# OSU Component for Nonpareil Dam Adult Trap and Genetic Pedigree Progress Report and Scope of Work for 2007-2009

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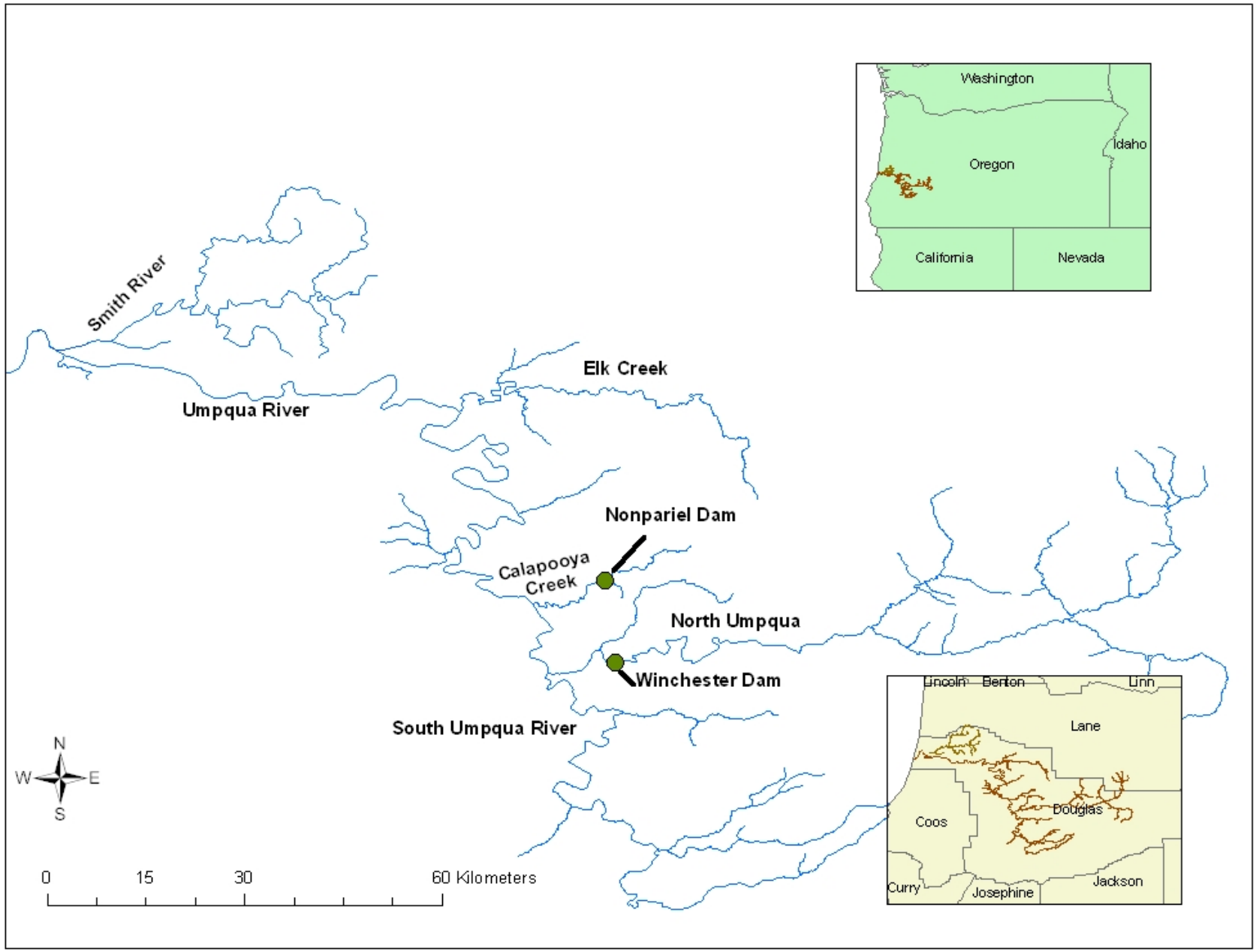

