

Update on Washington's Amphibians and Reptiles

Presented by Lisa Hallock and Marc Hayes



Photo credit: Barcroft Media/Eiko Jones / Barcroft Media

Introduction

- Publication on amphibian trends in the US
- Reasons declines are happening
- Reason it matters
- The situation in Washington



Trends in Amphibian occupancy in the United States (Adams et al. 2013)*



- The first-ever estimate of how fast frogs and salamanders in the US are disappearing from their habitats
- Based on 9 years of data from 34 sites spanning 48 species

*Adams, Michael J., David A. W. Miller, Erin Muths, Paul Stephen Corn, Evan H. Campbell Grant, Larissa L. Bailey, Gary M. Fellers, Robert N. Fisher, Walter J. Sadinski, Hardin Waddle, and Susan C. Walls. 2013. Trends in Amphibian Occupancy in the United States. 2013. PLoS ONE, vol. 8, no. 5, e64347

Trends in Amphibian occupancy in the United States (Adams et al. 2013)

cont.

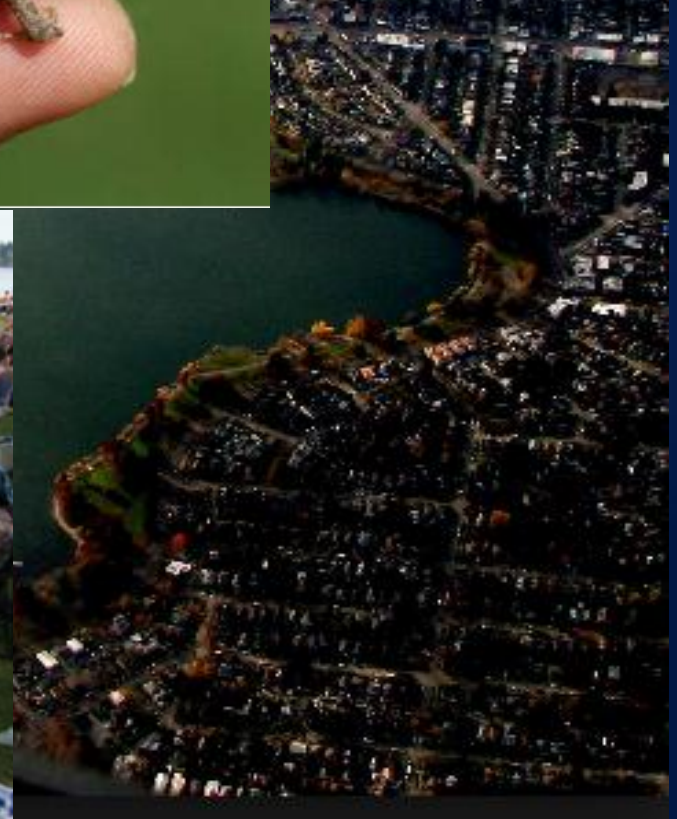


- Vanishing at an alarming and rapid rate (overall annual occupancy decline of 3.7% and 11.6% for rare species)
- Even species presumed to be relatively stable and widespread are declining
- Declines are occurring throughout the US and are notably even in national parks and wildlife refuges



Why is this happening?

The obvious – Habitat loss, alteration and fragmentation



The perils of living with so many humans

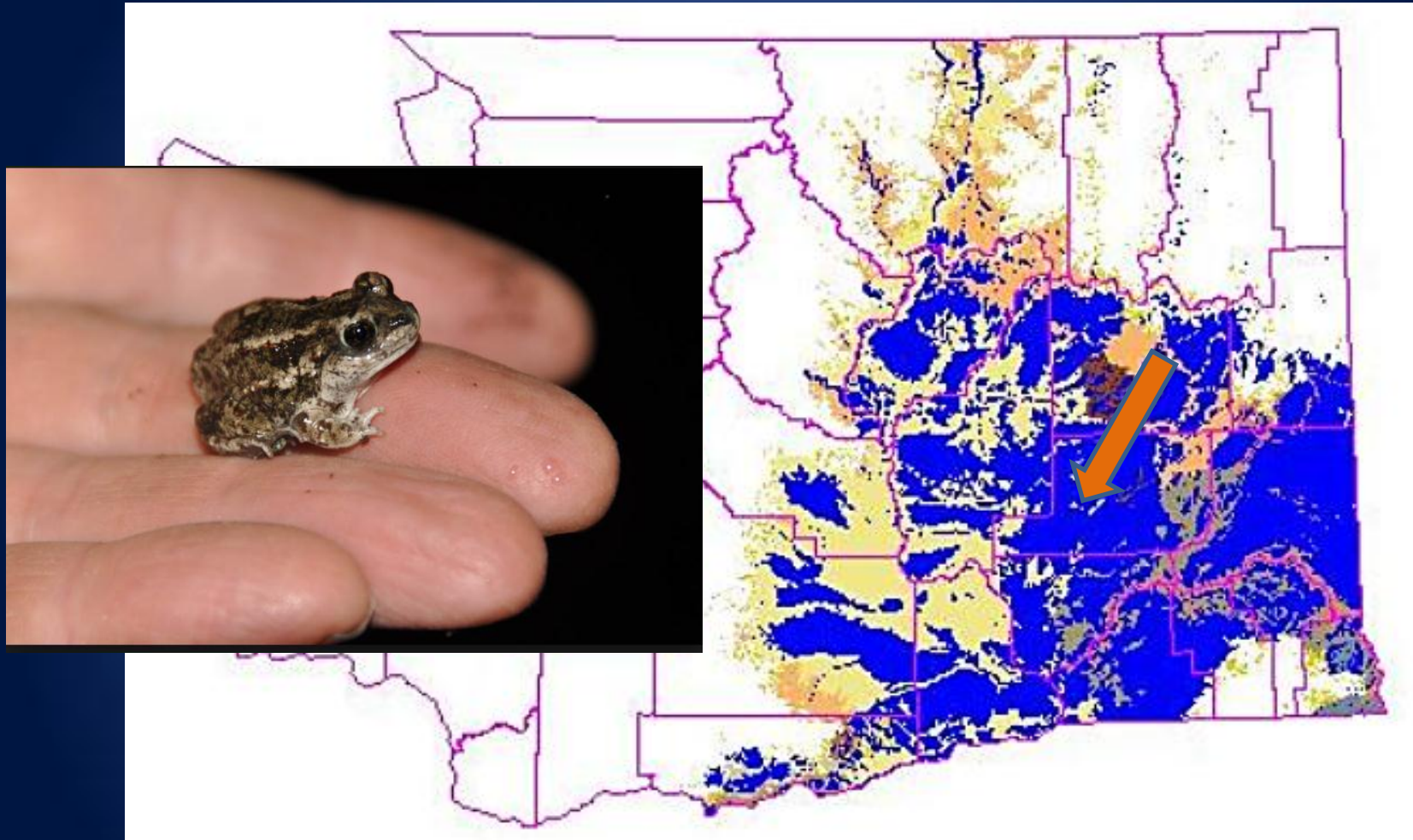


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Information is subject to changes and amendments over time.

Even without so many people...



Columbia Basin/Plateau
Conversion to agriculture (Blue), native shrub-steppe (Yellow/Orange)



Information is subject to changes and amendments over time.

For the amphibians, something else is also happening...



- Declines throughout the US including national parks and wildlife refuges
- Adams et al. 2013 do not speculate but others have:
 - Emerging diseases
 - Pollutants
 - Depleted ozone layer
 - Climate change

Why does it matter?



