

# Watershed Sentinels

Follow the water.





# Illuminating our connection to the local ecosystem and inspiring action.

## Follow the water.

From ridge-top creeks to swift rivers, to estuaries and bays, and finally out to the open ocean, the flow of water connects habitats that are seemingly independent of one another, and connect humans to wildlife in unexpected ways.

Watershed Sentinels is a visual tapestry illustrating these overlaps. The stories of the indicator species living within our watersheds, many of which are species of conservation concern, aim to engage the public, inspire involvement in local policy initiatives for sustainable industry practices, and empower community members to be environmental stewards.



# A story about us. All of us.

By watching the wildlife living in our watersheds, we can make smarter decisions for our communities, benefiting humans and all of nature.

The marbled murrelet is a robin-sized seabird that spends 90 percent of its life at sea. Yet, its population is highly impacted by logging practices up to 50 miles inland.

The Pacific lamprey, an ancient jawless fish, informs us about the impacts from dams hundreds of miles up river.

The coastal giant salamander, a foot-long species with metallic marbled coloration, keeps tabs on the ebb and flow of silt in streams running through conifer forests.

The river otter is an apex predator that needs an abundance of diverse prey and water free from pollutants to thrive.

Each of these species is an “indicator species” whose life illuminates the workings of an ecosystem and informs us what impact we are having on the environment.

As miners used canaries to signal something amiss in a mine, we can look to indicator species for assessing the ecological health and conditions of an area.

Through documentary portraits of species dependent on connected, healthy and functioning watersheds of the central coast of Oregon, Watershed Sentinels brings to light the intricate web that connects these species to us, connects us to our local ecosystem, and connects us to one another.

# The Canaries

An indicator species is an organism that provides us with a measure of the environmental conditions of an area.

For example, apex predators indicate abundant prey populations, which is often a sign of good health in an ecosystem. Frogs succumb easily to pollutants in water, and so are an indicator species for water quality. The presence of cobra lilies (*Darlingtonia California*) indicates serpentine, an uncommon soil type.

Indicator species can inform us of one or several aspects of an ecosystem's health, whether it is air, water or soil quality, habitat fragmentation, biodiversity, or any number of other characteristics.

If a species is particularly abundant or has declined, the health of individuals of that species, or how that species is changing in an area over time all are ways that it can indicate to us what is going on in an ecosystem.



# Clues to Problems

# Keys to Solutions

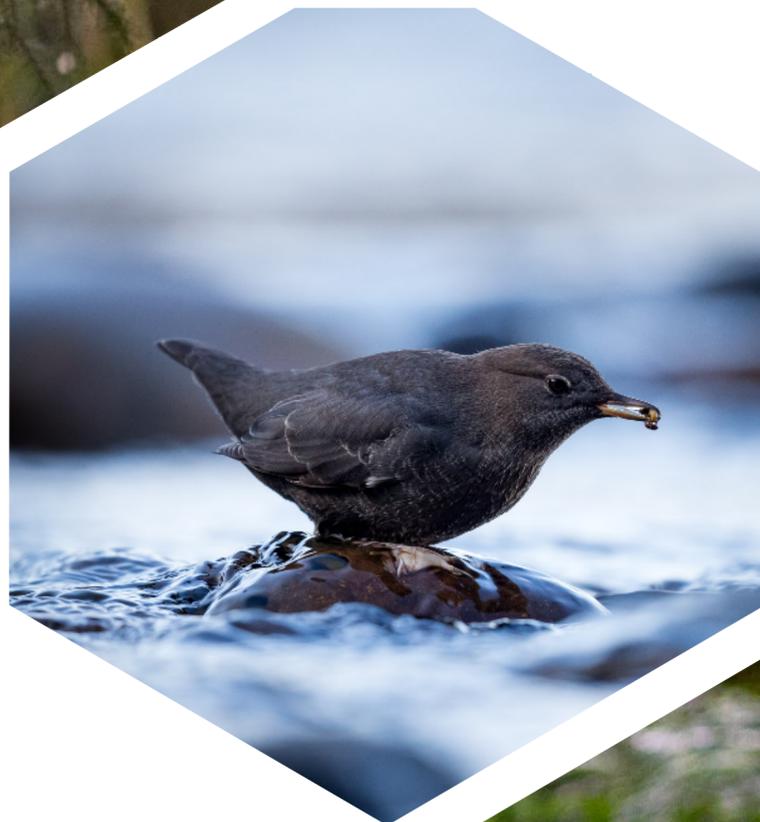


Oregon Coast's watersheds face many conservation challenges, including (but not limited to):

- pollution entering our waterways
- development of sensitive habitats for human use
- aggressive forestry practices that speed soil erosion and the siltation of rivers and estuaries
- large-scale use of pesticides and herbicides
- influx of invasive species
- ongoing loss of biodiversity
- fluctuations in rainfall and other impacts from global climate change

Each of these issues require objective scientific research, collaboration and creative thinking for smarter, more ecologically-sound solutions that balance economic health with ecological health.

Local indicator species help to reveal the extent to which we are impacting our ecosystem, and can guide us upstream to the cause of the problem and the beginning of a conversation.



