

Westside Type F Riparian Management Zone Exploratory Study Results

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Phase 2. Exploratory study – Purpose and Objectives

Purpose -

- To better define the population of interest for the BACI study (step 3) by providing information on the condition of riparian stands and level of functions associated with different prescription variants

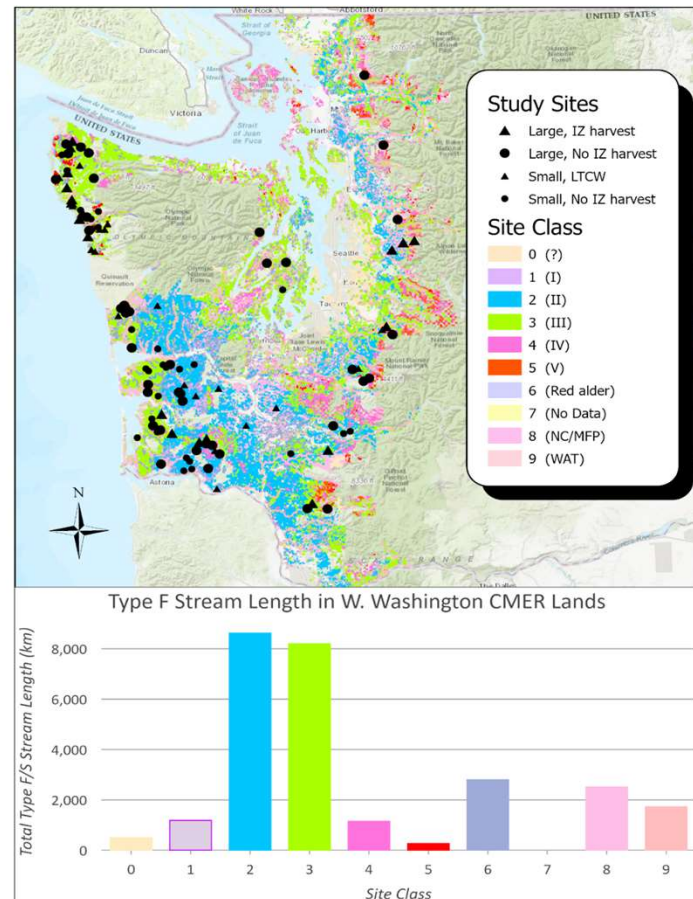
Objectives -

1. To evaluate post-harvest riparian stand conditions and riparian ecological functions across prescription variants with and without inner zone harvest.
2. To evaluate the extent to which post-harvest riparian forest stands are on trajectory to achieve DFC targets at sites with and without inner zone harvest.

Study Sites

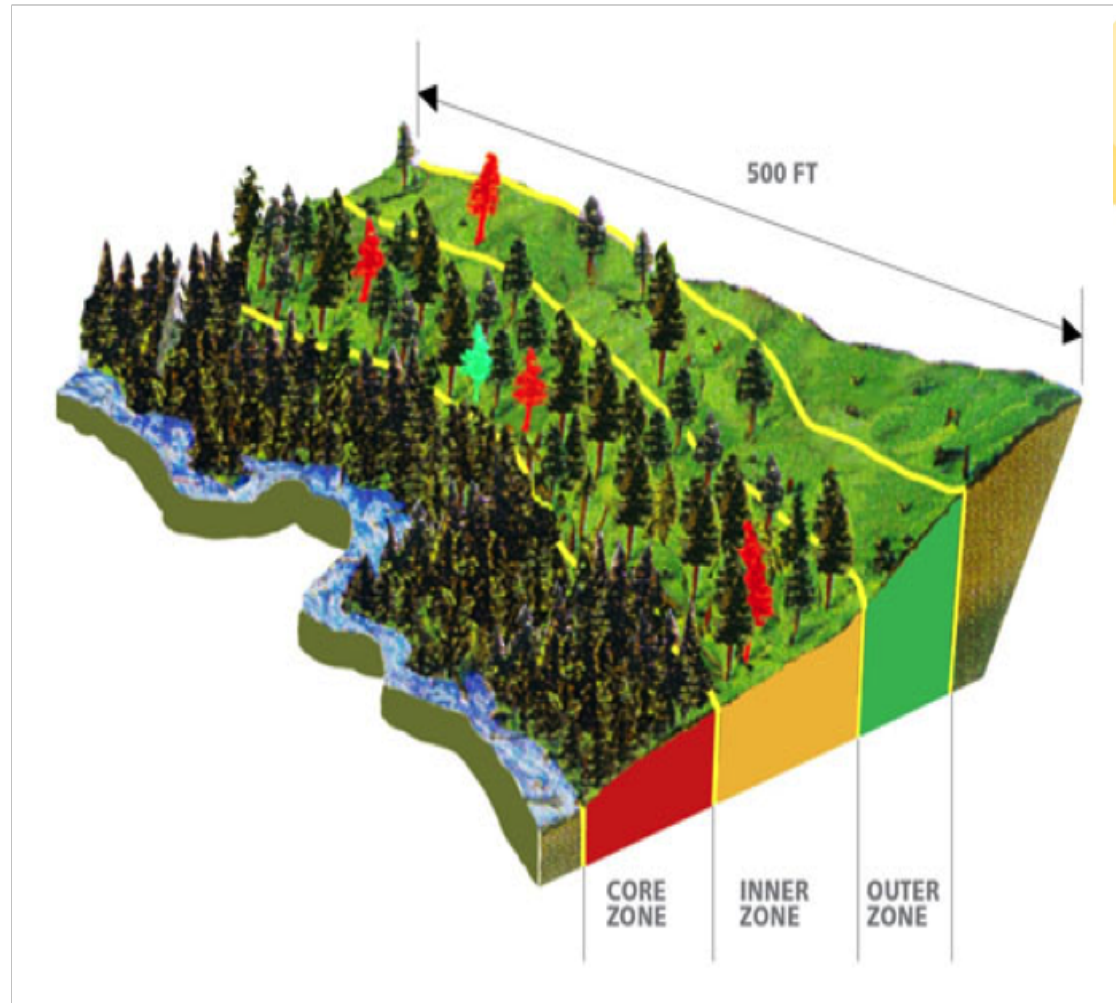
Distributed around Western WA CMER lands

