

Habitat use of juvenile Chinook salmon in Lake Washington



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U. S. Fish and Wildlife Service

Acknowledgements



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City of Mercer Island



Washington Department of Fish and Wildlife – WDFW



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City of Renton



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Muckleshoot Tribe – MIT

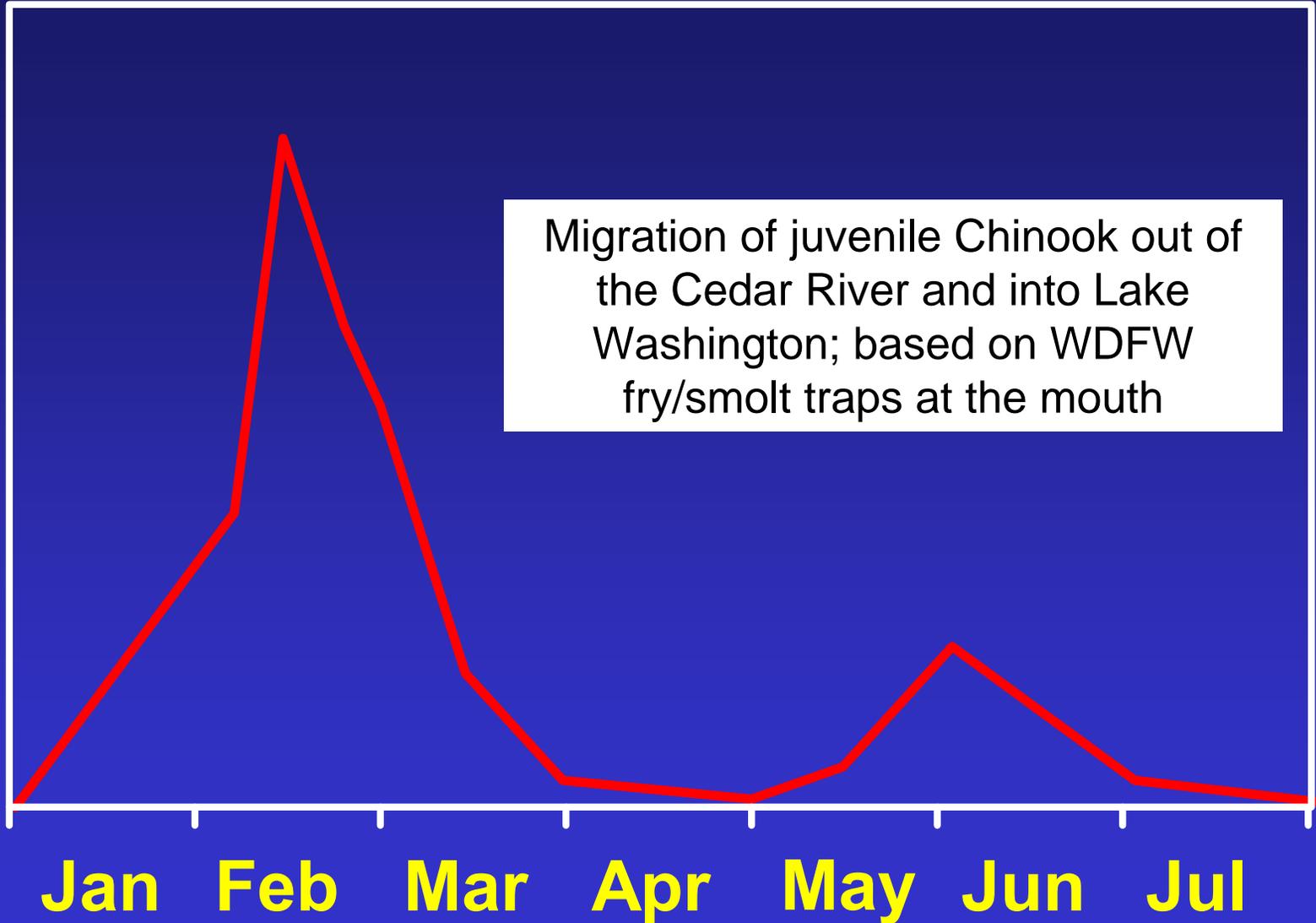


USFWS Employees

Cedar River Chinook Outmigration

Migration

Migration of juvenile Chinook out of the Cedar River and into Lake Washington; based on WDFW fry/smolt traps at the mouth