Washington
Idaho
Oregon
California
Nevada
Smith River
Elk Creek
Umpqua River
Nonpariel Dam
Calapooya Creek
North Umpqua
Winchester Dam
South Umpqua River
N
W
E
S
0
15
30
60 Kilometers
Lincoln
Benton
Linn
Lane
Douglas
Coos
Curry
Josephine
Jackson

| Marker | k | H | Exclusion | Reference |
|---|---|---|---|---|
| *OTS519A* | 8 | 0.72 | 0.35 | Naish & Park 2002 |
| *OTS520A* | 24 | 0.87 | 0.72 | Naish & Park 2002 |
| *ONE111A* | 6 | 0.84 | 0.32 | Olsen et al. 2000 |
| *P53A* | 19 | 0.91 | 0.73 | de Fromental 1992 |
| *OTS3B* | 10 | 0.89 | 0.53 | Banks et al. 1999 |
| *ONEμ2B* | 25 | 0.89 | 0.72 | Correns et al. 1997 |
| *OCL8B* | 20 | 0.88 | 0.65 | Condrey & Bentsen 1997 |
| *OTS215C* | 8 | 0.72 | 0.35 | M. Banks (unpublished) |
| *ONEμ13C* | 15 | 0.81 | 0.57 | Scribner et al. 1996 |
| *OMY1011C* | 11 | 0.84 | 0.58 | P. Bentzen (unpublished) |
| *OKI23D* | 20 | 0.80 | 0.74 | A. Spidle (unpublished) |

# Progress so far

***Task 1.*** What is the relative success of using a first generation, wild-type broodstock in a supplementation program compared to a broodstock that has been captive for multiple generations?

***Task 4:*** How does the supplementation program modify the effective population size of the population in the Calapooya (termed the "Ryman-Laikre Effect" (Ryman and Laikre 1991, Ryman et al 1995)

***Task 5:*** What is the level of inbreeding that results from the supplementation program?

| | | Male | Jack | Female | Unresolved | Dropped | Total |
|---|---|---|---|---|---|---|---|
| 2004 cohort | | | | | | | |
| | SGHS | 69 | 23 | 71 | 2 (1M, 1J) | 2 (2M) | 167 |
| | MGHS | 98 | 38 | 78 | 2 (1M, 1F) | 2 (2M) | 218 |
| 2005 cohort | | | | | | | |
| | SGHS | 121 | 38 | 169 | 20 (4M, 1J, 15F) | 0 | 348 |
| | MGHS | 174 | 28 | 189 | 9 (2M, 1J, 6F) | 7 (2M, 5F) | 407 |

**Adult**

| | ka | Va | Ra | Ra* | Nb/N* |
|---|---|---|---|---|---|
| MGHS-2001 | 2.14 | 3.62* | 1.68 (1.25-2.00) | 1.64 (1.27-197) | 0.76 (0.66-0.86) |
| SGHS-2001 | 1.72 | 2.52* | 1.46 (1.11-1.79) | 1.53 (1.15-1.90) | 0.79 (0.69-0.92) |
| MGHS-2002 | 3.84 | 6.67 | 1.73 (1.25-2.13) | 1.38 (1.16-1.57) | 0.84 (0.77-0.93) |
| SGHS-2002 | 3.13 | 5.58 | 1.67 (1.30-2.05) | 1.43 (1.17-1.63) | 0.82 (0.76-0.92) |

# Addressed but we're holding pending data from more cohorts

***Task 2.*** What is the relative success of unfed fry releases compared to smolt releases in producing returning adults?

***Task 3.*** What is the reproductive success in the wild of adult fish from the following treatments:

First-generation hatchery fish from unfed fry releases;

First-generation hatchery fish from smolt releases;

Multi-generation hatchery fish from unfed fry releases;

