

Influence of Resident Trout on Steelhead Production in the Yakima Basin

Ian Courter

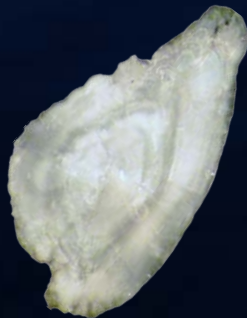
Cramer Fish Sciences

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DC Consulting, L.L.C.

Jim Hobbs

U.C. Davis



Acknowledgements

Joe Blodget, YN

Dave Fast, YN

Shadia Duery, CFS

Jay Vaughan, CFS

Tommy Garrison, CFS

Steve Cramer, CFS

Funding

Yakima Basin Joint Board



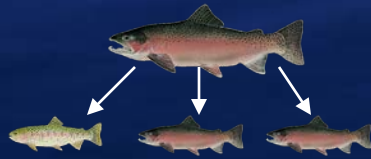
Photo Credit David Child

Evidence for rainbow trout and steelhead interbreeding

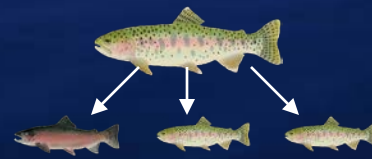
- Genetic Differentiation
 - Pearsons et al. 2007
 - Busby et al. 1996
 - Docker and Heath 2003
 - McPhee et al. 2007
- Genetic Parentage
 - Berntson et al. 2011, Little Sheep Creek
 - Christie et al. 2011, Hood River
 - Abernathy Creek
- Observational
 - McMillan et al. 2007

