



Vital Sign Update: Results from Vegetation Monitoring at Redwood National and State Parks 2011-2024

Lauren Youngblood
September 23, 2026



NPS/Jessica Weinberg McClosky



Objectives of this Face-to-Face Briefing (FFB)

- Overall objectives:
 - Face time with park staff
 - Introduction of I&M/KLMN to non-resource staff
 - Refresher of why/what we do for all staff
 - Review of Resource Brief for all staff
- Objectives of NR staff meeting following general presentation:
 - Deeper dive into parameters
 - Temporal patterns
 - Preview/discussion of analytical needs of park



KLMN veg crew heading to a plot at RNSP in 2024
NPS/Natasha Pagel-Aprill



Objectives of this Face-to-Face Briefing (FFB)

- Overall objectives: **~30 mins**
 - Face time with park staff
 - Introduction of I&M/KLMN to non-resource staff
 - Refresher of why/what we do for all staff
 - Review of Resource Brief for all staff
- Objectives of NR staff meeting following general presentation: **~60-90 mins**
 - Deeper dive into parameters
 - Temporal patterns
 - Preview/discussion of analytical needs of park



KLMN veg crew heading to a plot at RNSP in 2024
NPS/Natasha Pagel-Aprill



NPS Inventory & Monitoring Program

Natural Resource Challenge – 1999

- Mandated shift towards science-based decision making
- Created I&M Program to provide high quality info to park managers
- By conducting **Inventories**
 - what resources are present & where
- By conducting **Monitoring**
 - Track status and trends in condition of resources over time



Pacific tree frog at LAVO
NPS/Kelly Ahern

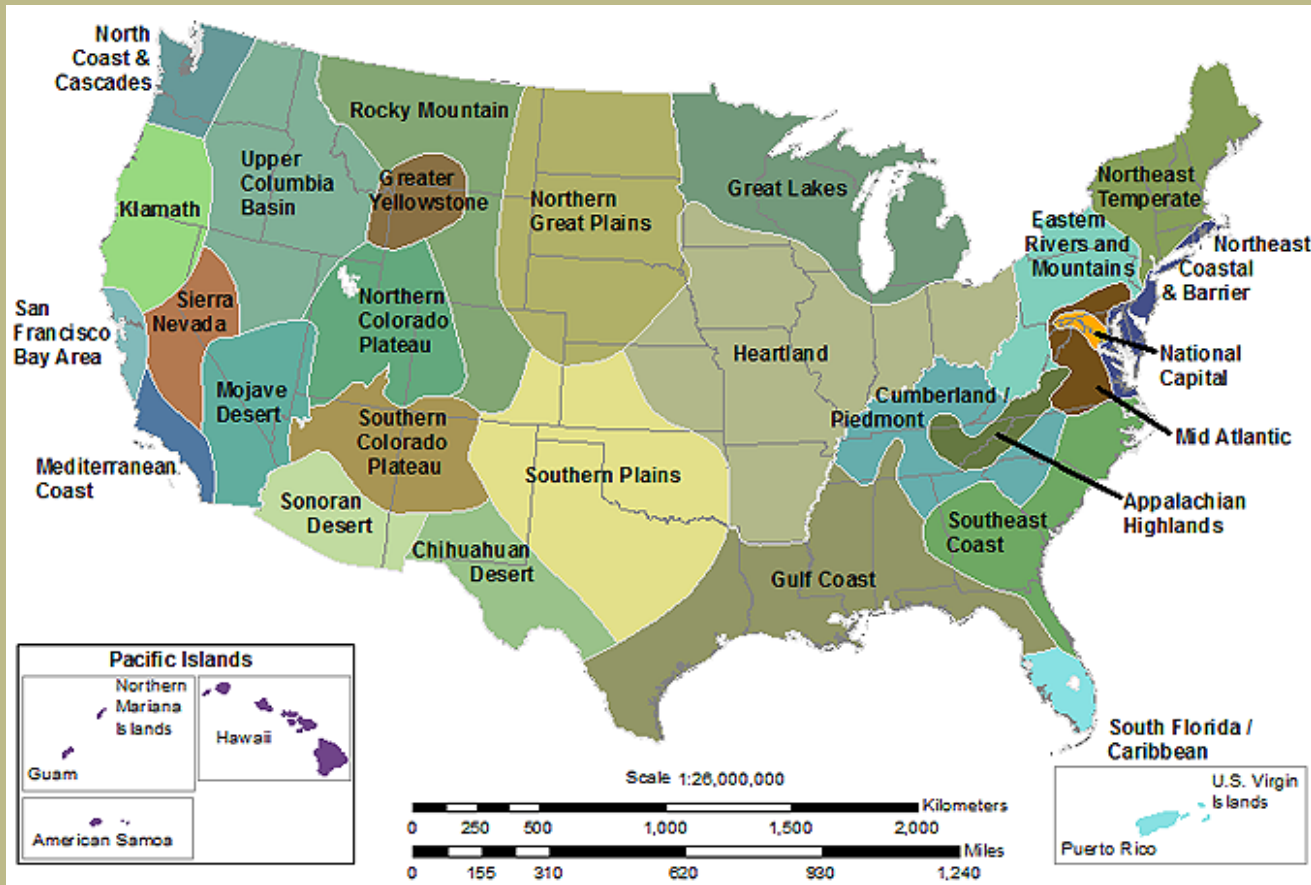


400+ National Park Service units

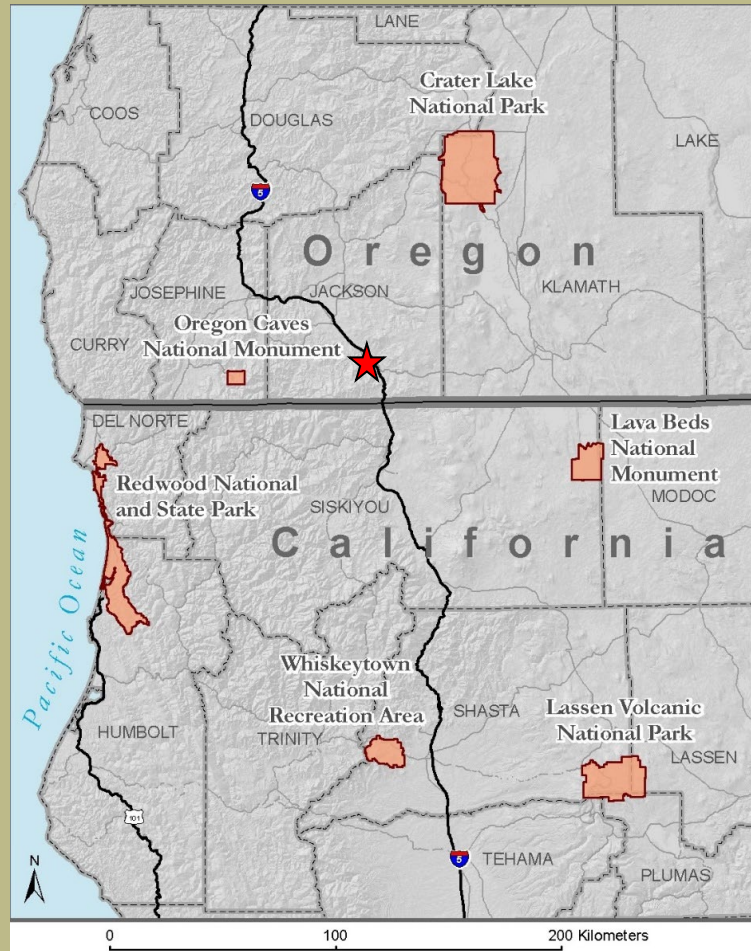




270+ parks organized into 32 networks



Klamath I&M Network



Klamath I&M Network--Office: SOU Campus in Ashland



Core KLMN staff

- Program Manager: Alice Chung-MacCoubrey (*retired*)
- Data Manager: Allison Snyder
- Vegetation Ecologist: Lauren Youngblood
- Aquatic Ecologist: Eric Dinger (*acting Program Manager*)
- Sci. Comm. Specialist: Sonya Daw (*retired*)
- Vegetation protocol lead: Trent Berrian





Klamath I&M Network

Office: SOU campus in Ashland

Eric Dinger
Acting Program Manager

KLMN Board
KLMN Tech. Committee

Allison Snyder
Data Manager

Lauren Youngblood
Ecologist

Eric Dinger
Quant/Aquatic Ecologist

Sonya Daw
Sci Comm Specialist
(Shared)

KBO -Bird Mon.

Trent Berrian
Veg Mon. Lead

Stream Mon.
bio/phys techs (4)

UCSC + REDW –
Rocky Intertidal Mon.

Invasive Species ED
bio techs (2)

Lakes Mon.
bio/phys techs (2)

LABE/ORCA - Cave Mon.

Whitebark Mon.
Intern (1)

Vegetation Mon.
bio techs (3)

Permanent
Seasonal
Cooperator or
Park staff

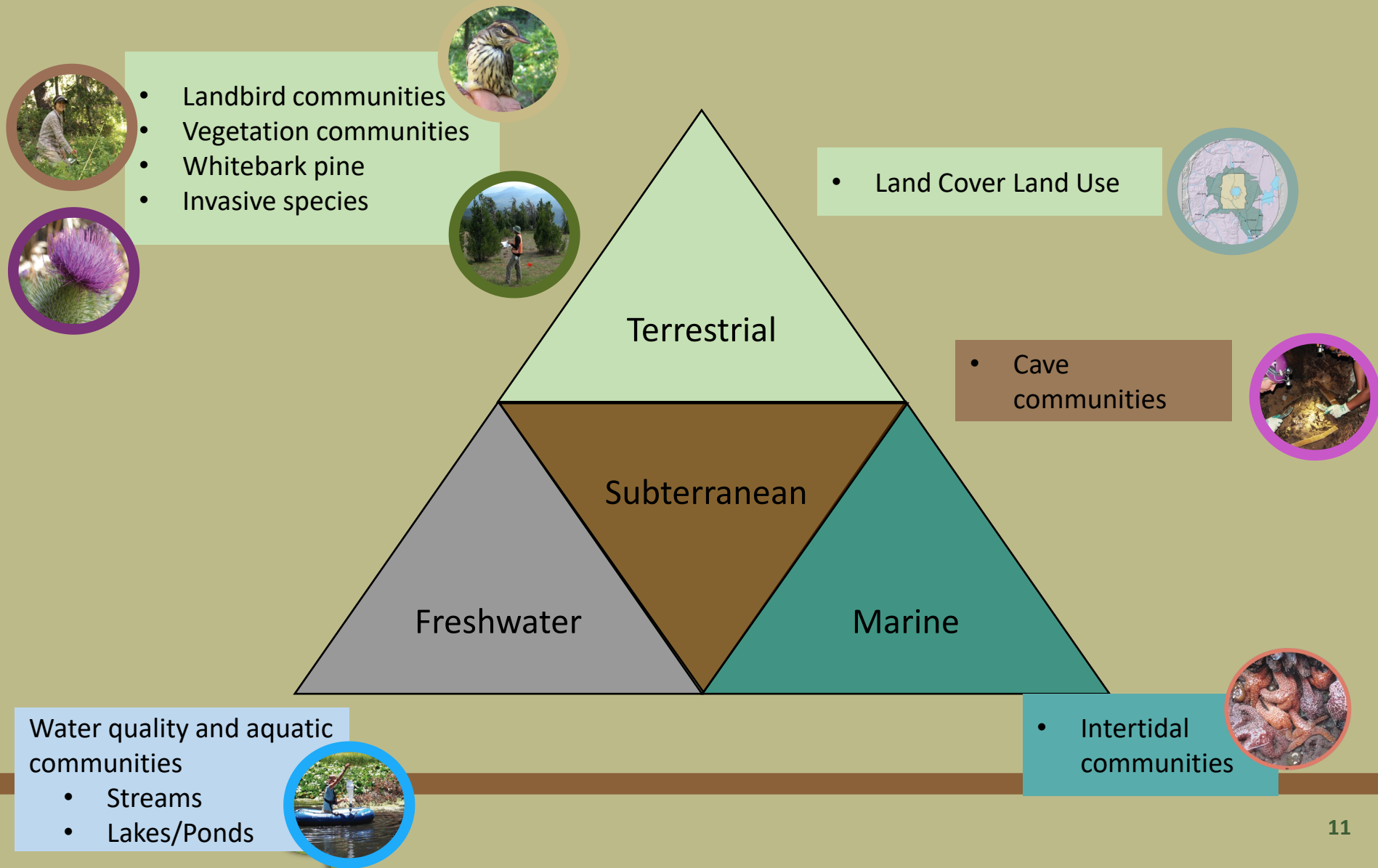


Seasonal crews

- Vegetation Crew (4-5)
- Stream or Lakes Crew (4)
- Invasive Species Early Detection (2)
- Whitebark Pine (1-2)
- SOU interns- field and office (1-3)

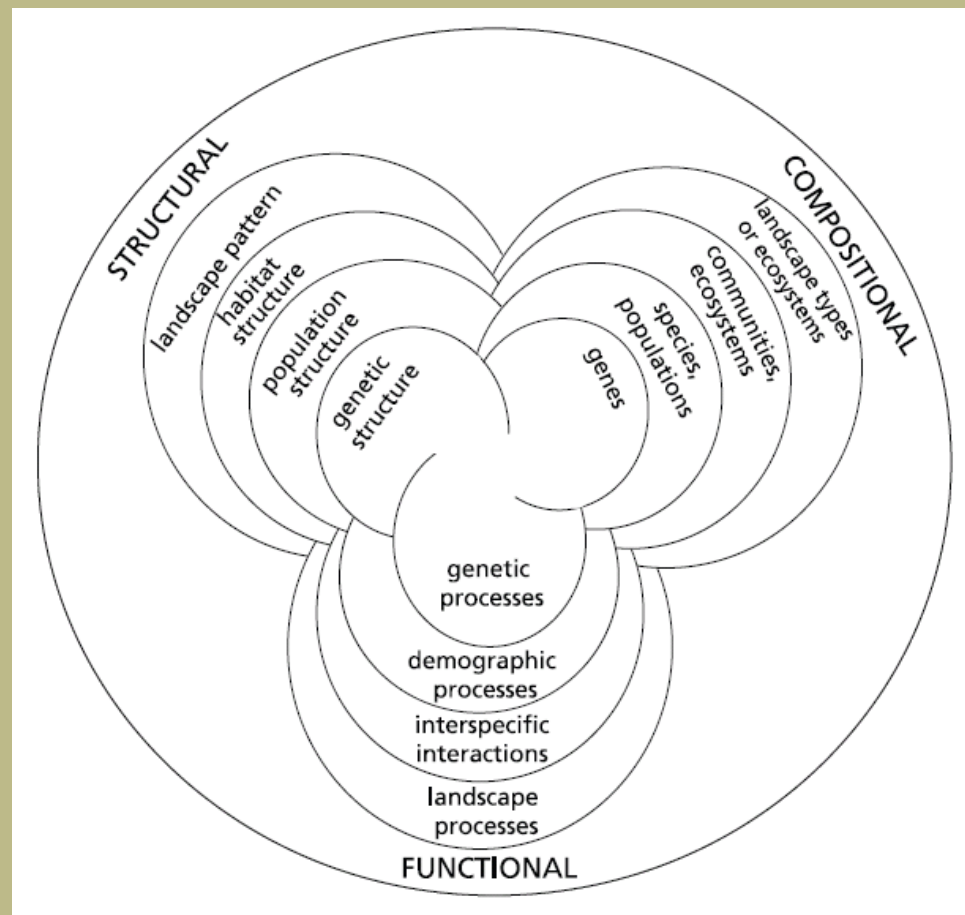


KLMN Vital Signs (aka “Protocols”)



Objectives of Vegetation Monitoring Protocol

- Describe the composition, structure, and function of vegetation communities
- Quantify temporal and spatial change in these factors through the re-measurement of permanent plots.



