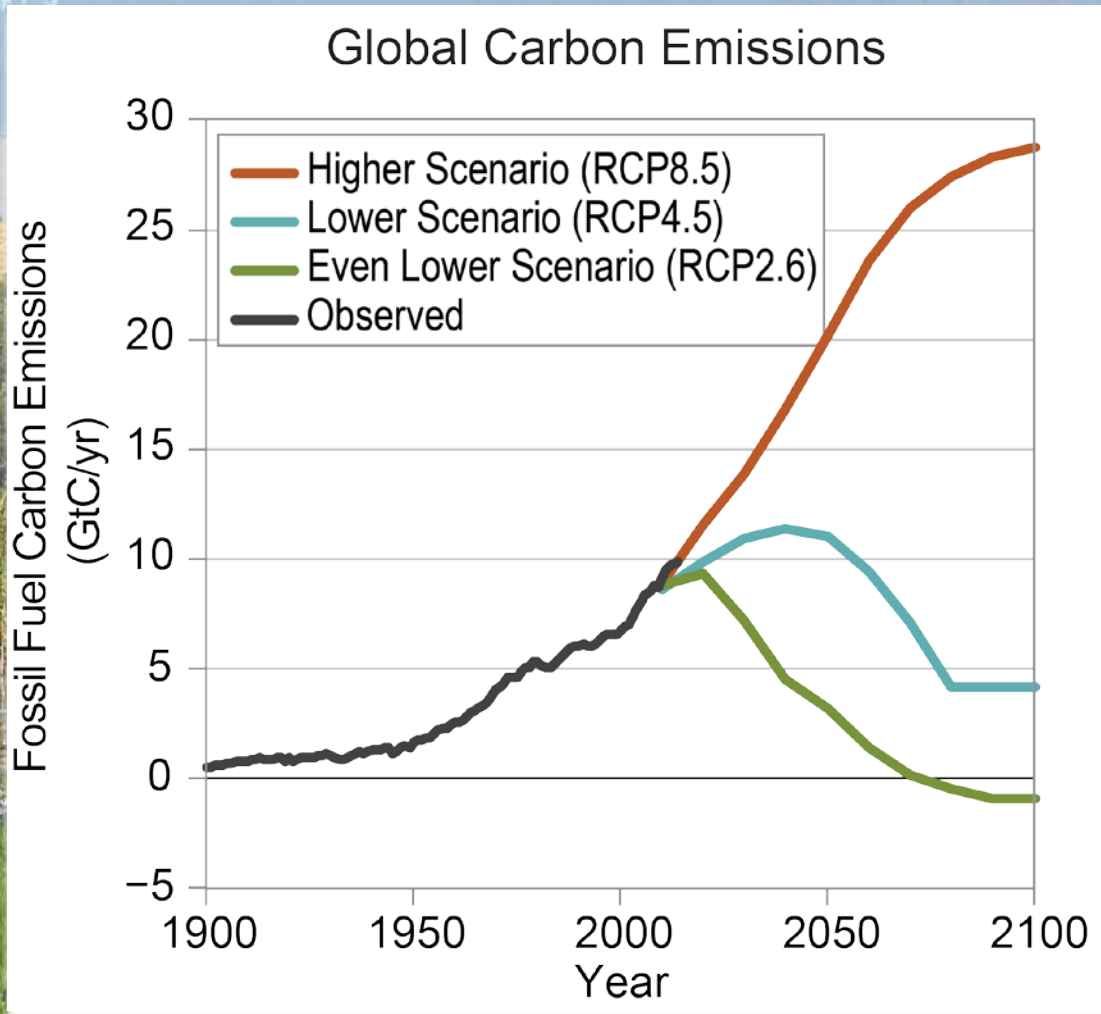
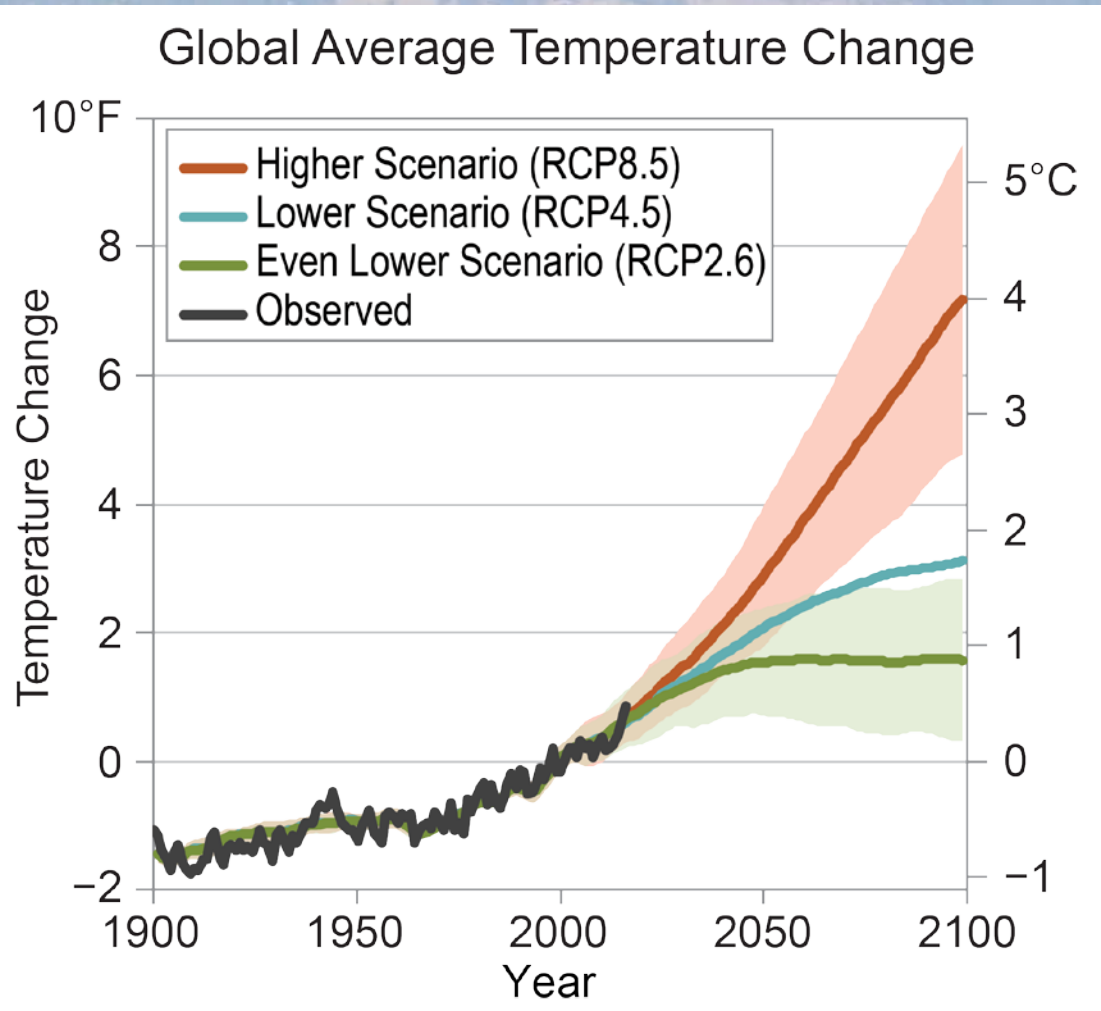
A Changing Climate and Ocean: Impacts and Adaptation for Fish, Wildlife, and their Habitats