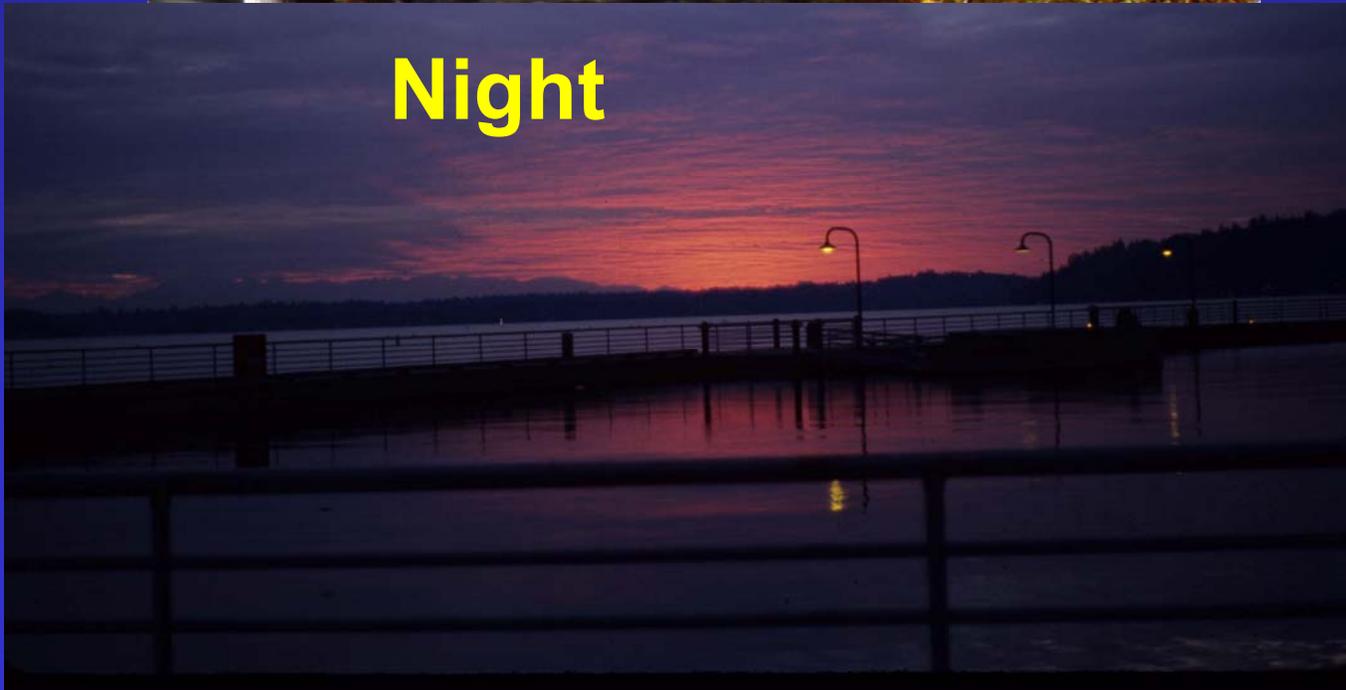
Juvenile Chinook Salmon

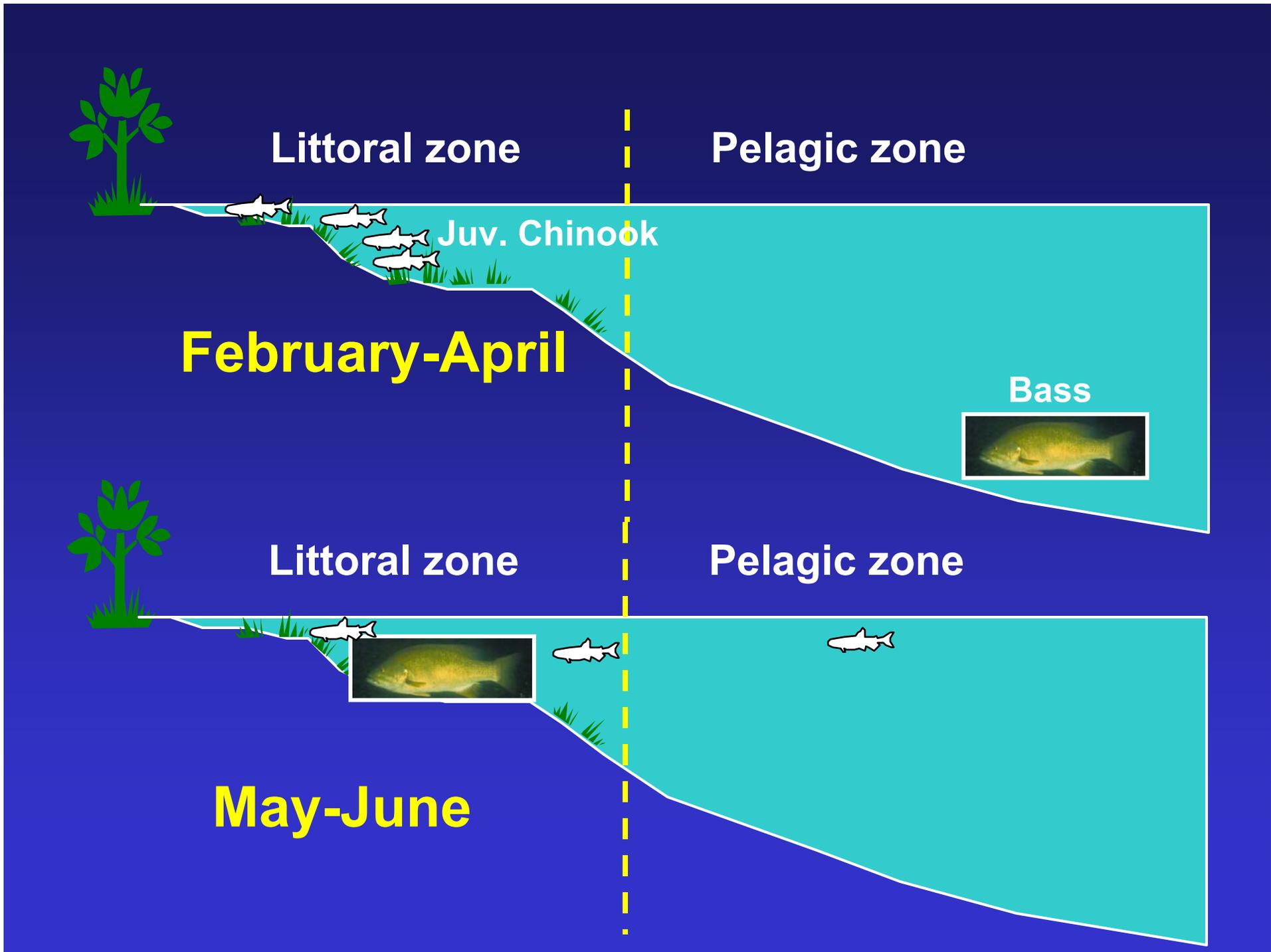


Day



Night



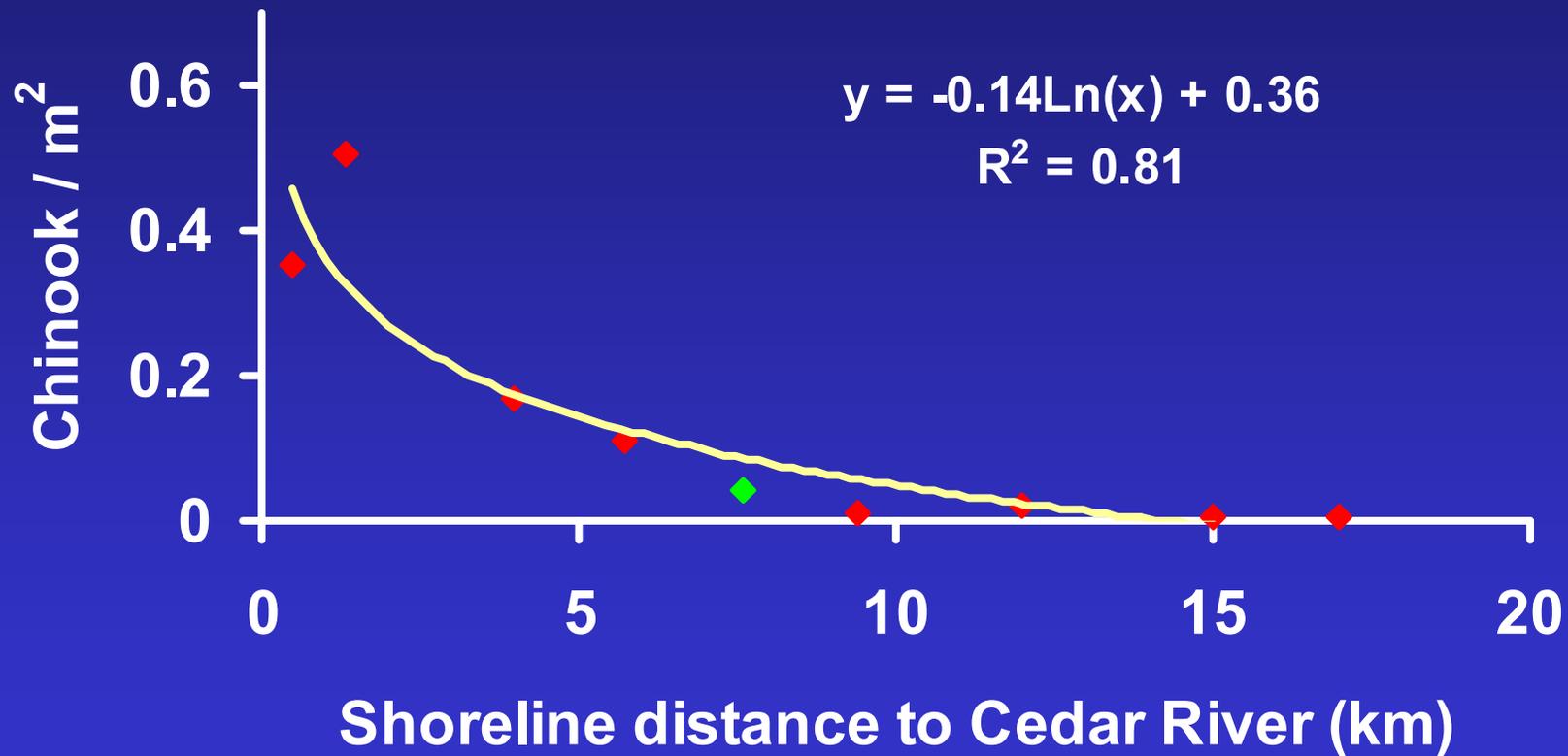


Index sites – Night Snorkeling



Index Sites

February 4 – May 27, 2003



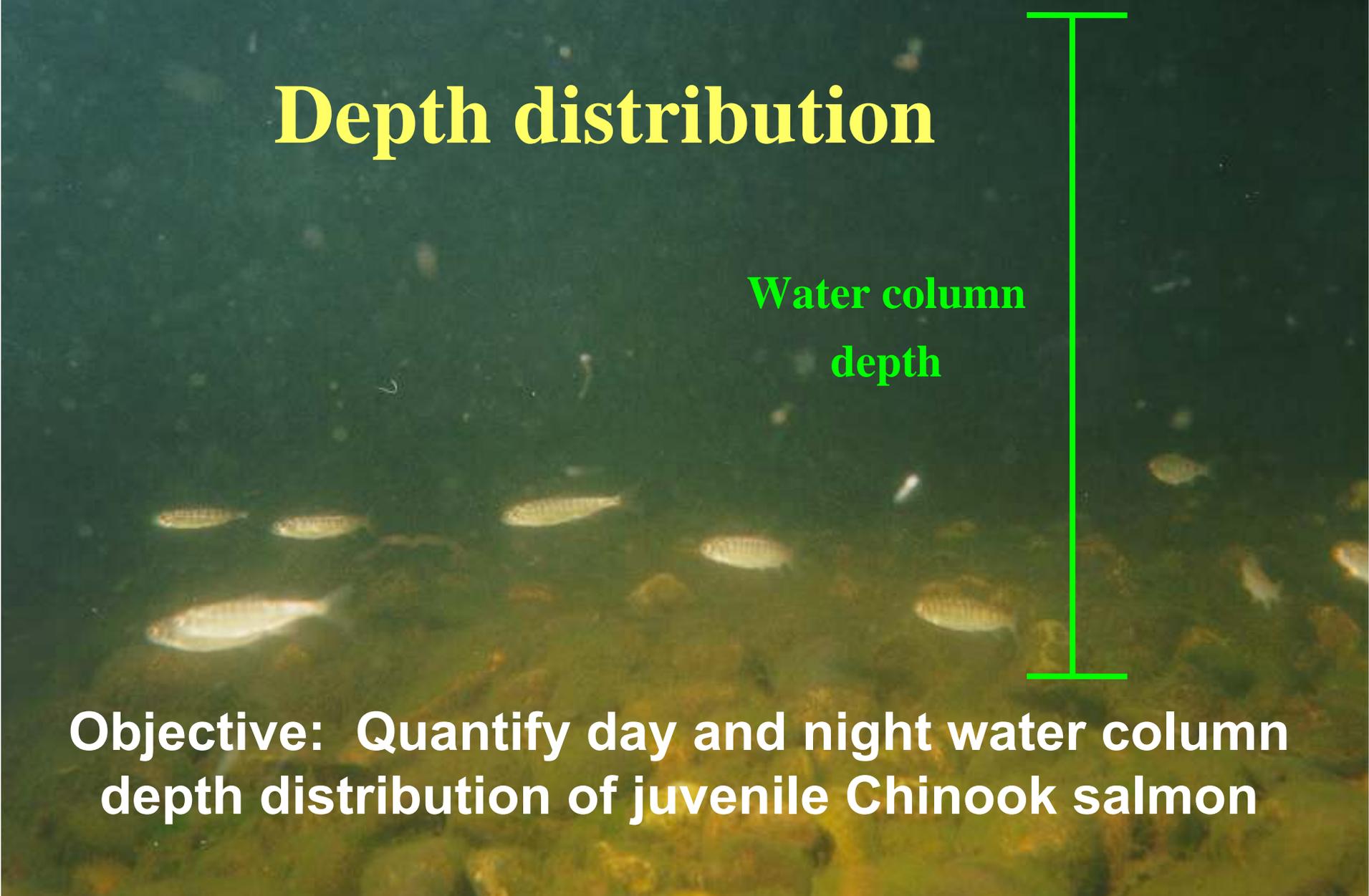
Chinook Salmon Nursery Areas

February to mid May



Depth distribution

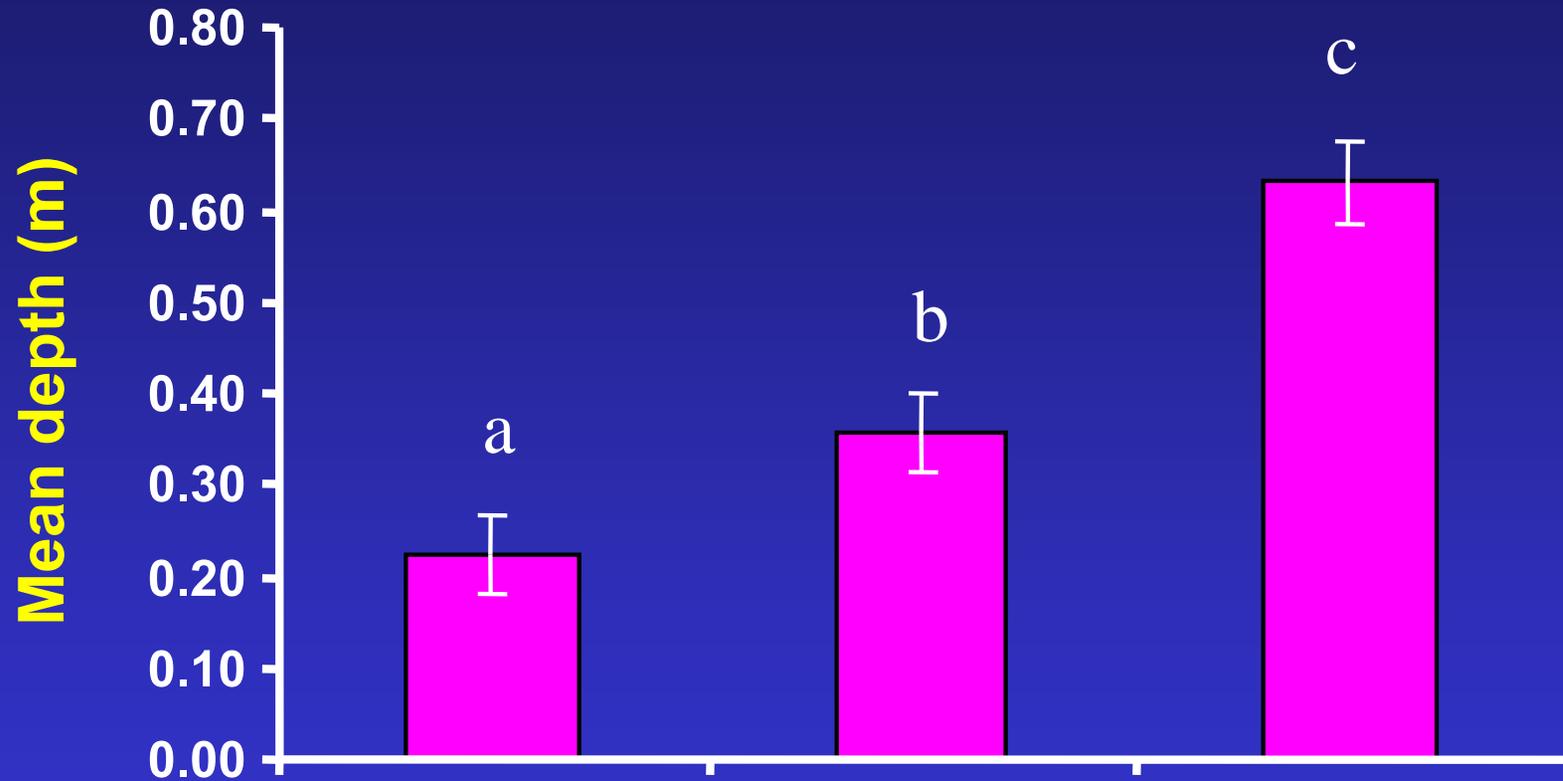
Water column
depth

An underwater photograph showing a school of juvenile Chinook salmon swimming in a dark, greenish water column. A vertical green line with horizontal caps at both ends is positioned