

Warm Springs River Chinook Salmon

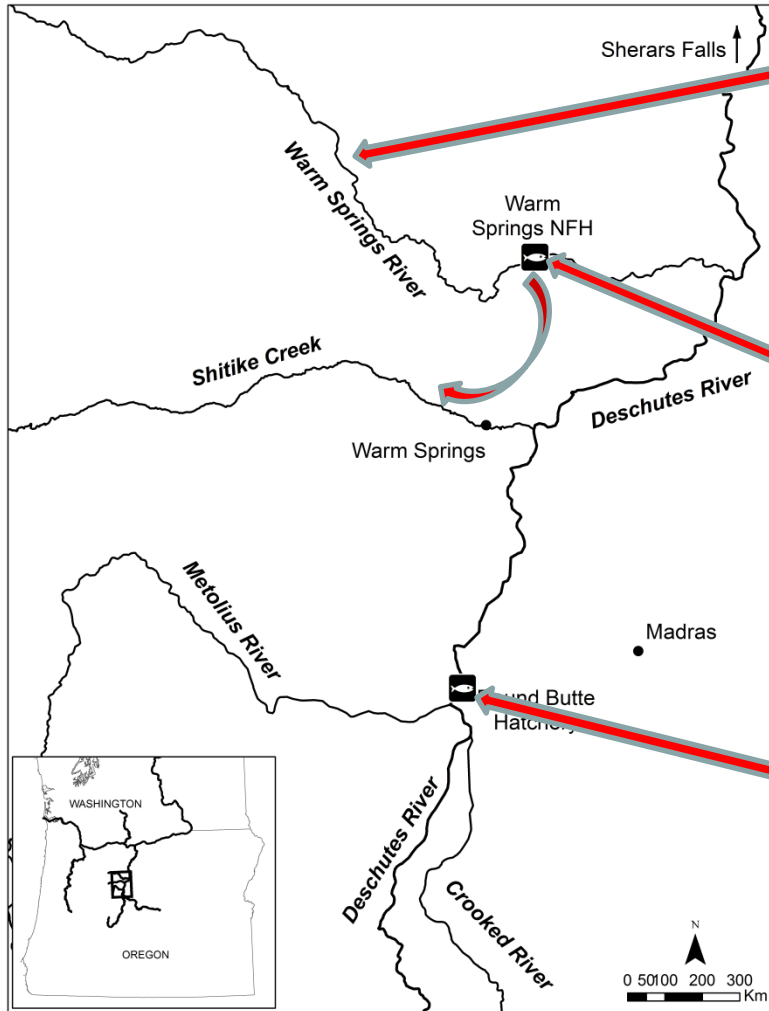


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Confederated Tribes of the Warm Springs Reservation of Oregon
Oregon Department of Fish and Wildlife
U.S. Fish and Wildlife Service

Photo Credit: Matt Smith

Deschutes River Spring Chinook salmon



Natural spawning in Warm Springs R.