Vegetation monitoring timeline

- Protocol initiated in:
 - 2011 at RNSP and LABE
 - 2012 WHIS and LAVO
 - 2013 ORCA and CRLA
- Three year revisit schedule
 - RNSP - 2011, 2014, 2017, 2021, 2024
 - Field work occurs July - Sept

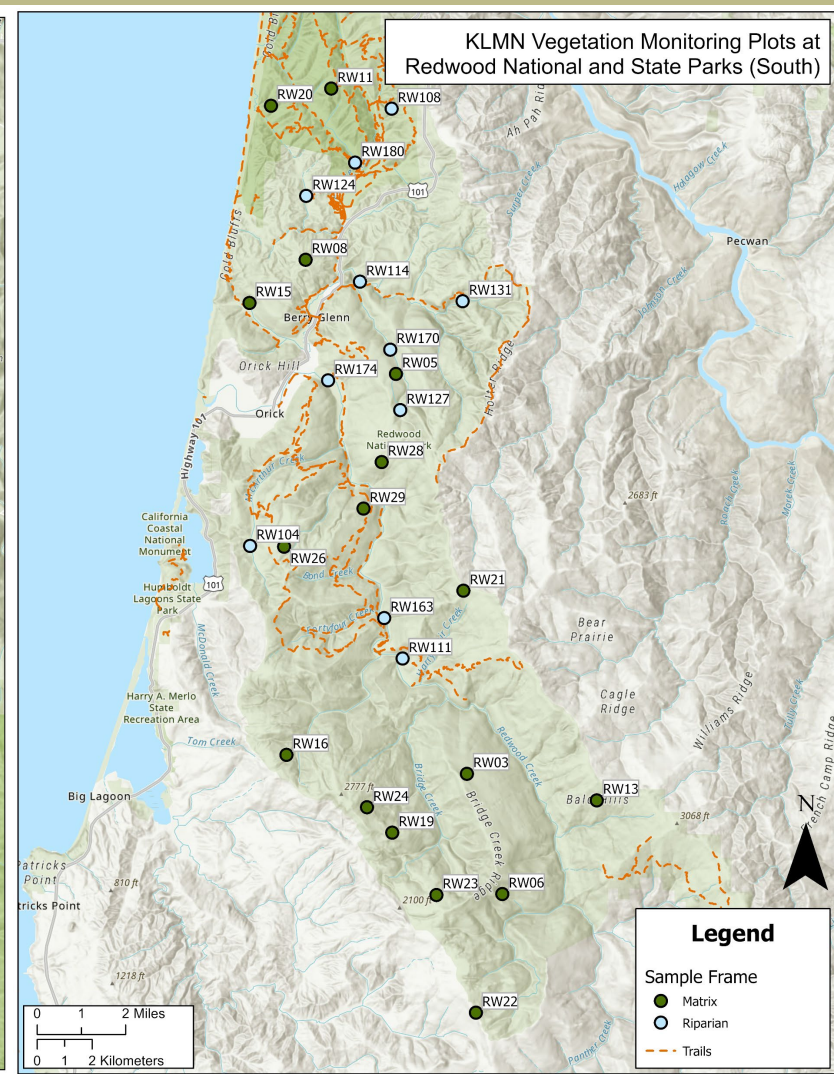
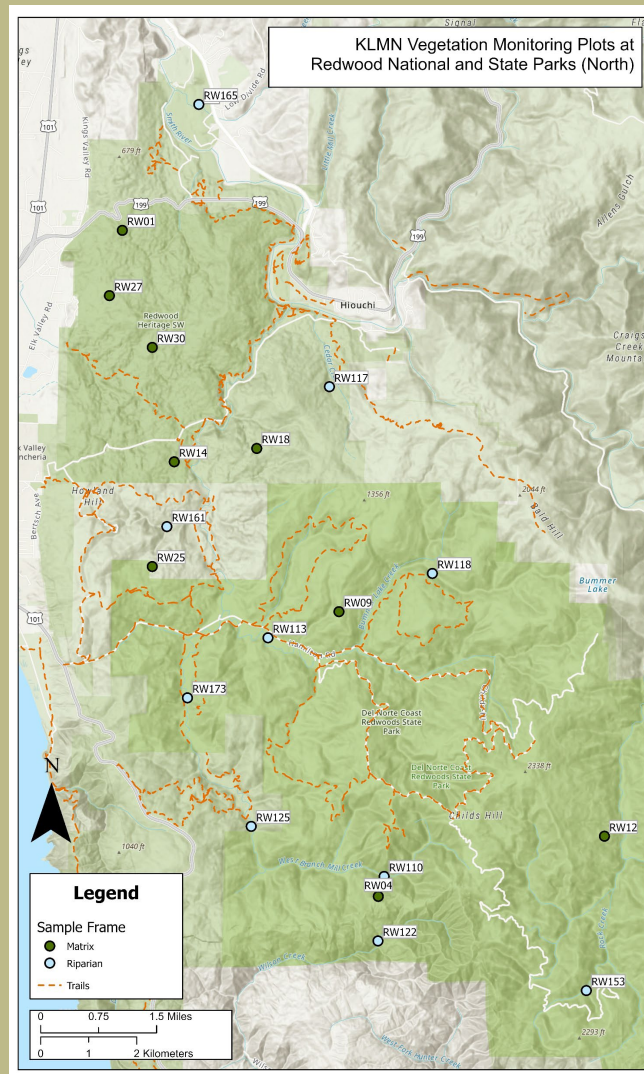


KLMN 2024 Veg Crew at RNSP
NPS/Dante Hernandez



Where we monitor: Our sample frames

- Matrix
 - Low- to mid-elevation upland habitats
- Riparian
 - Within 10m of a perennial stream
- Alpine
 - Sub-alpine or alpine habitats



Data Collection Includes

- Environmental
 - Slope, aspect, elevation, microtopography, macrotopography and disturbance
- Plant and Substrate Cover
 - vascular plant cover % and height strata, substrate cover %
in 4 intensive modules
- Species Presence
- Photos
- Live and Dead Trees
 - canopy cover, DBH, canopy position, crown condition, canopy base height, tree height
- Understory Trees
 - seedling, sapling, and pole density
- Down wood
 - tallied along transect and soundness recorded
- Litter and Duff
 - depth recorded along transect



KLMN veg crew setting up a matrix plot in Bald Hills 2024
NPS/Natasha Pagel-Aprill



Veg Plot layout

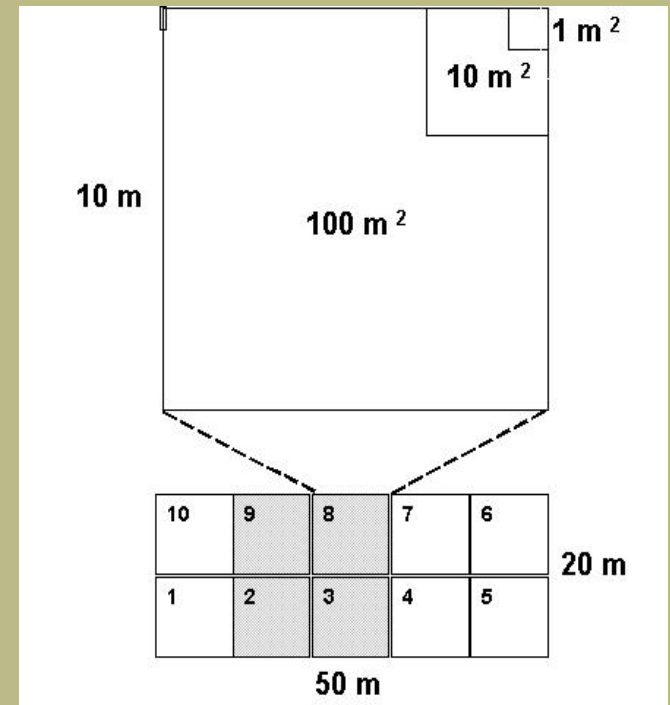


Figure 1. The 20 × 50 m matrix and alpine site plot layout. Each numbered square is 10 × 10 m. Shaded squares are the four intensive modules.

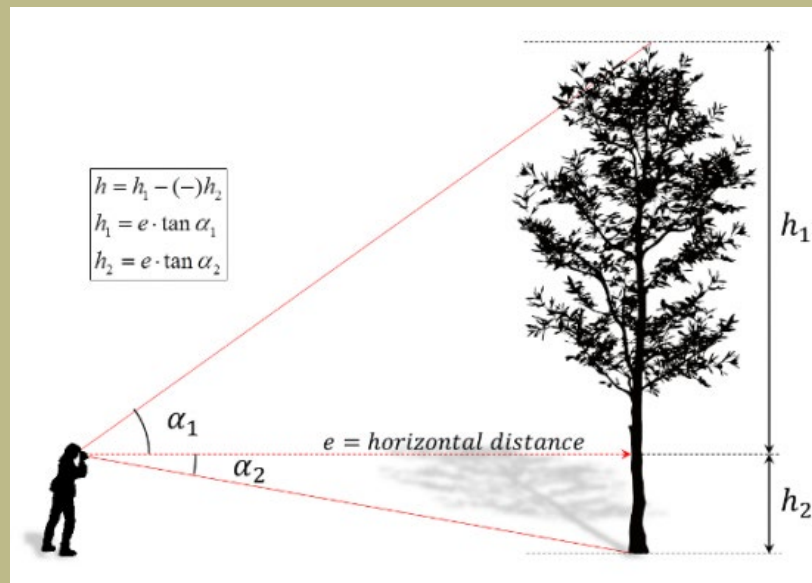


Measurement of Response Variables

Diameter at Breast Height (DBH)



Tree Height



Goals of vegetation monitoring are to understand variation in community-level:

1. Composition
2. Structure
3. Function



Tiger Lily at RNSP
NPS/Trenton Berrian



Goals of vegetation monitoring are to understand variation in community-level:

1. **Composition**
2. Structure
3. Function



Tiger Lily at RNSP
NPS/Trenton Berrian



Goals of vegetation monitoring are to understand variation in community-level:

1. Composition

- Species composition
- Species richness
- Invasive species

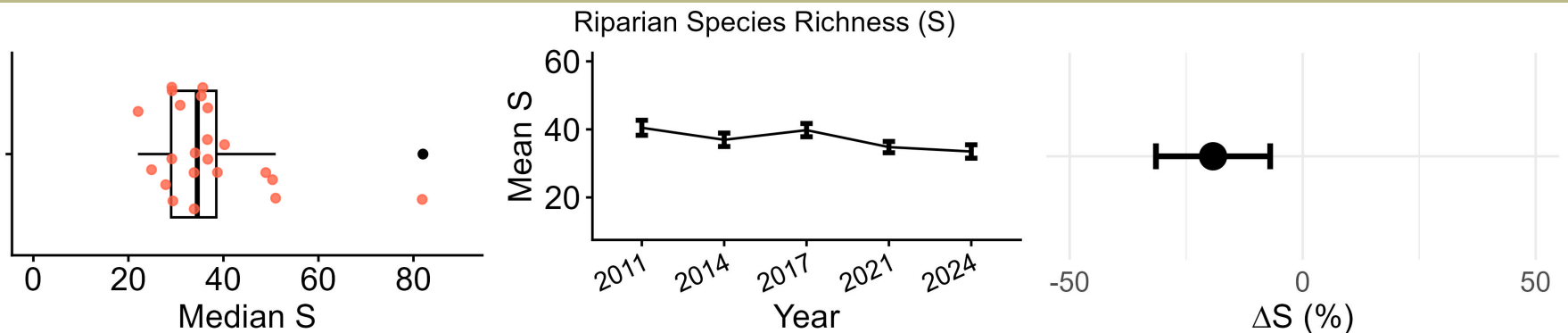


Tiger Lily at RNSP
NPS/Trenton Berrian



Vegetation Composition

- Species Richness - # of unique species

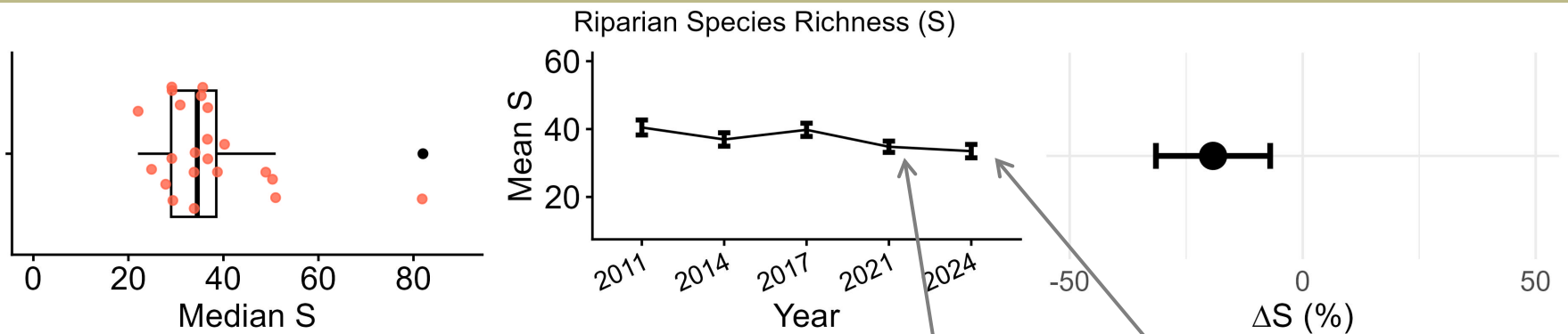


Species richness on all riparian plots in most recent visit. Boxplot shows median and IQR. Whiskers show min/max values excluding outliers.



Vegetation Composition

- Species Richness - # of unique species



Mean value

Whisker/Error bars
show Standard
Deviation

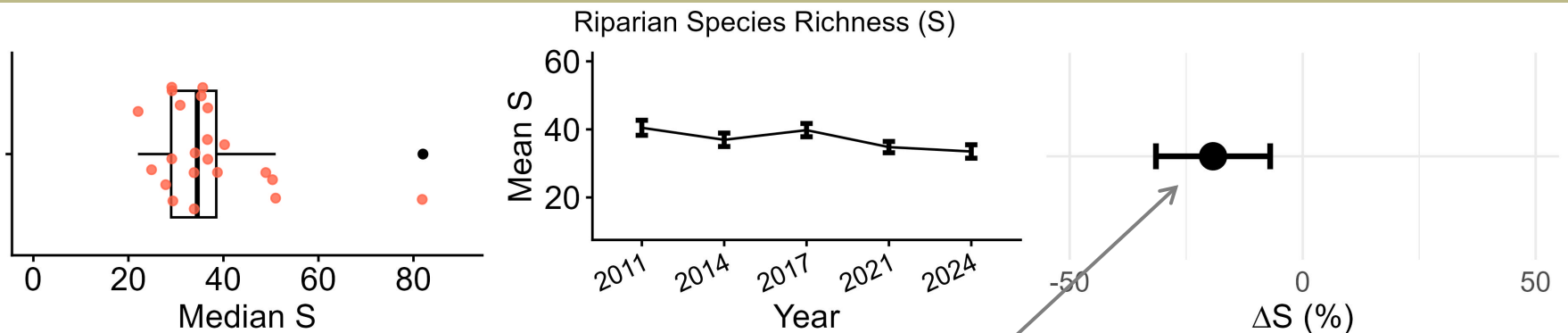
$$SE = \frac{\sigma}{\sqrt{n}}$$

Standard deviation

Number of samples

1. Vegetation Composition

- Species Richness - # of unique species



Averaged percent change of each site from visit 1 to visit 5 (i.e., % changed for each site calculated, and averaged). Error bars are standard deviation.

