

The Flying Fish Workshop

Alaska Marine Science Symposium

Jan 2009



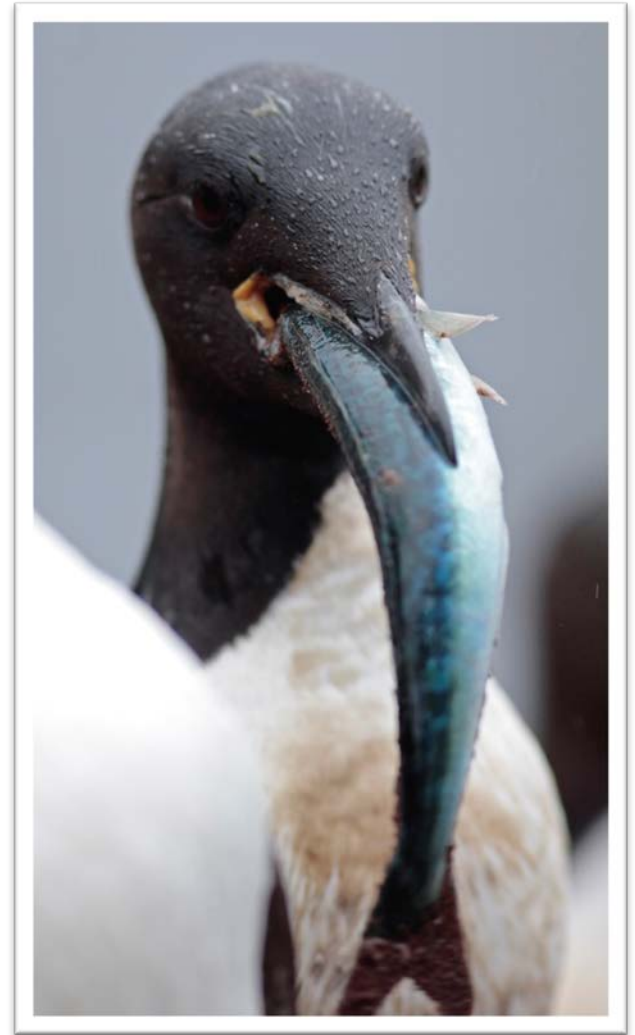
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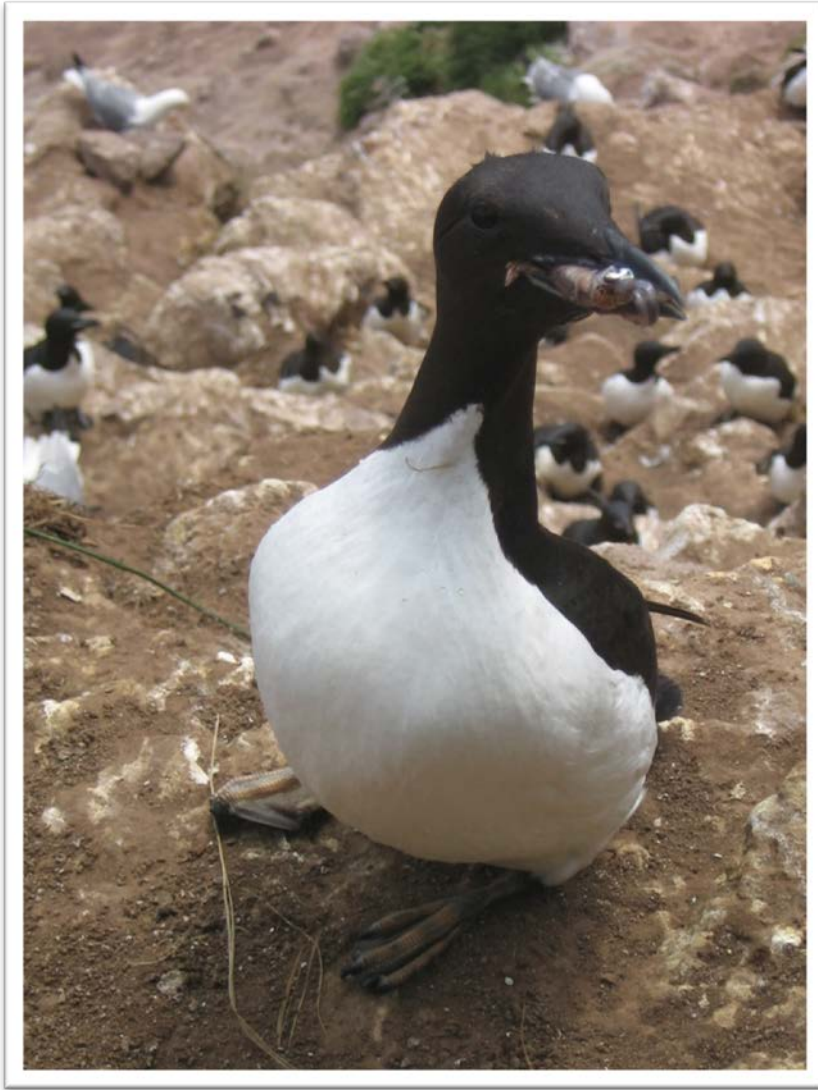
Workshop Outline

