Community science to capture the leading edge of an invasion:

European green crab on Washington State's inland shorelines

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Sea Grant Washington

CRAB TEAM

Green Crab Monitoring

First sighting of European green crab in inland Washington confirmed

September 2, 2016

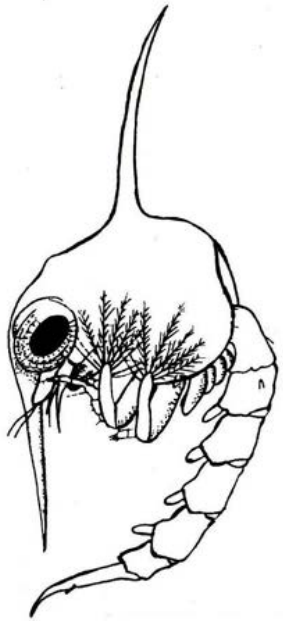
Crab Team volunteers discovered the first confirmed sighting of a European green crab along inland Washington shorelines while conducting their regular monthly monitoring earlier this week.

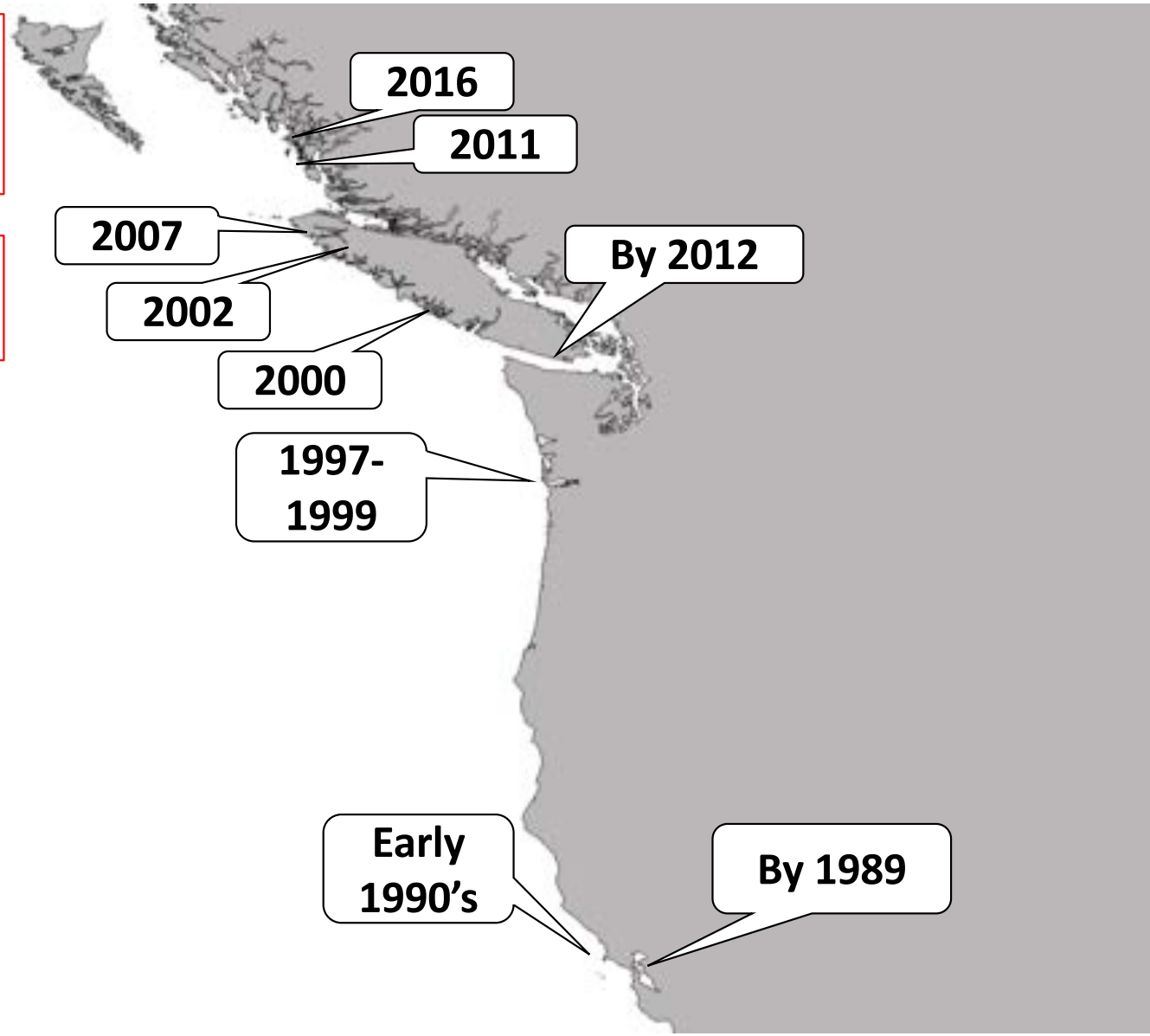
Volunteers at Westcott Bay, on San Juan Island, discovered the large adult male in one of their Fukui traps (the larger of the two types we use). Because the crab was an adult, it is believed that it washed in to the area as a larva in 2015 or 2014, possibly from the nearby Sooke Inlet population, or even as far as California.