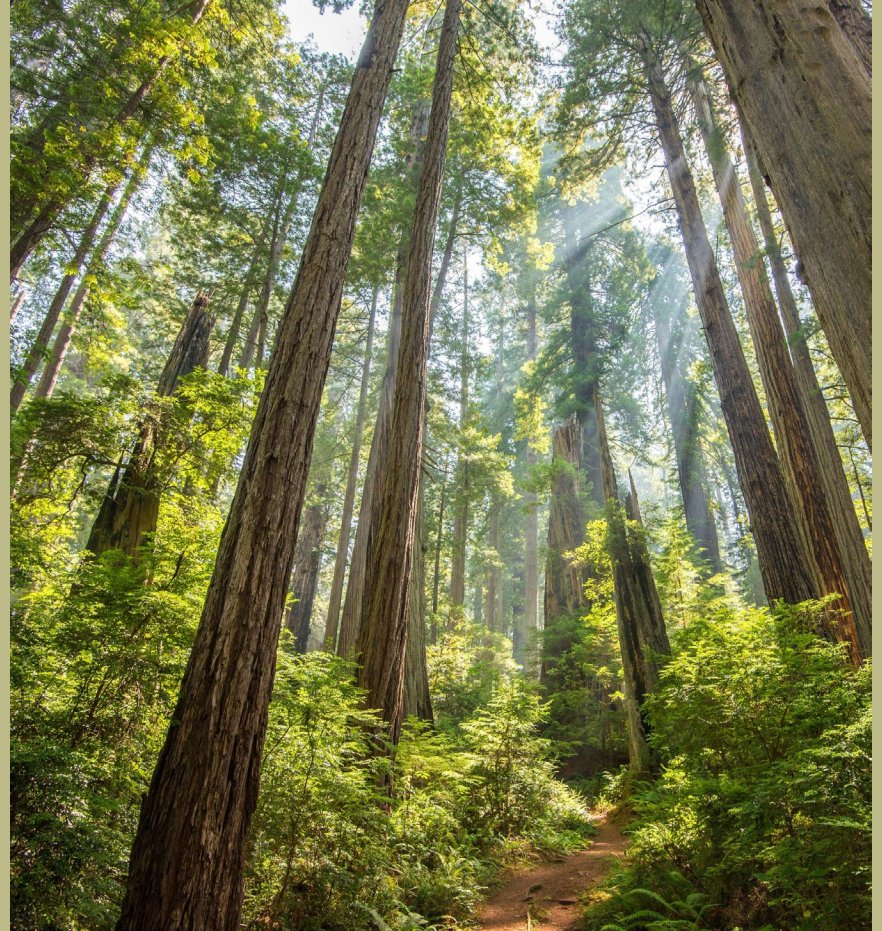
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Standard deviation
Number of samples



Goals of vegetation monitoring are to understand variation in community-level:

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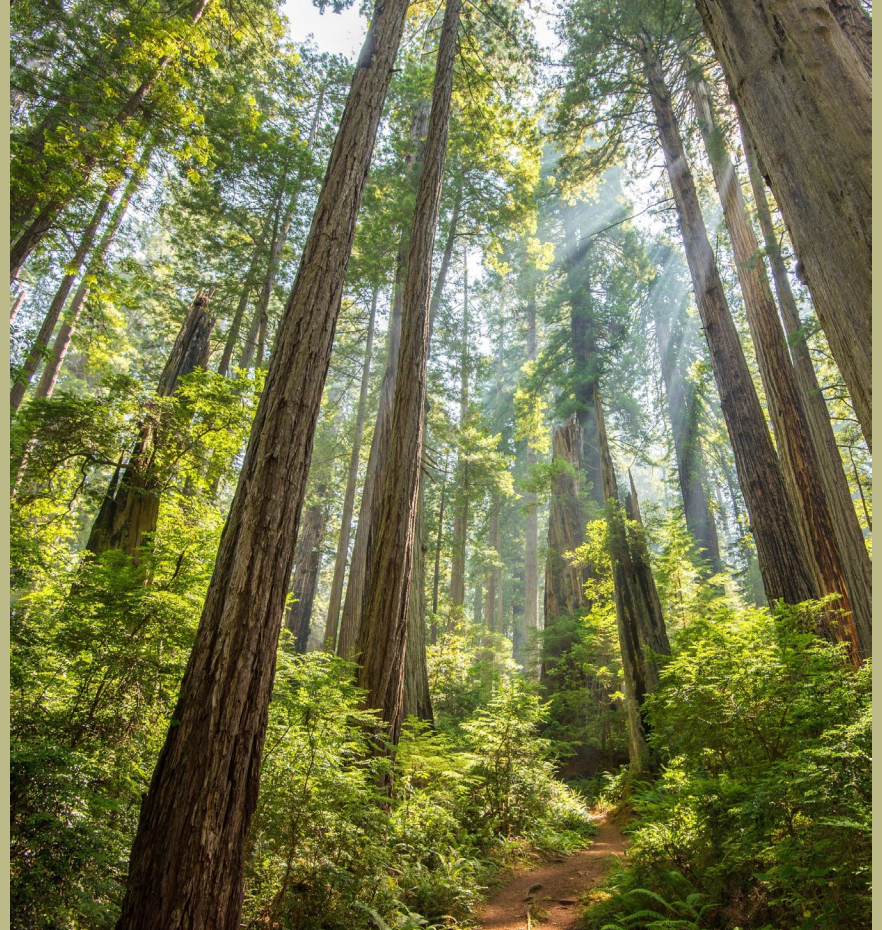


NPS/Jessica Weinberg McClosky



Goals of vegetation monitoring are to understand variation in community-level:

1. Composition
2. **Structure**
3. Function



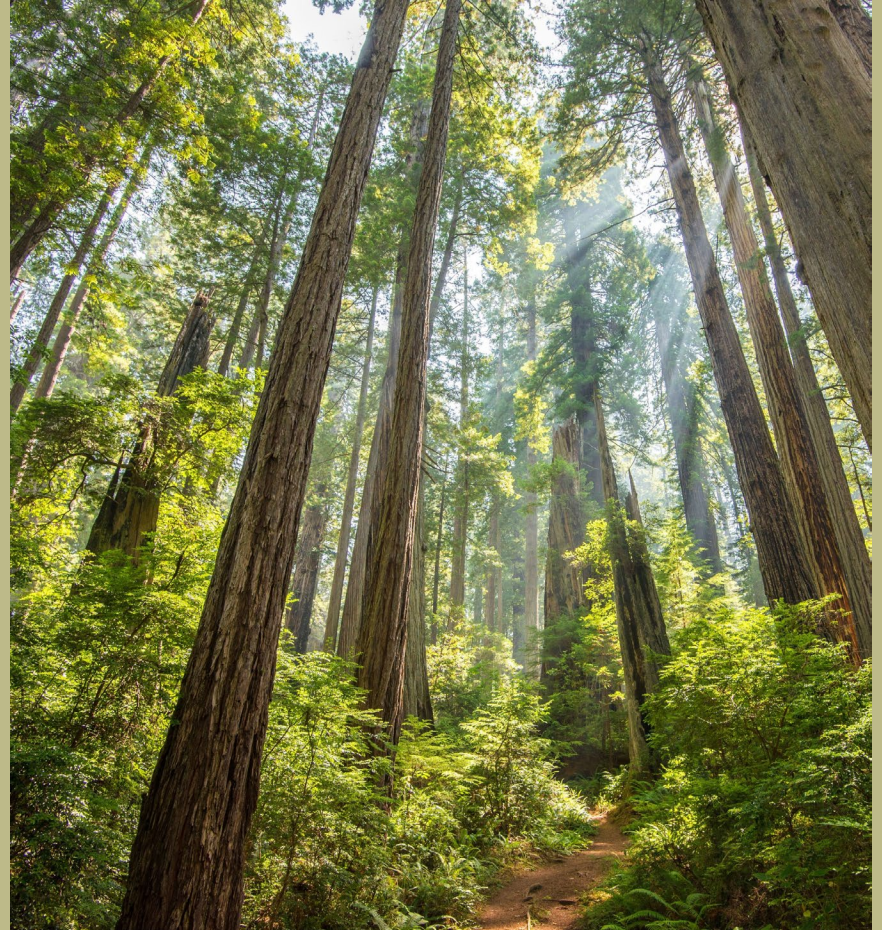
NPS/Jessica Weinberg McClosky



Goals of vegetation monitoring are to understand variation in community-level:

2. Structure

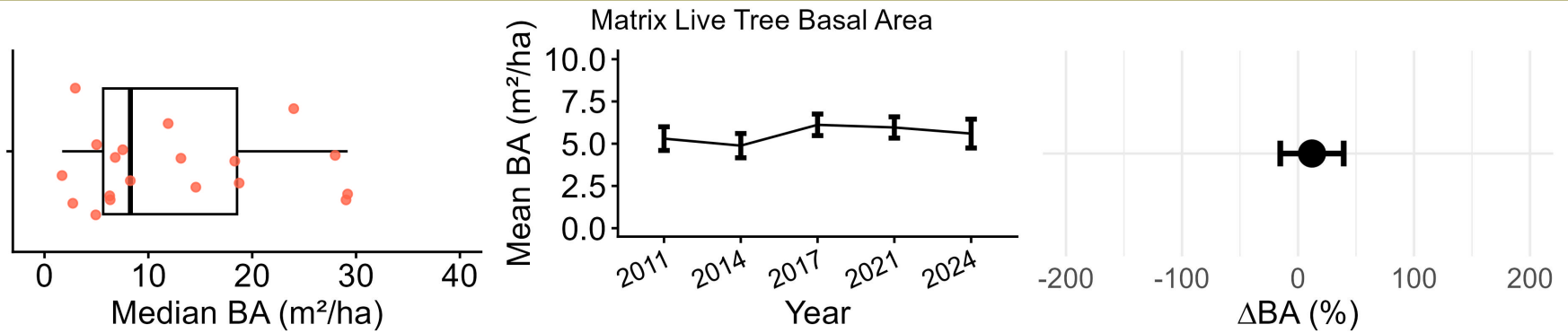
- Live trees and snags
 - Basal area
 - Tree density
 - Canopy height
- Shrub heights
- Substrate
- Litter/Duff
- Woody Debris



NPS/Jessica Weinberg McClosky



2. Habitat Structure



Goals of vegetation monitoring are to understand variation in community-level:

1. Composition
2. Structure
3. Function



Wyethia mollis
NPS/Hannah Wirth



Goals of vegetation monitoring are to understand variation in community-level:

1. Composition
2. Structure
3. **Function**



Wyethia mollis
NPS/Hannah Wirth



Goals of vegetation monitoring are to understand variation in community-level:

3. Function

- Demographics
 - Tree regeneration/death
- Competition
 - Interspecific interactions



Wyethia mollis
NPS/Hannah Wirth



Seedling counts by species

	Unit_Code	Loc_Type	Date_Year	Seedling_Code	total_seedling_sum
1	REDW	Matrix	2024	ALRU2	1
2	REDW	Matrix	2024	ARME	1
3	REDW	Matrix	2024	FRPU7	3
4	REDW	Matrix	2024	NODED	71
5	REDW	Matrix	2024	PISI	0
6	REDW	Matrix	2024	PSME	16
7	REDW	Matrix	2024	SESE3	69
8	REDW	Matrix	2024	TSHE	33
9	REDW	Riparian	2024	ABGR	1
10	REDW	Riparian	2024	ACCI	24
11	REDW	Riparian	2024	ACMA3	6
12	REDW	Riparian	2024	ALRU2	5
13	REDW	Riparian	2024	CADE27	1
14	REDW	Riparian	2024	FRPU7	15
15	REDW	Riparian	2024	NODED	20
16	REDW	Riparian	2024	PISI	2
17	REDW	Riparian	2024	PREM	13
18	REDW	Riparian	2024	PSME	1
19	REDW	Riparian	2024	SESE3	20
20	REDW	Riparian	2024	TSHE	11

ABGR = Grand fir; ACCI = Vine maple; ACMA3 = Bigleaf maple; ALRU2 = Red alder; ARME = Pacific madrone; CADE27 = Incense cedar; FRPU7 = Cascara buckthorn; NODED = Tanoak; PISI = Sitka spruce; PREM = Cherry; PSME = Douglas fir; SESE3 = Coast redwood; TSHE = Western hemlock.



Overview of current findings

- Riparian habitats at RNSP have 3rd highest plant biodiversity in all KLMN parks, after LAVO and WHIS.
 - Although average species richness on riparian plots has declined from 47 to 33 since 2011
- Forest structure appears stable
 - Minimal changes in density of live overstory trees
 - Density of dead overstory trees (snags) increasing in some plots but stable in most
 - RNSP has highest density (BA) for live overstory trees out of all KLMN parks
- Spatiotemporal trend analyses forthcoming!



Western columbine
NPS/Hannah Wirth



Resource Briefs Overview

- Quick Delivery – 2 pages
 - Text with brief overview of project and data collection on front
 - Map on back shows plot locations and data summary
- Multi-audience format
 - Made for all staff not just resource management
- Sampling effort at a glance
 - Plot locations and years visited

Resource Brief

National Park Service
U.S. Department of the Interior
Klamath 1&M Network
Natural Resource Stewardship and Science



Vital Sign Update: 2024 Results for Vegetation Community Monitoring at Redwood National and State Parks

Importance
From towering coast redwood forests to oak woodlands and grassland prairies, distinct plant communities grow at Redwood. Each responds uniquely to a particular set of climate, soil, and disturbance conditions, and each is vital to the park's health, providing food and shelter to animals, and cycling water, carbon and other nutrients through the soil for continual reuse. Redwood forests are also powerful carbon sinks, storing more carbon than they release, while understory plants like trillium and redwood sorrel add diversity and support wildlife. But natural and human-caused changes, like altered fire regimes, anthropogenic climate change, local land-use, and invasive species can profoundly affect plant communities. To detect concerning changes that park managers need to know about, we've been monitoring land plants (terrestrial vegetation) at Redwood since 2011. We measure composition (variety and abundance of species), structure (tree size, height, and density; shrub height) and function (tree death and regeneration) as vital signs of ecological health. This brief describes how we measure one of these elements—*species composition*—at Redwood and reports the average conditions we observed during our most recent sampling event in 2024.

Measuring Vegetation Composition
Changes in vegetation are not always unhealthy. To understand which changes are concerning, we examine our species data in different ways. Taken as a whole, these different measures provide the context park managers need to identify negative trends and make decisions.

Species Richness
Richness is a straight count of the number of vascular plant species (not mosses or fungi) detected in our plots. In general, the wider variety of species we find, the more biodiverse and resilient the ecosystem is. Related to species richness, we also examine several measures of diversity—each one provides slightly different information about the balance of species relative to each other.

Nonnative Species
Because nonnative species can cause serious ecological problems, we report how many nonnative species we detect, how much area they cover, and the ratio of native to nonnative species. This ratio is a useful measurement to track over time and to compare with more disturbed areas inside and outside the park.

Results and Ongoing Monitoring
Every 3 years, in Jul-Sep, we monitor plants at 47 riparian and mixed habitat sites at Redwood, barring unforeseen complications. In 2024, road removal from Redwoods Rising allowed only 37 sites to be sampled.

Riparian sites had twice the species richness on average of upland sites in 2024. This highlights the value of park riparian areas in conserving biodiversity. Few nonnative species occurred in riparian and upland sites overall. However, 3 sites had concerningly high cover (25%–70%) of nonnative species, highlighting the urgent nature of managing invasive nonnatives. View the map on the back for detailed results. We'll sample park vegetation again in 2027.

More Information
Lauren Youngblood, Ecologist
Klamath Inventory and Monitoring Network
lauren_youngblood@nps.gov; 541-552-8870

Project overview, reports, and protocol:
<https://www.nps.gov/in/klmn/vegetation.htm>

Datasets and all related publications:
<https://irma.nps.gov/Datastore/Reference/Profile/2171794>



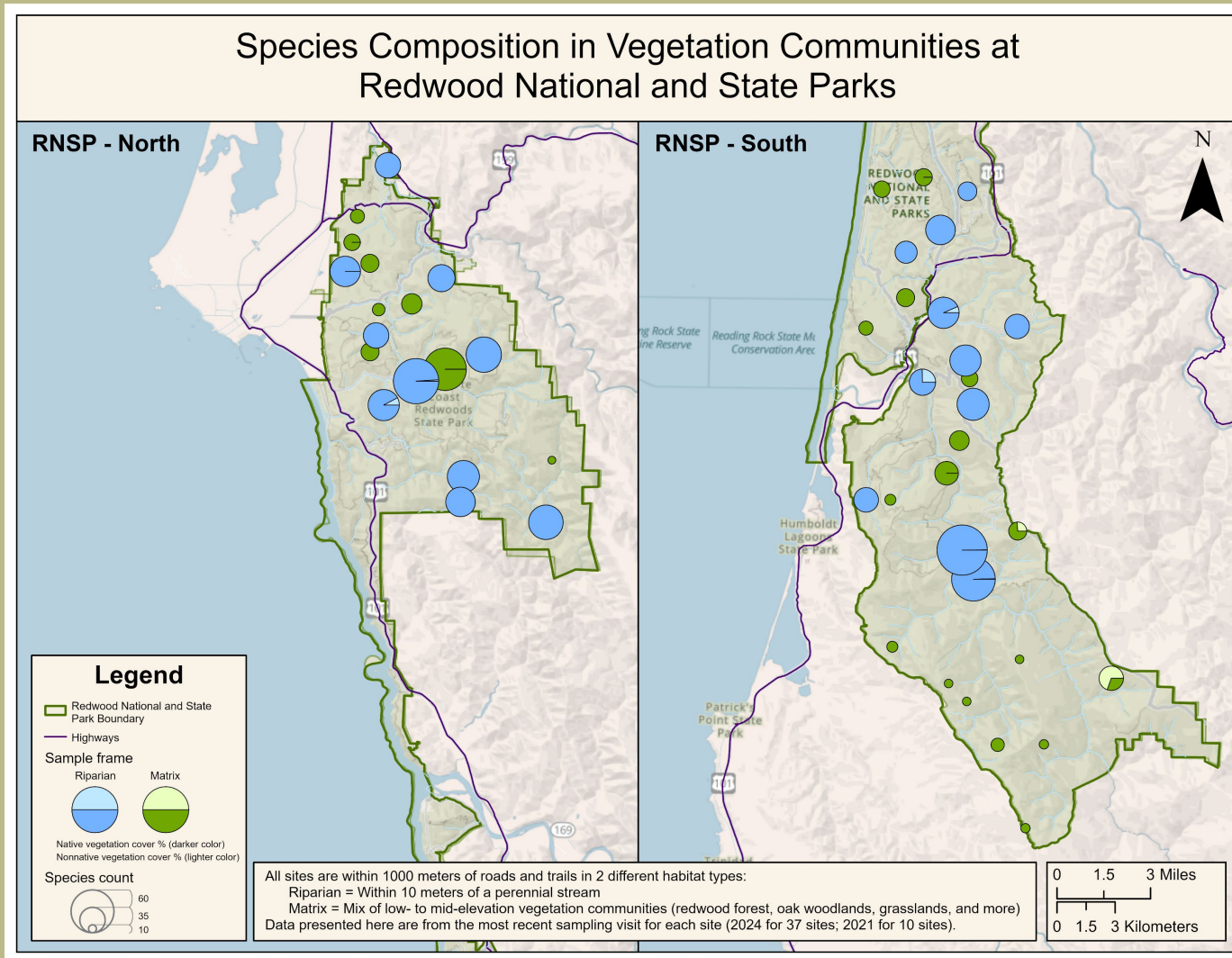
A botanist measures tree diameter at breast height (dbh) with a diameter tape in a 20 x 50 m plot (0.1 ha)—one of many variables, including species composition, used to track long-term changes in park vegetation communities.