- Overview of seabird prey items
- Basic characteristics by group
- Tips on a glance
- Samples
- Bill-load ID practice



Atka Mackerel
Cornelius Schlawe

Seabird Prey Items



Corey Van Stratt-Buldir

Shrimp

Squid

Pacific herring

Smelt (capelin, eulachon)

Myctophid (lanternfishes)

Gadid (pollock, cod)

Greenling

Rockfish

Poacher

Bathymasteridae (ronquil, searcher)

Prickleback

Gunnel

Prowfish

Sandfish

Sand lance

Flatfish

Invertebrates

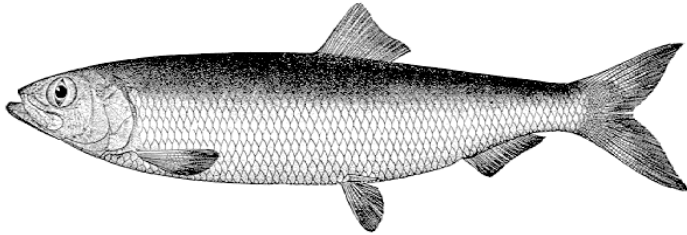


Nathan Banfield



Nathan Banfield

Pacific herring

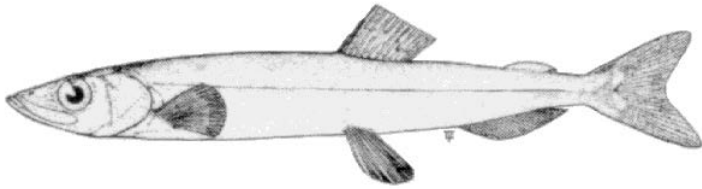


- lacks adipose fin
- large deciduous scales
- forked caudal fin
- countershading
- firm body



Smelt (Osmeridae)

- adipose fin
- forked caudal fin
- spawn on sand/gravel (spring/summer)



Spawning male capelin (*Mallotus villosus*)



Surf smelt (*Hypomesus pretiosus*)



capelin (*M. villosus*)



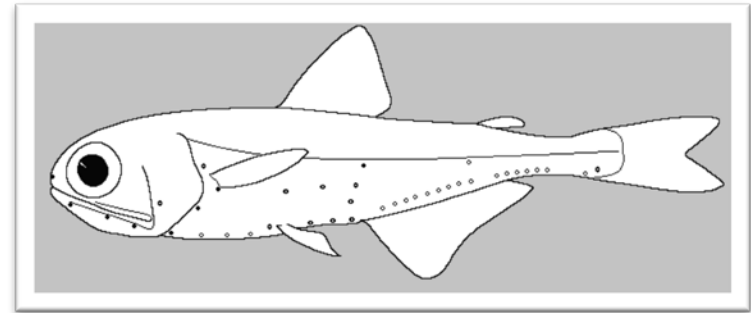
Eulachon (*Thaleichthys pacificus*)

