

Harvesting around small streams

Coastal Perspective



Stream Characteristics



- Typically high gradient
- Many reaches are non-alluvial, with shallow soil layer over boulders and bedrock.
- Flows can be “Flashy” with high flows during storm and rain-on-snow events. Glacial melt often supplements basal flow in summer.



Watershed Characteristics



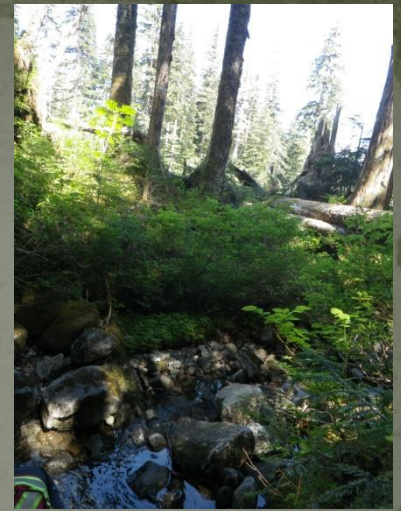
- Many 1st and 2nd Order reaches drain directly into the ocean.
- Steep face drainages are common to lakes and large rivers.
- High density of steep streams across the landscape- RMAs may overlap
- Underestimation in TRIM water layers

Central coast riparian harvest study (2015)

- Planning included identifying potential sites based on GIS information. Tailed frog habitat attributes were also considered.
- Field measurements followed FREP Riparian and TF eDNA field protocols and included basic WQ data.
- Field component included an evaluation of the potential habitat and a time constrained search for tadpoles.



Observed strategy- avoidance



- Use stream as natural block boundary. Often cut within RMA on one side.
- Establish WTP or other retention around streams within the block

Observed strategy – no management



- No retention of any forest layer, fall across, yard across, machine crossing

Results

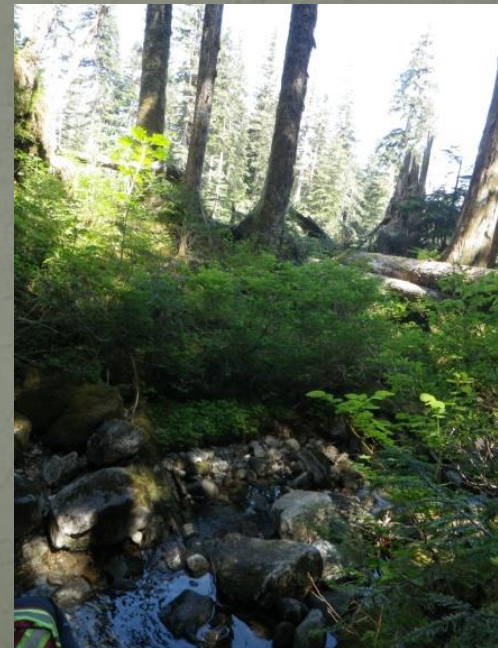
- Positive strong correlation between riparian retention and aquatic habitat quality.
- Some of the variance in the relationship could be explained by the erodibility of the channel.
- Streams with more bedrock were less susceptible to disturbance, provided timber had been fallen and yarded away and road crossings were not a factor.
- Reaches that had been clearcut on both banks were significantly lower in habitat value than all of the other groups.
- Some small, stable reaches may be able to absorb partial riparian harvest provided that the stream channel remains undisturbed and enough vegetation layers are left behind to provide for riparian processes.

