

The Nexus of Coastal Social-Environmental Systems & Sustainable Ecological Aquaculture

EPSCoR RII Track 1

University of Maine
University of New England

presented by

Anne Langston, Ph.D. ARI Assoc. Director, and
Carter Newell Ph.D. ARI EPSCoR Cooperative Research Coordinator

Main Components

- Research Network
- Statewide
- Multi-institutional
- Stakeholder focus
- Sustainable Ecological Aquaculture
- Goal to stimulate competitive research, education, and benefits to society
- Submitted in August, 2013
- Notification in March, 2014
- Start date June, 2014
- Three themes:
 - Productive capacity; social & ecological carrying capacity
 - Effects of changing environments
 - Use of aquaculture toolbox to benefit society

EPSCoR

Students, faculty, buoy/sensor
network, cyberinfrastructure,
education, research themes

Research Network
complementary research initiatives

BIOREGION FOCUS

**Bioregion 1
South**

**Bioregion 2
Mid Coast**

**Bioregion 3
Downeast**



Bangor

Augusta

Penobscot Bay

Jonesport/
Beals
Island Bay

Cobscook Bay

Cobscook Bay Learning Center

Downeast Institute/
University of Maine Machias

Maine Maritime Academy

Damariscotta Bay

Darling Marine Center

Overarching goal: to create state-wide network

Research goal: better understanding of opportunities for aquaculture in coastal zone: production, social, ecological, engineering aspects

Portland

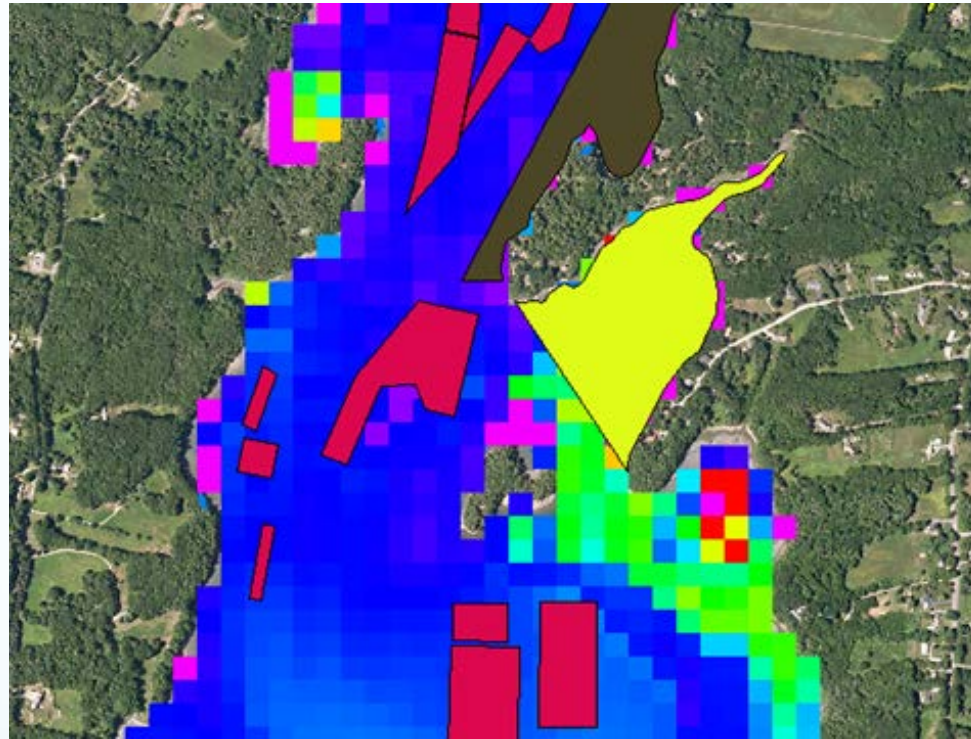
Casco Bay

Saco Bay

Southern Maine Community College

University of New England

Development of GIS map for each bay for aquaculture species
(oyster example)