- Ancestral Deschutes Basin

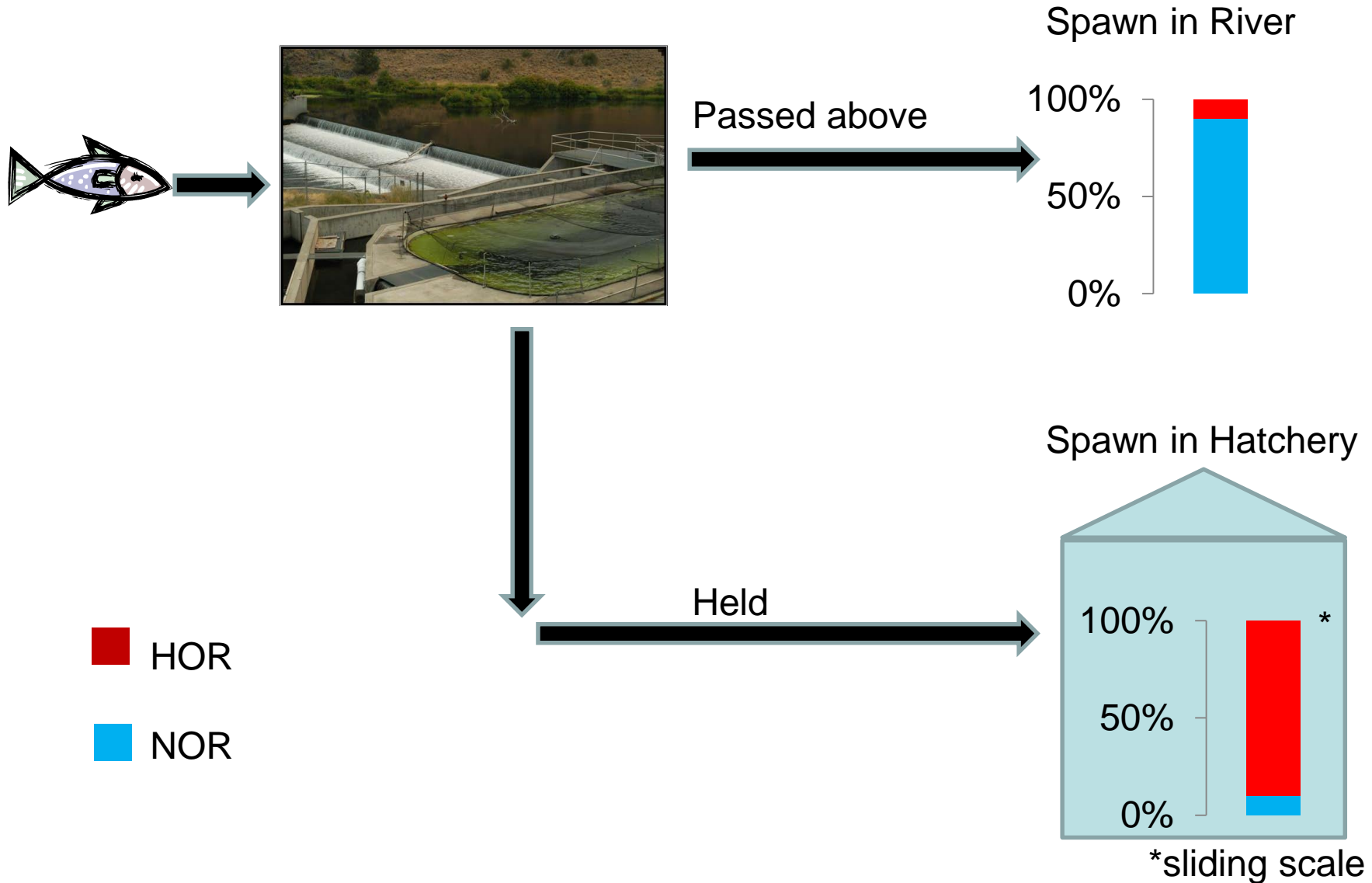
Warm Springs NFH

- integrated
- founded 1978
- fishery enhancement and conservation

