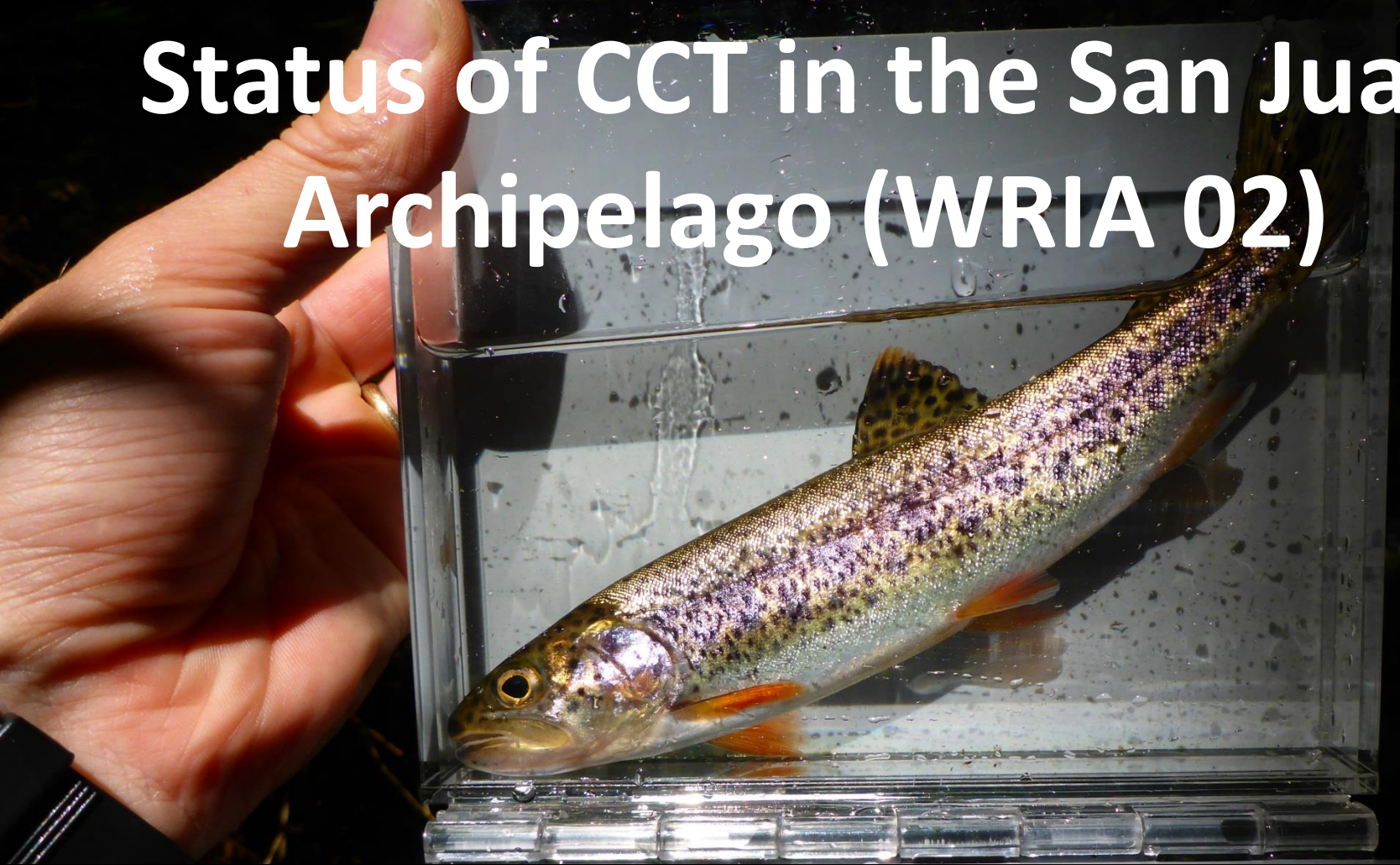


Wild Fish Conservancy
N O R T H W E S T

Status of CCT in the San Juan Archipelago (WRIA 02)



Jamie Glasgow, Wild Fish Conservancy (presenting)

Jenny DeGroot, Speckled Trout Consulting

Maureen Small, WDFW Genetics Laboratory

Russel Barsh, KWIAHT

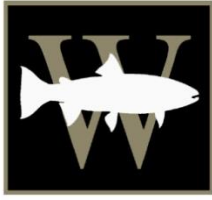
Mike O'Connell, Long Live the Kings

WATERTYPING

A stream classification system used to inform land use around streams.