Myctophidae (lanternfishes)

- photophores
- adipose fin
- distinct coloration

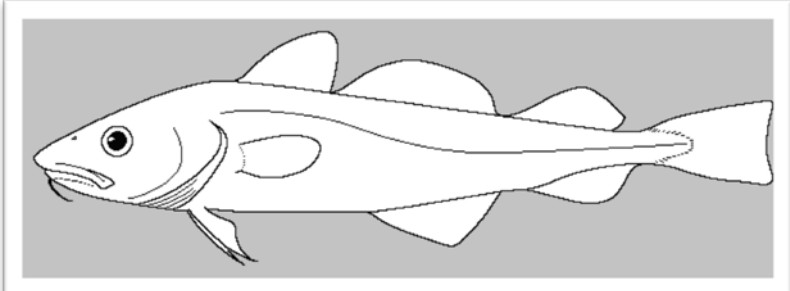


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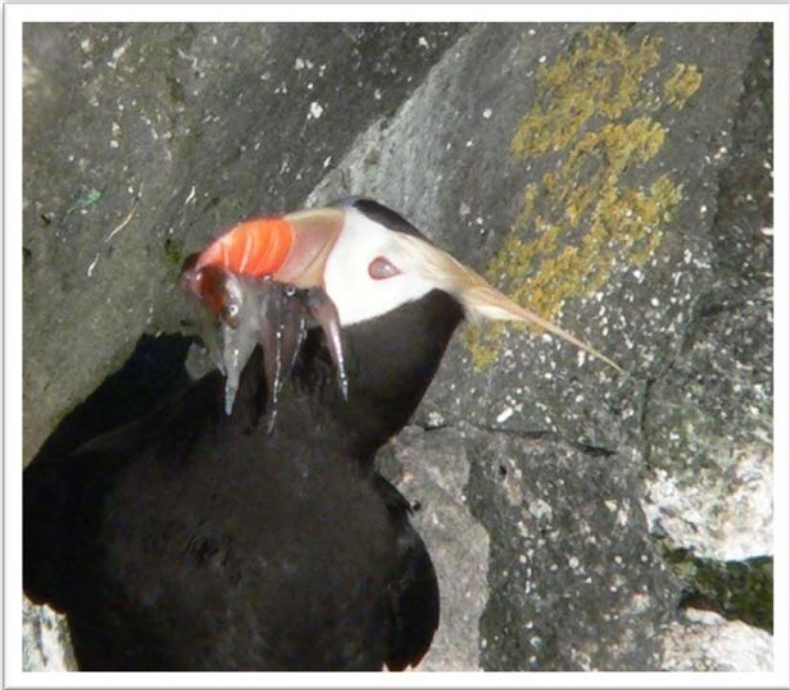


Northern lampfish

Gadidae (pollock, Pacific cod...)



- 3 dorsal, 2 anal fins
- light tan/brown coloration
- widest at nape



Rachael Orben



Walleye pollock



Pacific cod

Rockfish (Scorpaenidae)

- head spines
- variable coloration (~36 species in AK)
- spinous+soft-rayed dorsal and anal fins



Juvenile rockfish
Kitty Mecklenburg

Greenling (Hexagrammidae)