- Heaviest in coastal region, esp. NW Coast
- Site Classes II and III most highly represented in CMERlands and in studied Rx



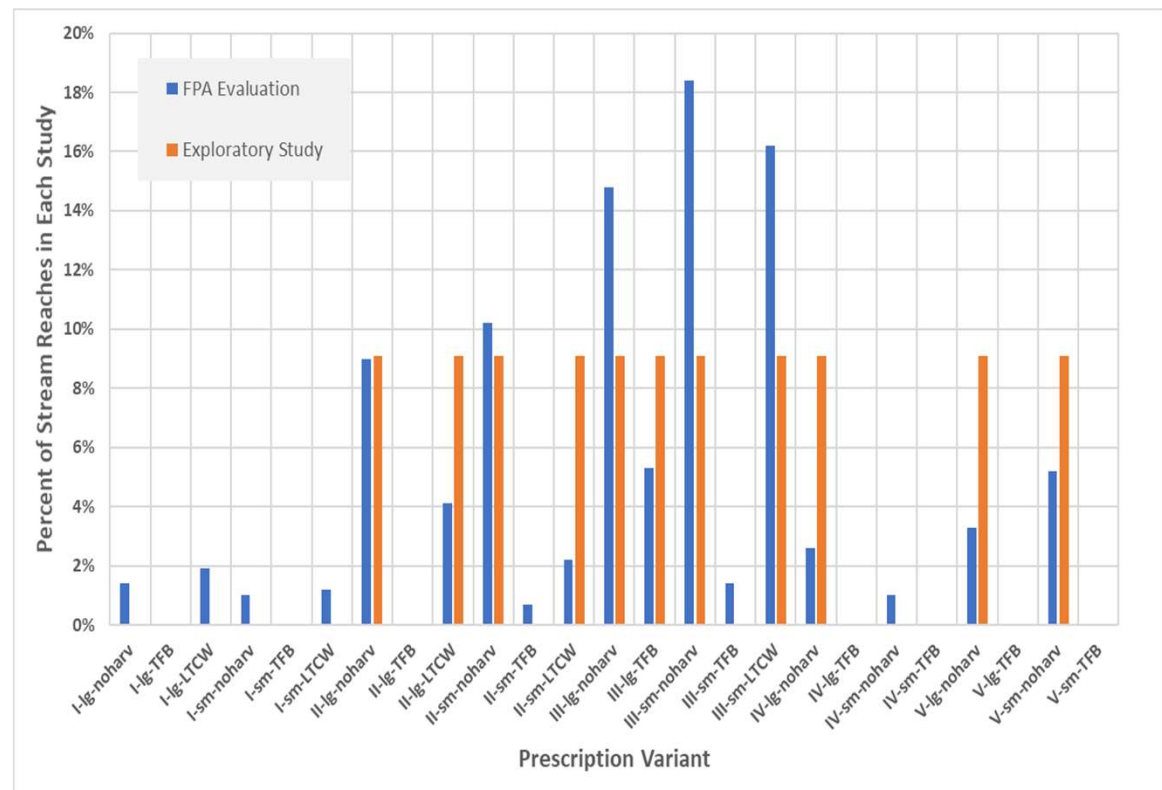
Type F Riparian Background

- 25 potential standard RMZ Prescriptions/RMZ Inner Zone widths
 - Based on site class, stream width
 - In some of those, can do some harvesting in the “Inner Zone” (middle zone)