Ryan Hagerty (USFWS)

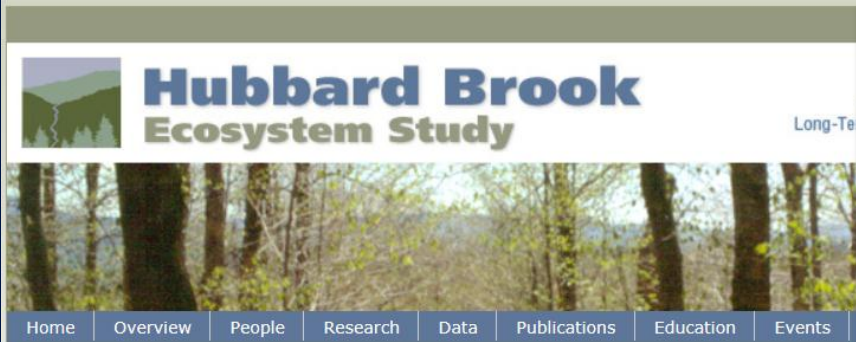


Ecologically important

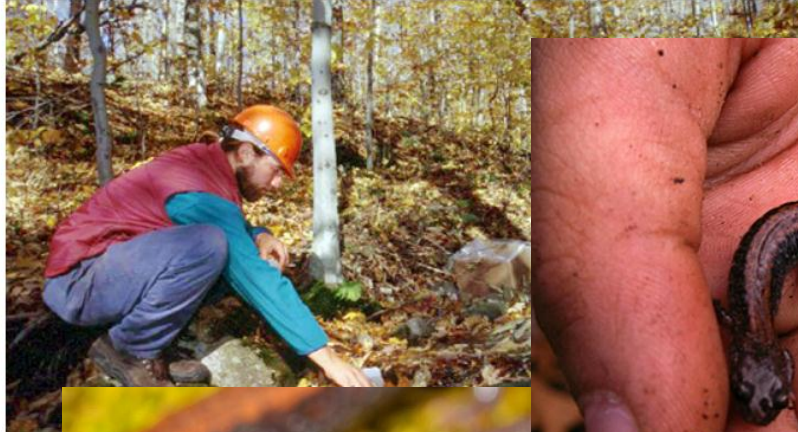
- Efficient at biomass conversion
- Provide food and transfer nutrients
- Control insect populations
- Natural filtration system for water



Their importance is underestimated



Biomass of salamanders within the Hubbard Brook Valley (Burton and Likens 1975)



... that of birds during breeding season
... equal to the mass of small mammals

- Eastern Red-backed Salamanders accounted for 93.5% of the total biomass



- Biological indicators of environmental health
- Frogs are important in human medicine
 - 10% of the Nobel Prizes in Physiology and Medicine have come from research that depended on frogs
 - Amphibian skin one of the richest sources of antimicrobial and antifungal peptides (= antibiotics)

People like them...especially the frogs



© Arthur Baensch/Corbis



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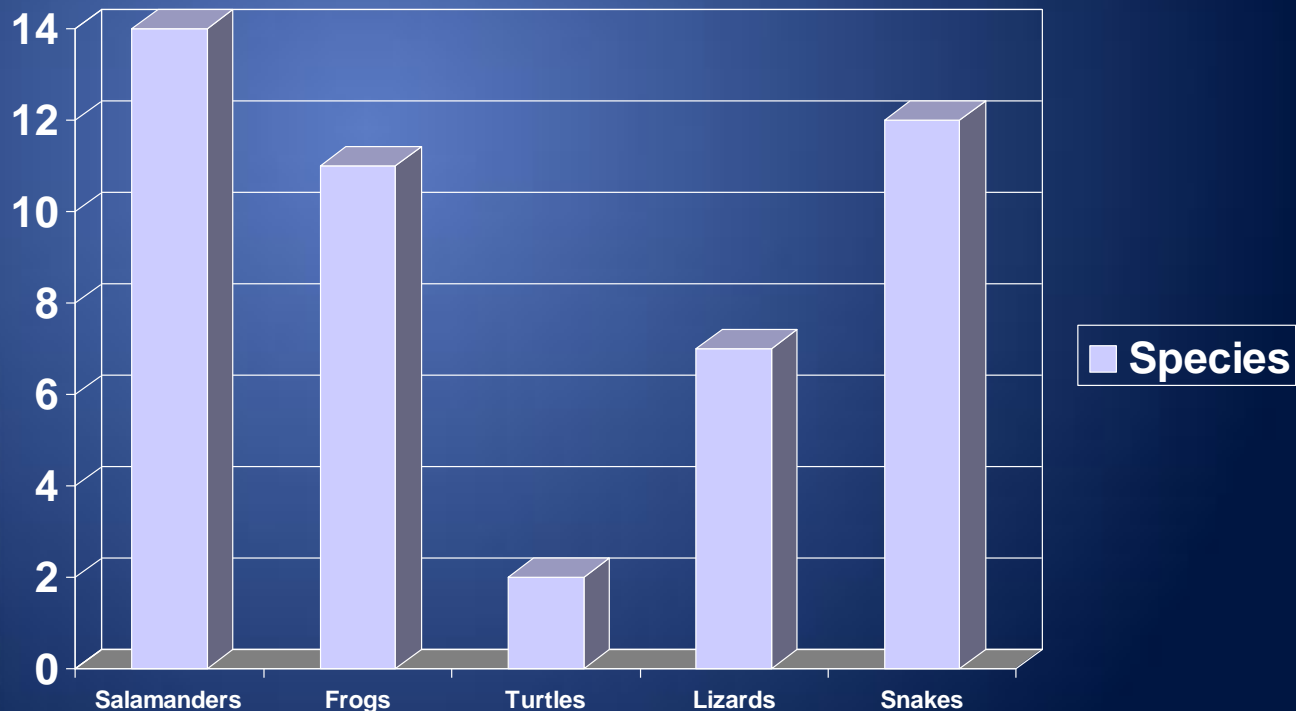
People notice when the frogs are gone



What is the situation in Washington?

Native species

- 25 amphibian species
- 21 reptile species



Information is subject to changes and amendments over time.

Federal and State Status

Federally Listed Species - Listing proposed as Threatened

- Oregon Spotted Frog

State Endangered

- Oregon Spotted Frog
- Northern Leopard Frog
- Western Pond Turtle

State Sensitive

- Larch Mountain Salamander



Information is subject to changes and amendments over time.

Endangered Species

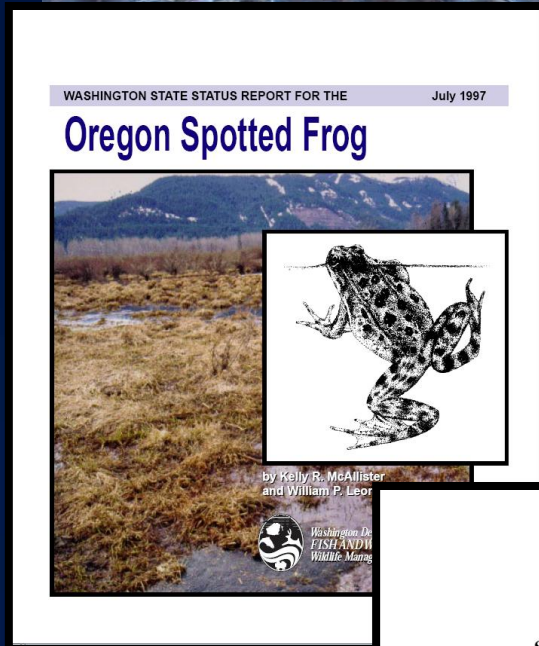
Listing and Recovery activities

- Develop guiding documents
- Inventory and monitoring
- Research
- Protection, enhancement and management of significant habitat
- Population reintroduction

Oregon Spotted Frog (*Rana pretiosa*)



