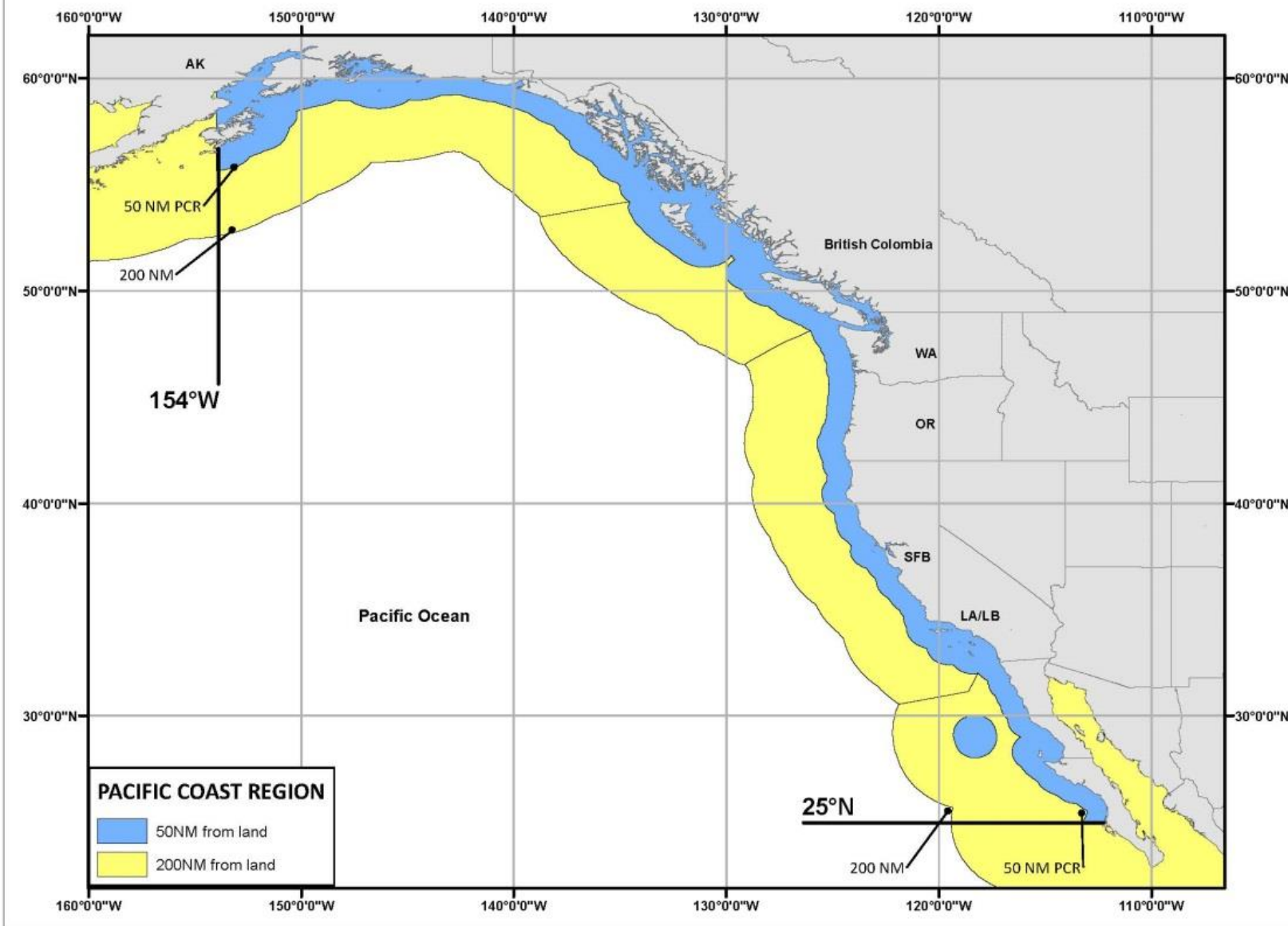


The Pacific Coast Region: Potential Solutions to Lingering Compliance Issues and Industry Concerns

**Chris Brown
Pacific Ballast Water Group
April 12, 2017
Portland, OR**



PACIFIC COAST REGION



2003 Marine Invasive Species Act

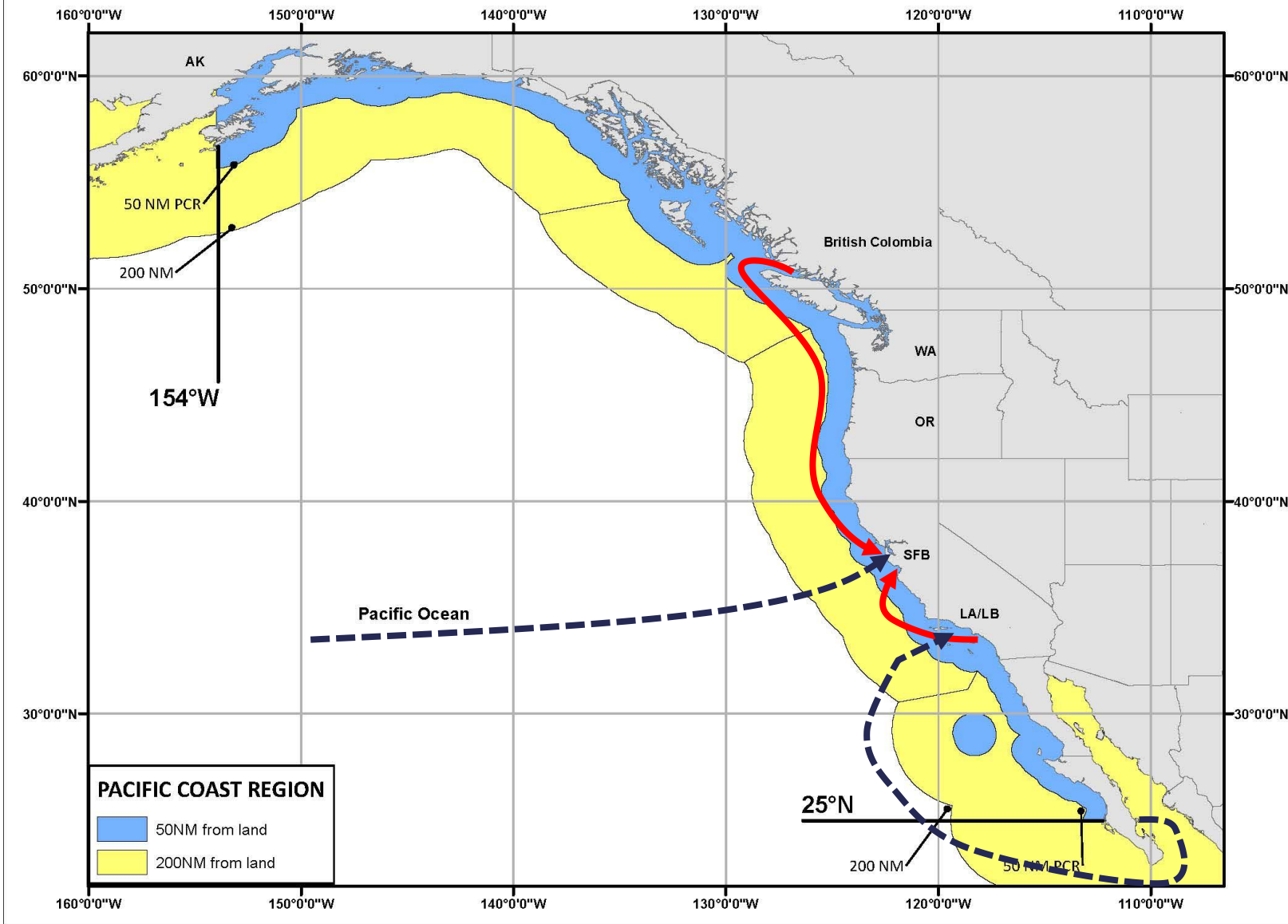
- **Pub. Resource Code 71200(k):** All coastal waters on the Pacific Coast of North America east of 154W longitude and north of 25N latitude, exclusive of the Gulf of California.