Production of Juvenile Anadromous and Resident Life-Histories

Anadromous female



Resident female

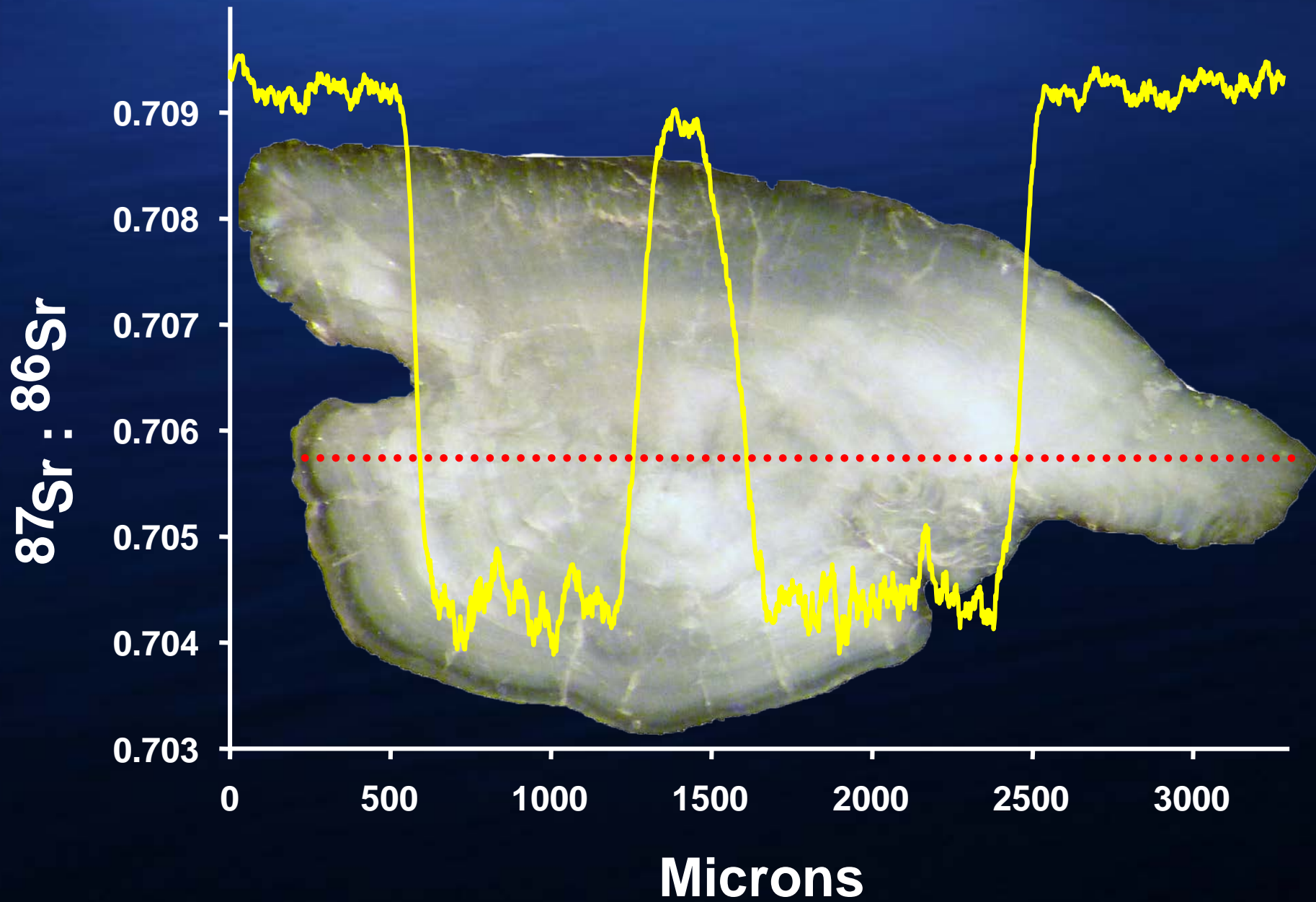


