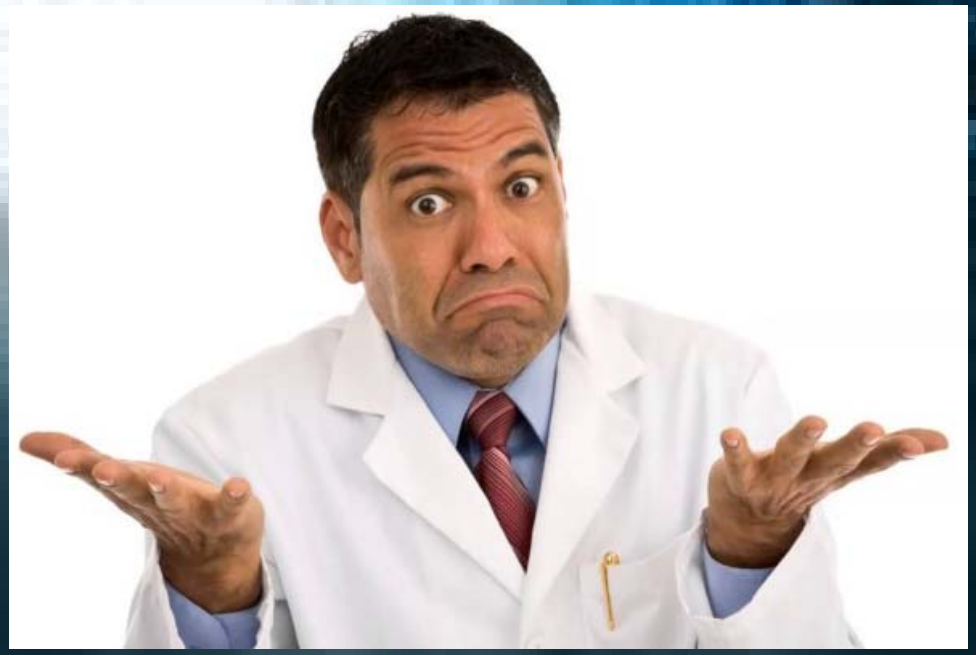
Ocean Phase of Pacific Lamprey



Ho: We don't know jack!

….Or *do* we?