EXPERIENCE YOUR AMERICA™

April 24, 2026



Resource Brief Map



Let us better help you! ... here's some ways we've used our veg data to support KLMN parks recently

- Identified high-value whitebark pine stands at LAVO to support fire resource advisors (READs) as Park Fire neared LAVO in 2024.
- Helped LAVO assess damage incurred following Dixie Fire for SURPA reporting by analyzing changes in density and occurrence of invasive species pre- and post-Dixie.
- Helped ORCA understand extent of Port Orford Cedars in park infected with a root rot disease
- Examples/types of questions you can ask me!
 - *Can you tell me more about how the density of [insert specific plant spp] has changed through time in our park?*
 - *Does [insert focal plant spp] occur in a specific part of our park?*
 - *I'm a new park ranger in interpretation looking for a specific plant factoid for my Ranger Talk. Can you tell me the 3 most common plants on KLMN plots at RNSP?*
 - *I'm a resource manager worried about [insert specific invasive species] spreading in RNSP. Can you tell me where the species is currently found? Has its density changed since 2011?*



Contact

Klamath Inventory and Monitoring Network

Lauren Youngblood, PhD

541-552-8870, lauren_youngblood@nps.gov

www.nps.gov/im/klmn/index.htm

Datasets and Project in IRMA:

<https://irma.nps.gov/Datastore/Reference/Profile/2218776>



Questions?



KLMN Veg crew at RNSP in 2024



Transition to further data review and discussion with NR staff



LAVO *Lupinus*
NPS/Hannah Wirth



Let's dive into the data a bit deeper!



LAVO *Lupinus*
NPS/Hannah Wirth



Goals of vegetation monitoring are to understand variation in community-level:

1. Composition

- Species composition
- Species richness
- Invasive species



Tiger Lily at RNSP
NPS/Trenton Berrian



Goals of vegetation monitoring are to understand variation in community-level:

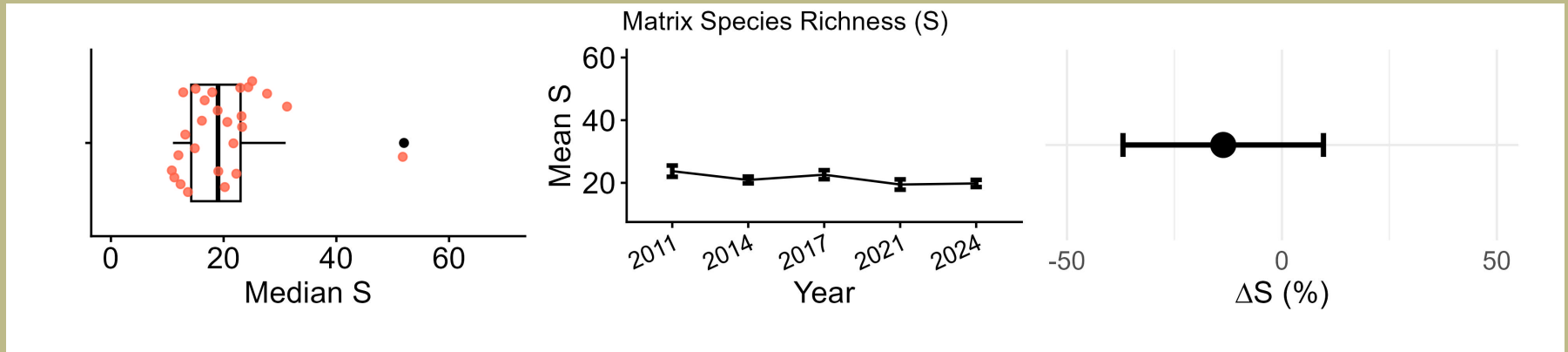
1. Composition
2. Structure
3. Function



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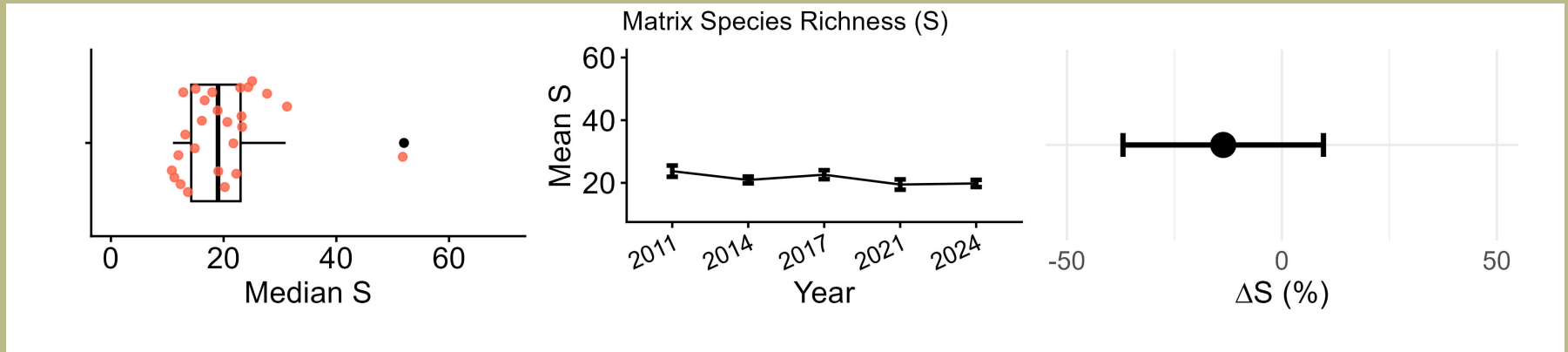
Species Richness at RNSP - Matrix



Left: Species richness (S) at 22/26 of our matrix plots at RNSP in 2024. Box plot shows median, interquartile range, and min/max species count.



Species Richness at RNSP - Matrix

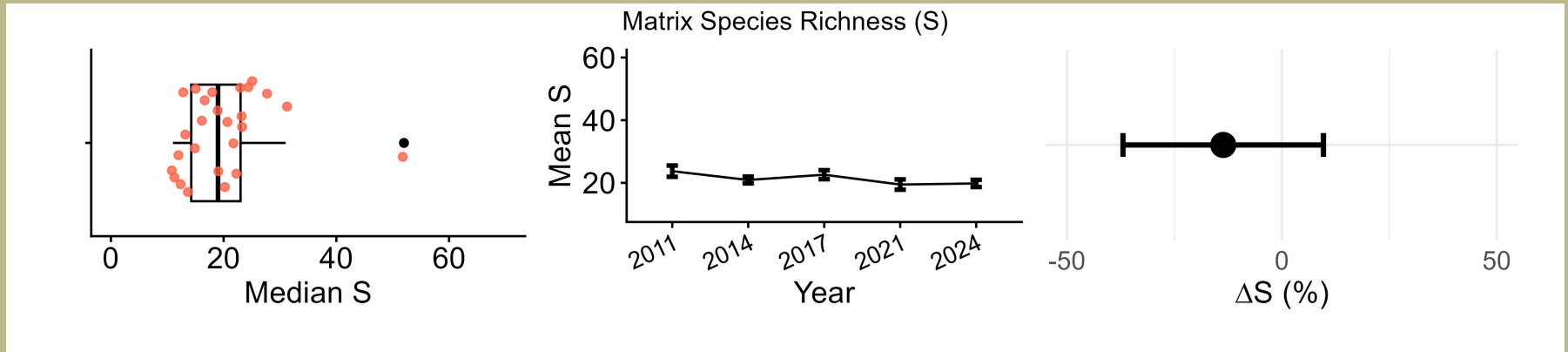


Left: Species richness (S) at 22/26 of our matrix plots at RNSP in 2024. Box plot shows median, interquartile range, and min/max species count.

Center: Change in mean species richness in our 26 matrix veg monitoring plots at RNSP across 4-5 visits spanning 2011 – 2024. Mean and standard error bars shown.



Species Richness at RNSP - Matrix



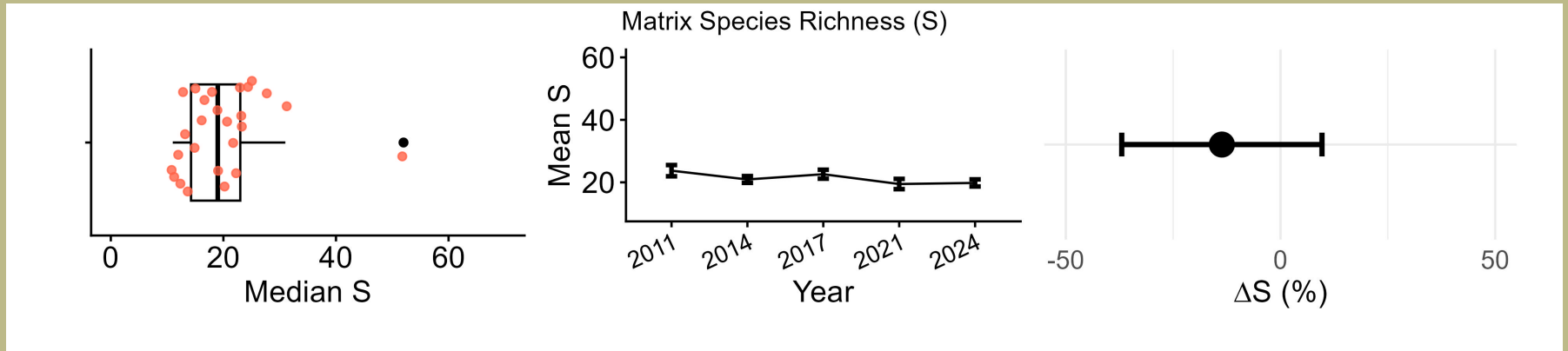
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Center: Change in mean species richness in our 26 matrix veg monitoring plots at RNSP across 4-5 visits spanning 2011 – 2024. Mean and standard error bars shown.

Right: Average percent change in species richness in our 26 matrix veg monitoring plots at RNSP from 2011 – 2024. Mean and standard error bars shown.



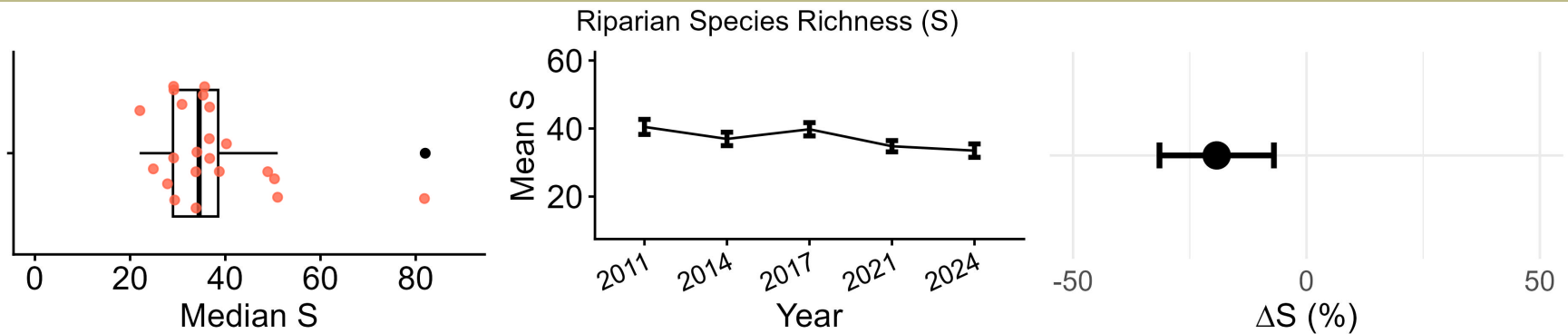
Species Richness at RNSP - Matrix



Loc_Type	Date_Year	Min	Max	Avg	StDev
Matrix	2011	13	56	23.73077	9.171947
Matrix	2014	12	35	20.91667	5.315414
Matrix	2017	15	61	24.07692	10.303099
Matrix	2021	10	52	19.46154	8.401099
Matrix	2024	11	31	19.80952	5.230861



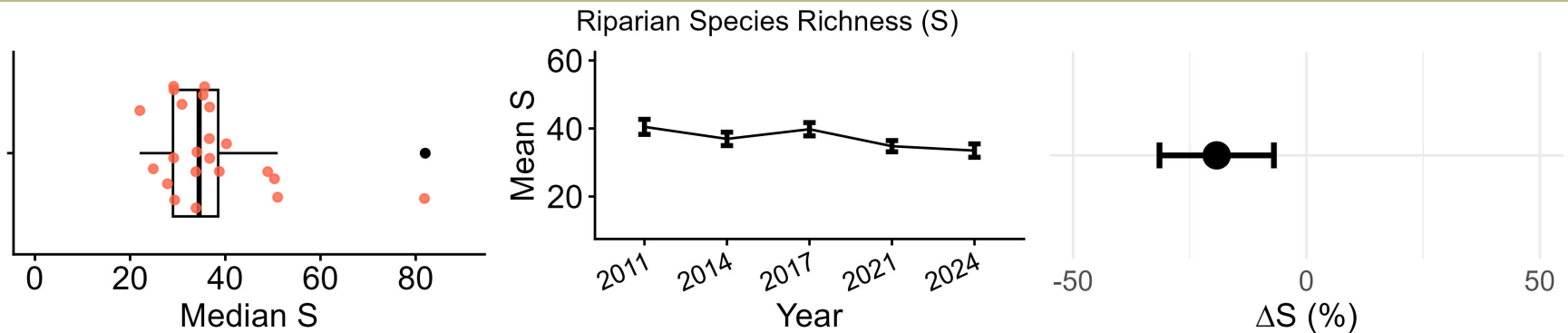
Species Richness at RNSP - Riparian



Left: Species richness (S) at 18/21 of our riparian plots at RNSP in 2024. Box plot shows median, interquartile range, and min/max species count.



Species Richness at RNSP - Riparian

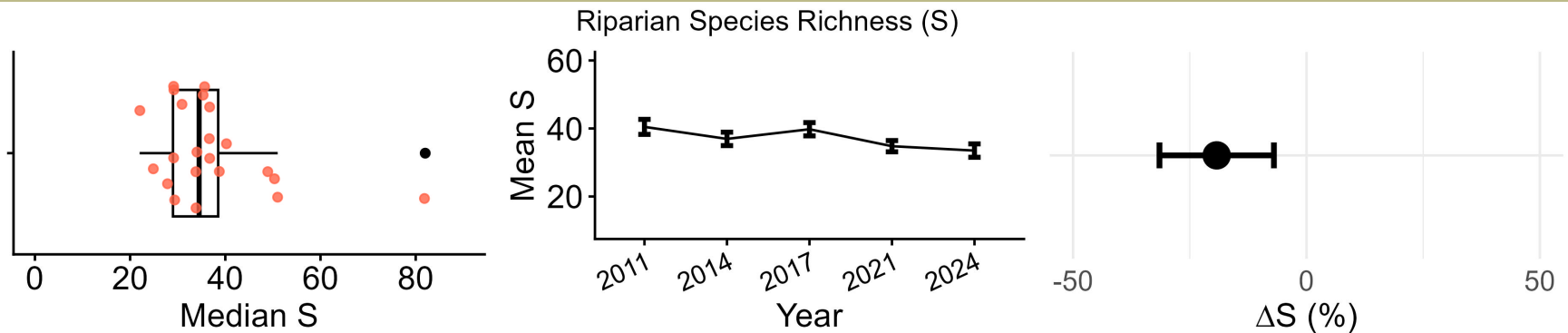


Left: Species richness (S) at 18/21 of our riparian plots at RNSP in 2024. Box plot shows median, interquartile range, and min/max species count.

Center: Change in mean species richness in our 21 riparian veg monitoring plots at RNSP across 5 visits spanning 2011 – 2024. Mean and standard error bars shown.



