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Past, Present and Future Efforts to Improve Resilience of a Pristine Watershed

Marisa Parish Hanson – NOAA Restoration Center

Outline

- Fisheries diversity
- Habitat availability
- Limiting factors
- Restoration – past and present
  - Upper Basin
  - Mill Creek
  - Coastal Plain
- Future – restoration and monitoring
- Beyond the basin

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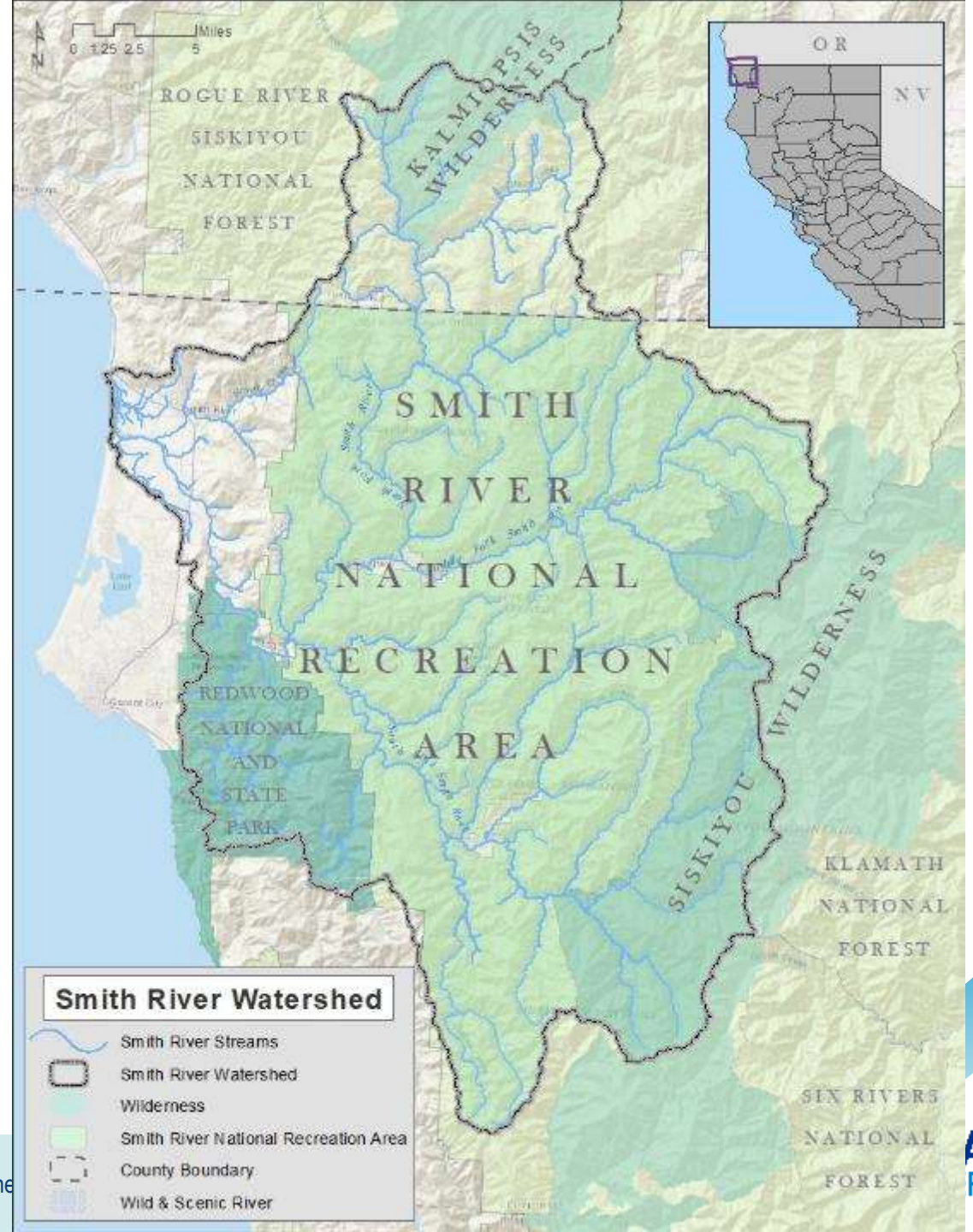
Smith River

Pristine

- 83% public lands
- 725 mi^2: 91m^2 in OR
- Wild and Scenic Rivers - 1981
  - 325.4 miles
  - Smith and all tributaries
- Smith River NRA - 1990
  - 450 mi^2

Resilient

- Geology
- Precipitation – 93.36 inches annually



Photos: John Parmentier

North Fork

Photos: Justin Garwood

Agriculturally Dominated Coastal Plain

Photo: Justin Garwood

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Anadromous Species Diversity

- Chinook Salmon (fall run) – petitioned for listing
- Coho Salmon – only listed species in basin
- Steelhead trout (winter run)
- Coastal Cutthroat trout
- Pacific Lamprey
- Green sturgeon

Historically salmon were very abundant - cannery operated 19th and early 20th

- processed 50 tons of salmon per year (Bartson 1997).
- Operated into the 1930's when CDFG closed in-river commercial fishing in California

Recovery Planning documents

- Smith River Anadromous Fish Action Plan 2002
  - Highlights need to conduct surveys and restoration on private property in coastal plain
- CDFW 2005
  - Restoration actions but not locations
- SONCC Recovery Plan NMFS 2014
  - Restoration actions but not locations
- Smith Estuary Restoration Plan 2018
  - Site specific recommendations across coastal plain

Limiting Factors (high and very high) (NMFS 2004)

Stresses

- Impaired Estuary/Mainstem Function
- Lack of Floodplain and Channel Structure
- Impaired Water Quality
- Barriers

Threats

- Roads
- Channelization/Diking
- Road-Stream Crossing Barriers
- Agricultural Practices

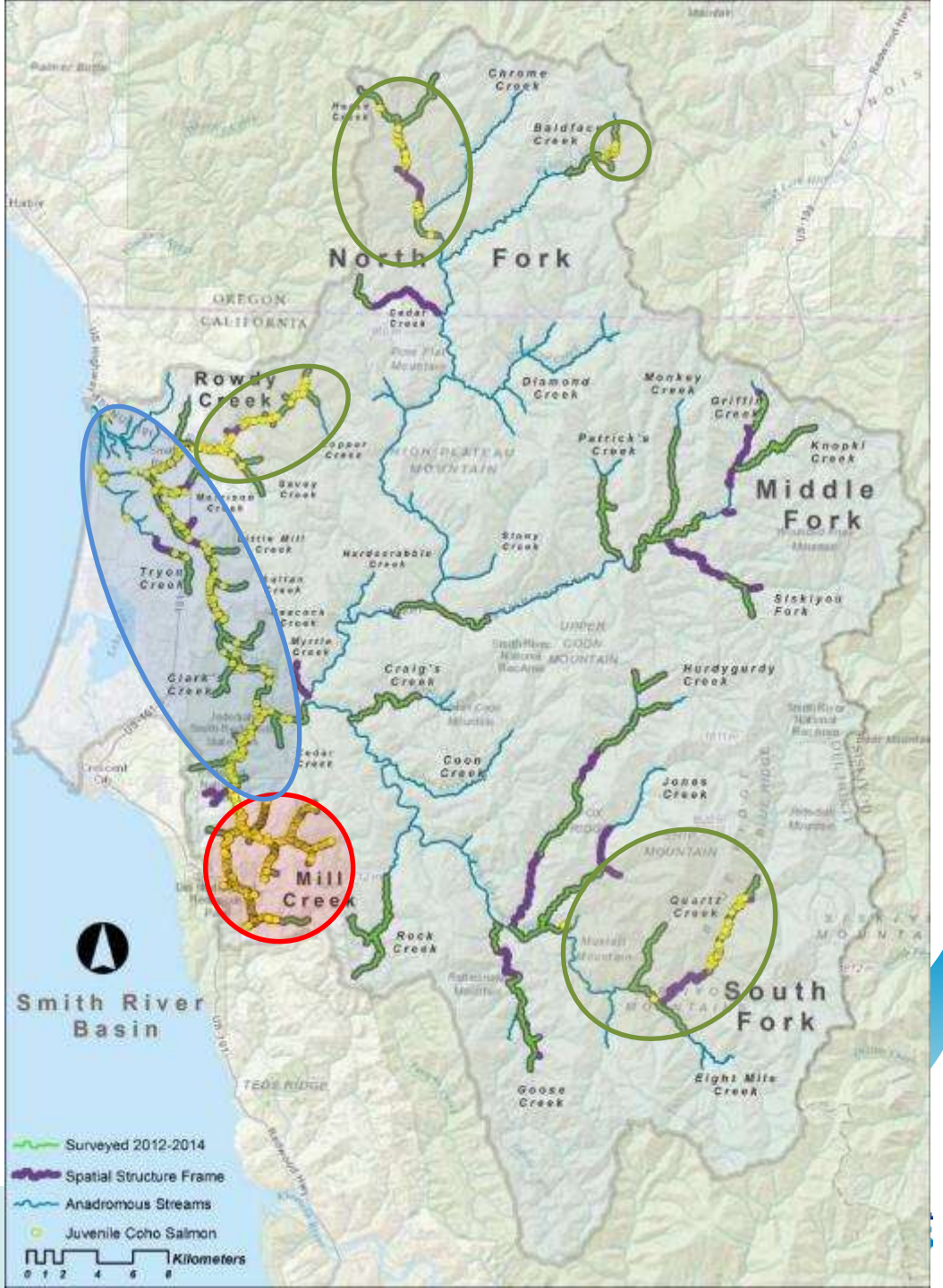
Recovery Actions

- Construct off-channel habitats, alcoves, backwater habitat, and old stream oxbows
- Remove, setback, or reconfigure dikes and levees
- Increase large woody debris (LWD), boulders, or other instream structure
- Restore natural channel form and function by reconstructing a naturally meandering channel in some tributaries
- Remove barriers
- Increase beaver abundance