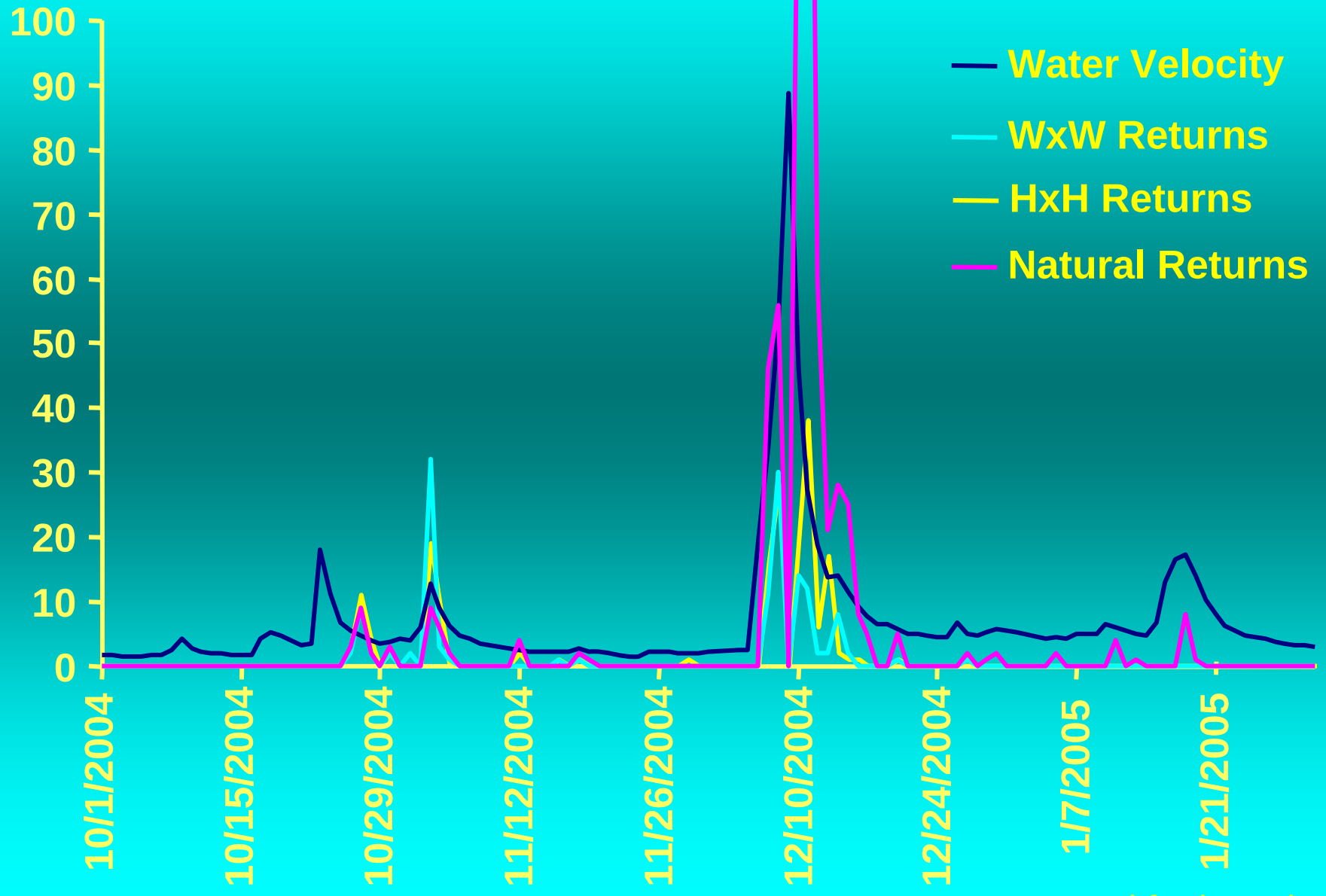
Multi-generation hatchery fish from smolt relases; and

Wild fish.

# Life history data

- Reproductive success
  - HxH smolts = 224/12,016 = 0.019
  - WxW smolts = 160/12,357 = 0.013
  - HxH fry = 28/198,689 = 0.00014
  - WxW fry = 23/216,566 = 0.00011

# Hatchery/wild fitness in coho




Moyer et al forthcoming

# Goals for 2007-2009

**Task 6: What is the incidence of natural crossing between adults from the different treatment groups while on the natural spawning grounds and the consequences of mate choice to the relative production of offspring by individuals;**

**Task 7: What differences in reproductive success occurs because of treatment by age (males), by gender, by adult run time, and by adult body size (length)?**

**Task 8: Does the size of the naturally-produced population increase due to successful natural reproduction by hatchery fish? Does the contribution to this increase vary by treatment group?**