on the right side of the image, extending from the top to the bottom of the visible water column. The salmon are scattered throughout the water column, with some appearing closer to the bottom and others higher up.

Objective: Quantify day and night water column
depth distribution of juvenile Chinook salmon

South Lake Washington

night snorkeling/scuba diving: 0–3 m deep



March 10

April 7

May 12

N = 31

40

46

Mean length (mm) = 43

50

92

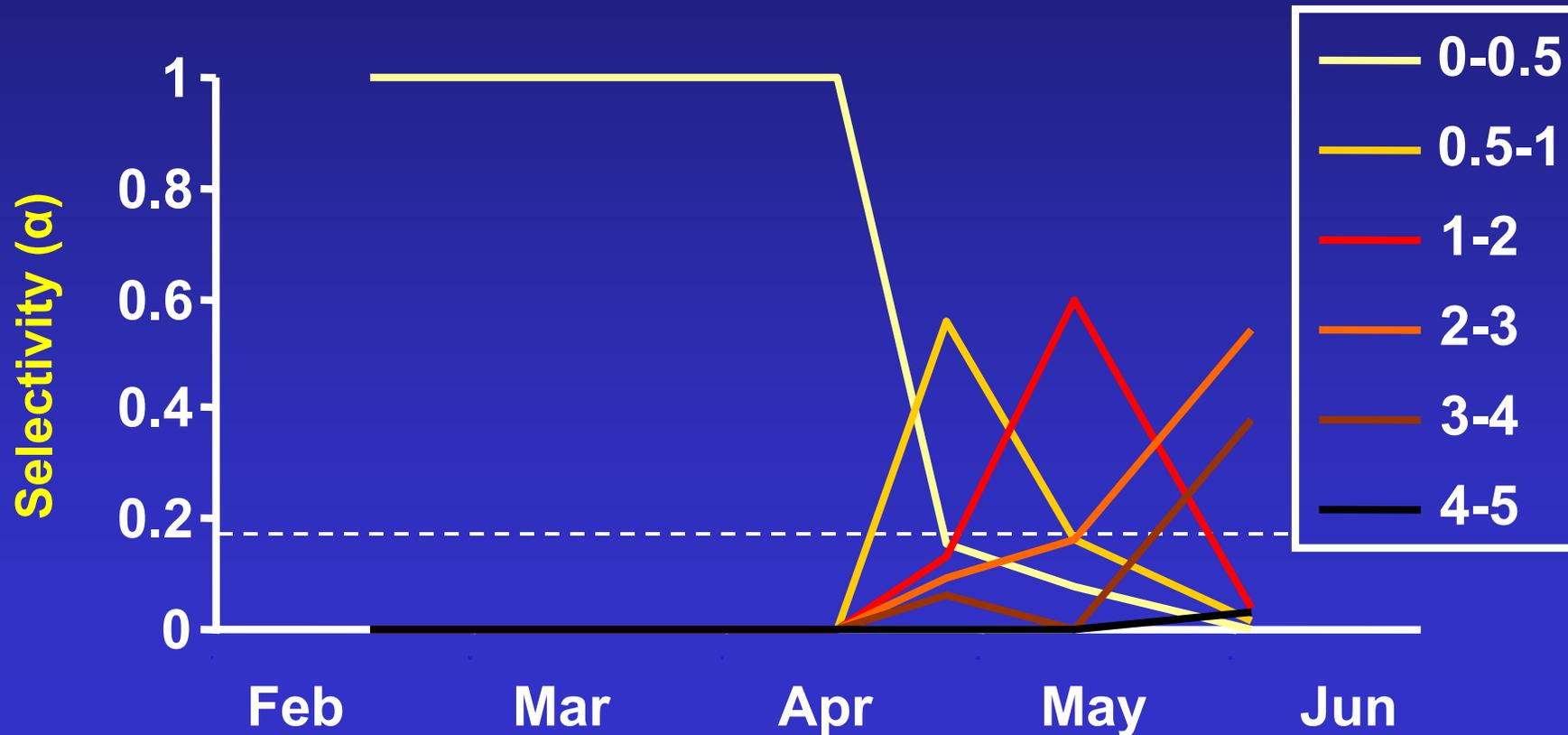
Dawn - South Lake Washington



South Lake Washington

Dawn surface feeding activity

Depth category (m)