Boundaries determined, in part, by a 2002-2003 workshop and report, titled “West Coast Oceanography: Implications for Ballast Water Exchange”

2004-2005: Coastal Exchange regulations developed with Technical and Scientific Advisory Groups



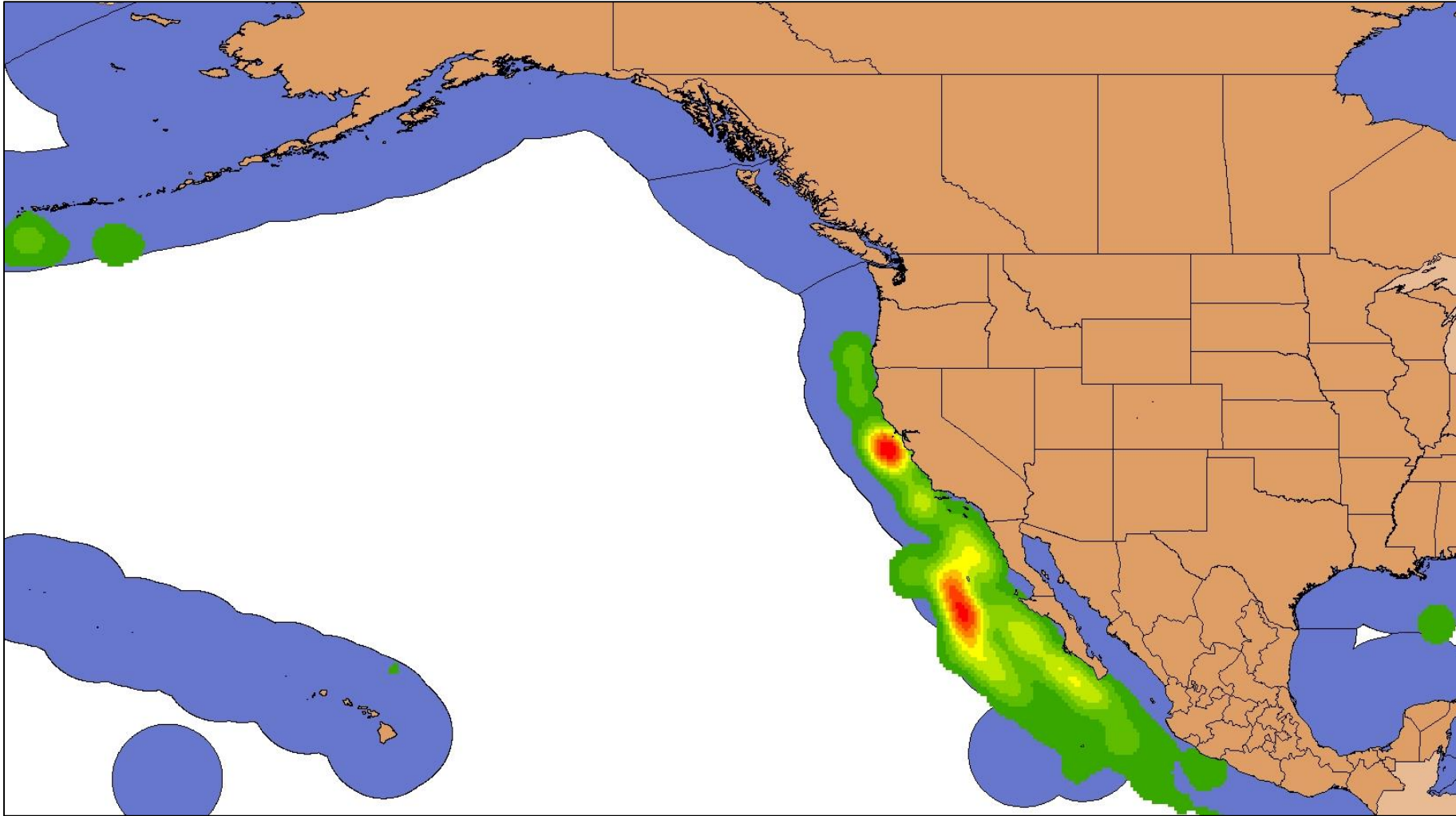
PACIFIC COAST REGION



Management (effective March 22, 2006):

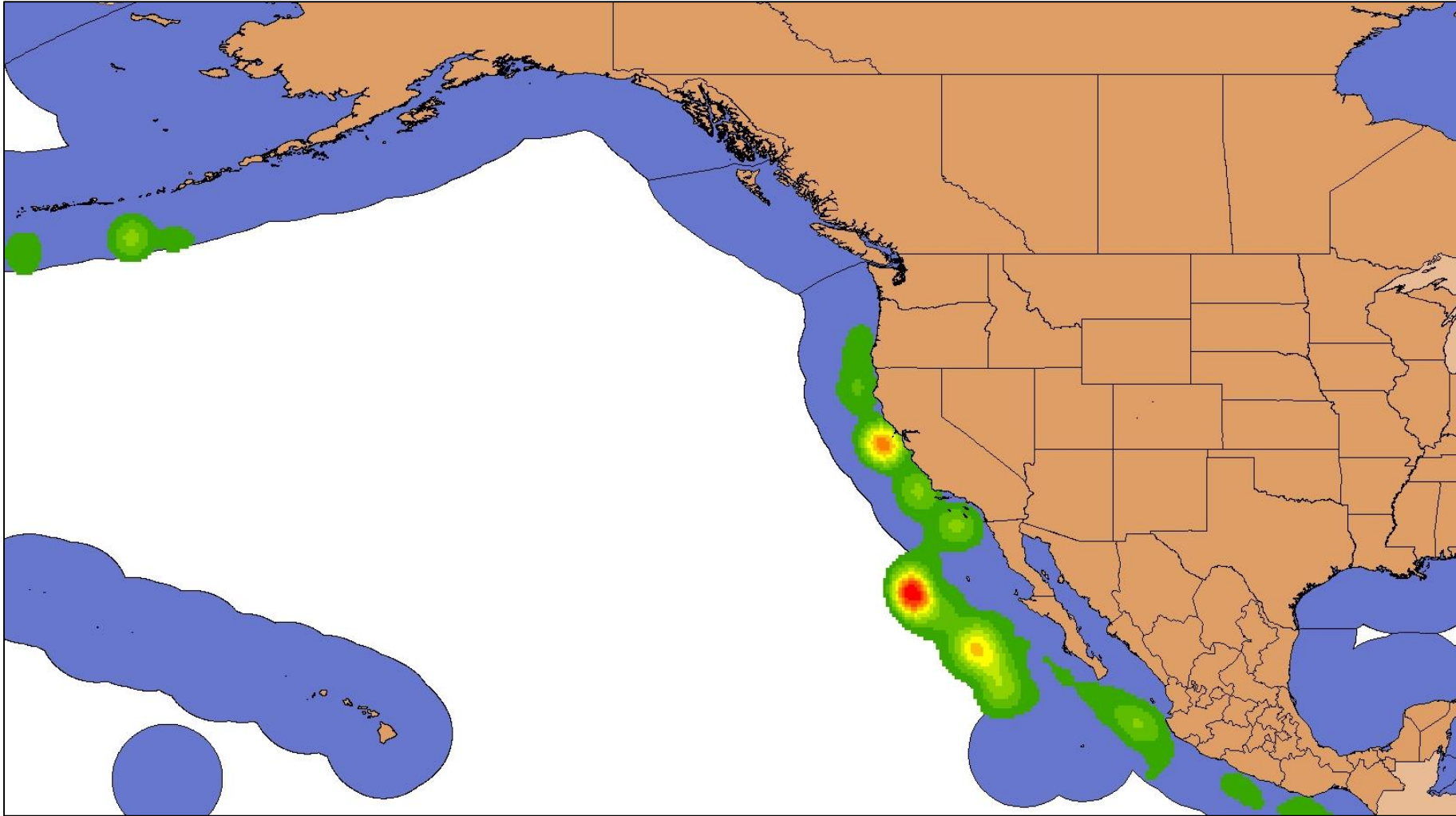
- Pub. Resource Code section 71204.3 and Title 2 CA Code section 2284.
- Arrivals from within: Exchange greater than 50 NM from land, in waters at least 200 m deep.
- Arrivals from outside: Exchange greater than 200 NM from land, in waters at least 2,000 m deep.