# Post doc position

Greg Moyer
Research Geneticist USFWS Georgia

Veronique Theriault
University of Laval

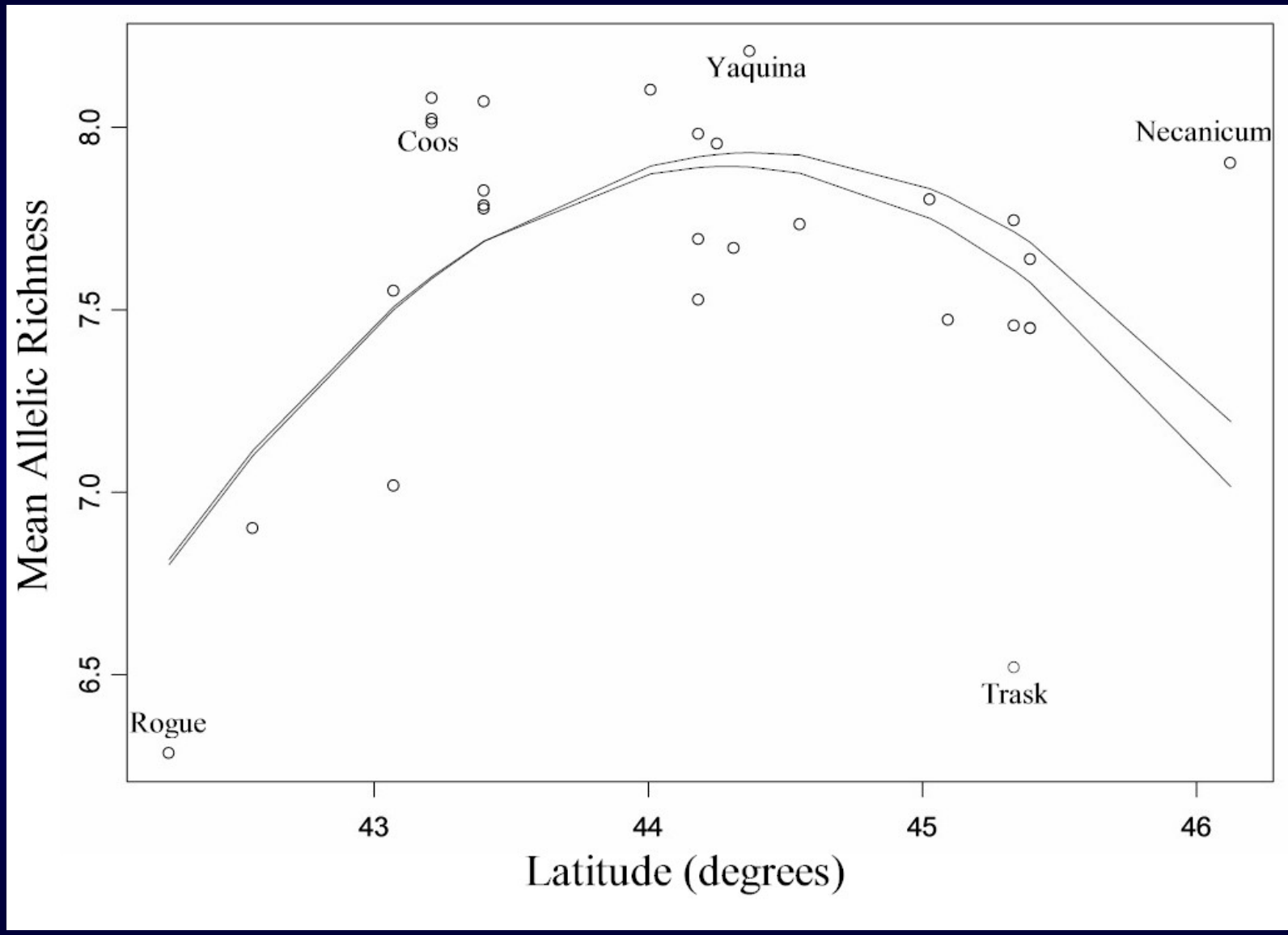
Evolution of anadromy and residency : the case of the brook charr of the Ste-Marguerite River, Quebec, Canada