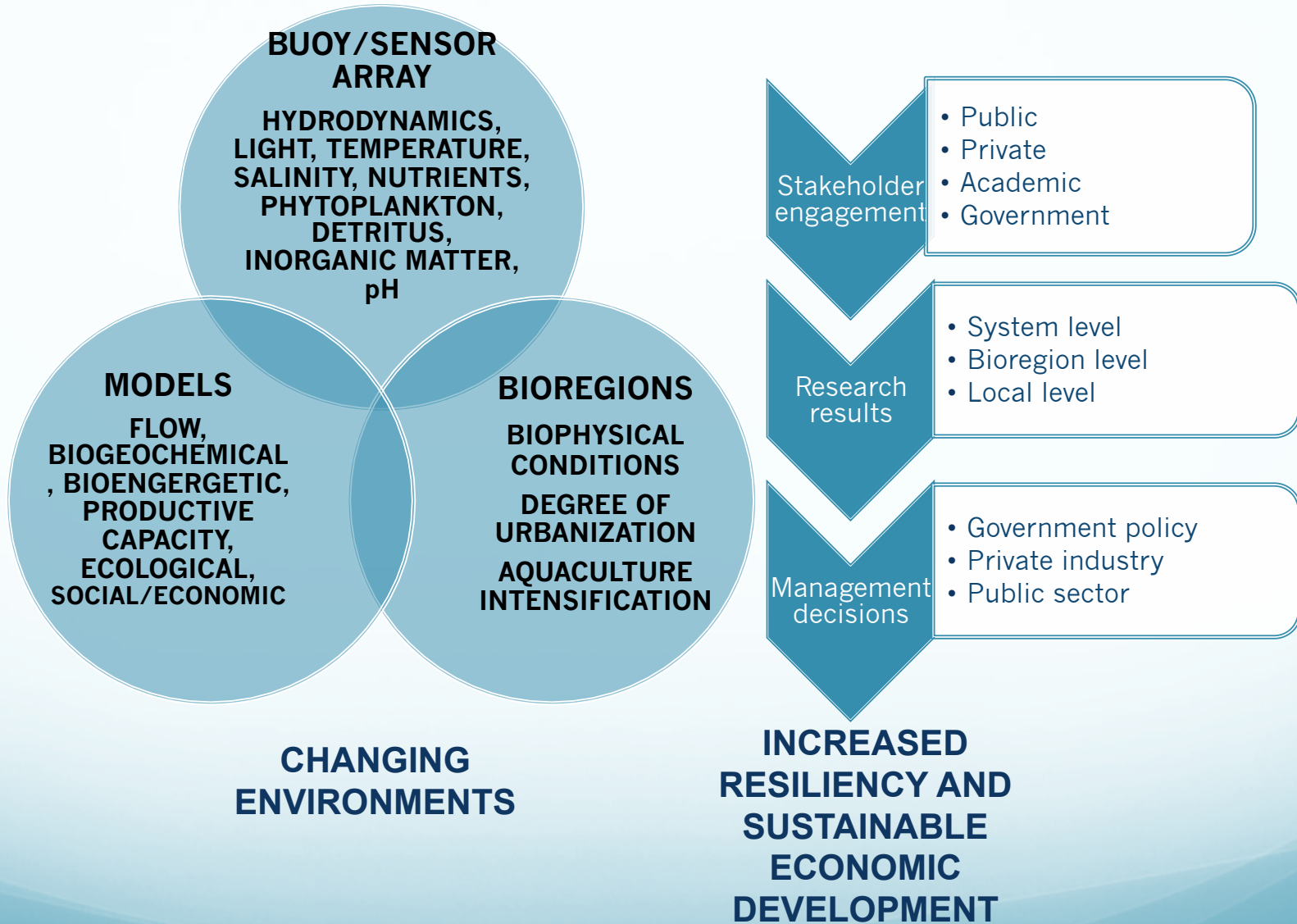


**Upper Damariscotta Shell-GIS Layers include oyster farm sites
Water quality classification Predicted growth of oysters**