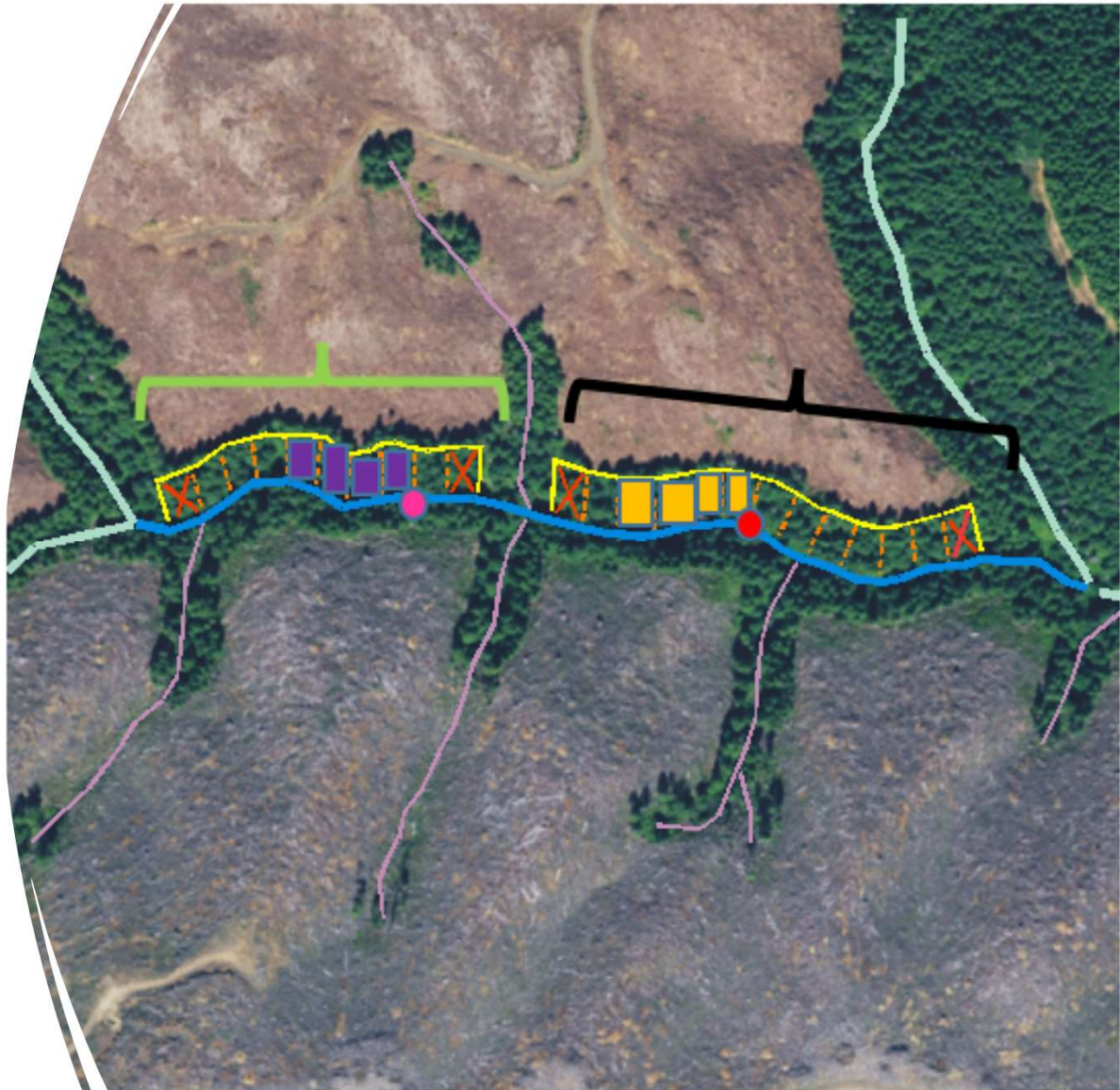
Study Sites

- 11 most commonly applied RMZ Prescriptions
- Theoretically, 10 in each
 - 4 Site Classes
 - 3 Inner Zone treatments, although no one site class/stream width combo had all 3
 - Really, one Rx had 11 sites, one had 8, another 9

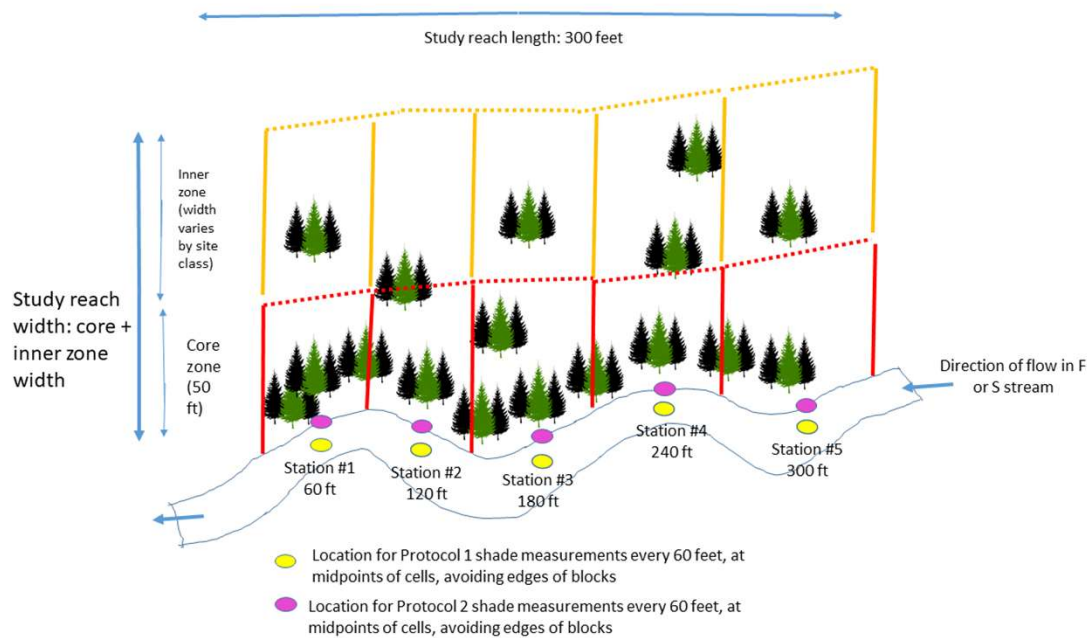


Study Site Layout

- Inspected randomly-selected riparian buffers on one side of Type F and S (fish-bearing) streams approximately three years after harvesting
- 300-foot stream segment at each site (sometimes broken into pieces)



Data Collection



- Collected stand characteristics, canopy cover; mortality and instream wood contributed since harvest
- Mortality and down wood data collected only for that occurring since harvest

Data Collection and Preparation Notes

- Sites were measured approximately three years after harvest (3-5 years)
- Added mortality since harvest to live tree data to calculate “Immediate Post-harvest” (IPH) conditions

Analyses

- Explore relationships among stand conditions and functional factors, especially looking at those relative to sites that had harvest in the Inner Zone
- Assess variabilities (help guide the development Phase 3 study)
- Assess the status of factors related to forming aquatic habitat at randomly selected F&F RMZs
- Investigate whether any particular prescriptions or factors stand out as requiring more extensive study (focusing Phase 3 study)