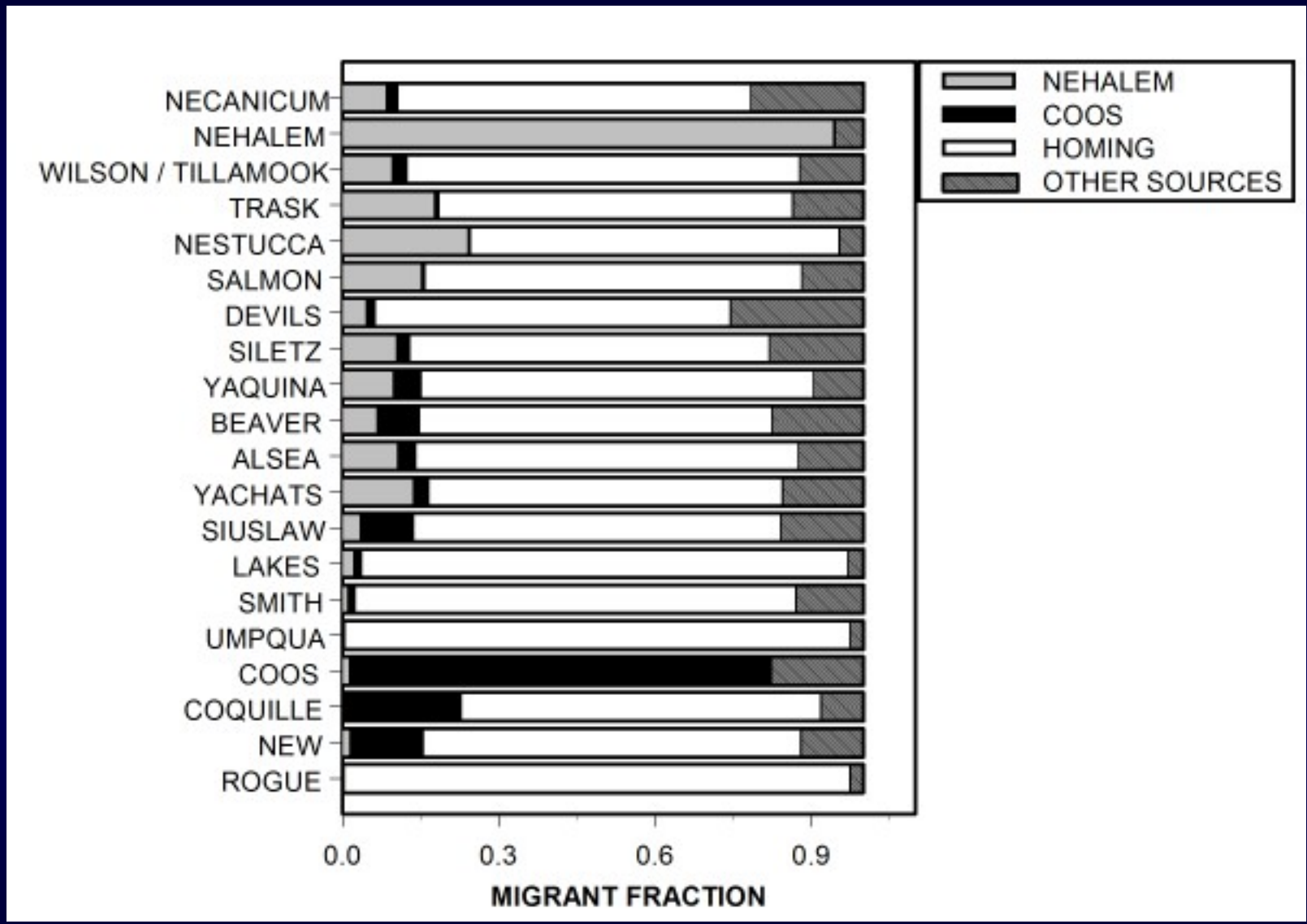
# Graduate Student

Marc A. Johnson now a full PhD candidate

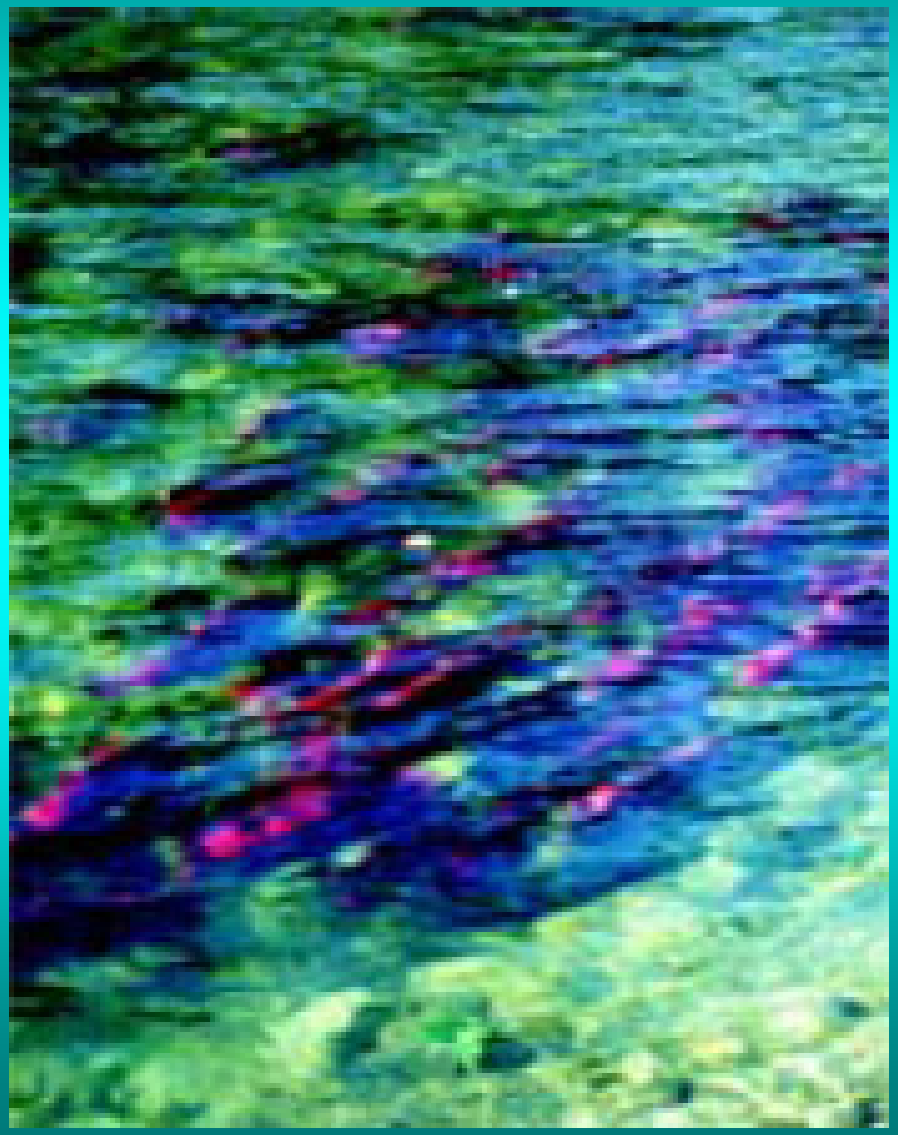
Genetic Structure, Migration and Patterns of Allelic Richness among Coho Salmon (*Oncorhynchus Kisutch*) Populations of the Oregon Coast

*in review CJFAS*


Mean Allelic Richness
8.0
7.5
7.0
6.5
Yaquina
Coos
Necanicum
Trask
Rogue
43
44
45
46
Latitude (degrees)


NECANICUM
NEHALEM
WILSON / TILLAMOOK
TRASK
NESTUCCA
SALMON
DEVILS
SILETZ
YAQUINA
BEAVER
ALSEA
YACHATS
SIUSLAW
LAKES
SMITH
UMPQUA
COOS
COQUILLE
NEW
ROGUE
NEHALEM
COOS
HOMING
OTHER SOURCES
0.0
0.3
0.6
0.9
MIGRANT FRACTION