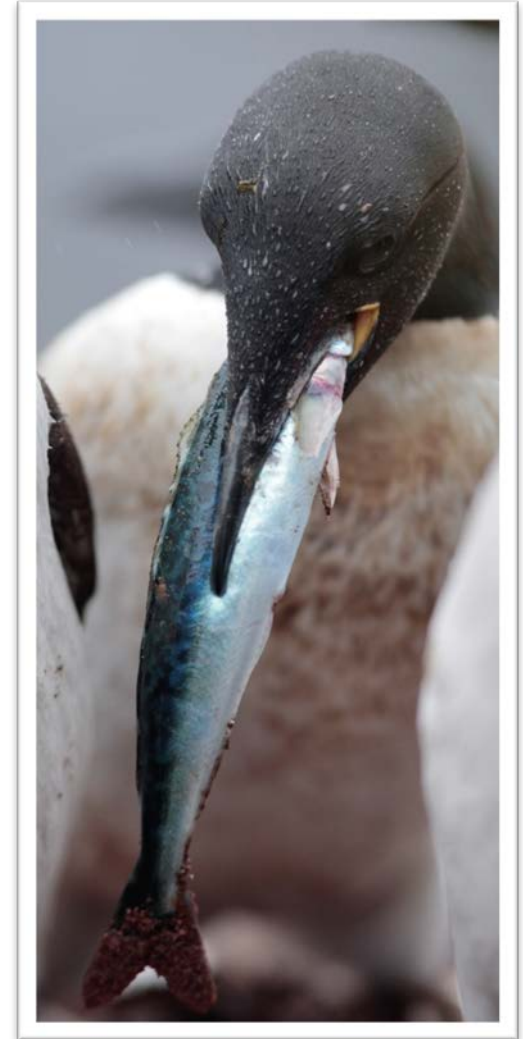
- 1-5 lateral lines
- juveniles are greenish
- single dorsal fin (usually notched)



Atka mackerel
Kitty Mecklenburg



Kelp greenling
Kitty Mecklenburg



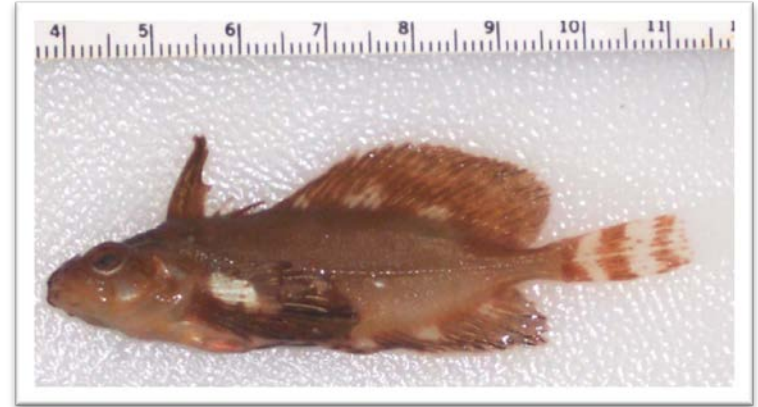
Atka mackerel
Cornelius Schlawe

Sculpin

(Cottidae, Hemitripterae, Psychrolutidae)



Rachael Orbin



Silverspotted sculpin



Roughspine sculpin

Kitty Mecklenburg

Poacher (Agonidae)



- bony plates (= rigid body)
- elongate
- long and narrow posterior



Sturgeon poacher

Kitty Mecklenburg

Gray starsnout

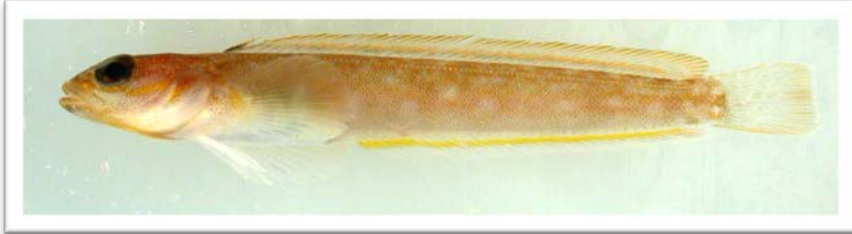
Kitty Mecklenburg

Bathymasteridae (searcher, ronquil)



Searcher

Kitty Mecklenburg



Northern ronquil

Kitty Mecklenburg



Nathan Banfield

- demersal
- truncate caudal, single dorsal and anal fins
- fin coloration

Pricklebacks (Stichaeidae)