Guiding documents

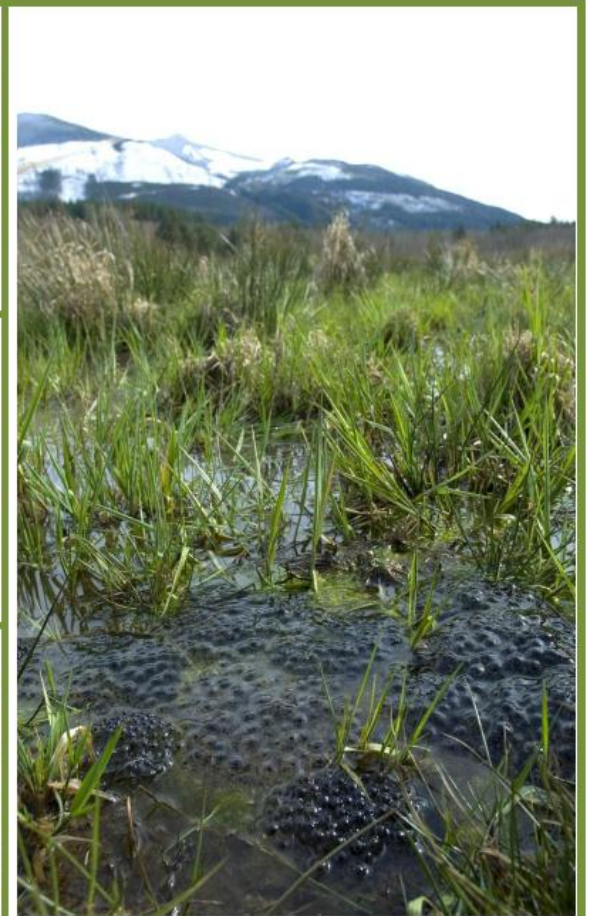
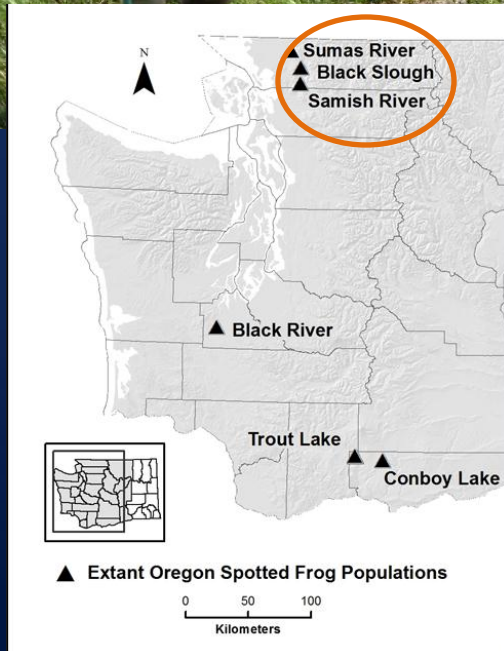
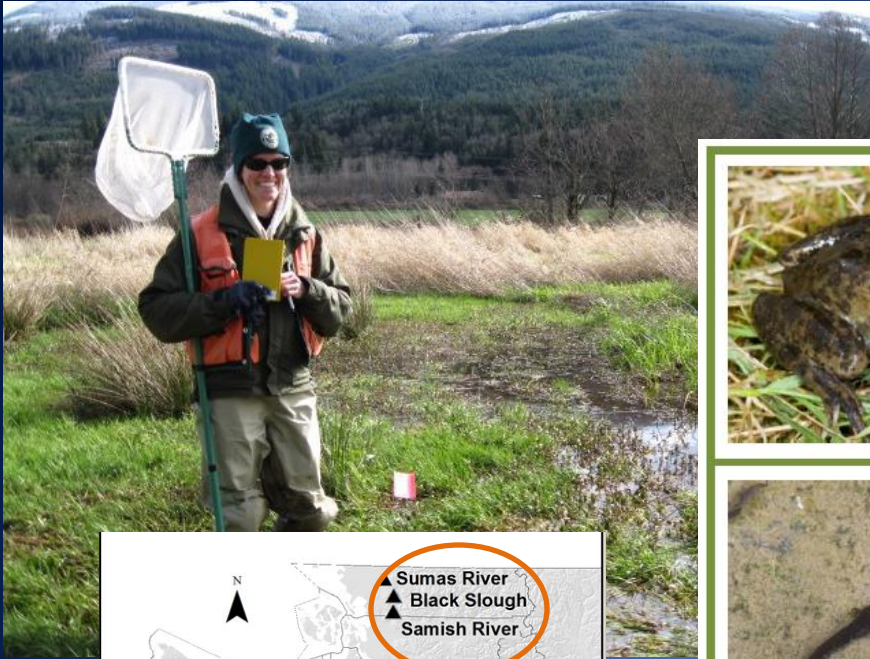


DRAFT State of Washington Oregon Spotted Frog Recovery Plan



Lisa A. Hallock
Washington Department of Fish and Wildlife
600 Capitol Way North
Olympia, Washington 98501-1091
May 2013

Inventory and monitoring



Photos by Les Meade

Research

- Mark and Recapture and telemetry studies
- Breeding habitat enhancement
- Sensitivity to amphibian Chytrid fungus
- Inventory using water samples (eDNA)
- Genetics
- Behavioral ecology



UNIVERSITY of WASHINGTON



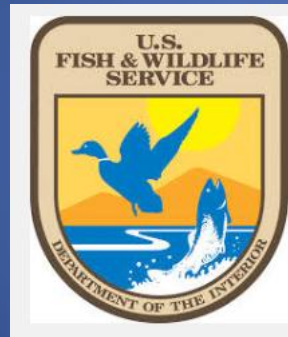
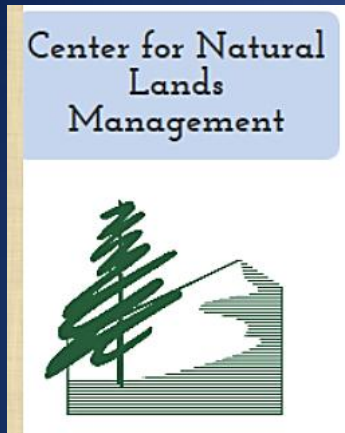
Information is subject to changes and amendments over time.

Protection, enhancement and management of significant habitat



Information is subject to changes and amendments over time.

Protection, enhancement and management of significant habitat



Reintroduction projects



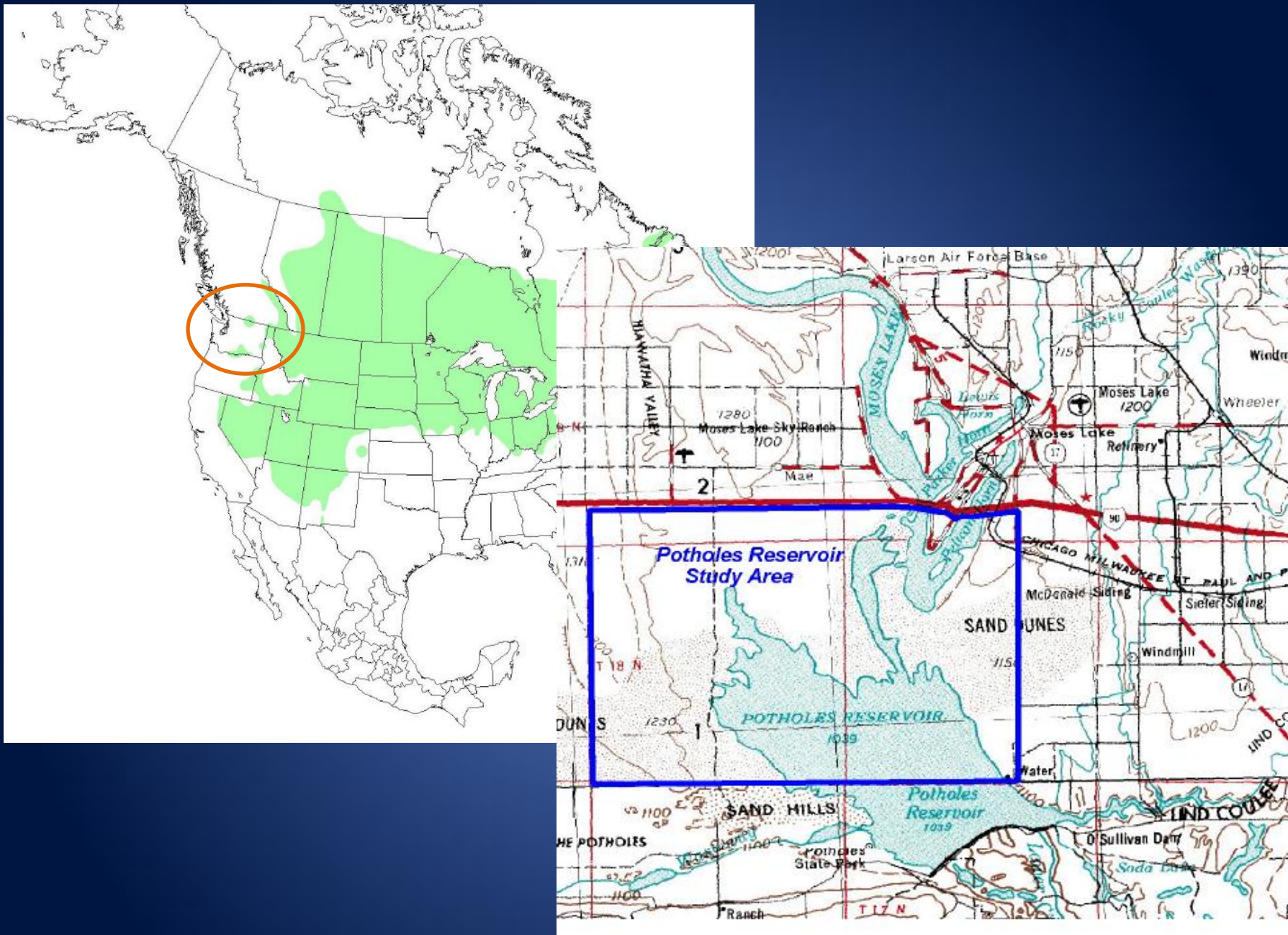
SPP  The Evergreen State College and Washington State Department of Corrections
SUSTAINABILITY IN PRISONS PROJECT

Information is subject to changes and amendments over time.

Northern Leopard Frog (*Lithobates pipiens*)



Photo Courtesy of Stephanie DeMay



Information is subject to changes and amendments over time.