Marine biology of the Pacific Lamprey: We know more than we realize

Image: NOAA Fisheries

Benjamin J. Clemens

Oregon Department of Fish and Wildlife

Outline

1. Distribution
2. Depth
3. Feeding/prey
4. Predators
5. Genetic structuring

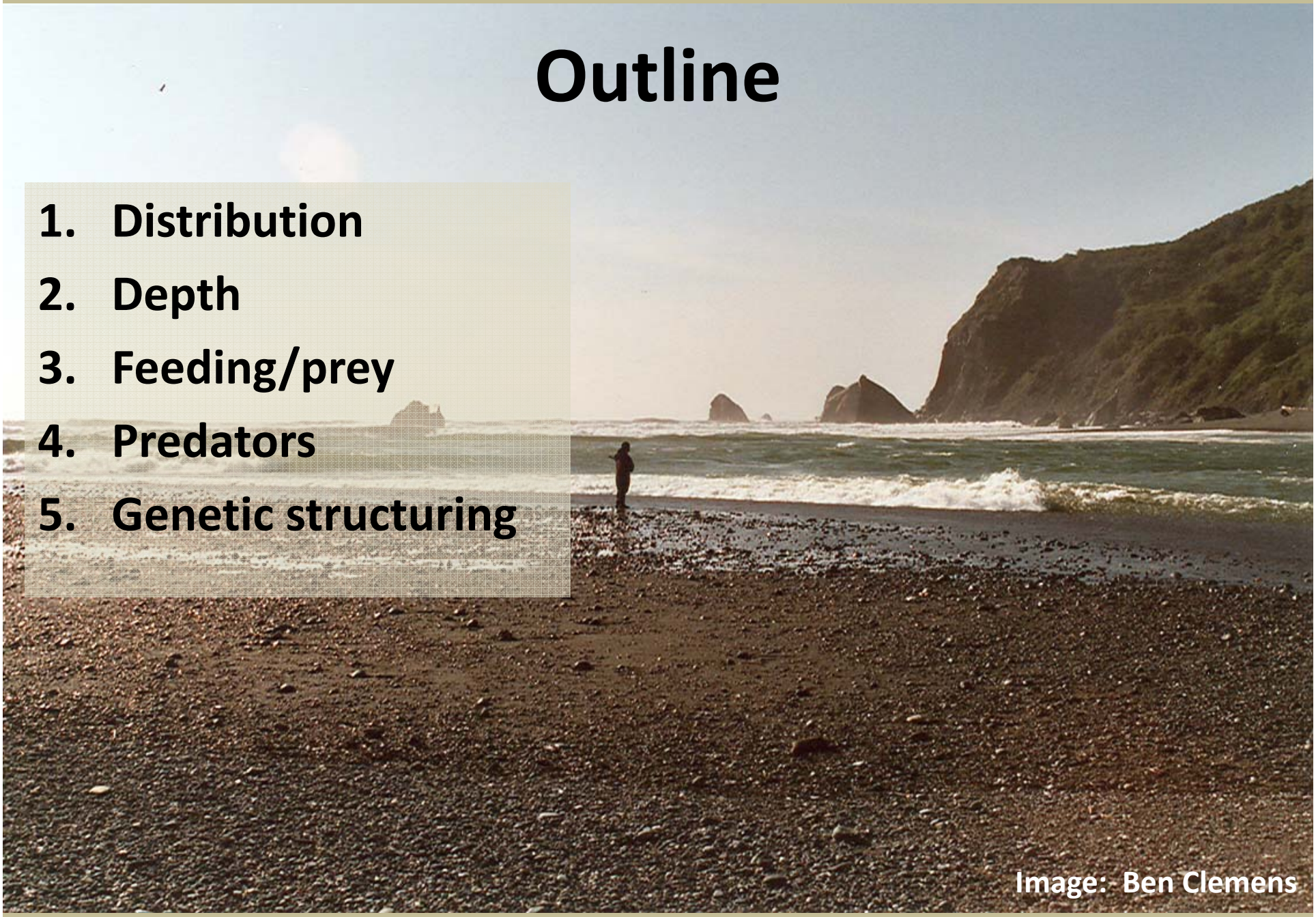
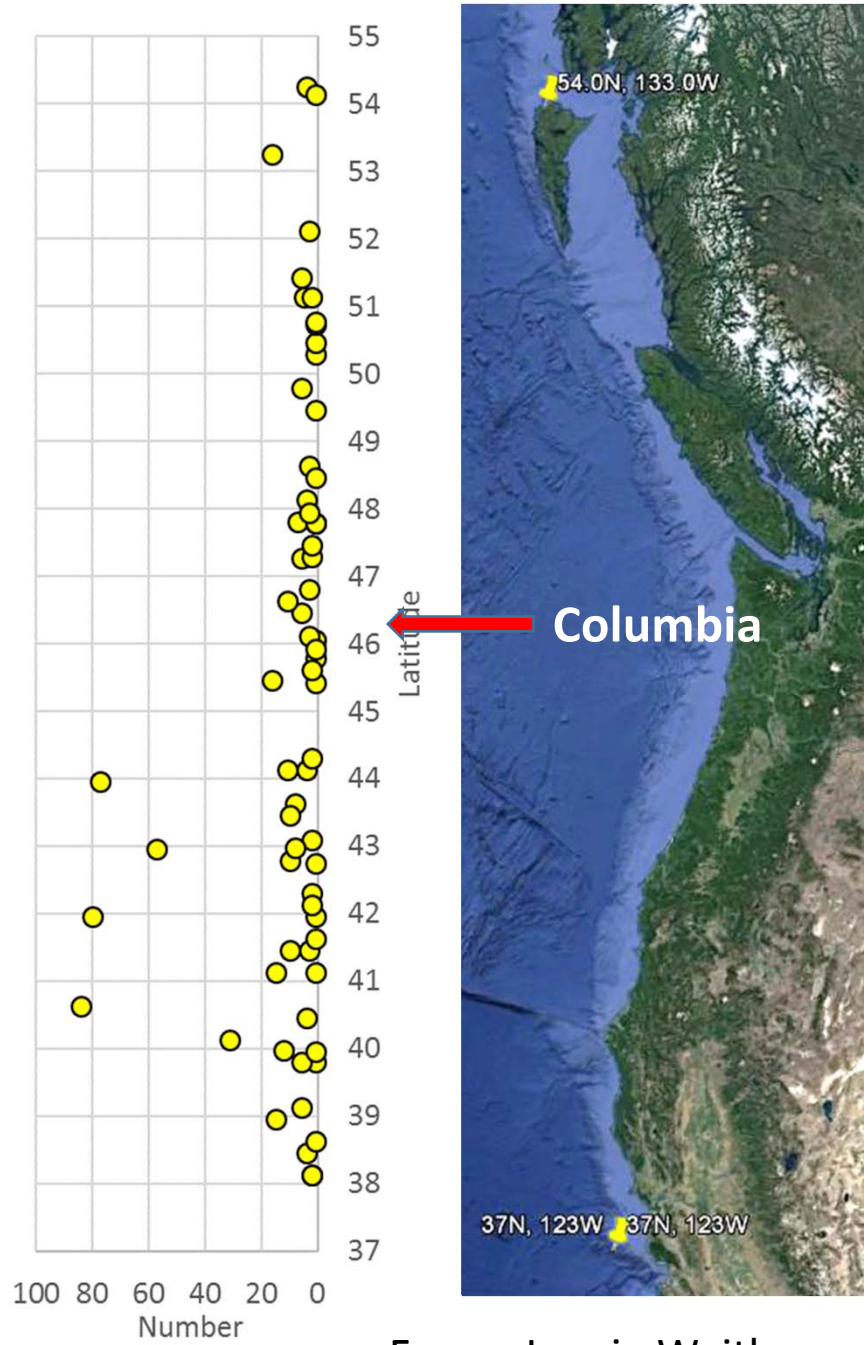