Species Richness at RNSP - Riparian



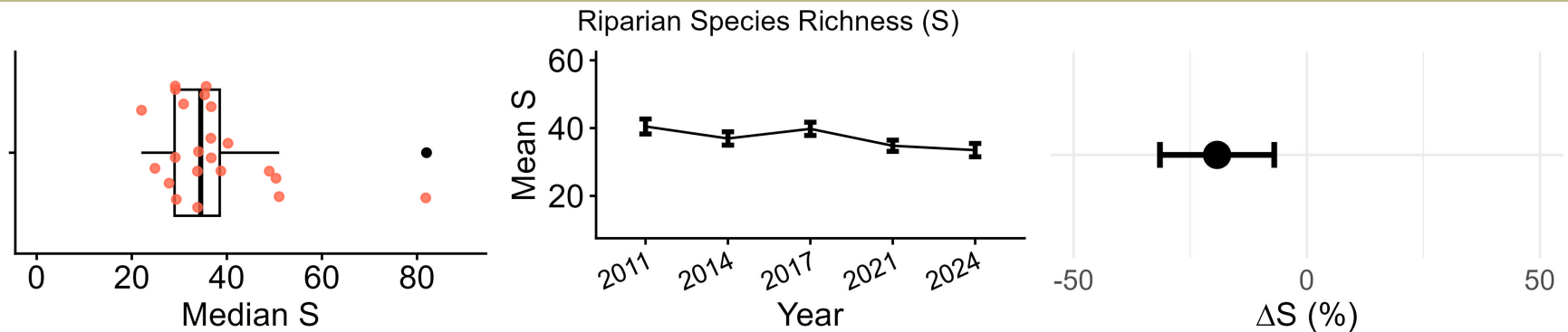
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Right: Average percent change in species richness in our 21 riparian veg monitoring plots at RNSP from 2011 – 2024. Mean and standard error bars shown.



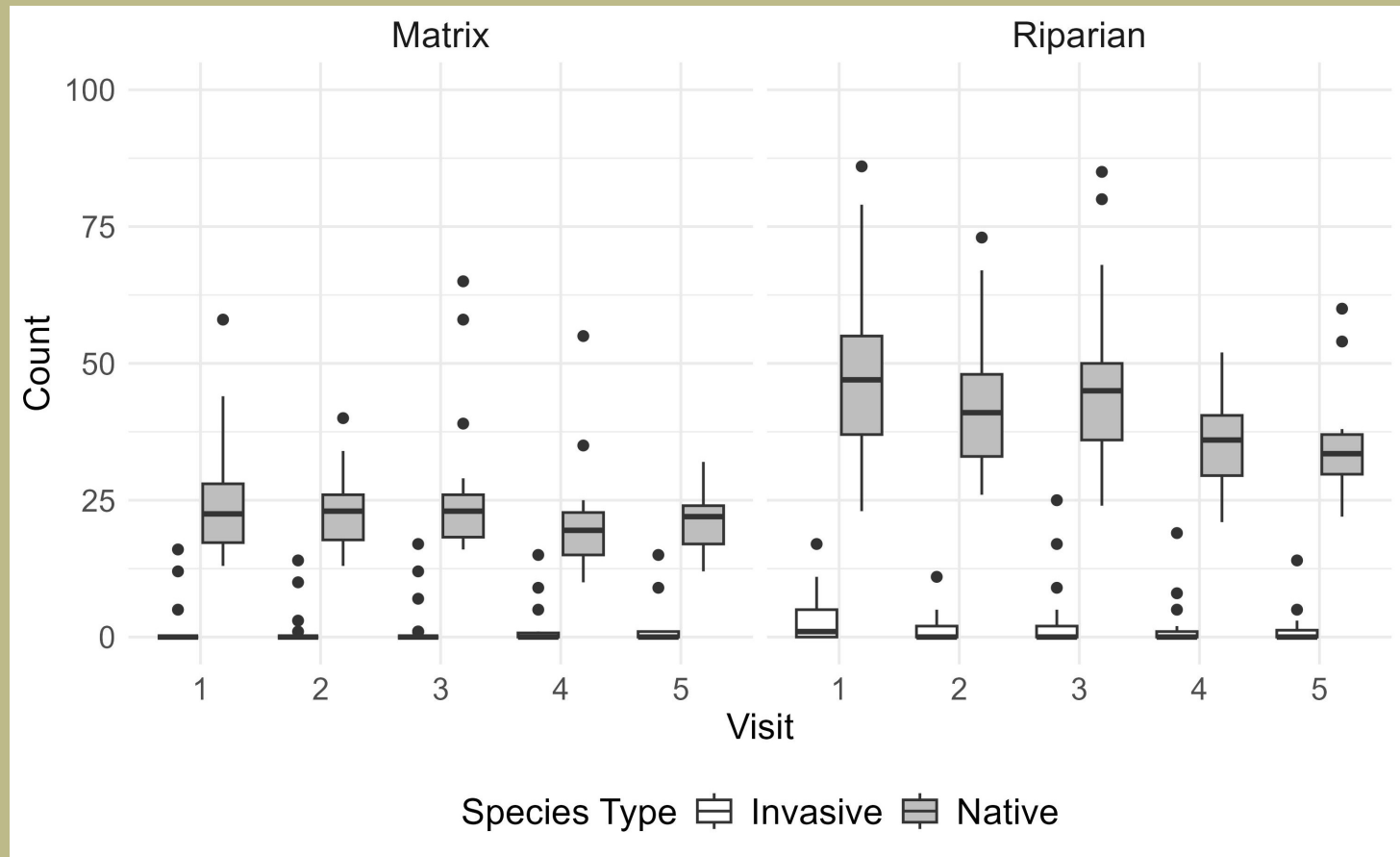
Species Richness at RNSP - Riparian



Loc_Type	Date_Year	Min	Max	Avg	StDev
Riparian	2011	23	82	47.09524	16.38262
Riparian	2014	25	68	40.16667	11.99632
Riparian	2017	23	78	44.28571	13.89655
Riparian	2021	21	49	34.78947	7.230944
Riparian	2024	22	51	33.50000	7.890923



Invasive species at RNSP



Distribution of native vs invasive species across 4-5 resampling visits. Box plot shows median, interquartile range, and min/max species count.



Changes in Species Richness at RNSP - Matrix

Loc_Name	CountSp_Visit1	CountSp_RecentVisit	Δ_CountSp	Count_Invasives_Visit1	Count_Invasives_RecentVisit	Δ_Count_Invasives
RW01	16	19	3	0	0	0
RW03	19	12	-7	0	0	0
RW04	17	15	-2	0	0	0
RW05	28	22	-6	0	0	0
RW06	27	13	-14	0	0	0
RW08	23	24	1	0	0	0
RW09	58	55	-3	5	5	0
RW11	17	23	6	0	1	1
RW12	18	11	-7	0	0	0
RW13	44	32	-12	16	15	-1
RW14	22	17	-5	0	0	0
RW15	32	19	-13	0	0	0
RW16	15	15	0	0	0	0
RW18	23	27	4	0	0	0
RW19	17	12	-5	0	0	0
RW20	22	22	0	0	0	0
RW21	33	24	-9	12	9	-3
RW22	13	13	0	0	0	0
RW23	27	18	-9	0	0	0
RW24	15	12	-3	0	0	0
RW25	28	24	-4	0	0	0
RW26	20	15	-5	0	0	0
RW27	28	22	-6	0	1	1
RW28	28	26	-2	0	0	0
RW29	27	31	4	0	1	1
RW30	21	24	3	0	1	1



Changes in Species Richness at RNSP - Riparian

Loc_Name	CountSp_Visit1	CountSp_RecentVisit	Δ_CountSp	Count_Invasives_Visit1	Count_Invasives_RecentVisit	Δ_Count_Invasives
RW104	31	29	-2	1	0	-1
RW108	27	22	-5	0	0	0
RW110	47	38	-9	1	0	-1
RW111	74	52	-22	11	8	-3
RW113	79	54	-25	6	2	-4
RW114	51	37	-14	2	1	-1
RW117	42	32	-10	0	0	0
RW118	55	42	-13	0	0	0
RW122	46	35	-11	1	0	-1
RW124	23	26	3	0	0	0
RW125	86	86	0	6	6	0
RW127	49	38	-11	0	0	0
RW131	29	29	0	0	0	0
RW153	47	41	-6	0	0	0
RW161	37	30	-7	0	0	0
RW163	77	60	-17	6	5	-1
RW165	36	30	-6	2	0	-2
RW170	48	37	-11	0	0	0
RW173	46	37	-9	5	3	-2
RW174	56	31	-25	17	14	-3
RW180	38	35	-3	0	0	0
RW191	36	36	0	1	1	0



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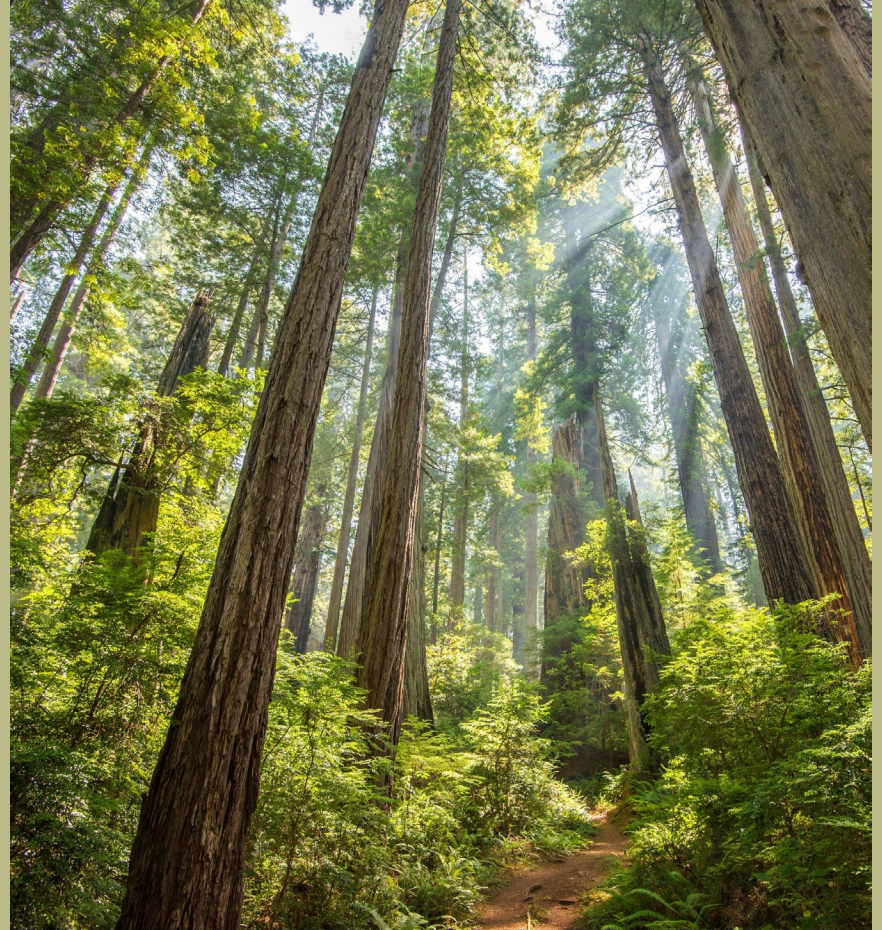


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NPS/Trenton Berrian



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2. Structure
3. Function



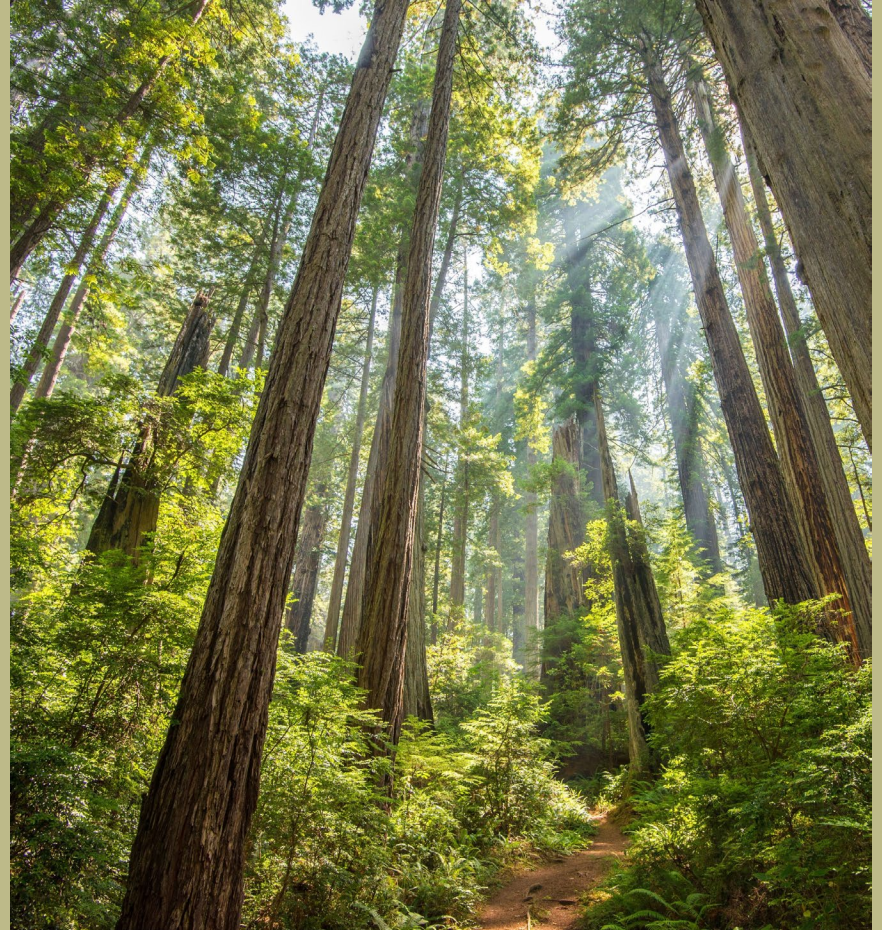
NPS/Jessica Weinberg McClosky



Goals of vegetation monitoring are to understand variation in community-level:

2. Structure

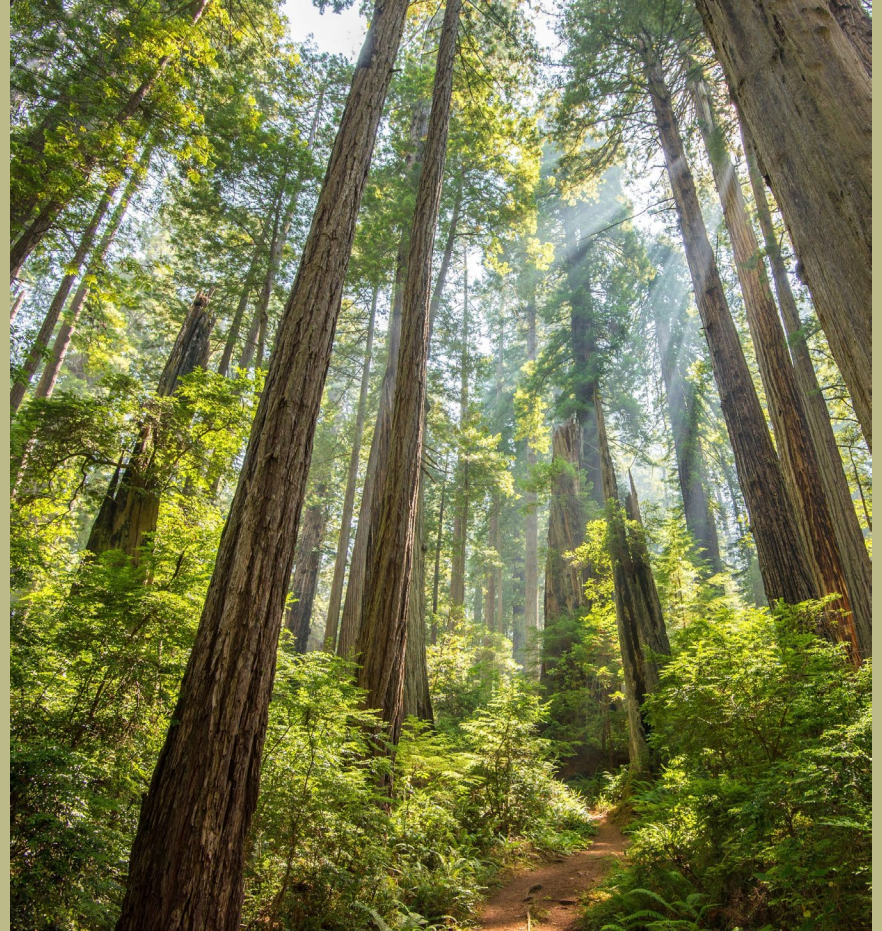
- Live trees and snags
 - Basal area
 - Tree density
 - Canopy height
- Shrub heights
- Substrate
- Litter/Duff
- Woody Debris