Lake Quinault



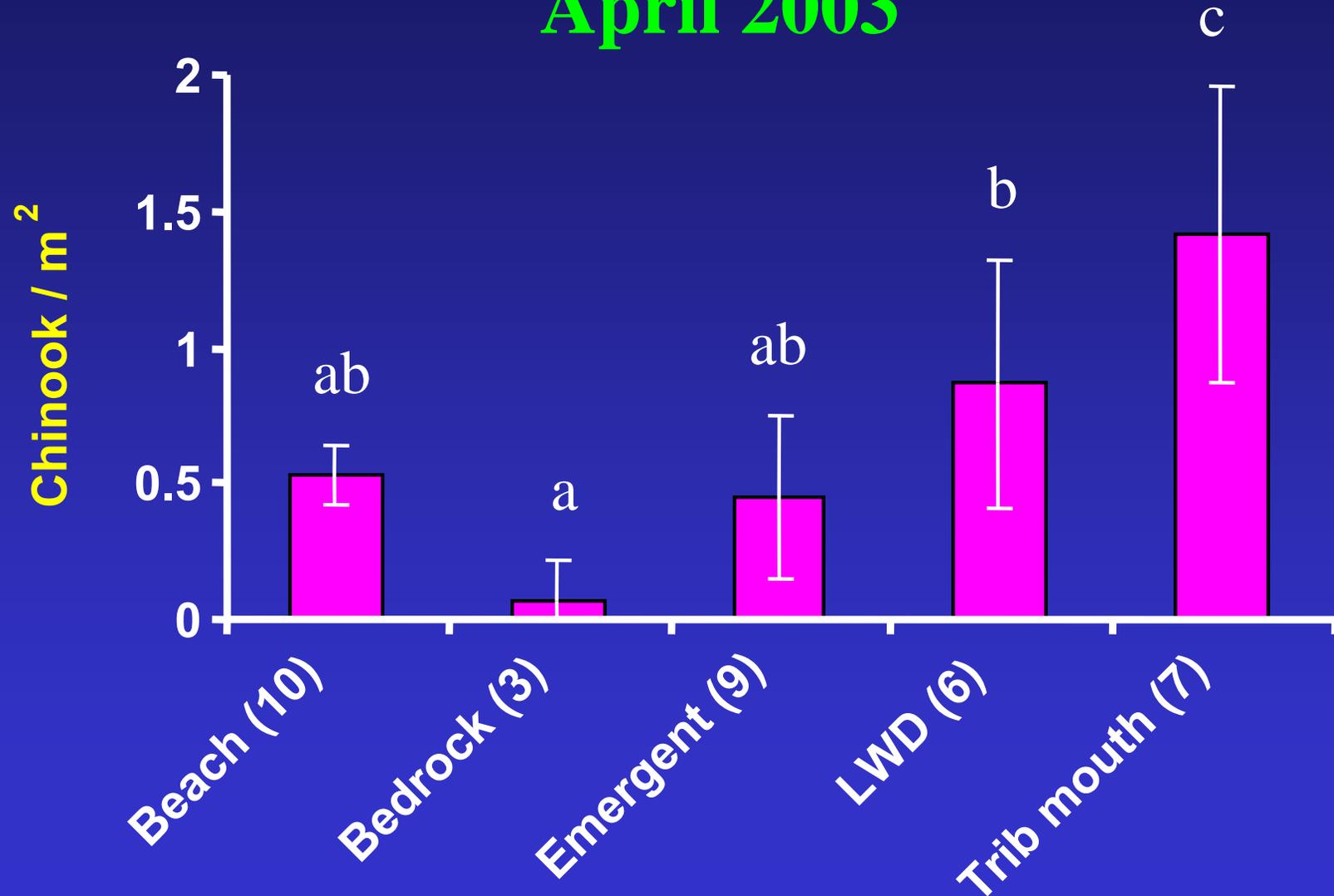
Emergent Vegetation



Large Woody Debris

Lake Quinault results

April 2003





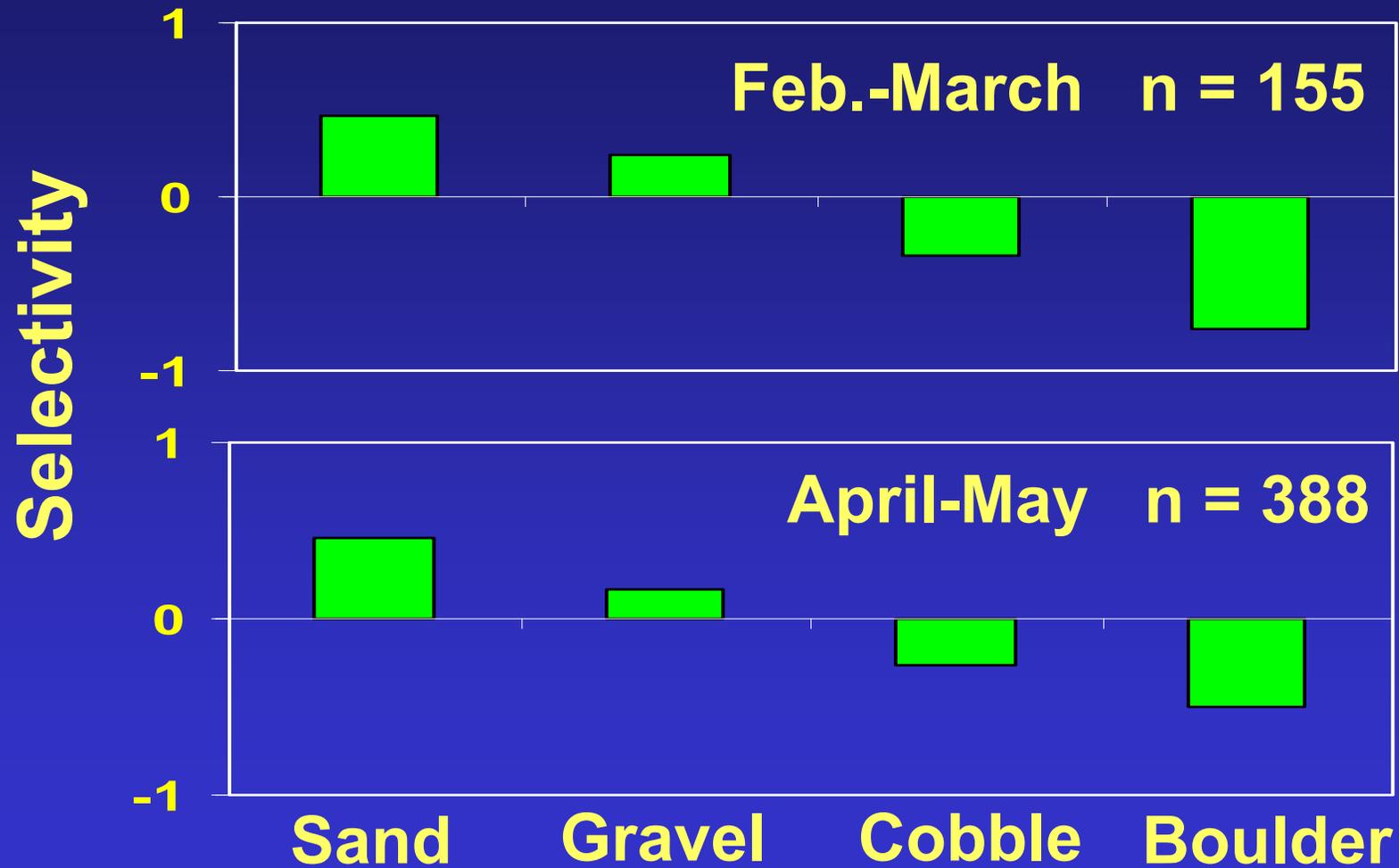
South Lake Washington

Random 100-m transects
Snorkel along 0.5 m depth contour

Variables include:

- Substrate use
- Use of armored shorelines
- Use of overwater structures

Substrate selection - Night



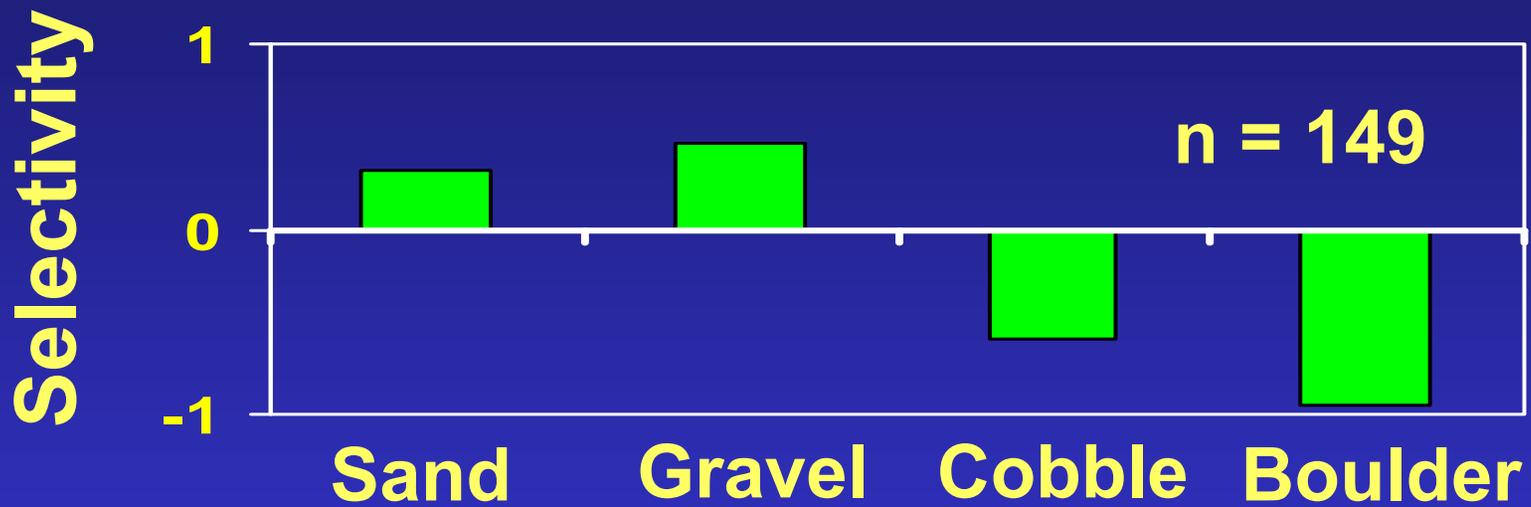


Juvenile Chinook – Night



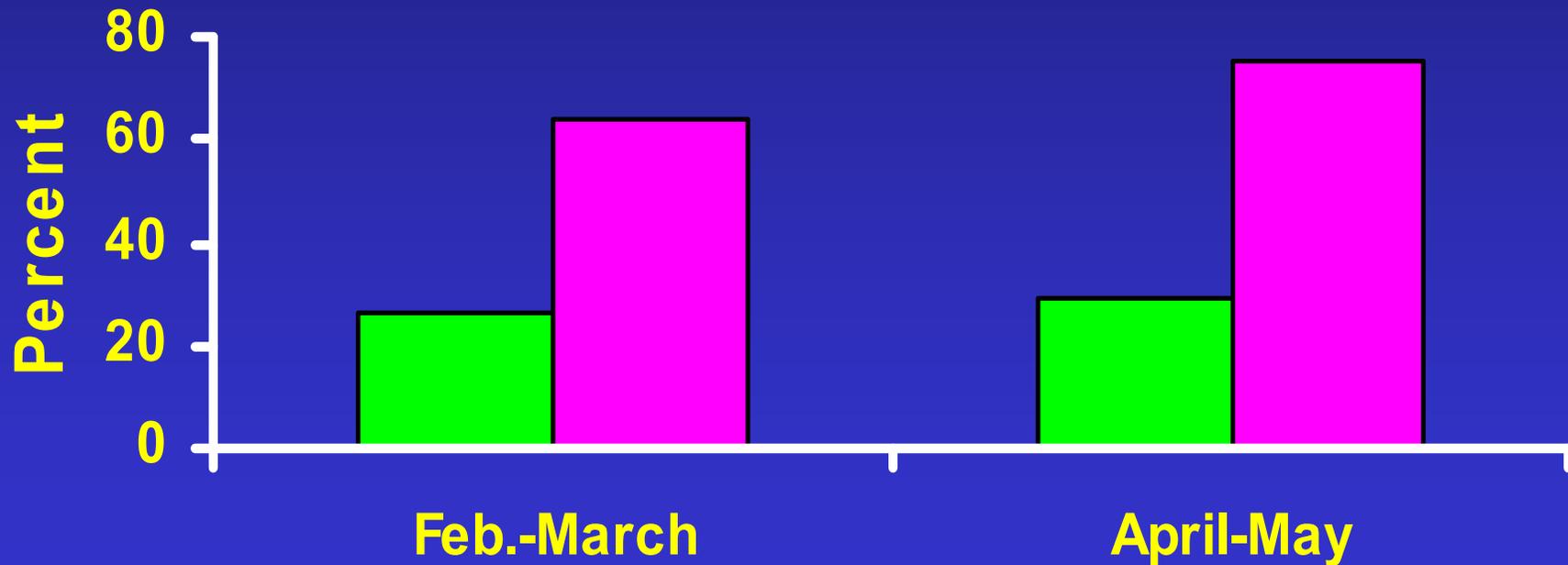
Substrate selection - Day

Feb.-March



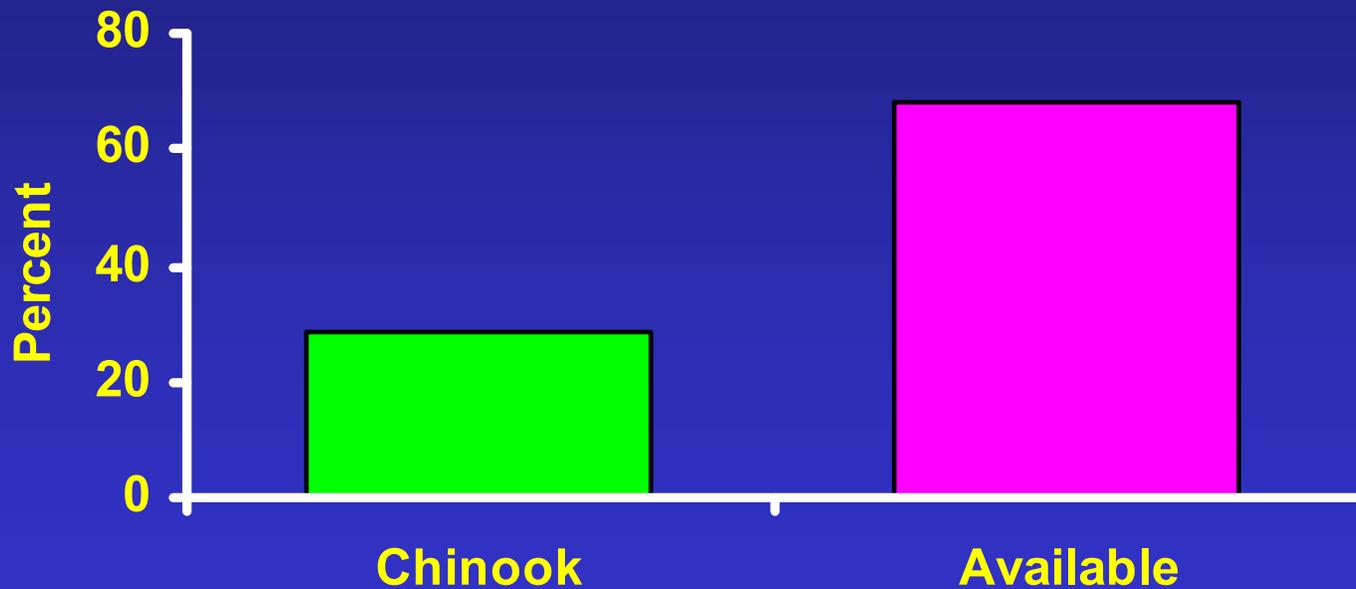
Shoreline Armoring Night surveys

■ Chinook ■ Available



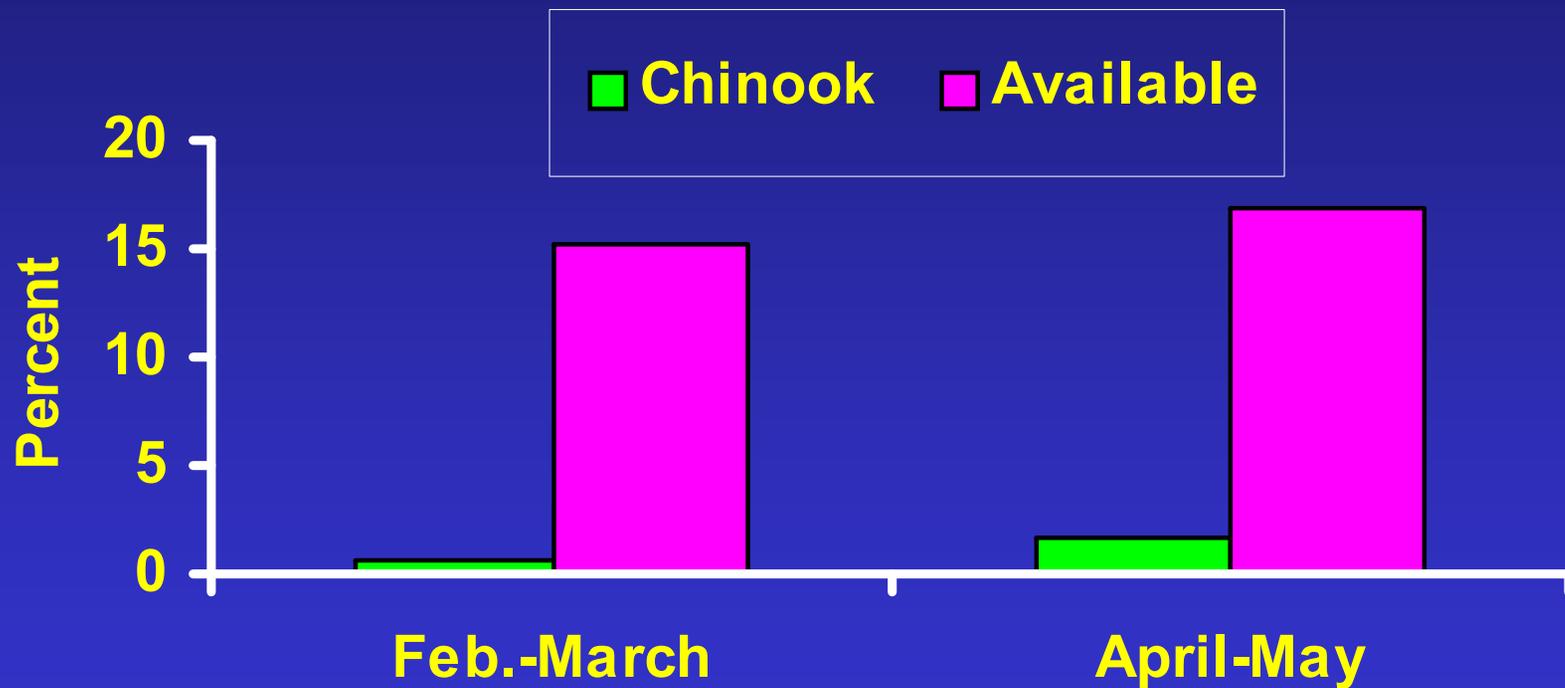