Analysis Focus Topics

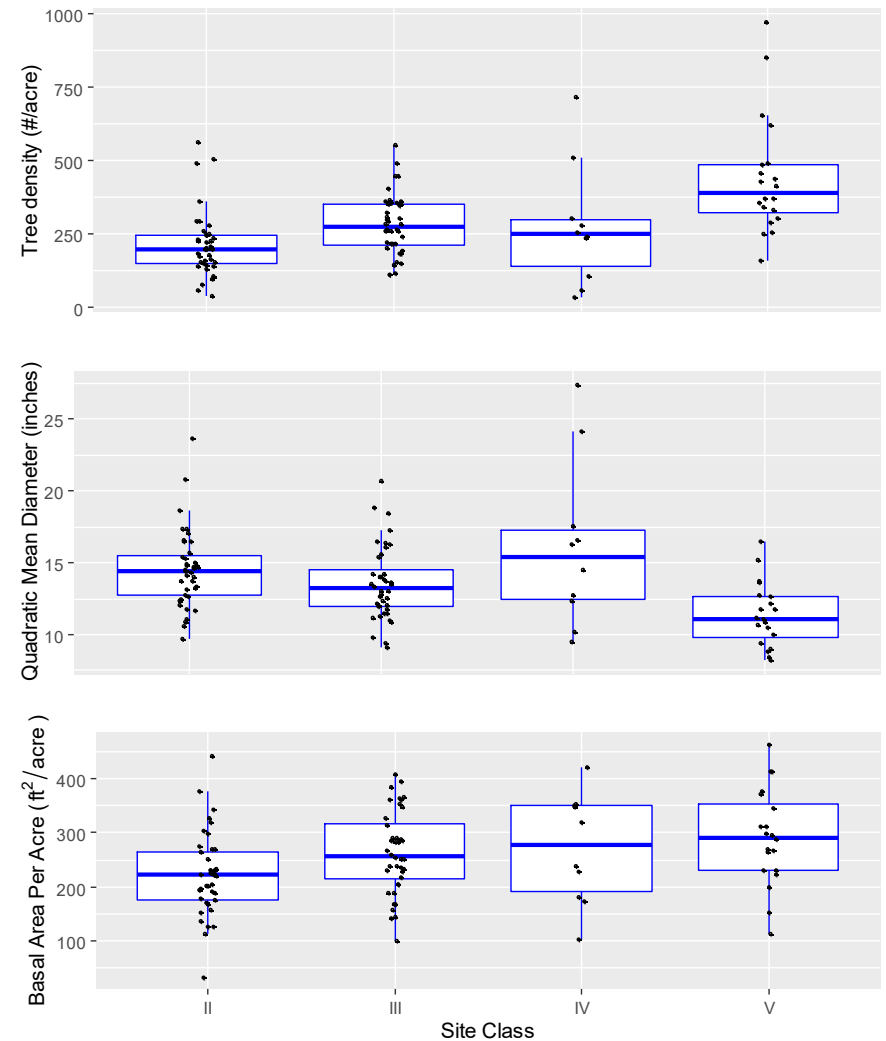
- General relationships among all variables
- Riparian Buffer Stand Characteristics
 - Tree density, diameter, basal area, composition
- Mortality
- In-stream Wood Recruitment
- Shade (Canopy Cover)
- Erosion
- Sites with/without Inner Zone (DFC) harvest

Erosion

- No signs of measurable erosion were observed

Residual stand characteristics vary with Site Class

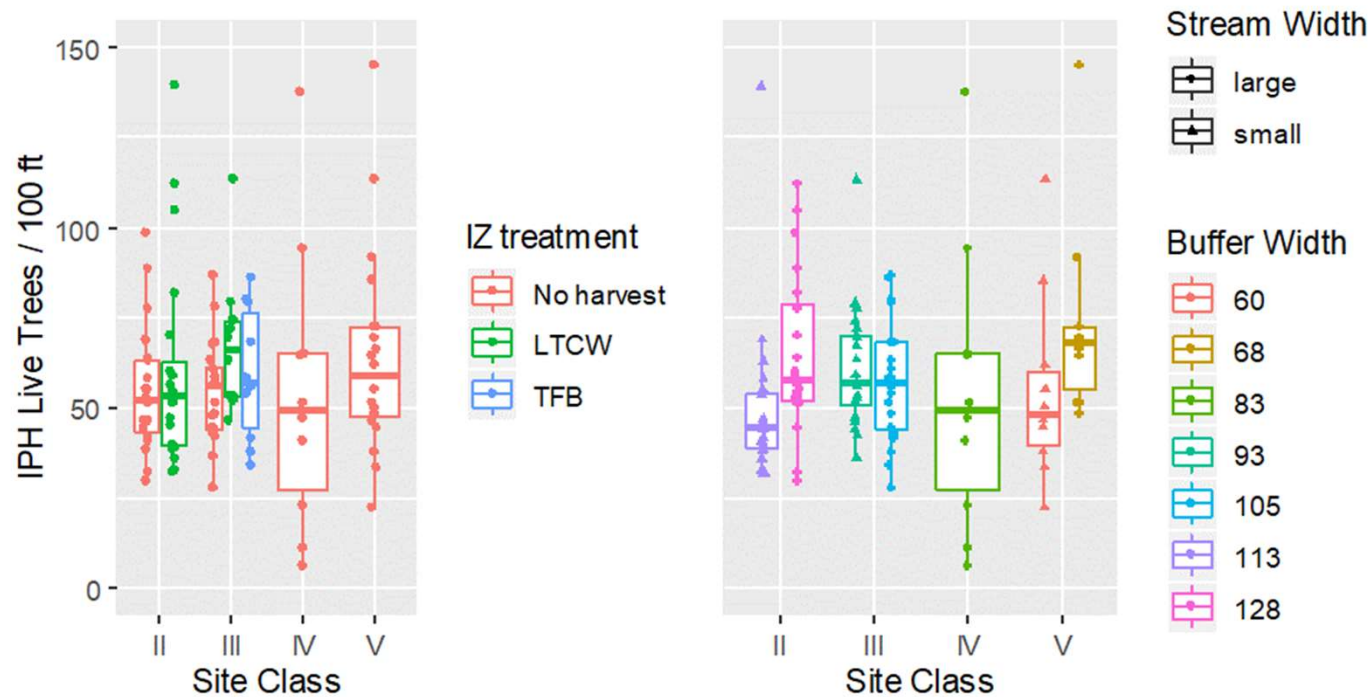
- May not always be underlying cause; Prescriptions vary by Site Class, so of course residual stands should vary by it.