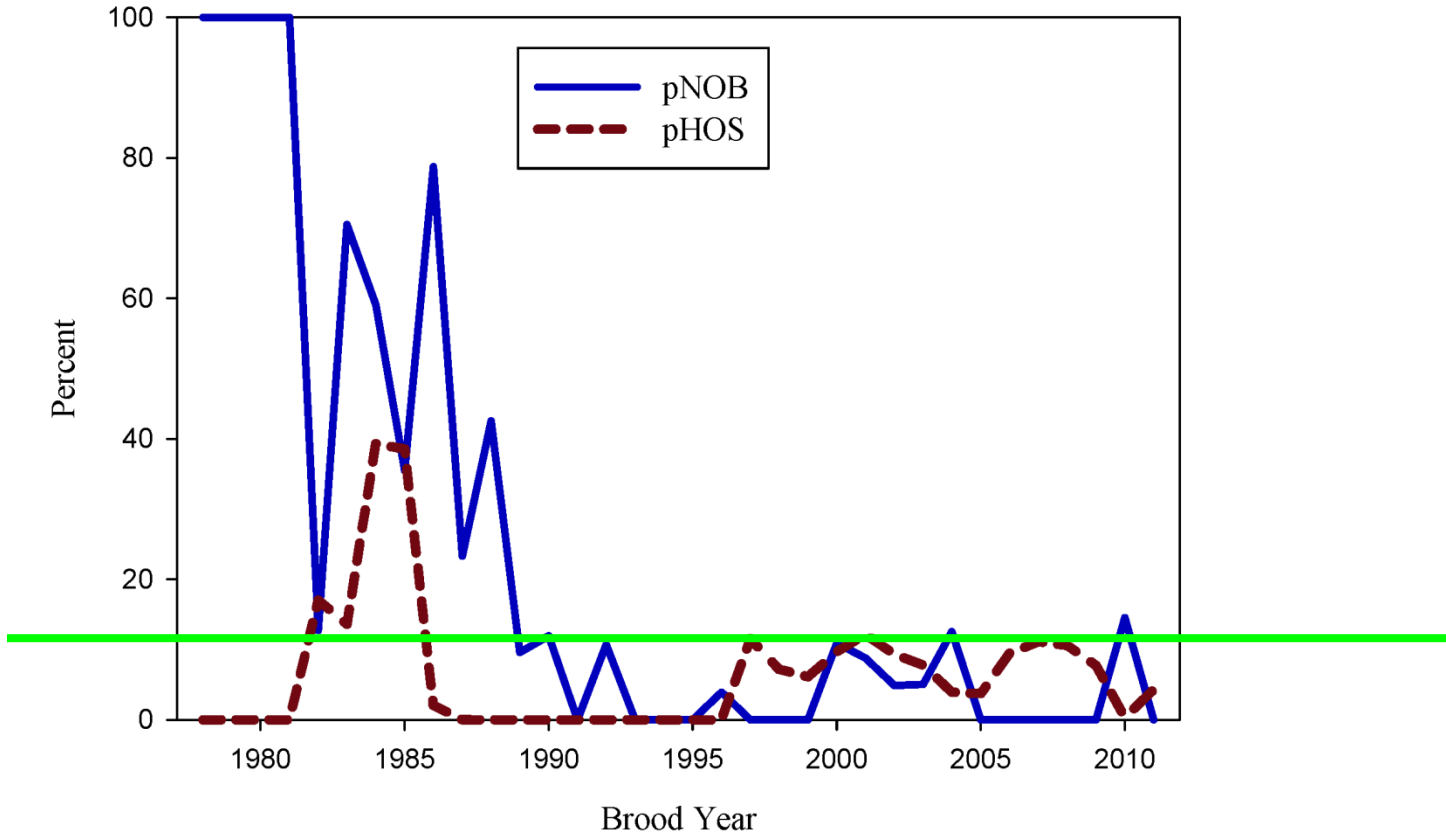
Round Butte Hatchery

- segregated
- founded 1972
- fishery enhancement

