Nearshore Fish Resources

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Important Forage Fishes

Pacific herring (*Clupea pallasi*)

Whitebait smelt (*Allosmerus elongatus*)

Eulachon (*Thalichthys pacificus*)

Chinook salmon (*Oncorhynchus tshawytscha*)

Northern anchovy (*Engraulis mordax*)

Pacific sardine (*Sardinops sagax*)

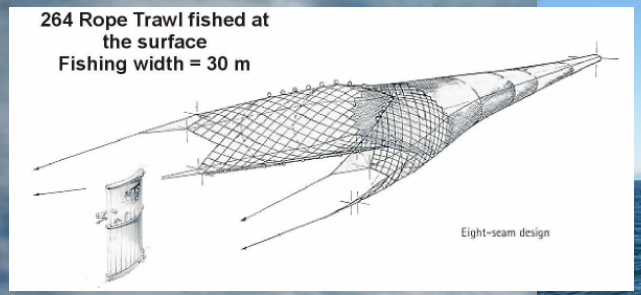
Predatory Fishes

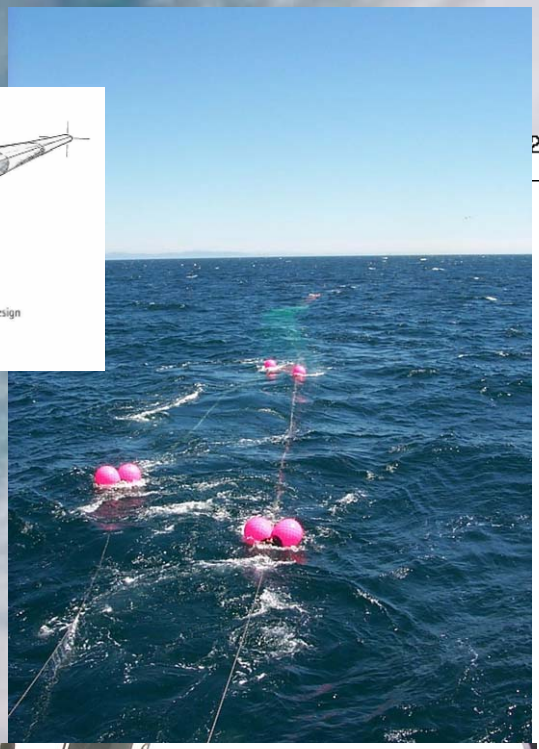
Jack mackerel (*Trachurus symmetricus*)

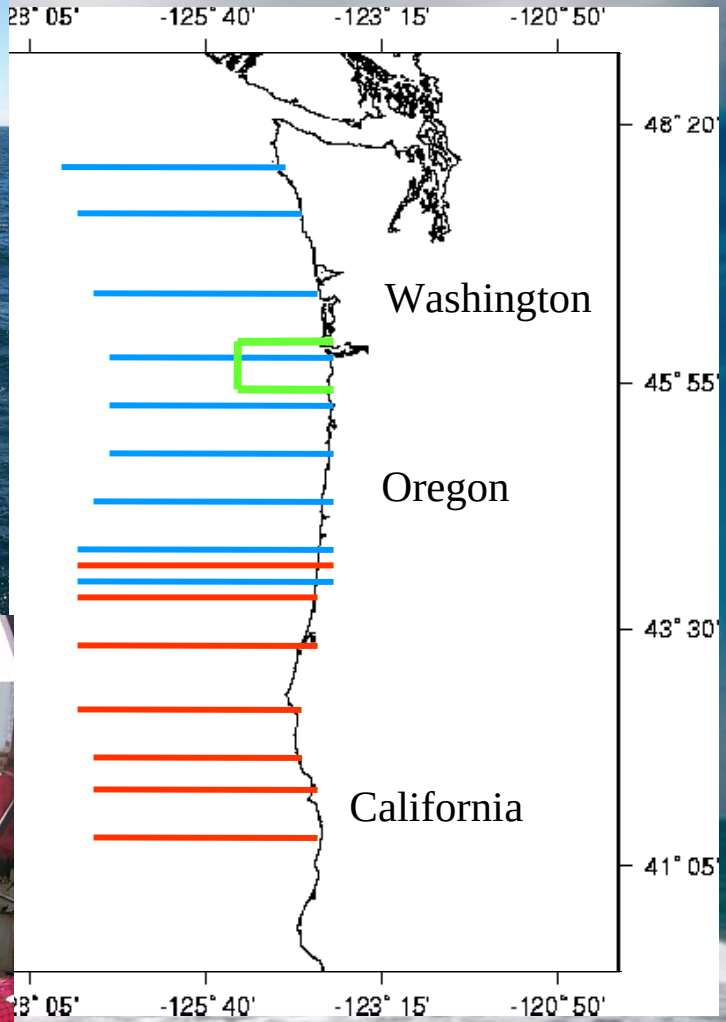
Pacific mackerel (*Scombrus japonicus*)