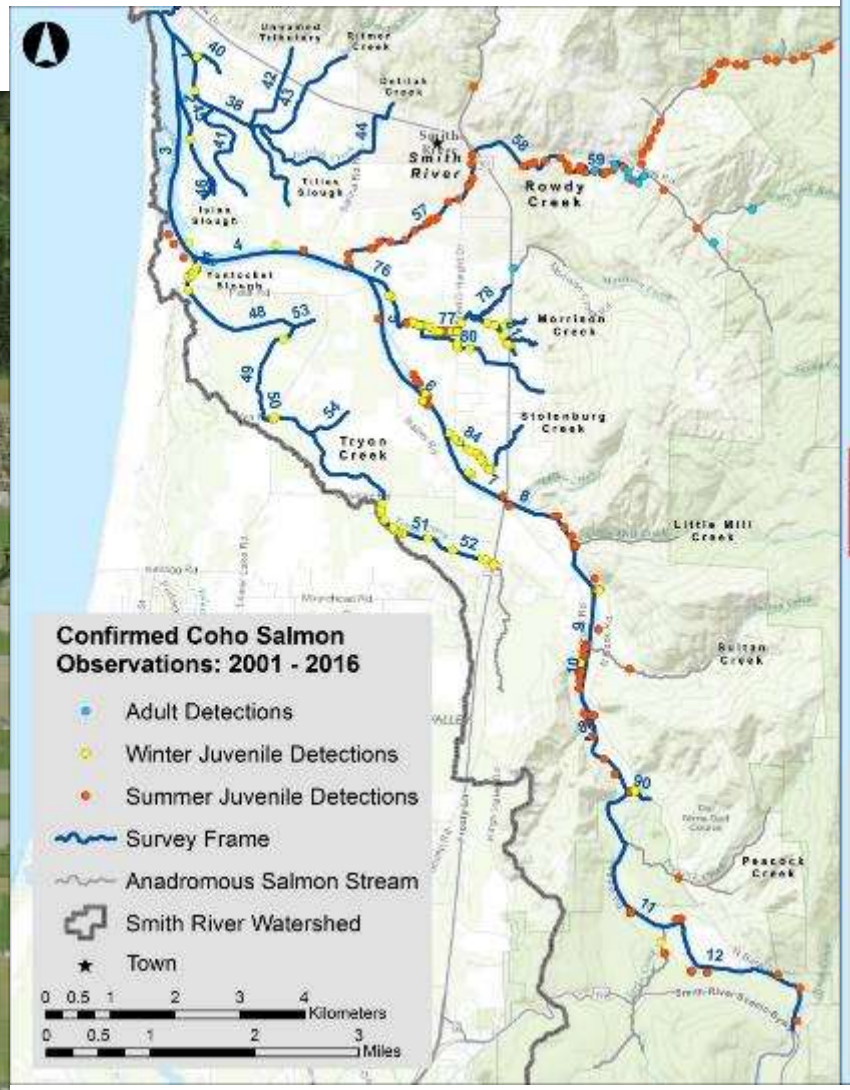
Habitat Availability and Use

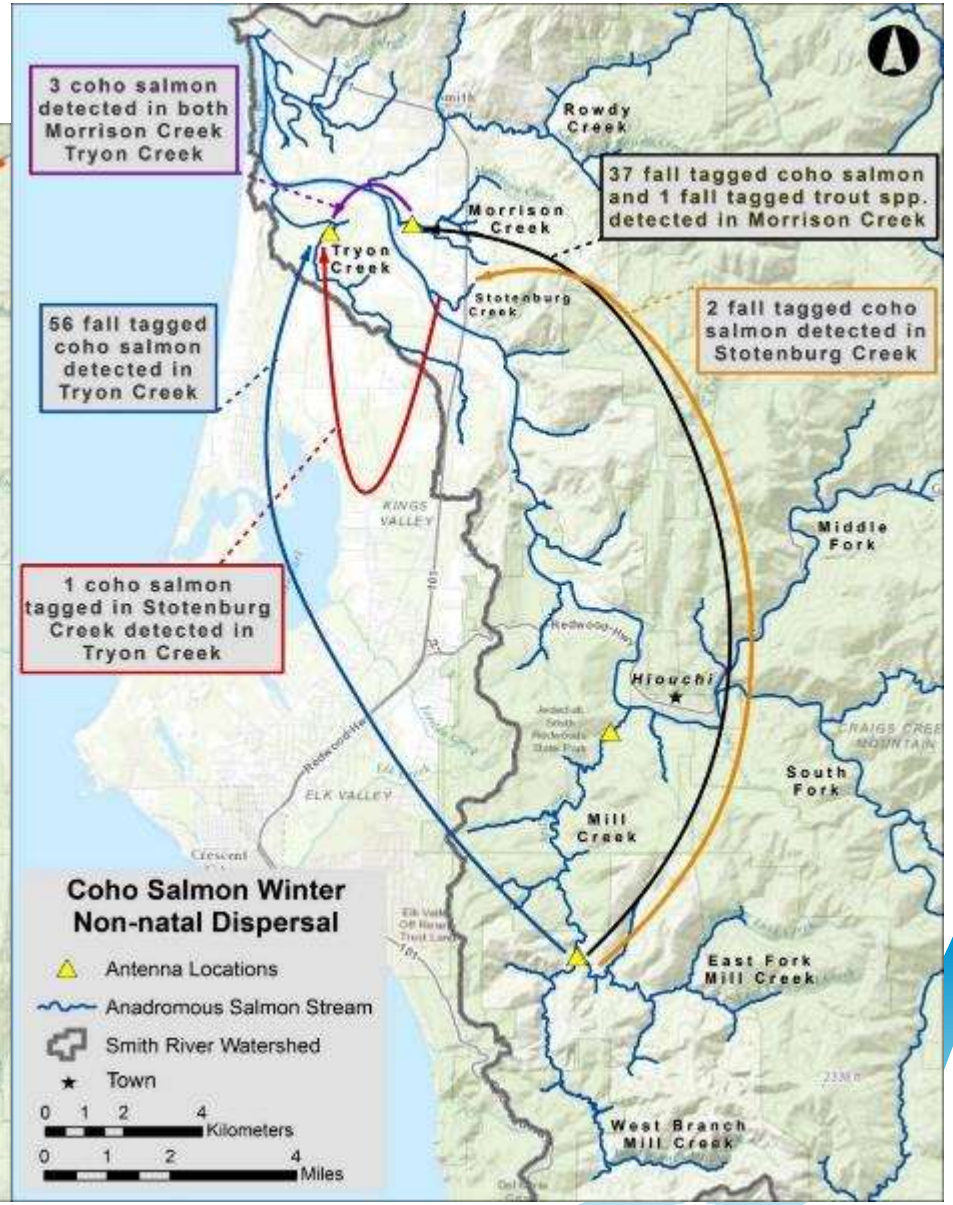
Extensive monitoring 2012 - 2017

- Spawner surveys
- Juvenile distribution surveys
- Summer and winter estuary surveys
- Over-winter survival studies
- Beaver distribution surveys



Seasonal Variation





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Upper Basin – South Fork & North Fork

Past – Instream

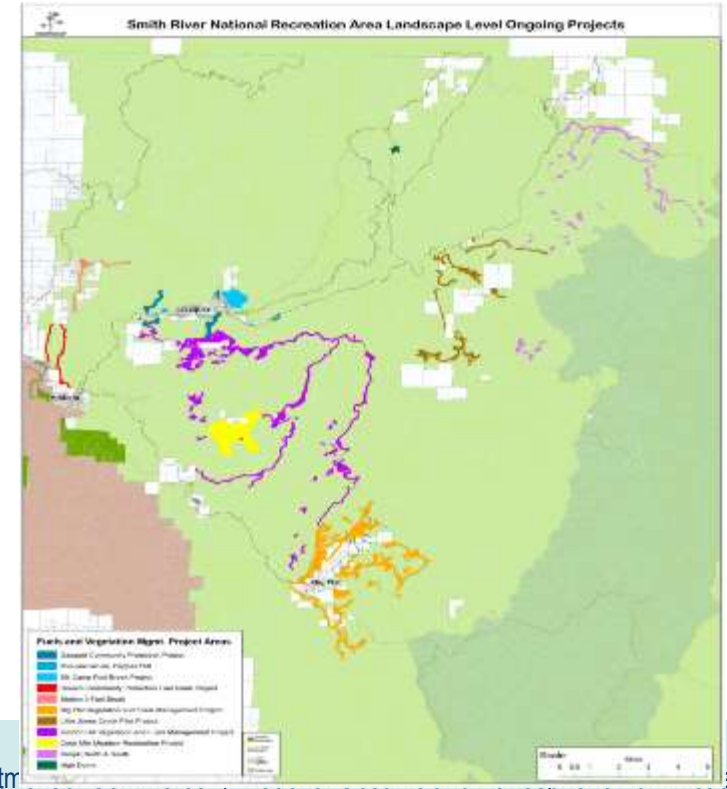
- site specific intentions with LW structures
  - Northwest Forest Plan (90's)
- Lacked holistic view and has variable results
- Road removal