Image: Ben Clemens

Pacific lamprey catches (NWFSC Hake surveys)

- **Hake survey catches many Pacific lamprey**
  - **Most years: 0-25 fish**
  - **2003: 535 fish caught**
- **Widespread throughout survey area**
- **Biggest catches (all 2003) in S OR/N CA.**
- **Most fish 17-500 g (=larger than macrophthalmia, smaller than adults)**



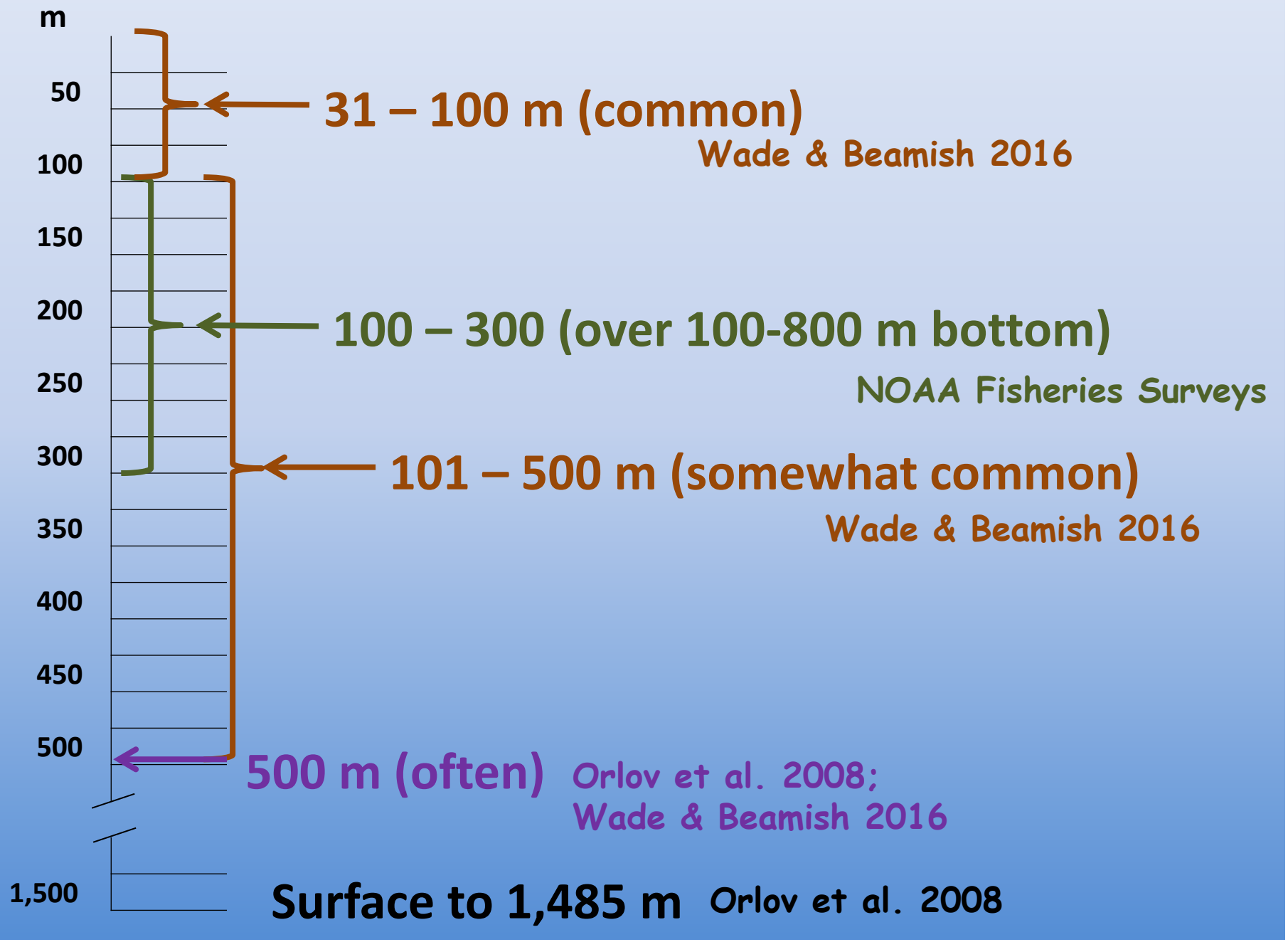
From: Laurie Weitkamp

Depth distribution

- Lamprey catches often associated with prey
  - Walleye Pollock (highest abundance in AK)

  - Pacific Hake (abundant CA, OR, WA)

Beamish 1980; Orlov et al. 2008; Wade & Beamish 2016

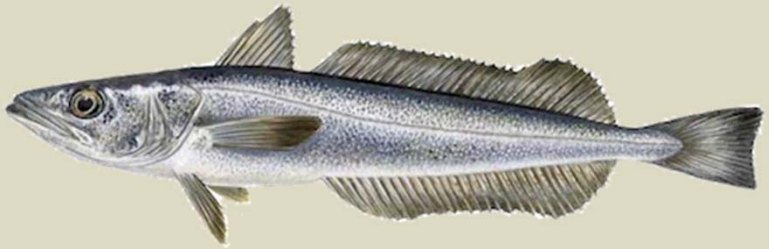

m
50
100
150
200
250
300
350
400
450
500
1,500
31 – 100 m (common)
Wade & Beamish 2016
100 – 300 (over 100-800 m bottom)
NOAA Fisheries Surveys
101 – 500 m (somewhat common)
Wade & Beamish 2016
500 m (often)
Orlov et al. 2008;
Wade & Beamish 2016
Surface to 1,485 m
Orlov et al. 2008