European green crab
Carcinus maenas

Coastal spread of European green crab did not initially include the Salish Sea

And initial introduction to the Salish Sea was human-mediated



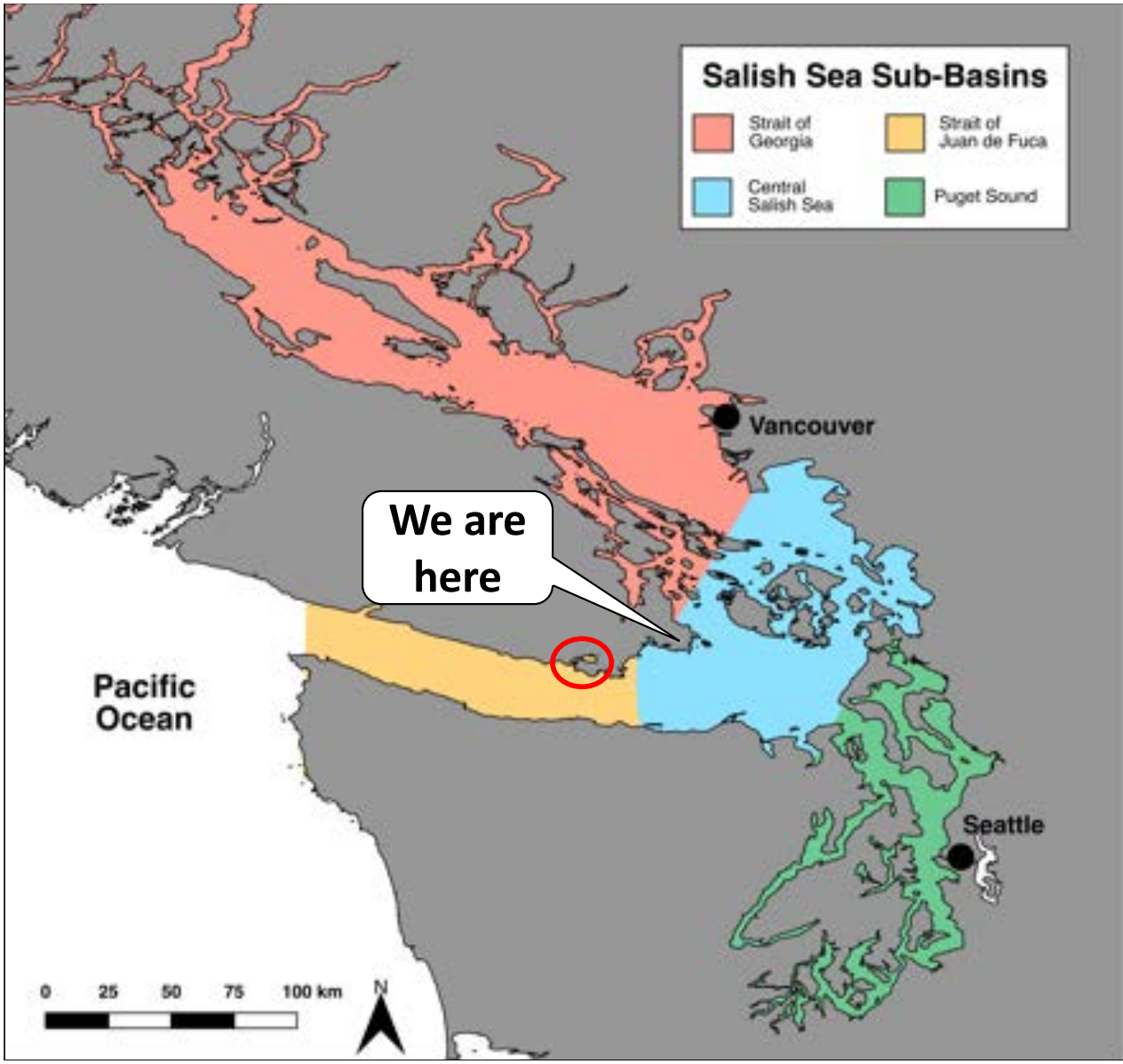


Inland shorelines could be **more protected** than the coast:

- Net outward surface flow
- Reversals may not overlap with spawn timing

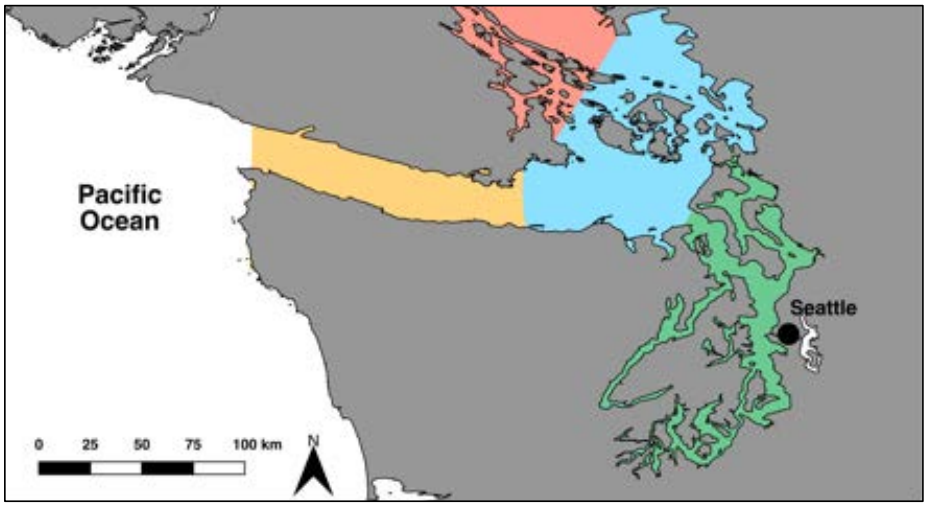
Inland shorelines could **be more vulnerable** than the coast:

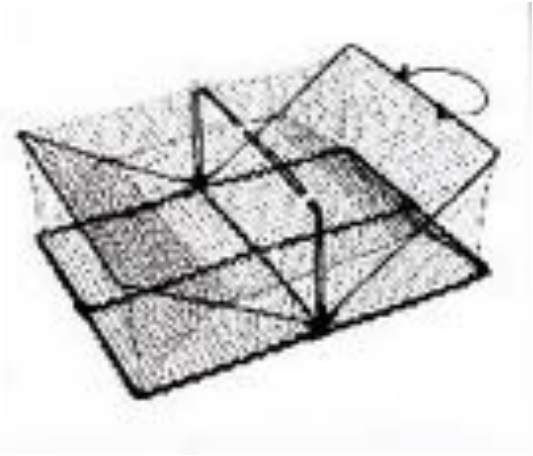
- More suitable habitat
- More overlap with shellfish growers
- More larval retention



Challenges for agency management

- Limited management tools
- Labor intensive
- Large geographic scope relative to organism
- Agencies have limited infrastructural flexibility





Community Science Approach

- Engaging and tractable
- Clear and urgent application
- Broad geographic scale
- Local application

