

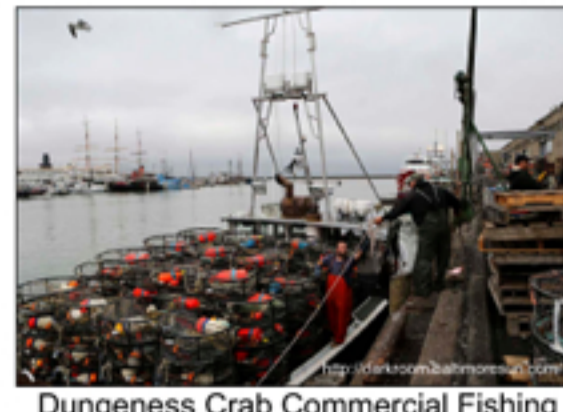
# Examining intra-annual genomic diversity among Dungeness crab (*Cancer magister*) recruits along the Oregon coast

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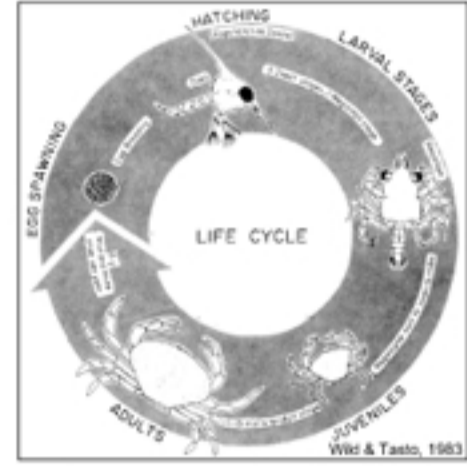
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## Background

Maintaining **sustainable fisheries** requires an understanding of the demographic structure and connectivity of the fisheries species.<sup>1</sup> **Dungeness crab** (*Cancer magister*) is the most valuable single-species commercial fishery on the west coast of North America.<sup>2</sup>



Dungeness Crab Commercial Fishing



Dungeness Crab Life History

The population distribution of Dungeness crab is driven by **larval dispersal**. After hatching, Dungeness crabs spend three to four months free-floating in the ocean as they develop through pelagic zoeae larval stages to a **megalopae** stage.<sup>3</sup> The larvae are dispersed along the coast by the ocean current systems and then are transported back onshore as megalopae during the spring transition.<sup>4</sup>

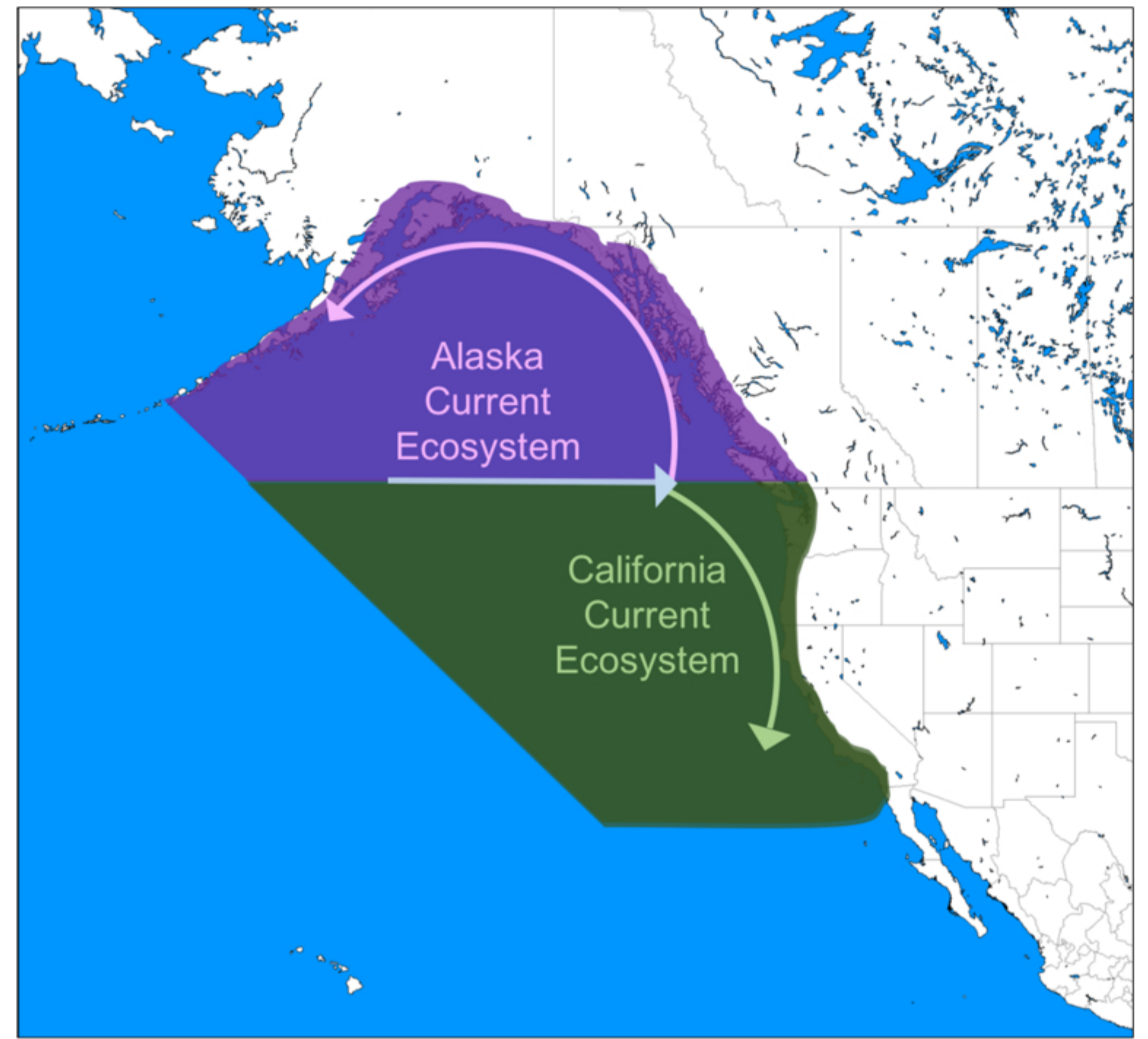
Dungeness crab spawn later in the season at higher latitudes. Therefore, it has been suggested that late-season megalopae recruits along the Oregon coast are offspring of crab spawning at higher latitudes, likely in the Alaska Current Ecosystem, and are carried south by the California Current System.<sup>5</sup>