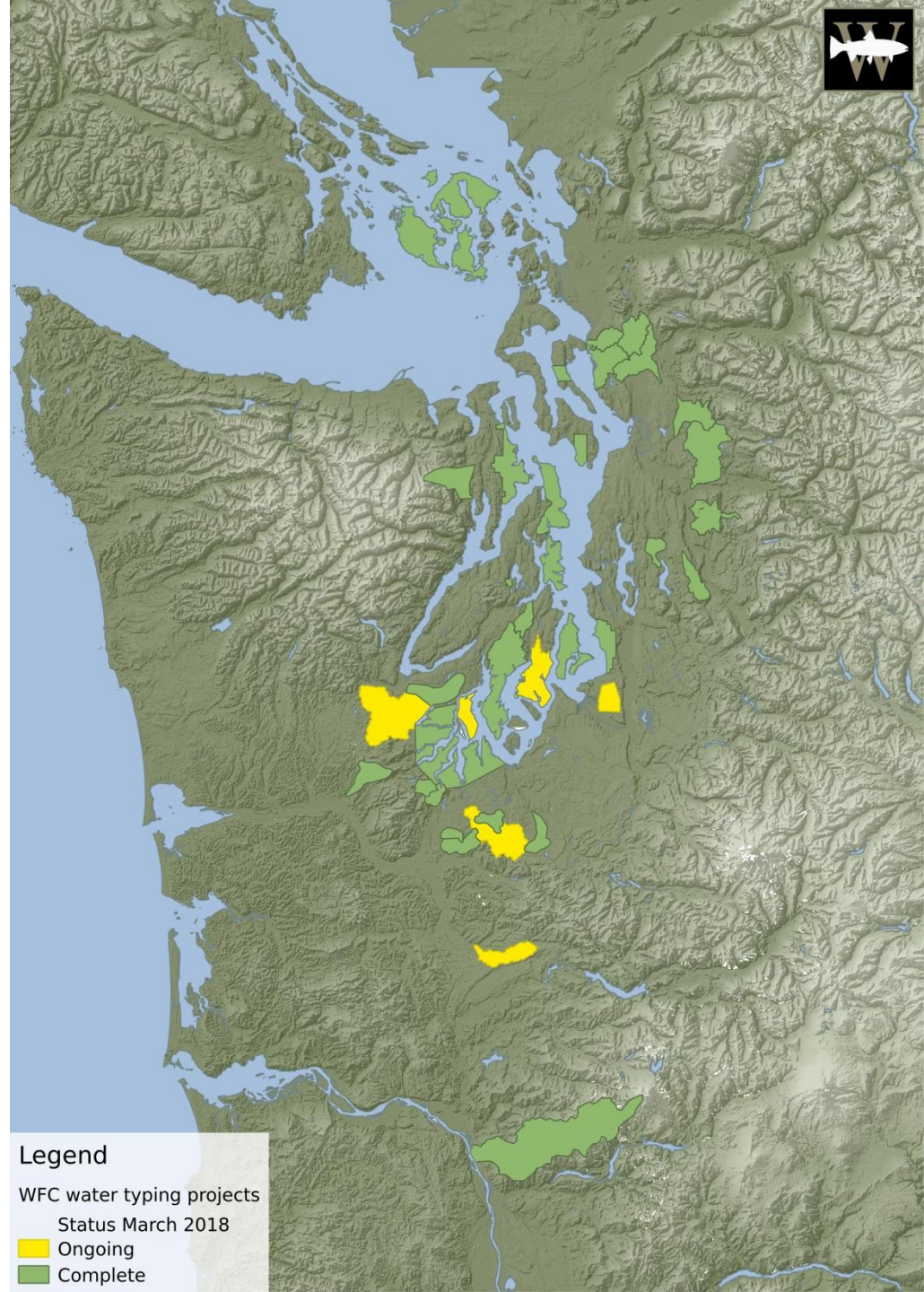
WHERE ARE STREAMS AND THEIR FISH HABITATS?



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S C I E N C E E D U C A T I O N A D V O C A C Y

Systematic Water Type Assessments



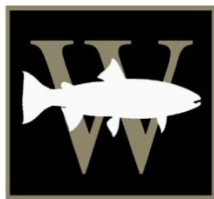
Legend

WFC water typing projects

Status March 2018

Yellow Ongoing

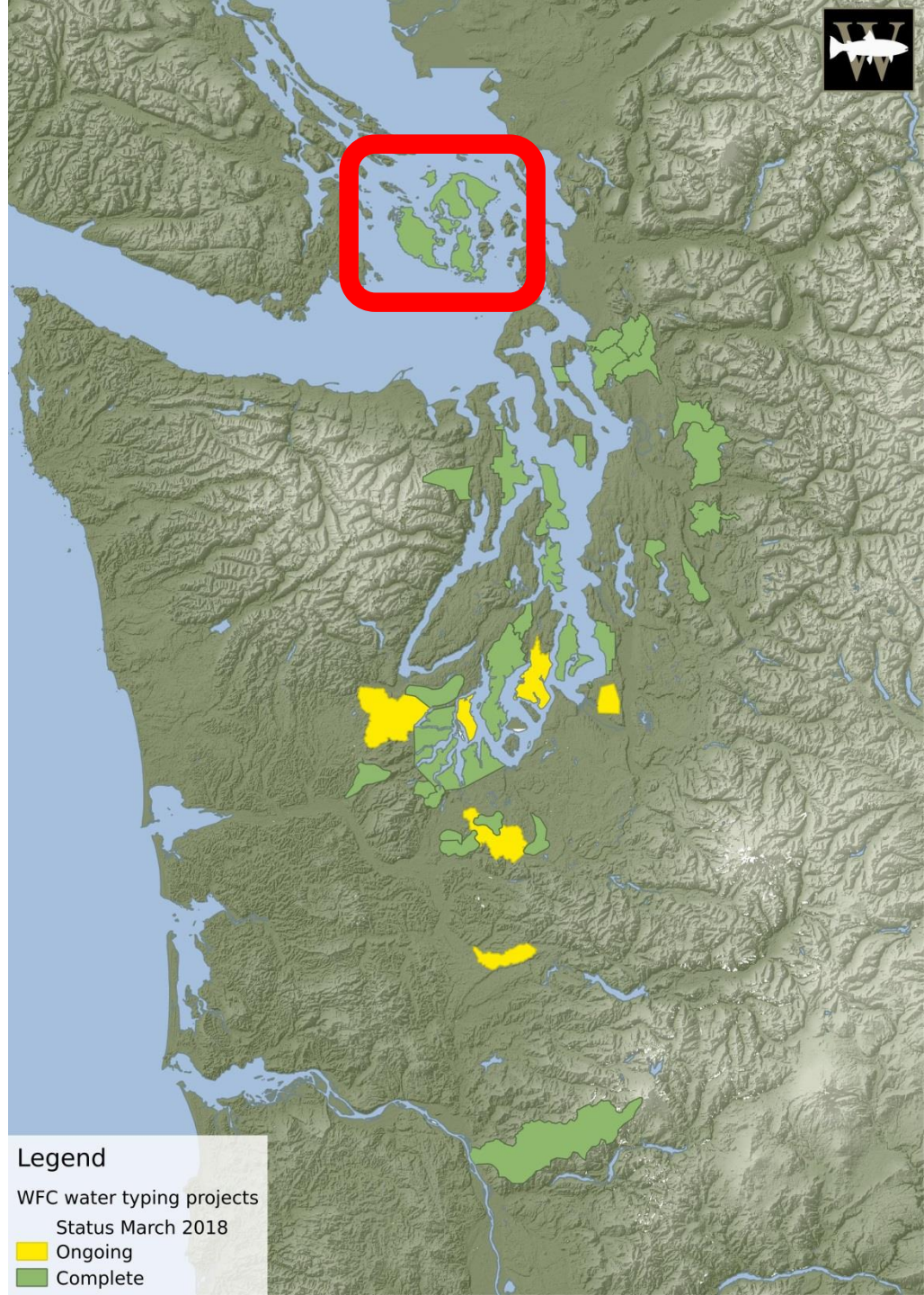
Green Complete



Wild Fish Conservancy
N O R T H W E S T

S C I E N C E E D U C A T I O N A D V O C A C Y

Systematic Water Type Assessments





Stream:OI13C
Date:04/24/2007
Gradient:NULL
BFW ft.:NULL
WW ft.:NULL
Notes:Inlet of a 4 ft. diameter corrugated round metal culvert at Pt. Lawrence Rd approx. 130 ft. downstream of the confluence of two middle headwater creeks of Doe.