Management

Washington Department of FISH and WILDLIFE

- Management mandate
- State-wide network of managers

CRAB TEAM

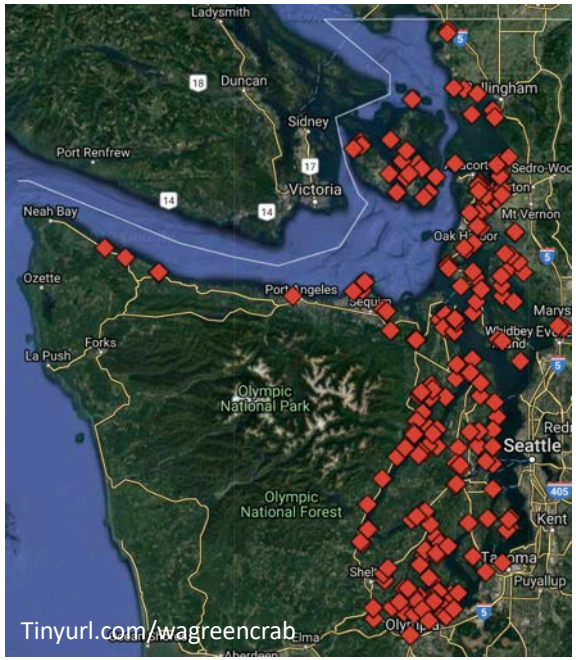
Outreach & Research

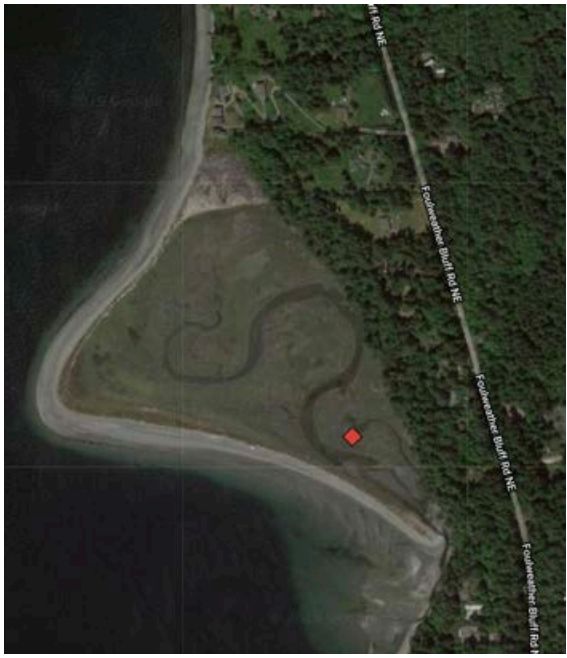
Sea Grant Washington

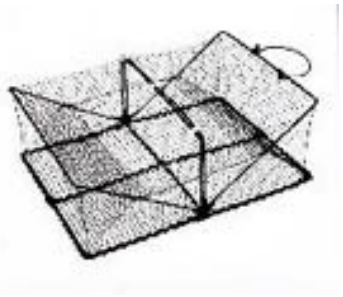
- Species expertise
- Research collaborations
- Community stewardship
- Communications