Shoreline Armoring

Daytime surveys, Feb.-March



Overwater Structures

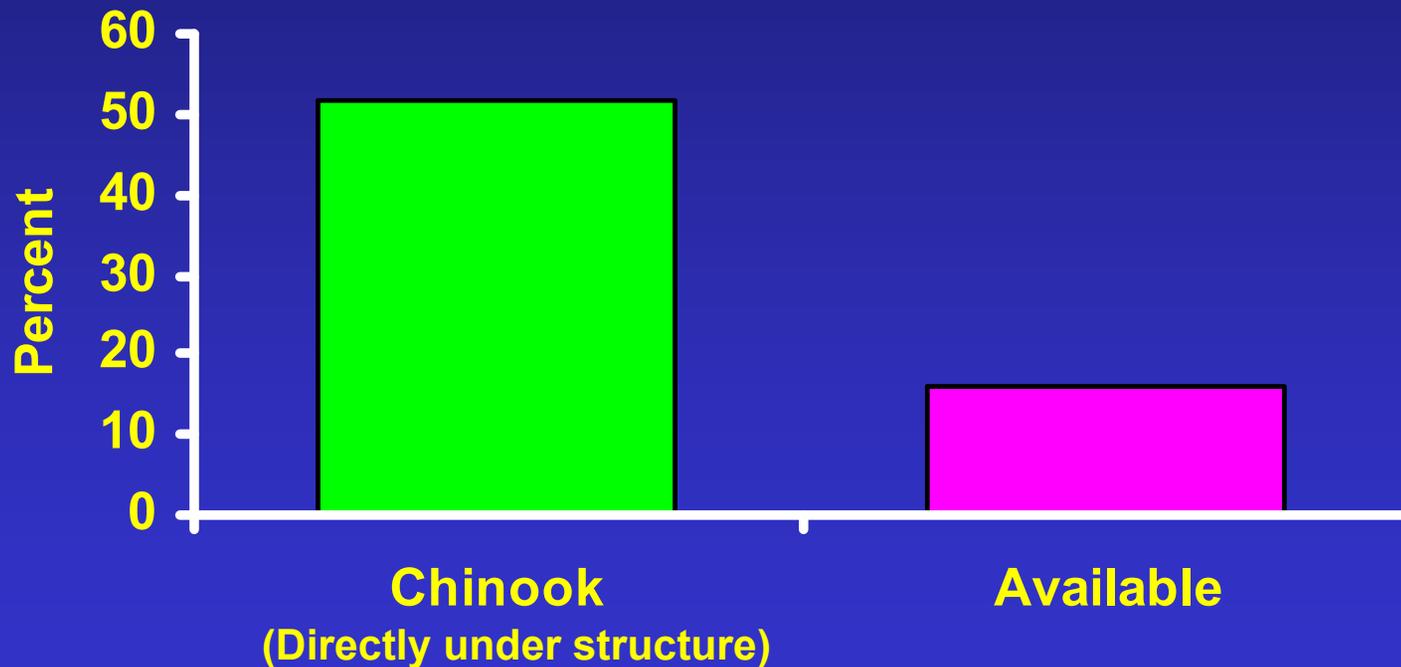
Night surveys



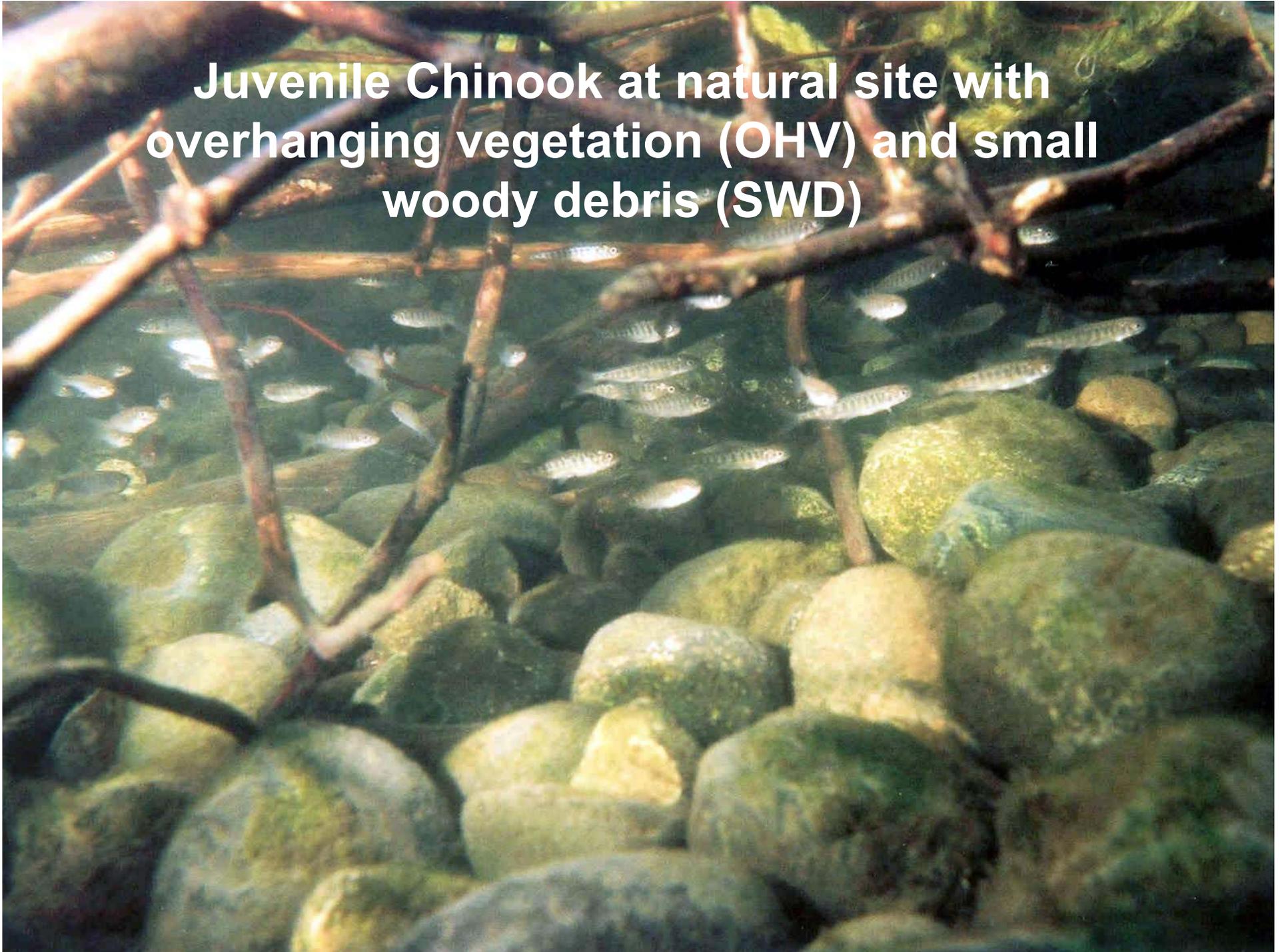
Overwater Structures

Includes piers and overhanging vegetation

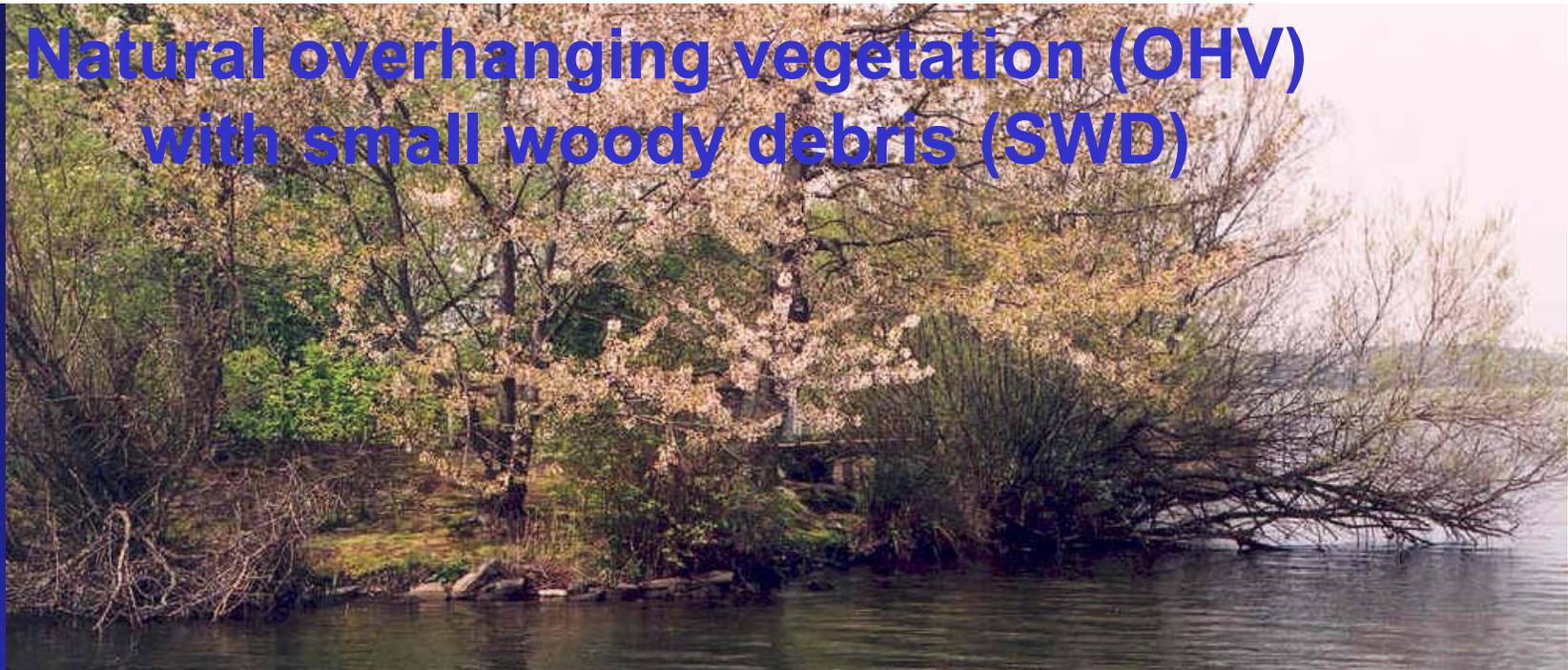
Daytime surveys, Feb.-March



**Juvenile Chinook at natural site with
overhanging vegetation (OHV) and small
woody debris (SWD)**