# Homing vs Straying in Coho

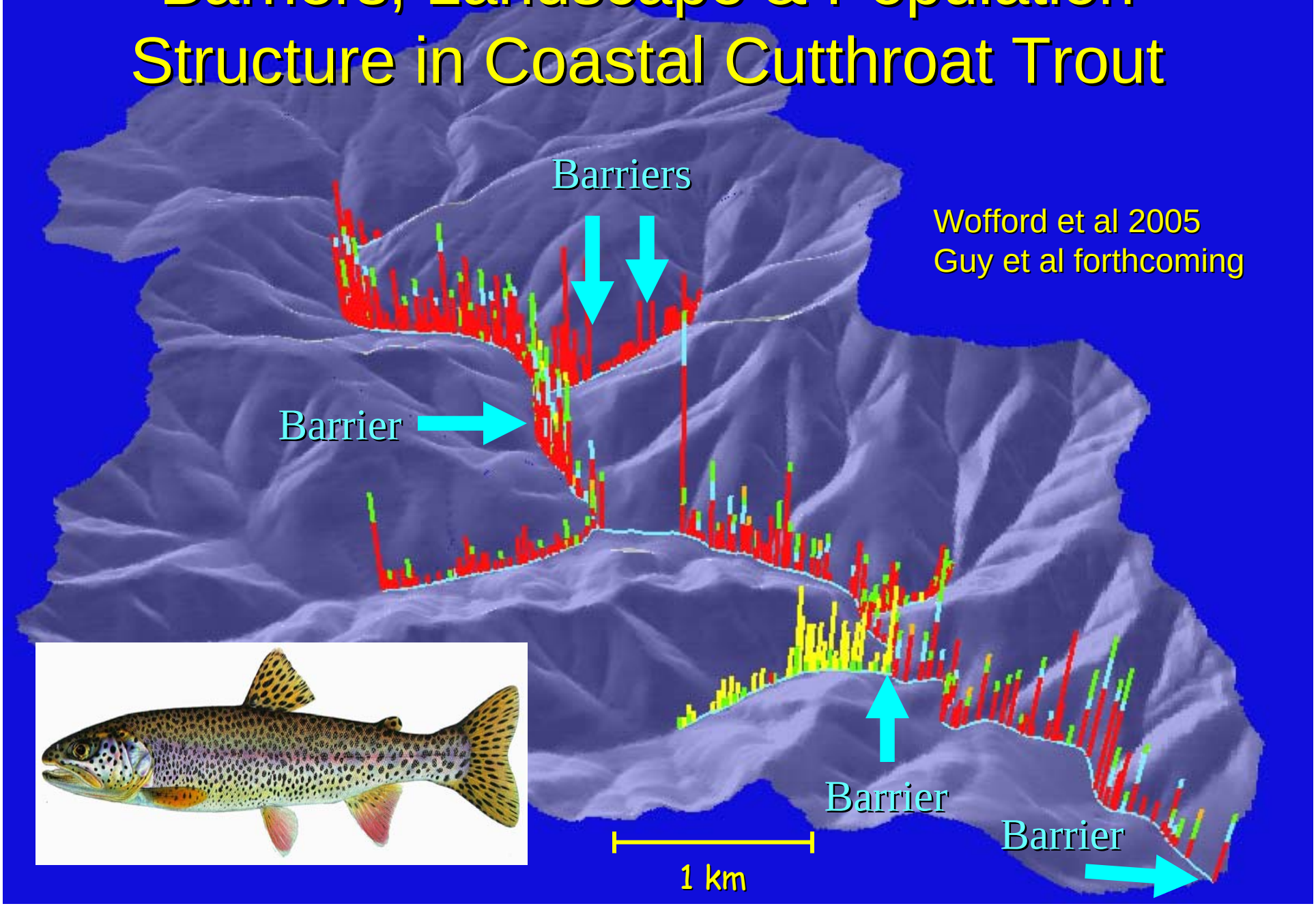


Olfactory receptors

100+ genes

Johnson & Banks forthcoming

# Barriers, Landscape & Population Structure in Coastal Cutthroat Trout




Wofford et al 2005
Guy et al forthcoming

# Run timing in Chinook

## Candidate gene

Clock, Cry, BMAL & Per

## Genomic

LongSAGE

200+ candidates

O'Malley & Banks (2007)

Meusnier O'Malley & Banks forthcoming

Bernier et al forthcoming