Guiding documents

STATE OF WASHINGTON

October 1999

Washington State Status Report for the Northern Leopard Frog



Status Report (1999)

Reintroduction Plan (2014)

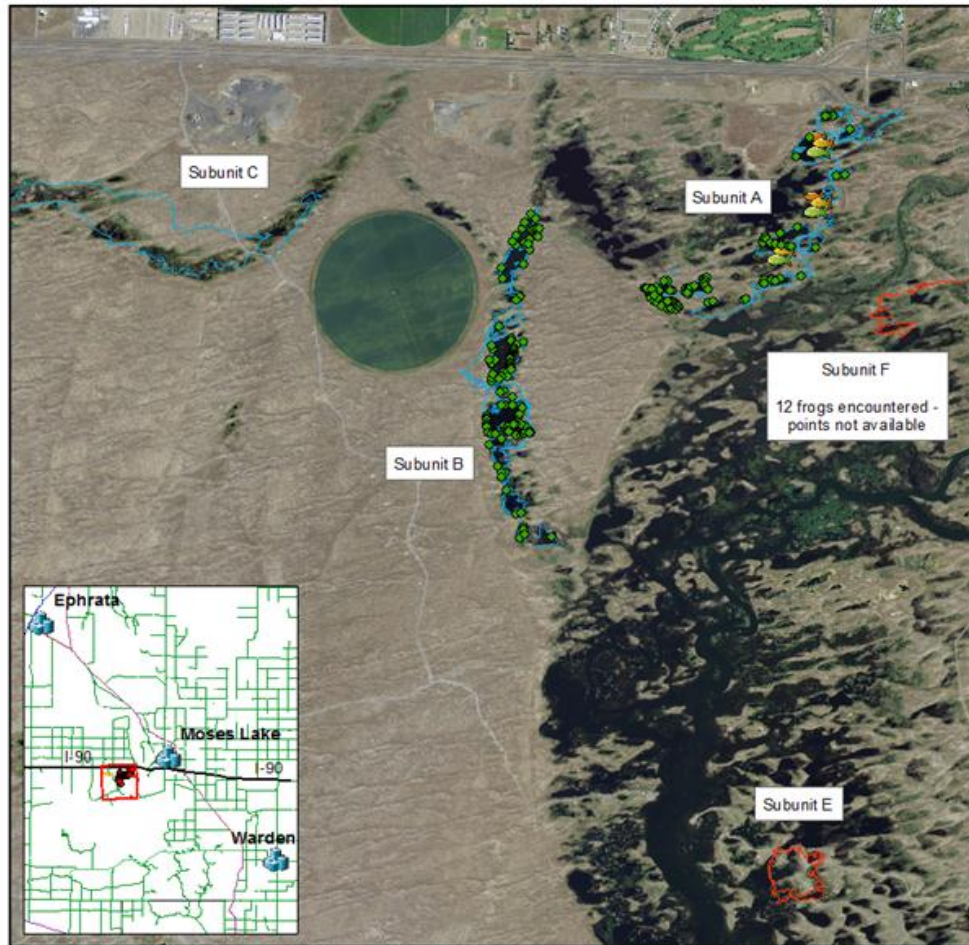


Photo by K. McAllister

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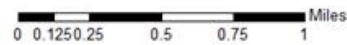
Monitoring

2013 NLF Survey Encounters



Legend

- NLF Encounters
- Fish
- Survey Tracks
- Recon Tracks



Created by:
Washington Department of Fish and Wildlife
23 September 2013

Research



WASHINGTON STATE
UNIVERSITY
World Class. Face to Face.



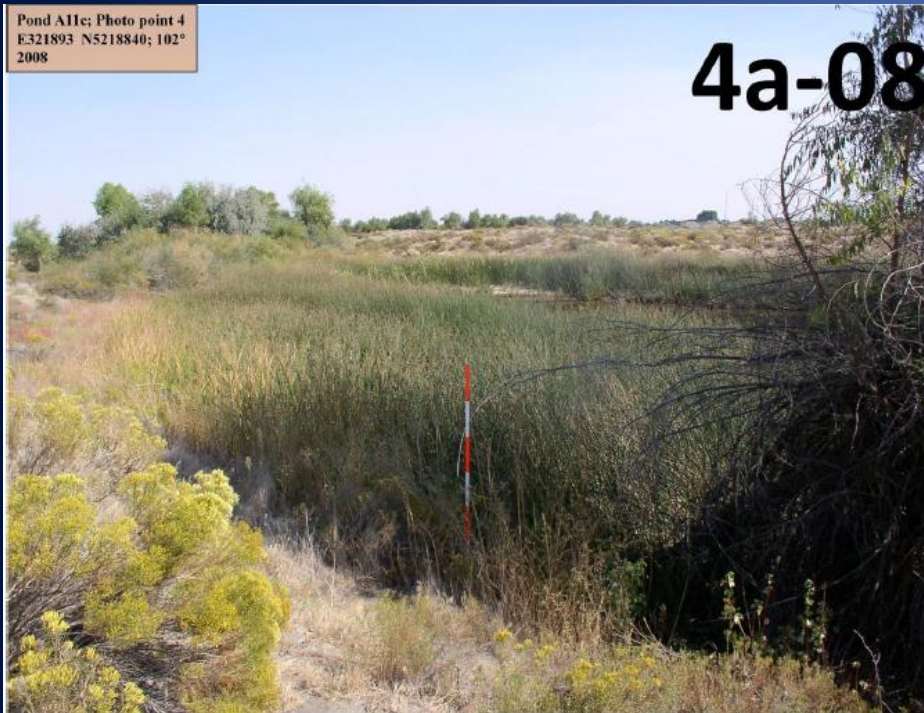
Fig. 3. Spotting patterns allow identification of individual leopard frogs at Moses Lake, and quantitative estimates of dispersal, survival, and population size, without intrusive marking.

Amphibian Chytrid fungus (Bd)

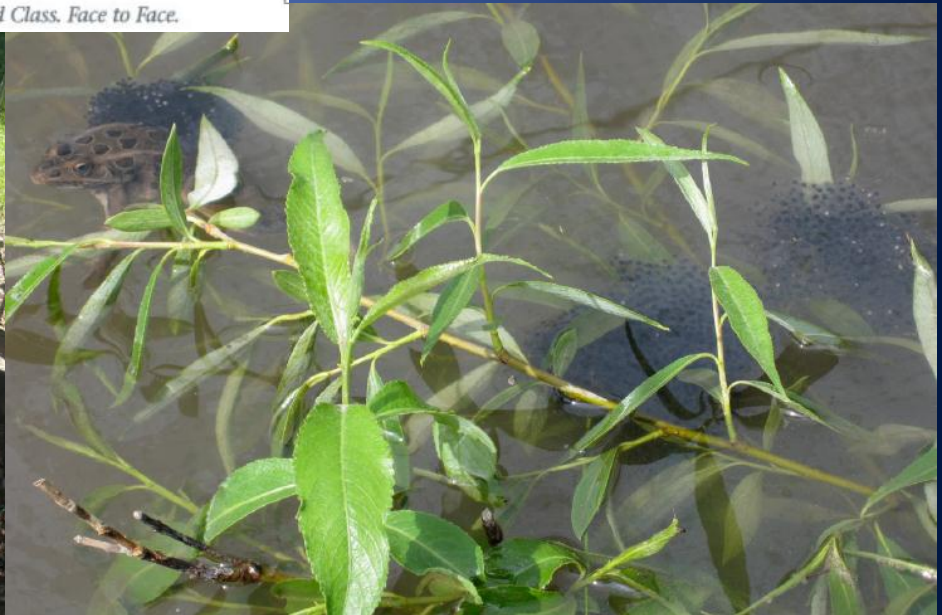
Habitat use (radio-telemetry)

Information is subject to changes and amendments over time.

Protection, enhancement and management of significant habitat



Captive Breeding Program



Information is subject to changes and amendments over time.