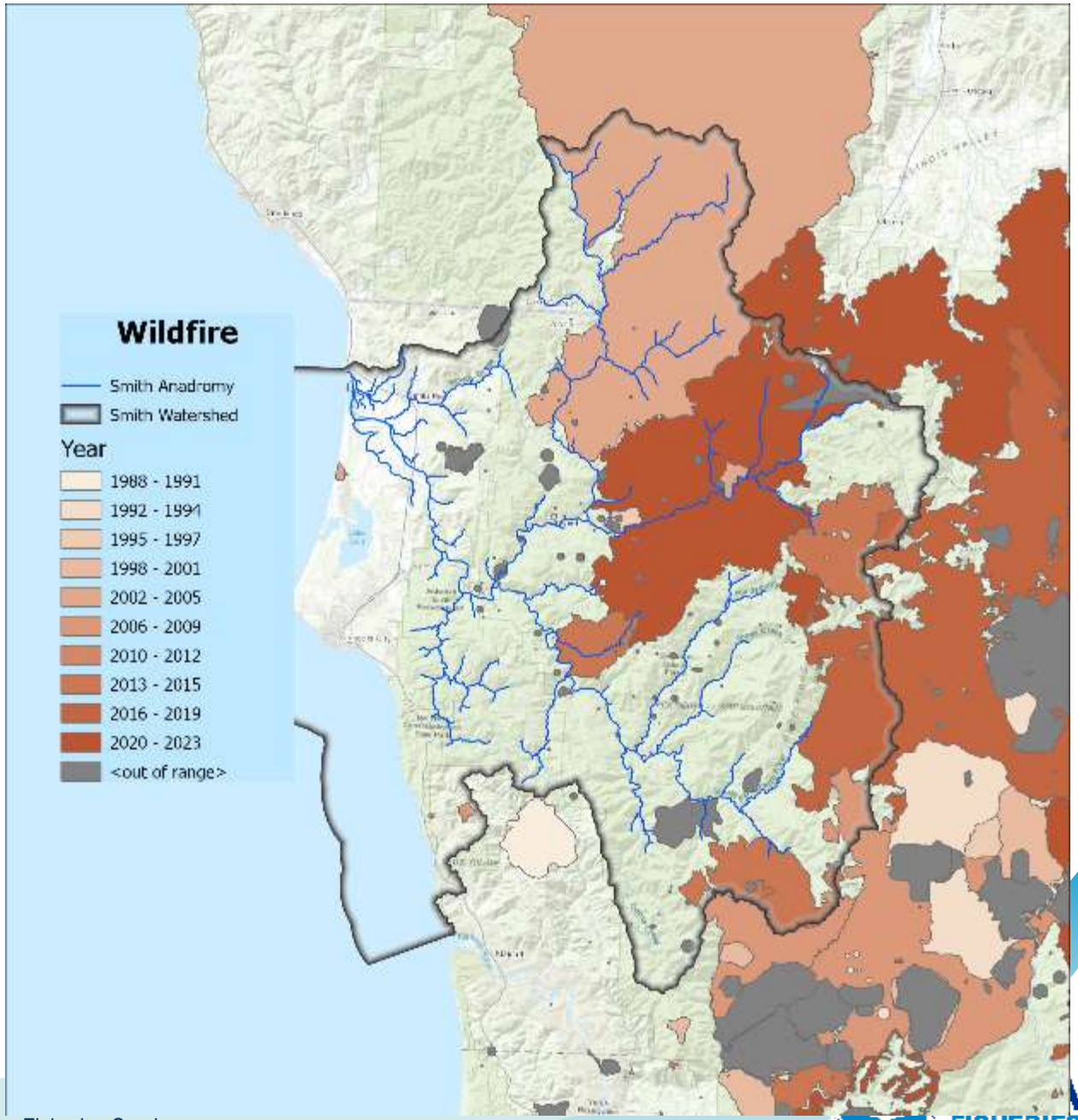
Present (last ~10 years)

- Broader view (what is impacting habitat) with fire regime incorporated
- Roads – remove or retain
- Fires – minimizing impacts during suppression efforts