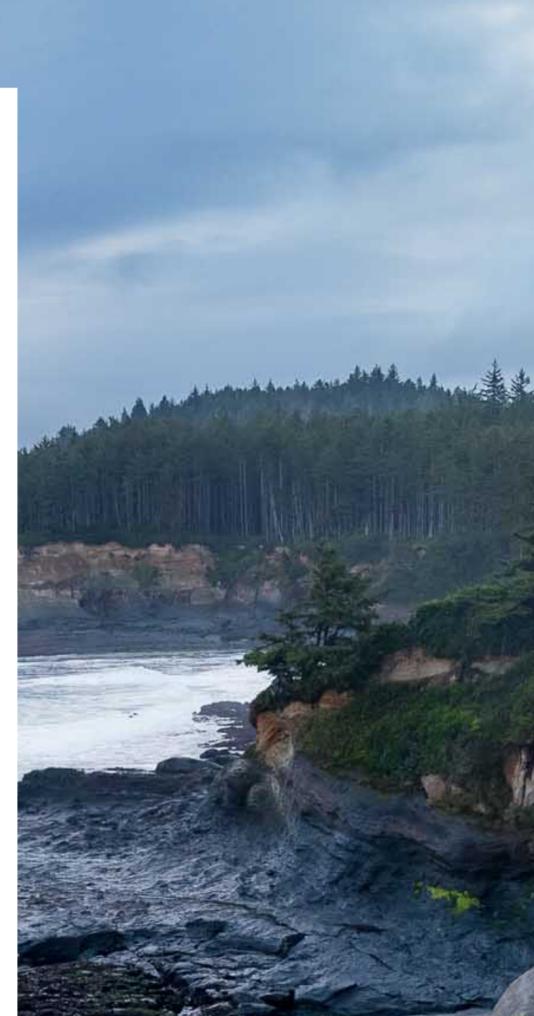
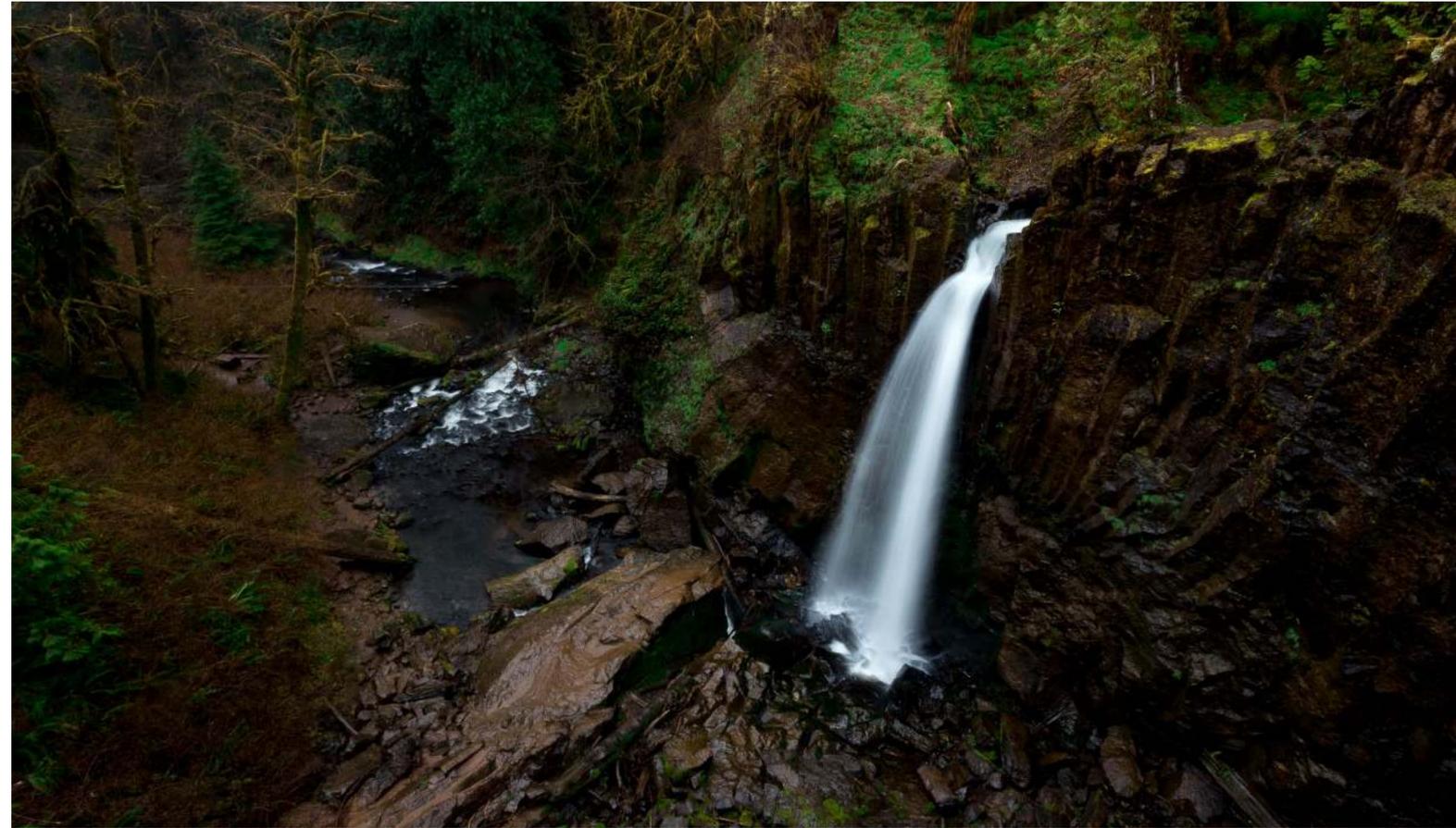
Not only do these watershed sentinels provide us with insights, they also stimulate action.

Charismatic flora and fauna are vehicles for sparking curiosity and motivating citizens to understand where their water comes from, what activities impact their watersheds, and the larger story of an ecosystem.