- elongate, flaccid
- spiny dorsal fin
- long anal fin
- usually blotches or mottled coloration

whitebarred prickleback

Motohito-St. George



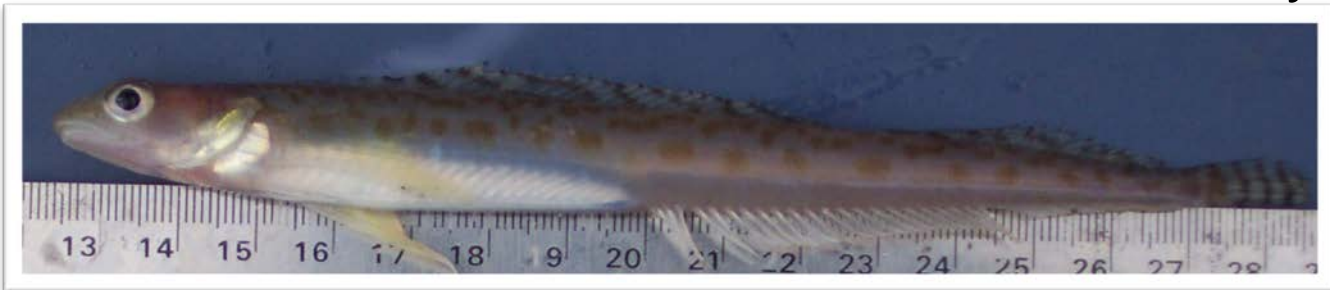
daubed shanny

Ian Jones

Pricklebacks (Stichaeidae)



slender eelblenny



daubed shanny



snake prickleback

Gunnel (Pholidae)



Crescent gunnel