NPS/Jessica Weinberg McClosky



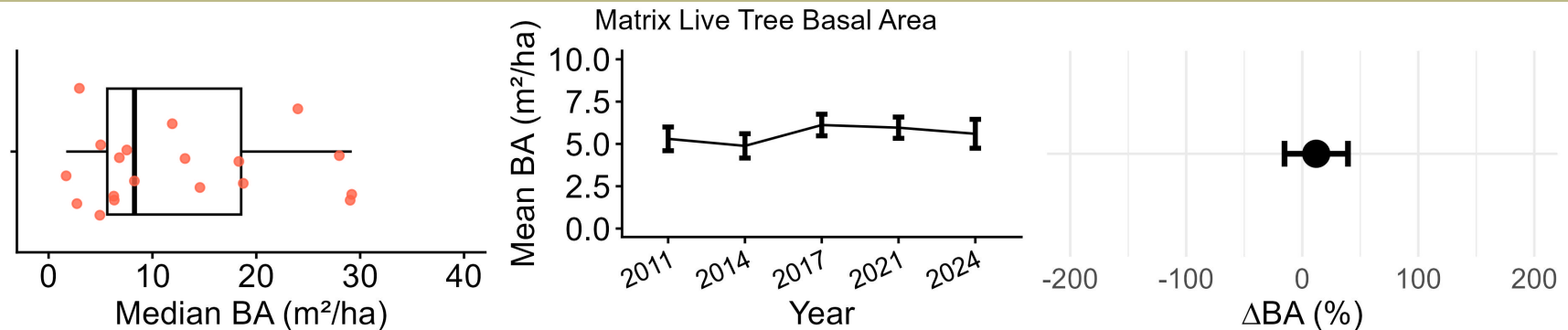
Live trees and snags – basal area



NPS/Jessica Weinberg McClosky



Live Tree Basal Area - Matrix



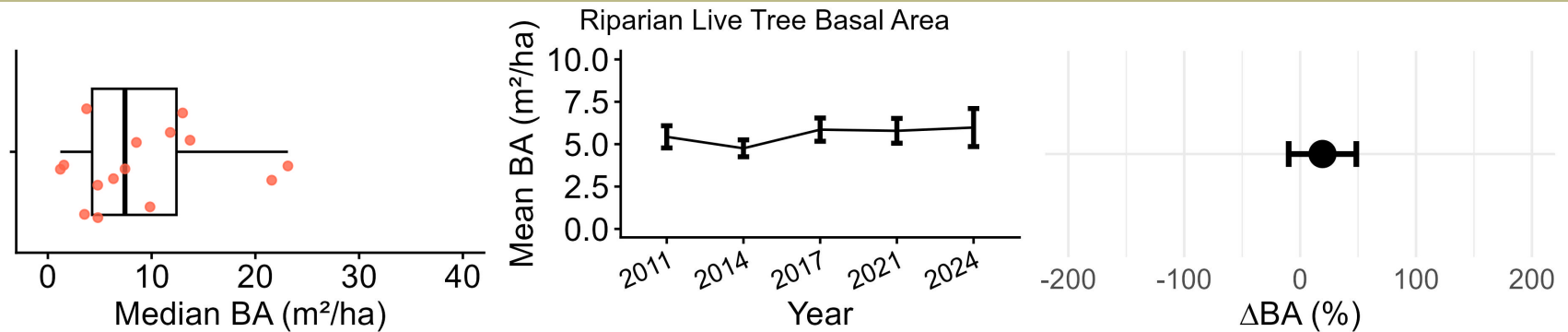
Left: Overall BA for all live trees at 22/26 of our matrix plots in 2024. Box plot shows median, interquartile range, and min/max basal area.

Center: Change in mean BA in our 26 matrix veg monitoring plots at RNSP across 4-5 visits spanning 2011 – 2024. Mean and standard error bars shown.

Right: Average percent change in living tree density (BA) in our 26 matrix veg monitoring plots at RNSP from 2011 – 2024. Mean and standard error bars shown.



Live Tree Basal Area - Riparian



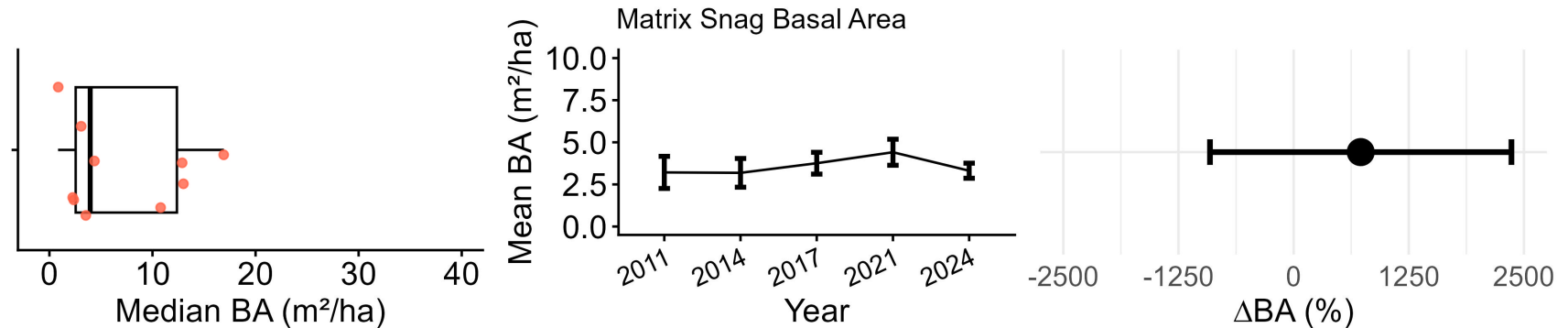
Left: Overall BA for all live trees at 18/21 of our riparian plots in 2024. Box plot shows median, interquartile range, and min/max basal area.

Center: Change in mean BA in our 21 riparian veg monitoring plots at RNSP across 4-5 visits spanning 2011 – 2024. Mean and standard error bars shown.

Right: Average percent change in living tree density (BA) in our 21 riparian veg monitoring plots at RNSP from 2011 – 2024. Mean and standard error bars shown.



Snag Basal Area - Matrix



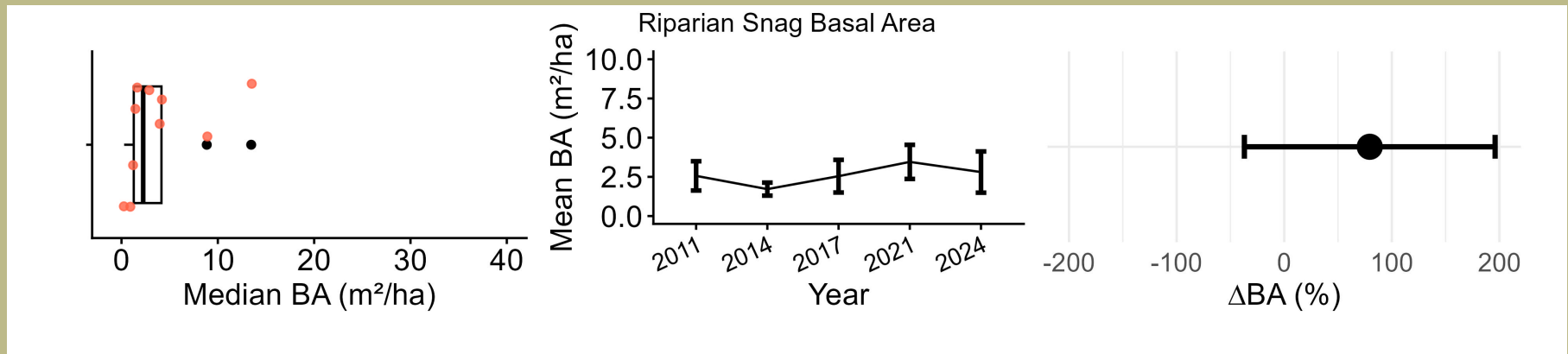
Left: Overall BA for all dead trees at 22/26 of our matrix plots in 2024. Box plot shows median, interquartile range, and min/max basal area.

Center: Change in mean BA in our 26 matrix veg monitoring plots at RNSP across 4-5 visits spanning 2011 – 2024. Mean and standard error bars shown.

Right: Average percent change in dead tree density (BA) in our 26 matrix veg monitoring plots at RNSP from 2011 – 2024. Mean and standard error bars shown.



Snag Basal Area - Riparian



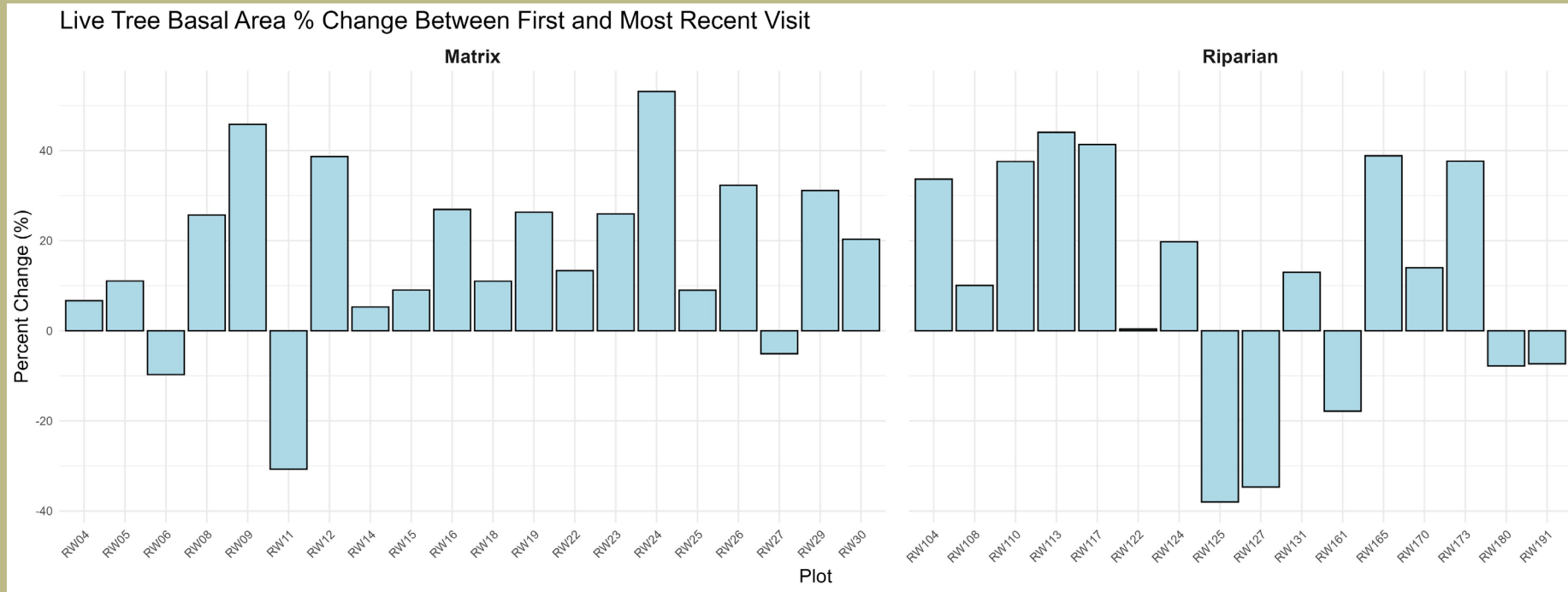
Left: Overall BA for all dead trees at 18/21 of our riparian plots in 2024. Box plot shows median, interquartile range, and min/max basal area.

Center: Change in mean BA in our 21 riparian veg monitoring plots at RNSP across 4-5 visits spanning 2011 – 2024. Mean and standard error bars shown.

Right: Average percent change in dead tree density (BA) in our 21 riparian veg monitoring plots at RNSP from 2011 – 2024. Mean and standard error bars shown.



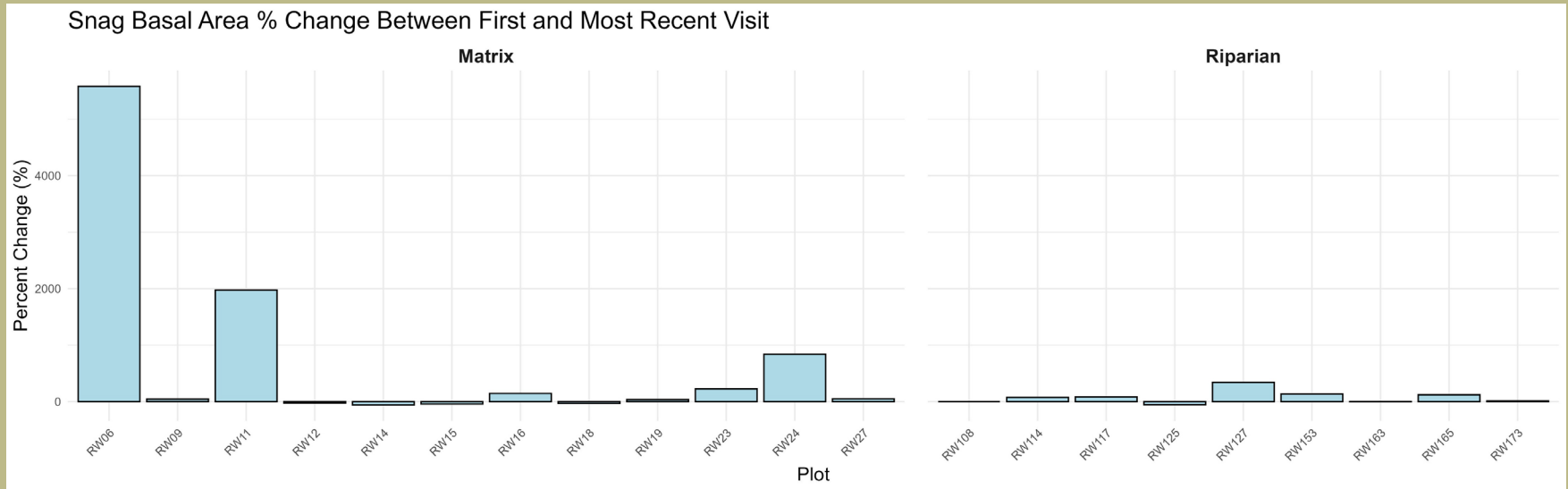
Changes in live tree BA at individual plots



RW24 in 2024 – lots of trees newly above 12cm dbh cutoff needed to be included in overstory dataset