Population reintroduction



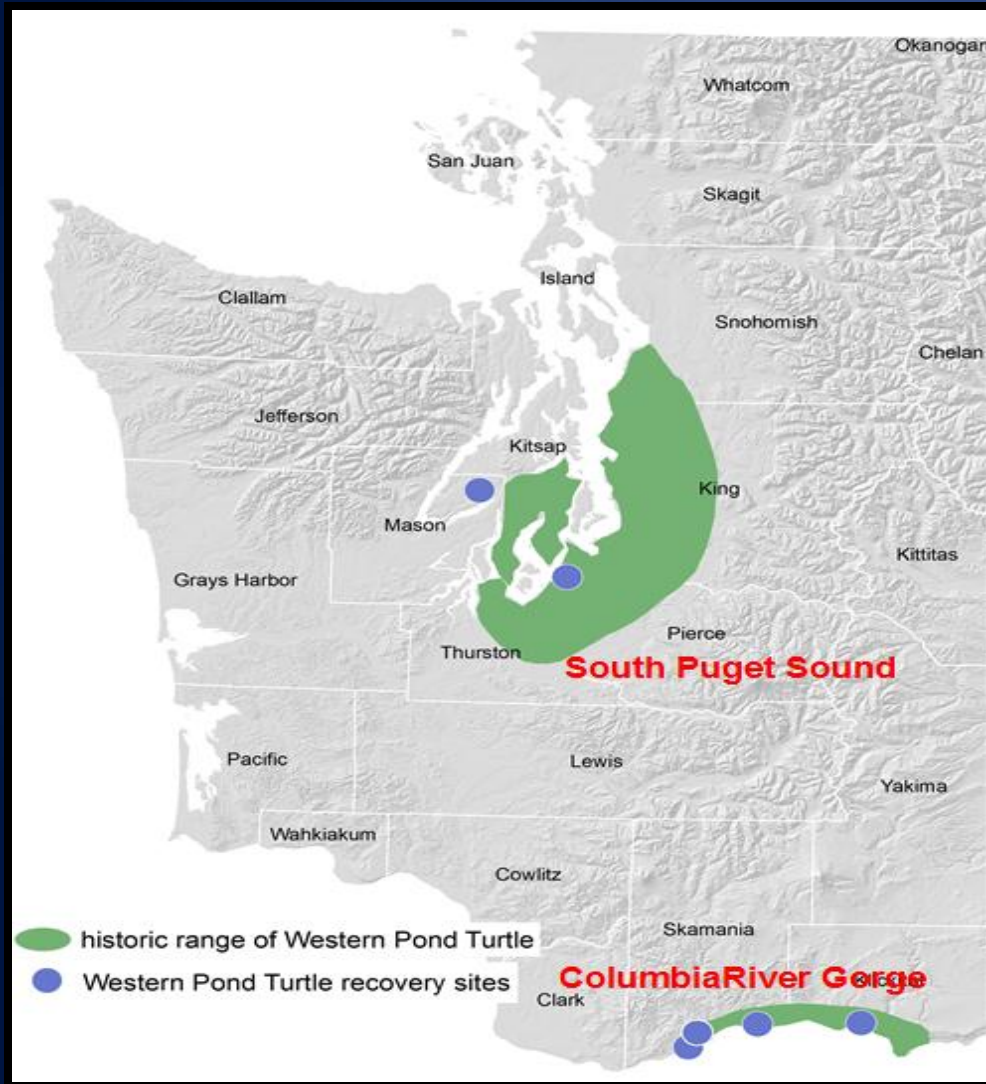
The Evergreen State College and Washington State Department of Corrections
SUSTAINABILITY IN PRISONS PROJECT

DOI

Western Pond Turtle (*Actinemys marmorata*)



Western Pond Turtle distribution



At start of recovery efforts

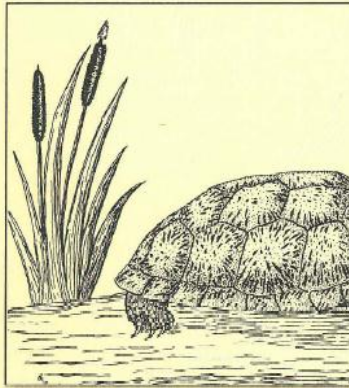
- 1990s only two populations
- Less than 200 turtles

As of 2013

- Six populations
- About 2000 turtles released since the program was started in 1991

Guiding documents

W DEPARTMENT
Washin



STATUS OF THE WESTERN P
(*Clemmys marmorata*) IN WA



Washington
Department of Wildlife
Wildlife Management Division



The Western Pond Turtle in Washington

A Population and Habitat Viability Assessment



NW ZOO &
AQUARIUM
ALLIANCE



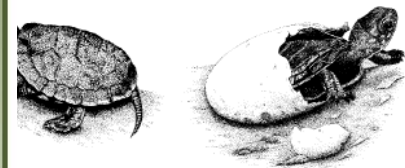
CONSERVATION
BREEDING
SPECIALIST GROUP



Washington State Recovery Plan
for the
Western Pond Turtle

by

Kelly R. McAllister, Scott A. Richardson, and Derek W. Stinson



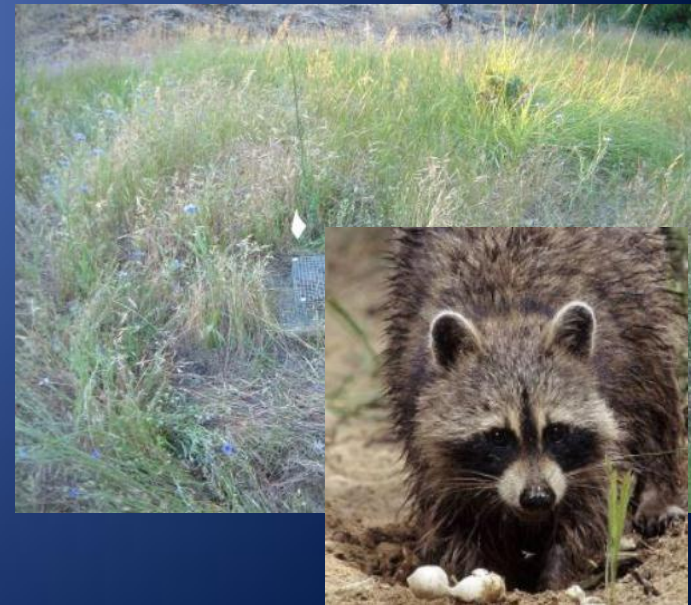
Washington Department of Fish and Wildlife
600 Capitol Way North
Olympia, Washington 98501-1091

August 1999

Department of Fish and Wildlife

Date

Monitoring



Information is subject to changes and amendments over time.

Protection, enhancement and management of significant habitat



Information is subject to changes
and amendments over time.

Basking enhancement



Bullfrog control



Information is subject to changes and amendments over time.

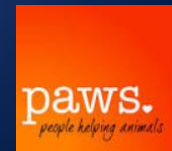


Turtle releases



Information is subject to changes and amendments over time.

Disease



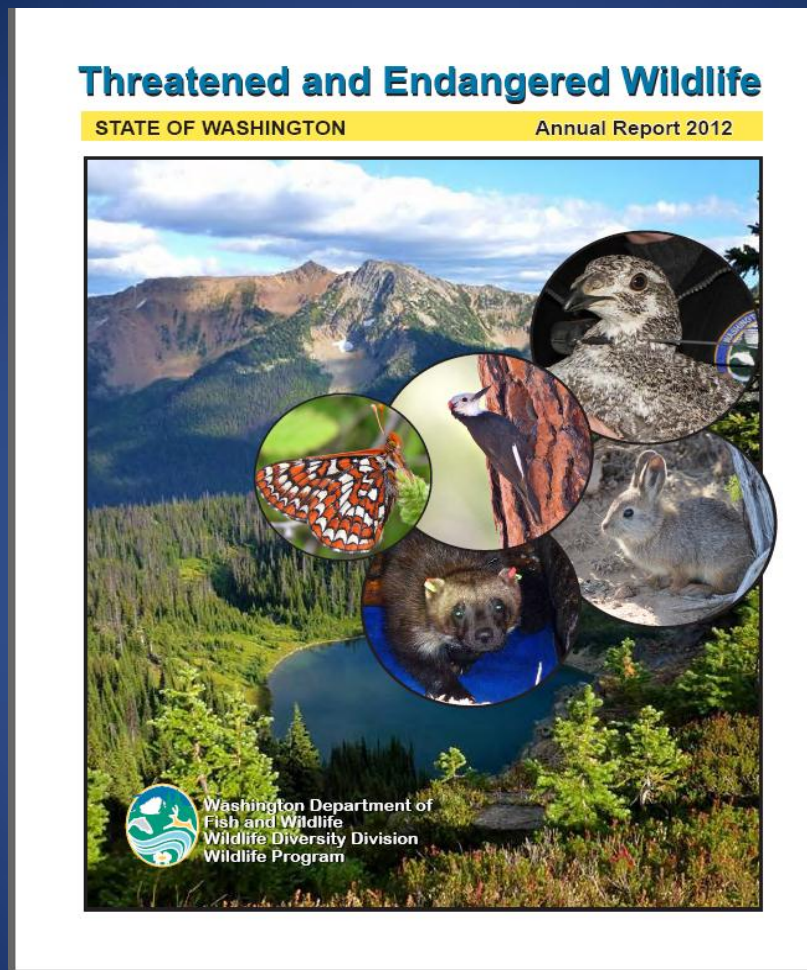
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More partners....



