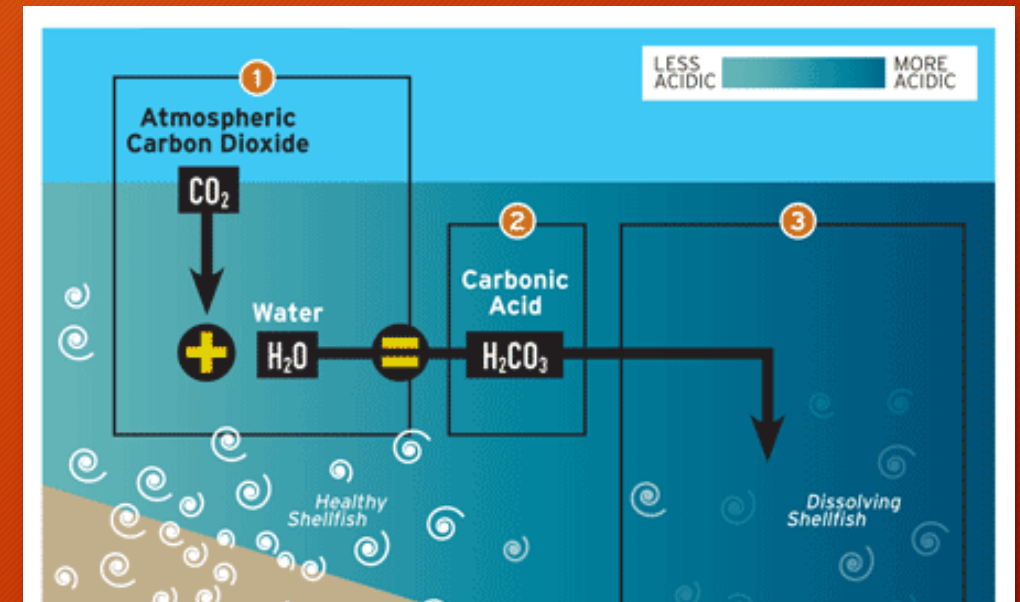


Life Cycle of Dungeness Crab



Threats to Population

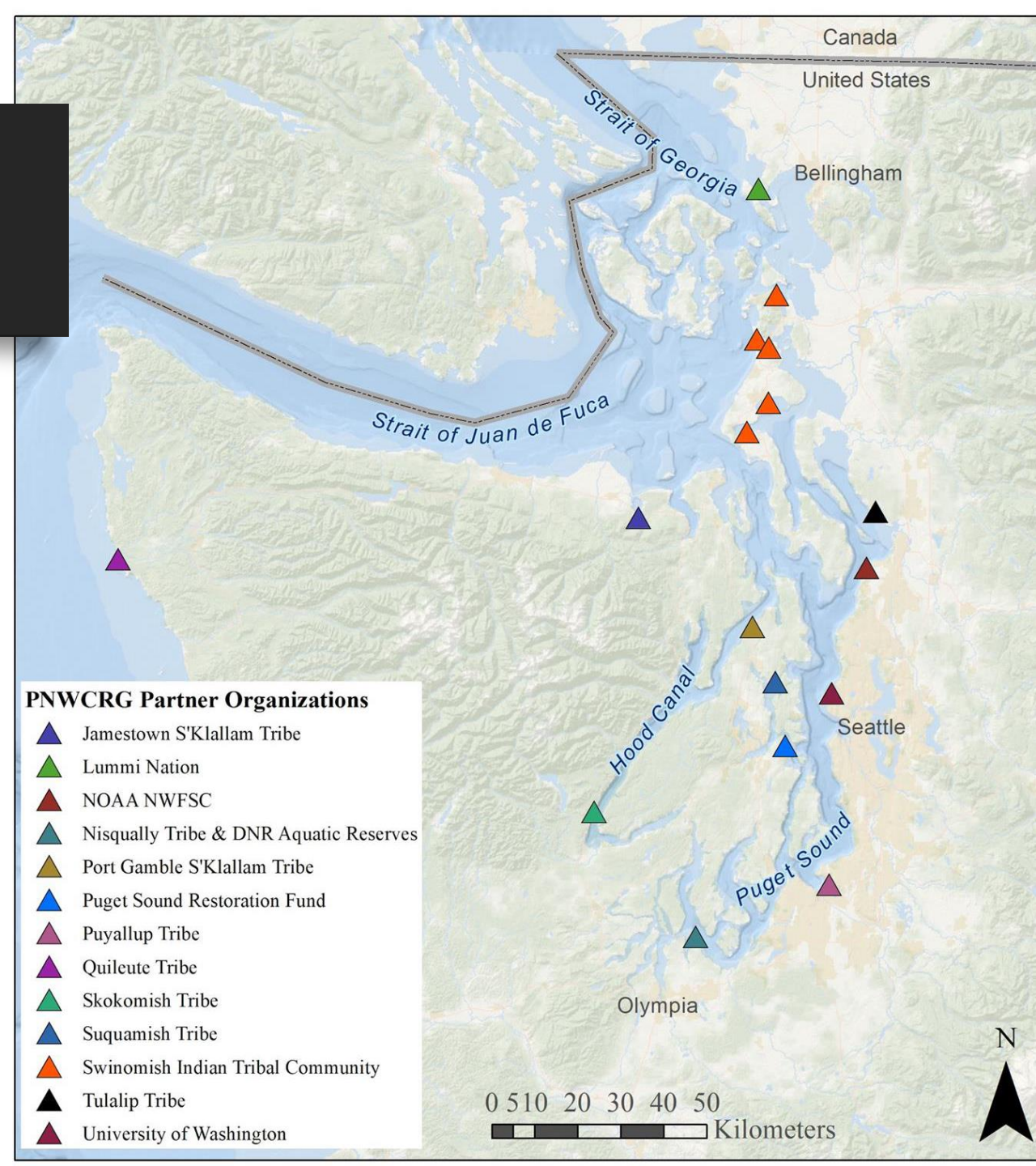
- Fishing Pressure
 - Daily limits set during seasons, “3S system”
 - Catch record card required in Puget Sound Fishing areas
- Climate Change
 - Ocean warming and acidification
 - Low dissolved oxygen (hypoxia)
- Vulnerability of larvae to disease
- Human Development
 - Dredging- sedimentation
 - Pesticides and other pollutants