Stand Composition

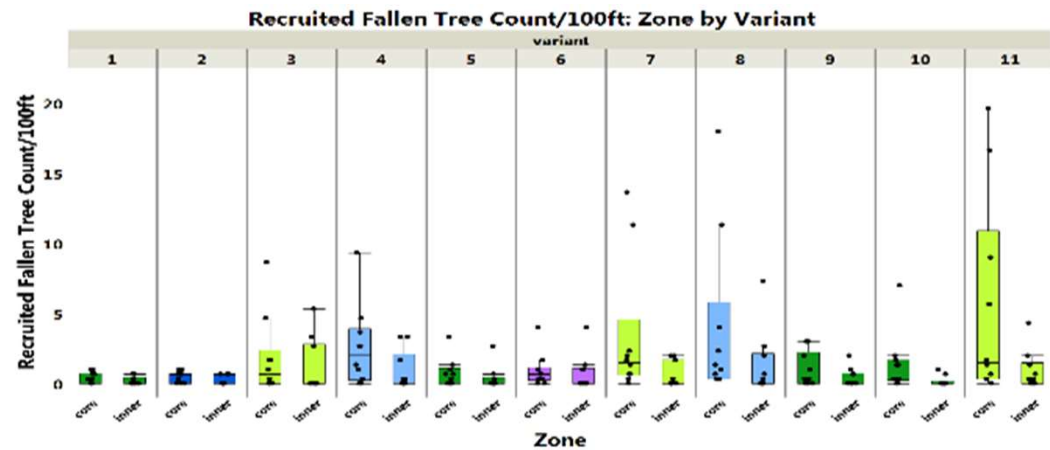
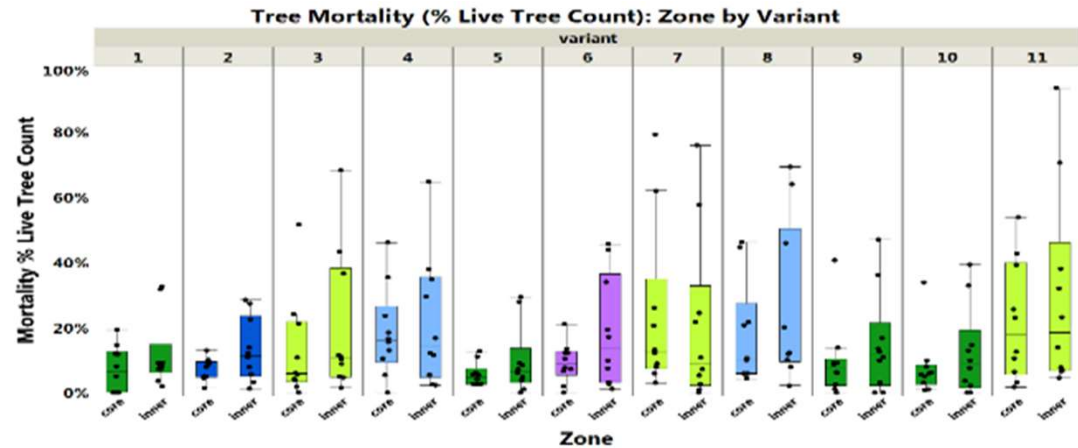
- Over 80% of the buffers in this study were dominated by conifers (i.e, % conifer >50%).
- Sites with inner zone harvest are associated with a high percentage of conifers whereas sites where no inner harvest was conducted tended to have higher percentages of broadleaf species and greater overall species richness.

Interesting finding - Approximately 55 buffer trees per 100' of stream length left by all prescriptions



Mortality and Wood Recruitment

- Mortality and down wood data collected only for that occurring since harvest



Site Class	II				III				IV	V	
Stream Width	L		S		L		S		L	L	S
IZ Harvest	No	LTCW	No	LTCW	No	TFB	No	LTCW	No	No	No
CZ&IZ width (ft)	128	100+	113	80+	105	105	93	80+	83	68	60