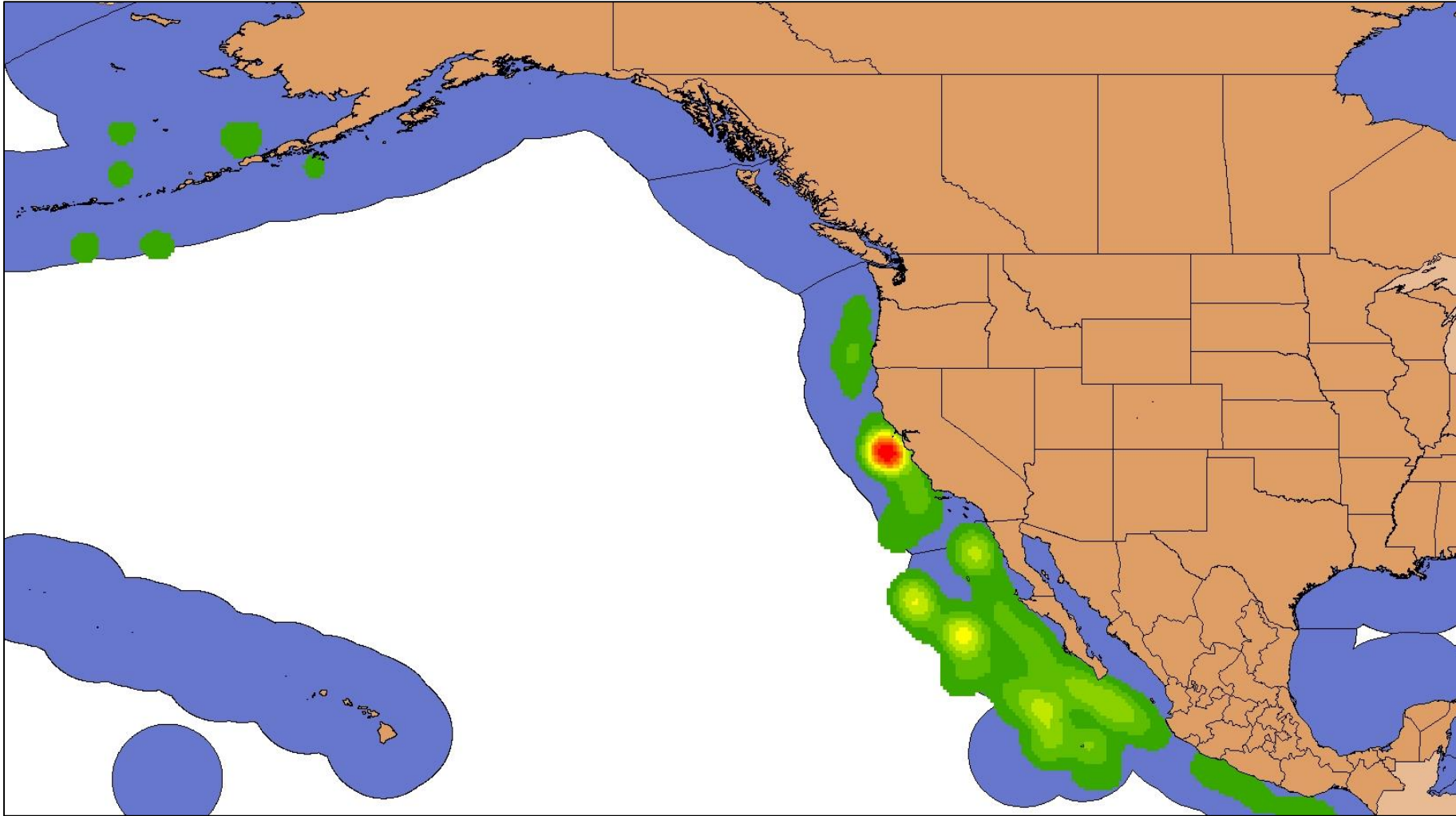
2011





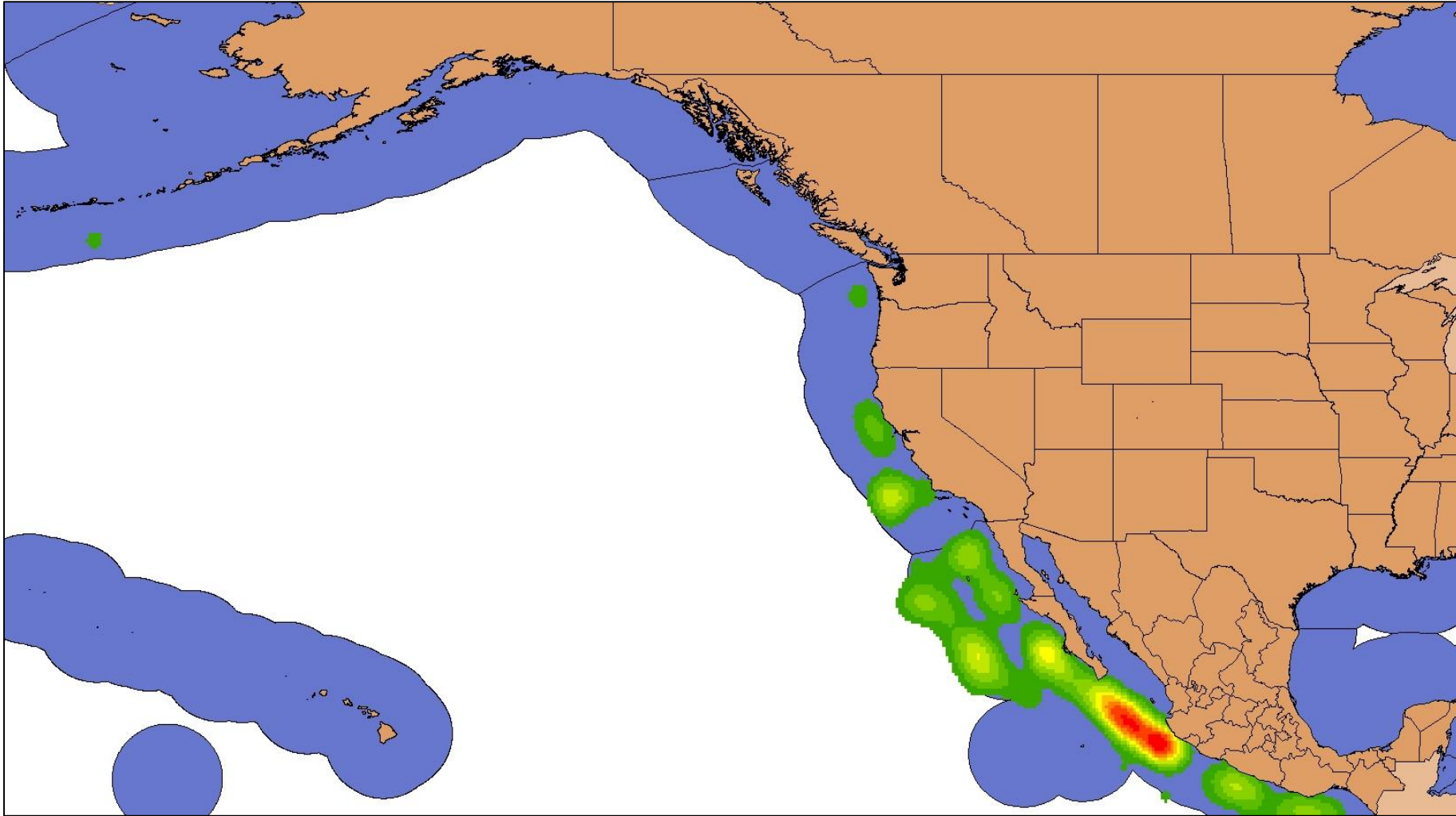
2012





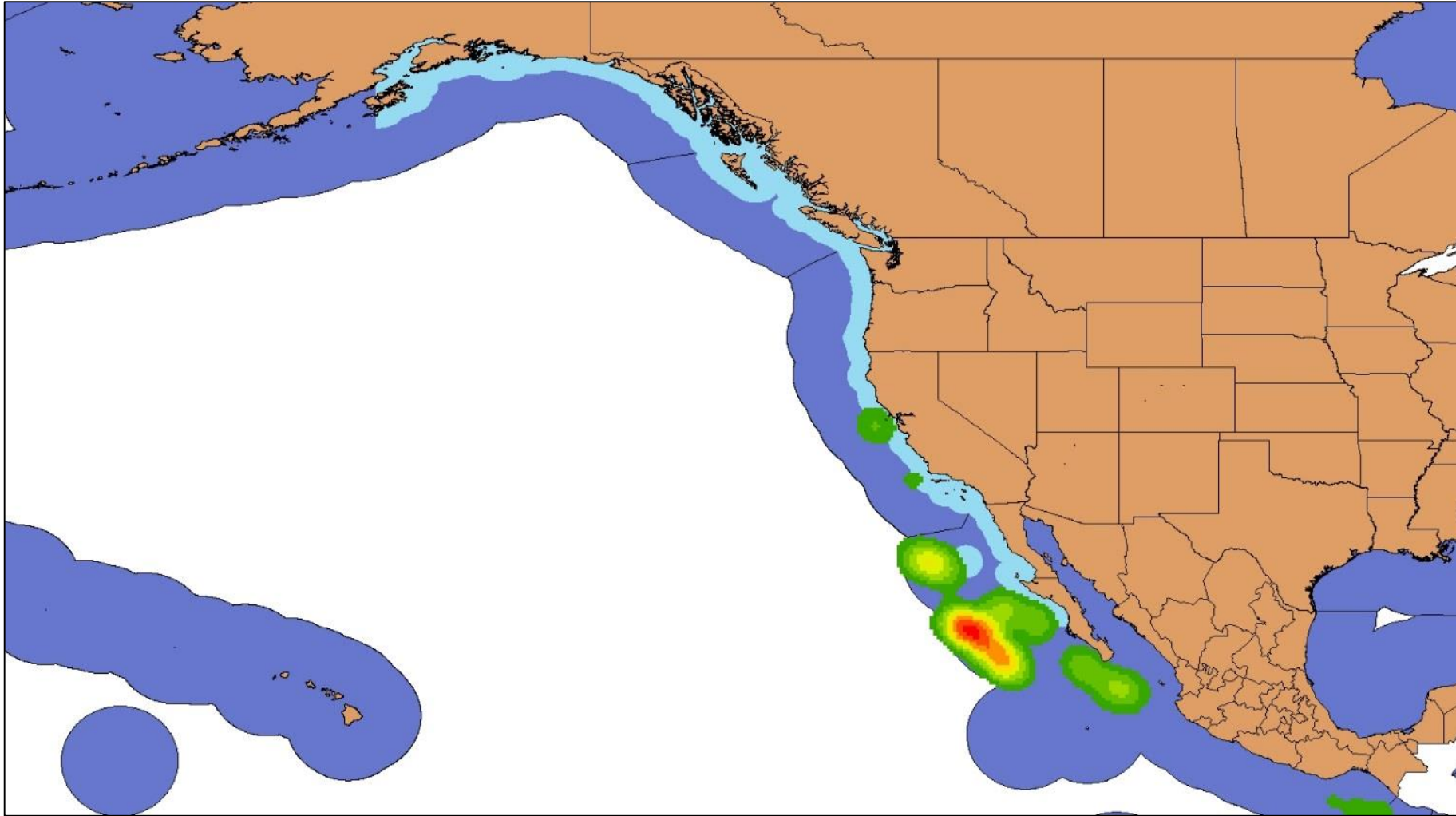
2013





2014

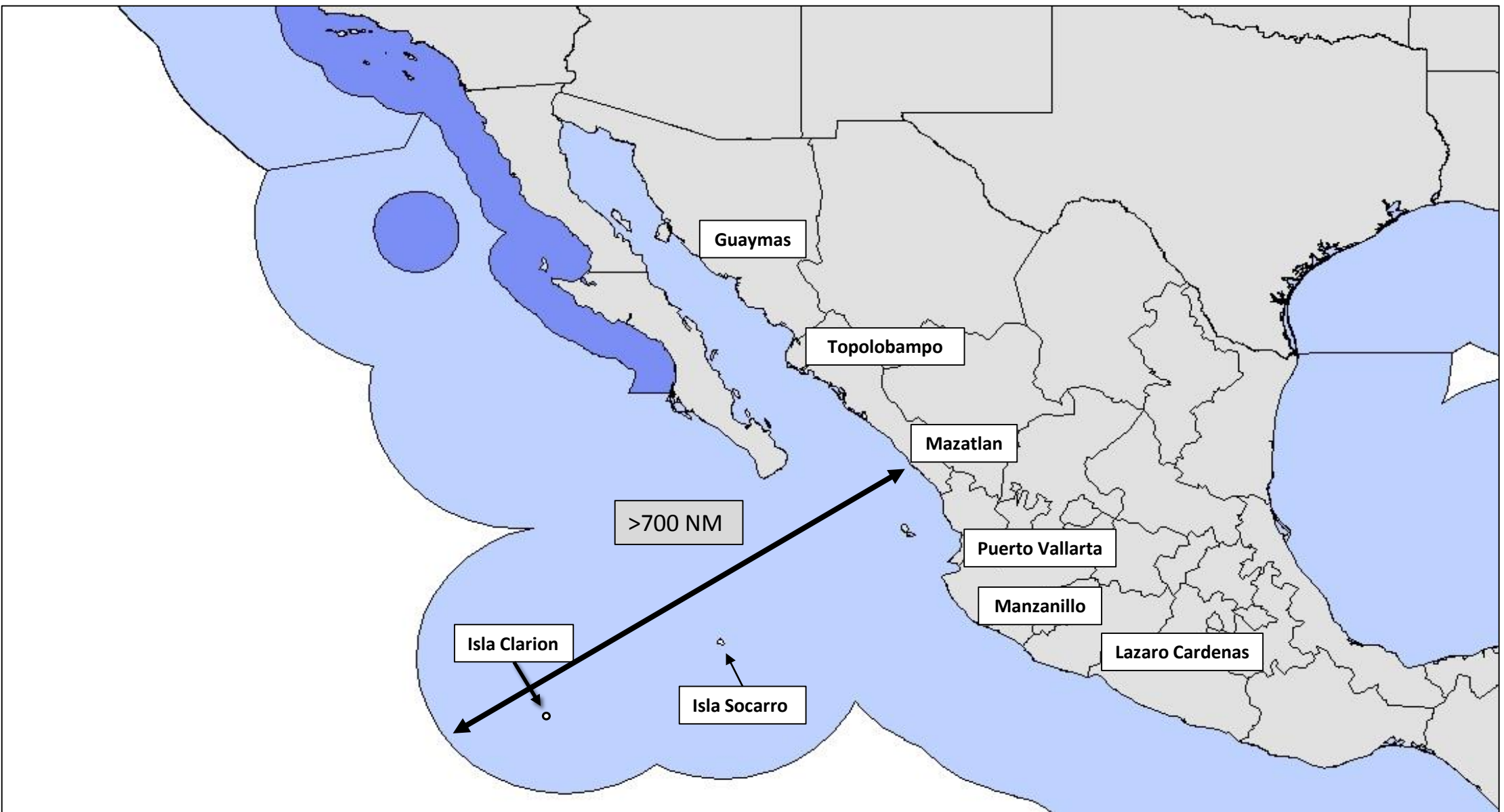




2015





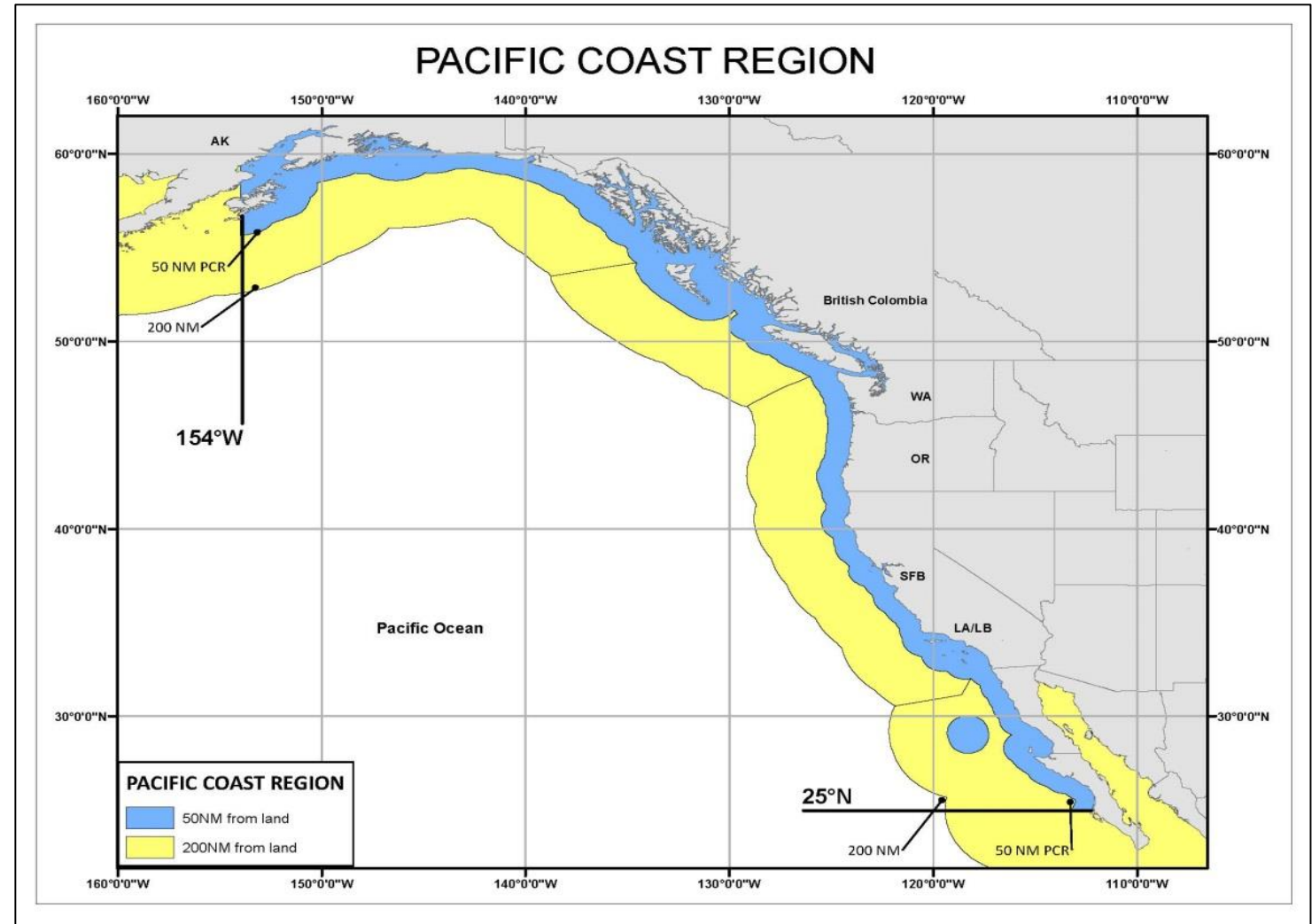




71204.3.