Upper Basin – Fire

- Mosaic of fire severity
- Smith River Collaborative
  - Control Burns



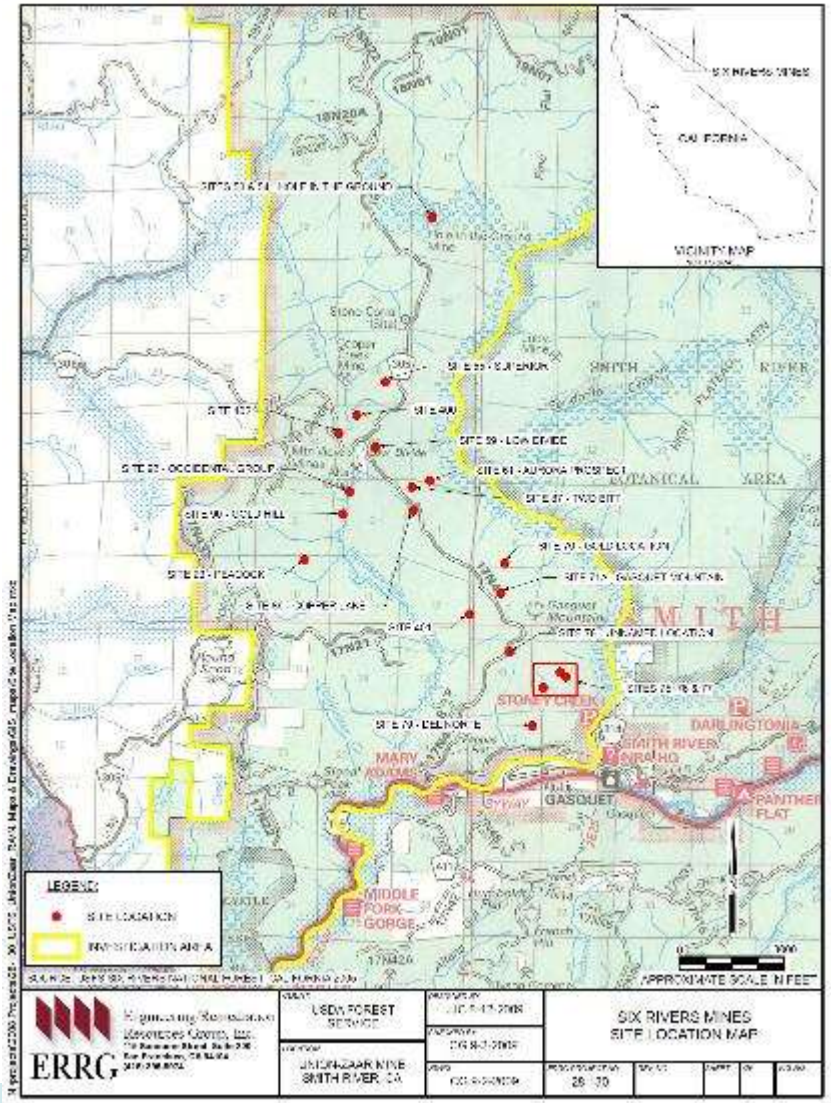


North Fork Mines

- Mine tailings
- Legacy heavy metals

Past and Present

- Mine site remediation
- Future impacts
  - North Fork NRA
  - Mining Ban



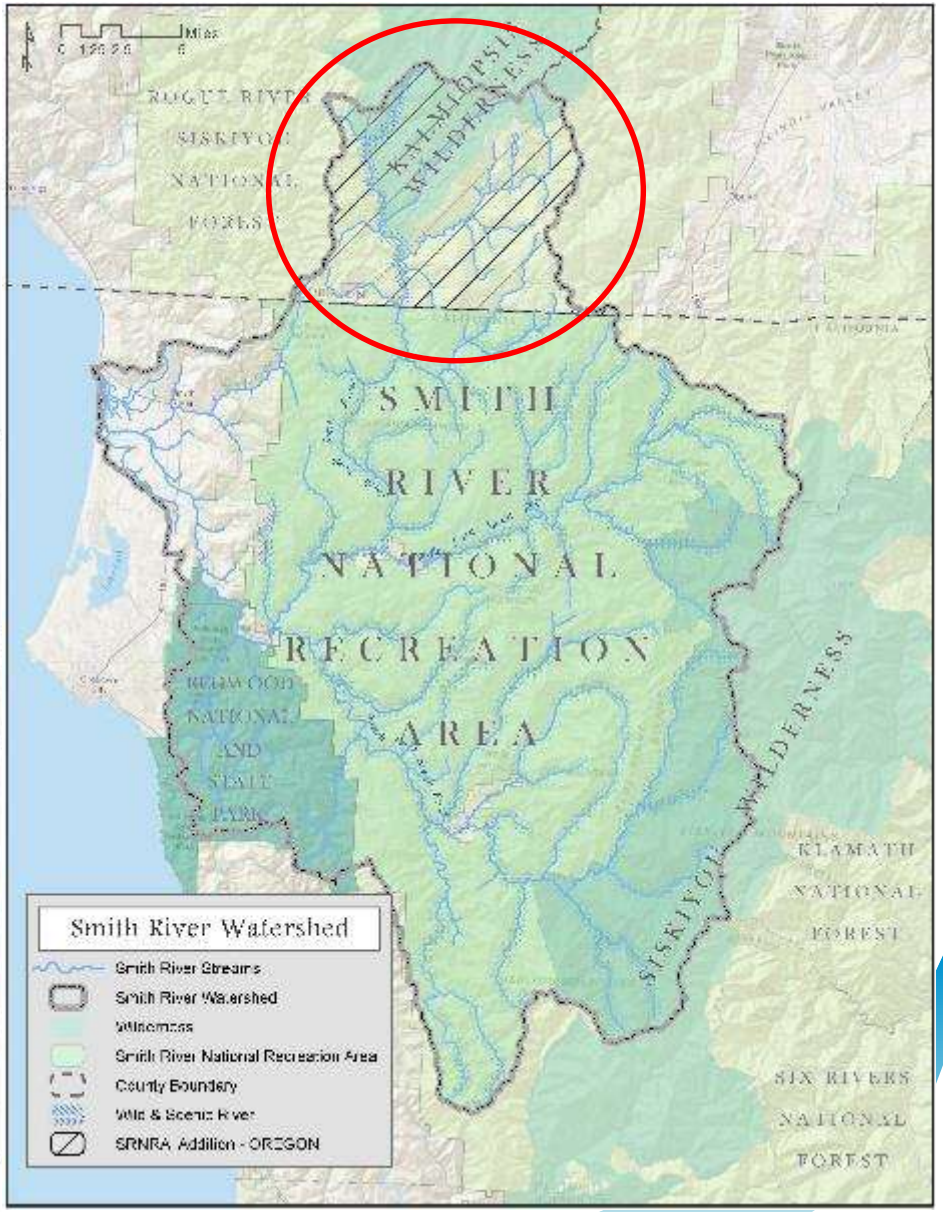


Photo: Nate Wilson

Mill Creek

Photo:
John Parmentier

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Mill Creek - Roads

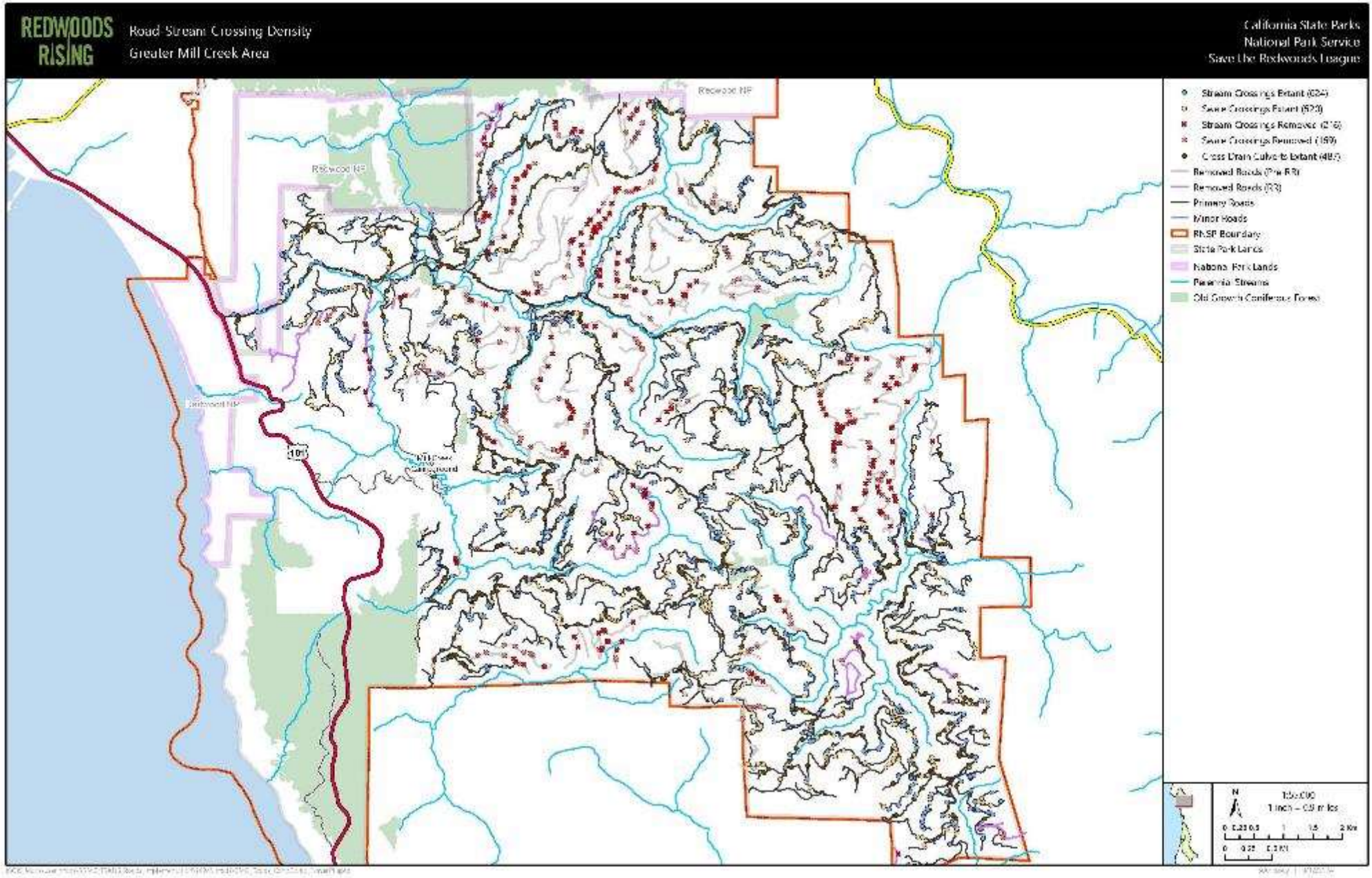
- >300 miles
- + skid roads

Past removal

- 216 crossings
- 169 swales
- 76.6 miles

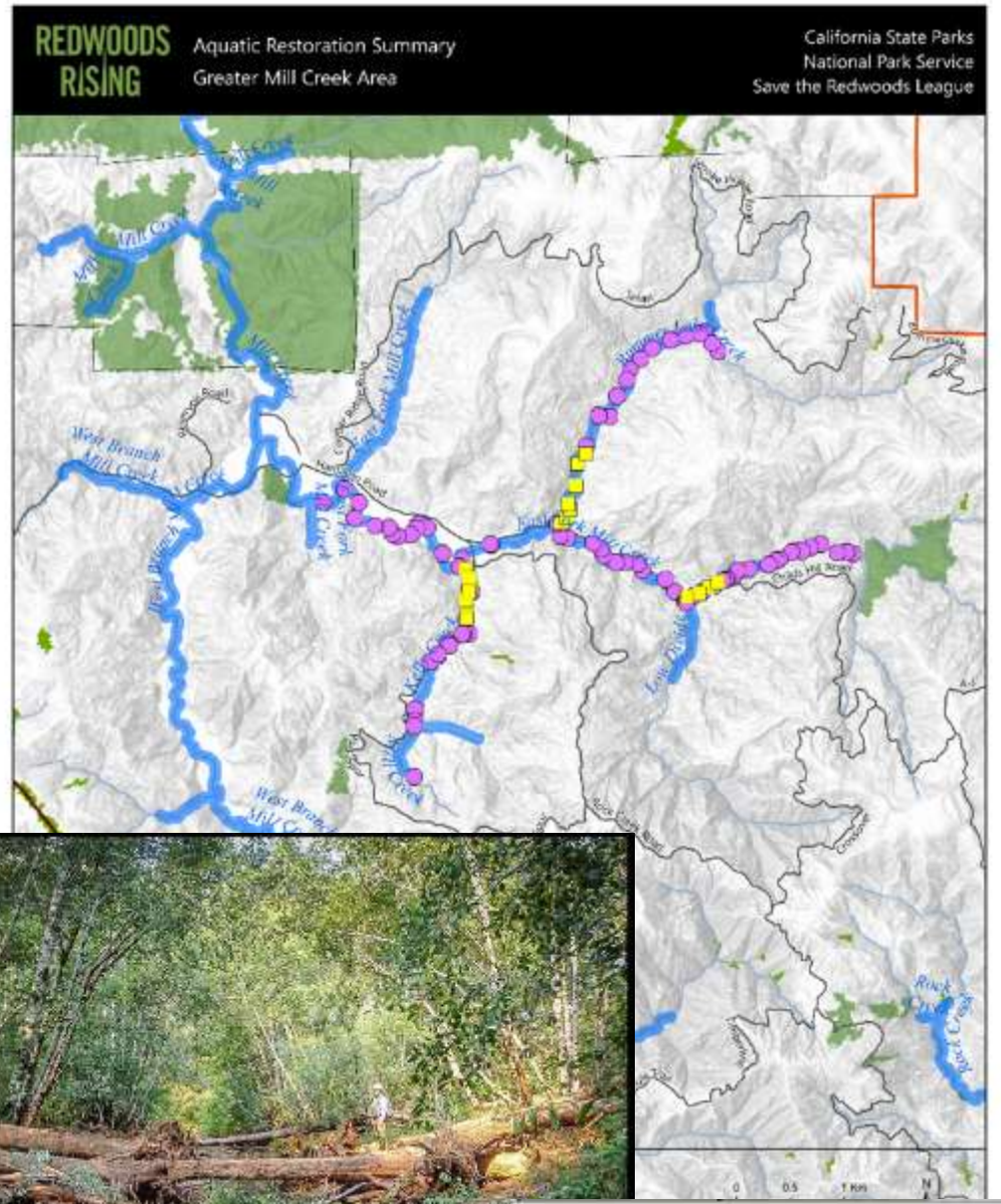
Future - remaining

- 624 crossings
- 520 swales
- 487 cross drains



Mill Creek - Instream

- 1995: 49 LWD sites
  - 1- 4 log ballasted and anchored with rocks
- 2006: 12 LWD sites
  - 1 - 4 logs intertwined with and anchored to riparian tree
- 2008: 14 sites
  - Pieces with RW, buried and woven between trees without anchoring
  - Mobile pieces incorporated
- 2011: 13 sites
  - Use of helicopter
  - 2 – 4 logs per site