Integration strategy at WS NFH



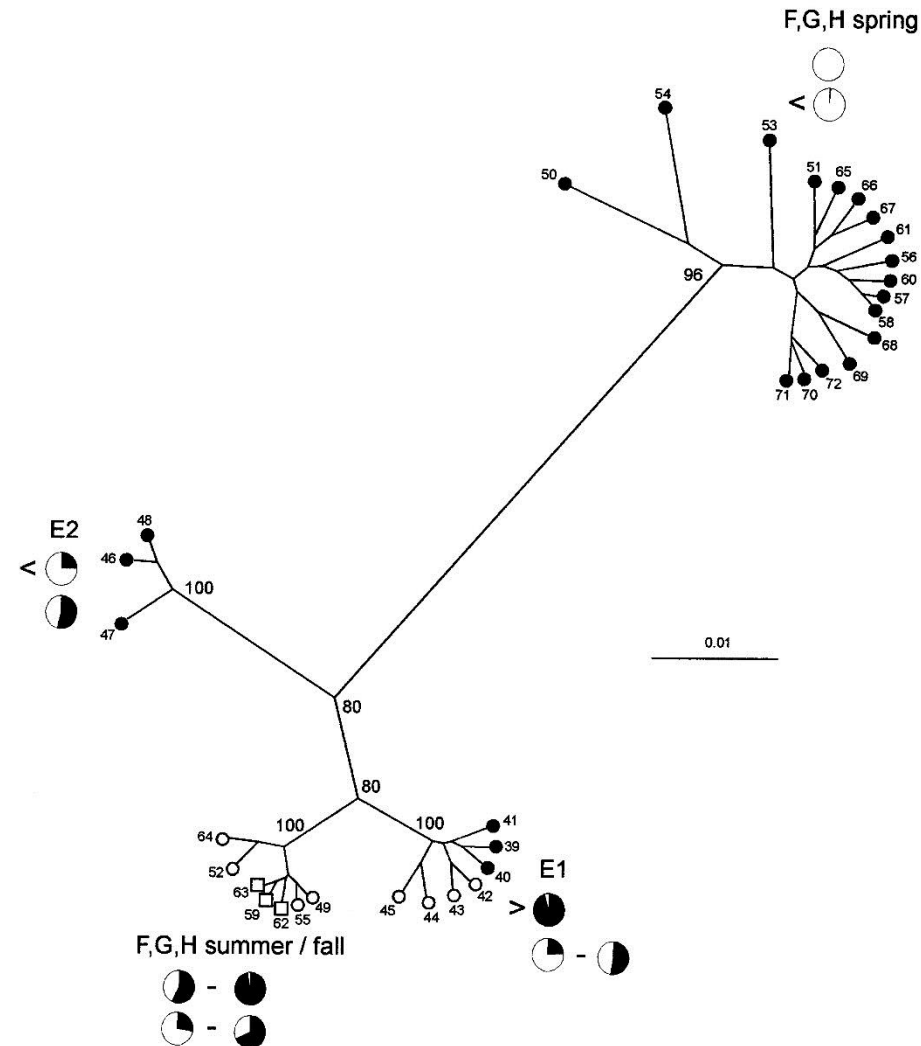
Success at meeting percent natural influence targets has been variable