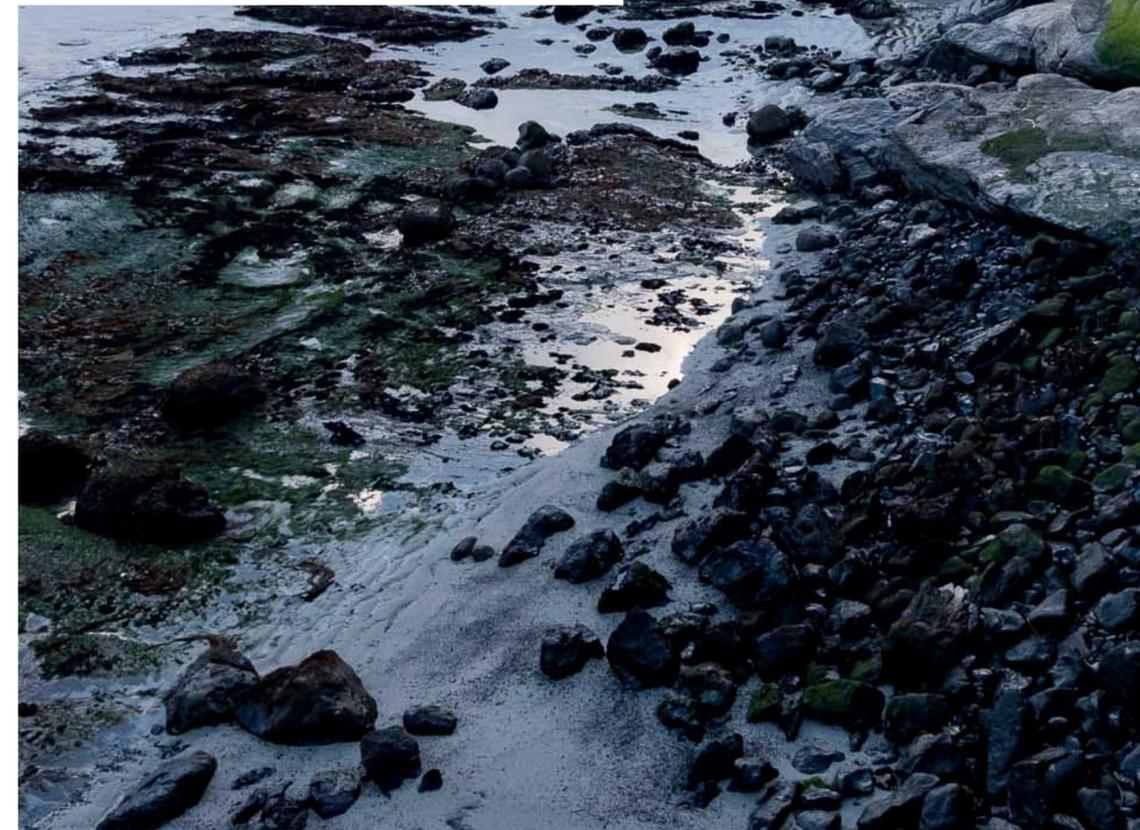
Using a visual experience of wildlife and their world, Watershed Sentinels seeks to bring more participants to the table and form solutions-based strategies that consider the needs of all community members - land owners, business owners, outdoor enthusiasts, families and many others.

Through science-based investigation and education, industry and living practices that affect our watersheds become larger, far more involved conversations that move away from an Us-Them mentality and instead take everyone into account - human and non-human alike.

# Oregon, Central Coast



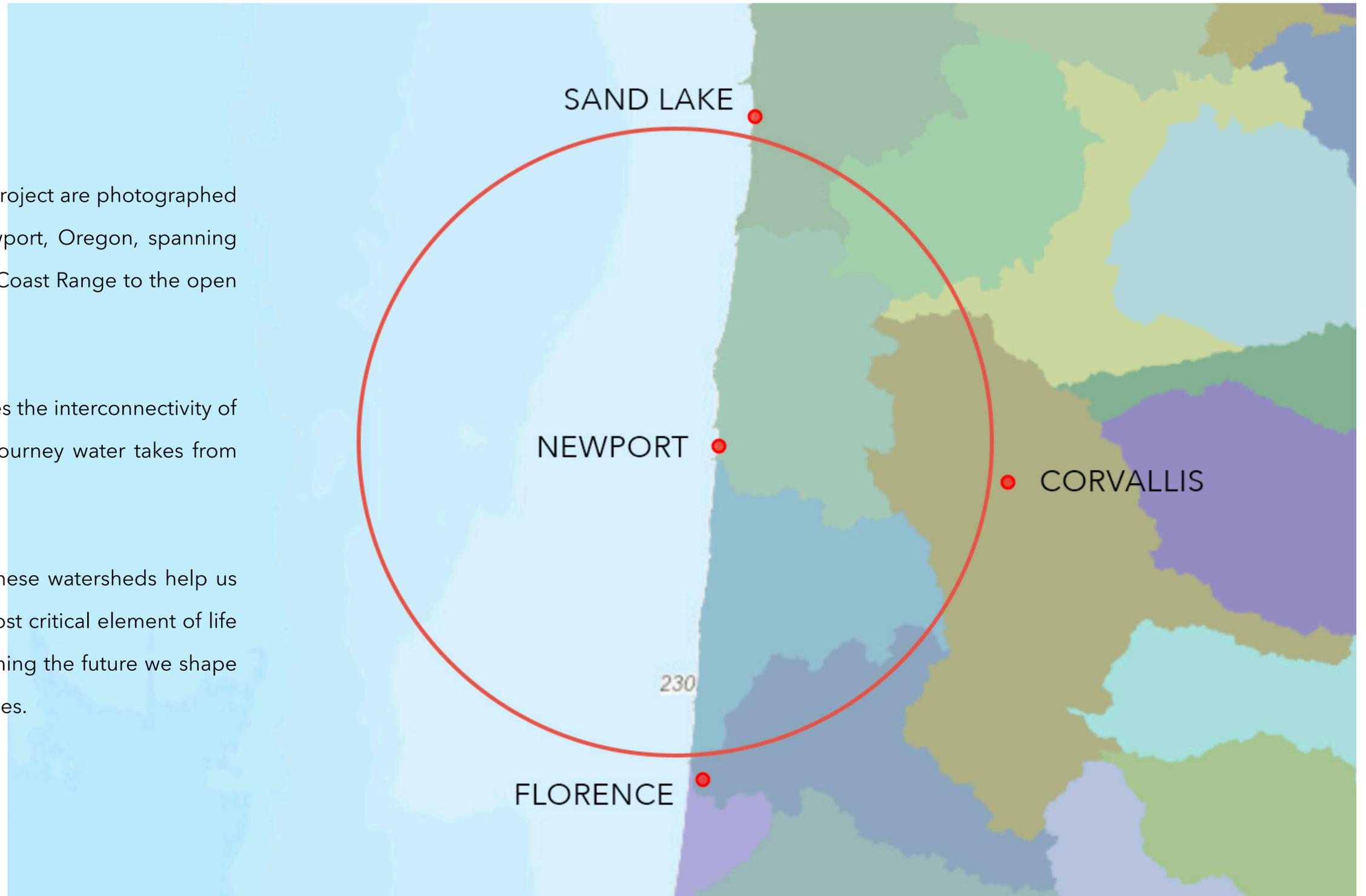
The Oregon Coast is a hub for science, industry, tourism, and tight-knit communities. It is the home of industrial logging, fishing and farming companies, a base for research including Hatfield Marine Science Center and NOAA Marine Operations Center-Pacific, and the nucleus of conservation organizations large and small. It is wildlife- and resource-rich, and an ideal location to closely study the tenuous balance of watershed issues and the species that live in the crosshairs of human activities.