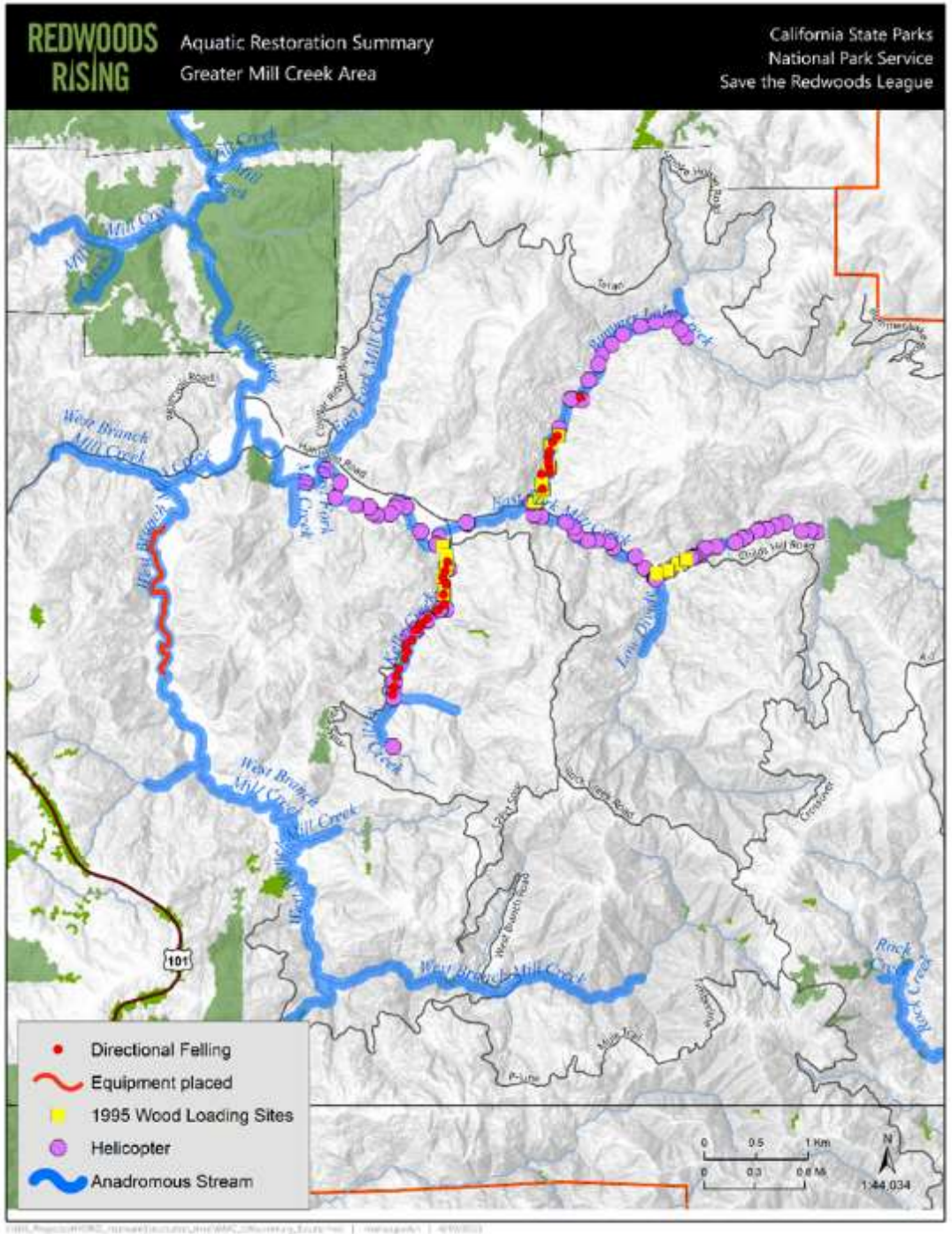
Mill Creek – Redwood Rising

Directional Felling

Whole Trees – woven in riparian

Anchorless structures

- 2022 – Bummer Lake Creek
- 2023 - Kelly Creek
- 2024 – West Branch Mill Creek



Mill Creek – LW loading - present

West Branch Mill – Picnic Road
Photos: Aaron Martin - Yurok Tribe

Bummer Lake Creek
Photos: State Parks

Coastal Plain

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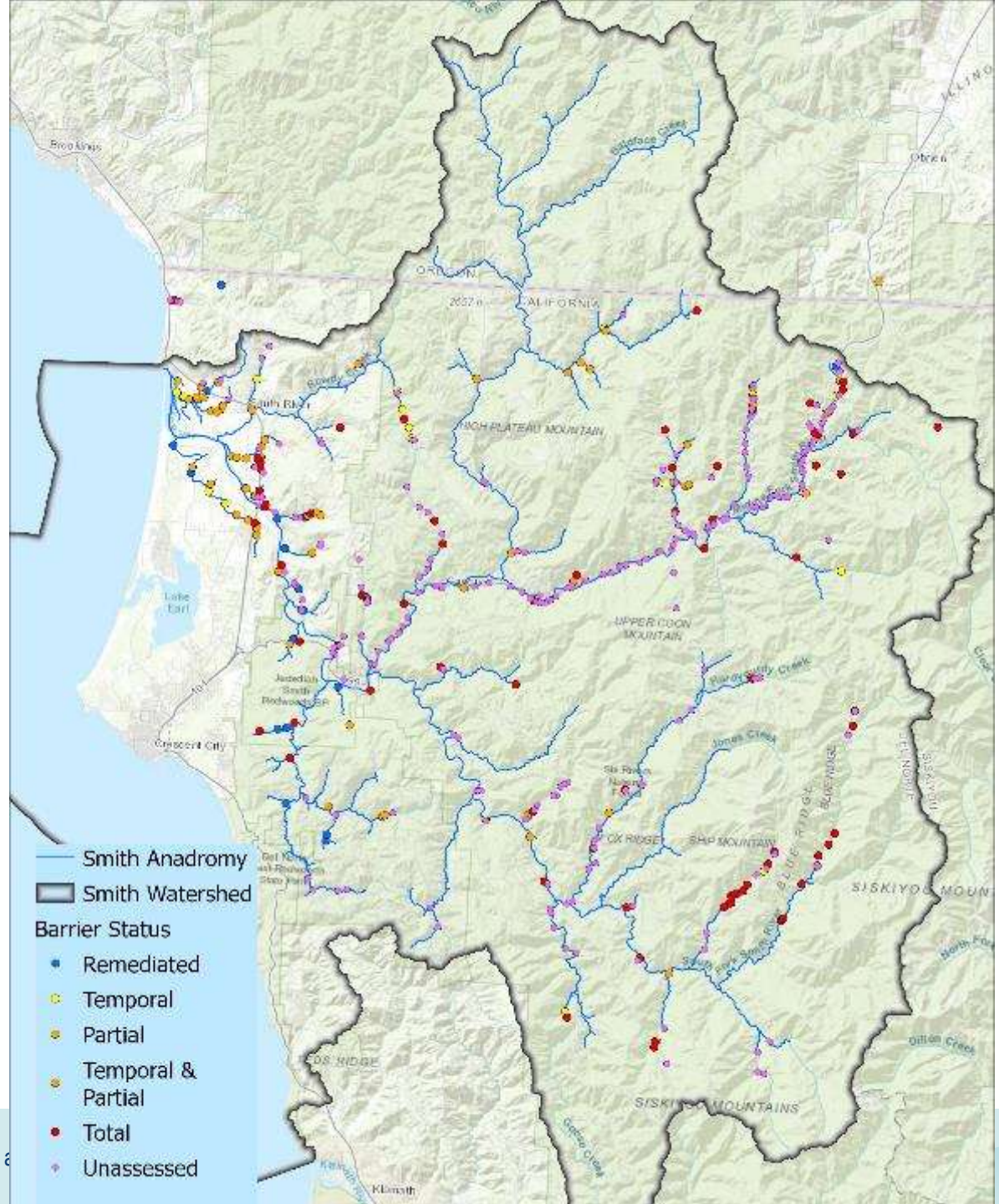
Passage



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Passage – past public

CalTrans District 1 – 2005 report

LITTLE MILL CREEK

DOMINIE CREEK

Pre-treatment: Before Replacement. Drop at culvert outlet. Photo taken on and courtesy of Caltrans.

Pre-treatment: Before Replacement. Downstream weir. Photo taken on and courtesy of Caltrans.

Post-treatment: After Replacement. Photo taken on and courtesy of Caltrans.

Culvert Outlet Pre-Remediation. Photo taken on 09/11/2001.

Culvert Inlet Post-Remediation. Photo taken on 07/31/2013.

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Passage – present private

- Morrison Creek trib (2) –2023 & 2024
- Stotenburg Creek (3) – 2023 & 2024
- Upper Tryon –2024
- Lower Tryon –2024
- Rowdy Creek and Dominie Creek weir - 2024

