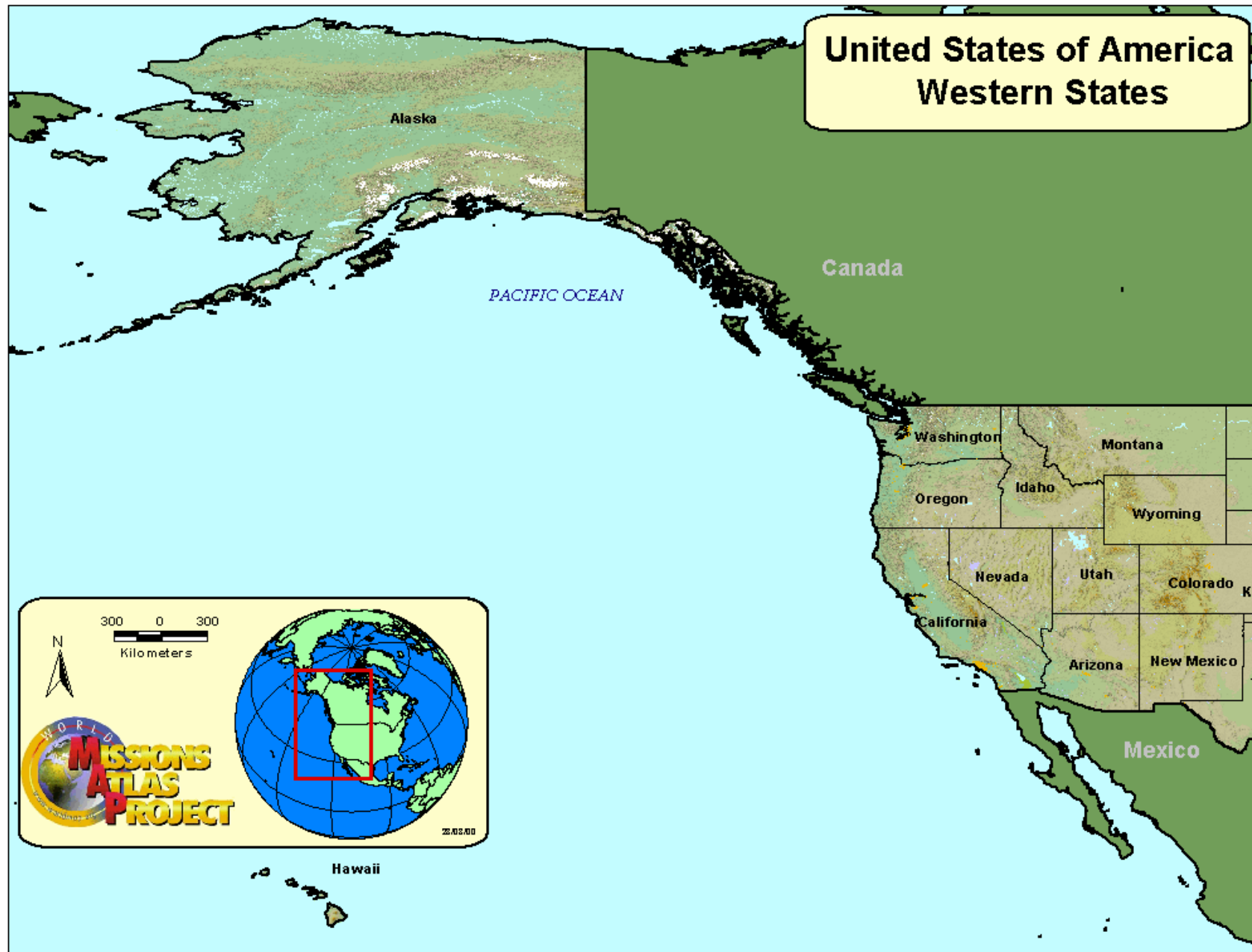


Western Regional Panel on Aquatic Nuisance Species Coastal Subcommittee

2013, 2014 & 15 Activities and Priorities

Sonia Gorgula
Chair – WRP Coastal Subcommittee
Sonia.gorgula@hawaii.gov



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2013 ANSTF Fall Meeting

Recommendation

- Support a Pacific states tunicate workshop to identify management and research needs across the region