Dungeness Crab (*Cancer magister*)

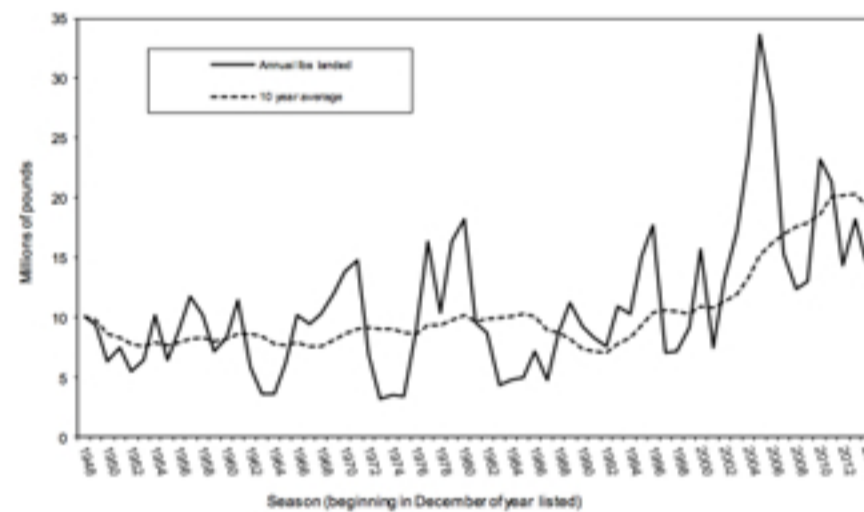
Tracking species with long pelagic larval duration, such as the Dungeness crab, can be difficult, but **genetic methods** have proved successful in differentiating subpopulations of species.<sup>5</sup> We use genetics to track species and understand connectivity and population structure.

## Dungeness Crab Distribution



## Oregon Dungeness Crab Landings

Commercial fishery data from recent decades have shown large annual fluctuations in the population size of Dungeness crab.<sup>6</sup>