Stotenburg Creek

Upper Tryon Creek – remediated 2024

Morrison Creek tributary – remediated in 2023

Rowdy Creek Fish Hatchery

Rowdy Creek Fish Hatchery

Courtesy TDN - September 4, 2024

Passage – future public and private

Caltrans

- Mellow Creek - 2026
- Delilah Creek – 2028

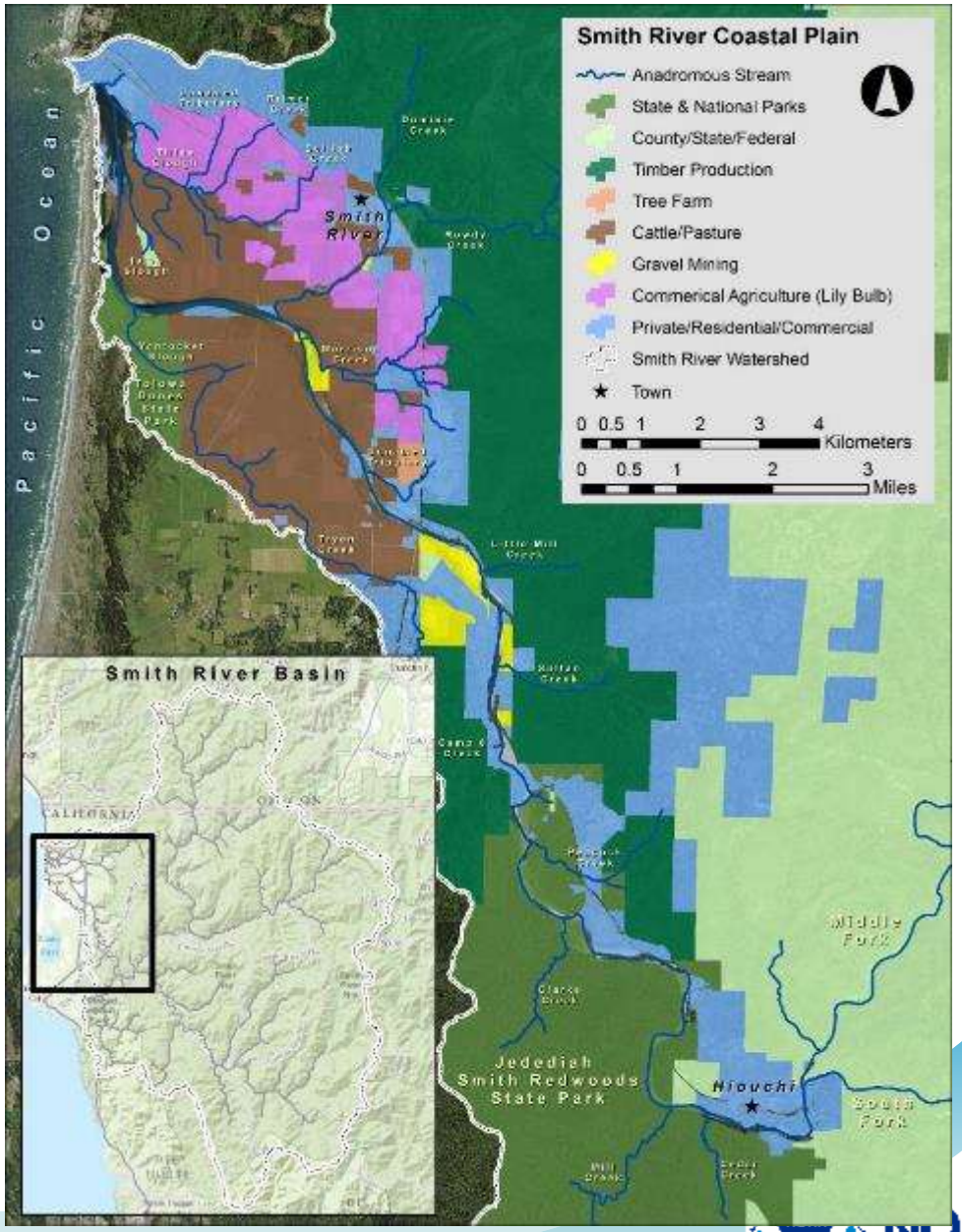
Private

- Tillas Slough (3) – 2026?
- Islas Slough – 2026?
- Delilah Creek – 2026?
- Tryon Creek (3) – 2025 - 2026
- Stotenburg Creek – 2026?

MELLO CREEK

Coastal Plain: Timber lands

- Roads - minimize sediment impacts
  - Upgrade to remove hydrologic connectivity
  - Crossing
- Timber harvest
  - Smaller harvest plots
  - Higher canopy retention
- Anchored structures
  - Little Mill Creek
  - Peacock Creek
  - Rowdy Creek
  - Sultan Creek
  - Morrison Creek

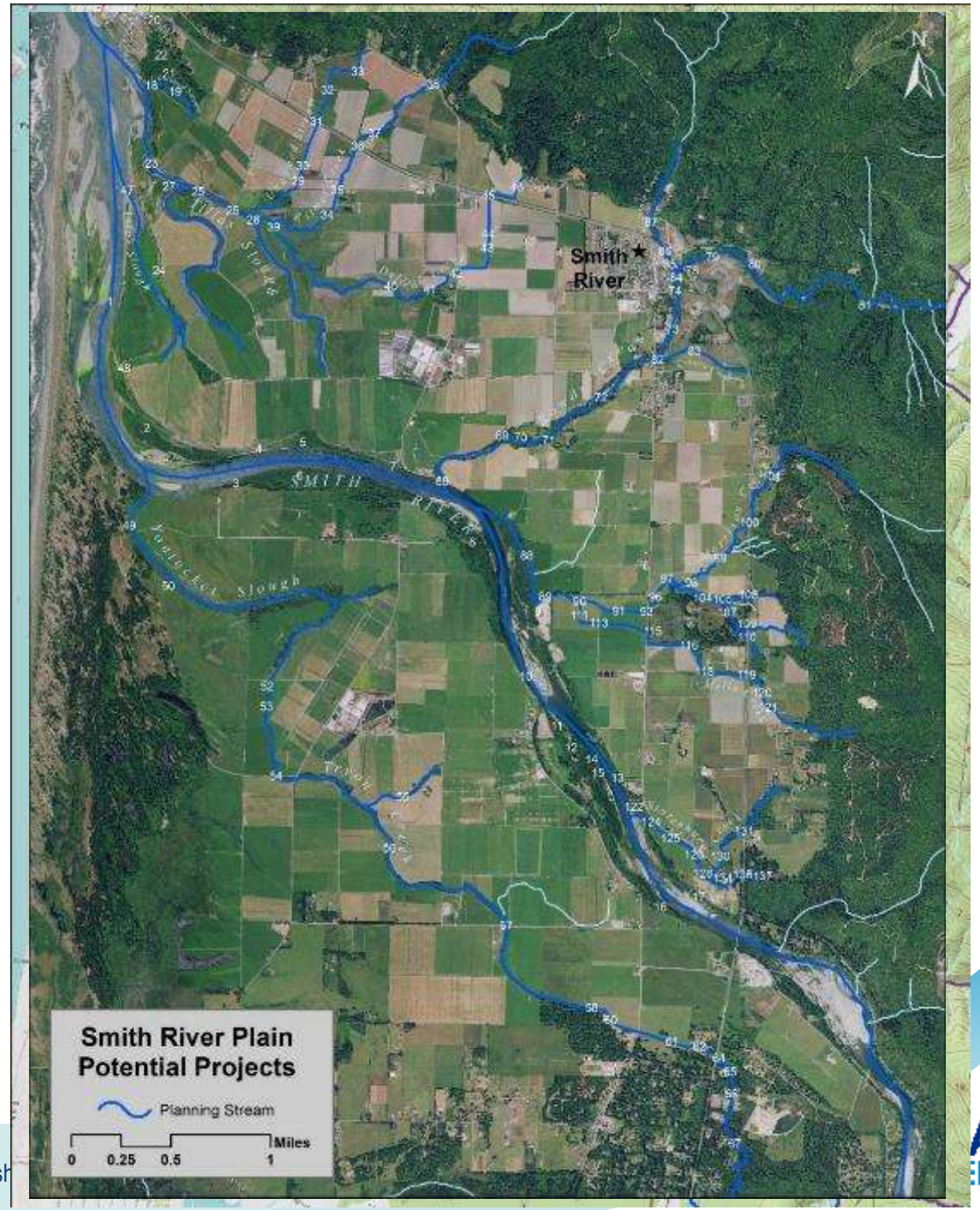


Coastal Plain Planning

2018 report

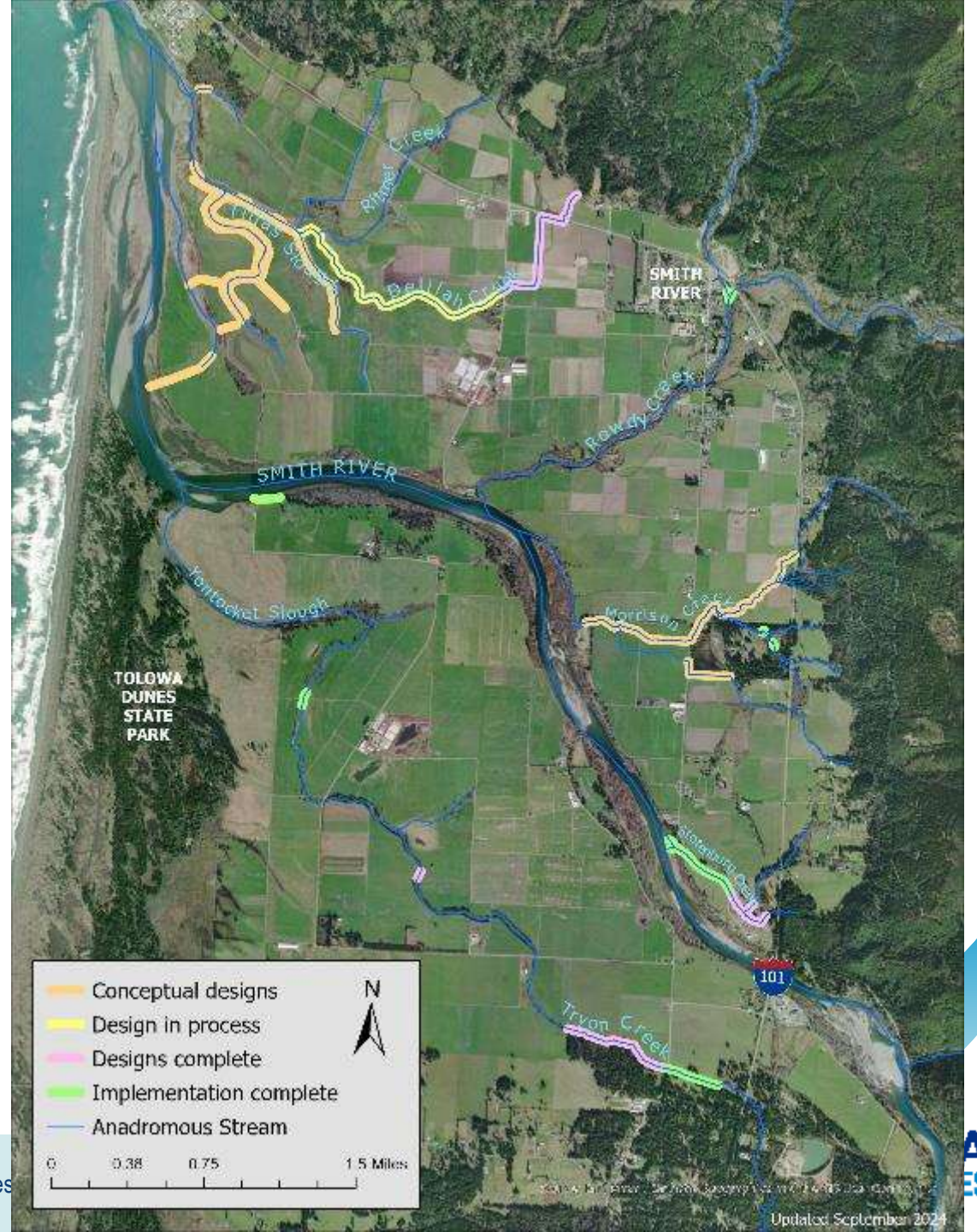
37.46 miles assessment area

- 137 projects
  - Riparian:29
  - Channel complexity: 33
  - Passage: 63
  - Invasive Plant Removal: 8
  - Water Quality and Quantity: 4
- 8 basin wide recommendations