Mortality Findings

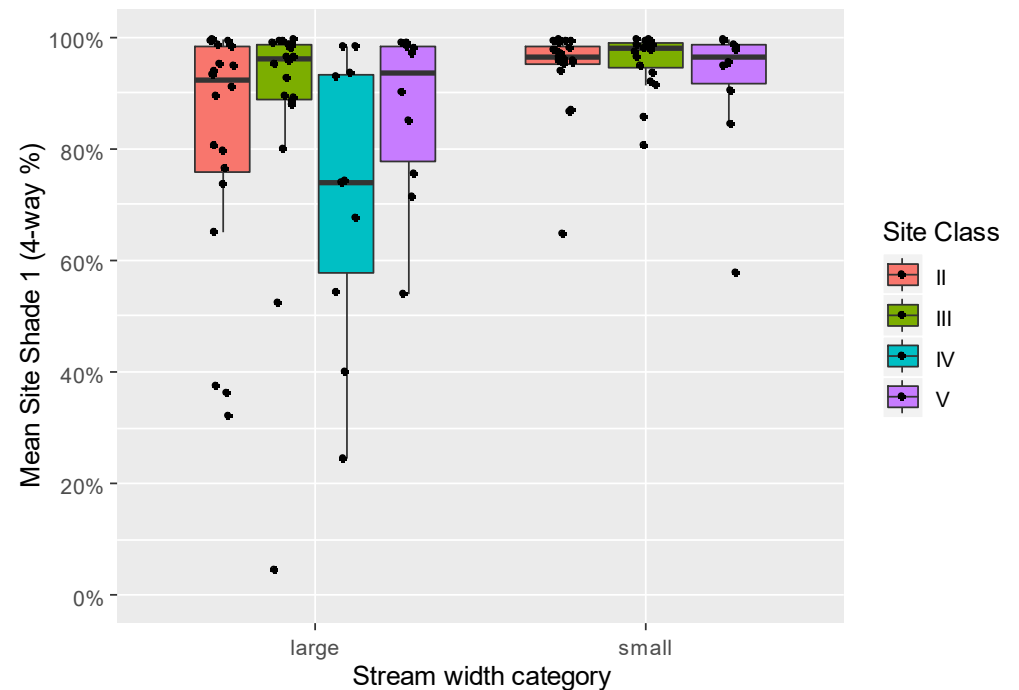
- Mortality greater on small streams
- Windthrow dominant agent on both large and small streams
- Buffers with LTCW inner zone harvest experienced high mortality events at a greater rate than sites with no inner zone harvest (20% vs. 10%)
- Despite this, 5 of the 6 (83%) buffers that experienced high mortality left residual stands that still are projected to meet the DFC target and shade requirements.

Canopy Cover/Shade

- Two measurements:
 - Shade1 = standard into, out from, up-, and downstream method
 - Shade2 = Into (toward) buffer only
- Shade2 use for most analyses because it highlights conditions in the buffer being investigated
 - Reminder – this is NOT the effectiveness study, so we were not evaluating the effectiveness of each buffer in shading the stream, but rather gathering an indication of the conditions and variations among prescriptions in potential to provide shade

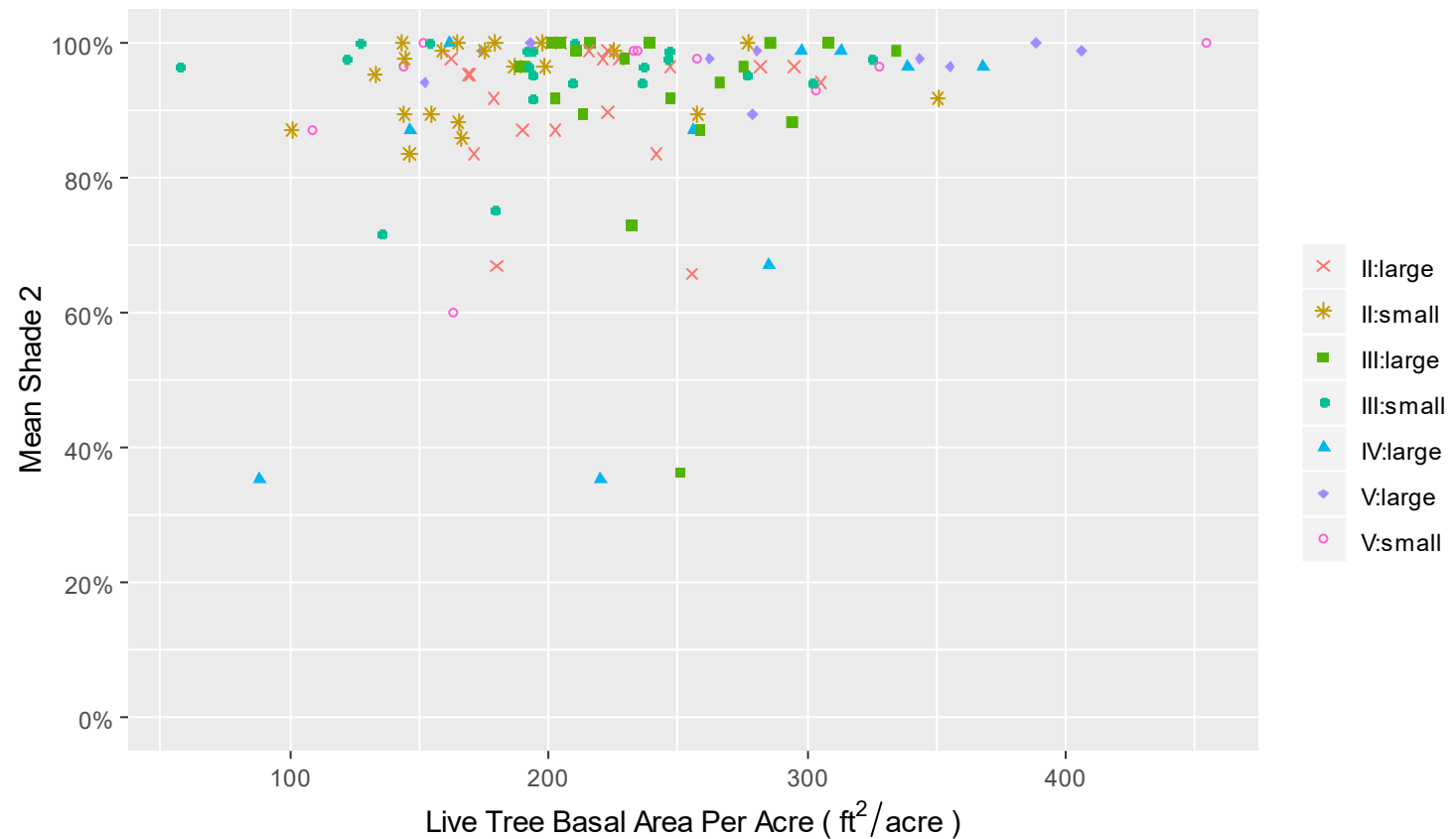
Shade1 - Instream

- As would expect, shade measured midstream shows that small streams (<10 feet wide) are better shaded than large, and the variability is much greater on large streams