(a) The commission shall adopt regulations governing ballast water management practices for vessels arriving at a California port from a port outside of the Pacific Coast Region.

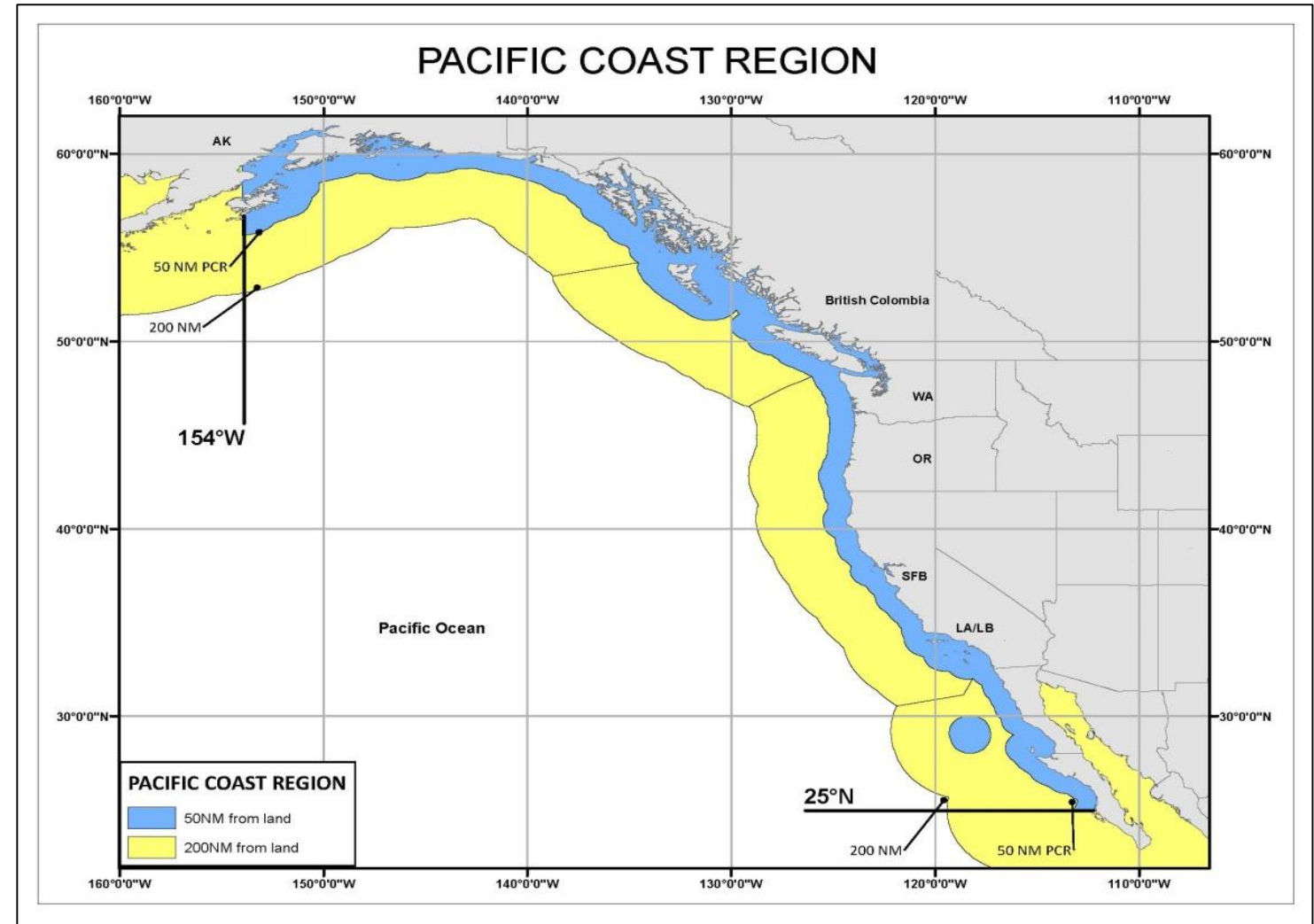
“The commission may modify these boundaries through regulation if the proponent for the boundary modification presents substantial scientific evidence that the proposed modification is equally or more effective at preventing the introduction of nonindigenous species through vessel vectors as the boundaries described herein.”



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Solutions?