Stream:OI13C
Date:04/24/2007
Gradient:NULL
BFW ft.:NULL
WW ft.:NULL
Notes:This is a view of a 7 in. coastal cutthroat trout brought to hand from the plunge pool of the culvert under Pt. Lawrence Road.



Stream:OI13C
Date:04/24/2007
Gradient:5
BFW ft.:7
WW ft.:5



www.wildfishconservancy.org

Salmon and Steelhead Habitat Limiting Factors Report

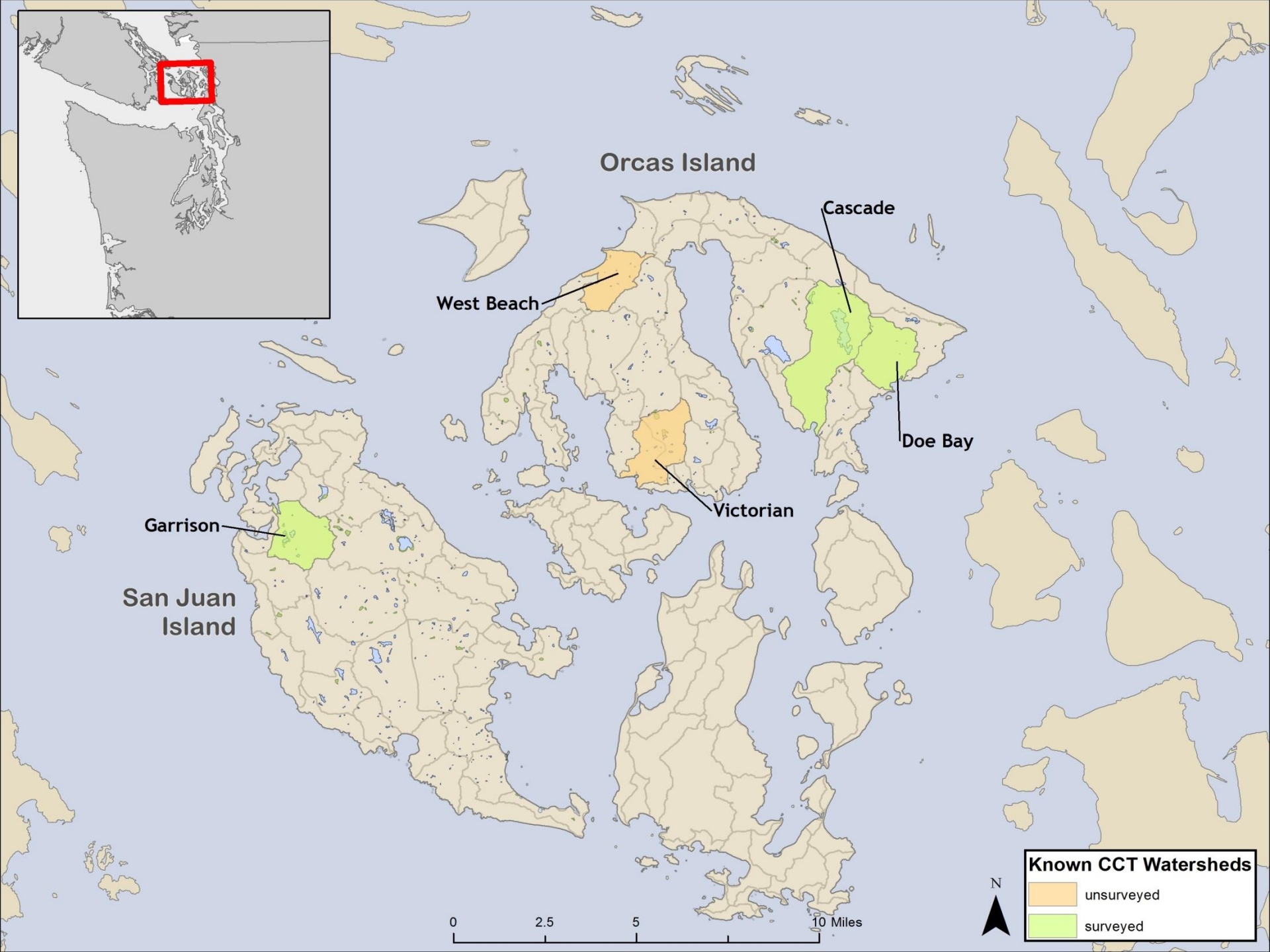
for the

**SAN JUAN ISLANDS
(Water Resource Inventory Area 2)**

Salmon and Steelhead Habitat Limiting Factors Report

“There are no known naturally sustaining populations of anadromous or resident salmonids in the freshwater habitats of WRIA 2.”

SAN JUAN ISLANDS
(Water Resource Inventory Area 2)



Study Goals

1. Describe status of CCT within three SJ County watersheds
2. Provide baseline data against which future data can be compared (trends).
3. Provide protection, restoration, and management recommendations

Study Objectives

Biological:

1. Abundance
2. Age-structure
3. Length-Weight Analyses
4. Phenotypic Observations
5. Genetics

Management Recommendations:

1. Habitat protection
2. Habitat restoration
3. Introduced species
4. Data gaps





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Table 1. Site names, sampling dates, reach length, and sampling results.