FREP data 2006-2015

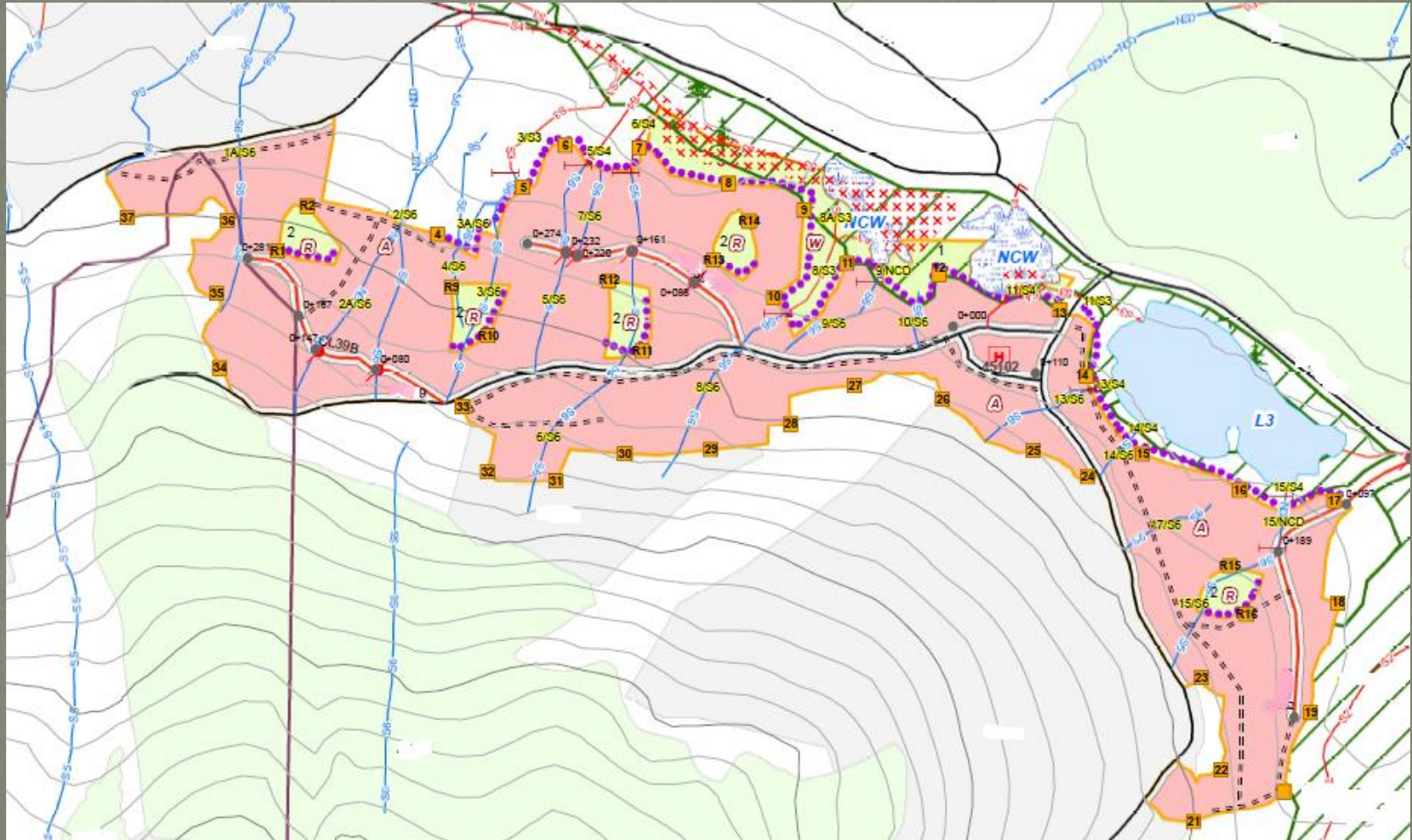
In-block vs adjacent streams

Condition of small streams located inside and adjacent to the block

		NPF	FHR	FR	PF
Coast	In-block	27%	28%	28%	17%
	Adjacent	5%	14%	31%	50%

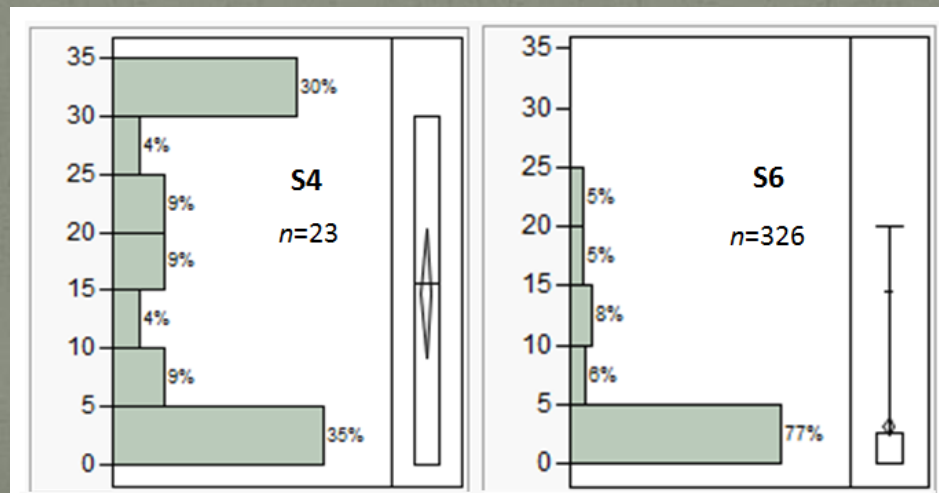


High density of small streams - options for riparian management?



FREP Data for streams inside blocks

Area	Sample Location	N (%) of streams	Average channel width	Average channel grade (%)
Coast	Adjacent	149 (29%)	1.8	16.9
	In-Block	366 (71%)	1.3	26.5
Coast Total		515 (100%)	1.5	23.7



Retention (m) around streams located within block boundaries

Summary

- More retention leads to better outcome- adjacent streams are left in better condition than within-block streams
- How to manage the high density of small streams on the coast?
- Explore options for Best Management Practices around small streams to maintain functioning condition

Harvest-related effects that impair stream function & Strategies that could improve outcomes

Identify residual effects causing impairment of physical and biological processes.



#1 High loading of wood waste in channel

Creates blockages, changes flow patterns, erodes bed and banks, causes aggradation, multiple channels, overland flow, dewatering.

#2 Input of cutblock sediment and road debris

Erodes channel bed and banks, impacts water quality, fills in pool habitat, blankets stream bottom, influx is transferred to downstream reaches until it exceeds transfer and storage capacity of channel, dewateres stream.

#3 Disturbed ground in riparian area

Compacted soil limits regrowth and facilitates greater surface runoff. Less infiltration to groundwater, more surface water to stream increases channel erosion. Exposed soil available for sediment transfer, opens site to establishment of weeds.

#4 Lack of retention

Less channel stability from decrease in root network, less organic input to soil decreases infiltration and organic matter to streams is reduced. Lower shade values may increase water temperatures and harmful uv radiation. Lower value riparian habitat.

Strategies

Avoidance

- Cut stream out of block or use as anchor for windfirm WTP or other retention

Other

- Strategies may vary by site condition
- Investigate options
- Discuss limitations

Small Streams Project (Coast)

- Objective: Visit a number of sites that may have been harvested within the RMA but with consideration to maintaining stream function.
- Planning: FREP database, licensees.
- Small setbacks: Some sites dropped from the original sample design; weather has caused some delays.



High stumping, MFZ, some non-merch
retention



Other Options?

To Be Discussed