Davia Palmeri, Conservation Policy Coordinator

May 2, 2019

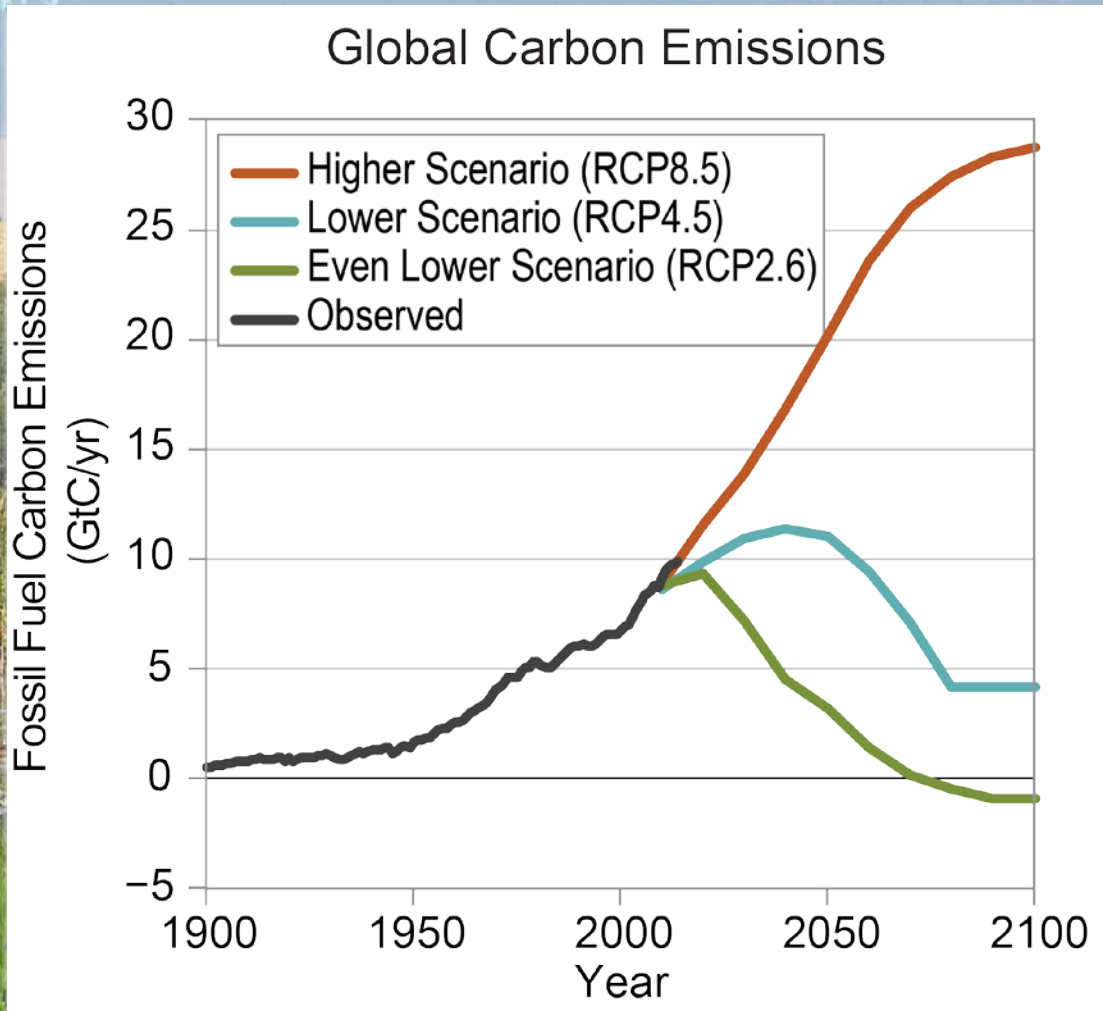
CLIMATE CHANGE | EFFECTS ON GLOBAL AVERAGE TEMP

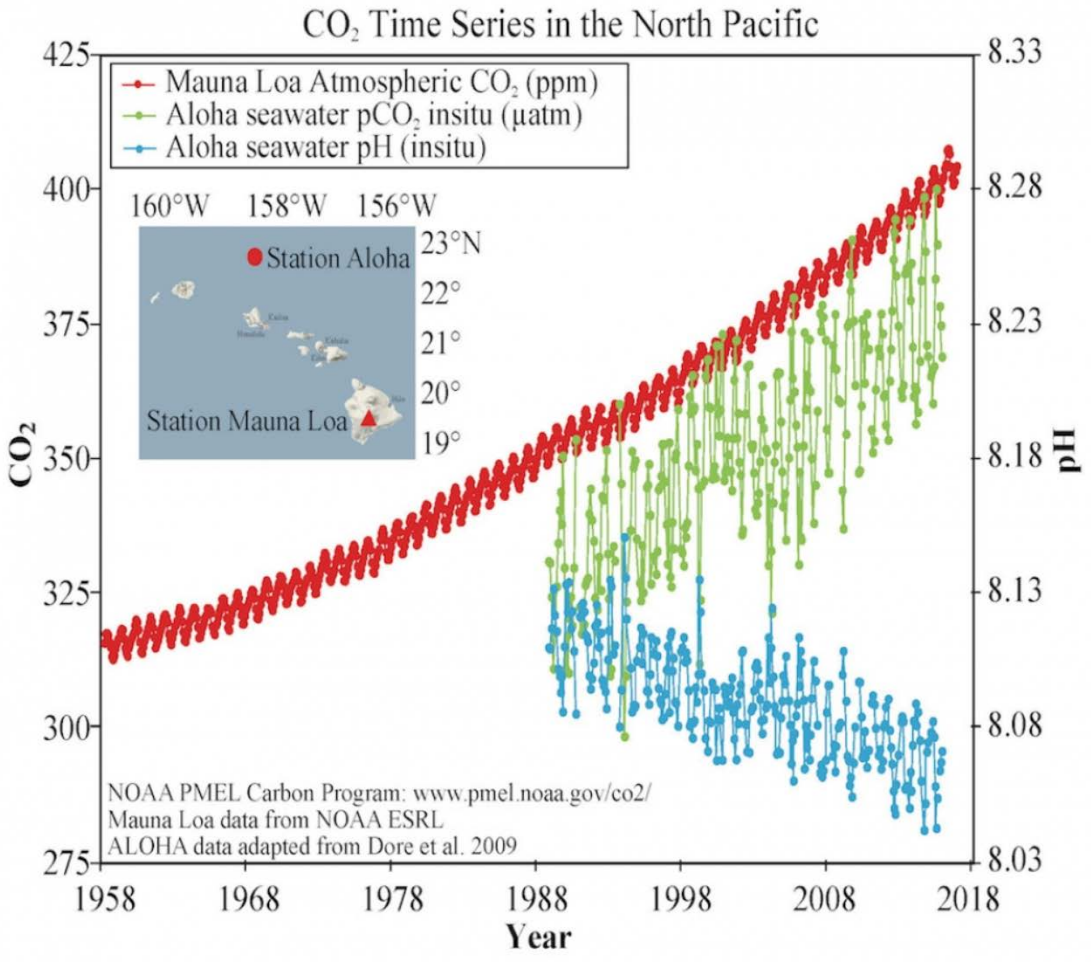




Fourth National Climate Assessment, 2018

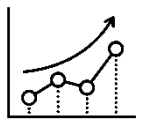
CHANGING OCEAN | EFFECTS ON OCEAN CHEMISTRY





Fourth National Climate Assessment, 2018
NOAA

4th Oregon Climate Assessment Report Summary



Air and water temperatures increase during all seasons, more so in summer

Precipitation may decrease in summer, increase in winter

Extreme heat events become more frequent

Years with low snowpack become more common as snow falls increasingly as rain

Summer streamflow decreases and timing of peak streamflow shifts earlier

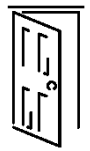
OCCRI

4th Oregon Climate Assessment Report Summary

Wildfires, insects, and drought increasingly affect forest health

Sea level rise + flood events inundate coastal assets more often

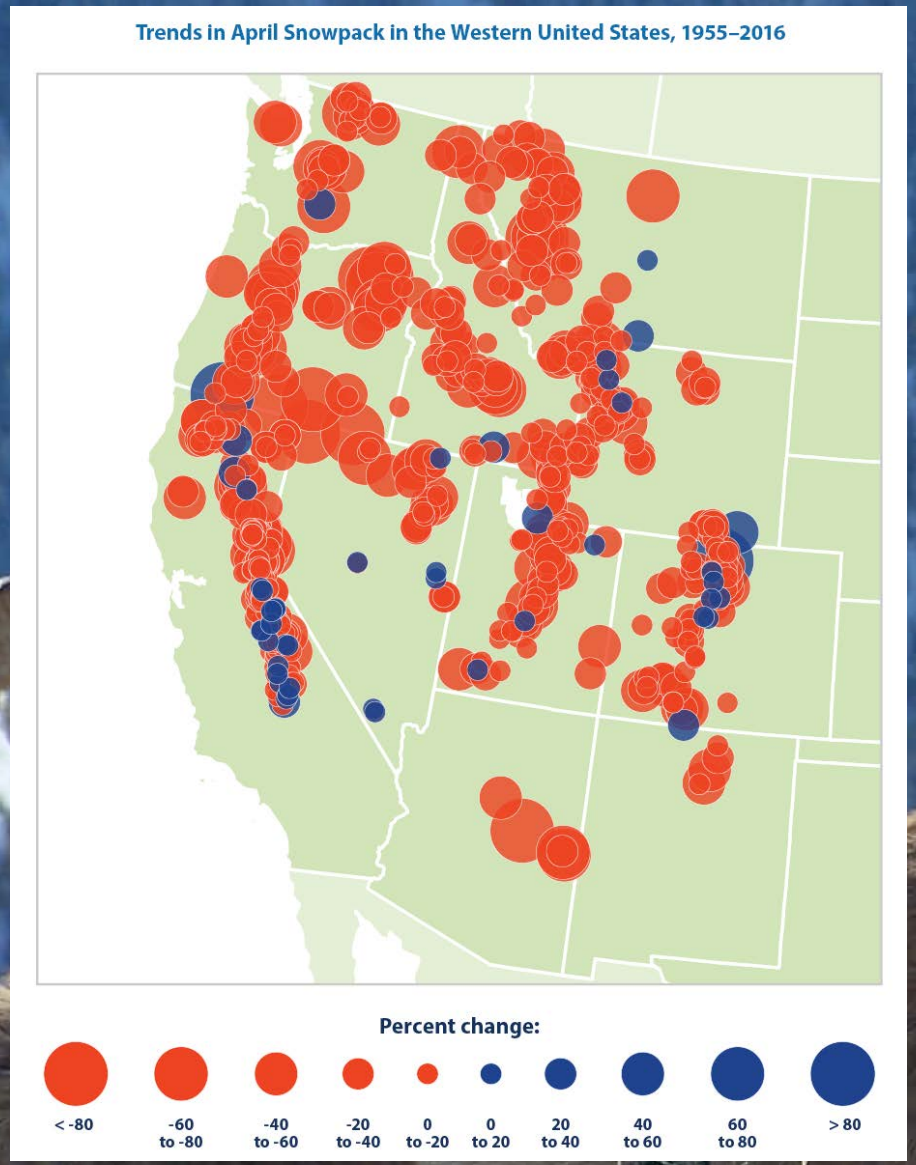
Coastal ocean conditions become disruptive to marine ecosystems and local economies