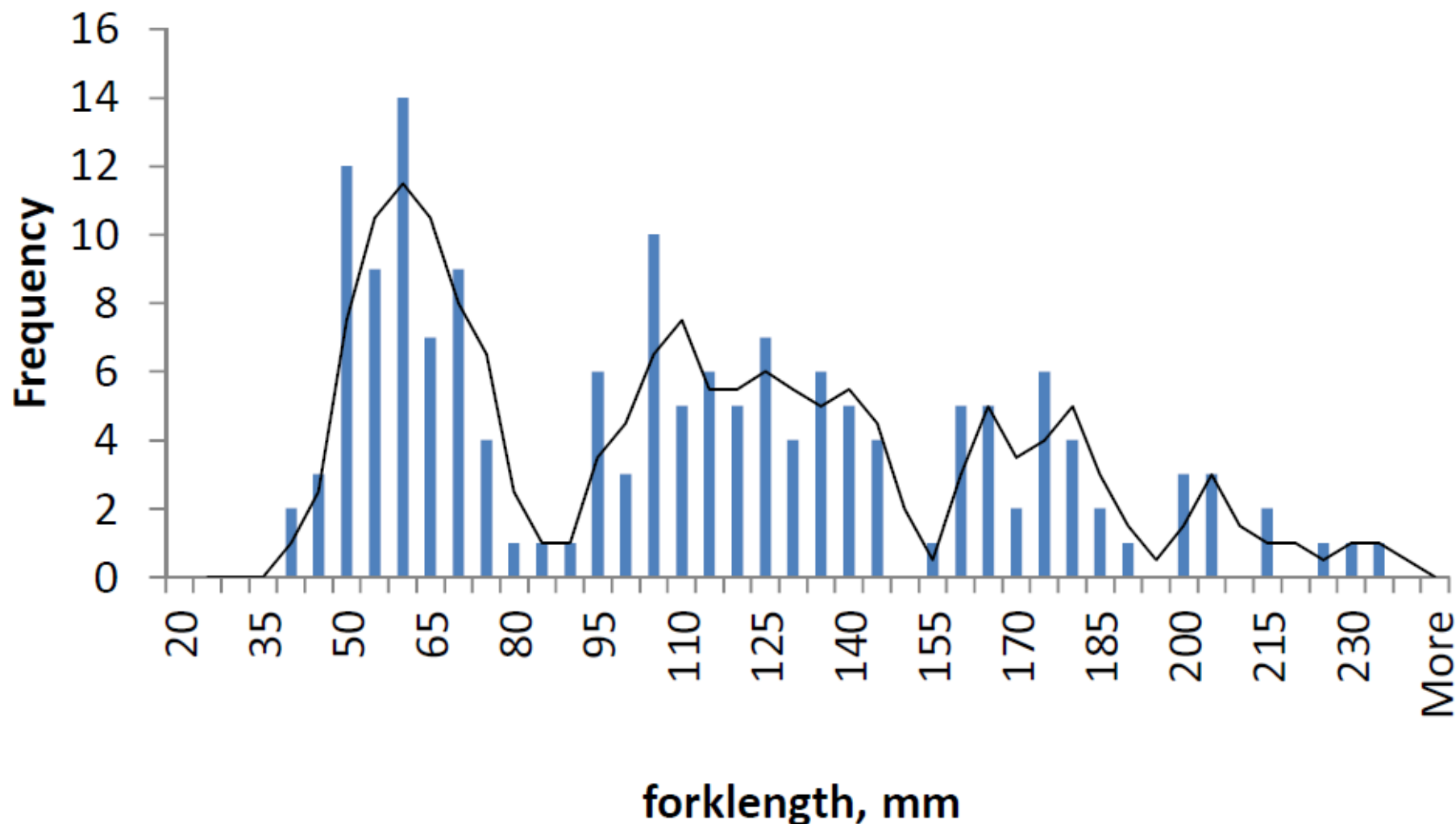
			Avg. Reach	Coastal Cutthroat Trout		
Site		2014 Dates	Length (m)	Captured	Fin clipped	Scales samp.
Cascade	A	6/9, 7/4, 7/28, 8/4	190	12	10	10
Cascade	B	4-Aug	240	14	14	14
Cascade	C	5-Aug	100	19	10	8
Cascade	D	5-Aug	140	11	5	4
Cascade	E	5-Aug	140	10	10	0
Doe Bay	A	2-Jul	70	22	22	20
Doe Bay	B	2-Jul	90	28	28	18
Garrison	A	22-Aug	125	1	1	0
Garrison	B	7/1, 8/22,	100	19	18	18
Garrison	C	7/1, 8/22, 12/16	170	31	31	23
				167	149	115



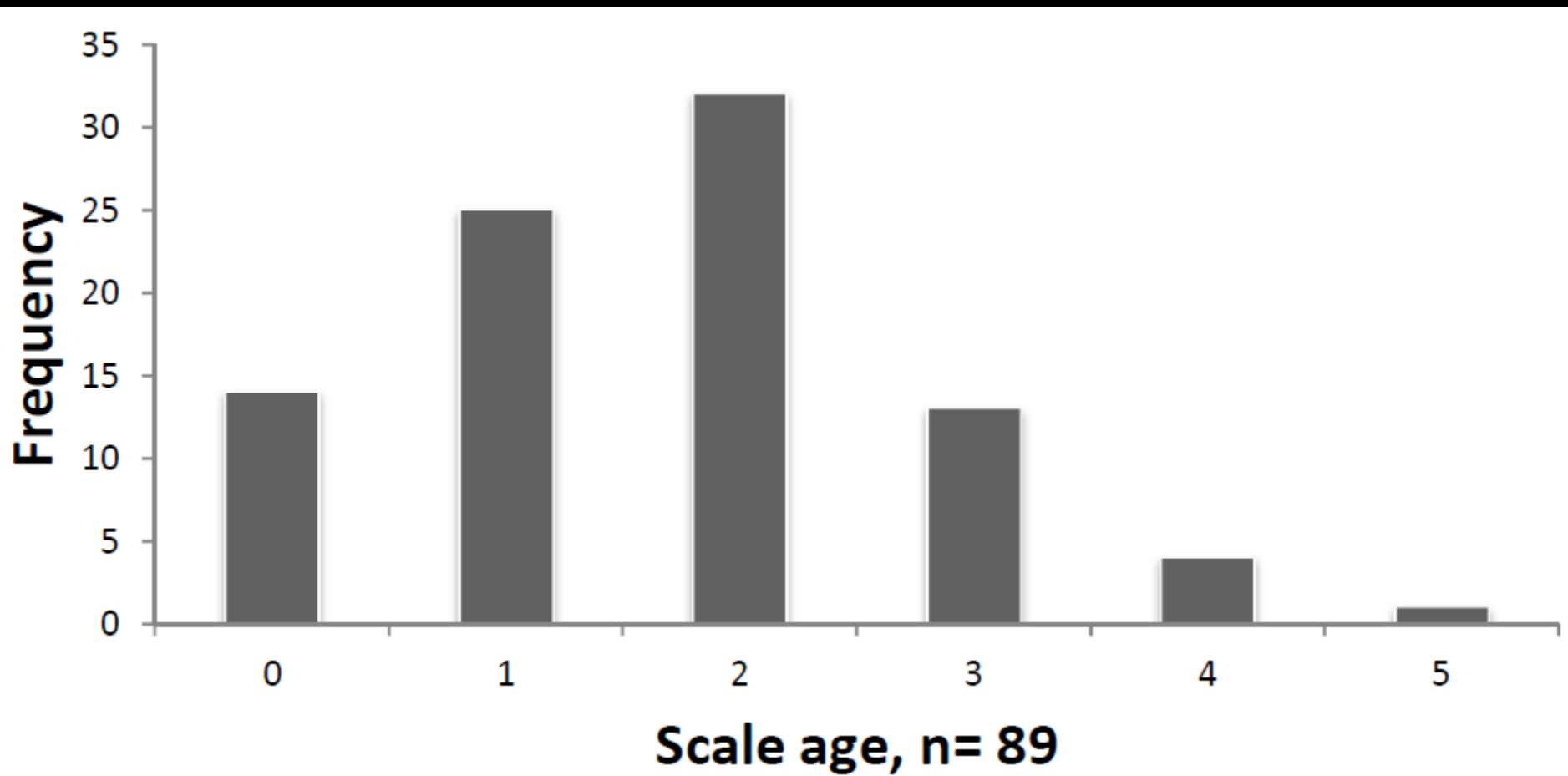
- ID
- Measure
- Weigh
- Fin Clip
- Scales
- Recover, release