Marine Ecoregions of the World: A Bioregionalization of Coastal and Shelf Areas

MARK D. SPALDING, HELEN E. FOX, GERALD R. ALLEN, NICK DAVIDSON, ZACH A. FERDANA, MAX FINLAYSON, BENJAMIN S. HALPERN, MIGUEL A. JORGE, AL LOMBANA, SARA A. LOURIE, KIRSTEN D. MARTIN, EDMUND McMANUS, JENNIFER MOLNAR, CHERI A. RECCHIA, AND JAMES ROBERTSON

The conservation and sustainable use of marine resources is a highlighted goal on a growing number of national and international policy agendas. Unfortunately, efforts to assess progress, as well as to strategically plan and prioritize new marine conservation measures, have been hampered by the lack of a detailed, comprehensive biogeographic system to classify the oceans. Here we report on a new global system for coastal and shelf areas: the Marine Ecoregions of the World, or MEOW, a nested system of 12 realms, 62 provinces, and 232 ecoregions. This system provides considerably better spatial resolution than earlier global systems, yet it preserves many common elements and can be cross-referenced to many regional biogeographic classifications. The designation of terrestrial ecoregions has revolutionized priority setting and planning for terrestrial conservation; we anticipate similar benefits from the use of a coherent and credible marine system.

Keywords: ecoregions, marine biogeography, mapping, marine protected areas, representative conservation

Mapped classifications of patterns in biodiversity have long been an important tool in fields from evolutionary studies to conservation planning (Forbes 1856, Wallace 1876, Spellerberg and Sawyer 1999, Lourie and Vincent 2004). The use of such systems (notably, the widely cited system developed by Olson et al. [2001]) in broadscale conservation, however, has largely been restricted to terrestrial studies (Chape et al. 2003, Hazen and Anthamatten 2004, Hoekstra et al. 2005, Burgess et al. 2006, Lamoreux et al. 2006). In the marine environment, existing global classification systems remain limited in their spatial resolution. Some are inconsistent in their spatial coverage or methodological approach. The few publications that have attempted to use biogeographic regionalization in global marine conservation planning (e.g., Kelleher et al. 1995, Olson and Dinerstein 2002) have been qualitative, and have expressed

In the absence of compelling global coverage, numerous regional classifications have been created to meet regional planning needs. This, of course, does not satisfy the need for a global system that is consistent across the many marine realms and coastal zones.

Biogeographic classifications are essential for developing ecologically representative systems of protected areas, as required by international agreements such as the Convention on Biological Diversity's Programme of Work on Protected Areas and the Ramsar Convention on Wetlands. Marine space is still grossly underrepresented in the global protected areas network (only about 0.5% of the surface area of the oceans is currently protected; Chape et al. 2005), a fact that adds urgency to the need for tools to support the scaling up of effective, representative marine conservation. The key idea underlying the term "representative" is the intent to protect

Spalding et al. (2007) developed the Marine Ecosystems of the World (MEOW)

Hierarchical system based on

- Taxonomic configurations
- Evolutionary history
- Patterns of dispersal
- Isolation