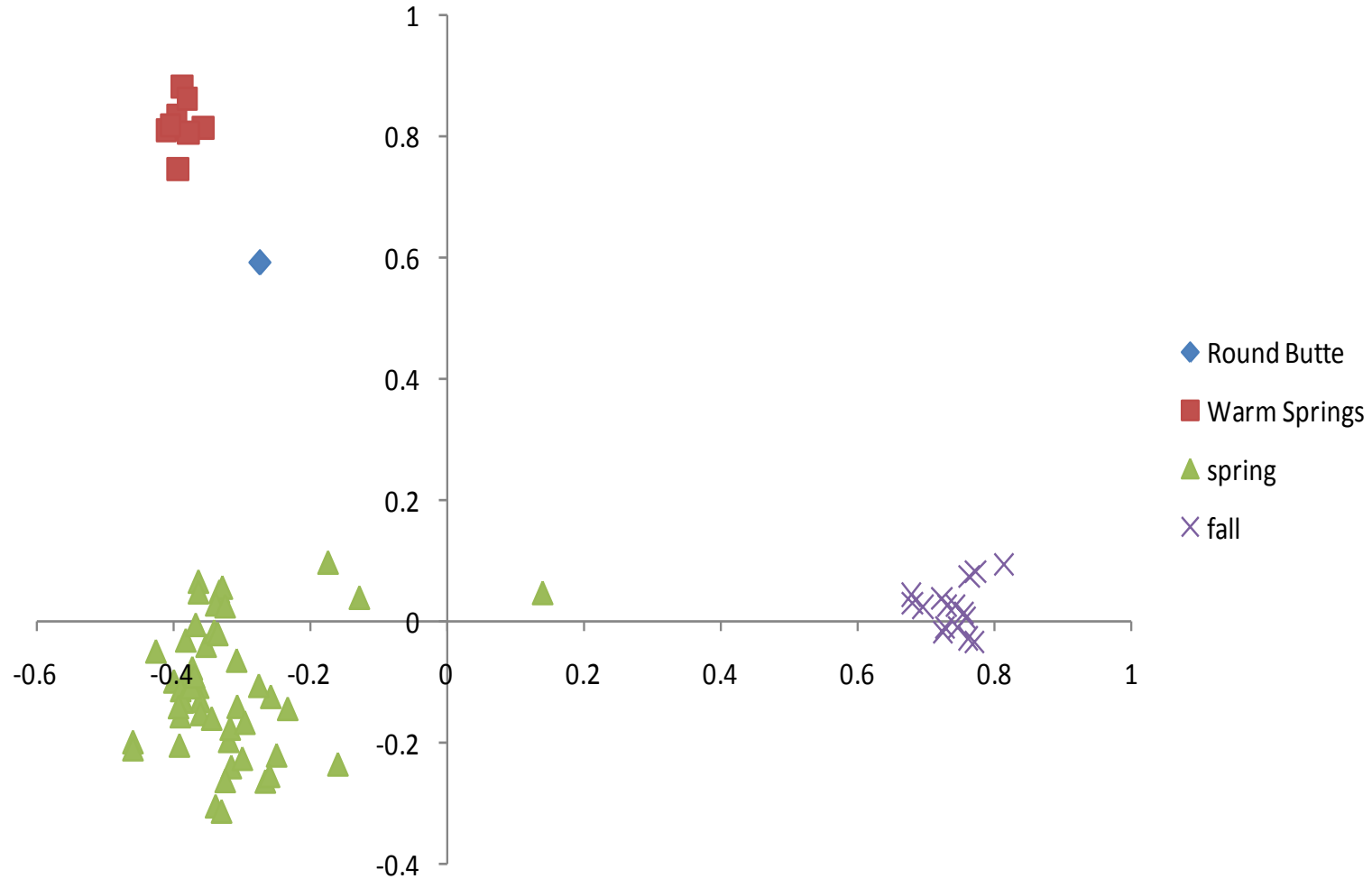
Divergence among Columbia River Chinook salmon based on allozymes

392

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Divergence among Columbia River Chinook salmon based on microsatellites