There are opportunities to adapt to a rapidly changing Oregon

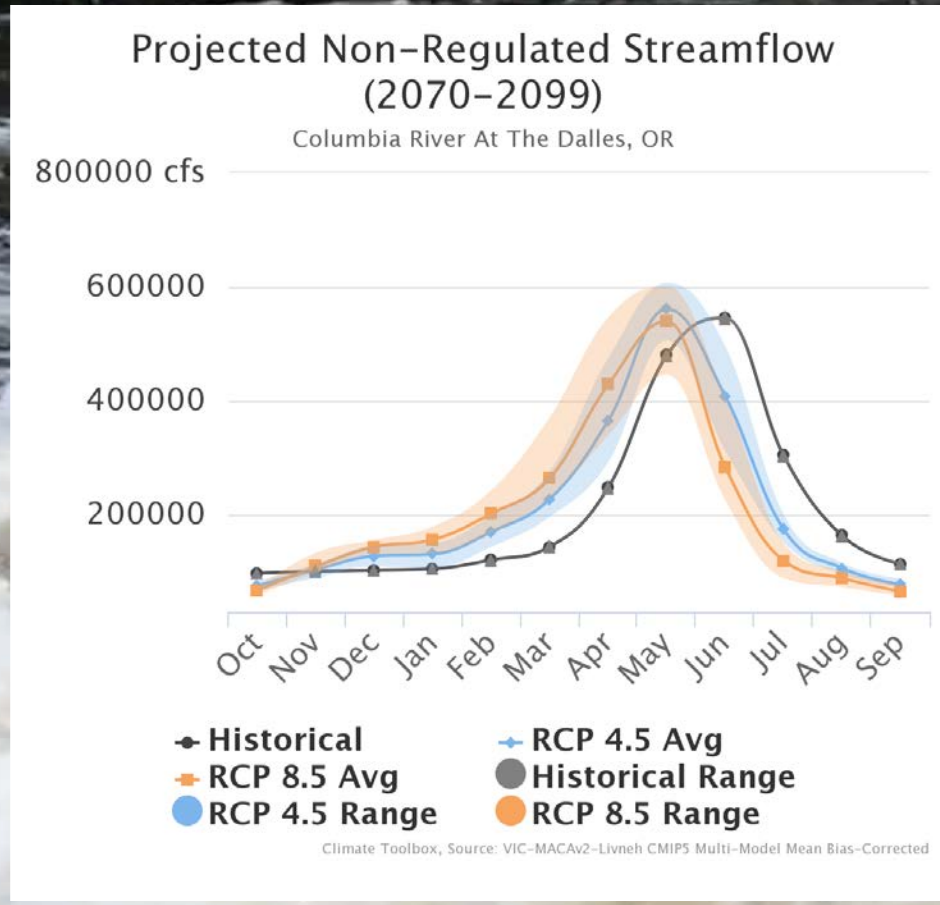
OCCRI

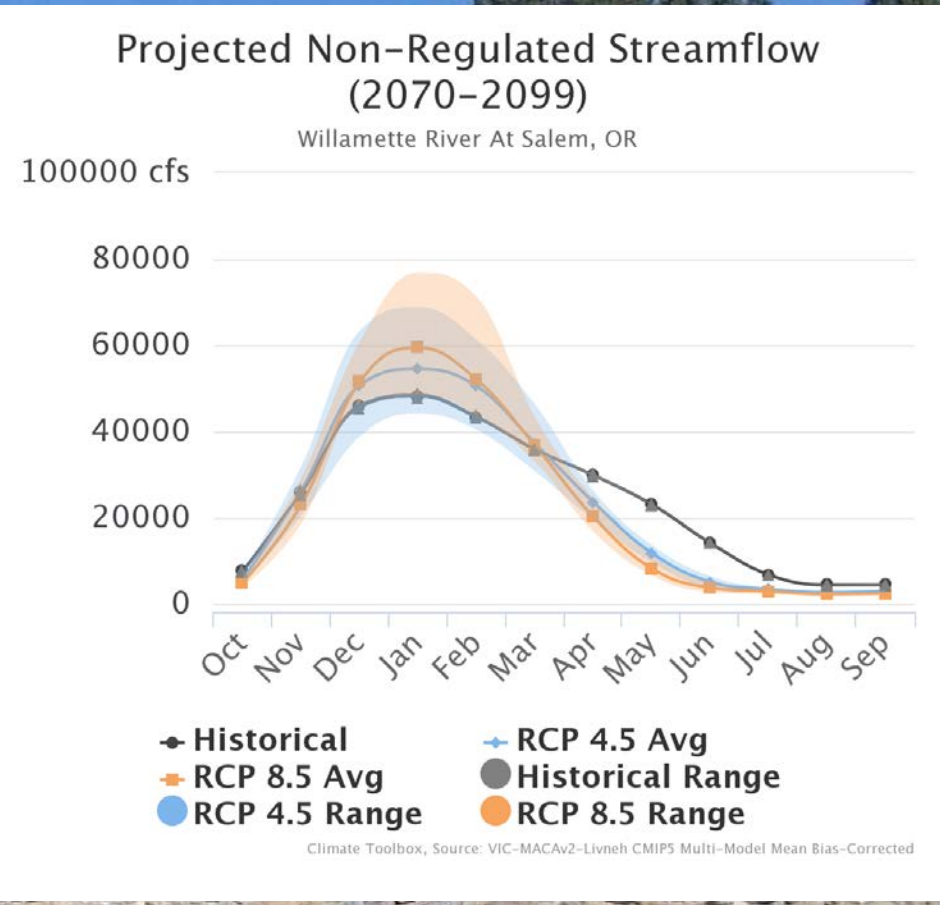
CLIMATE CHANGE | OBSERVED SPRING SNOWPACK DECLINES



Fourth Oregon Climate Assessment Report, 2019

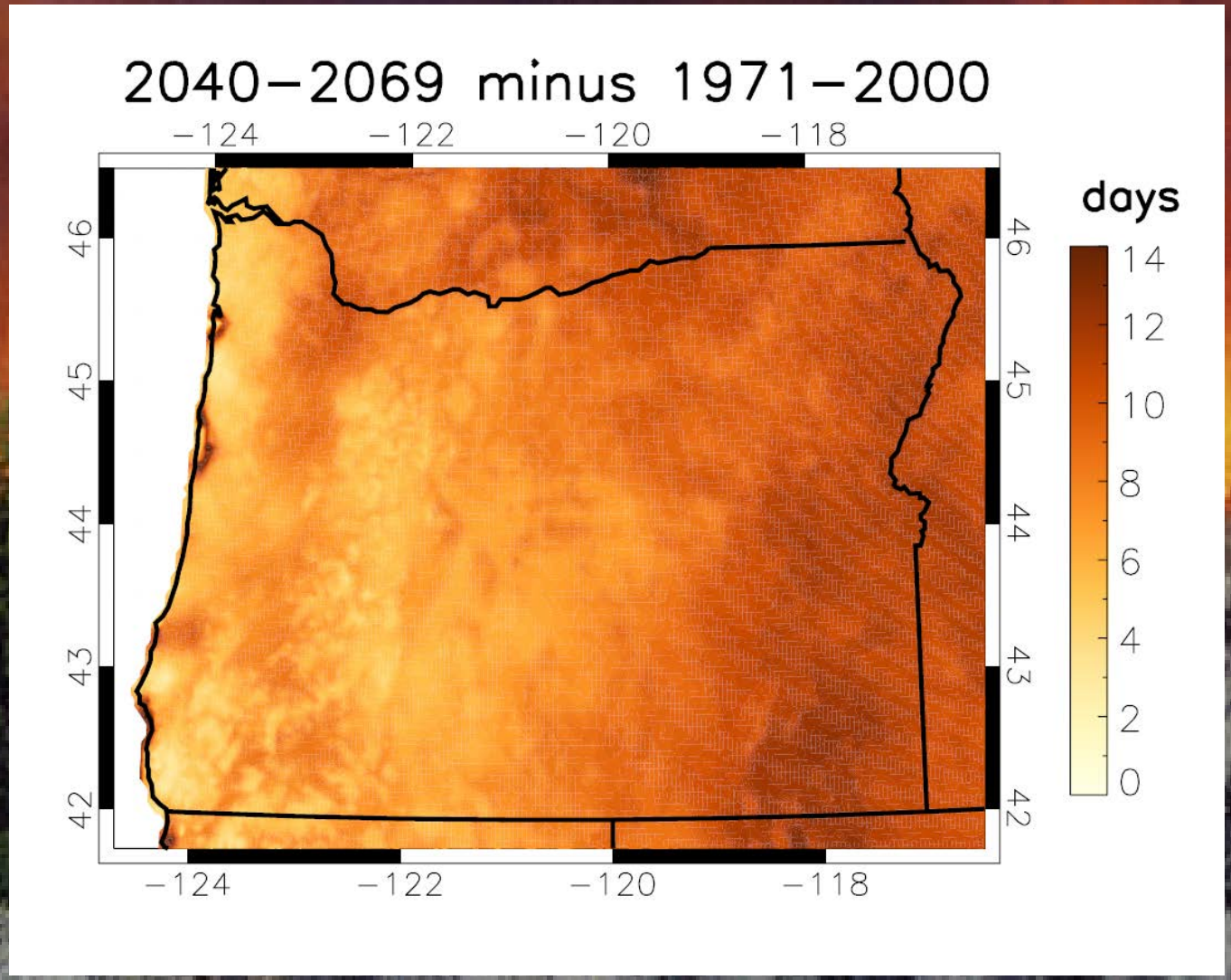