SJ Cutthroat FL Histogram

n=161, sampled summer 2014 in Cascade, Garrison, and Doe Bay



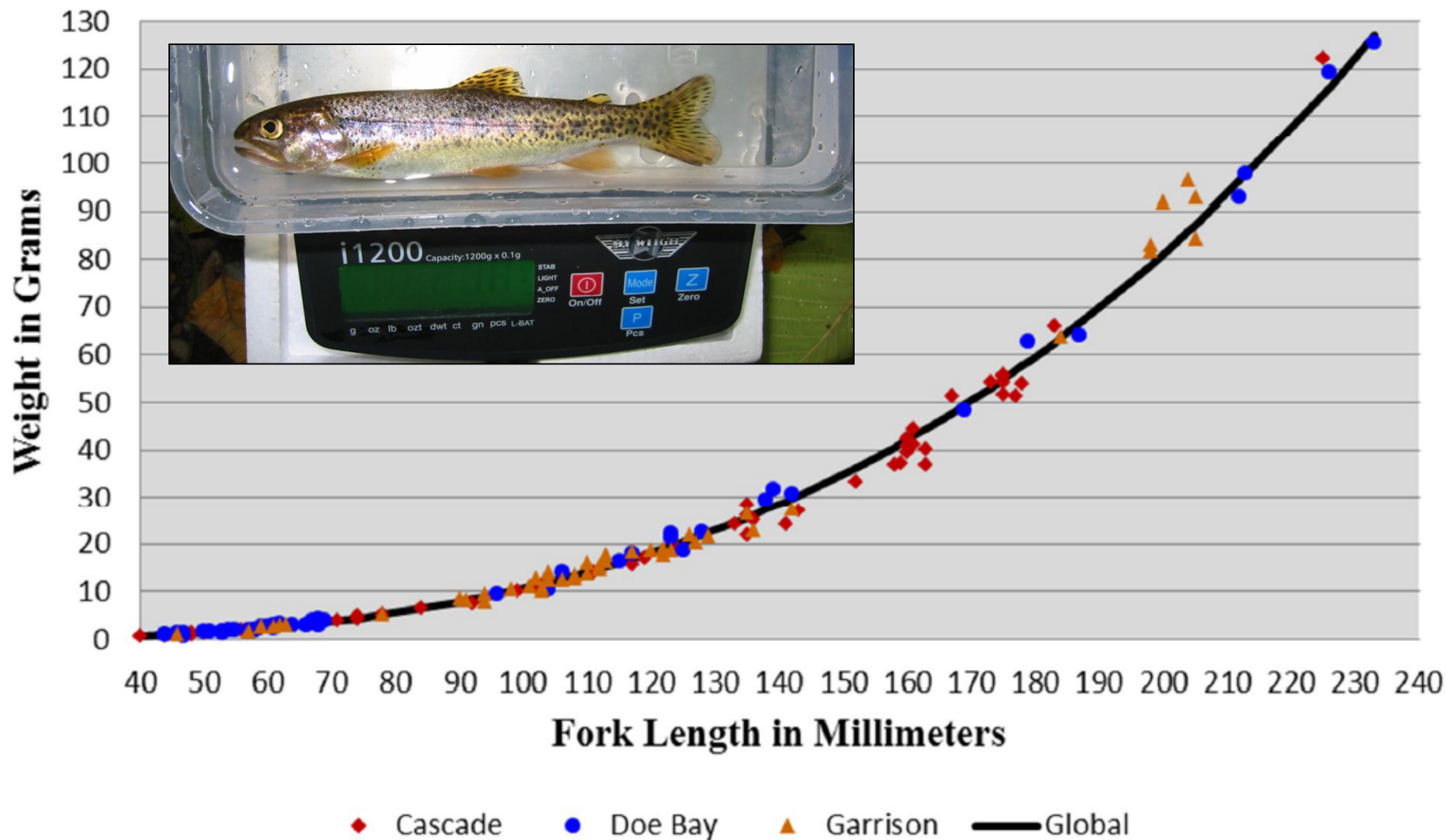
Scale Frequency Distribution





San Juan Cutthroat Actual and Predicted Weight-Length data.
Prediced values are from the Global L-W equation:
 $W = 0.000014627 * L^{2.931}$

n=152

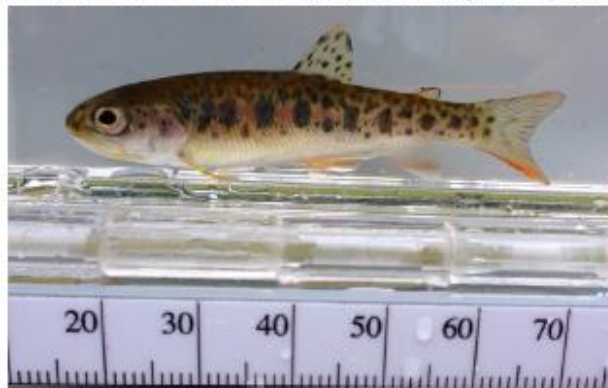




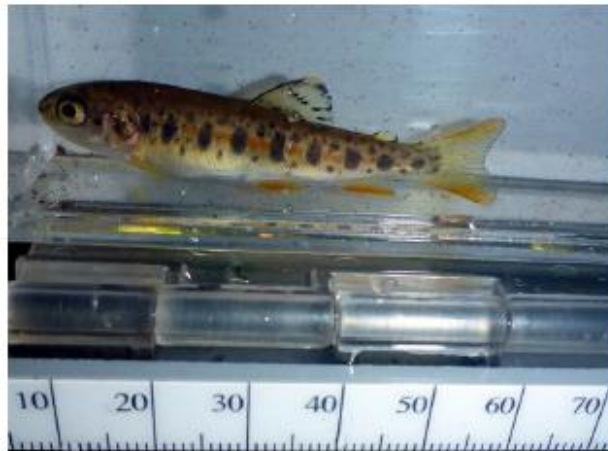
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photarium@wildfishconservancy.org