- elongate, appears flimsy
- yellow-orange-brown
- crescent-shaped marks along upper sides
- nearshore, demersal

Prowfish (Zaproridae)

- short and stout
- dorsal and anal fins (usually) striped
- rounded snout
- may appear “flimsy”



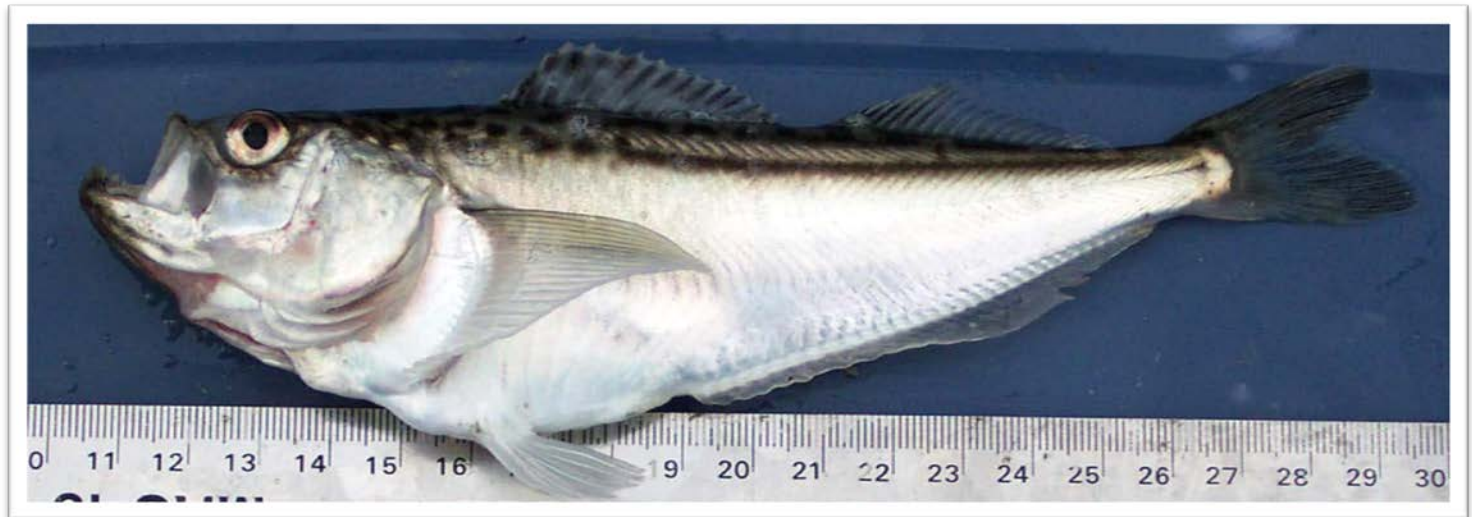
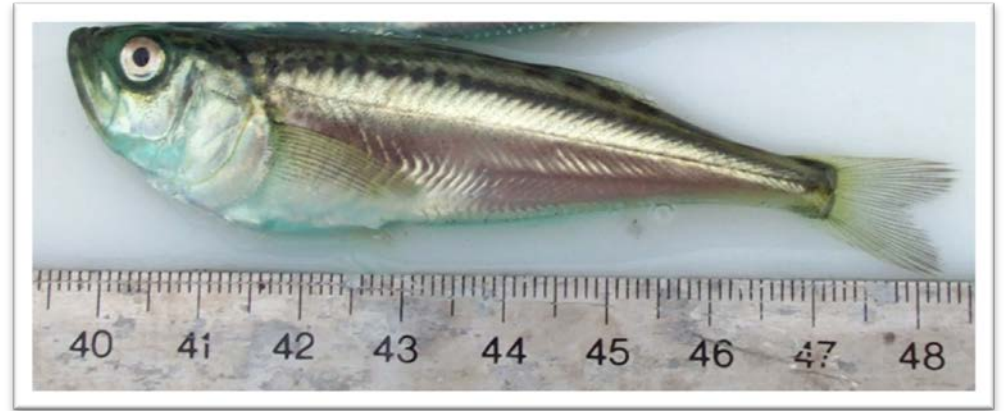
prowfish