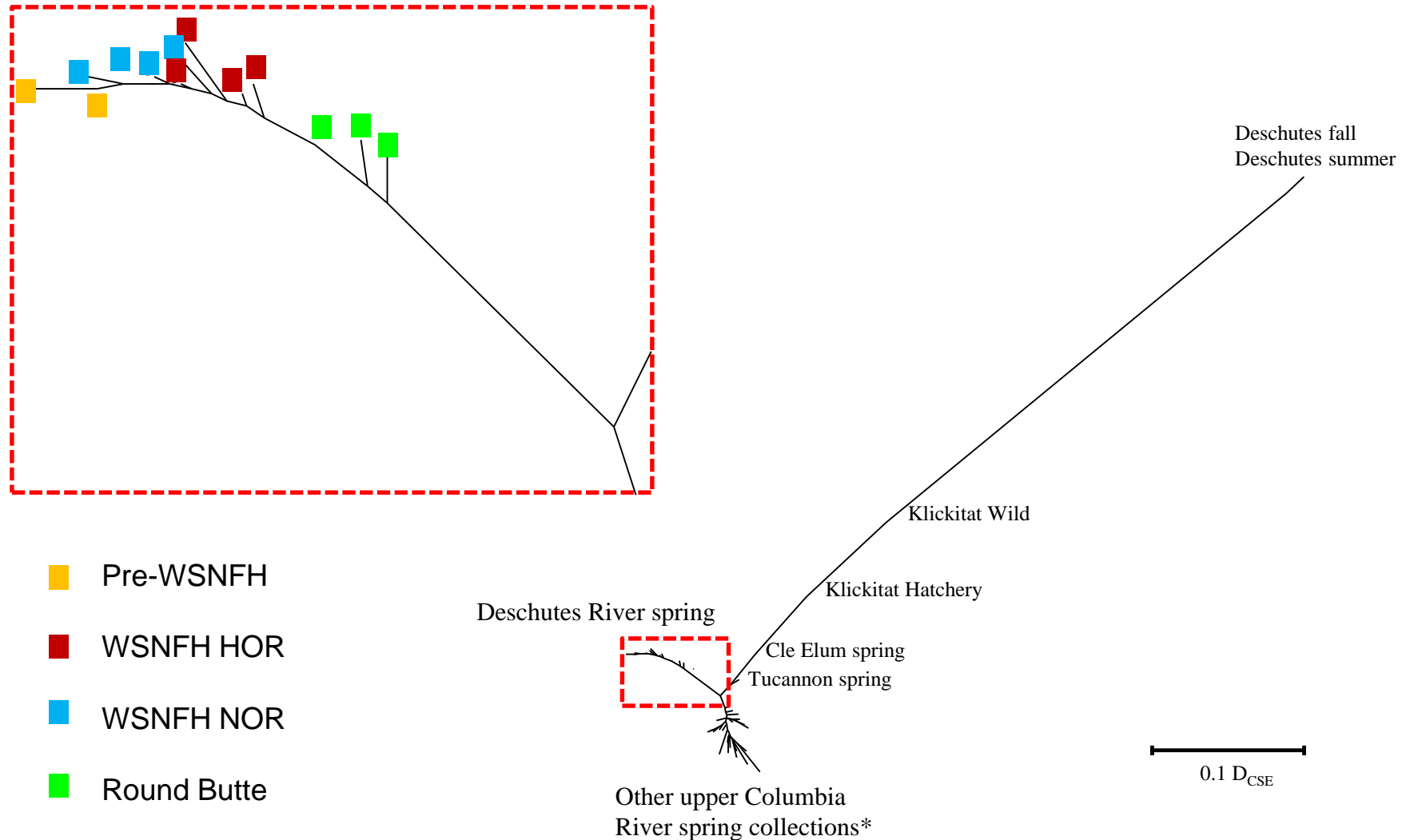
Questions

- How are Warm Springs Chinook salmon related to those from Round Butte Hatchery and other members of the ESU?
- Has the Warm Springs population changed since inception of WSNFH?
- Are HOR and NOR fish from the Warm Springs River different from one another?