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JUVENILE CCT COMPARISON, TYPICAL



Garrison Juvenile (0076)



Cascade Juvenile (0674)

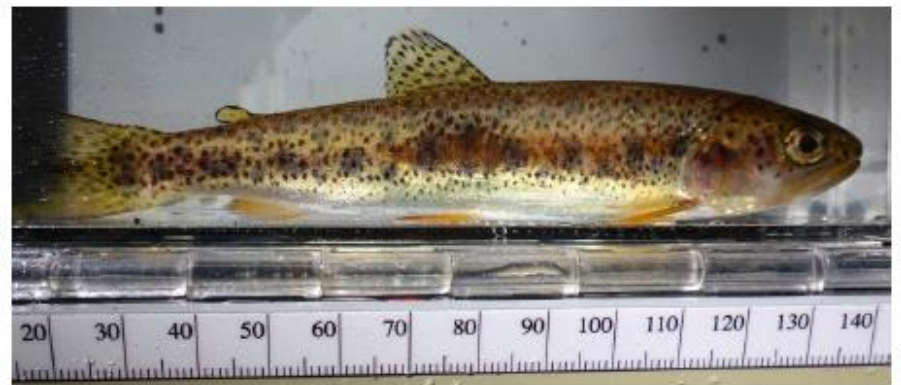


Doe Bay Juvenile (5978)

ADULT CCT COMPARISON, TYPICAL



Garrison adult (0782)



Cascade adult (0742)



Doe Bay adult (5983)

CASCADE CR. FINE-SPOTTED VS. COARSE-SPOTTED



Cascade adult, fine-spotted (0757)



Cascade adult, large-spotted (0637).

Genetics



- ~50 fin clips from each watershed
- Genotyped at seven microsat loci and 96 SNPs

Genetics

Nb represent very small but persistent populations

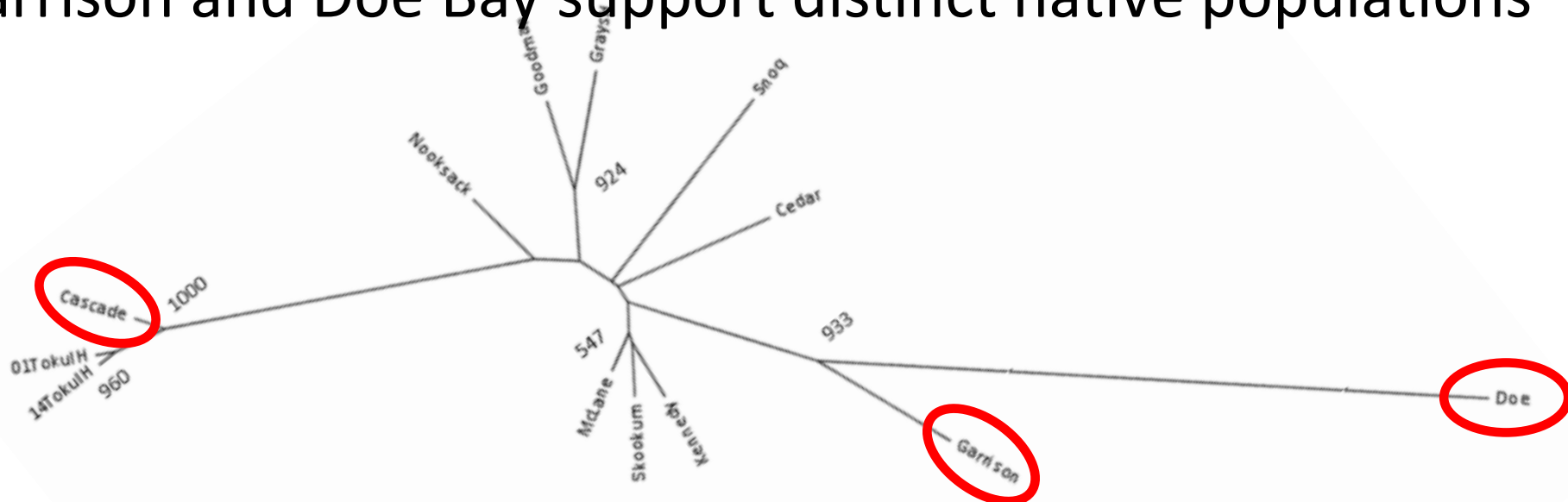
- Cascade Cr: 27 (16-48, 95% CI)
- Doe Bay Cr: 21 (12-39, 95% CI)
- Garrison Cr: 20 (12-39, 95% CI)



Genetic diversity was lower in SJ Islands than in any other CCT collections from WDFW (Puget Sound and coastal WA) baseline.

Genetics

Garrison and Doe Bay support distinct native populations



Cascade Cr. CCT represent two lineages

1. Tokul Cr. - ongoing WDFW hatchery planting in a headwater lake;
2. Descended from naturalized Tokul plants and/or a remnant of a native CCT population.

Protection, Restoration, and Management Opps



Typical Habitat, Hydrograph, and Water Quality Impacts

- **Agriculture**
- **Development**
- **Forest Practices**



SJC special considerations

- Small fish populations – susceptible to impacts
- Many barriers to migration; natural and manmade
 - Bedrock chutes, culverts, diversions, dams
- Small streams, less rainfall, low summer flows
 - Susceptible to land use and climate change impacts
- Substantial residential growth anticipated
- Lack of instream LWD and recruitment opportunities
- Instream damming for ponds and reservoirs

SJC special considerations

- **Introduced non-native fish**

- Predation, competition

- **Hatchery impacts – genetic and ecological**

- ~20,000 Tokul CCT fry + ~500 adult RBT planted in Mountain Lake (Cascade Creek) annually. Also private ponds stocking.