Abundant Prey, Abundant Lamprey

Chinook Salmon

Pacific Herring

Walleye Pollock



Pacific Hake

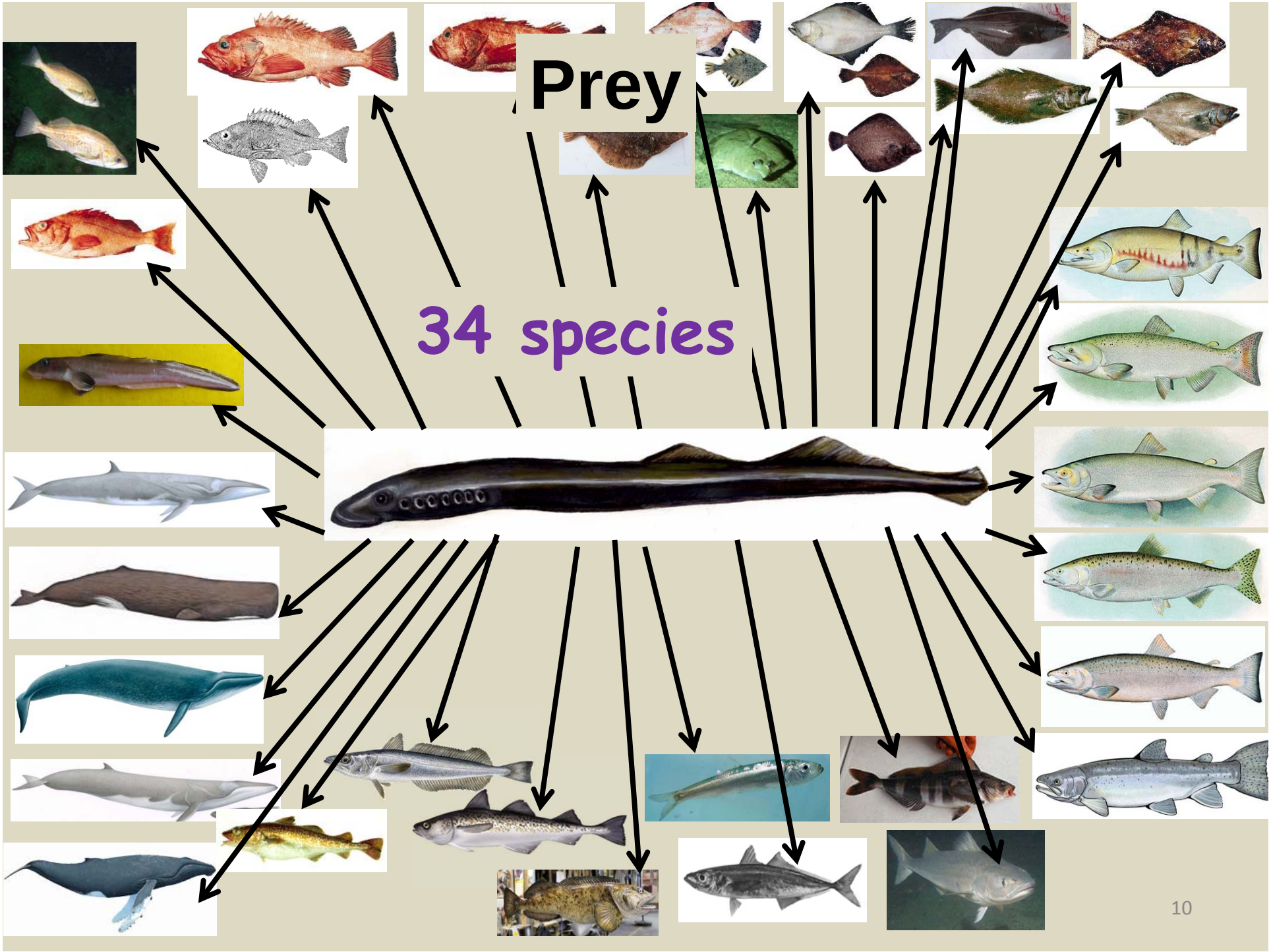
Murauskas et al. 2013

Feeding Behavior

- **Consume blood**
  - **Few hard structures in gut (scales; skin)**

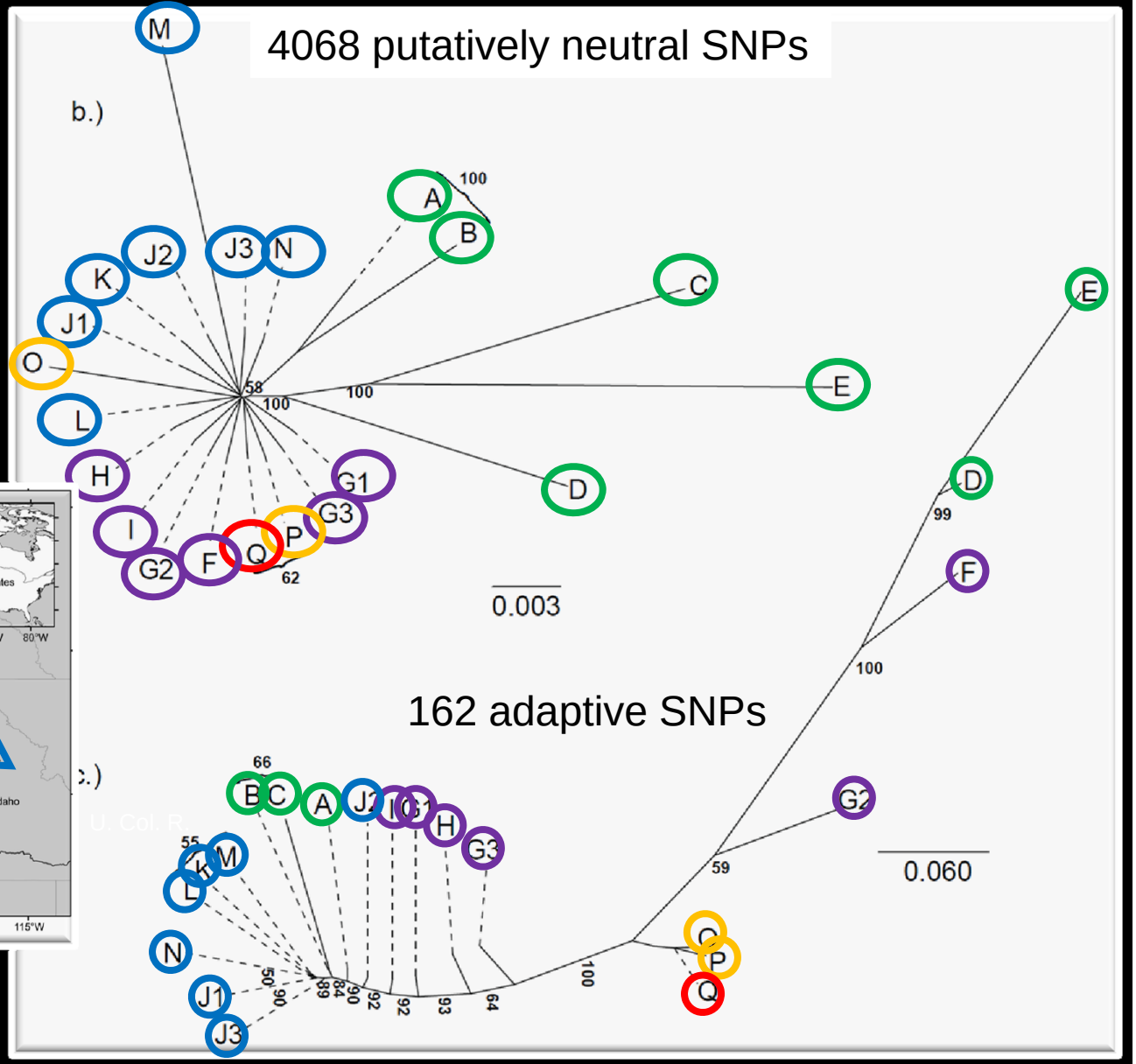
Lamprey-induced wounds: examples