CLIMATE CHANGE | SHIFTING STREAMFLOW TIMING



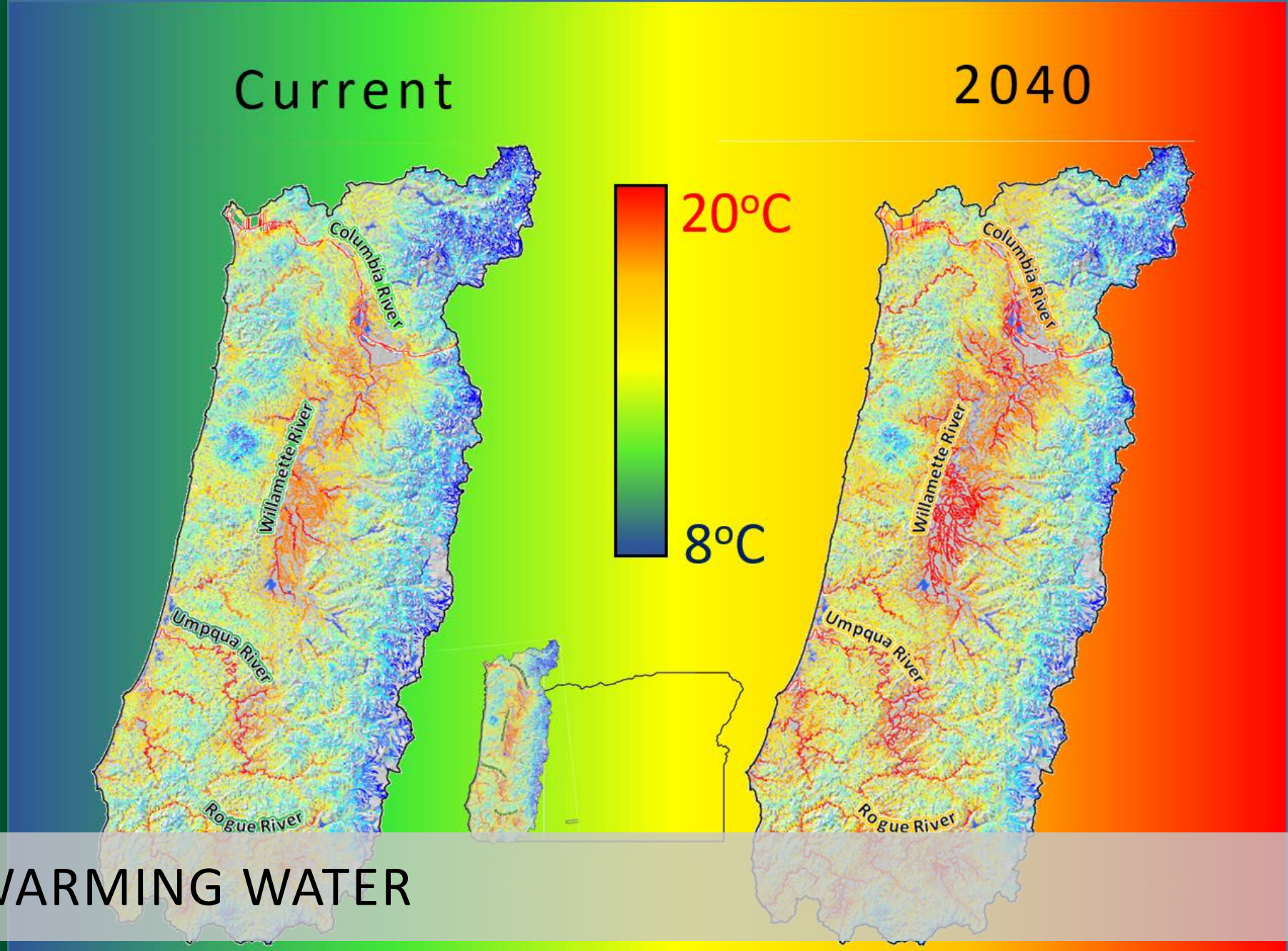


Fourth Oregon Climate Assessment Report, 2019

CLIMATE CHANGE | INCREASING FIRE RISK



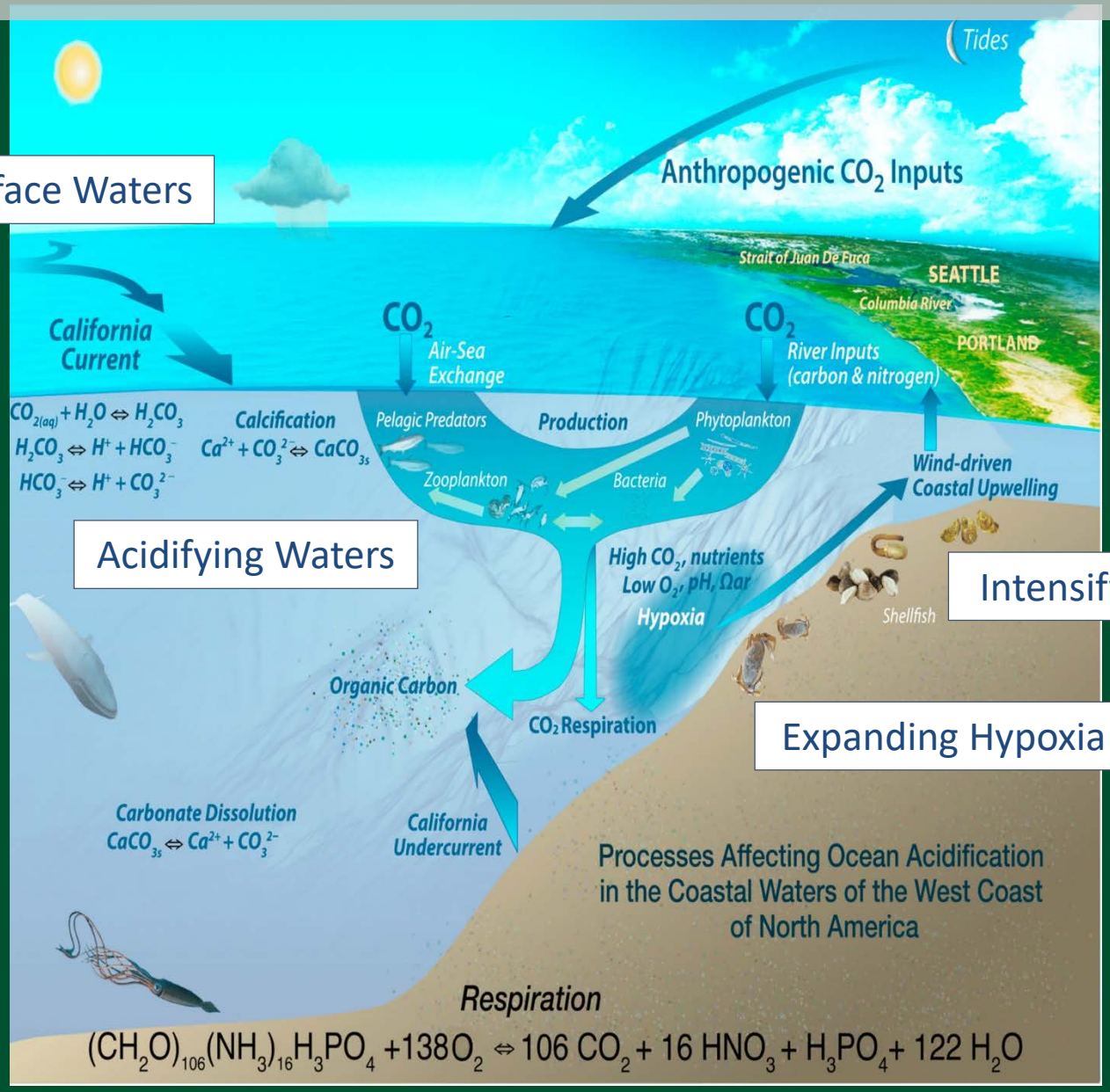
Fourth Oregon Climate Assessment Report, 2019