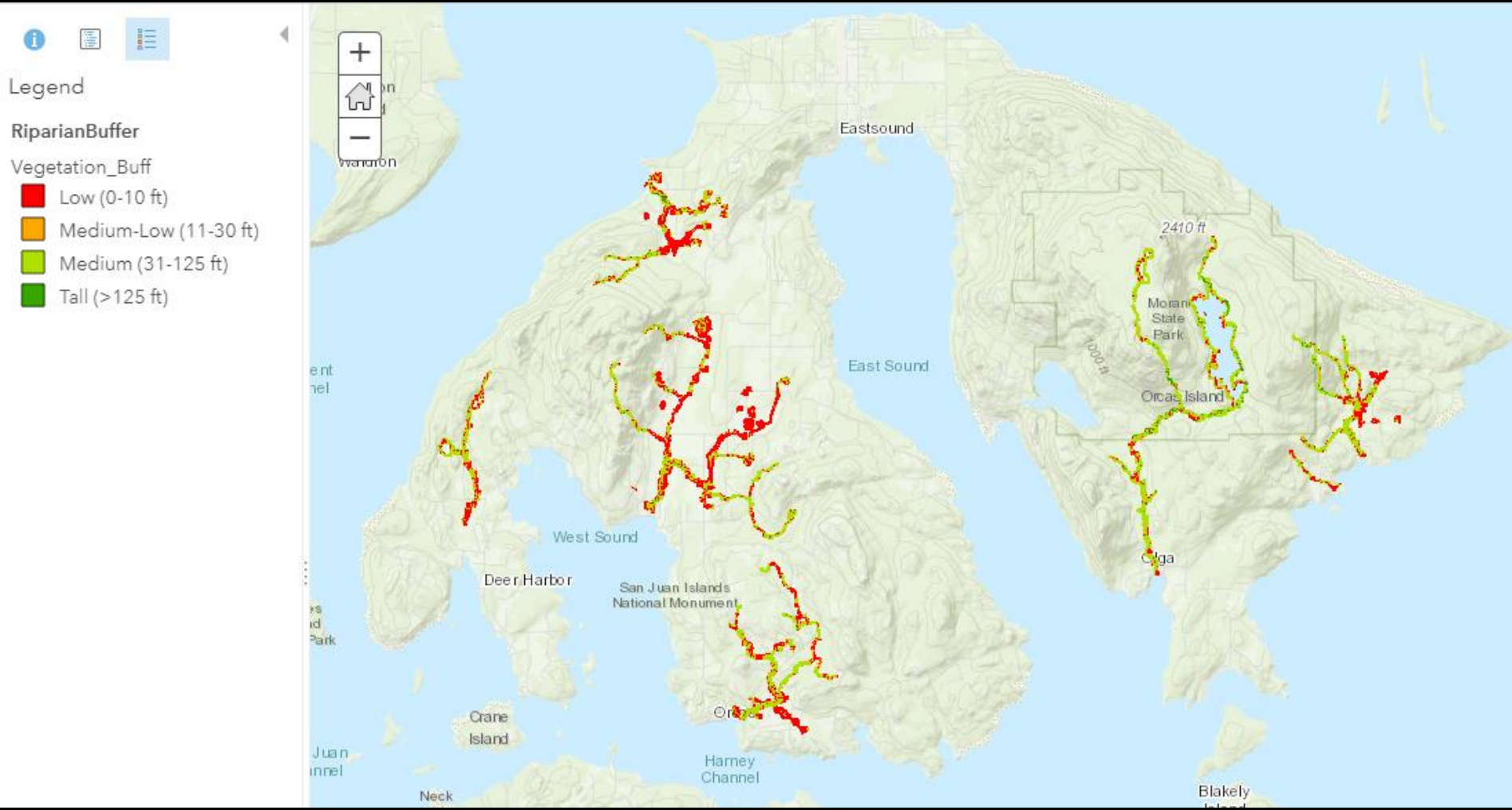
- **Tourism**

- Weekly / seasonal surges in human population, with related resource demands.

- **Important nearshore habitat for salmon recovery**

- As go the streams, so goes the nearshore

San Juan County NTA to develop a Freshwater Salmonid Recovery Strategy – Spring 2019





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Support provided by University of California,
Davis through the SeaDoc Society

For More Information:

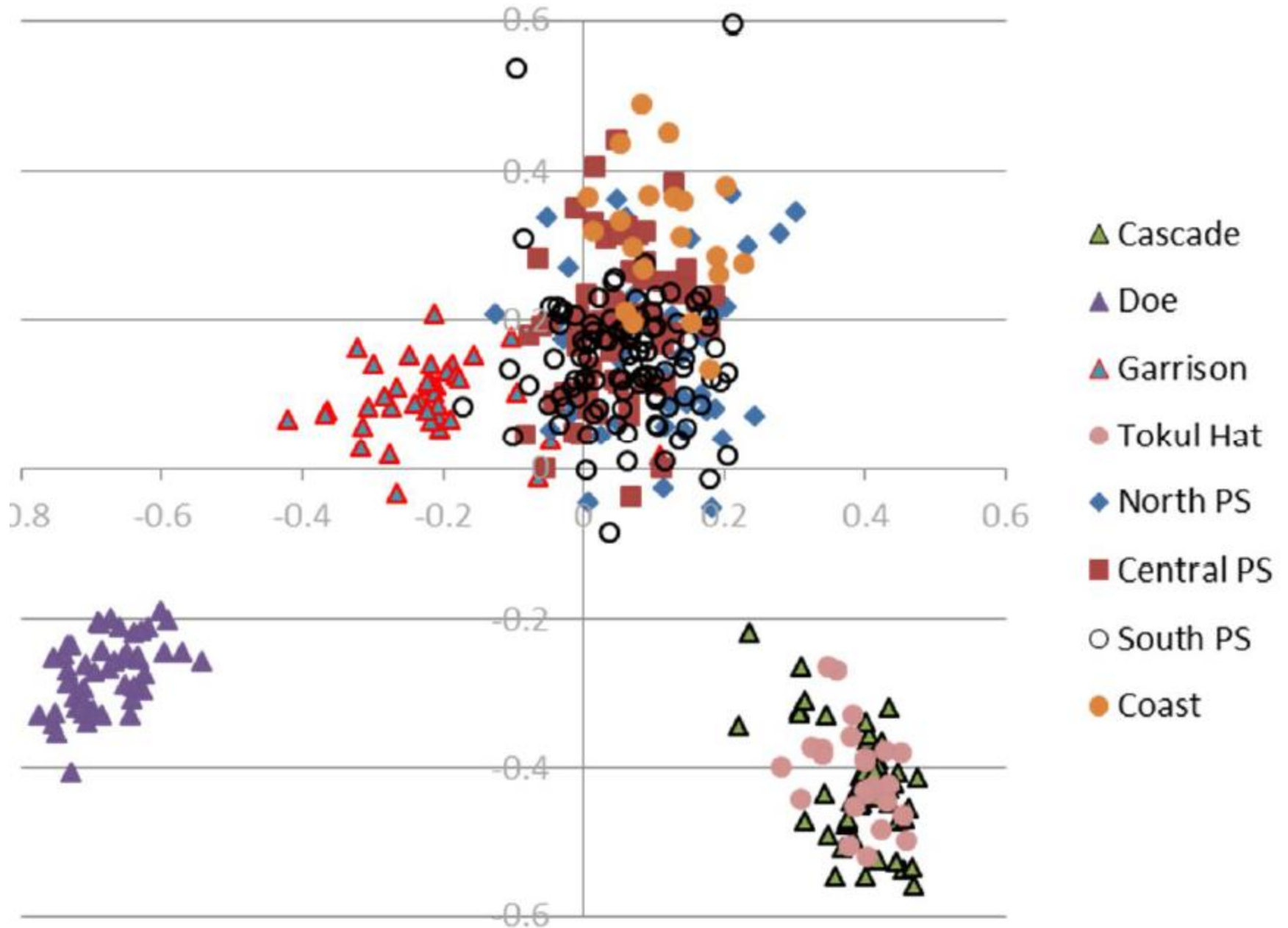


Jamie Glasgow, Director of Science and Research

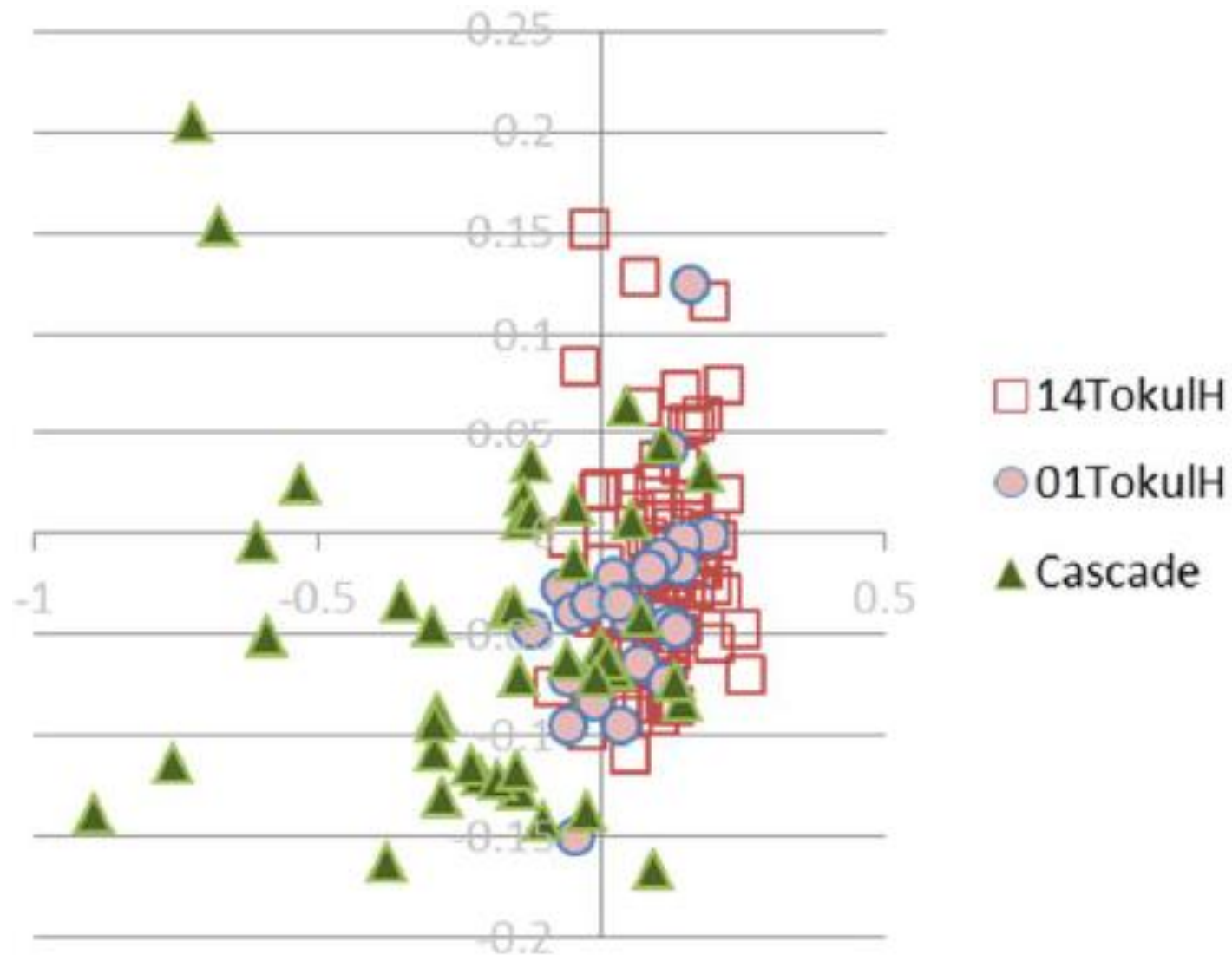
206/310.9302, jamie@wildfishconservancy.org

www.wildfishconservancy.org

Factorial Correspondence Analysis Plots



Factorial Correspondence Analysis Plots



WDFW CCT

Genetic Baseline

Region	San Juan study	Code	N
NorthPS	Cascade	14QW	49
NorthPS	Doe	14QX	50
NorthPS	Garrison	14QZ	50
WDFW baseline			
NorthPS	01TokulH	01NZ	24
NorthPS	14TokulH	14MK	90
CentralPS	Cedar	05BB	20
CentralPS	Snoqualmie	09IJ	42
NorthPS	Goodman	00CU	21
Coast	GraysH	11OI	21
NorthPS	Nooksack	95VF	22
SouthPS	Kennedy	14JG	32
SouthPS	McLane	14JG	34
SouthPS	Skookum	14JG	35