Progress to date

- 45 projects – initial planning and design
- 23 projects - 100% designs completed
- 12 projects advanced to implementation



Instream – wood and beyond

- Lower Stotenburg Creek – 0.5 miles (2023)
  - BDAs
  - LW structures
  - Cattle exclusion fencing

- Upper Tryon Creek - 0.83 miles
  - 0.27 treated in 2024
  - LW structures
  - Alcoves
  - Removed levee - restored meandering bends
  - Cattle exclusion fencing

Photos: Smith River Alliance

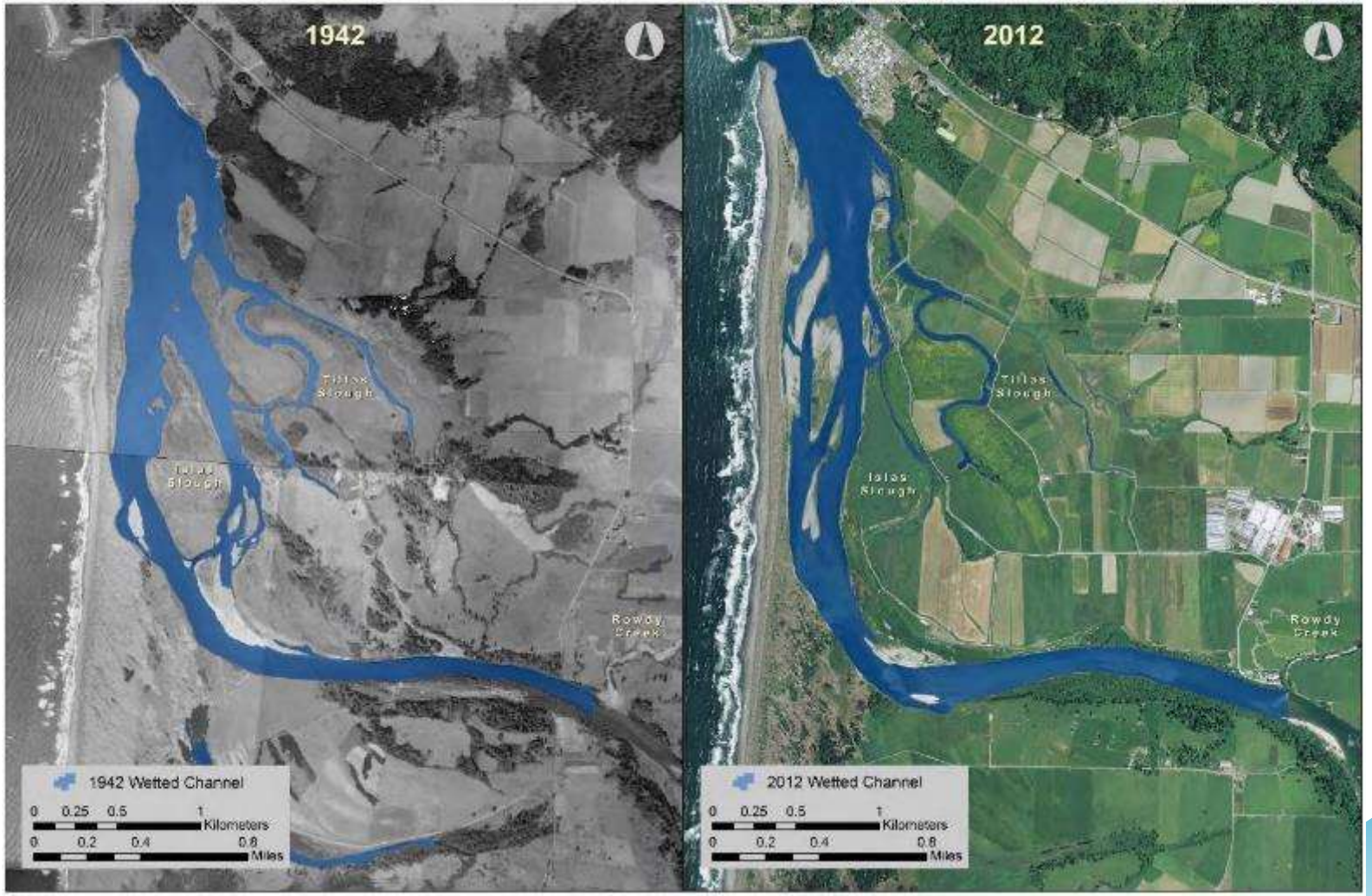
Mainstem

- Tedsen backwater – implemented 2023
  - Alcove enhancement
  - LW structures

Photos: Smith River Alliance

Future – tributaries

- Rowdy Creek
- Morrison Creek
- Tillas Slough
- Islas Slough
- Yontocket Slough



Parish and Garwood 2014

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Future – Mill site remediation

- Mill Creek
- Rowdy Creek

Photo: Justin Garwood

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Future - Monitoring

- Effectiveness monitoring
  - Habitat conditions
  - Juvenile use
- Spawner surveys
- Collaboration is key