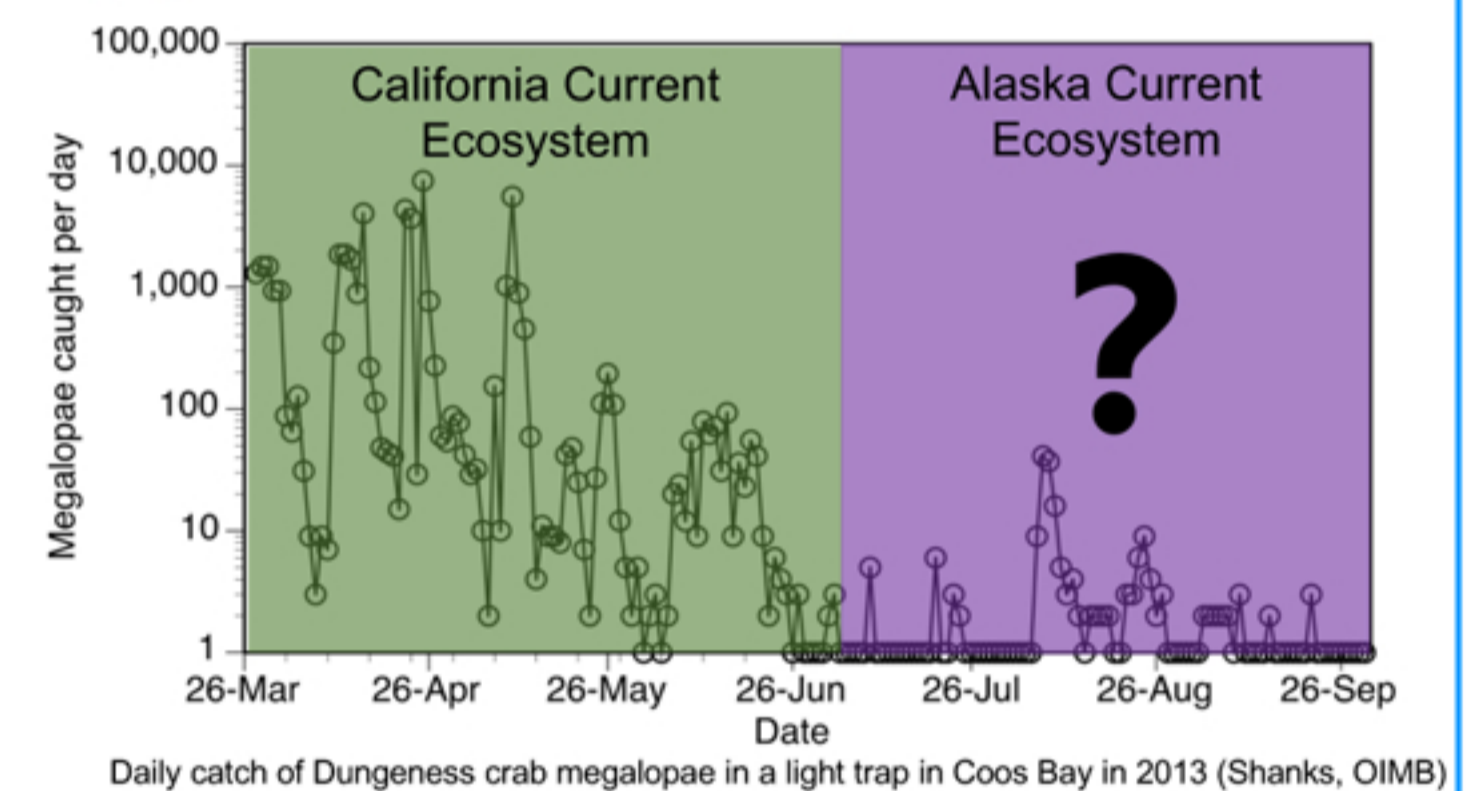


## Objective:

Examine the genetic structure of recruiting Dungeness crab megalopae on the Oregon coast to determine if early-season migrations of megalopae and late-season migrations of megalopae originate from different adult Dungeness crab subpopulations.