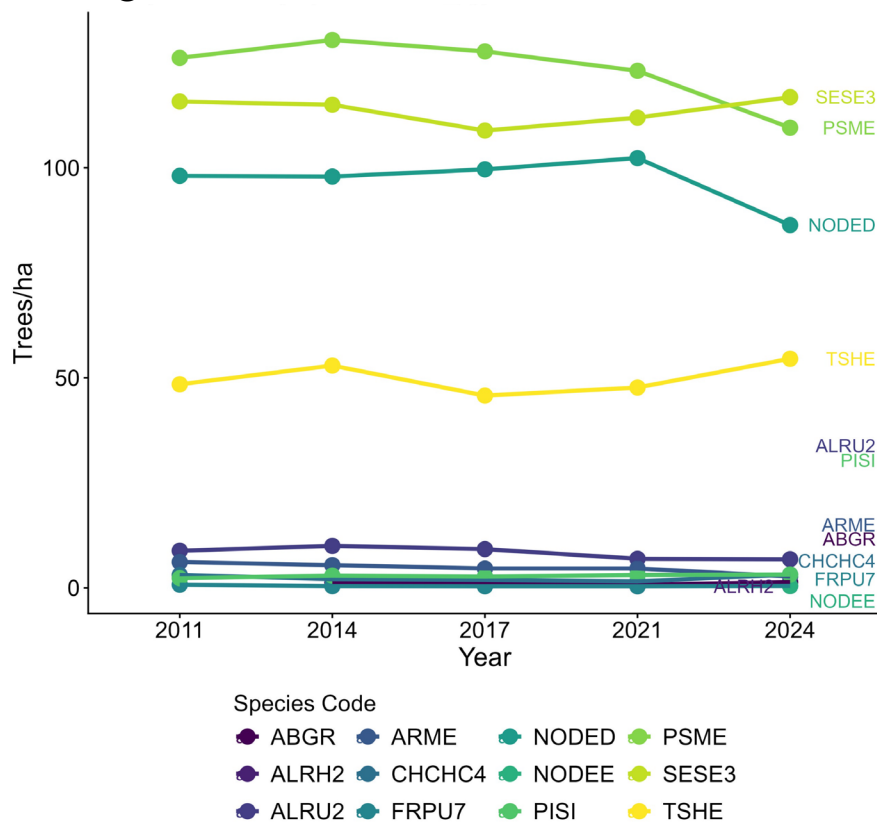


Changes in snag (dead) tree BA at individual plots

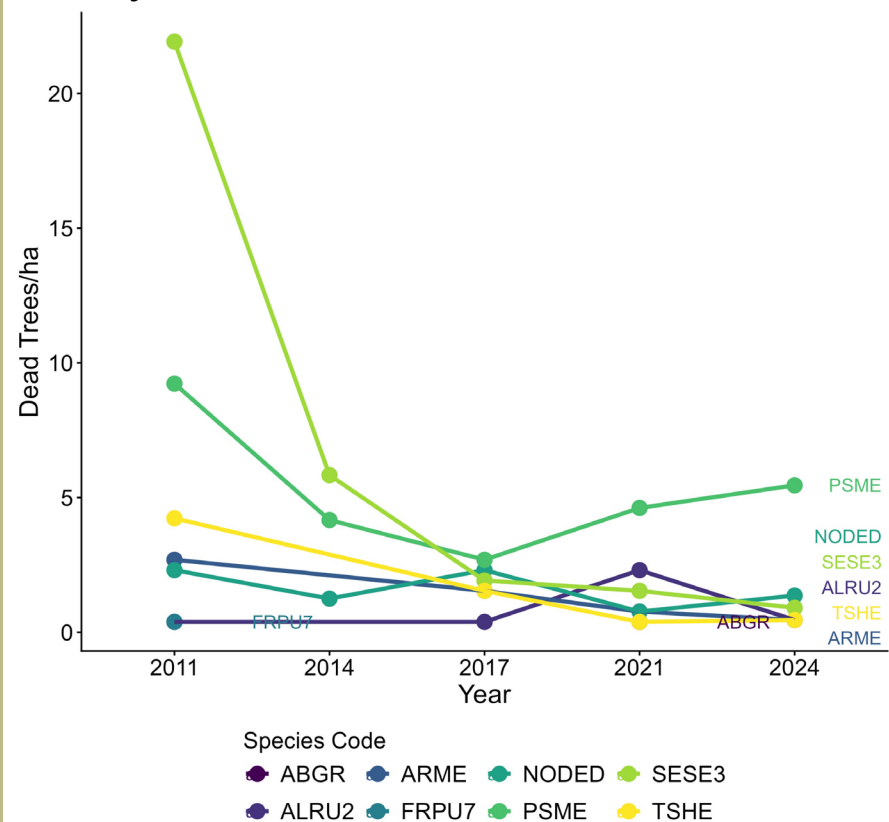


Tree density by species - Matrix

Living trees



Newly dead trees

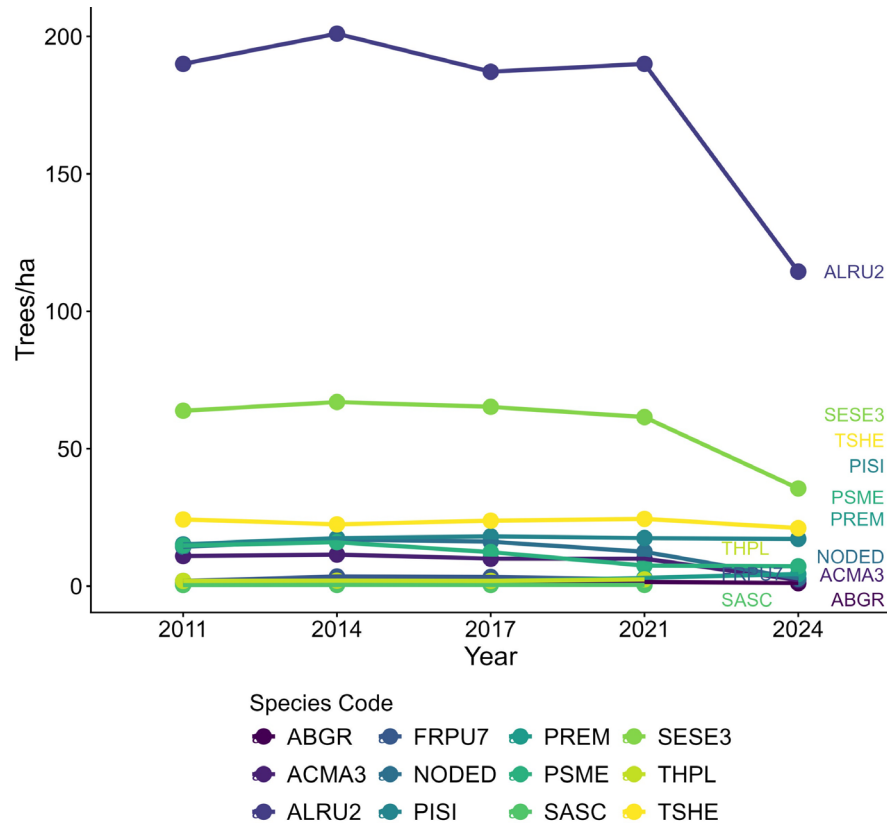


ABGR = Grand fir; ACMA3 = Bigleaf maple; ALRH2 = White alder; ALRU2 = Red alder; FRPU7 = Cascara buckthorn; NODED = Tanoak; PISI = Sitka spruce; PREM = Cherry; PSME = Douglas fir; SESE3 = Redwood; TSHE = Western hemlock

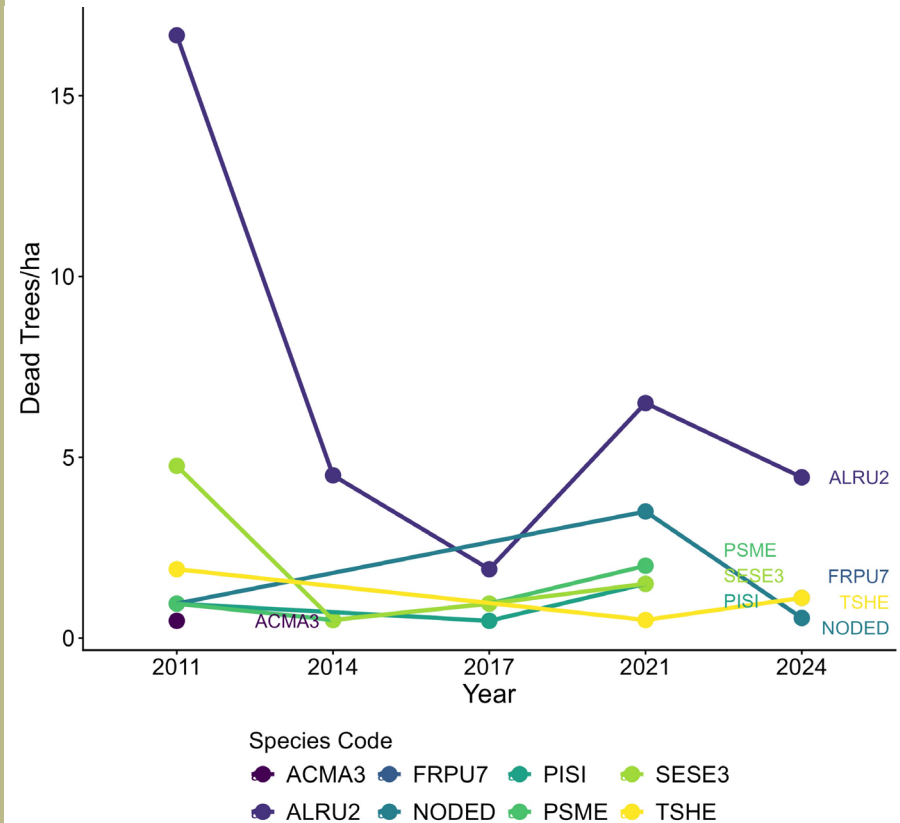


Tree density by species - Riparian

Living trees



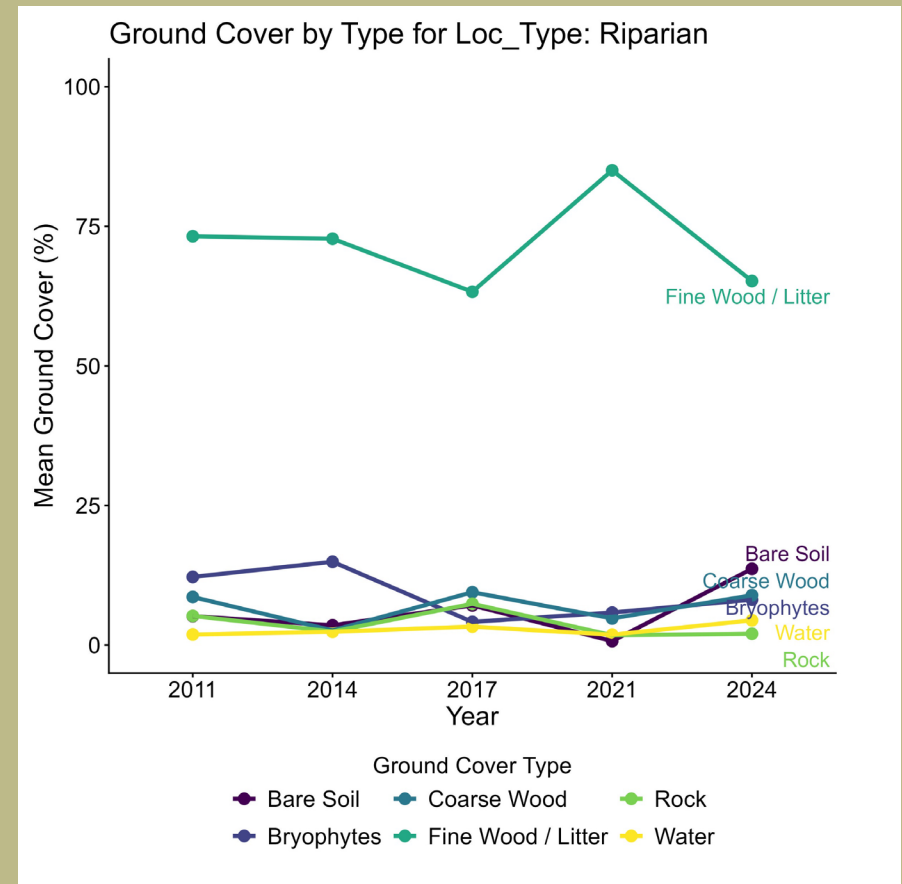
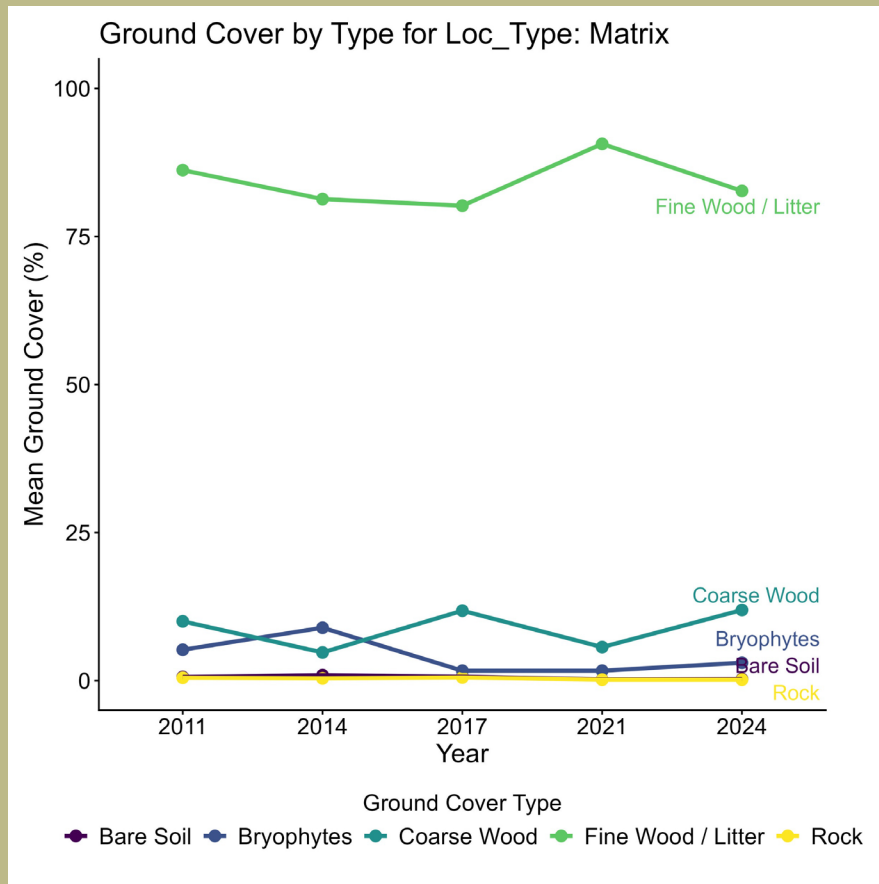
Newly dead trees



ABGR = Grand fir; ACMA3 = Bigleaf maple; ALRU2 = Red alder; FRPU7 = Cascara buckthorn; NODED = Tanoak; PISI = Sitka spruce; PREM = Cherry; PSME = Douglas fir; SASC = Willow; SESE3 = Redwood; THPL = Red cedar; TSHE = Western hemlock