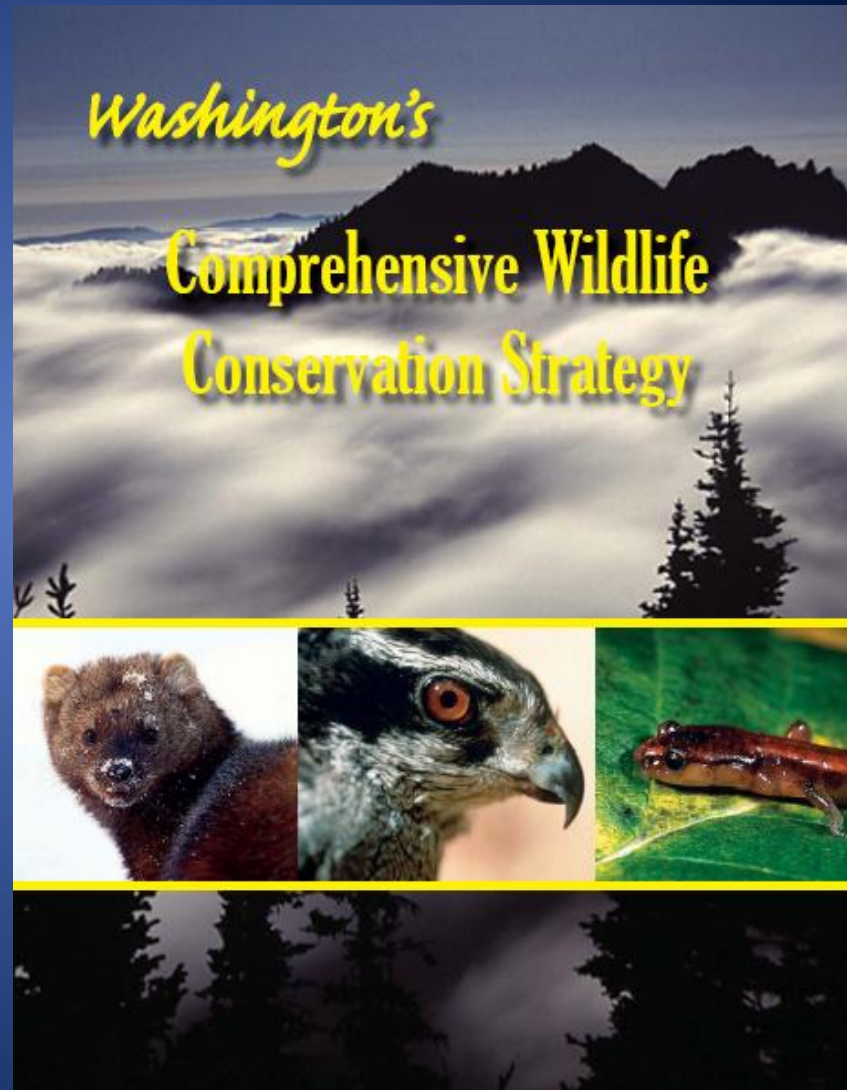
Information outreach



Available on-line at
<http://wdfw.wa.gov/publications/01542/>

Species of Greatest Conservation Need (SGCN)

- 11 amphibian species
- 8 reptile species
- Includes listed species



Species with limited distributions in Washington

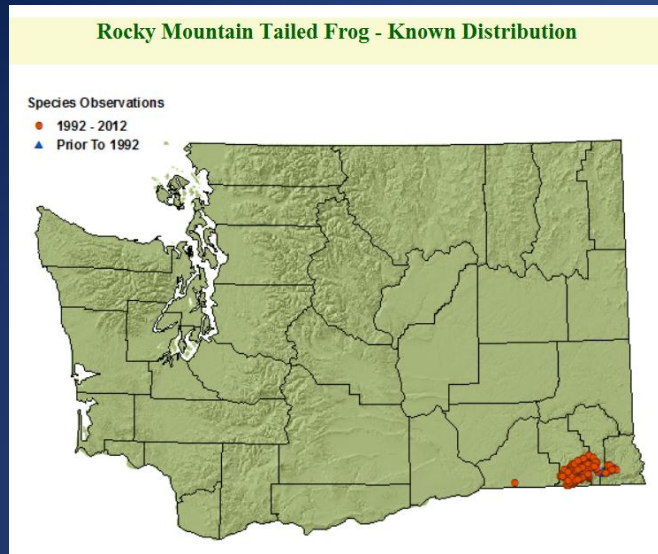
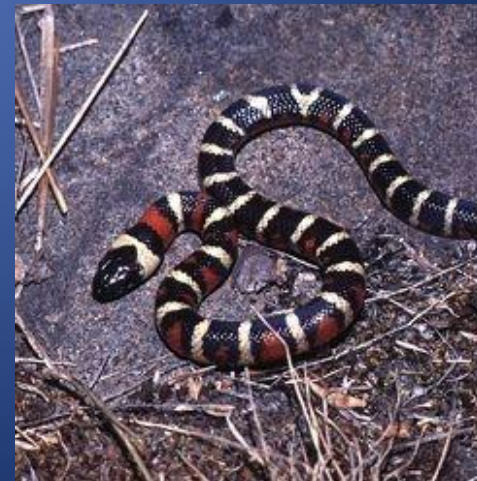
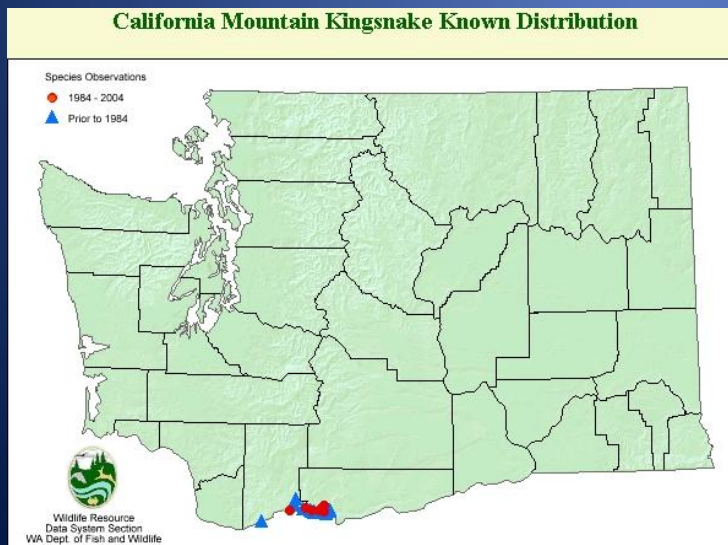