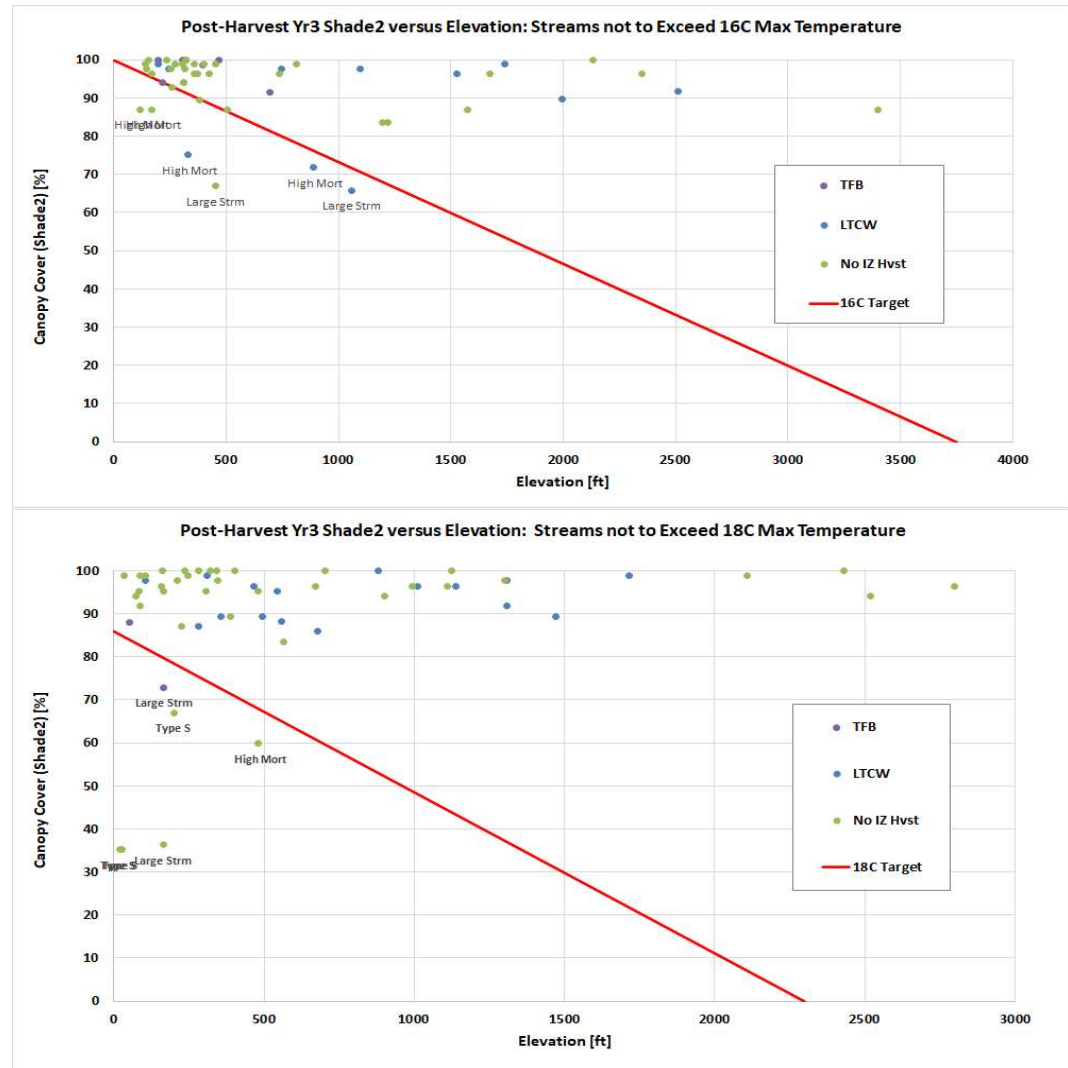
Shade2 – Buffer Canopy Closure

- Most (>90%) of sites had buffer canopy closures over 80%
- Buffers with low values nearly all on large streams