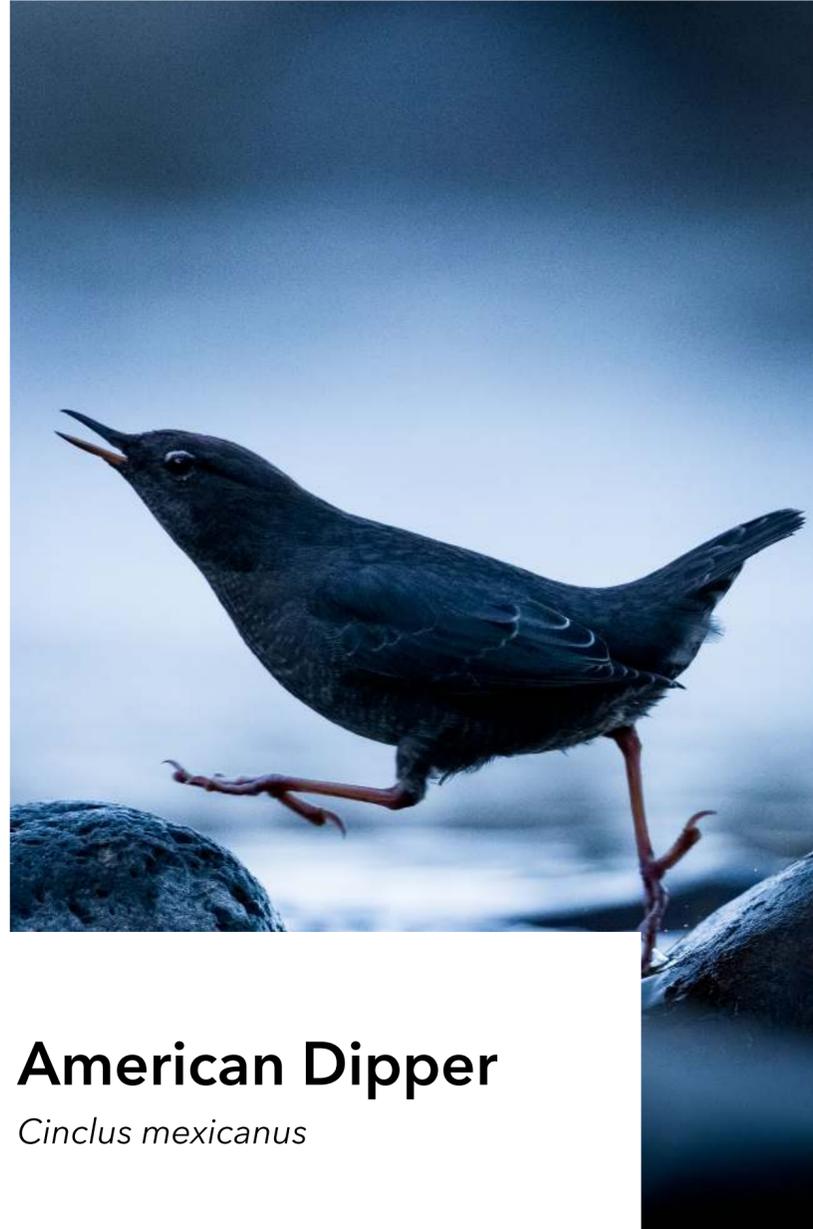
All the species featured in this project are photographed within a 50-mile radius of Newport, Oregon, spanning habitats from the forests of the Coast Range to the open ocean.

This habitat diversity underscores the interconnectivity of our watersheds, and the long journey water takes from mountaintop to ocean.

Indicator species living within these watersheds help us monitor the heartbeat of this most critical element of life and in turn, assist us in determining the future we shape for ourselves and our communities.



# The Characters

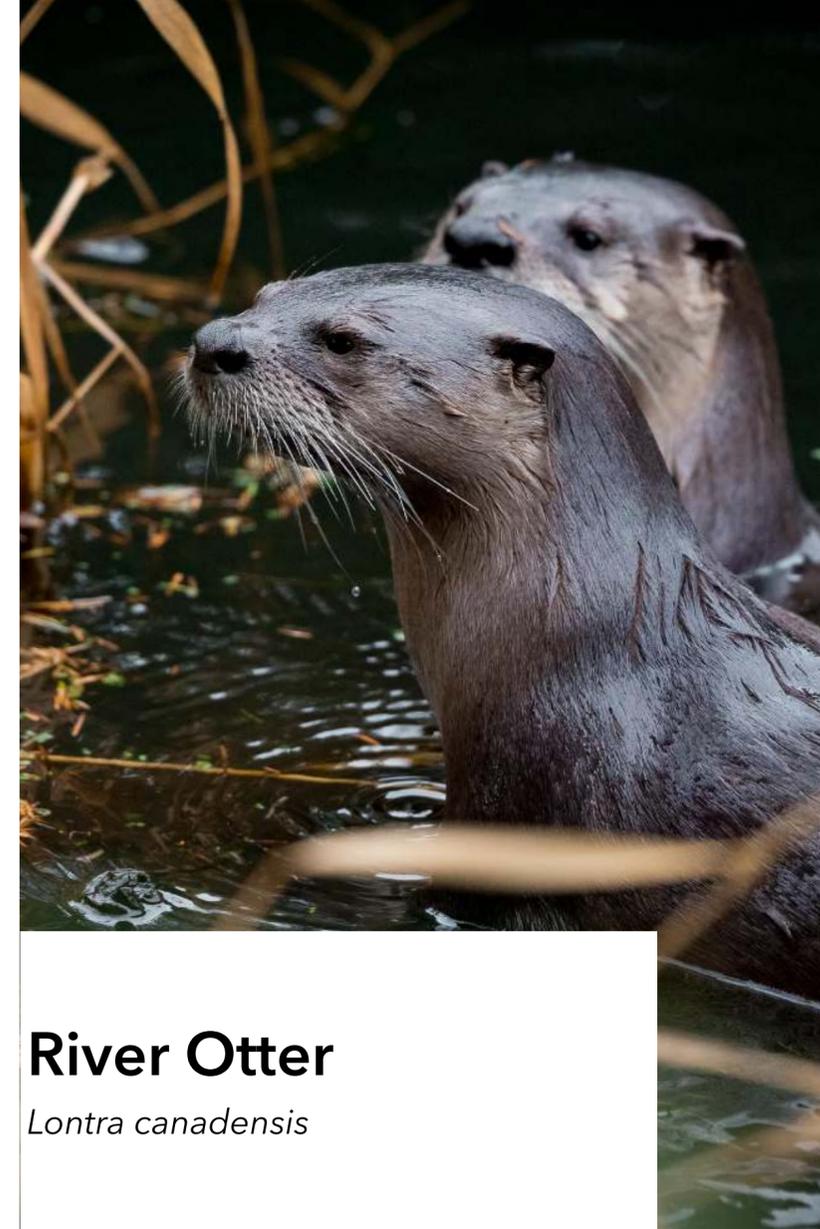


**American Dipper**

*Cinclus mexicanus*

Limiting Factors:

- Stream habitat quality
- Water quality

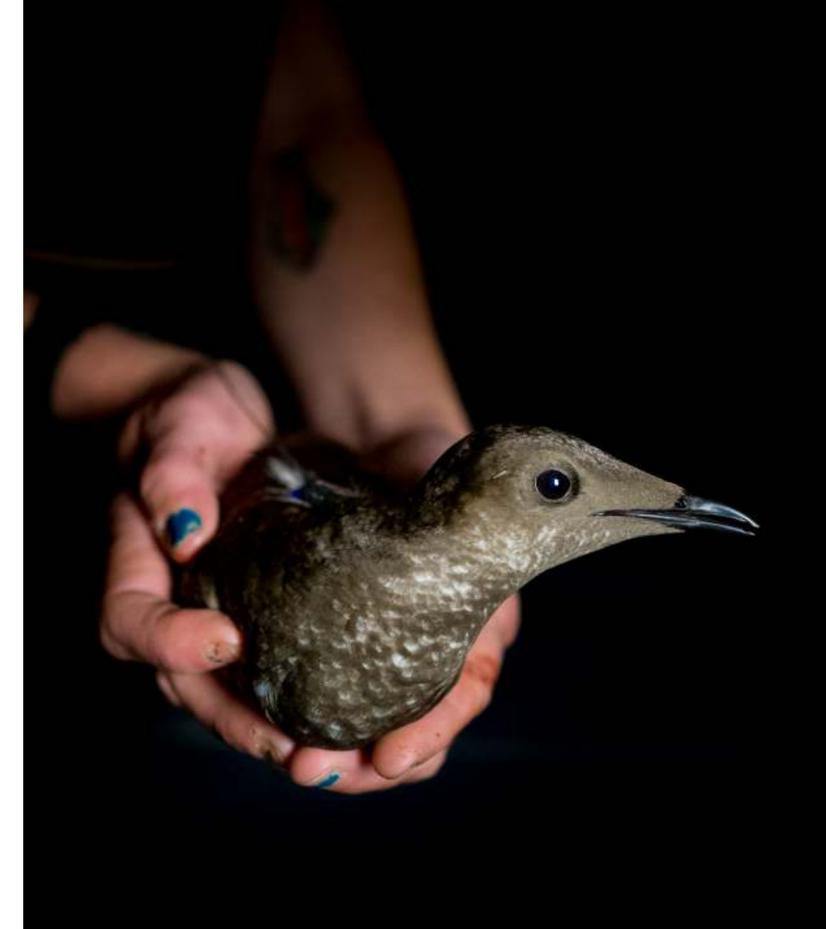


**River Otter**

*Lontra canadensis*

Limiting Factors:

- Prey abundance
- Water quality



**Marbled Murrelet**

*Brachyramphus marmoratus*

Limiting Factors:

- Nearshore fisheries
- Forest habitat

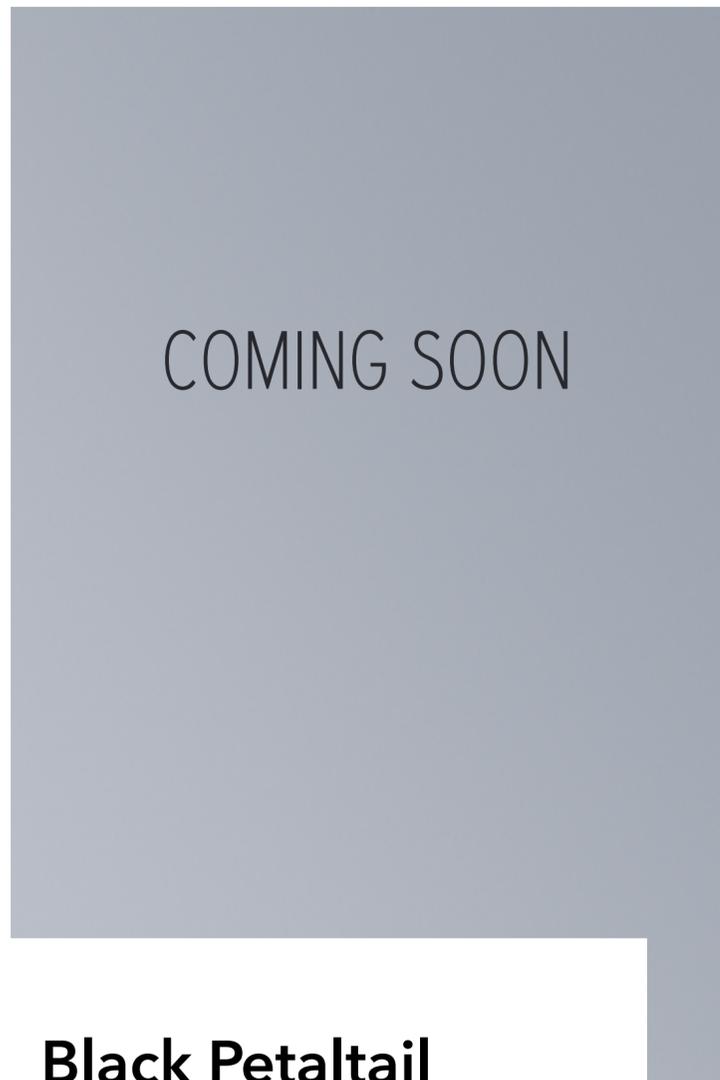


## Cobra Lily

*Darlingtonia californica*

### Limiting Factors:

- Availability of nutrients
- Suitable habitat



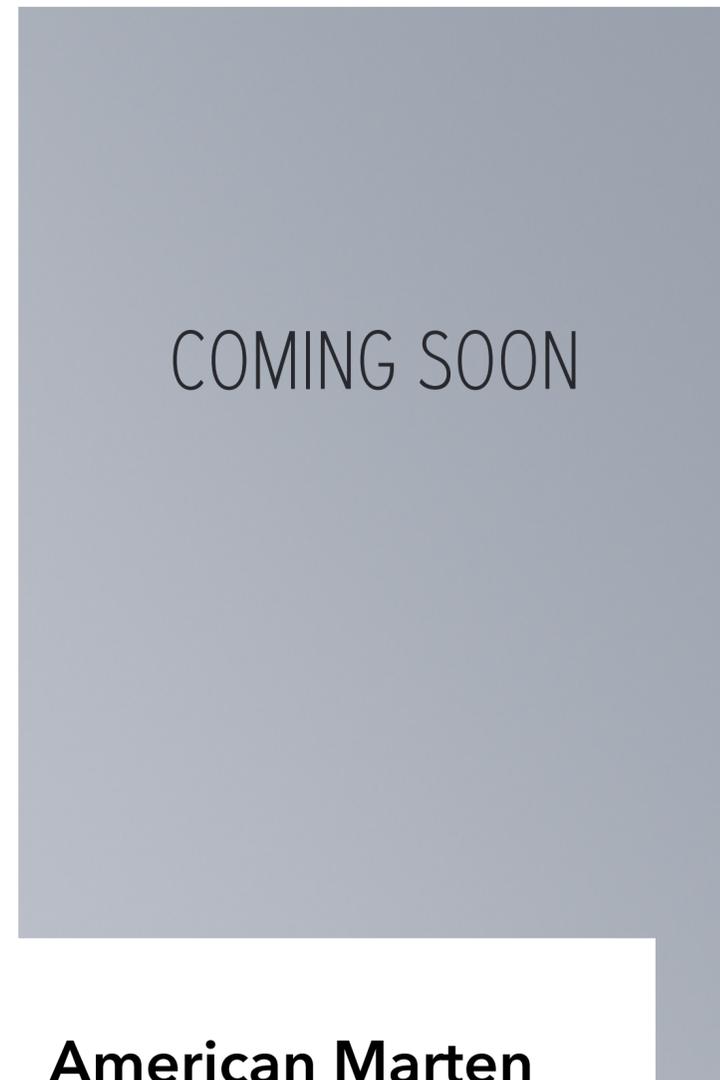
COMING SOON

## Black Petaltail

*Tanypteryx hageni*

### Limiting Factors:

- Specialized habitat needs
- Human disturbance



COMING SOON

## American Marten

*Martes americana*

### Limiting Factors:

- Forest fragmentation
- Density of snags and logs



COMING SOON

## Northern Red-legged Frog

*Rana aurora*

### Limiting Factors:

- Suitable habitat for reproduction
- Habitat development for human use

COMING SOON

## Beaver

*Castor*

### Limiting Factors:

- Conflicts with humans
- Availability of food resources

COMING SOON

## Pacific Lamprey

*Entosphenus tridentatus*

### Limiting Factors:

- Water quality
- Passage barriers and flow patterns

COMING SOON

## Coho Salmon

*Oncorhynchus kisutch*

### Limiting Factors:

- Stream complexity; riparian habitat quality
- Alteration of hydrology and passage

COMING SOON

## Pacific Mole Crab

*Emerita analoga*

### Limiting Factors:

- Habitat loss
- Plastic and oil pollution

COMING SOON

**Cascade Head  
Catchfly**

*Silene douglasii* var. *oraria*

Limiting Factors:

- Habitat loss and fragmentation
- Competition with invasive species

COMING SOON

**Oregon Silverspot  
Butterfly**

*Speyeria zerene hippolyta*

Limiting Factors:

- Habitat loss and modification
- Fire suppression limiting its host plant

COMING SOON

**Western  
Ridged Mussel**

*Gonidea angulata*

Limiting Factors:

- Changes in hydrology and water diversion
- Sedimentation and contamination of water

COMING SOON

**Coast Giant  
Salamander**

*Dicamptodon tenebrosus*

Limiting Factors:

- Suitable forest habitat near streams
- Suitable stream habitat with pools



WILSON-TRASK-NESTUCCA

YAMHILL

MIDDLE WILLAMETTE

UPPER WILLAMETTE

SIUSLAW

# The Places

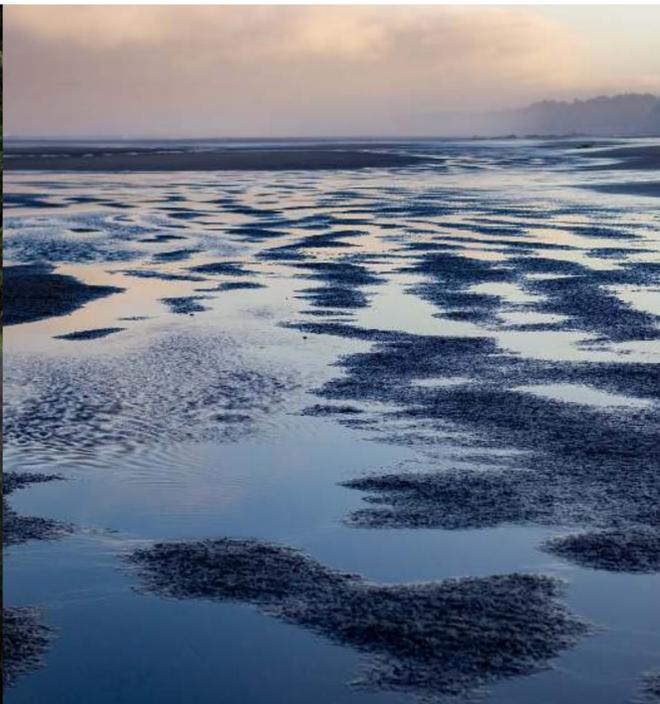
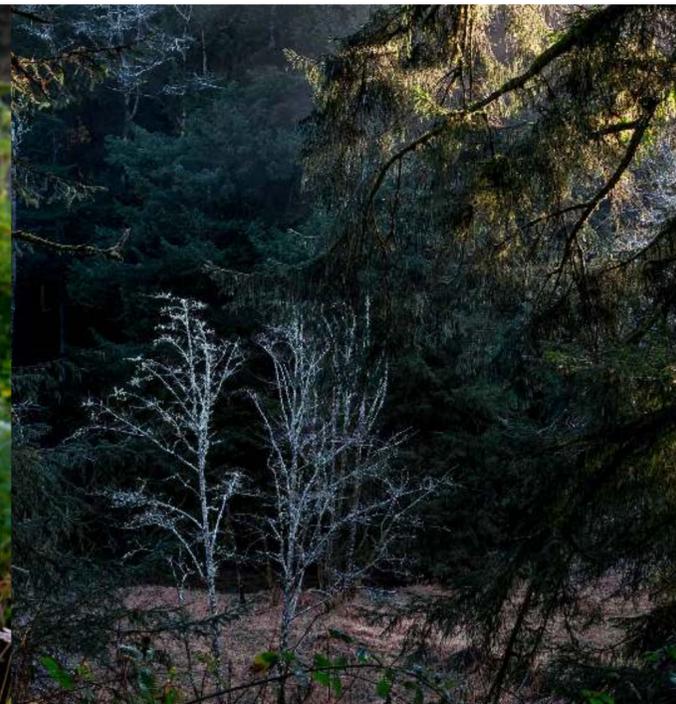
ALSEA