CLIMATE CHANGE | WARMING WATER

CHANGING OCEAN CONDITIONS

Warming Surface Waters



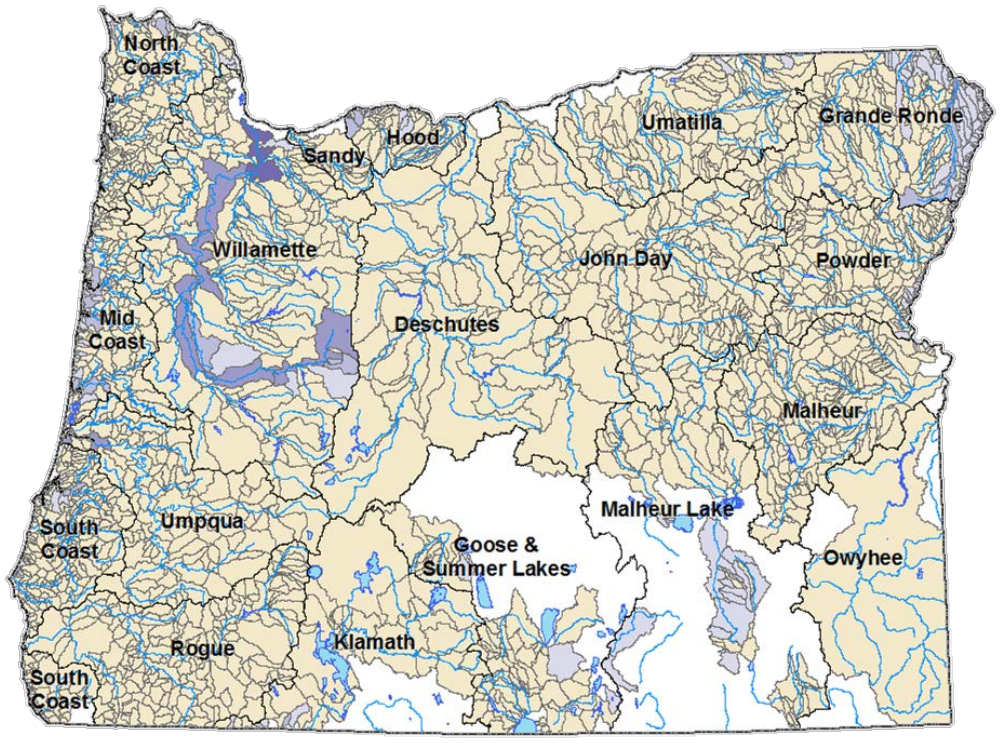
Feely et al., 2018

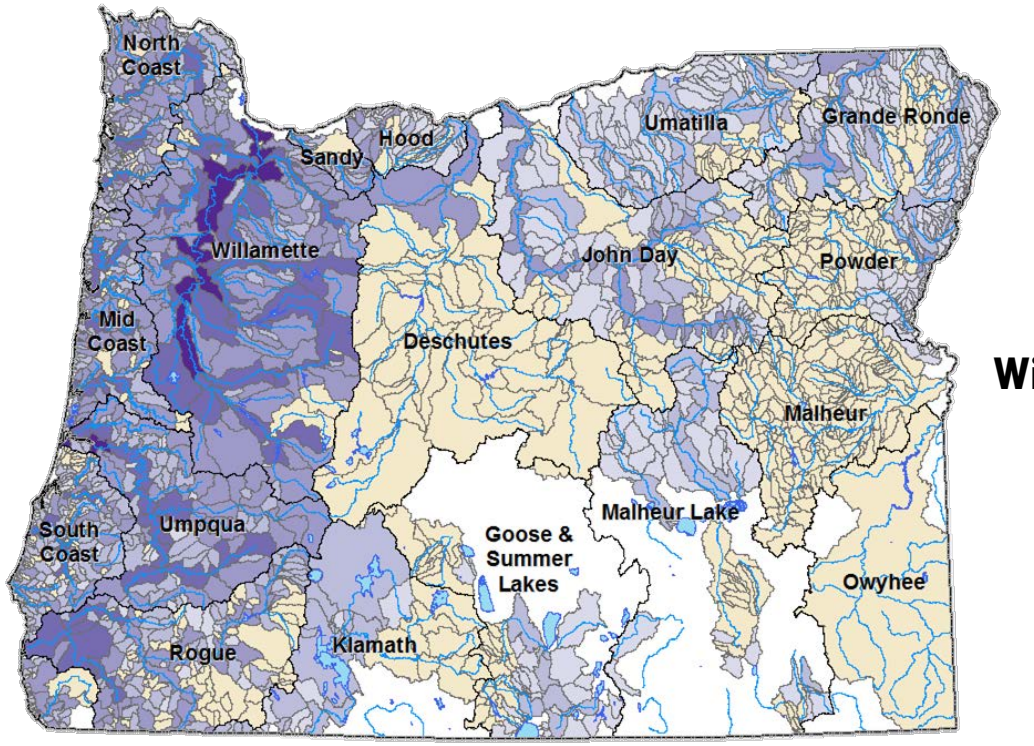
WATER AND HABITAT FOR FISH AND WILDLIFE

WATER LAW LEGACY

No water **More water**

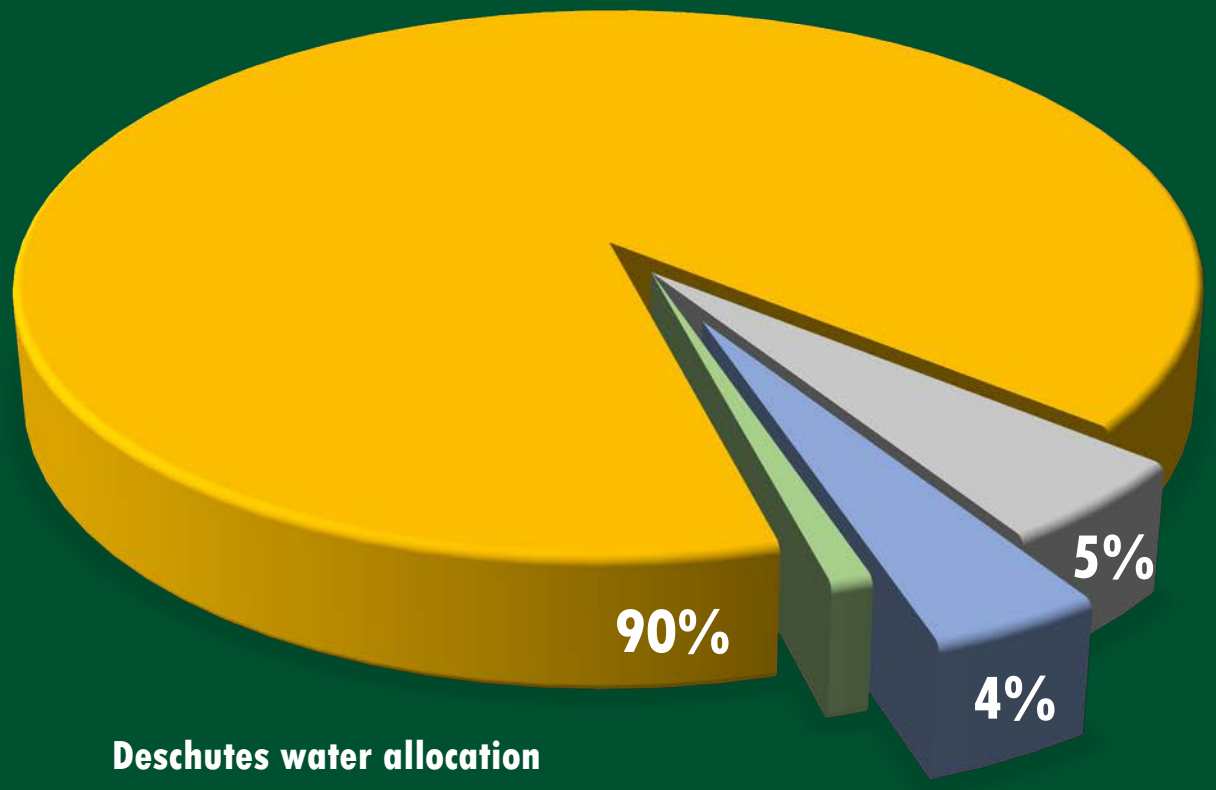
Summer





Winter

WHERE THE WATER FLOWS



Deschutes water allocation

- Agriculture
- Municipalities and Industry
- Instream
- Resorts

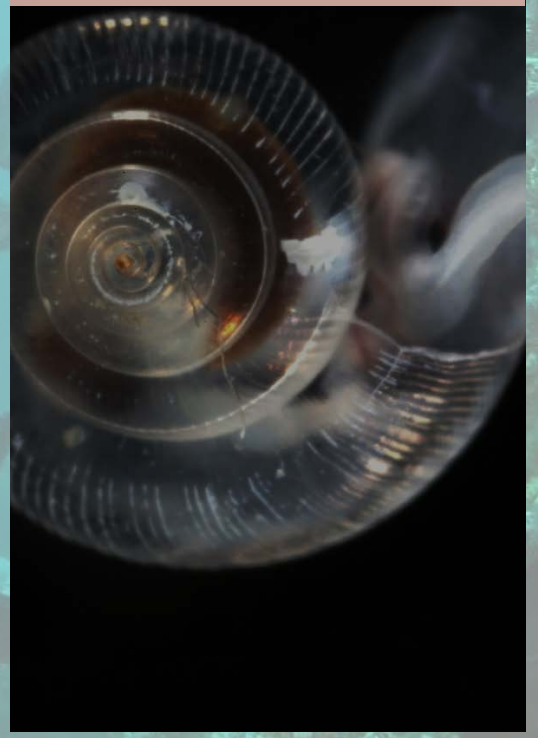
CLIMATE CHANGE | IT'S RE-SETTING THE TABLE