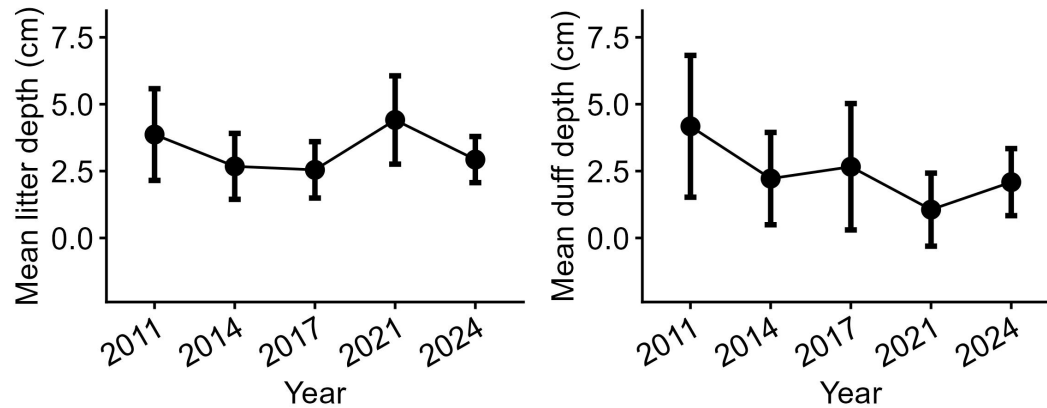


Substrate Cover in matrix (left) and riparian (right) habitats

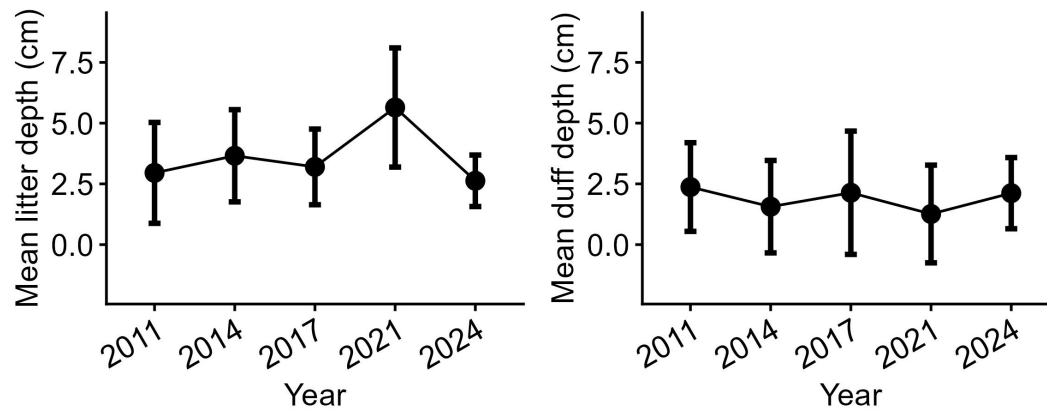


Leaf Litter and Duff

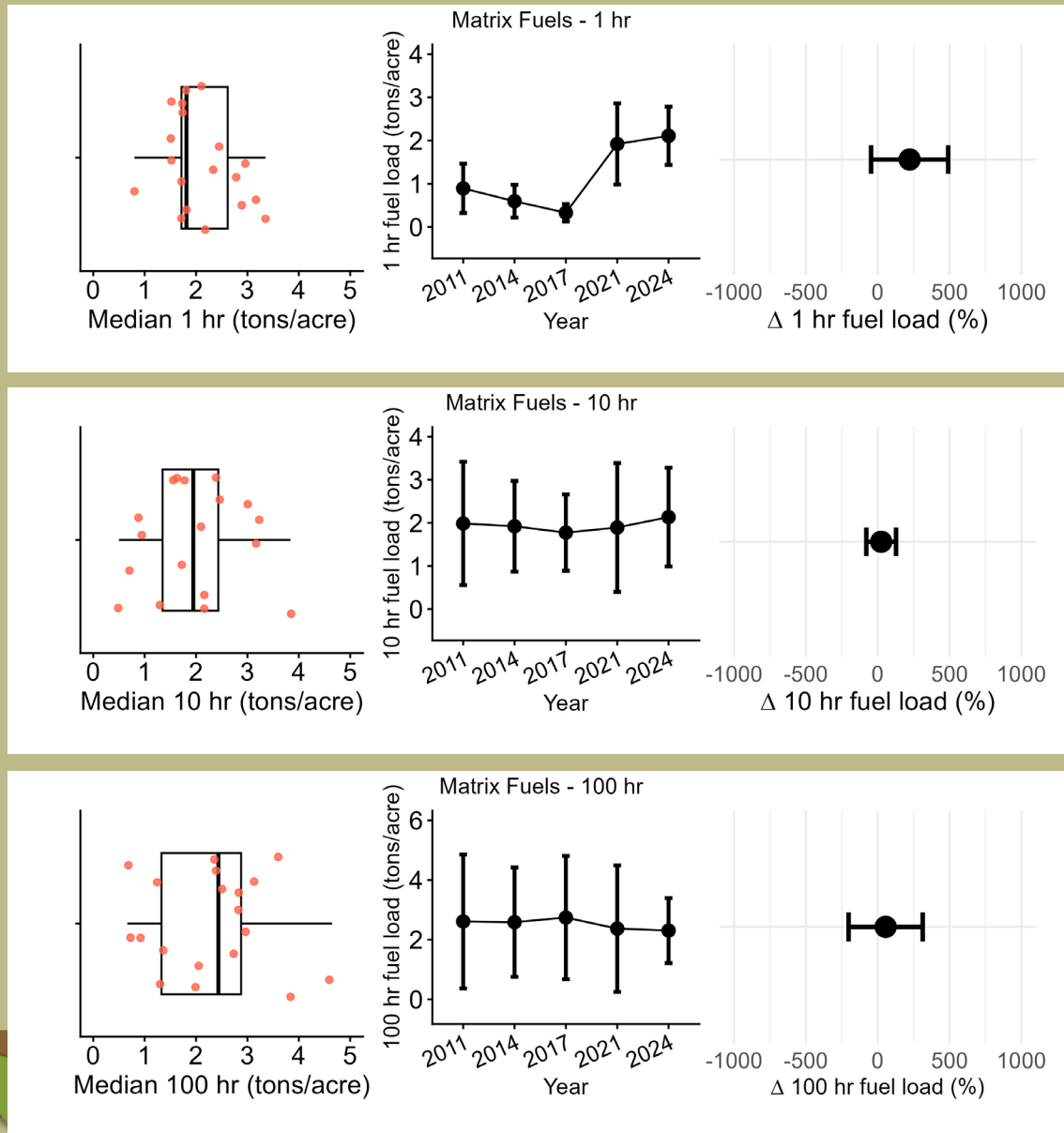
Matrix litter and duff



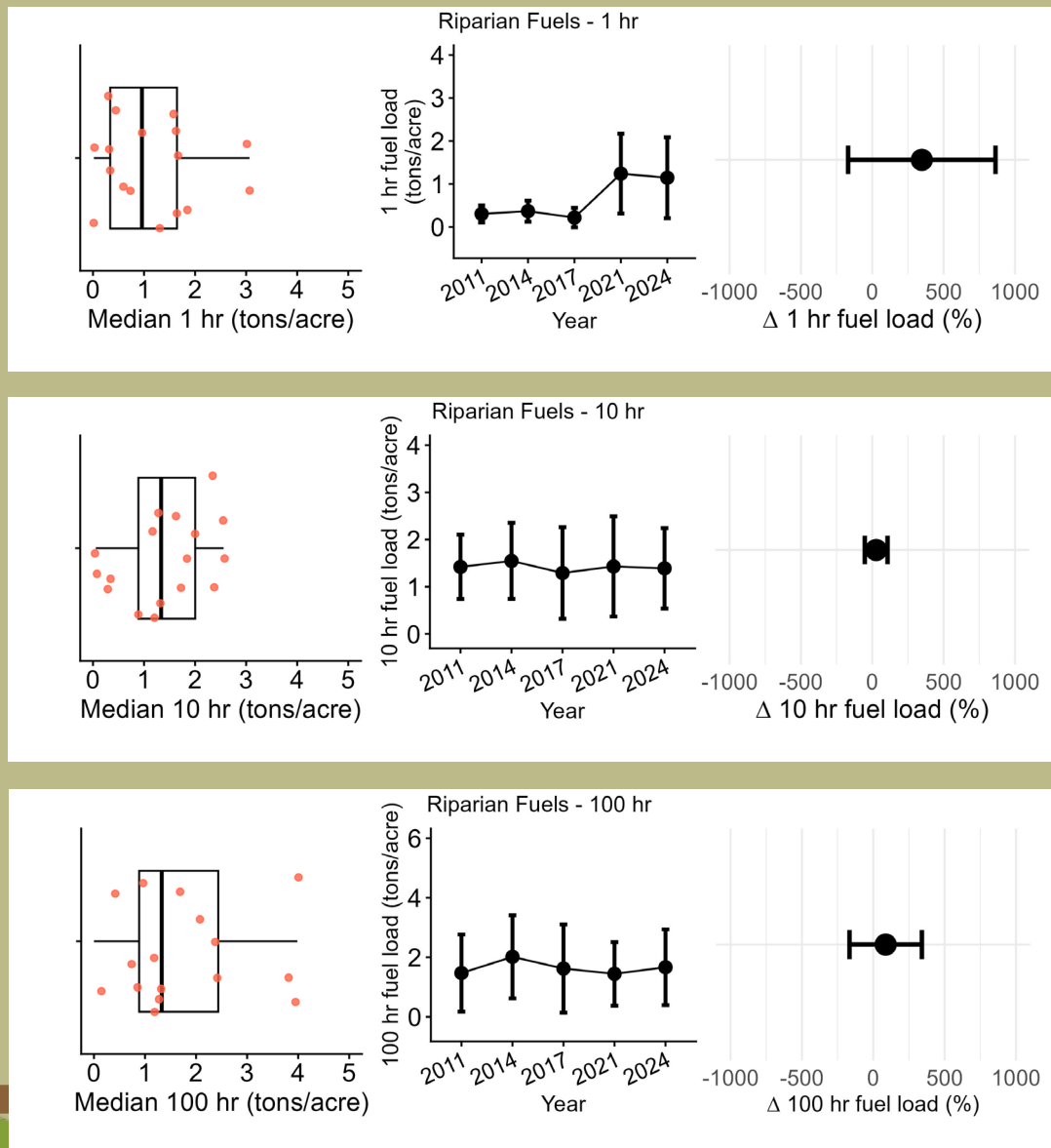
Riparian litter and duff



Woody Debris - Matrix

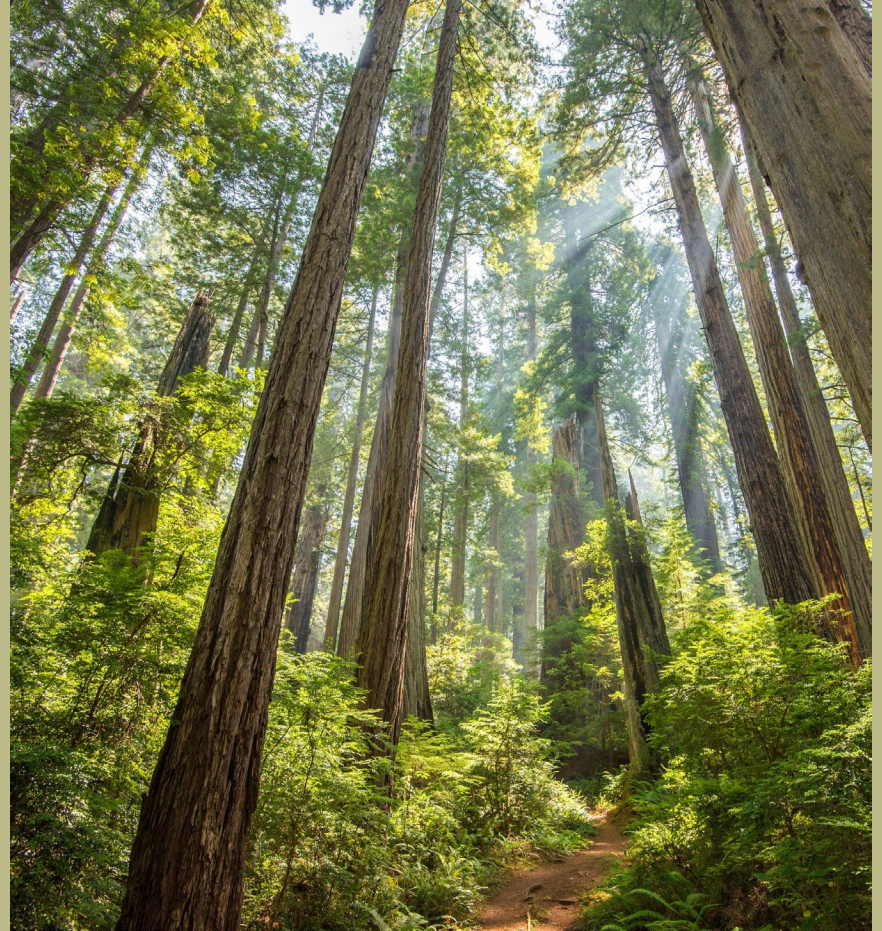


Woody Debris - Riparian



Goals of vegetation monitoring are to understand variation in community-level:

1. Composition ✓
2. Structure ✓
3. Function



NPS/Jessica Weinberg McClosky



Goals of vegetation monitoring are to understand variation in community-level:

1. Composition ✓
2. Structure ✓
3. **Function**



Wyethia mollis
NPS/Hannah Wirth



Seedling counts by species

	Unit_Code	Loc_Type	Date_Year	Seedling_Code	total_seedling_sum
1	REDW	Matrix	2024	ALRU2	1
2	REDW	Matrix	2024	ARME	1
3	REDW	Matrix	2024	FRPU7	3
4	REDW	Matrix	2024	NODED	71
5	REDW	Matrix	2024	PISI	0
6	REDW	Matrix	2024	PSME	16
7	REDW	Matrix	2024	SESE3	69
8	REDW	Matrix	2024	TSHE	33
9	REDW	Riparian	2024	ABGR	1
10	REDW	Riparian	2024	ACCI	24
11	REDW	Riparian	2024	ACMA3	6
12	REDW	Riparian	2024	ALRU2	5
13	REDW	Riparian	2024	CADE27	1
14	REDW	Riparian	2024	FRPU7	15
15	REDW	Riparian	2024	NODED	20
16	REDW	Riparian	2024	PISI	2
17	REDW	Riparian	2024	PREM	13
18	REDW	Riparian	2024	PSME	1
19	REDW	Riparian	2024	SESE3	20
20	REDW	Riparian	2024	TSHE	11

ABGR = Grand fir; ACCI = Vine maple; ACMA3 = Bigleaf maple; ALRU2 = Red alder; ARME = Pacific madrone; CADE27 = Incense cedar; FRPU7 = Cascara buckthorn; NODED = Tanoak; PISI = Sitka spruce; PREM = Cherry; PSME = Douglas fir; SESE3 = Redwood; TSHE = Western hemlock.



Overall dead tree counts by visit and species

	Unit_Code	Loc_Type	Date_Year	num_dead_trees
1	REDW	Matrix	2011	107
2	REDW	Matrix	2014	27
3	REDW	Matrix	2017	27
4	REDW	Matrix	2021	28
5	REDW	Matrix	2024	20
6	REDW	Riparian	2011	57
7	REDW	Riparian	2014	11
8	REDW	Riparian	2017	9
9	REDW	Riparian	2021	31
10	REDW	Riparian	2024	13

	Unit_Code	Loc_Type	Current_Sp_Code	2011	2014	2017	2021	2024
1	REDW	Matrix	ALRU2	1	0	1	6	1
2	REDW	Matrix	ARME	7	0	4	2	1
3	REDW	Matrix	FRPU7	1	0	0	0	0
4	REDW	Matrix	NODED	6	3	6	2	3
5	REDW	Matrix	PSME	24	10	7	12	12
6	REDW	Matrix	SESE3	57	14	5	4	2
7	REDW	Matrix	TSHE	11	0	4	1	1
8	REDW	Matrix	ABGR	0	0	0	1	0
9	REDW	Riparian	ACMA3	1	0	0	0	0
10	REDW	Riparian	ALRU2	35	9	4	13	8
11	REDW	Riparian	ALVI2	1	0	0	0	0
12	REDW	Riparian	NODED	2	0	0	7	1
13	REDW	Riparian	PISI	2	0	1	3	0
14	REDW	Riparian	PSME	2	1	2	4	0
15	REDW	Riparian	SESE3	10	1	2	3	0
16	REDW	Riparian	TSHE	4	0	0	1	2
17	REDW	Riparian	FRPU7	0	0	0	0	2

ABGR = Grand fir; ACMA3 = Bigleaf maple; ALRU2 = Red alder; ARME = Pacific madrone; FRPU7 = Cascara buckthorn; NODED = Tanoak; PISI = Sitka spruce; PSME = Douglas fir; SESE3 = Redwood; TSHE = Western hemlock.



RNSP Veg Data Visualizer

- If you ever want to view the graphs presented today in the future, I've made a data visualizer that can be downloaded here:



Veg_FFB_data_visualization_REDW_V7.html



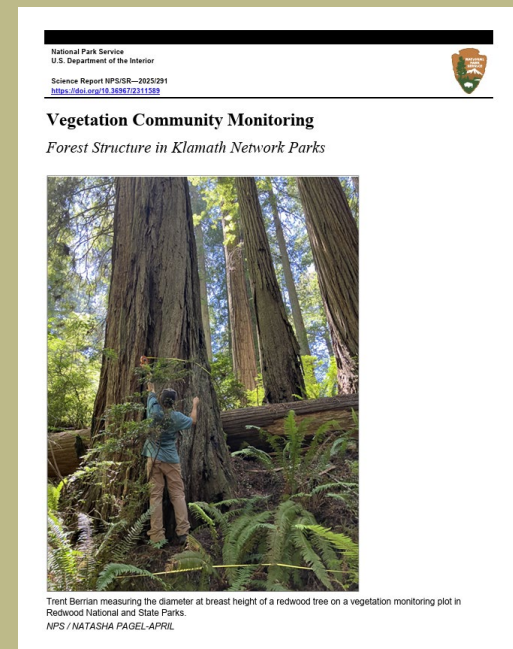
Park Data Needs related to our Objectives

- We have five visits, trend analyses are coming soon.
- Are these data table summaries helpful?
- Are these graphs helpful? Need more detail?
- Are we missing opportunities for data sharing?
- Would other park staff benefit from this?
- Anything we have missed?



Discussion Points

- Analysis and Synthesis report #2 published in NPS Science Report Series in 2025.
- Trend analyses beginning this spring for A&S #3 report.
- Specific analytical needs?
- Veg monitoring at RNSP next in 2027.



KLMN needs up-to-date information on the status of roads, bridges, etc., to plan site access in 2027

KLMN RNSP Veg plots not resampled in 2024	Reasoning
RW03	Road leading to site (M-2-1/2) not drivable when we attempted. Tried two separate days. Sites RW03, RW06, and RW23 are all accessed from the same road.
RW04	Mill creek plot. This was in a staging area for a bridge removal (Rock Creek Rd.). We also have notes that a crossing on rock creek road "failed" last summer (whatever that means). Didn't get the chance to check out the site, but if there is going to be a bridge removal this will greatly effect the sites accessibility.
RW06	See notes for RW03 ^, this plot is accessed through the same road. Other access that we attempted was on M-2-1, but this road was extremely overgrown with tall and woody brush immediately so not drivable.
RW09	Mill creek plot. Plot is on decommissioned rd. Unsure if this means powderhouse rd., or there may be an old logging rd adjacent. If powderhouse stays open, then this plot may be able to be accessed in the future.
RW110	See notes for RW04. This plot may be accessible instead from Visser-Spur Road but I think this road is also gone. Seems that there may be a route from westbranch rd but I'm pretty sure it won't be able to connect. Can check in future years.
RW111	Plot access fine. We were able to get there (see above notes). Plot not sampled due to landslide danger. This plot may be sampled in future years once everything is settled although I'm not too sure about how much of the setup is left. I was only able to find one of the rebars as it managed to go through a fallen tree (incredible really). So i'm not sure how many are left, they may all be buried.
RW12	Plot may be accessible in future years as they are currently replacing a bridge. This project was not projected to be done until late fall 2024.
RW122	See notes for RW04, plot is in similar area and access to this plot should be using the same roads.
RW153	See notes for RW12, this plot is accessed in the same way. Access to this plot was not possible this year due to bridge replacement
RW118	Access is extremely steep and eroded. At creek plot has some steep parts but not too bad, most of the concern is getting to the plot safely.