Pacific Northwest Crab Research Group



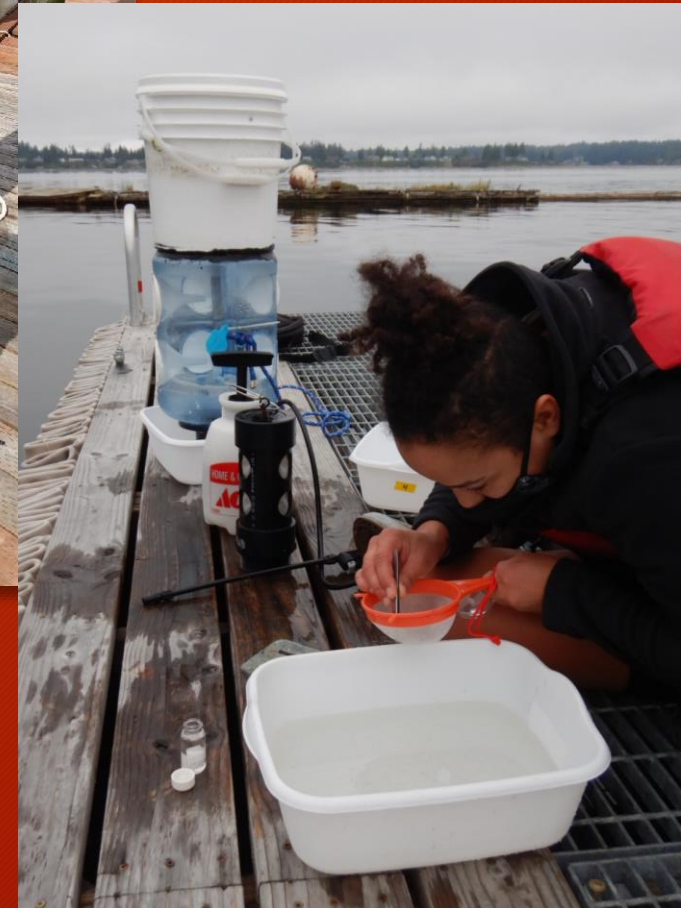
- Diverse group of researchers:
 - State and Tribal Co-managers
 - Federal Agencies
 - Academics
 - Non-profit Organizations (ex. PSI)
- Formed 2018
- Support sustainable fishing and healthy Dungeness crab populations in PNW
- Long-term monitoring in Puget Sound



Light Trap Monitoring Project

WHY?

- Recent declines of Dungeness crab in Puget Sound
- South Sound fishery closed since 2018
- Young crab are most vulnerable to stress in the environment
- Cause of declines still unknown...



Light Trap Monitoring Project

- Light traps deployed off docks and piers around Puget Sound to capture larval crab
 - Collect data April through September
- Megalopae swim to surface at night to feed
- Attracted to light of trap (phototaxis)!
- Other species attracted too...