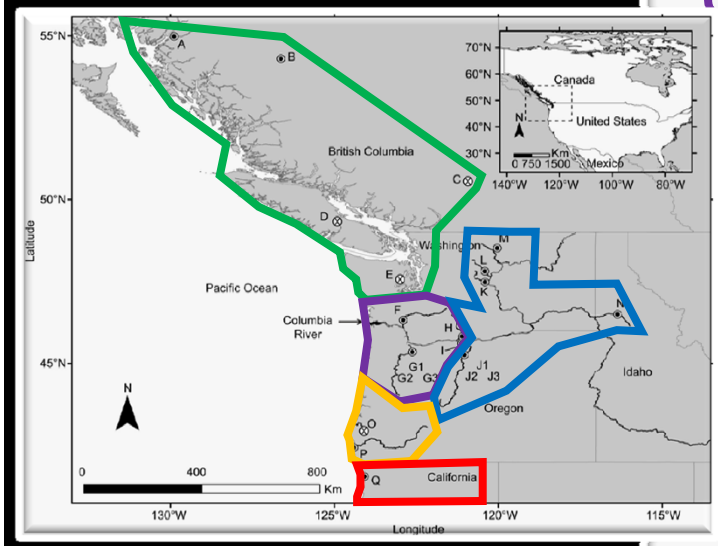
from NOAA Fisheries (groundfish surveys)


Prey
34 species

Predators

Pacific lamprey phylogeography





Hess JE *et al*. (2013) Mol Ecol, 22(11), 2898-2916.

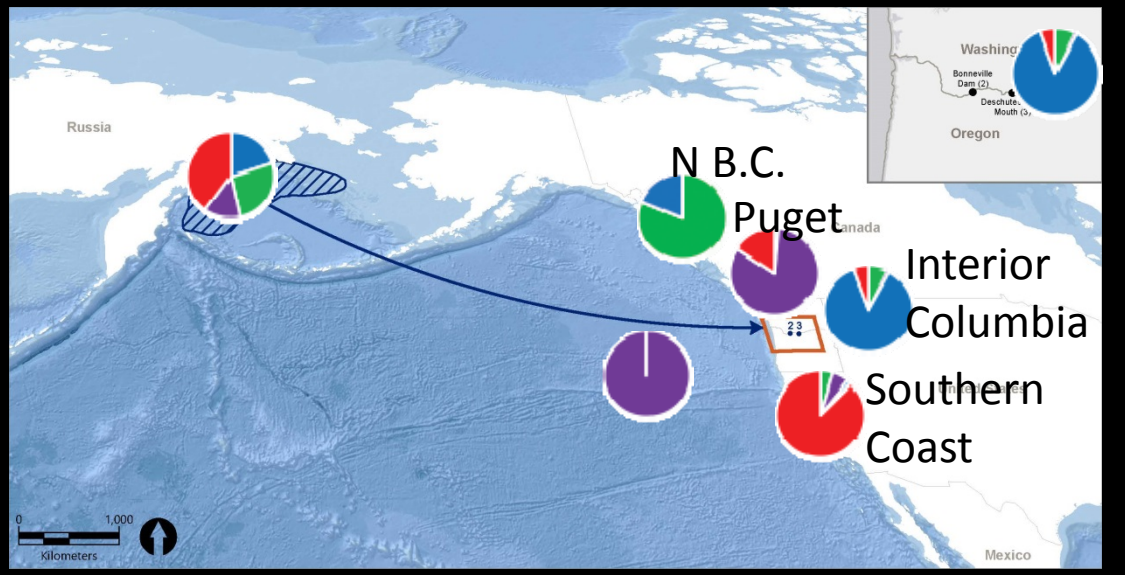
From: Jon Hess

Predicting fate based on genotype of ocean phase lamprey

Bering Sea 2014
(N=15)