KNOWLEDGE

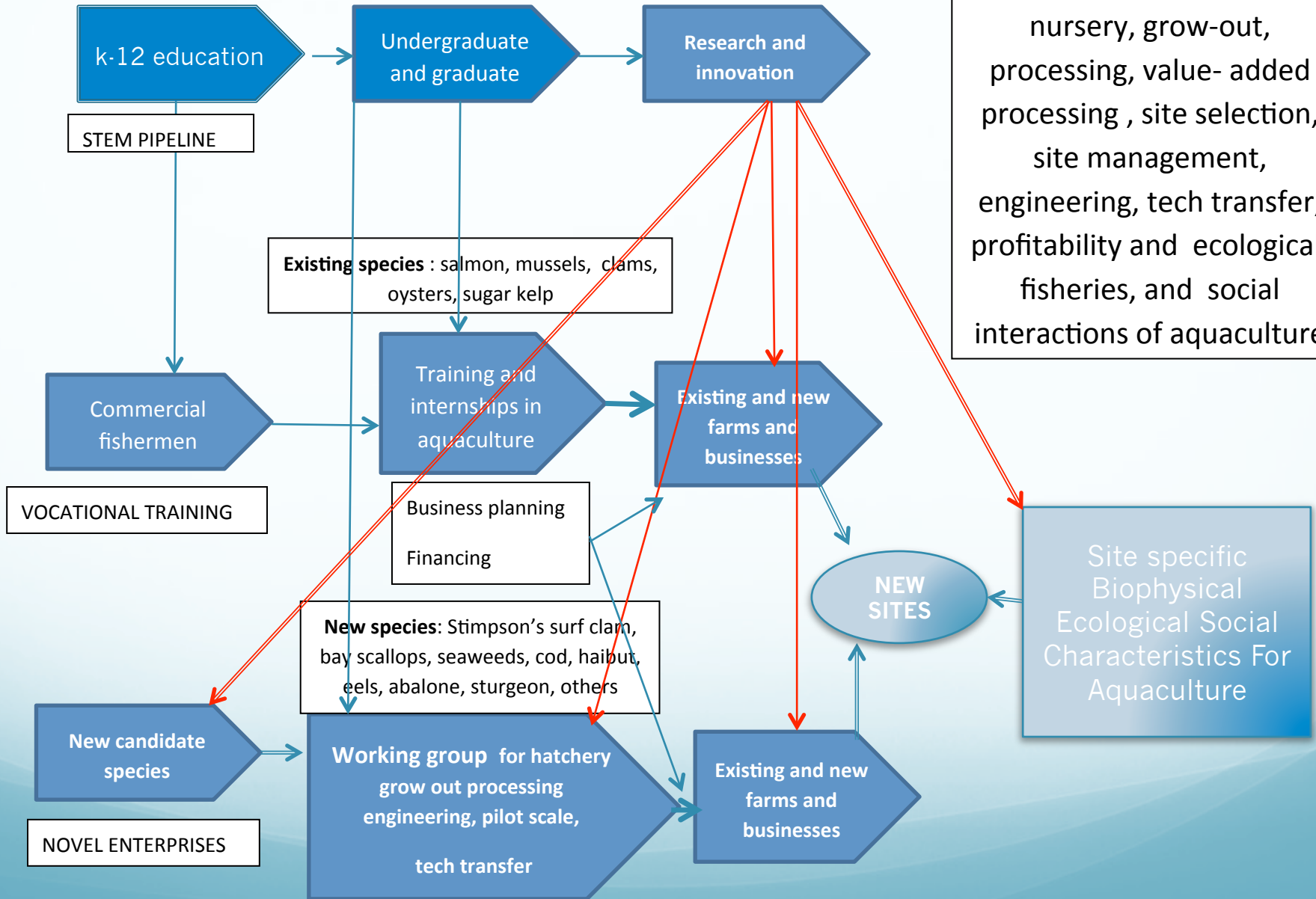


ACTION



Workforce development of researchers, growers, innovators,
New species development, how to grow the industry

Opportunities for research and innovation in hatchery, nursery, grow-out, processing, value-added processing, site selection, site management, engineering, tech transfer, profitability and ecological, fisheries, and social interactions of aquaculture



Infrastructure Investments

People

- 6 IHE's plus range of other research & education
- New hires: 4 faculty; 5 post docs
- 20 grads; 96 undergrads
- 3 network staff
- 20 high schools
- 100 K-12 teachers trained; 10 teacher internships per year

“Stuff”

- Inshore buoy system
- Inshore sensor array
- Knowledge Portal
- Experimental Microcosms
- Research Intensive Farms



Cyberinfrastructure

Public

- Knowledge portal
- Bioregional
- Real data
 - GIS
 - Schools
 - Museums

Research

- Database
 - Cloud technology
 - Accessible by all researchers, students etc.
- Videoconferencing infrastructure
- Visualization walls

Seed Funding & Emerging Areas

Seed Grants

- 2 per year from YR2
- \$20K
- Priority areas driven by stakeholders, external advisors ++
- Available statewide
- **Another seed grant program for workforce development**

Innovation Working Groups

- In partnership with MTI & MAIC
- Fund 'gatherings' of researchers & stakeholders
 - Data synthesis
 - Research proposals
 - New areas

Promoting Connections

Bioregions

- Co-ordinated by Maine Sea Grant
- Bioregional meetings
- Bioregional research, education & stakeholder networks
- Bioregional “nodes” to the web-based knowledge portal

State-wide

- Seminars
- All-team meetings
- Research theme symposia
- Innovation working groups