Video: Megalopae in light trap - PCRG- Swinomish

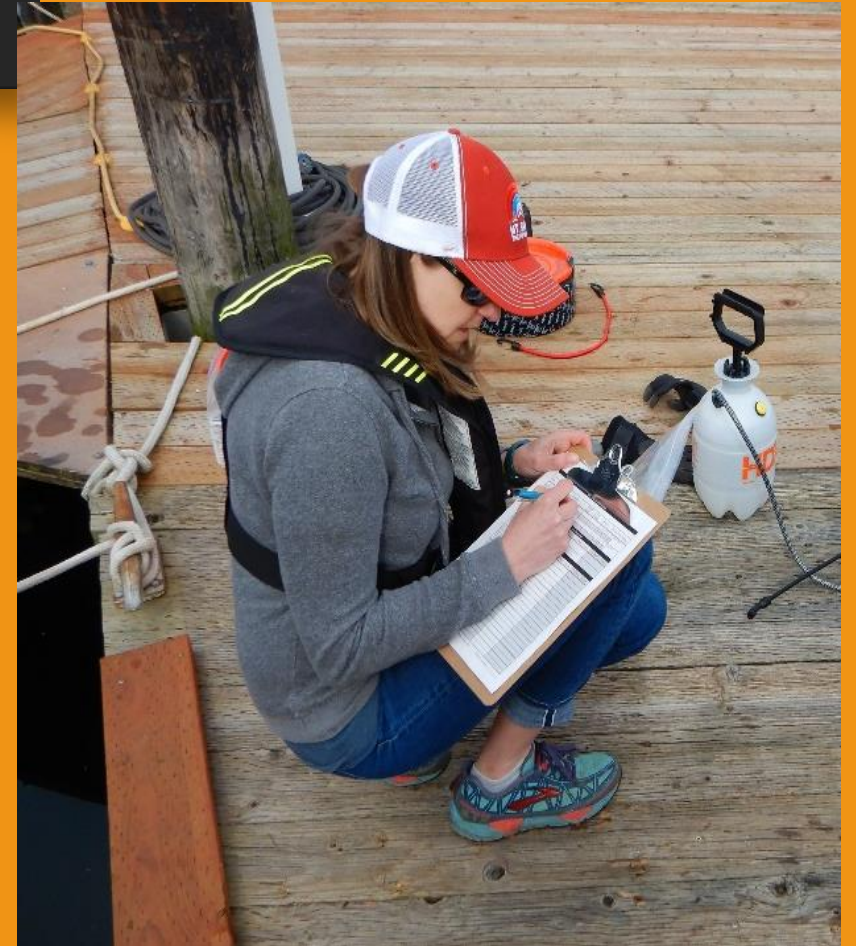
Light Trap Monitoring Project



1. Identify and Count Crabs



2. Measure Dungeness Crabs



3. Record data!

Light Trap Monitoring Project: Crabs

Cancer Gracilis

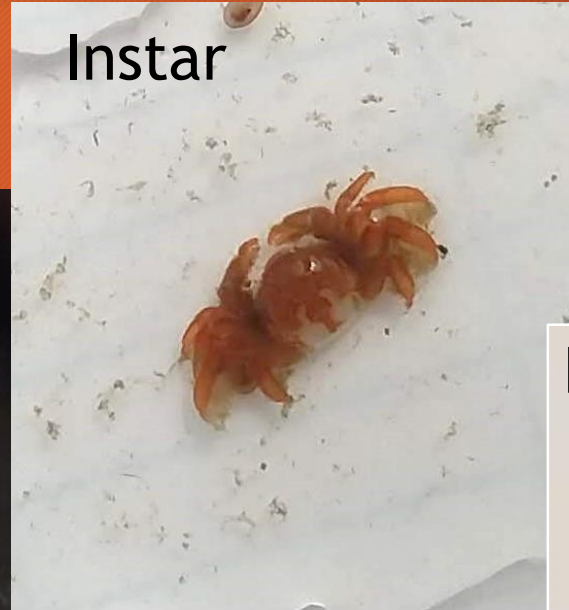


Photo: Shannon Boldt

Crab Zoea



Instar



Dungeness



Photo: Jamestown S'Klallam

Light Trap Monitoring Project: Other Species

Crangon



Hyperiid Amphipod



Sand Shrimp



Cumacean



Photo: M. Homerding

Light Trap Monitoring Project: Other Species

Snake Prickleback



Larval Forage Fish



Clingfish



Gunnel



Juvenile English Sole



Baypipe Fish



Light Trap Monitoring Project: Other Species



Polychaete



Nereid Epitoke



Octopus Larvae



Pile Worm

Photos: S. Boldt



Squid Larvae



Jellyfish

Take Home Messages

- Dungeness crab of all ages are important parts of our ecosystem
- Washington communities rely on Dungeness crab for their livelihood, food, culture and fun!
- Cause of recent declines in Puget Sound unknown...
- Climate change negatively impacts Dungeness crab
- Scientists are working together to learn more so we can keep fishing Dungeness crab sustainably in WA!



Photo: Jamestown S'Klallam

Quick Quiz!

1. Name one reason Dungeness are important in Washington?
2. Where can we find Dungeness?
3. Who preys upon Dungeness?
4. What are some threats to the population?
5. What year did the South Sound Dungeness fishery close?
6. Why are we using the light traps?
7. Can you name other species found in the light trap?



A BIG THANK YOU!

Pacific Crab Research Group

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Our South Sound Partners- Nisqually Indian Tribe, Nisqually Reach Nature Center, WDNR Aquatic Reserves Program, and Zittel's Marina for hosting our light trap



Photo: Zittel's crew checking out the catch!