Pacific hake (*Merluccius productus*)

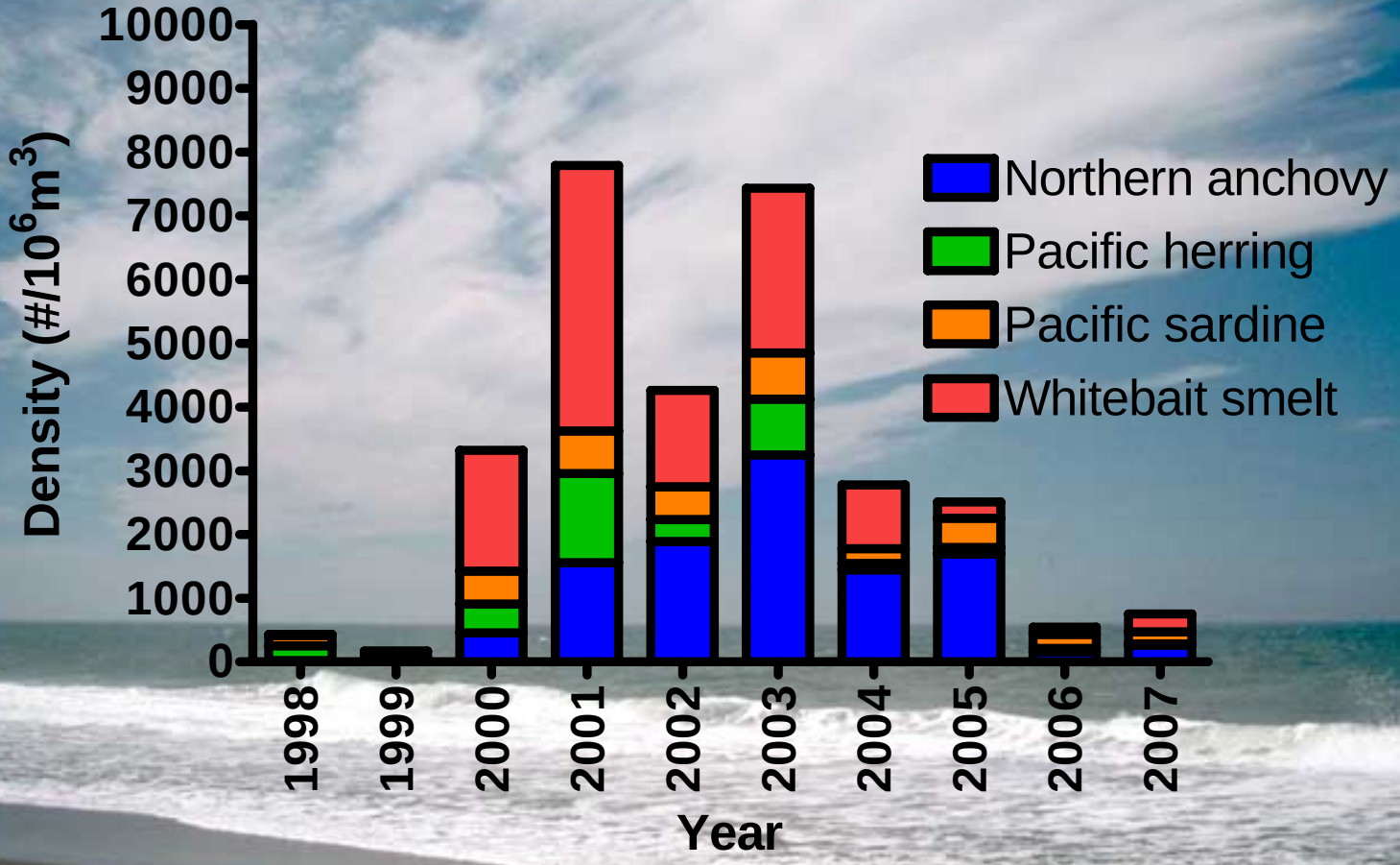
Spiny dogfish (*Squalus acanthias*)