Photo by W.P. Leonard



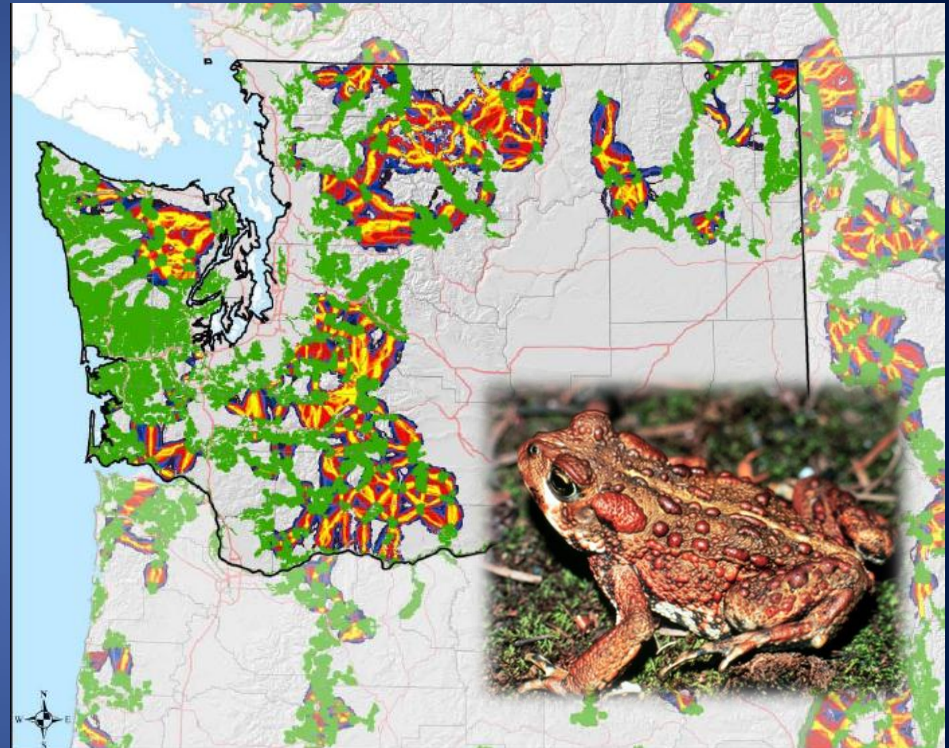
WASHINGTON WILDLIFE HABITAT
CONNECTIVITY
 WORKING GROUP

WASHINGTON CONNECTED
 LANDSCAPES PROJECT:
 STATEWIDE ANALYSIS



WASHINGTON WILDLIFE HABITAT CONNECTIVITY
 WORKING GROUP

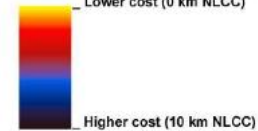
DECEMBER 2010



Linkage Zones

**Western Toad
 (*Anaxyrus boreas*)**

Normalized Least-Cost Corridors*

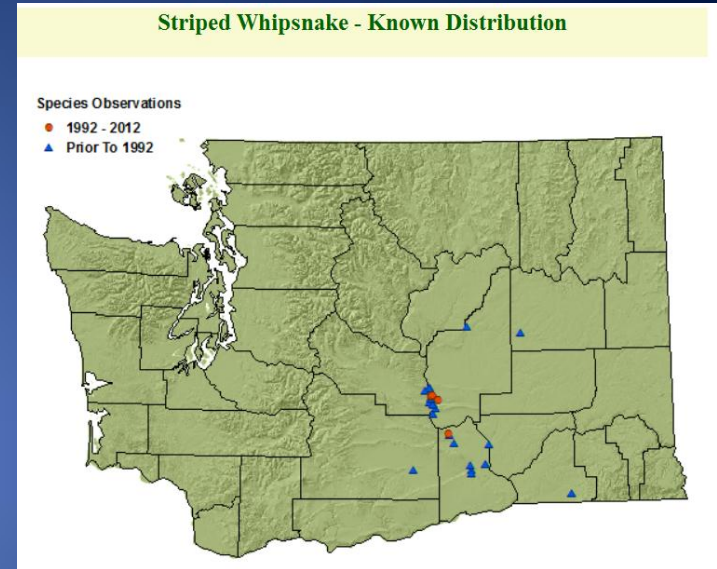


* Cumulative movement cost relative to least-cost path for each linkage.
 NLCC = LCC - LCD (see glossary).

Road Network

- Freeway
 - Major Highway
- Administrative Boundaries**
- ▭ Washington Border
 - ▭ Other State or Provincial Border
 - ▭ County Line or Regional District Line
- Outside Study Area**
- ▭ Land Mass
 - ▭ Ocean

Some have declined to the point where a status report is being considered

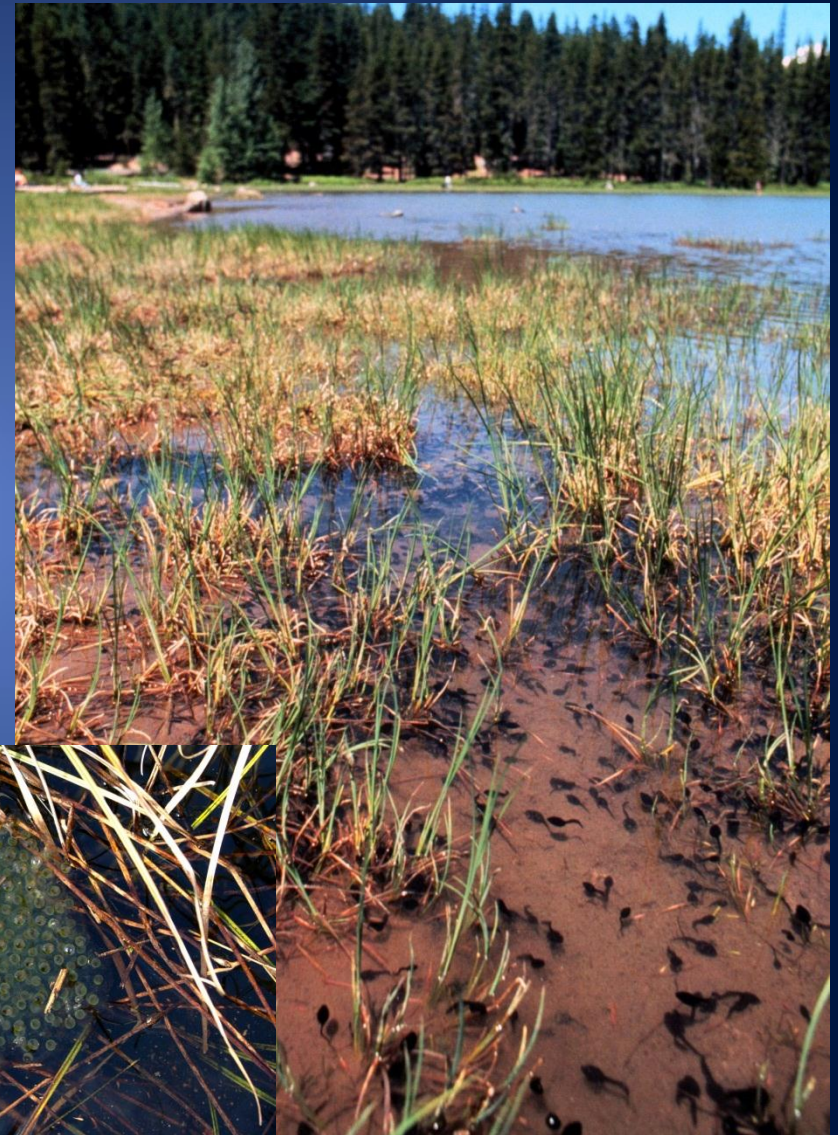


Striped Whipsnake

- Surveys at all historical sites
- Radio-telemetry study 2005-2006
- On-going inventory & monitoring
- Protection of extant sites



Partnerships: Research and Conservation



Citizen Science

Information is subject to changes and amendments over time.



Species
Fact Sheets

Contributions
& Questions

References

Herp Atlas
Home

Return to
WNHP

Washington Herp Atlas

Amphibians
List

Reptiles List

Amphibians:

Billfro

Tiger Salamander

Contents:

[Taxon, Status, and Ranks](#)

[General Description](#)

[Identification Tips](#)

[Phenology](#)

[Range](#)

[Habitat](#)

[State Status Com](#)

[Inventory & Resea](#)

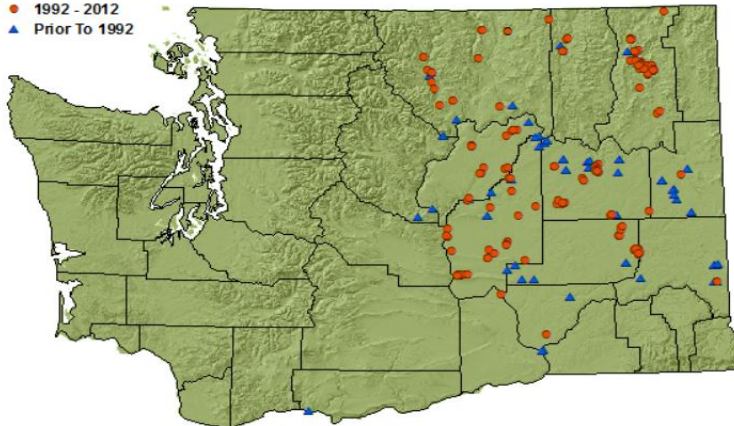
[Threats & Mgmt C](#)

[References](#)

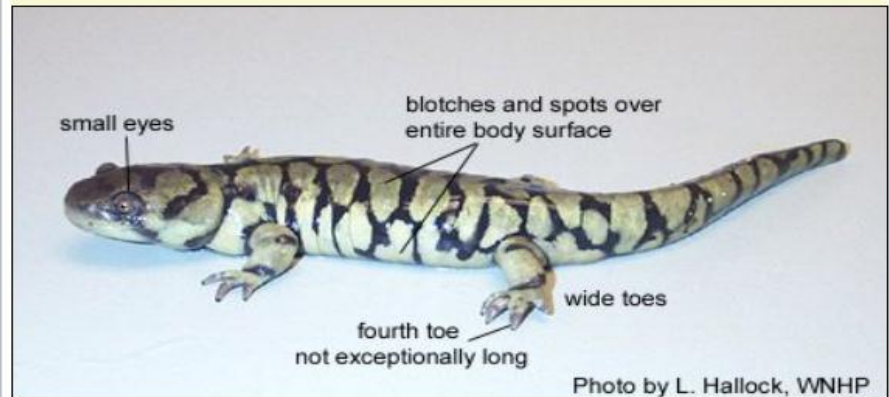
Tiger Salamander - Known Distribution

Species Observations

- 1992 - 2012
- ▲ Prior To 1992



Tiger Salamander Key Features



Adult (Douglas County)



Ventral view (Douglas County)



Swollen vent lobes of breeding male (Stevens County)



Small larva (Douglas County)



Neotene (North Dakota)



Information is subject to changes and amendments over time.



Information is subject to changes and amendments over time.

Habitat Program – Landscape-Level Research



Cooperative Monitoring, Evaluation and Research Committee (CMER)

Information is subject to changes and amendments over time.