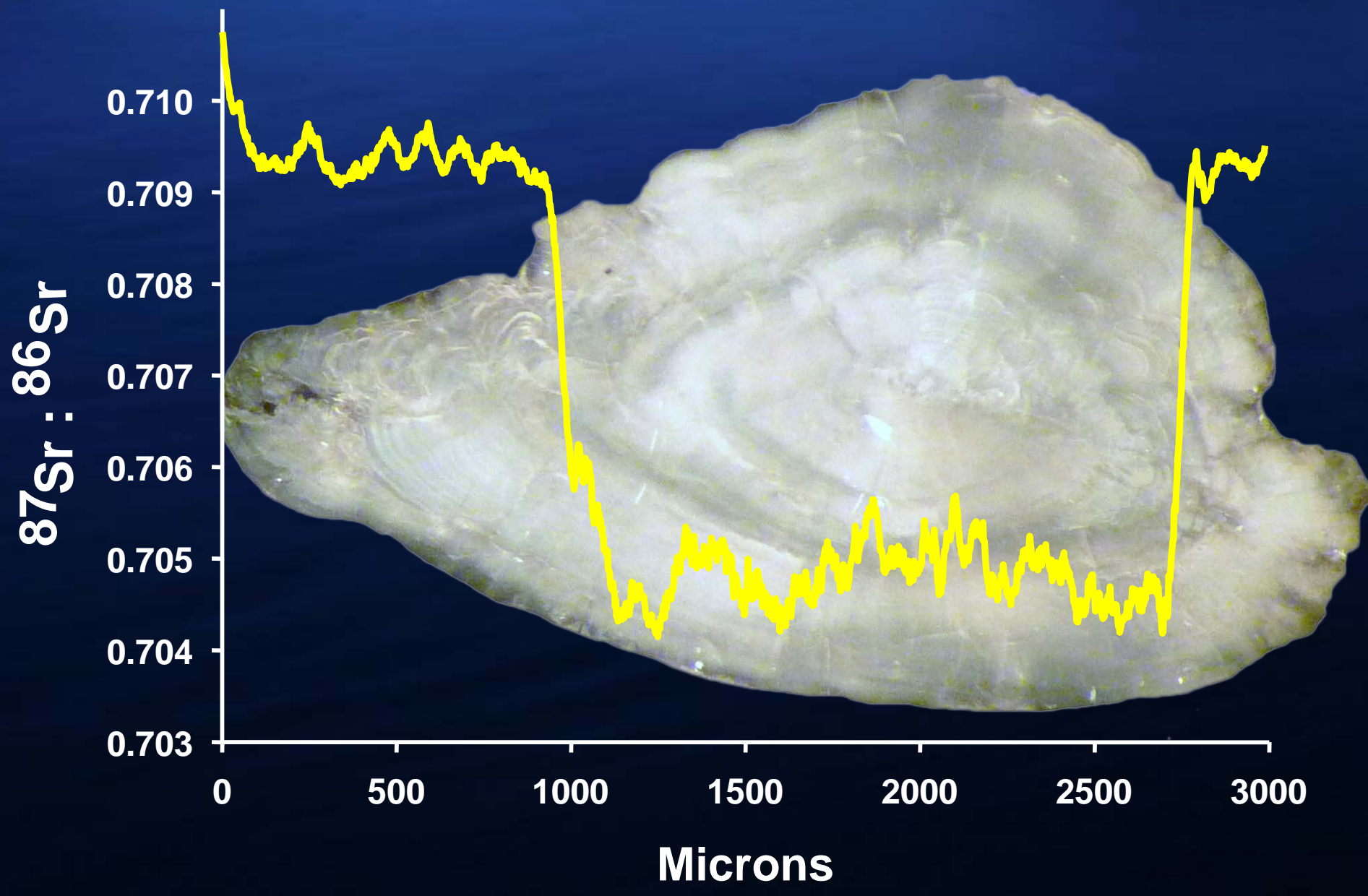
Cross-type	Females	Males
AfxAm	82%	47%
AfxRm	57%	21%
RfxAm	71%	78%
RfxRm	24%	10%