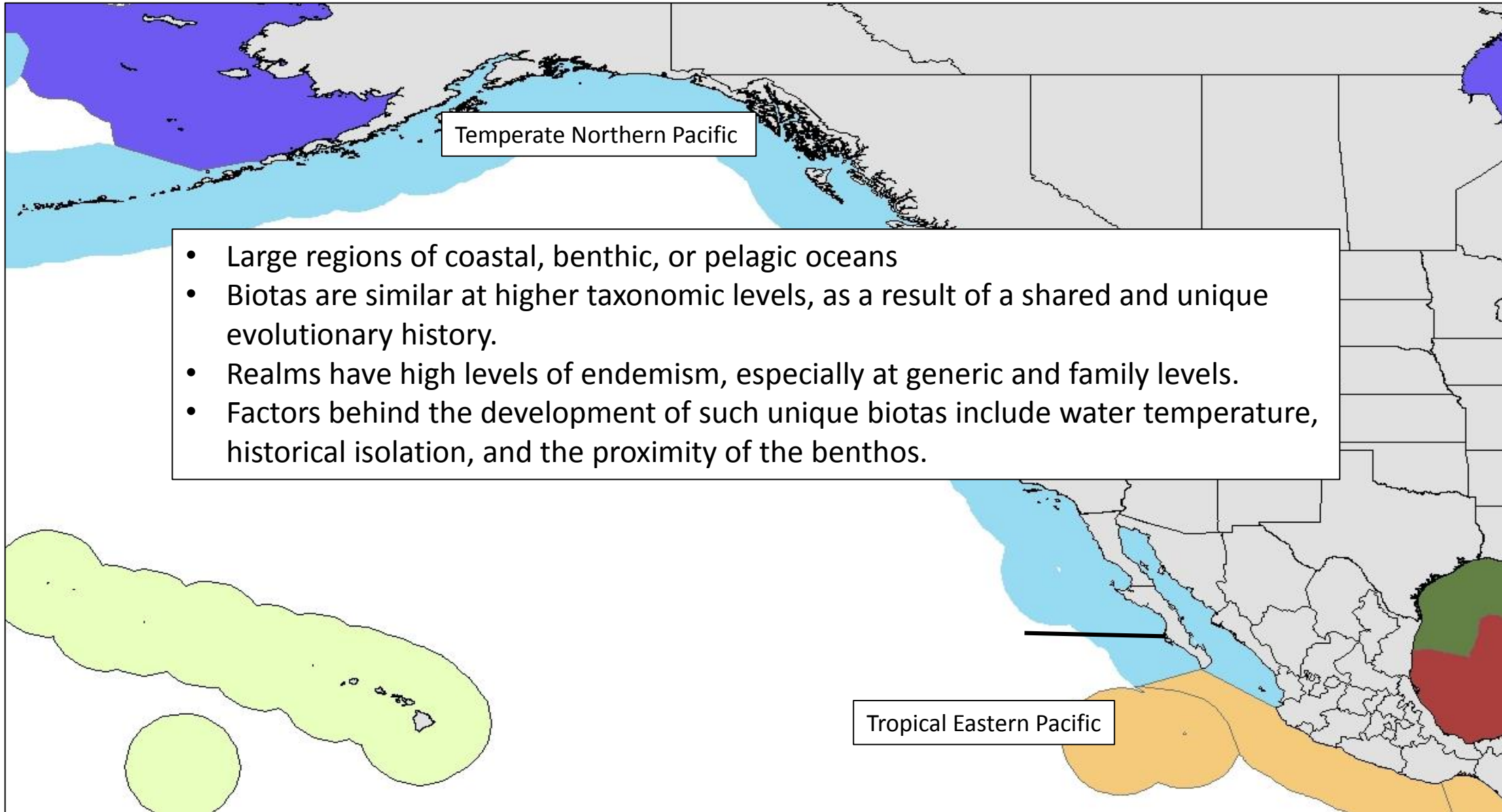
Nested system of

- 12 realms
- 62 provinces
- 232 ecoregions

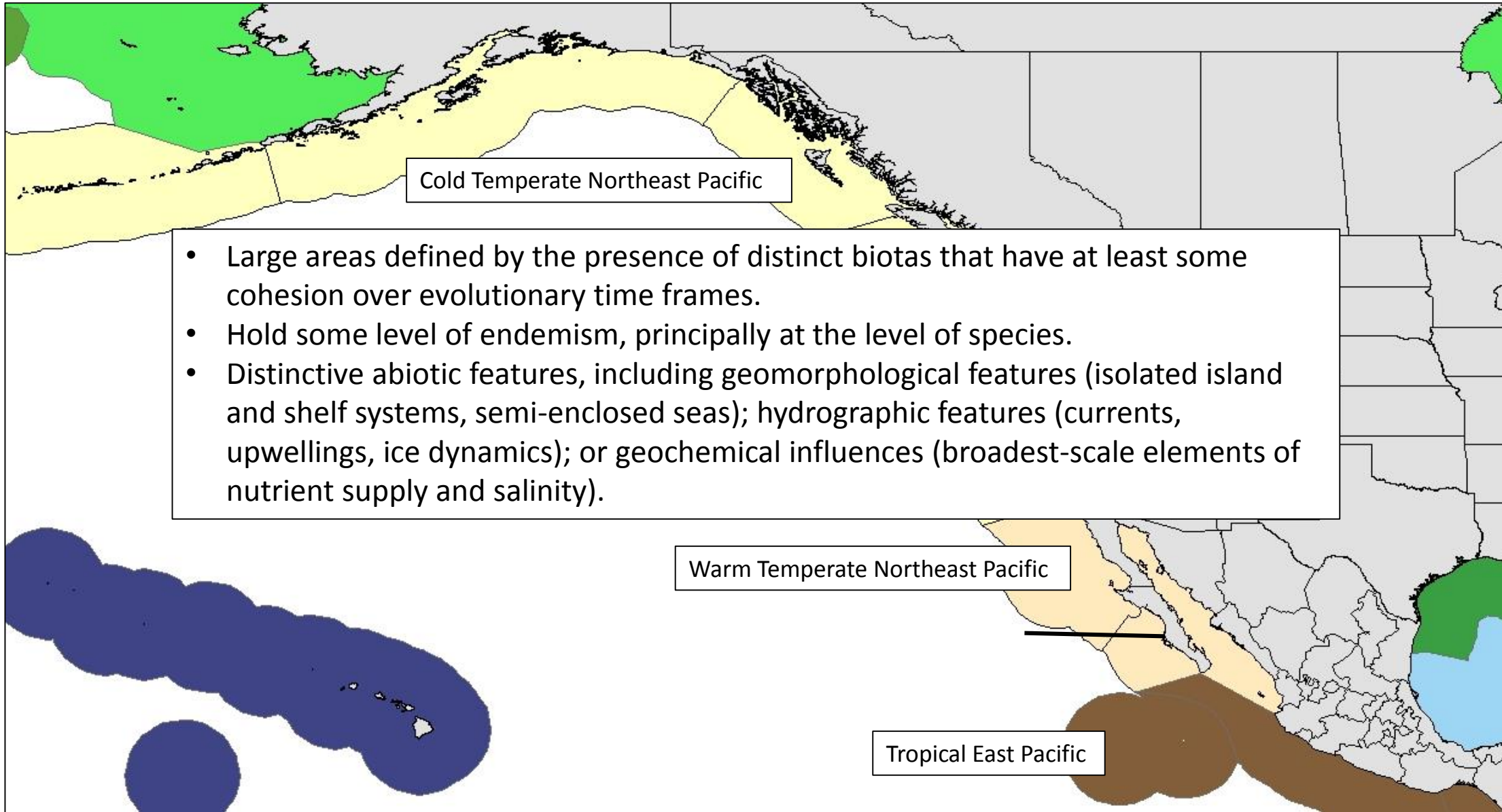
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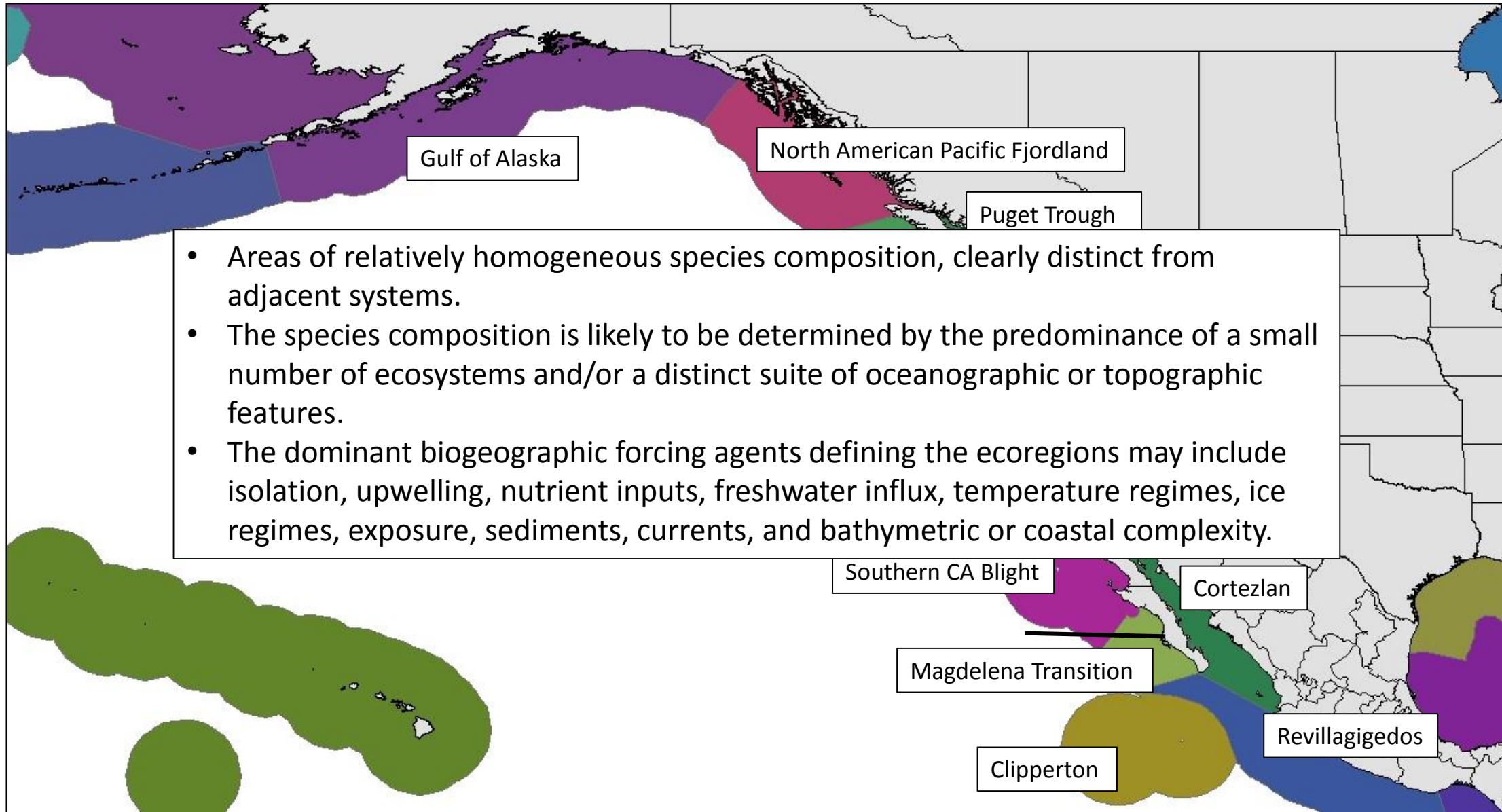
Realms