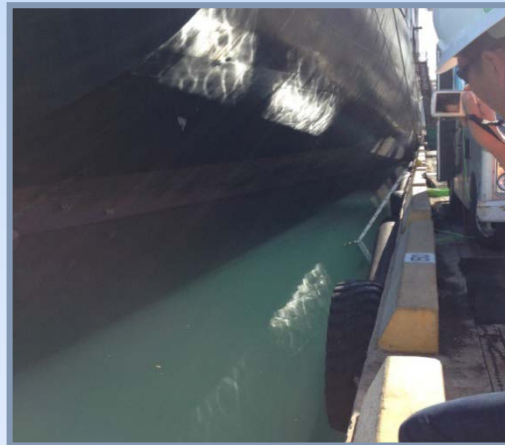
Updates on Ongoing Work

- In-water cleaning of ship's hulls and niche areas
- Japan tsunami marine debris
- European Green Crab
- Spartina

Ongoing work - expanded

In-water cleaning of ships hulls and niche areas

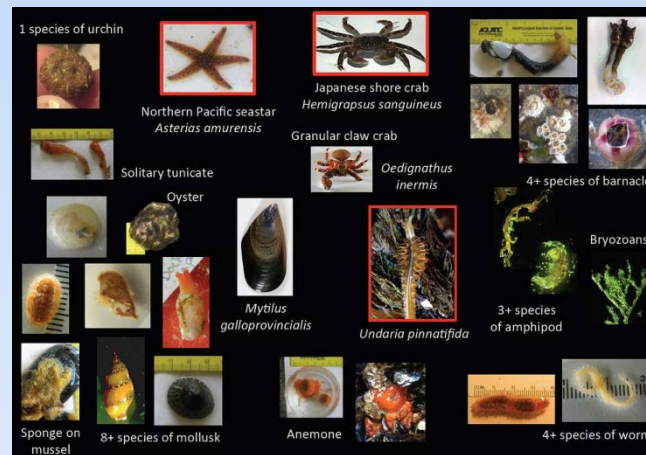
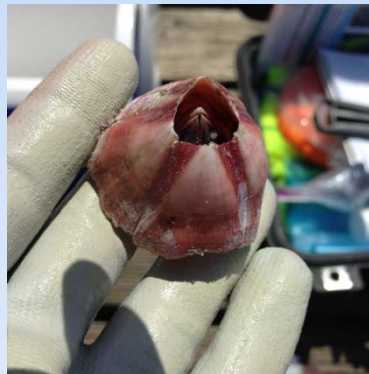
- Releases pulses of biocides from biocidal paints and potentially non-native/invasive species
- Concern to coastal states; review requests to clean on an 'case by case' basis
- Opportunity for regional collaboration; risk assessment



Ongoing work - expanded

Japan tsunami marine debris

- Debris still landing
- Nearly 300 incidents of debris landing with potential Japanese species attached
- GAP: monitoring and evaluating invasive species risks. Jim Carlton's group spearheading marine invasions research



European Green Crab & Spartina

- AK, BC and WA continue cross border work to address the spread
- Develop and implement a volunteer-based, early detection and monitoring program for European green crab in Washington's inland marine waters – commence May 2015 (WA SG)



- 2010 Spartina Action Plan released by West Coast Governors Alliance
- Populations in CA, WA, OR and BC; BC using herbicides for control
- States seek funds to implement the plan

12 month planning

March 2014 – Planning Call for a 12 month action plan

- Discussed risk assessment, species prioritization needs, vector management needs (more effective?)
- Support from the group to direct more effort to vector management. Limited consensus on next steps for the region.
- Consensus – channel efforts to tunicate workshop and consider the recommendations of this workshop in the context of future prioritization. Essentially await the outcomes of the workshop before deciding on our next goal.

Invasive Tunicate Workshop 2014

*Convening managers, researchers and affected industries to facilitate
coordinated management of non-native tunicates*