SILTEZ-YAQUINA

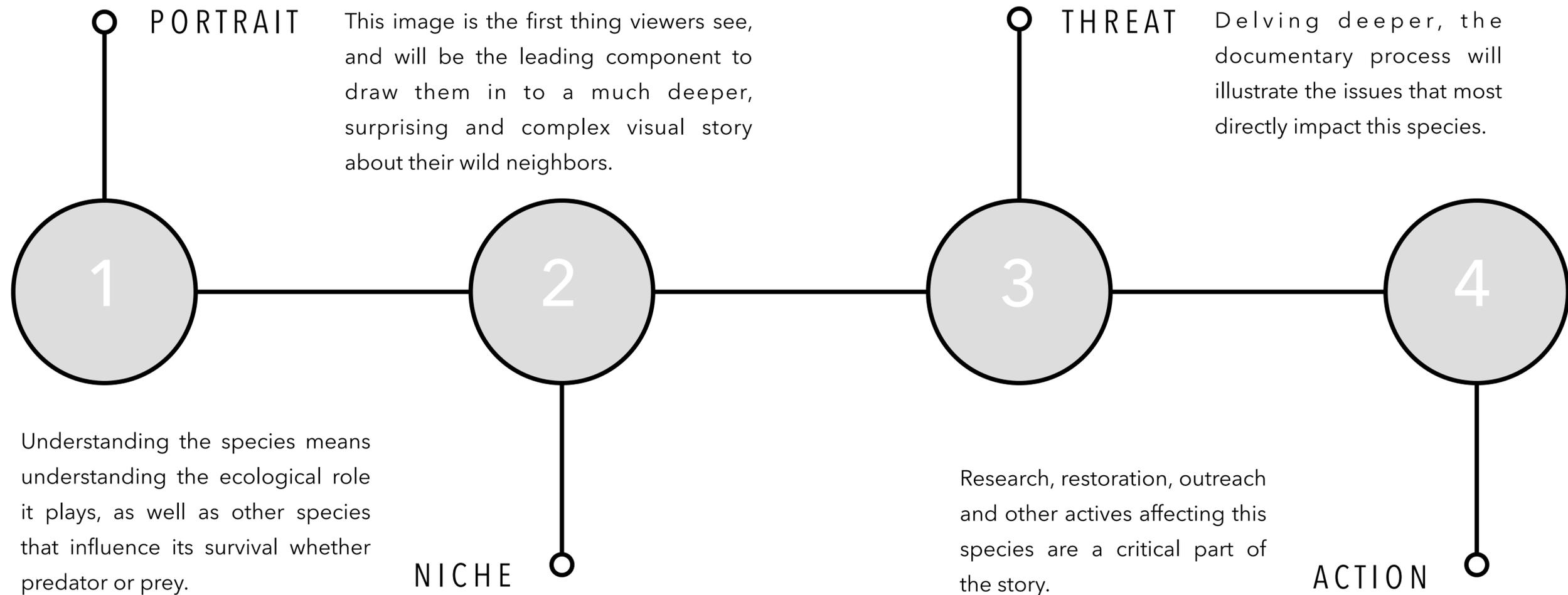
FOREST & RIPARIAN

WETLAND & ESTUARINE

BEACH & OCEAN



## The Images





# Long-Term Deliverables

## STORY MAP WEBSITE

Using the unparalleled story-telling platform of ArcGIS's Esri Story Maps, an interactive website will seamlessly blend maps, text, imagery and video to engage viewers and encourage them to explore the connections between species, places and issues.

## SPECIES PORTFOLIOS

Each Watershed Sentinel will have a thorough image portfolio illustrating its natural history, the issues affecting it and any research or conservation work focused on it. These publication-ready portfolios will assist in getting its story out to a broader audience.

## BOOK

The images and stories gathered over the course of the project will culminate in a beautiful published book that reaches an audience well beyond the geographic range of Watershed Sentinels, and inspire readers to learn about their own local watersheds.