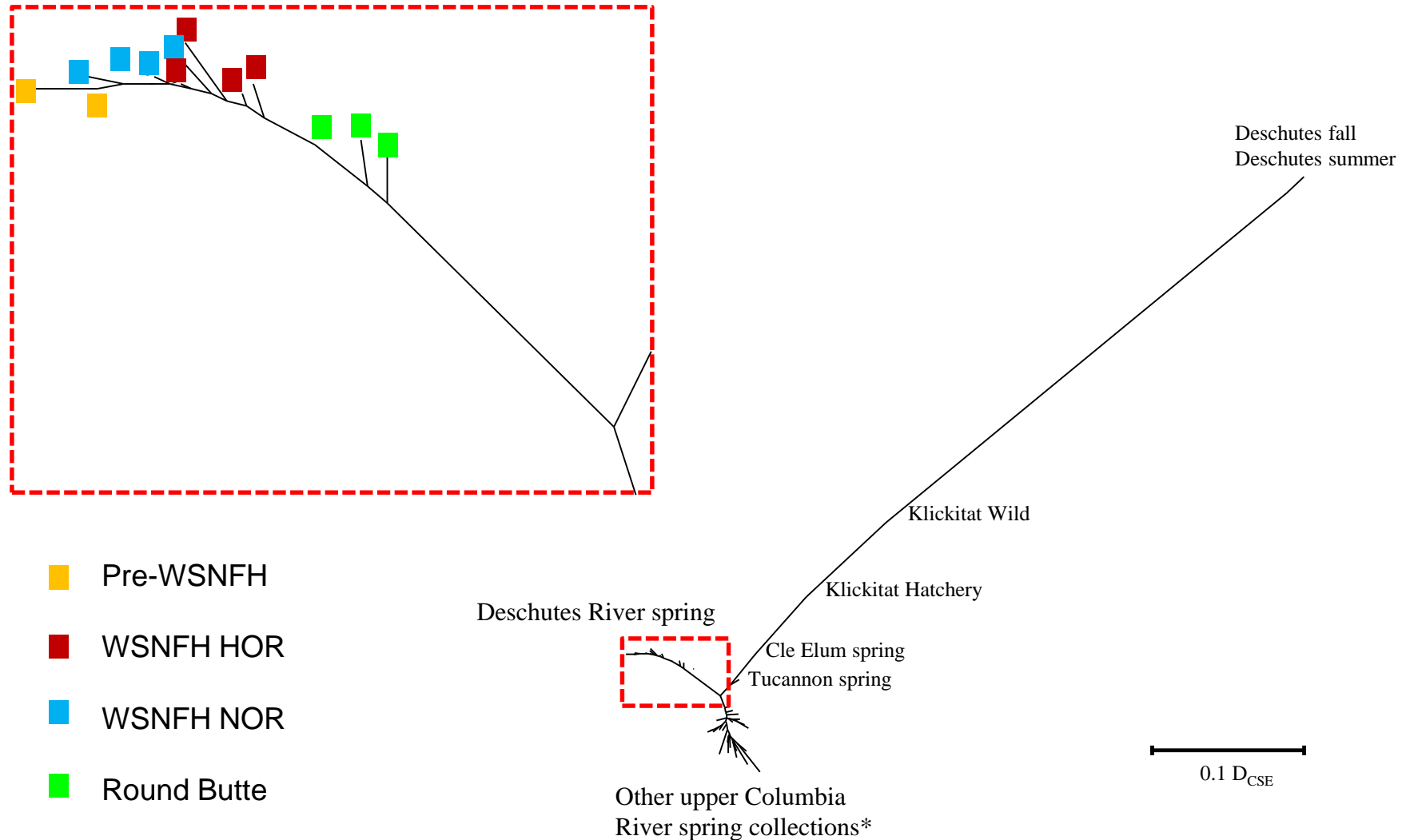
13 collections analyzed with 76 SNP (TaqMan) markers

Number	Collection site	Year	Life stage	Origin	N
1	Warm Springs R	1976	juvenile	n	71
2	Warm Springs R	1977	juvenile	n	73
3	Warm Springs H	2001	adult	h	55
4	Warm Springs H	2001	adult	n	37
5	Warm Springs H	2004	adult	h	43
6	Warm Springs H	2004	adult	n	48
7	Warm Springs H	2010	adult	h	133
8	Warm Springs H	2010	adult	n	84
9	Warm Springs H	2011	adult	h	100
10	Warm Springs H	2011	adult	n	102
11	Round Butte H	2010	adult	h	141
12	Round Butte H	2011	adult	h	95
13	Round Butte H	2012	adult	h	96