## Hypothesis:

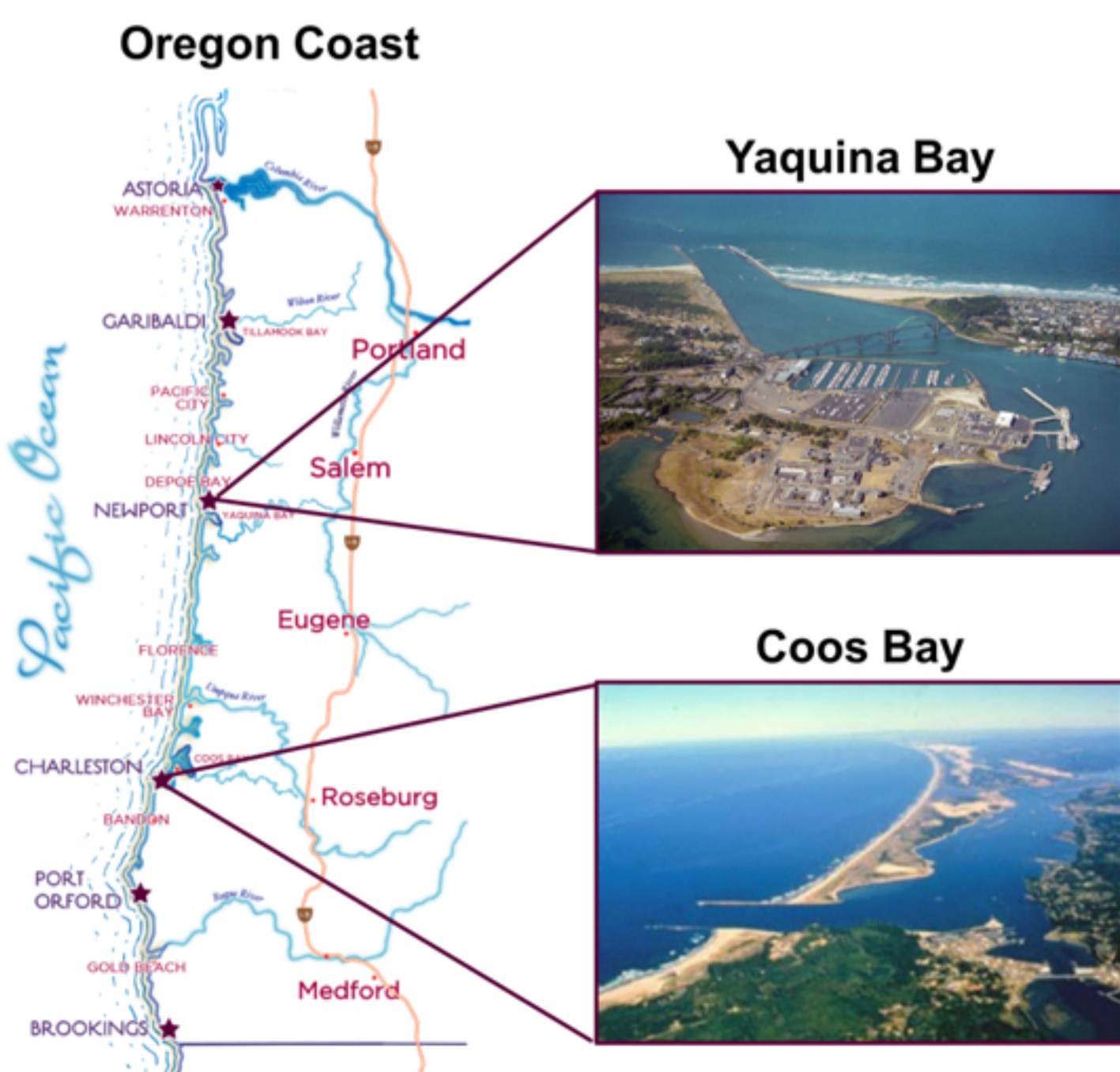
Oregon coast late-season migrations of recruiting Dungeness crab megalopae (August and September) originate from the Alaska current ecosystem.



Daily catch of Dungeness crab megalopae in a light trap in Coos Bay in 2013 (Shanks, OIMB)

## Methods

### Sampling Locations:



Light Trap Sampling April to October



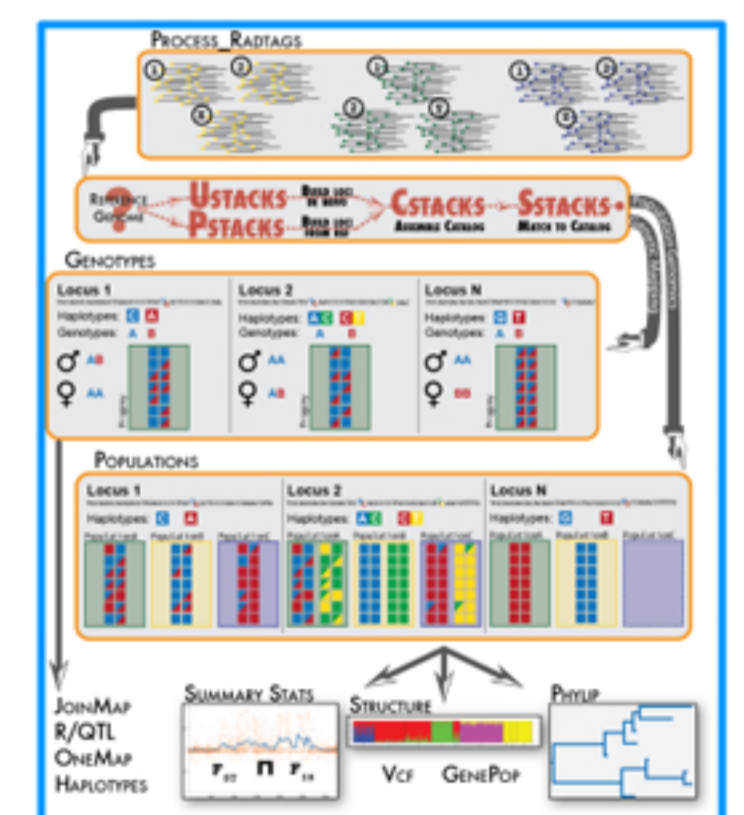
DNA Extracted from Early-Season and Late-Season Megalopae



NextGen Sequencing of all Megalopae DNA



Population Differentiation Analysis



## Acknowledgements

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OSU and ODFW volunteers regularly sampling the Yaquina Bay light trap.



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