Forest and Fish Agreement



Unique
Adaptive Management Science
Multi-stakeholder
Largest HCP in N America

Goals - maintain:

- 1) harvestable fish populations
- 2) water quality
- 3) viability of concern species
- 4) economic viability of timber industry



Flagship Study

Type N Experimental Buffer Study

Key Objective: Evaluate the effectiveness of the buffer prescription for non-fish-bearing streams in western WA

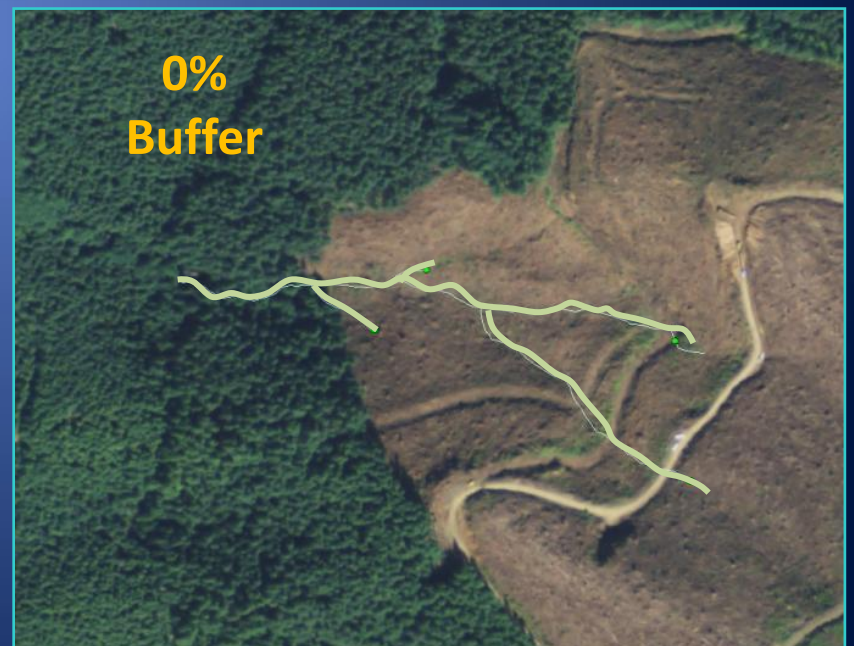
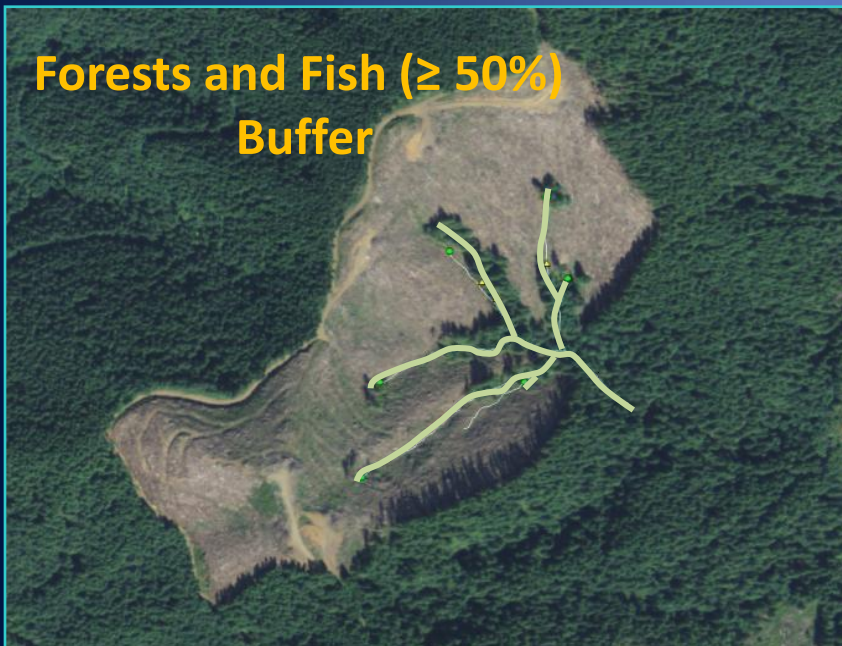
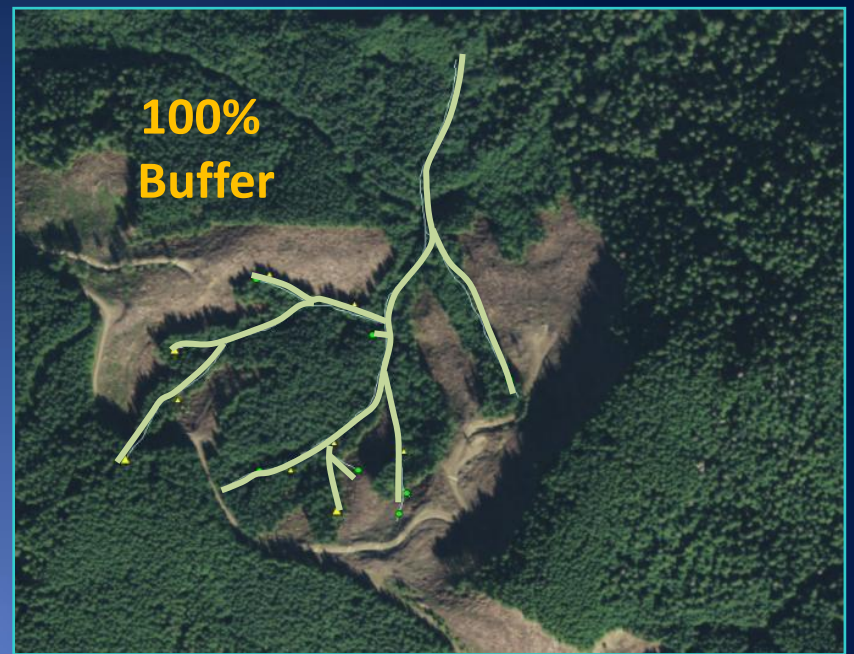
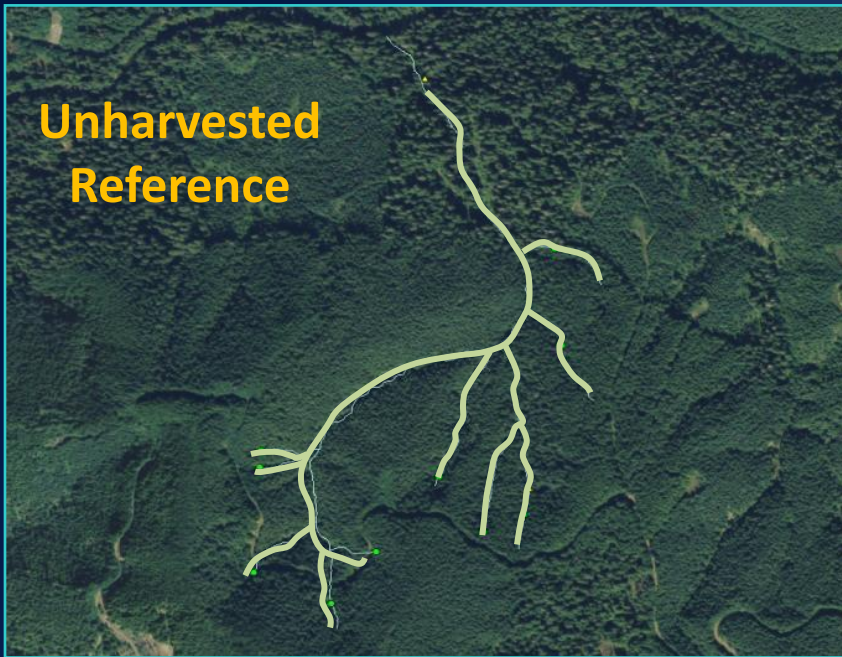
Foci were determining effects on:

- water quality
- exports to fish-bearing streams
- primary productivity
- riparian stand characteristics
- response of fish downstream

- **AMPHIBIAN** abundance, occupancy and genetics



Information is subject to changes and amendments over time.



Extensive Field, Data Handling, and Reporting Work

Nine co-principal investigators and field crews of 10-21 annually

Funding

State and Federal Sources via the Cooperative Monitoring, Evaluation and Research Committee (CMER)



Information is subject to changes and amendments over time.

MANY PARTNERS

LANDOWNERS

COLLABORATORS

WA Ecology



Weyerhaeuser

Longview Timber



WDFW

NWIFC



WSU



Fruit Growers Supply

Gifford Pinchot NF



Olympic NF

Longview Timber



Rayonier

Rayonier



WA DNR

Weyerhaeuser



Concluding remarks

To effectively protect and conserve these species we need

- **More information**
 - Life history and status
 - Habitat changes
 - Climate change
 - Other factors (*e.g.*, disease)
- **Partners**
 - Government & private landowners
 - Professional and university level research
 - Citizen science efforts
- **Outreach and education**



Thank you!