264 Rope Trawl fished at
the surface
Fishing width = 30 m
Eight-seam design

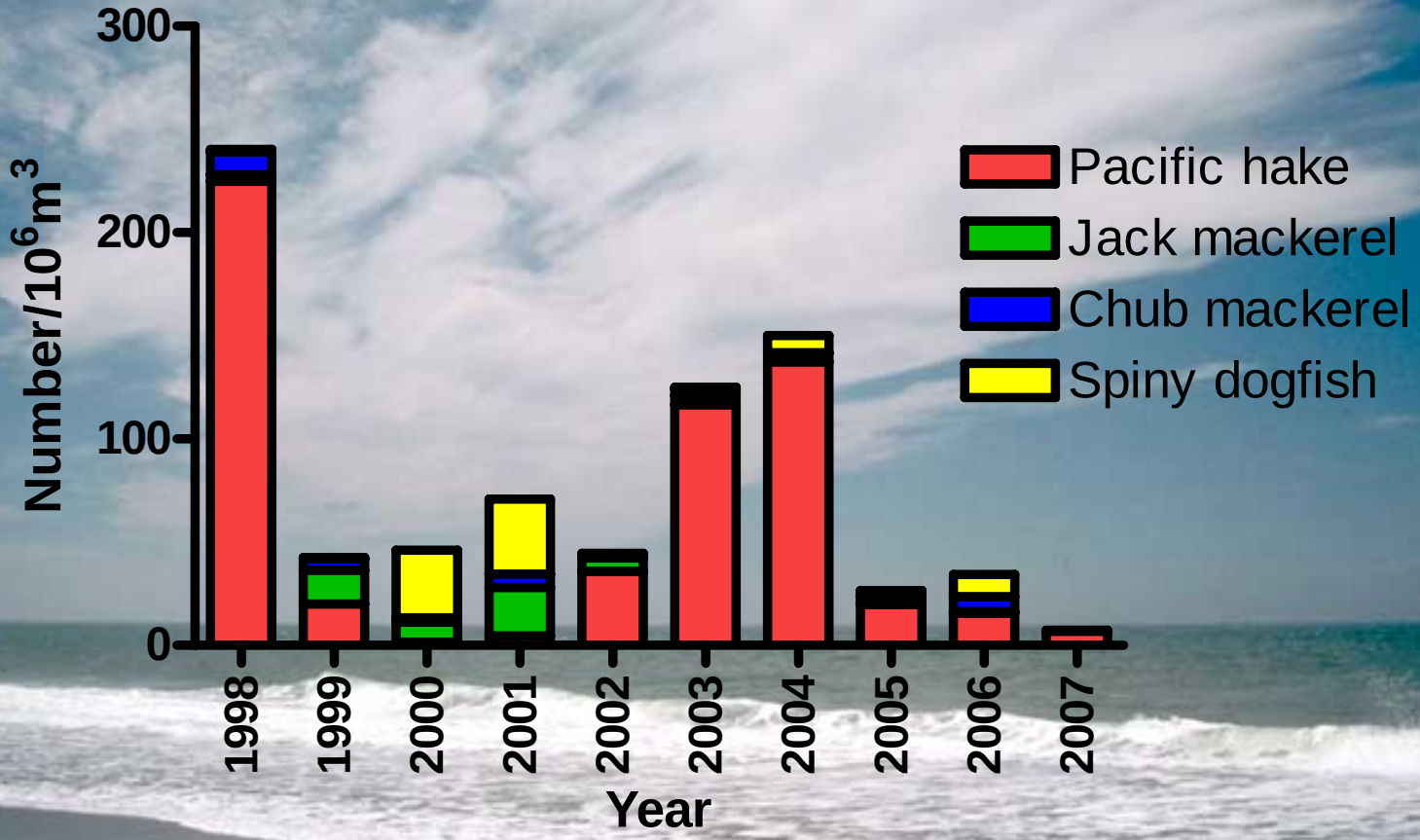



-125° 40'
-123° 15'
-120° 50'
48° 20'
45° 55'
43° 30'
41° 05'
Washington
Oregon
California