## COLLABORATOR PORTFOLIOS

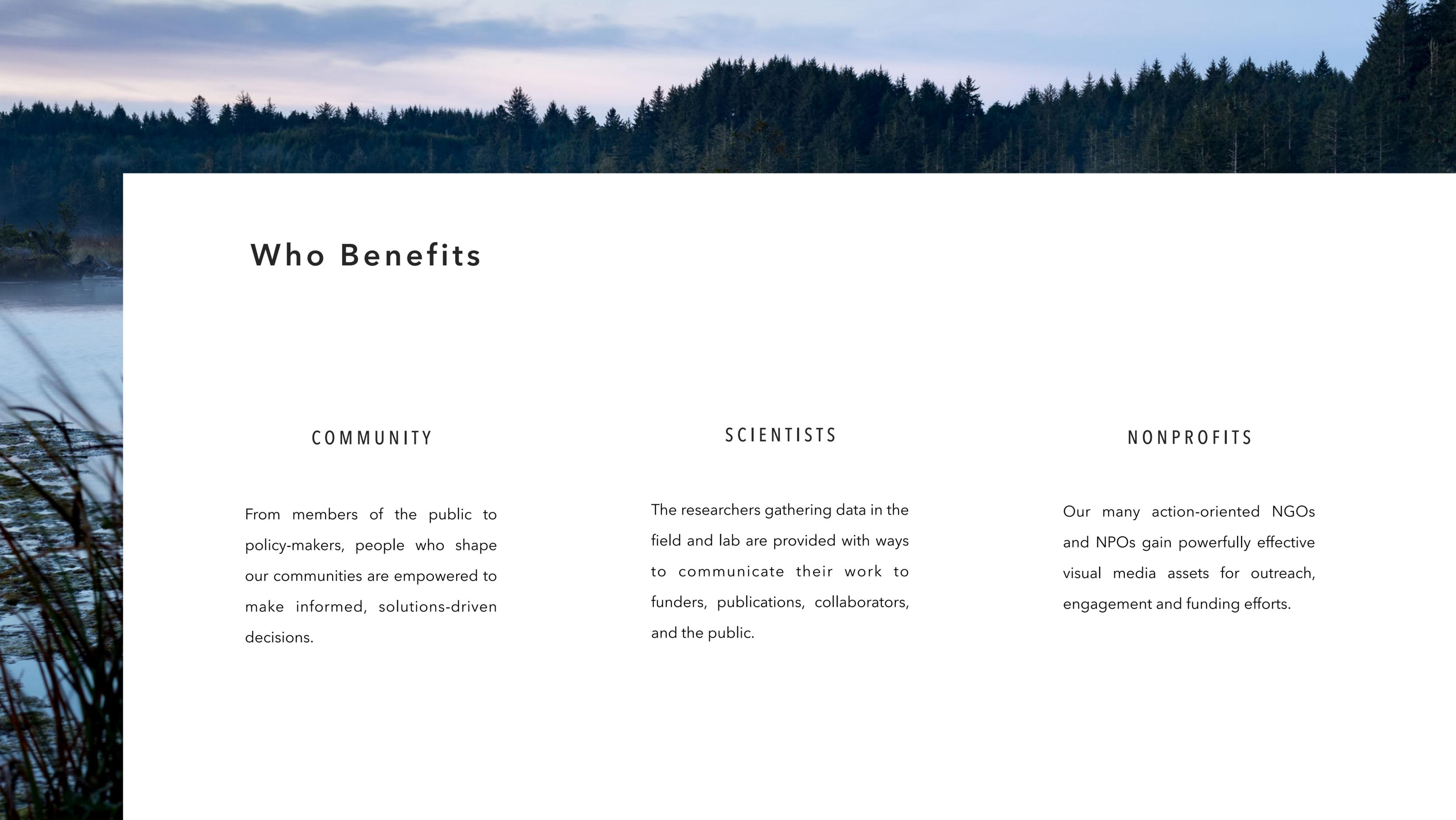
During the course of this project, I'll connect with and work alongside a wide range of people and organizations. As I document their work in relation to the species profiled, I will build portfolios of single projects or ongoing work that can be used for outreach or publication.

## PRESENTATION PACKAGES

Scientists, teachers, nonprofits, non-government organizations, community leaders and many others will have access to pre-designed packages that cover topics for educational talks or programs, from watershed ecology to conservation initiatives.

## EXHIBITS

The portraits created of each species in the Watershed Sentinels project will come together in one cohesive exhibit that can be shown in places of interest including galleries, visitor centers, universities, airports and other key locations.



# Who Benefits

## COMMUNITY

From members of the public to policy-makers, people who shape our communities are empowered to make informed, solutions-driven decisions.

## SCIENTISTS

The researchers gathering data in the field and lab are provided with ways to communicate their work to funders, publications, collaborators, and the public.

## NONPROFITS

Our many action-oriented NGOs and NPOs gain powerfully effective visual media assets for outreach, engagement and funding efforts.

# Connect. Inspire. Engage.

I have never been content to make a photograph and leave it at that. From the time I first picked up a camera to document wildlife, I have felt the need to put images to work and engage viewers with the larger story of the photo's subject. Experiencing wilderness and witnessing wildlife is my passion and thus conservation photography is my purpose.

In this niche of nature photography, the image itself is the first critical step in a larger process of storytelling, engaging viewers to question, consider, empathize, and ultimately act. The first part of the job is to craft compelling images that encompass the subject's story - its life, its world, and the threats it faces. The second part is putting that image in front of viewers in ways that engage them beyond a passing glance.

My goal is to create beautiful, surprising, illuminating images that spark positive emotions, which lead to a sense of connection with and protectiveness for the subject.

In the nine years I have been working as a professional wildlife photographer, my work has been published in National Geographic Magazine and National Geographic Books, Heyday Books, Outdoor Photographer Magazine, Audubon Magazine, Sierra Magazine, National Wildlife Magazine, Ranger Rick Magazine and many more. One of my images was turned into a stamp by the United Nations Postal Administration to celebrate the International Day of Happiness.

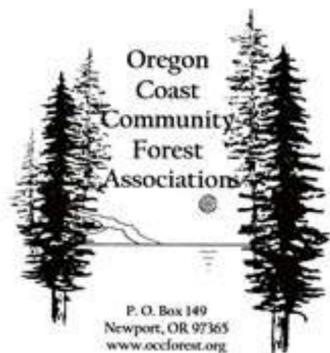
I am the founder and Director of Urban Coyote Initiative, which focuses on creating powerful photography documenting the role of coyotes in a healthy urban ecosystem and promoting informed coexistence. I am a recipient of a National Geographic Expeditions Council grant for my work on urban coyotes.

In addition to my photojournalism projects and assignment photography work for nature-oriented publications, I lead week-long conservation photojournalism workshops around the country, and lead single day nature photography tours on the central Oregon coast.

I am a volunteer with the North American Nature Photography Association (NANPA), an affiliate with the International League of Conservation Photographers (iLCP), and a volunteer workshop leader with Girls Who Click, a nonprofit that encourages young girls to get involved with nature photography.



# The Support



## LET'S COLLABORATE

I am interested in working with:

- Researchers
- Naturalists
- Educators
- Business leaders
- Land owners
- Artists and designers
- Government agencies
- Nonprofit organizations
- Non-government organizations
- Community organizations
- Publishers

Important areas for assistance include:

- Access to private land
- Species sightings
- Networking
- Exhibit space
- Specialized photography equipment
- Financial backing

[JaymiHeimbuch.com/Conservation/Watershed-Sentinels](http://JaymiHeimbuch.com/Conservation/Watershed-Sentinels)