Kitty Mecklenburg

Pacific sandfish

- superior mouth
- preopercular spines
- juveniles appear greenish
- widest at the nape



Pacific sandfish



Nathan Banfield



larval Pacific sandfish

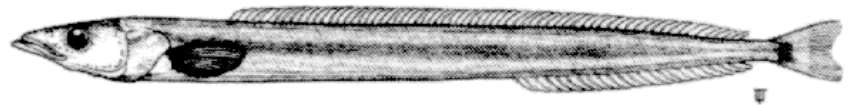
Abundant in beach seines
near Andreanof Islands,
Aleutians in June 2006
(Arimitsu and Piatt, 2008)

Pacific sand lance

- “needlefish”, tapers at both ends
- protruding lower jaw
- elongate, moderately flaccid



Martin Renner

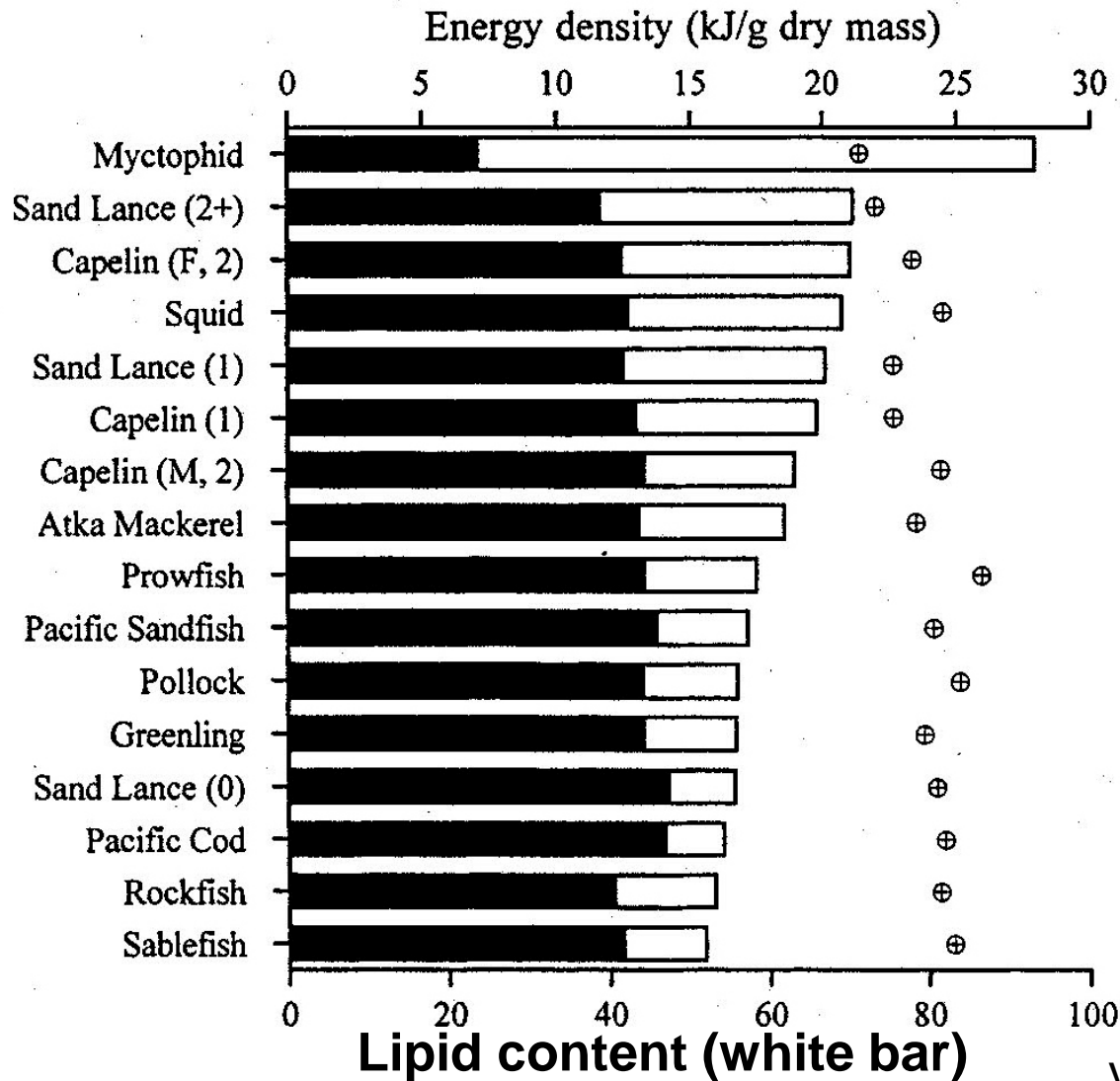


Flatfish (Pleuronectidae)