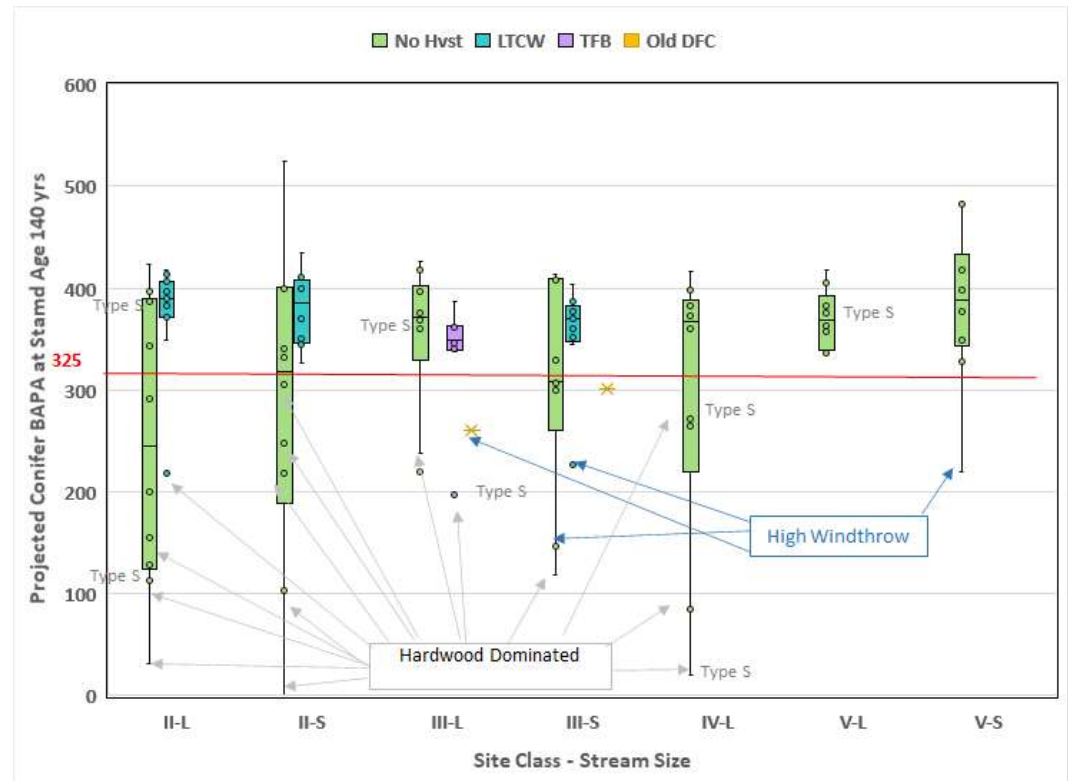
Required Shade by Elevation and WQ Maximum Temperature Requirement*

*FPB Manual Section 1



DFC Projections

- 92% of sites that had Inner Zone harvest still projected to meet DFC BAPA target and currently meet their respective shade targets
- 74% of ALL sites are projected to meet DFC basal area at 140 years
 - Only half the sites with no IZ harvest projected to meet target



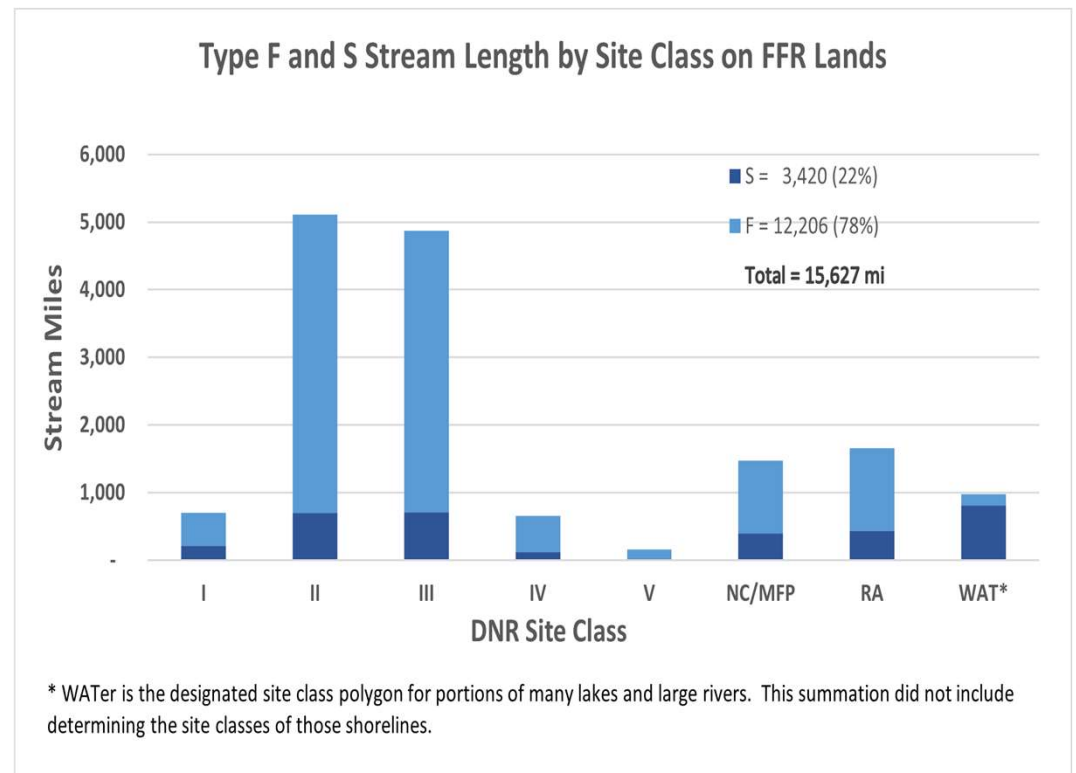
Buffers on large channels may warrant further investigation

- Buffer on low, colonizing terrace
- Consists of sparse, mostly broadleaf trees and shrubs
- 35% canopy cover
- Low current and future recruitment potential



Type S Channels on FFR Lands

- Type S are not all >100ft wide
- 22% of FFR Stream Length
- Important salmonid spawning habitat



Conclusions

- Relationship between residual riparian conditions and site class, as expected since prescriptions differ by site class
- High variability within all prescriptions
- Canopy cover is high across all prescriptions
 - Few sites with low canopy cover; dominated by sites on larger rivers
- Measurable surface erosion was not observed for any variant
- The effectiveness of Type F/S Buffer Prescriptions on large (>100 ft wide) channels warrants further investigation
 - Only 7 Type S sites in study, **3** of which were >100' wide

Questions?