August 6-7, 2014
Double Tree by Hilton Hotel, Seattle Washington



Workshop sponsors



PARTICIPANTS

- Jeff Adams – Washington Sea Grant
- Kevin Anderson – Puget Sound Partnership
- Sam Chan – Oregon Sea Grant
- Sara Cohen – San Francisco State University
- Diane Cooper – Taylor Shellfish Farms
- Tammy Davis – Alaska Department of Fish and Game
- Lisa DeBruyckere – Creative Resource Strategies, LLC
- Cat deRivera, Portland State University
- Glenn Dolphin – Oregon State Marine Board
- Robyn Draheim – US Fish and Wildlife Service
- Anya Dunham – Fisheries and Ocean Canada
- Leah Elwell – Western Regional Panel on Aquatic Nuisance Species
- Gary Freitag – Alaska Sea Grant
- Sonia Gorgula – Hawaii Dept Land and Natural Resources
- Linda Shaw – National Oceanic and Atmospheric Administration
- Bruce Hansen – US Forest Service
- Gordon King – Taylor Shellfish Farms
- Gretchen Lambert – University of Washington
- Joel Moribe – National Oceanic and Atmospheric Administration
- Steve Murschel – Portland State University
- Adam Obaza, National Oceanic and Atmospheric Administration
- Susan Pasko – National Oceanic and Atmospheric Administration
- Stephen Phillips – Pacific States Marine Fisheries Commission
- Greg Ruiz – Smithsonian Environmental Research Center
- Steve Rumrill – Oregon Department of Fish and Wildlife
- Jesse Schultz – Washington Department Fish and Wildlife
- Mark Sytsma – Portland State University
- Ron Smith – US Fish and Wildlife Service

Workshop Goals

- To facilitate the coordinated management of non-native tunicates through the development of an action plan and key next steps to prevent the introduction and spread of invasive tunicates in the Pacific Northwest and Hawaii, and Alaska.
 - *Discuss* the environmental and economic risks (actual or potential) posed by non-native tunicates.
 - *Share information*, efforts, issues, successes and challenges.
 - *Identify* management options, research needs and funding priorities.
 - Determine if a *regional management plan* is needed, and if so, create an action plan to inform scoping and development.

Day 1 Session 1

- 8:30am-8:45am **Registration, welcome**
- 8:45am-9:30am Tunicate biology and ecology (*G. Lambert*)
- 9:30am-9:45am The genetics of tunicates (*S. Cohen*)
- 9:45am-10:00am Q and A
- 10:00am-10:15am **BREAK**
- 10:15am-10:30am Current tunicate research and vectors (*G. Ruiz*)
- 10:30am-10:45am Shellfish growers: implications for production (*D. Cooper* and G. King)
- 10:45am-11:00am Eradication successes and failures in WA (*J. Schultz*)
- 11:00am-12:15am Management presentations
 - Alaska (T. Davis), British Columbia (A. Dunham), Washington (J. Schultz), Oregon (G. Dolphin), California (written comments), Hawaii (S. Gorgula), and the elements of a WA/OR tunicate management plan (C. deRivera)
- 12:15pm-1:00pm **LUNCH**
- 1:15pm-1:30pm Summarize key points from morning and tee up next sessions

Day 1 Session 2

- 1:30pm-4:00pm

Breakout sessions

- Risk Assessments
- Funding
- Management Options
- Research
- Collaboration
- Regional Plan

- 4:00pm-4:45pm

Breakout session summaries and discussion

- 4:45pm-5:00pm

Review day's work and prep for tomorrow

- 5:00pm

ADJOURN

Day 2, Session 1

- 8:30am-8:45am

- 8:45am-9:45am

- 9:45am-10:15am

- 10:15am-10:30am

- 10:30am-10:45am

- 10:45am-NOON

- NOON-1:00pm

- 1:00pm-2:00pm

- 2:00pm

Introductions – review agenda

Breakout sessions – review case studies (Washington, British Columbia, Oregon) and discuss key management elements

- Identification of species
- Notification/communication
- Controls – mechanical/chemical
- Permits
- Etc.

Share breakout session discussion and lessons learned

BREAK

Review WCGA *Spartina* plan, WA tunicate plan, Australian options

Regional Invasive Tunicate Management Plan

LUNCH

Summarize action plan elements and key next steps – additional

ADJOURN

input

Action Plan Contents – a Menu of Opportunity

- WCGA Regional *Spartina* Eradication ACT Work Plan (2010)
- Washington State Tunicate Plan (2007-2009)
- Western Australia Eradication and Control Methods Document (2014)



Government of **Western Australia**
Department of **Fisheries**

WEST COAST GOVERNORS
ALLIANCE on **OCEAN HEALTH**
CALIFORNIA OREGON WASHINGTON



Washington
Department of
FISH and
WILDLIFE

Spartina Eradication ACT Work Plan

- Tiered priorities
 - 1 – eradication and improved methods of treatment
 - 2 - surveys and prevention
 - 3 – restoration and communication
 - 4 – other tasks
- Prevention
- Early Detection
- Rapid Response
- Eradication
- Restoration
- Communications and Public Outreach
- Prioritized tasks among these six categories within the four tiers.
- Budget

Washington State Tunicate Management Plan

- Define the problem and pathways
- Overview of tunicate life history, biology and ecology
- Field management methods
 - Mechanical, chemical, biological, and integrated
- Management priorities (e.g., *Styela clava* containment)
- Goals, objectives and tasks
 - Prevention
 - Control, contain, or eradicate established ANS populations
 - Predict or detect new or recurring ANS
 - Coordinate and collaborate, incl. regionally
 - Public education
 - Restoration

Government of Western Australia - Fisheries

- Species Characteristics
- Management
- Control and eradication methods
 - Chemical, biological, physical/mechanical
- Combining methods for control/eradication
- Novel methods in aquaculture
- Case studies
- Considerations for future responses
- Conclusions and recommendations

Elements of a Regional Marine Invasive Species Plan- but first, does the region want a plan?