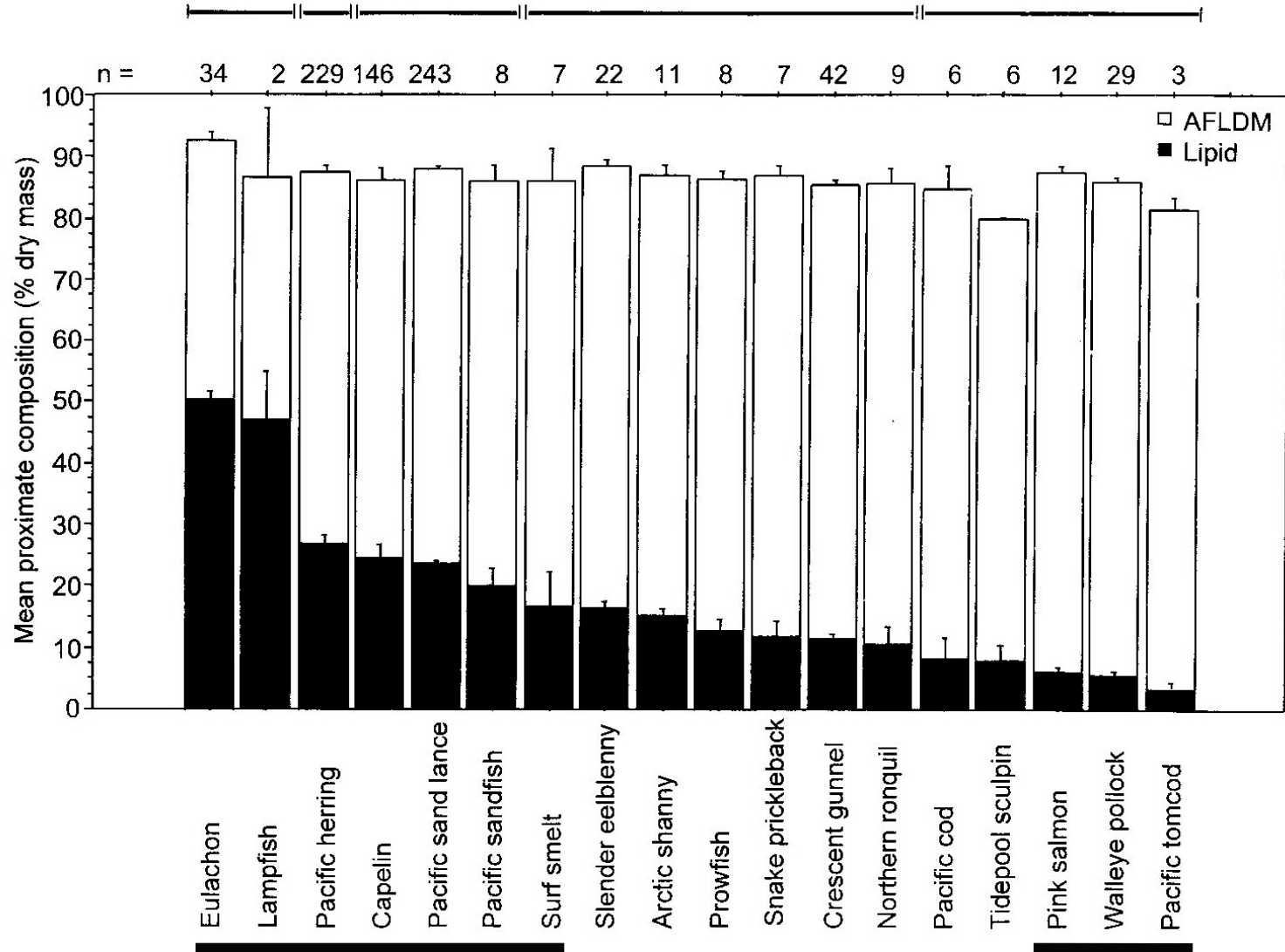
- substrate-colored eyed side
- light blind side
- rigid body, appear “cardboard-like”

Prey Quality



Van Pelt *et al.* 1997

Prey Quality



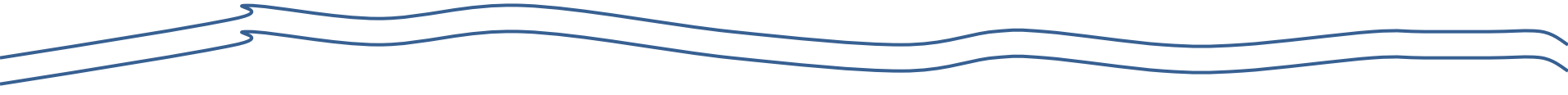
Lipid content (black bar)

Anthony *et al.* 2000

Identification Tips and Resources

- pelagic vs. demersal characteristics
- shape and rigidity
- life history of fishes

It's OK if you don't know!

- www.fishbase.org
 - http://www.absc.usgs.gov/research/seabird_foragefish/products/index.html
 - *Fishes of Alaska* Mecklenburg et al. 2002
 - *Alaska's Saltwater Fishes and Other Sea Life: A Field Guide* D. Kessler 1985
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Recommendations for Prey Studies

- Sample Design (effort, confidence, quantitative vs. qualitative)
- Estimation of fish size relative to bill length
- Observer training
- Photo/video



Acknowledgements

Photo credits:

Nathan Banfield
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Samples:

Andrew Eller
JJ Vollenweider
Bruce Wing, NOAA ABL

Erica Madison
Ann Harding
Rosana Pareda



Pacific spiny lumpsucker
Marc Romano