Oregon coast (recovered from Tuna belly)
(N=1)

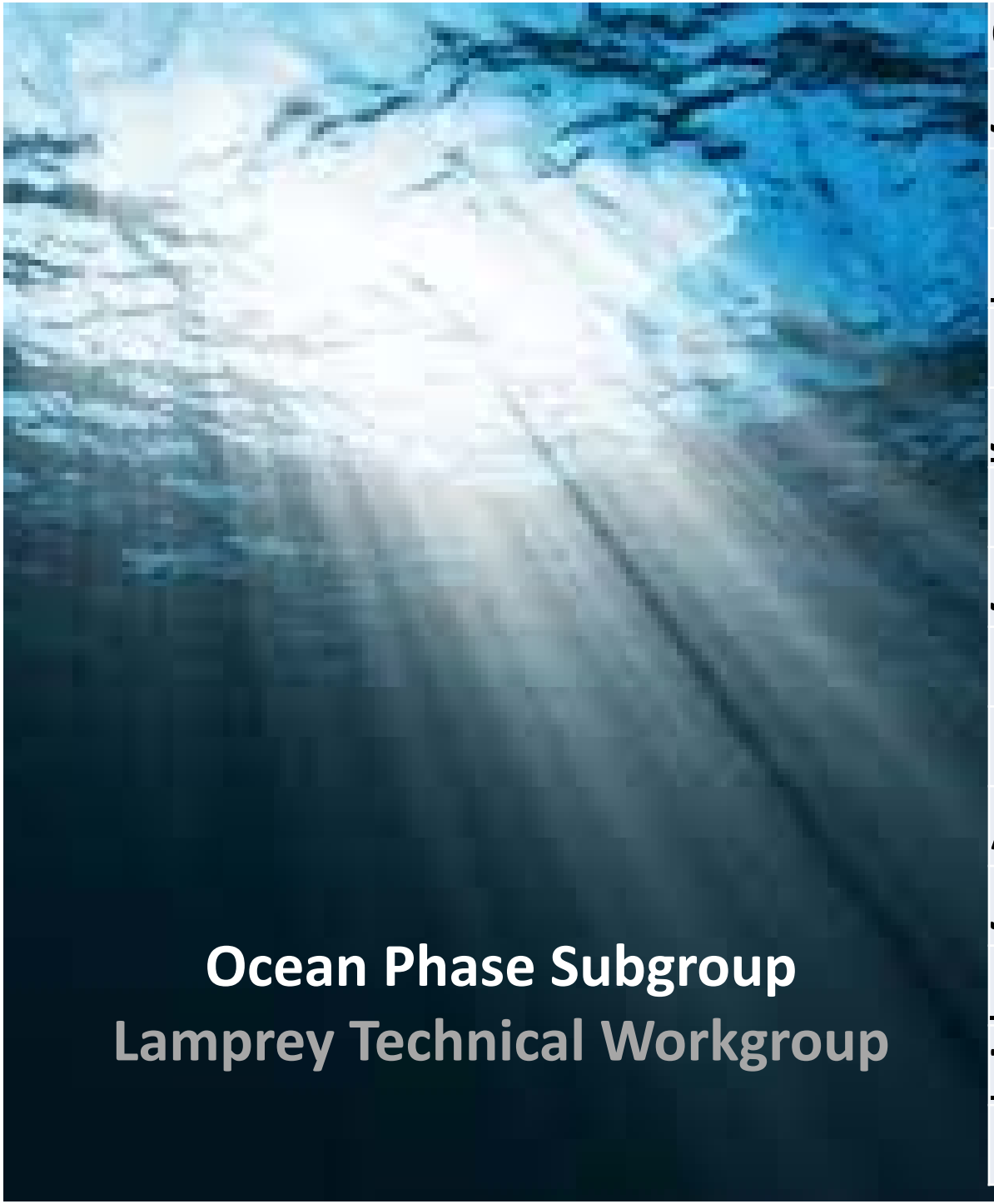
Where do they come from and where do they go?