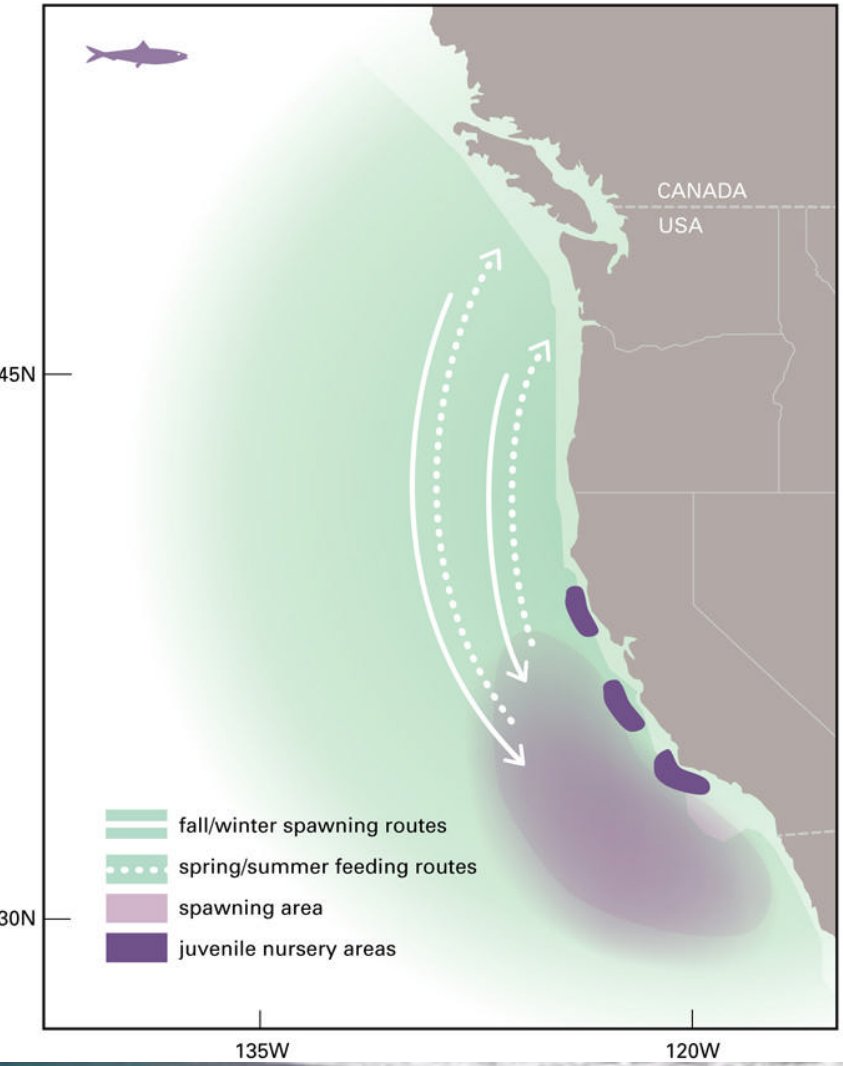
Forage Fish Densities off the Columbia River