CLIMATE CHANGE | IT'S RE-SETTING THE TABLE

SEA LEVEL RISE

OCEAN CIRCULATION

OCEAN ACIDIFICATION



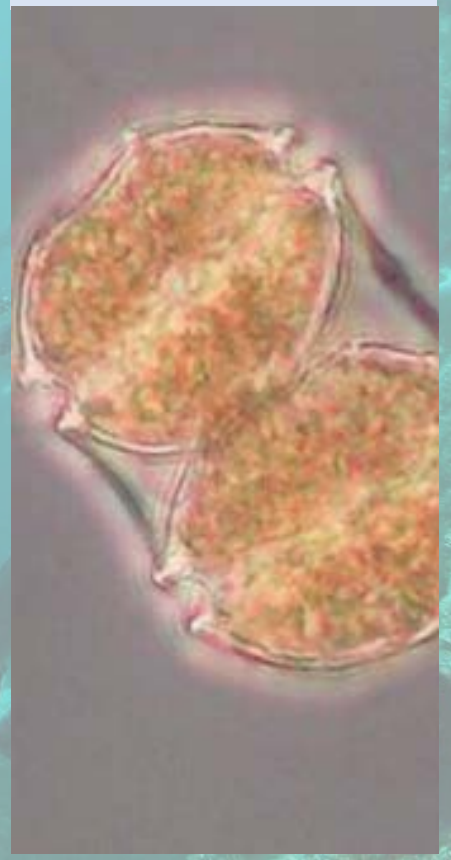
CLIMATE CHANGE | THE MARINE IMPACTS

RANGE SHIFTS

SHELL FORMATION

FOOD WEBS

HABs

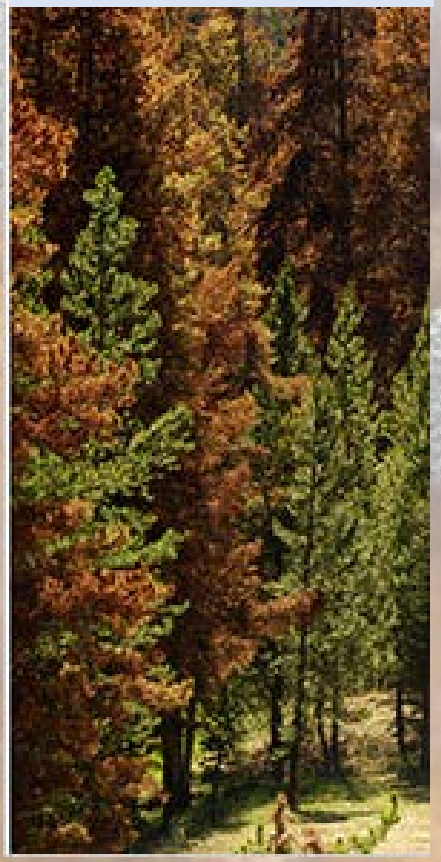


ACUTE MORTALITY

CLIMATE CHANGE | THE TERRESTRIAL IMPACTS

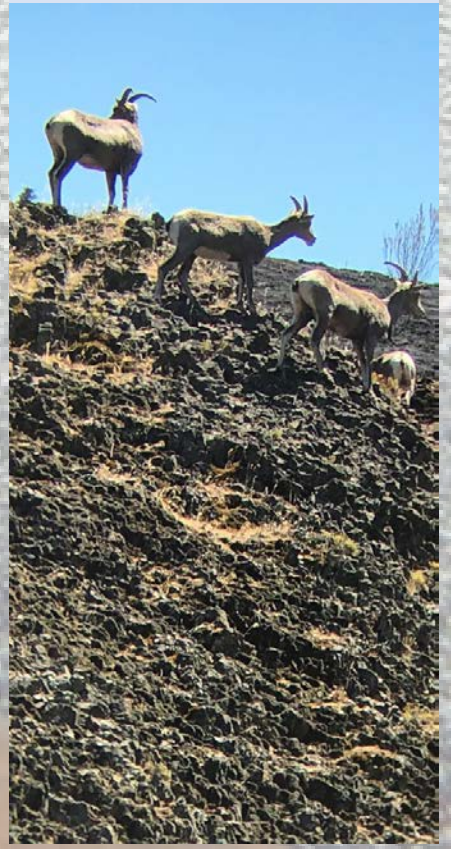
INFRASTRUCTURE

INVADERS

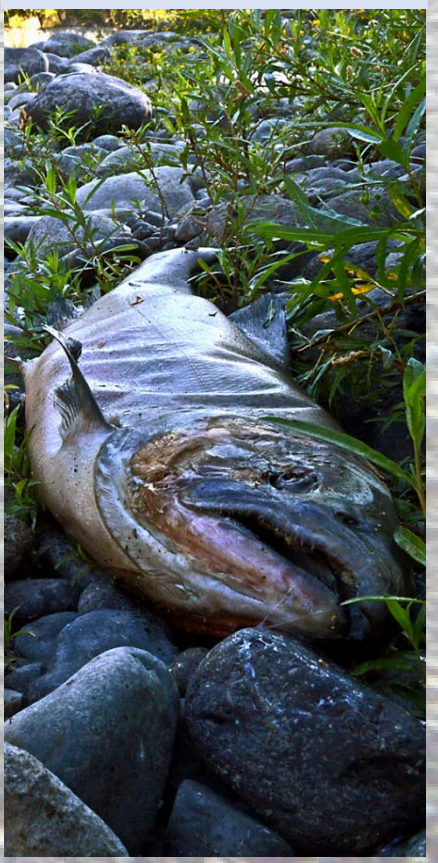


RANGE SHIFTS

HABITAT LOSS AND FRAGMENTATION



ACUTE MORTALITY



SHARED VALUES

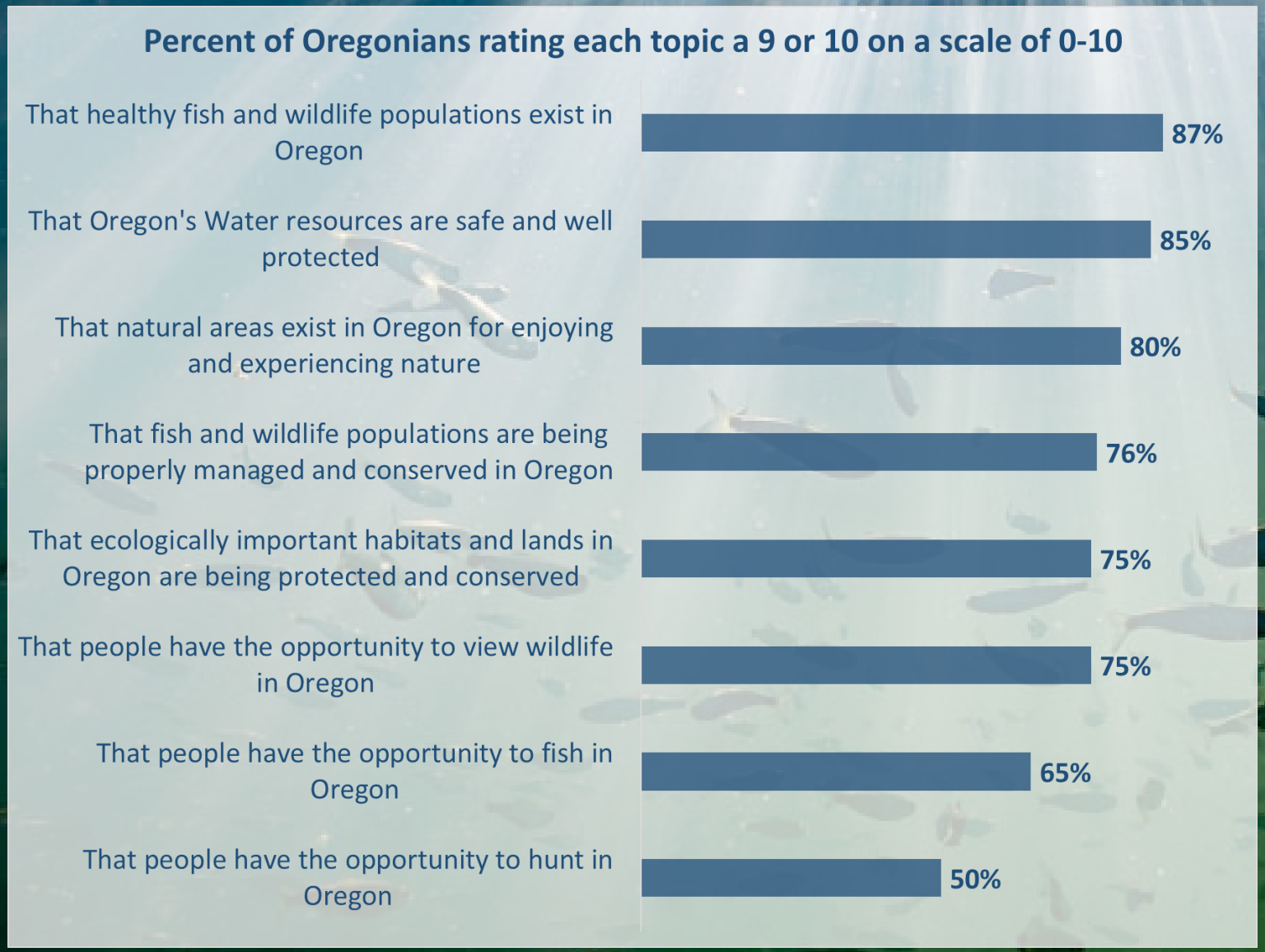


Photo: Laura Tesler

HEALTHY HABITAT HEALTHY ECONOMY

People that

2.8 M

Hunt, fish, recreate

Dollars

2.7 B

spent

Related

>11,000

Jobs

HEALTHY HABITAT HEALTHY FISH AND WILDLIFE

ESA fish listings

25

cite water issues

Federal ESA listings

30+

cite habitat issues

OREGON
Fish & Wildlife