**Natural overhanging vegetation (OHV)
with small woody debris (SWD)**

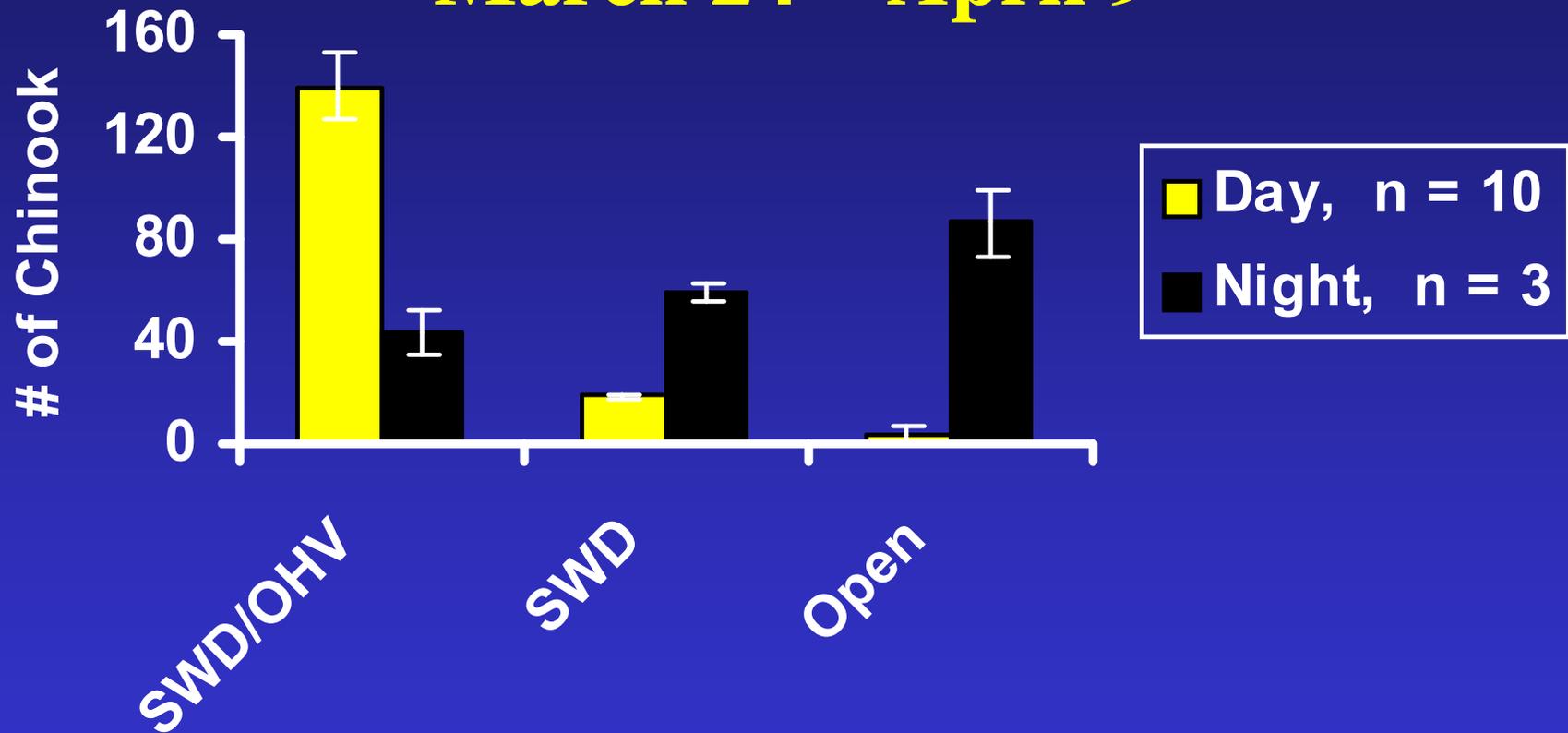


SWD and OHV Experiment



SWD and OHV Experiment

March 24 – April 9

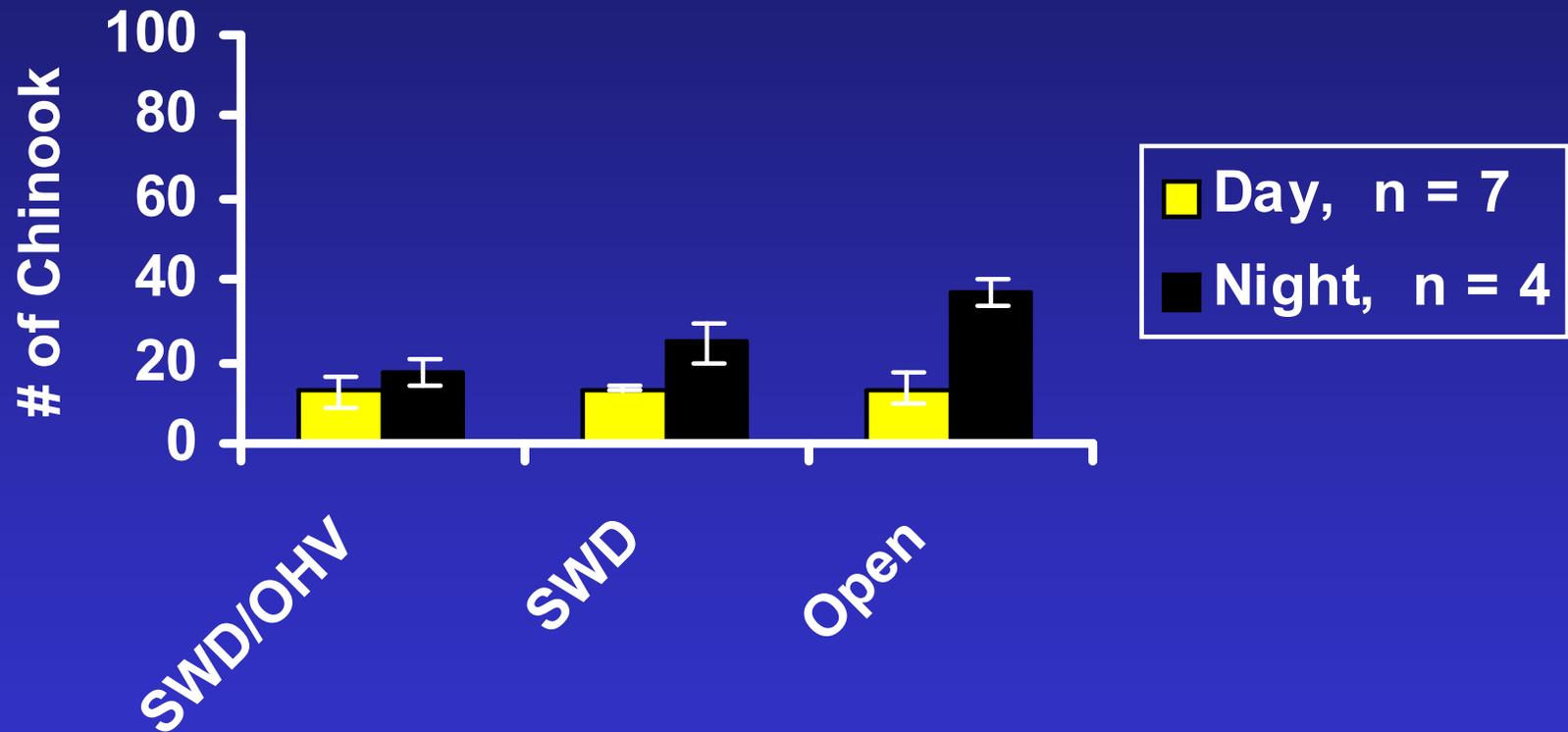


Mean length, March 24 = 44 mm FL

Juvenile Chinook under SWD



SWD and OHV Experiment May 2 – 16



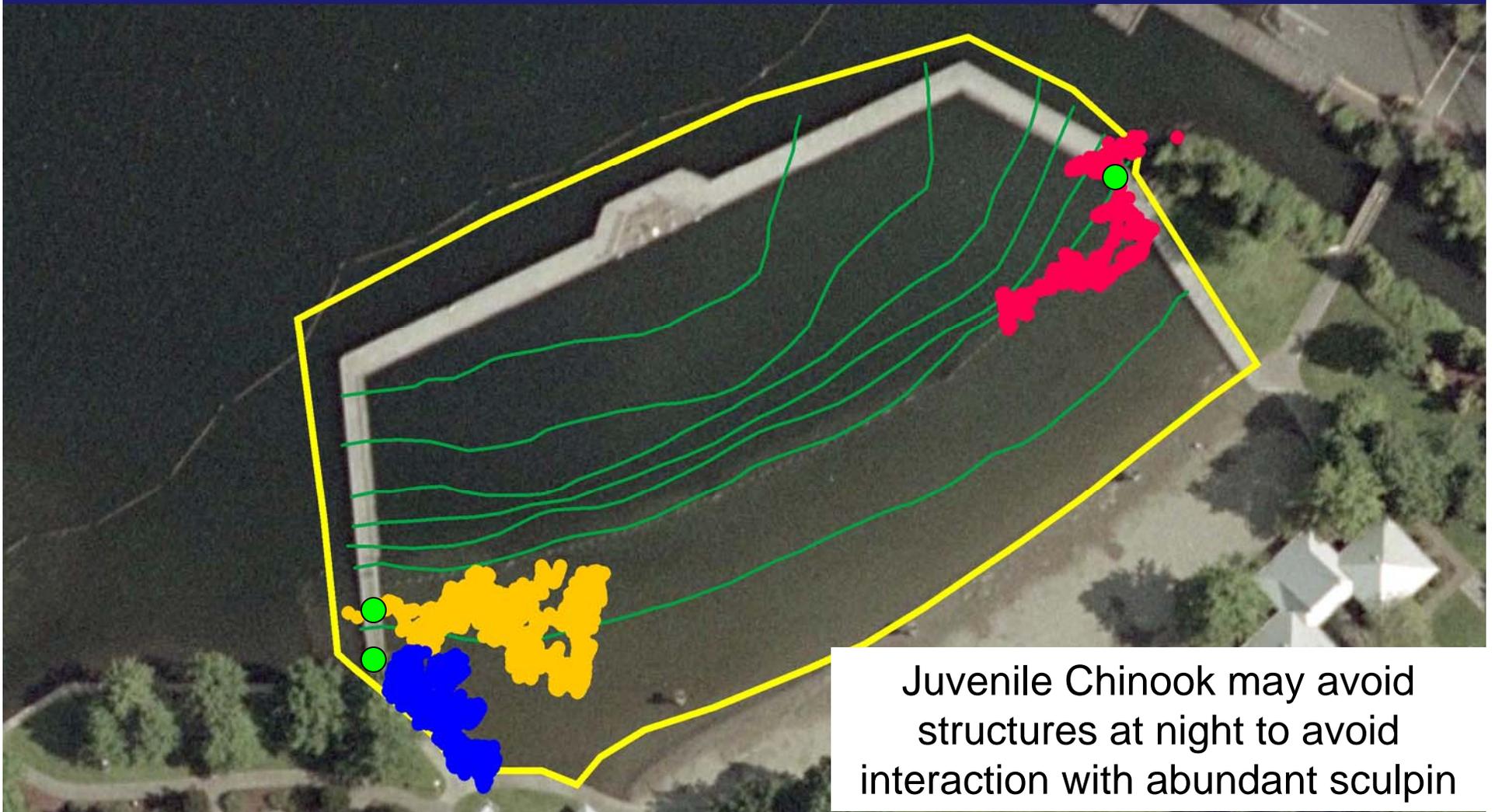
Mean length, May 8 = 70 mm FL



Prickly Sculpin – abundant nocturnal predator in the nearshore area

Prickly Sculpin movements

Gene Coulon swim beach



Juvenile Chinook may avoid structures at night to avoid interaction with abundant sculpin

Preferred Habitat Conditions



Open sandy beach –
Day and night habitat

SWD and OHV –
Day habitat



Rainier Beach Restoration Site

Marina and rip rap replaced with gravel beach