1. Sensitive for European green crab

- Target highly suitable habitat
- Multi-modal searches
- Repeated sampling



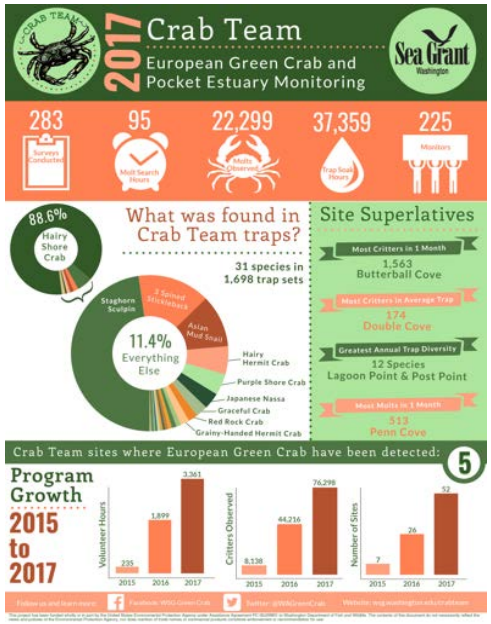


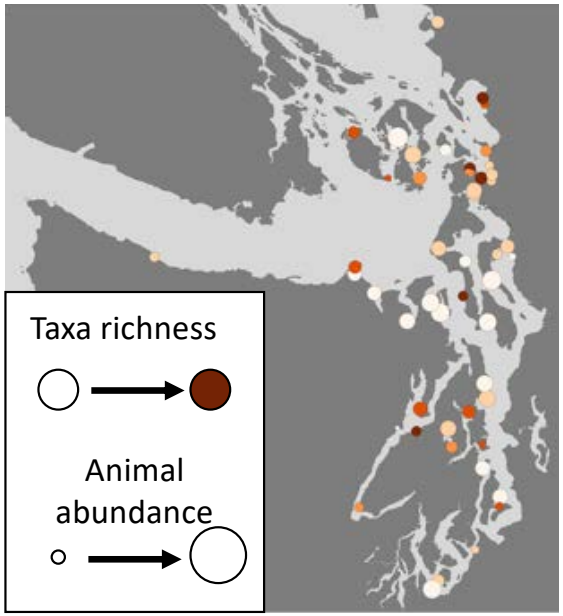


1. Sensitive for European green crab

2. Doable and engaging for volunteers

- Site access and timing
- Volunteer comfort/safety
- Value of “bycatch” data



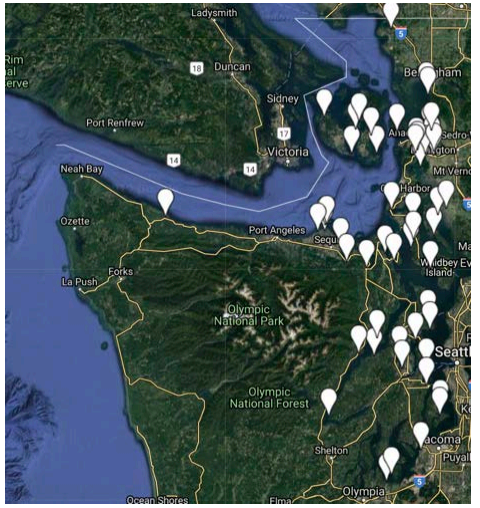


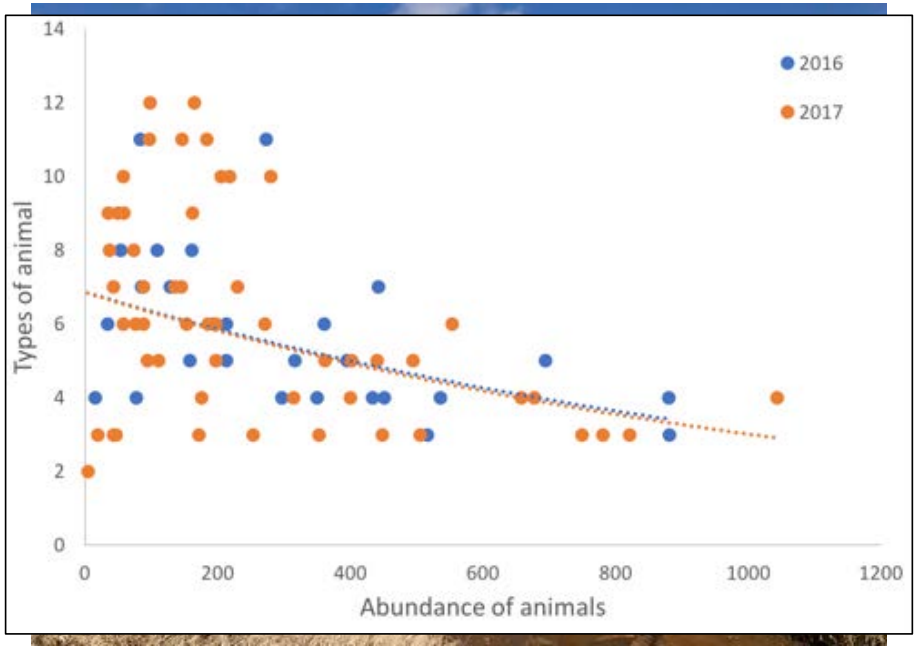
1. Sensitive for European green crab

2. Doable and engaging for volunteers

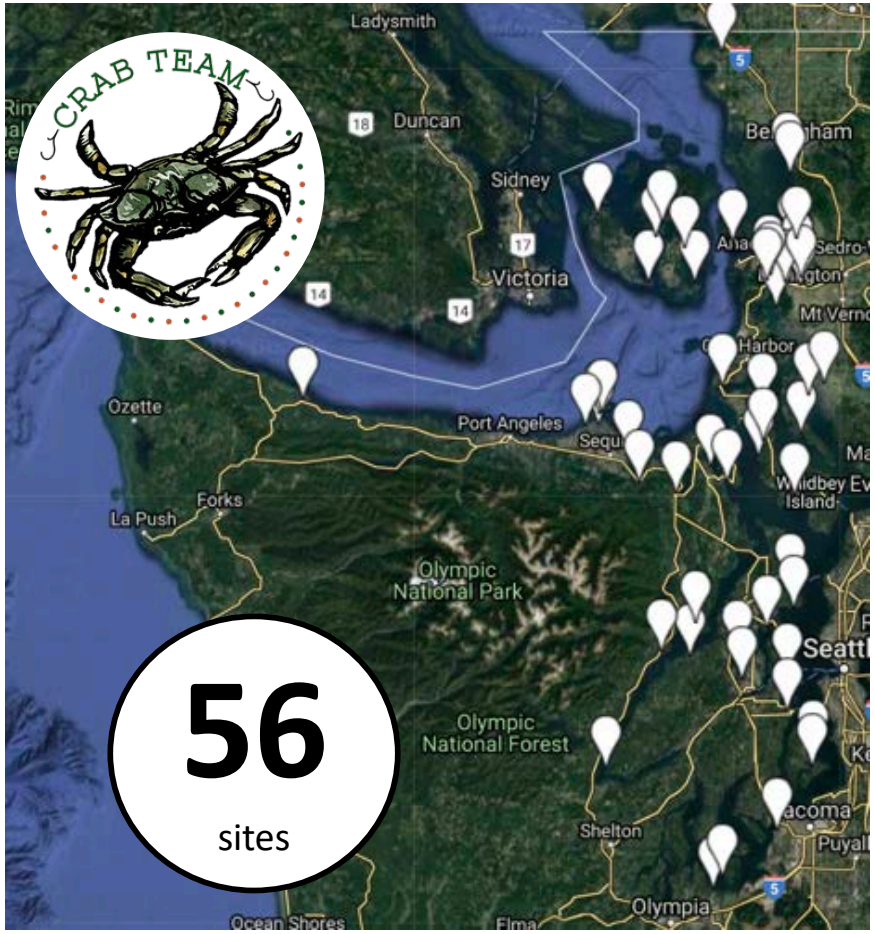
3. Scientifically valuable

- Data verification
- BACI Sampling design
- Consistent implementation



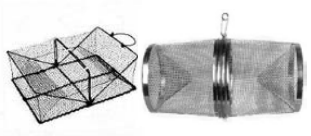


Crab Team Early Detection Network



Trained Monitors

Baited trapping



High risk sites

Molt Hunt