Species of Greatest

294

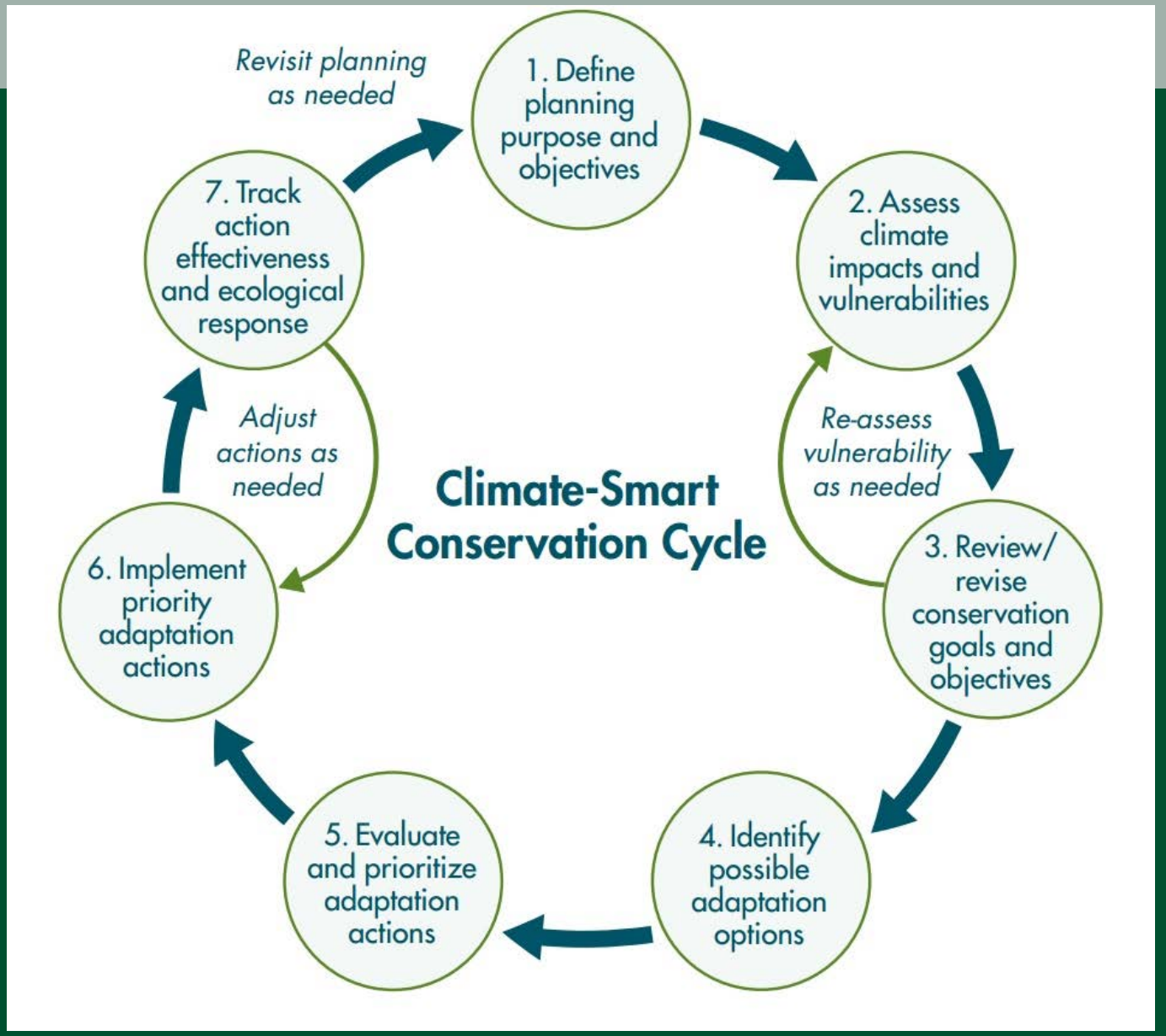
Conservation Need


Oregon
LEADERSHIP IN NATURAL RESOURCE MANAGEMENT FOR A CHANGING CLIMATE


Oregon’s Fish and Wildlife Policy
Oregon’s Conservation Strategy
Oregon’s Integrated Water Resource Strategy
Governor's Water Vision
ODFW’s Strategic Plan

ADAPTATION

Adaptation is defined as adjustments in human and natural systems, in response to actual or expected **climate** stimuli or their effects, that moderate harm or exploit beneficial opportunities*



*Intergovernmental Panel on Climate Change

the OREGON CONSERVATION STRATEGY

KEY CONSERVATION ISSUES

Climate Change

Land Use Changes

Invasive Species

Disruption of Disturbance Regimes

Barriers to Animal Movement

Water Quality and Quantity

Challenges and Opportunities for Private Landowners to Initiate Conservation Actions