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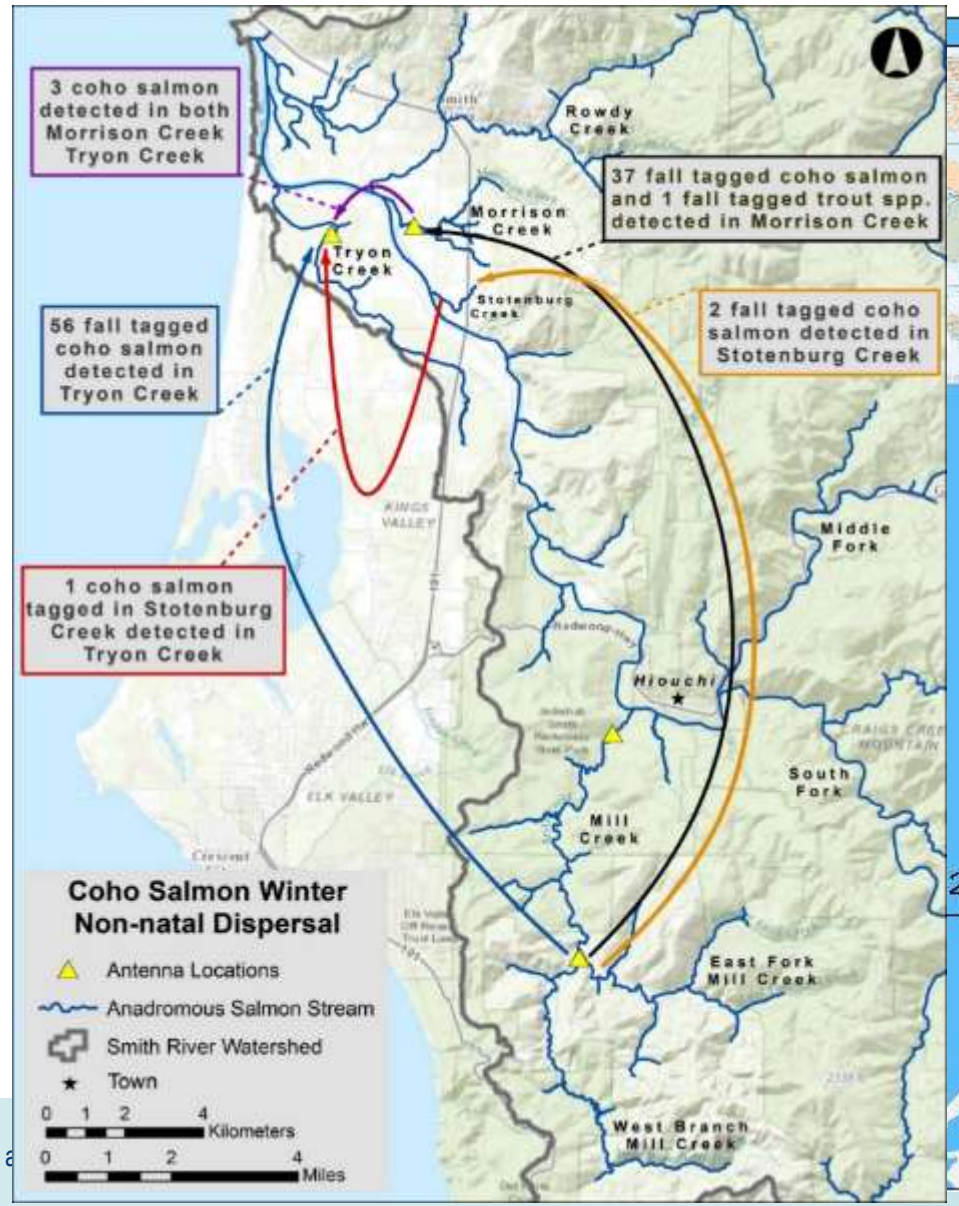
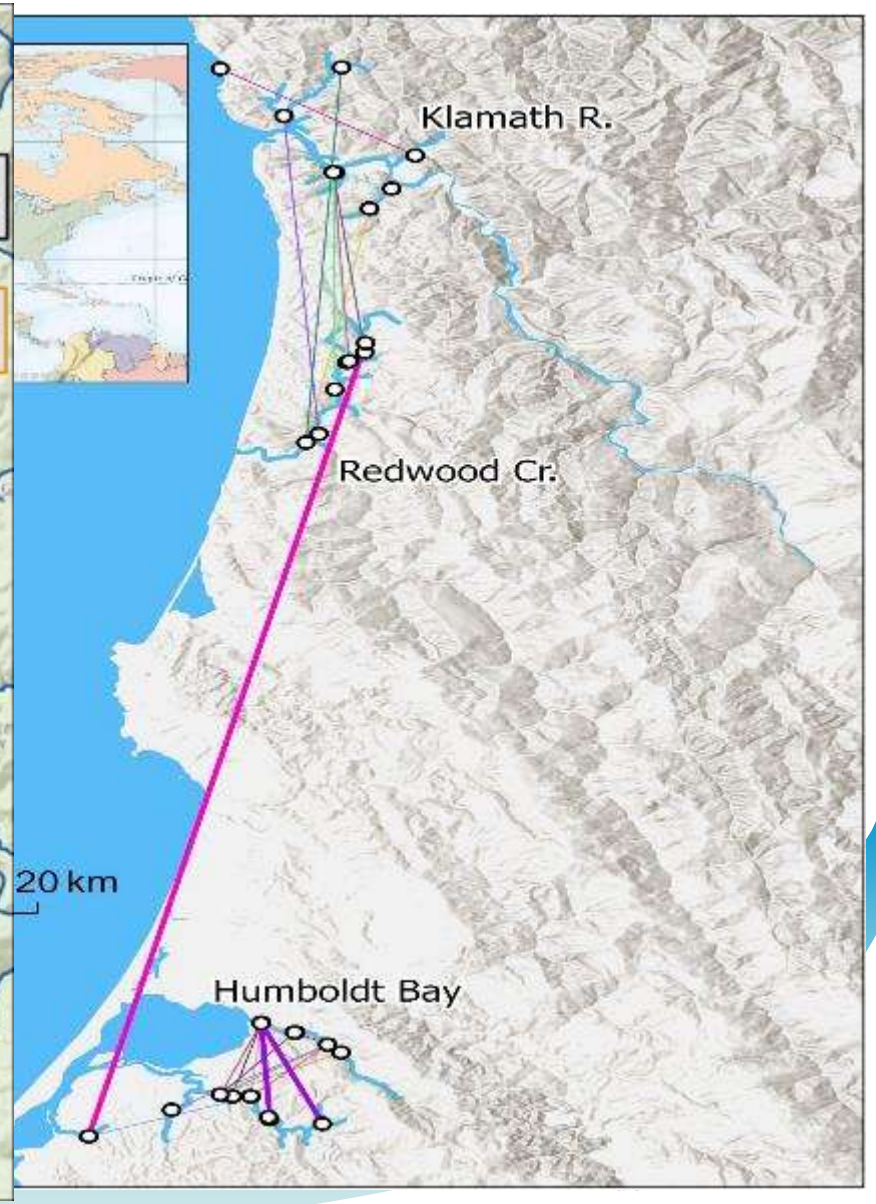
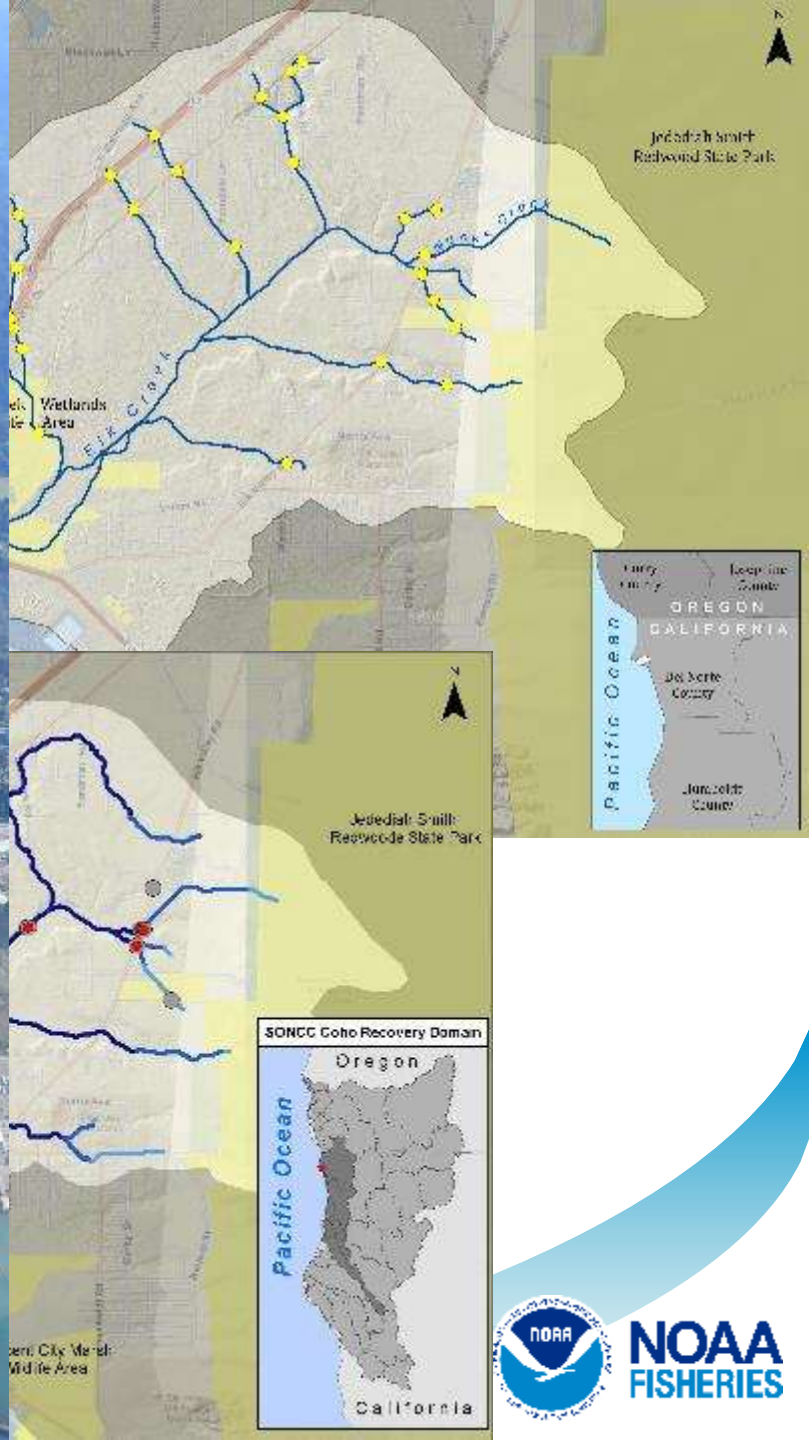
Beyond the Basin - Stream swappers

- Elk Creek
- Klamath River
- Prairie Creek





Elk Creek



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Klamath River

Prairie Creek

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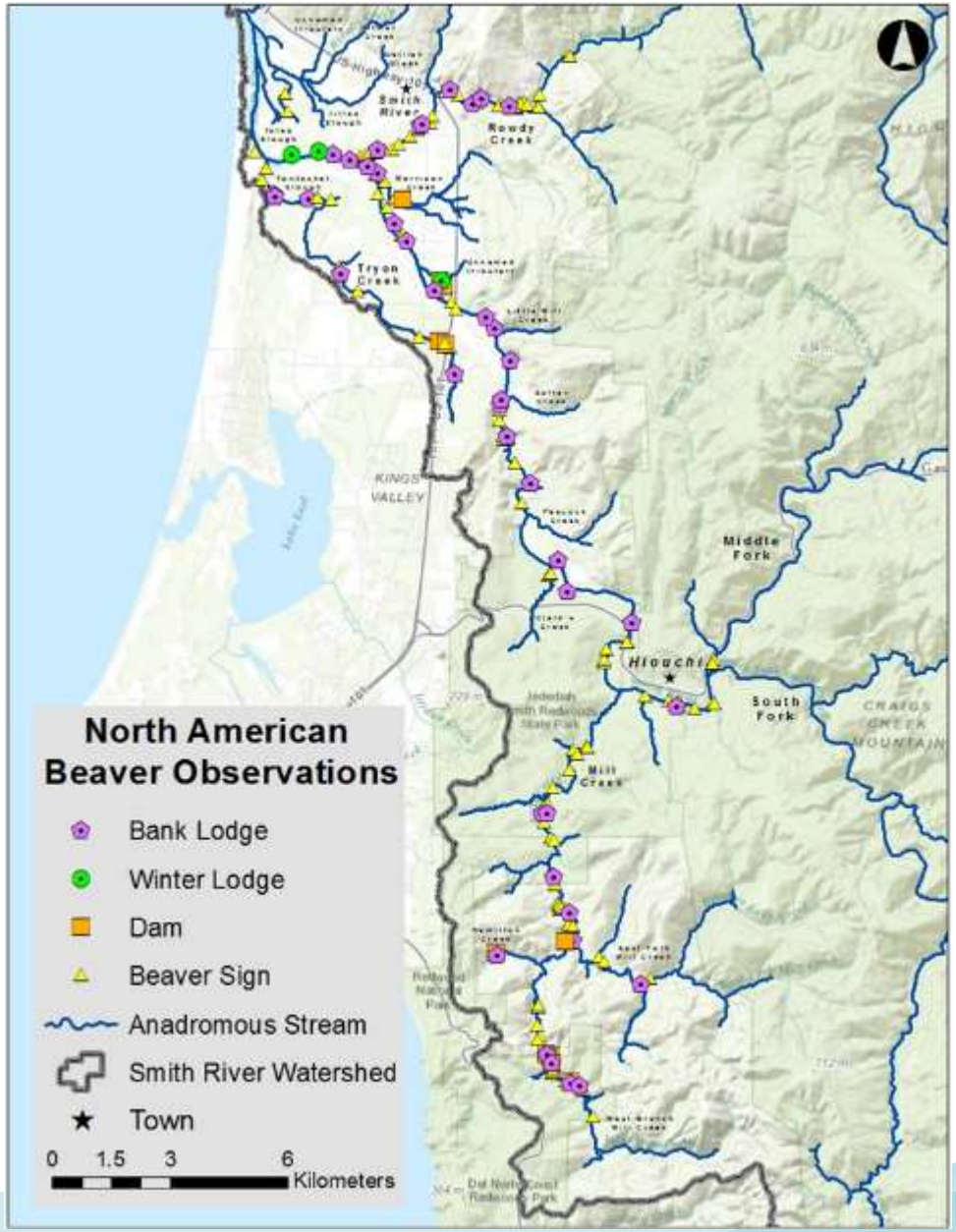
Questions

Beaver Distribution



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