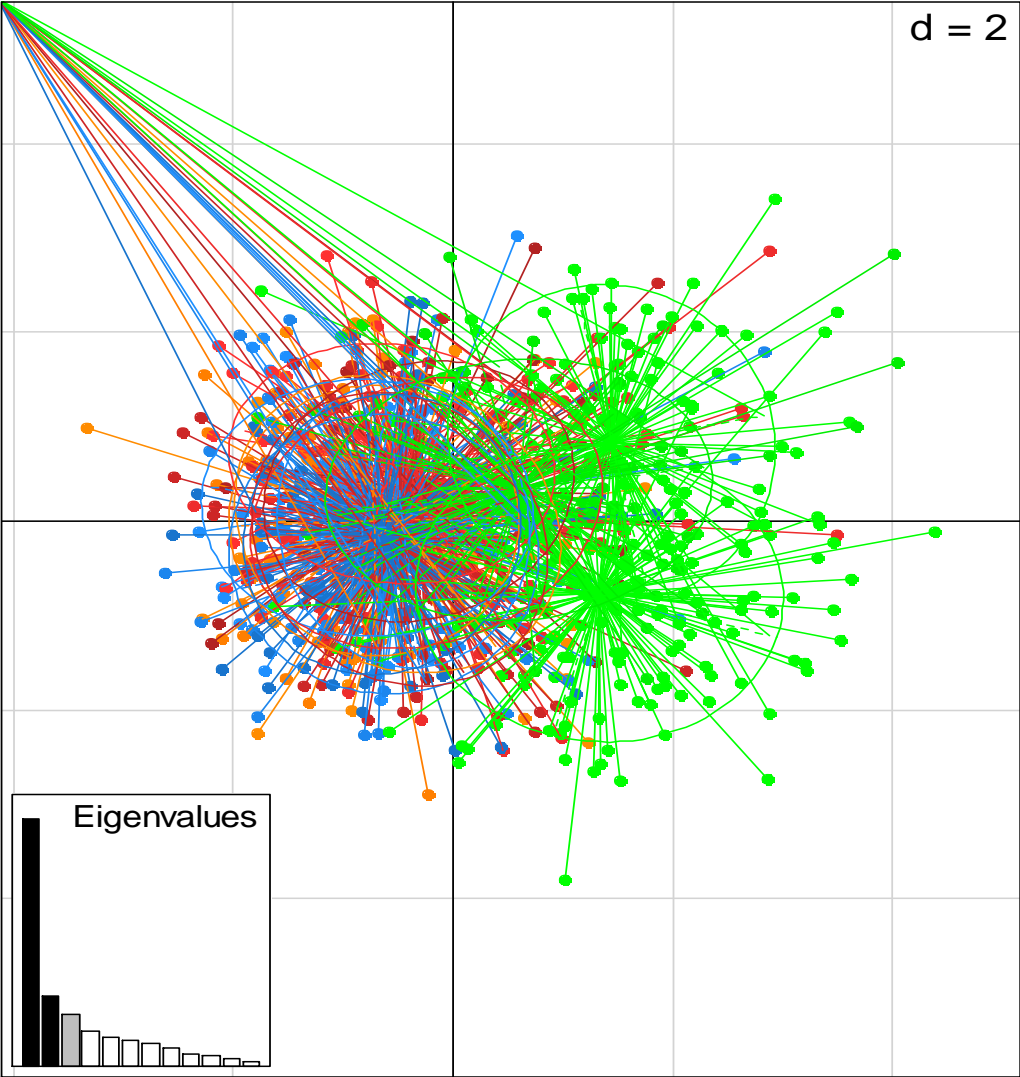
SNP divergence among Columbia River Chinook salmon



SNP divergence among Columbia River Chinook salmon



Divergence among Deschutes Basin Spring Chinook salmon



- Pre-WSNFH
- WSNFH HOR
- WSNFH NOR
- Round Butte

Conclusions

- Deschutes Basin Spring Chinook salmon are distinct.
- Within the Deschutes, the primary divergence is between Round Butte and Warm Springs
- NOR Warm Springs fish returning now are similar to those that returned prior to inception of the hatchery
- HOR fish from Round Butte (and to a lesser extent Warm Springs) exhibit genetic characteristics typical of hatchery fish

Acknowledgements

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- The findings and conclusions in this article are those of the authors and do not necessarily represent the views of the institutions with which they are affiliated.