Hypotheses

A significant number ($\geq 10\%$) of resident rainbow trout offspring migrate to the ocean and return as adult steelhead.

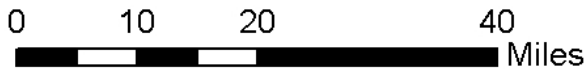
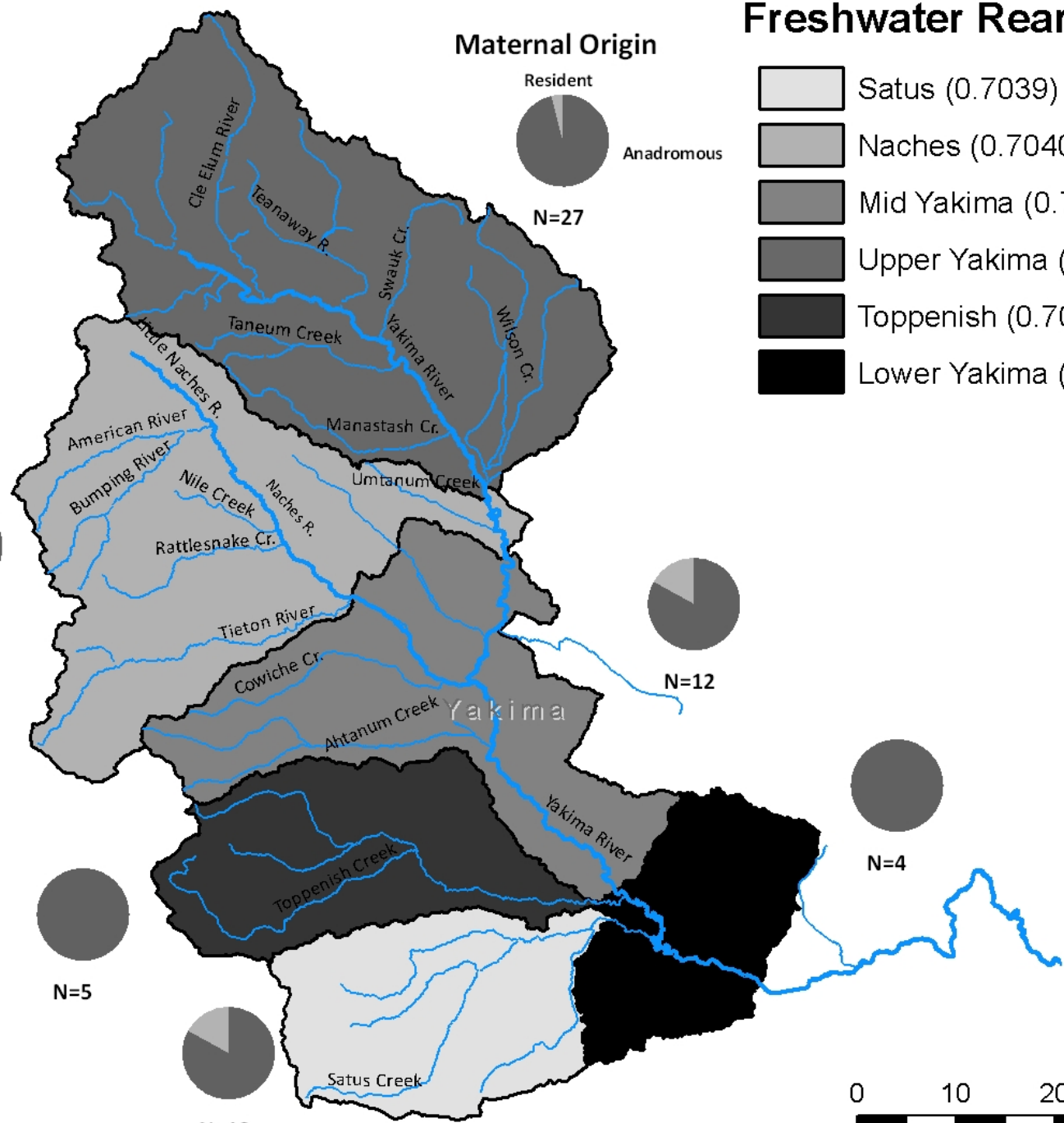
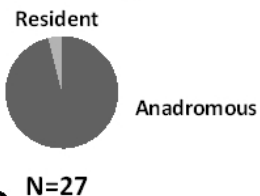
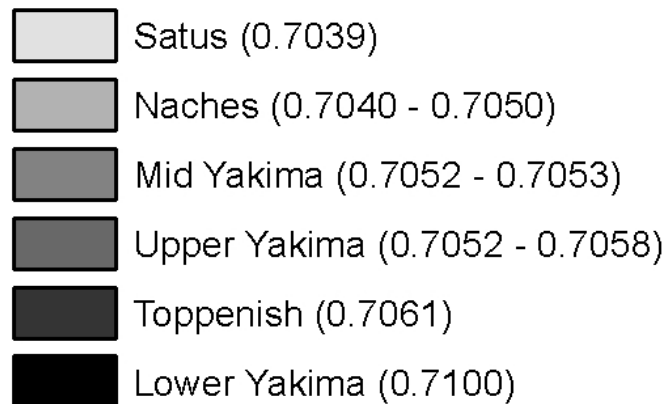






Freshwater Rearing Regions

Maternal Origin



2011 Data Collection

- Additional water samples taken in Satus Creek, Toppenish Creek, and Lower Yakima River.
- Collected a representative sample of the entire kelt emigration
- Validation test



2011 Data

Maternal Origin

Rearing Region	Resident	Anadromous	% Resident Origin
Satus Creek	1	14	7%
Toppenish	1	5	17%
Naches or Mid Yak	1	14	7%
Naches	2	114	2%
Mid Yak or Upper Yak	3	18	14%
Upper Yak	6	23	21%



Conclusions

- Yakima Basin *O. mykiss* are partially anadromous
- Significant numbers of offspring from resident trout are adopting an anadromous life-history.
- Resident Maternal Origin
 - 17% in 2010
 - 7% in 2011
- The Naches Basin is predicted to be a major producer of steelhead in both study years.

Questions/Comments



Photo Credit Frank Thrower