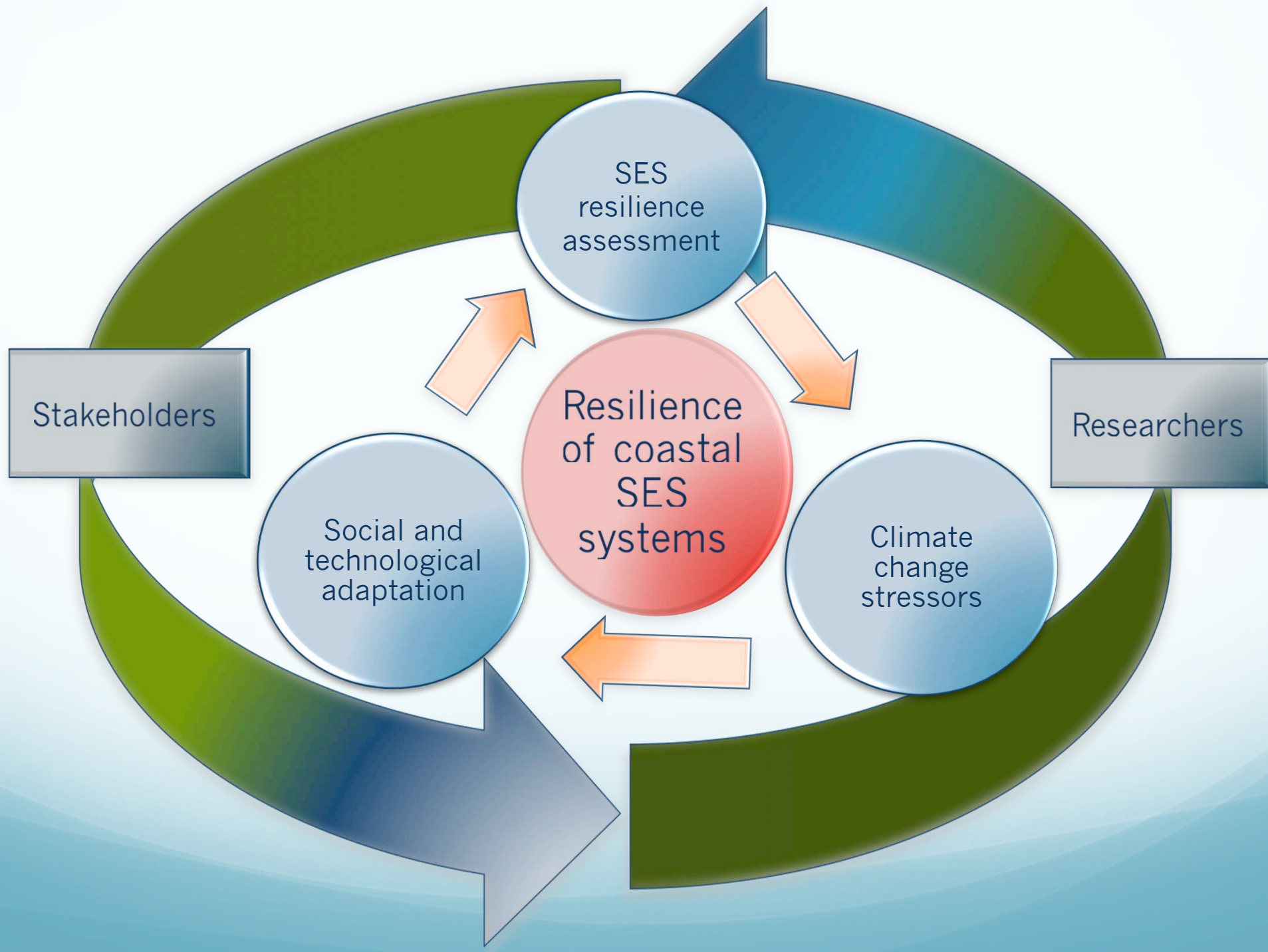
Workforce Development

In the research program

- Undergrads
- Grads
- Post docs
- Early career faculty
- Curriculum Development
 - Major
 - Minor
 - Grad cert
- Mentoring
- Community Colleges

Related to the research

- Teacher training
- Teacher internships
- Curriculum
- Museum(s)
- Diversity
- SEAWaRD
 - 4H
 - High schools



SES
resilience
assessment

Resilience
of coastal
SES
systems

Social and
technological
adaptation

Climate
change
stressors

Stakeholders

Researchers



PORTLAND • GORHAM • LEWISTON • ONLINE