Bering Sea Slope

- **The highest catches of Pacific Lamprey have occurred in the slope area of the Bering Sea**

Orlov et al. 2008; Weitkamp et al., unpubl.

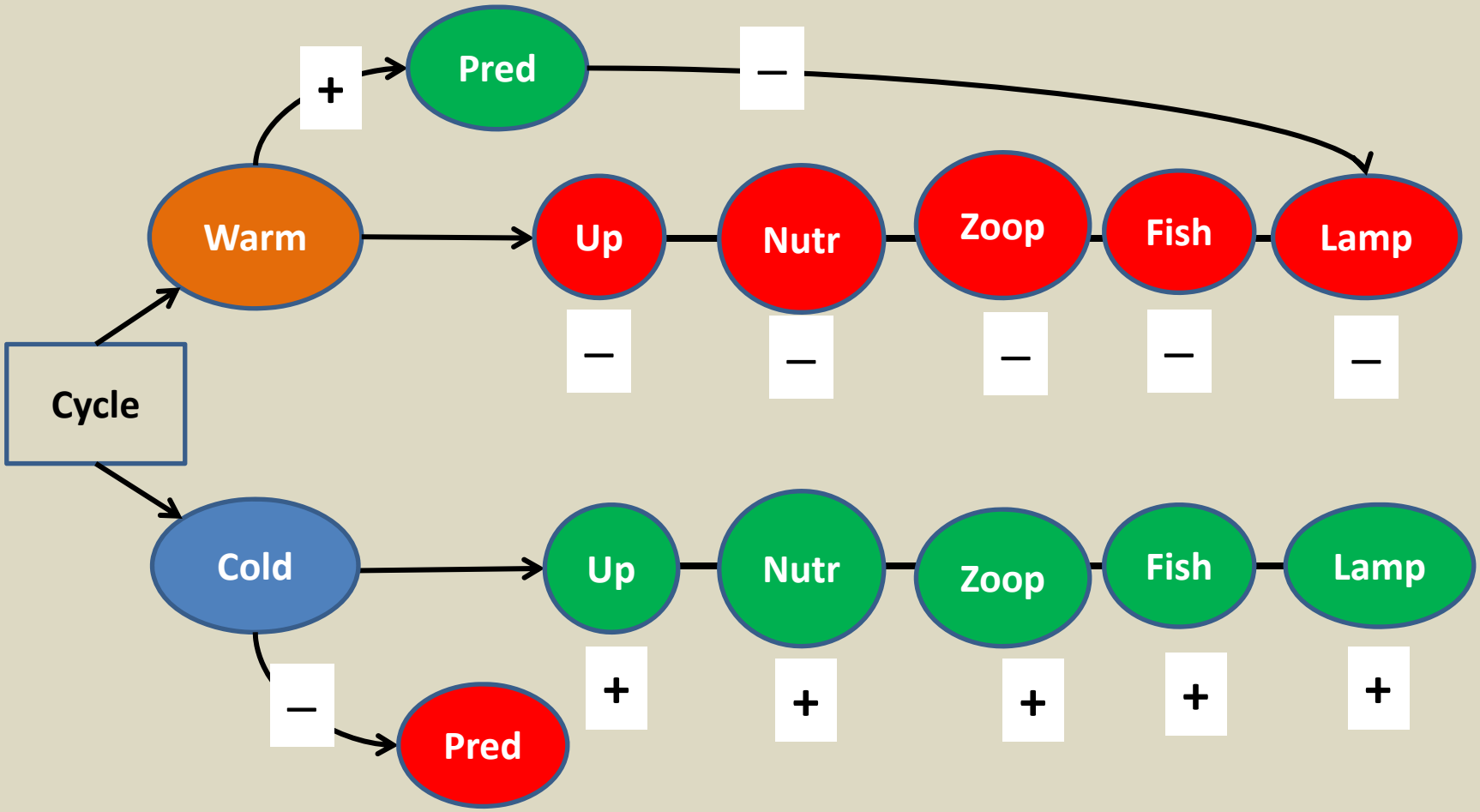


Ocean Phase Subgroup

Lamprey Technical Workgroup

Christina Wang
Josh Murauskas
Matt Weeber
Laurie Weitkamp*
Dan Kamikawa
Jon Hess*
Laurie Porter
Julianne Harris
Brian McIlraith
Keith Parker
Alexei Orlov
Joy Wade
Kevin Siwicke*
Trent Sutton*
Dave Ward

PDO & bottom-up (cold phase) *vs.* top-down (warm phase)



Mantua et al. 1997; Haeseker et al. 2012; Losee et al. 2014; Peterson et al. 2014