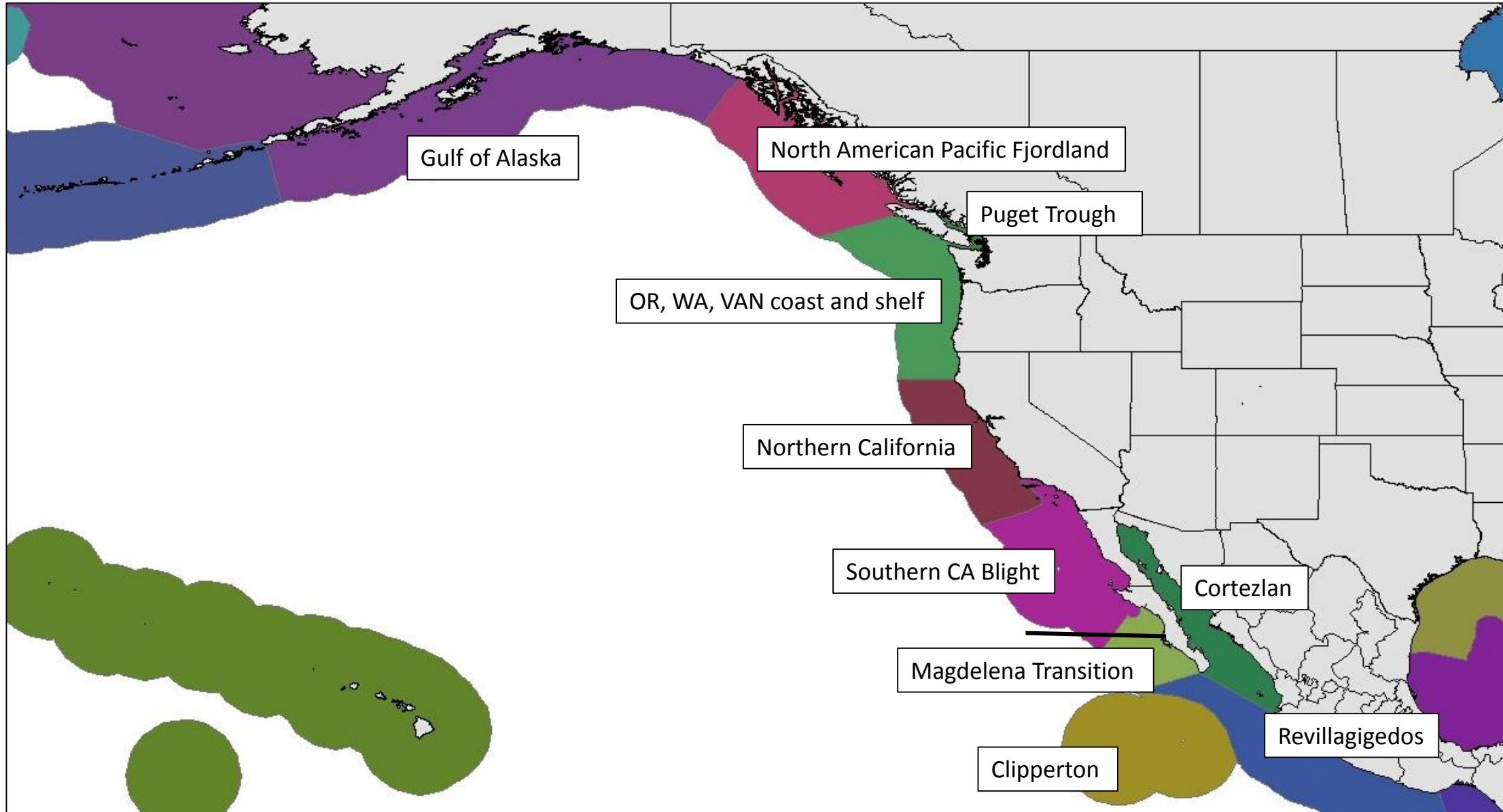
Provinces



Ecoregions



Ecoregions



West Coast Oceanography: *Implications for Ballast Water Exchange*

Draft Report

*Authors: Jack Barth, Oregon State University; Curt Collins, Naval Postgraduate School;
and Barbara Hickey, University of Washington*

*Editors: Karen McDowell, California Sea Grant Extension Program, Mark Sytsma,
Portland State University*

EXECUTIVE SUMMARY

Introduction

- The purpose of this report is to inform ballast water management policy on the West Coast of North America by reviewing significant features of the nearshore water movement. Discharge of ballast water can lead to the introduction of aquatic invasive species (AIS) taken onboard during ballasting. At present, exchange of port water in ballast tanks with mid-ocean water is the only management method available for most ships. All west coast states, and some ports in British Columbia, require mid-ocean exchange for ships entering a west coast port from outside the Exclusive Economic Zone (EEZ). Oregon and Washington also require exchange of ballast water taken onboard in a west coast port outside designated areas. This coastal exchange requirement is considered to be protective of sensitive estuaries in Oregon and Washington that house port facilities.
- The fate and risk of establishment of organisms discharged in ballast water in coastal exchange is not well known. There is concern that organisms might be driven back to shore by a variety of coastal processes and therefore could inoculate the coastline and associated bays with AIS. The relative risk of establishment of AIS in coastal estuaries resulting from coastal exchange versus discharge of port water directly into estuaries is unknown. The primary goal of this report was to compile the current information on coastal processes on the

CA Legislature defined the PCR, in part, from the findings of the 2003 report by Barth and Hickey

- Reviewed nearshore water movement features to inform ballast water management policy

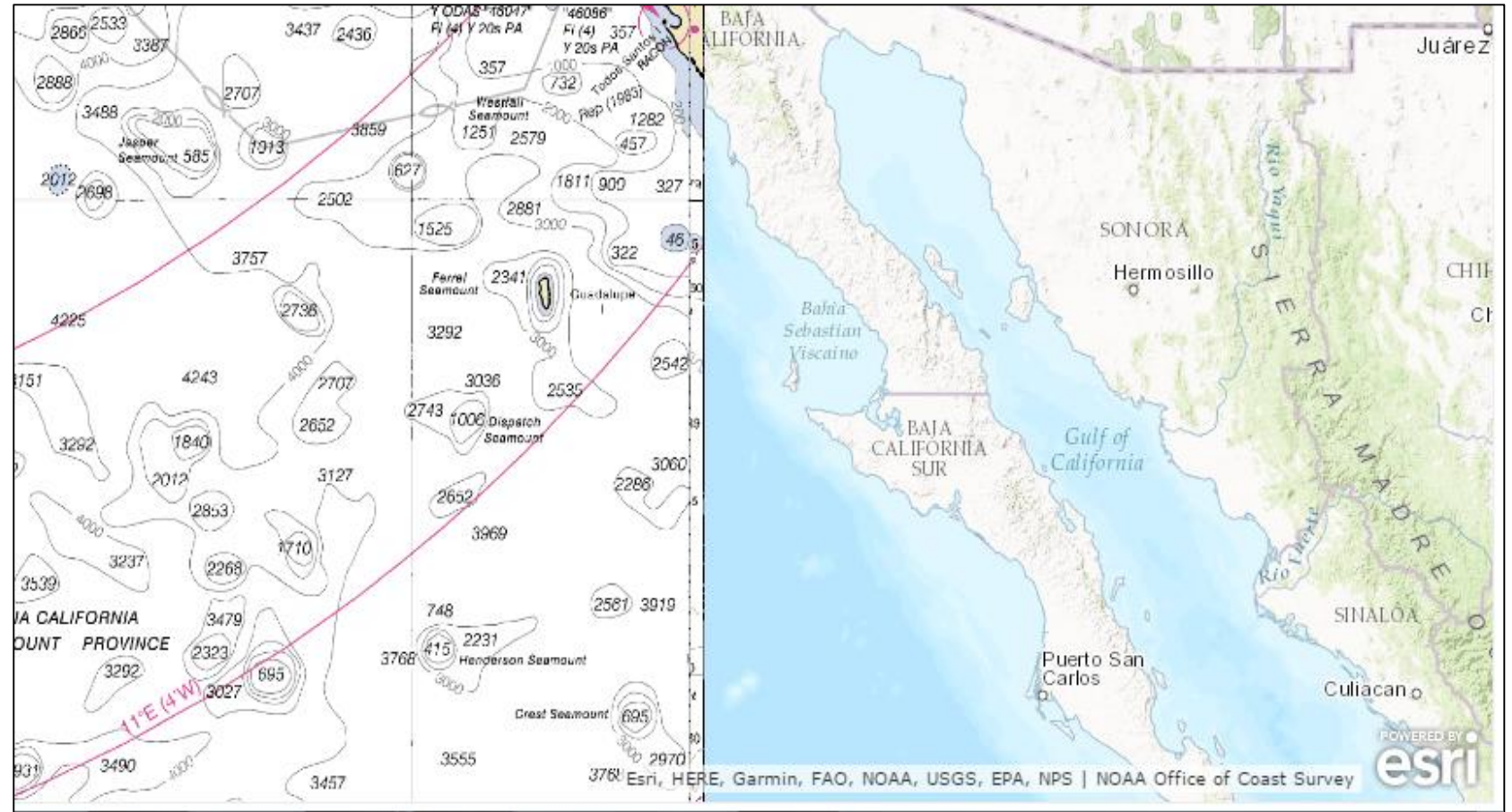
3 Recommendations:

- Avoid specified retention zones located ~50 NM to land
- Discharge in waters more than 1,000 meters deep has a relatively low probability of reaching shore (probability increases with discharge in water less than 200 m deep)
- Seasonal fluctuations of currents and retentions zones should be considered



Require an alternative minimum distance and depth for vessels departing from Central Mexico/Gulf of California?

- 200 NM and 2,000 m?
- 200 NM and 1,000 m?
- 100 NM and 1,000 m?
- 100 NM and 500 m?
- 50 NM and 200 m?
 - Current EPA VGP requirement for all Pacific coastal voyages



Questions?

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