OREGON HABITAT CONNECTIVITY CONSORTIUM

100 YEAR WATER VISION

Vision

Preparing a secure, Safe and Resilient water future for all Oregonians

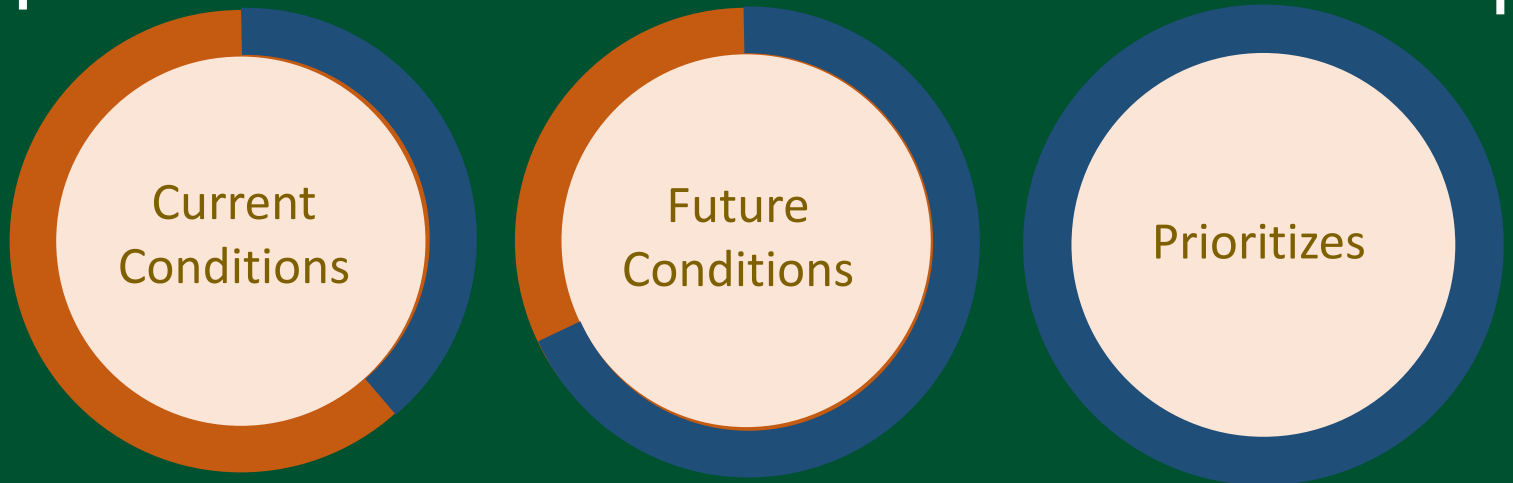
Goals

1. Health
2. Economy
3. Safety
4. Environment - Ensure native fish and wildlife have access to the cool, clean water they need to thrive

100 YEAR WATER VISION

Where are species greatest needs now and into the future?

ODFW is answering this question

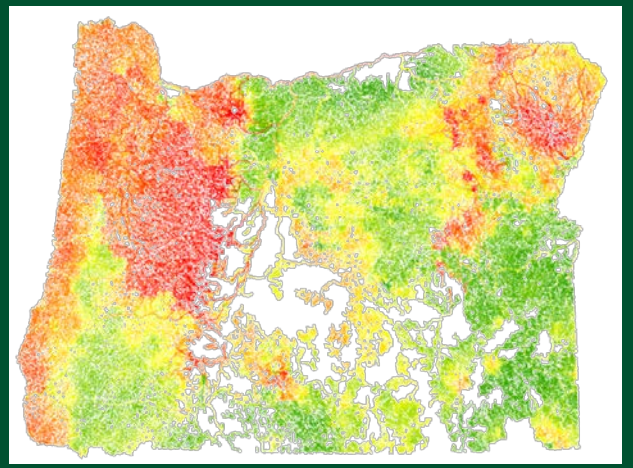


Water & other habitats
Species distribution

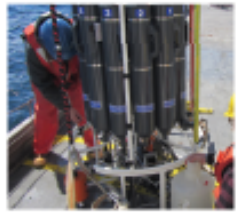
Climate change impacts

Spatial optimization
Cost-benefit
Stakeholders

Outcome: Map of priority areas to work/invest for greatest species benefit



OREGON COORDINATING COUNCIL ON OCEAN ACIDIFICATION AND HYPOXIA



THEME 1

Strengthen OAH science, monitoring, and research

THEME 2

Reduce causes of OAH

THEME 3

Promote OAH adaptation and resilience

THEME 4

Raise awareness of OAH science, impacts and solutions

THEME 5

Commit resources to OAH actions


©Jason Ching

TAKING ACTION

RESILIENT FORESTS

- Reduce fire fuel loads
- Plant resilient seed lines
- Develop market approaches to balance harvest and ecosystem services

RESILIENT COAST

- Restore eelgrass
- Replace tidegates
- Planting for erosion control

OUTCOMES

- Clean air & water
- Ensure access to the outdoors
- Protected property and infrastructure
- Healthy fish and wildlife
- Healthy economy

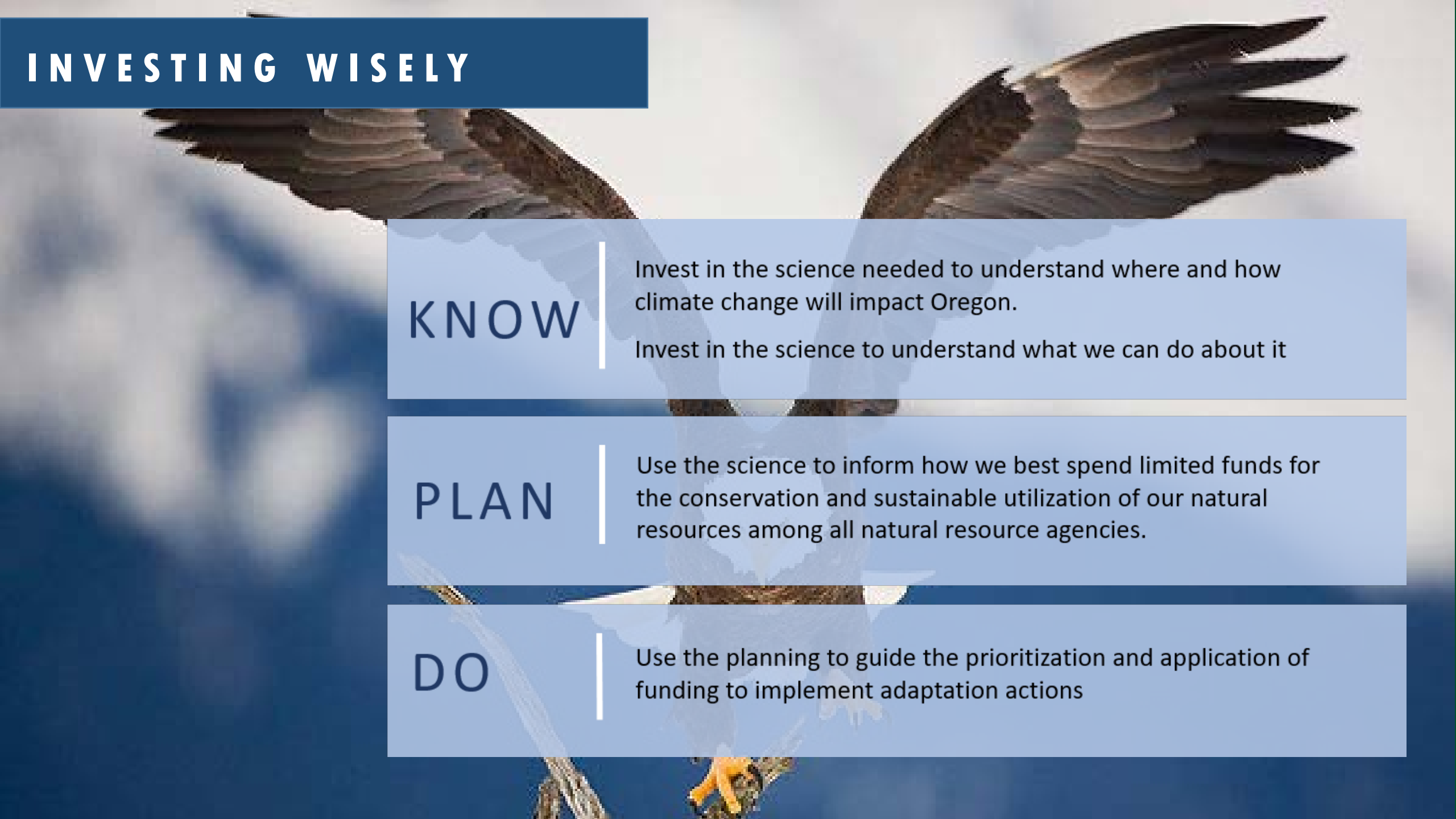
RESILIENT RIVERS

- Upgrade culverts
- Shade our streams (tree planting)
- River restoration to reduce flood damage

RESILIENT LANDSCAPES

- Invest in highway overpasses for wildlife
- Invest in water conservation technology
- Control non-native plants on rangeland

INVESTING WISELY



KNOW	Invest in the science needed to understand where and how climate change will impact Oregon. Invest in the science to understand what we can do about it
PLAN	Use the science to inform how we best spend limited funds for the conservation and sustainable utilization of our natural resources among all natural resource agencies.
DO	Use the planning to guide the prioritization and application of funding to implement adaptation actions

INVESTING WISELY

Random acts of kindness will not be enough. We need a portfolio approach that includes long term stable investment in Natural Resource Agency programs to lay the science foundation and coordinate planning and prioritization; complemented by strategic investment in priority on the ground projects

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