Convening managers, researchers and affected industries to facilitate coordinated management of non-native tunicates

August 6-7, 2014
Double Tree by Hilton Hotel, Seattle Washington





THE RESULT....

Elements of a Regional Marine Invasive Species Plan (**articulate plan purpose**)

- A. Overview of current knowledge on vector-related biofouling in region
- B. Assessment of regional vectors
- C. Information gaps and research needs
- D. Management
 - Review of current management plans in and beyond the region
 - Management strategies
- E. Outreach and “inreach” strategies
- F. Policy and regulatory frameworks
- G. Impacts of marine invasives (economic, environmental, social)
- H. Funding/Budget
- I. Monitoring
- J. Collaboration opportunities



Regional Marine Invasive Species Management Plan

A recommendation, for the broader WRP Coastal Committee to consider.

- Scope – to be determined over the next 3-4 months
- Coordinate with Cat de Rivera's 'Regional Fouling Management Plan' Project
- Find an organization to support the effort and increase likelihood of broader uptake
- Provides options for regional management activities to leverage funds

Coastal Vector Management



VECTORS

Accidental	Intentional
Biofouling	Aquaculture
Ballast water and solid ballast	Sport
Ship boring	Improvement of wild stock
Aquaculture escapes	Ornamental (Nursery, Aquarium trade)
Marine debris fouling	Control of unwanted organisms
Polyvetric [includes accidental release on or with imported commercial products, inside airplane cabins, in soil, and on or with aquarium plants and greenhouse plants (Carlton and Ruiz, 2005)]	Unknown

Transport Mechanisms

"Biological Islands"