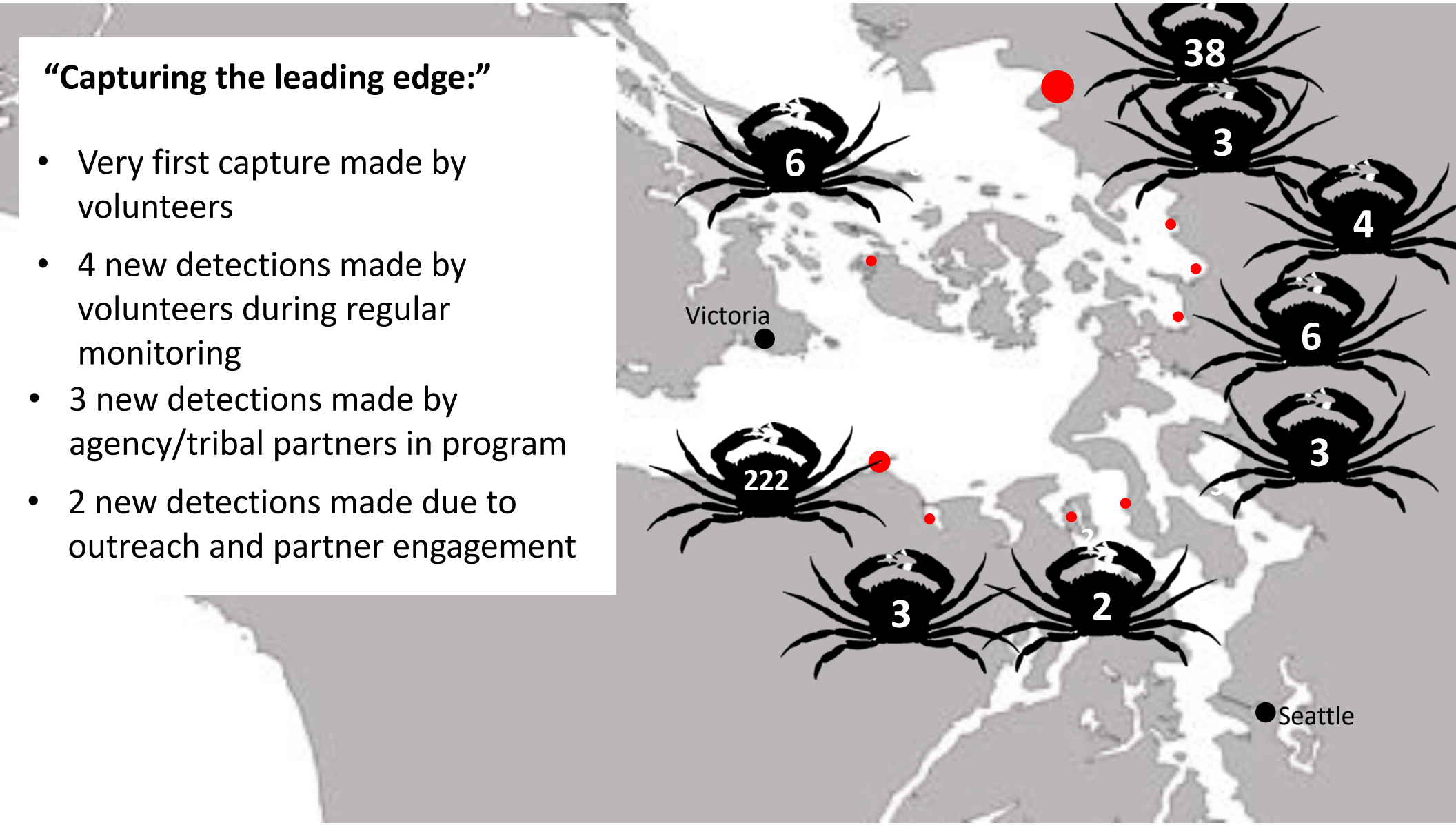
April - September

Shoreline Features


Penn Cove (311)
Kiket (323)
Iverson Spit (516)
Post Point (362)

“Capturing the leading edge:”

- Very first capture made by volunteers
- 4 new detections made by volunteers during regular monitoring
- 3 new detections made by agency/tribal partners in program
- 2 new detections made due to outreach and partner engagement



1. **Early Detection** → **2. Assessment** → **3. Management**

Monitors:
- Volunteers (225)
- Agency (15)
- Tribal Staff (15)

Public

State Agency or Tribe

Supported by:
- Crab Team Staff
- Local managers

Local Stakeholders

Supported by:
- WDFW
- Local managers
- Volunteers

Intensity and duration of effort


CRAB TEAM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Compromises are made

1. Taxonomic resolution, breadth
2. Site selection
3. Scale of sampling

Lessons Learned

Volunteers are not free

1. Training & Support
2. Engagement/Retention
3. Extra work (e.g. Bait/prep)
4. Continuing education

Uncontrollable outcome

1. We don't control management
2. Messaging is important to maintain interest/ momentum
3. Structure can be confusing and frustrating to volunteers

Not infinitely scalable

1. Saturating volunteer pool
2. Personal relationships
3. Agency/Tribal partners can help with this

- Increased scope
- Follow through and local investment

- Formalized response structure
- Resources

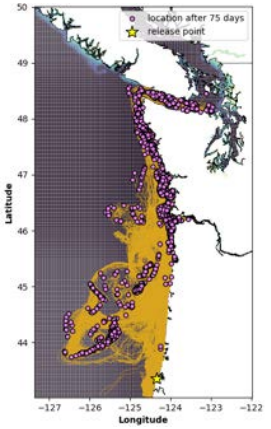
Management

Community

CRAB TEAM

Science

- Informed management
- Opportunity to learn and collaborate



Thank you!

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