Maritime Vessels

Commercial

Private

Ballast Water
Planktonic Stages
Adult Stages
Resting Stages

BioFouling
Adult Stages
Planktonic Stages

Sediments
Adult Stages
Resting Stages

BioFouling
Adult Stages
Planktonic Stages

Direct and Indirect Concerns

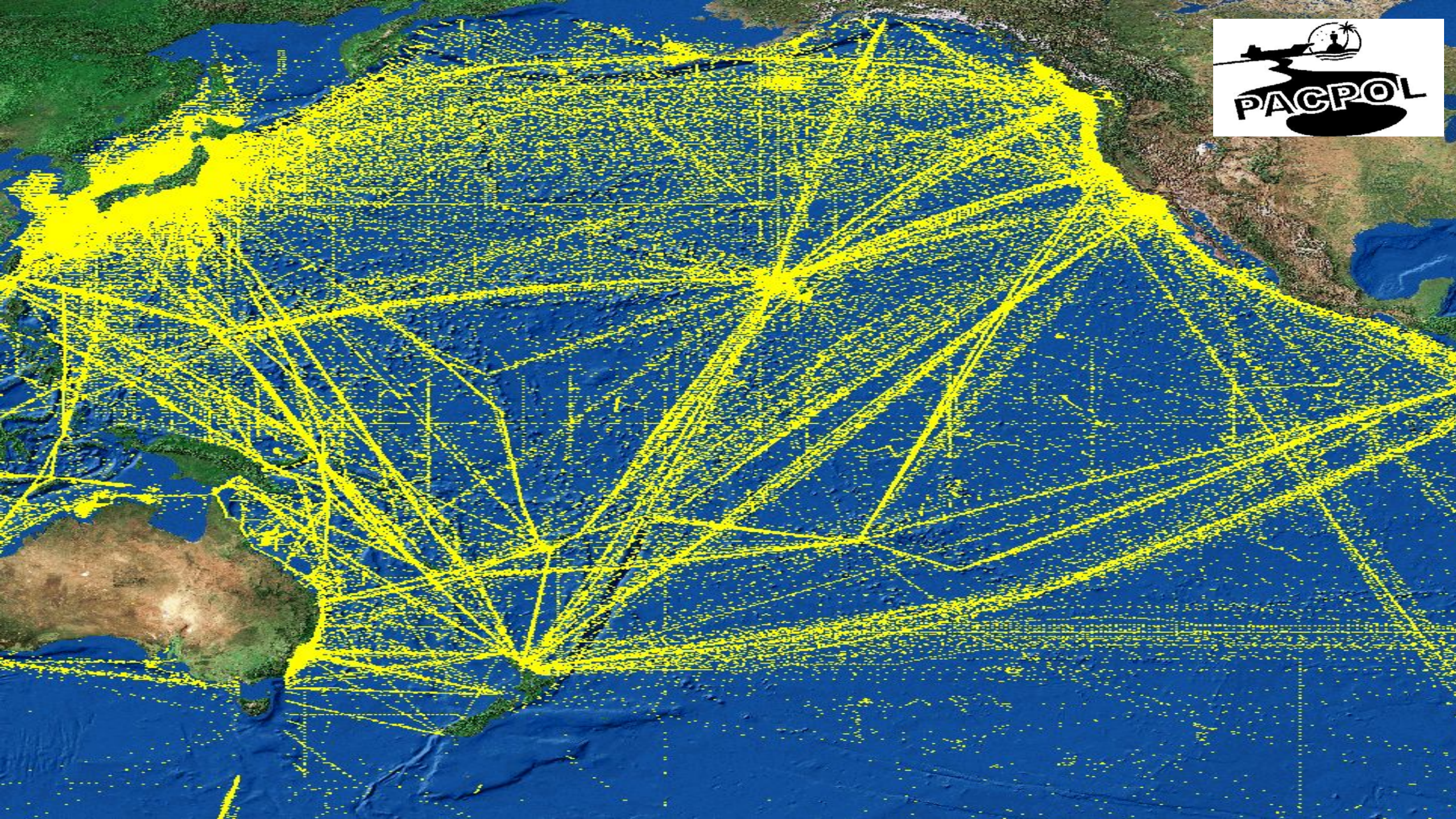
Debris

Aquarium
Imports

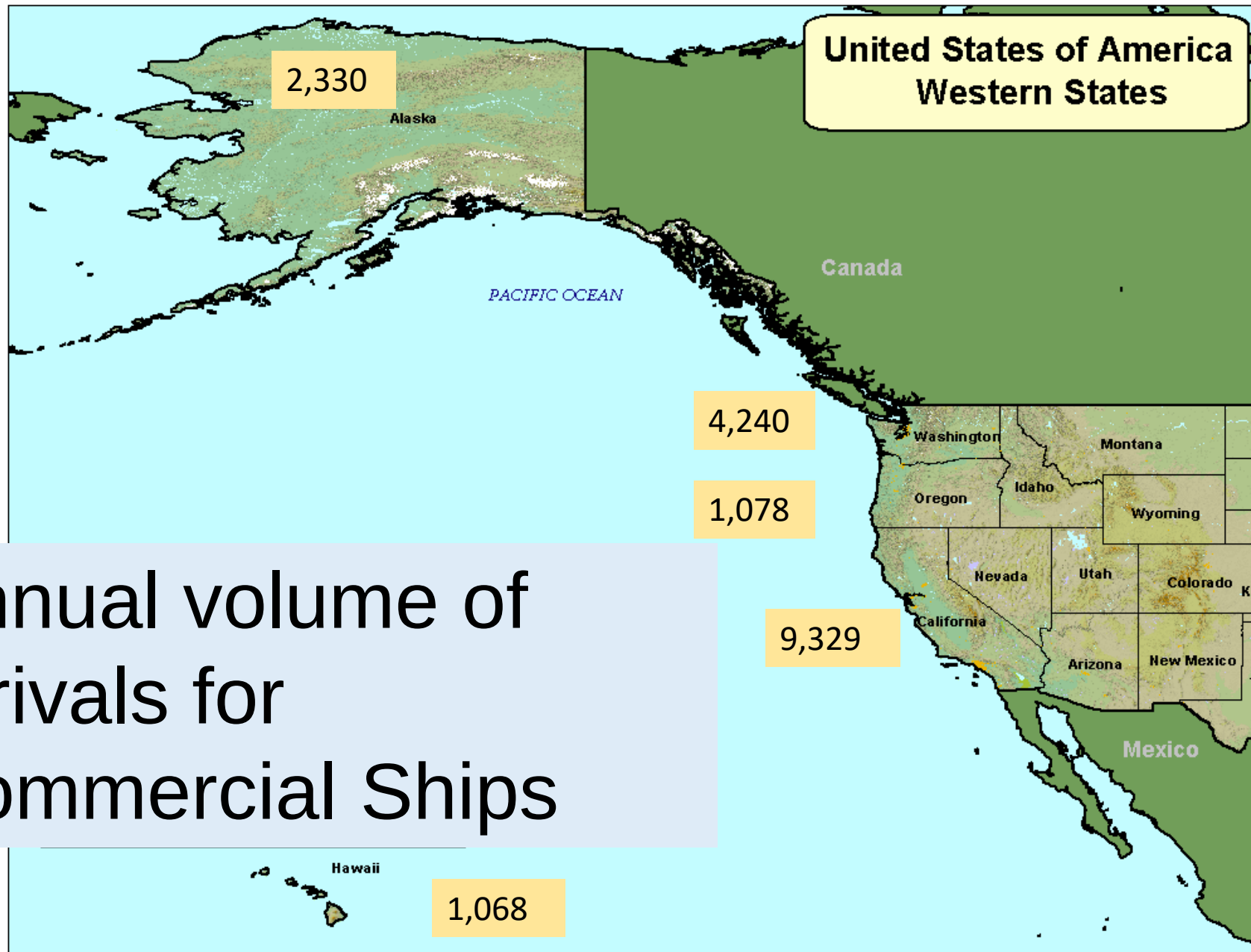
Derelict
Fishing
Gear

Live
Seafood

FAD's



Annual volume of arrivals for Commercial Ships

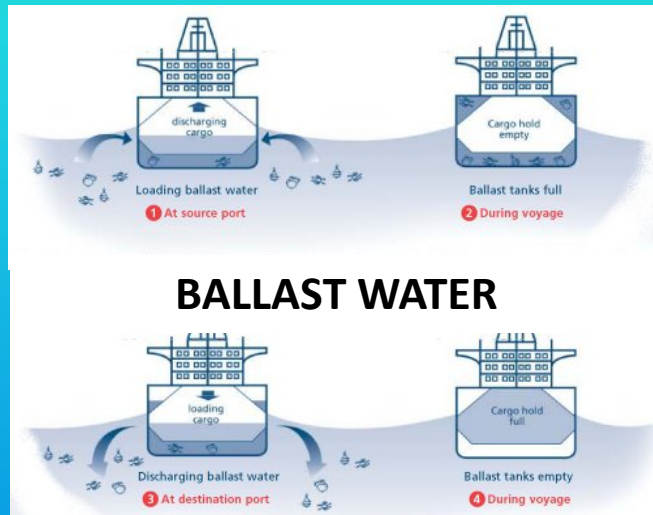


Relative role of vessel biofouling in marine bioinvasions

In coastal environments, commercial shipping accounts for, or contributes to up to 79.5% of introductions into **North America** (Fofonoff et al. 2003)

LOCATION	PERCENTAGE OF NON-INDIGENOUS MARINE SPECIES CONSIDERED ASSOCIATED WITH BIOFOULING	REFERENCE
New Zealand	69%	Cranfield et al. 1998
Hawaii	74%	Eldredge and Carlton 2002
North Sea	>50%	Gollasch 2002
North America (USA)	70%	Fofonoff et al. 2003
Port Phillip Bay, Australia	78%	Hewitt et al. 1999, 2004
Australia (national port surveys)	59%–69%	Hewitt and Campbell 2010
Japan	42%	Otani 2006
Global (algae)	70%	Hewitt et al. 2007
Global (all taxa)	55%	Hewitt and Campbell 2010

Progress – vessel management



State programs (except Alaska)

BIOFOULING

CALIFORNIA

- Drafting Biofouling Regulations (commercial)
- Hull Husbandry Data since 2008
- IWC Work shop

OREGON

- Voluntary biofouling data collection completed late 2000's

WASHINGTON

- Biofouling report (relative vector contributions) – 58% of introductions
- Increase staff

HAWAII

- Voluntary hull husbandry data collection (rec & commercial)
- Considering regulations
- IWC data project

What about recreational boats?

CHALLENGES

- Far reaching
- Surveys concentrated in harbors
- High levels of in-water cleaning
- Lack of data – hard to get



Going Forward

- Consider scoping out a ‘Regional Marine Invasive Species Management Plan’ during late 2014
- How will we begin addressing vector issues and gaps? (e.g. recreational, other floating submerged structures e.g. docks)
- How will we incorporate risk assessment?
- Maintaining momentum will be critical + organizational buy in