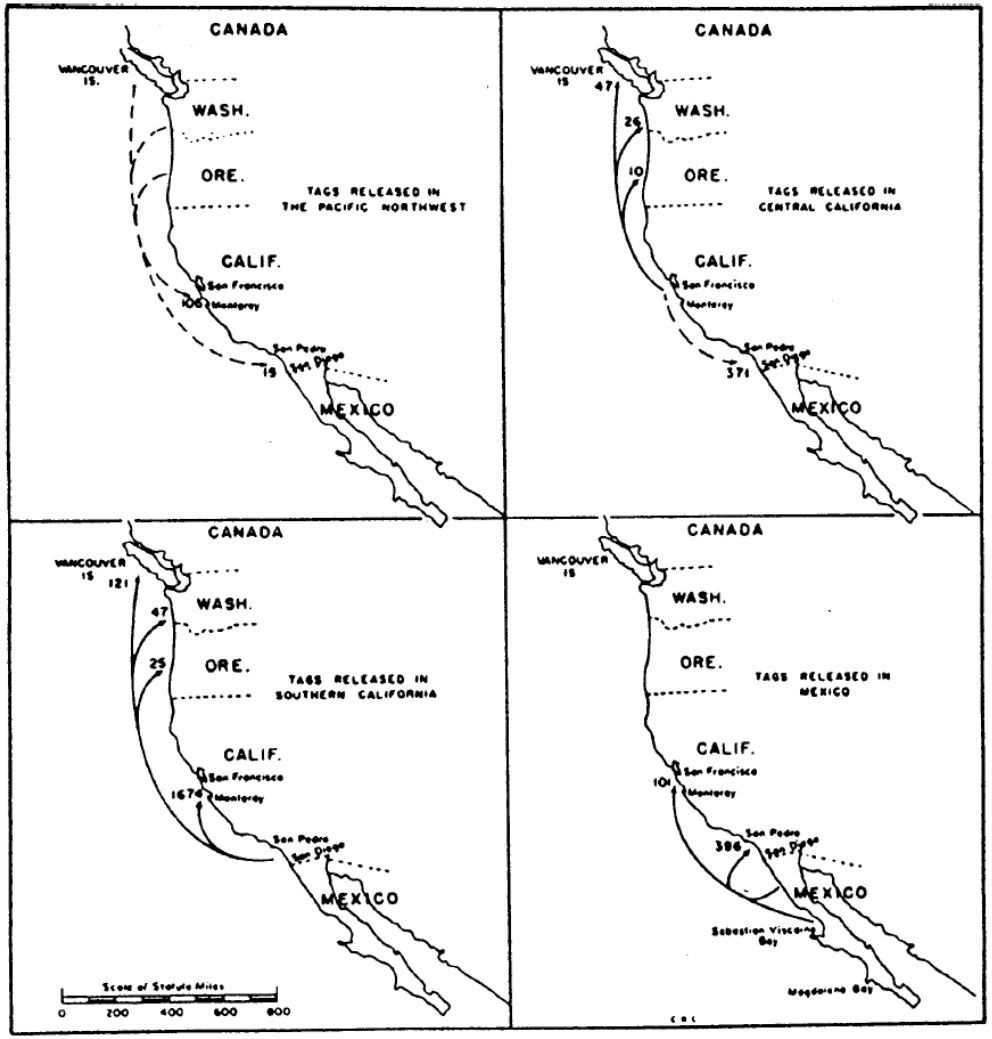


Predator Densities off the Columbia River

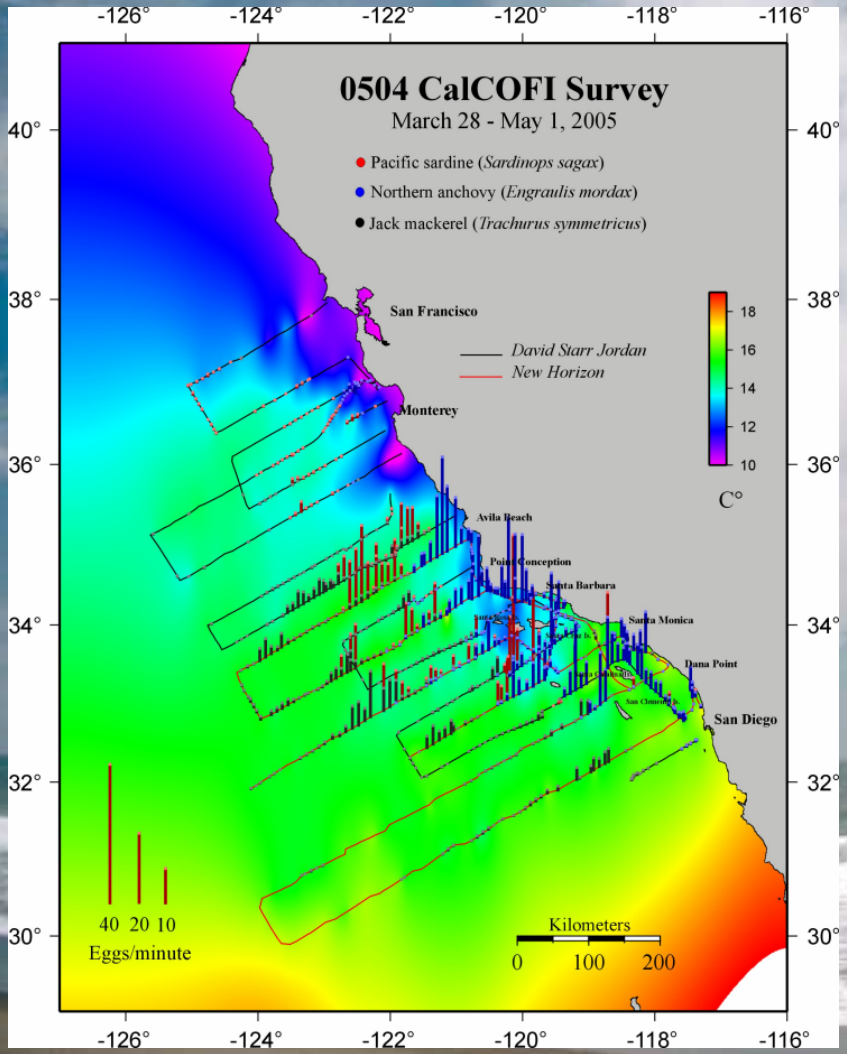


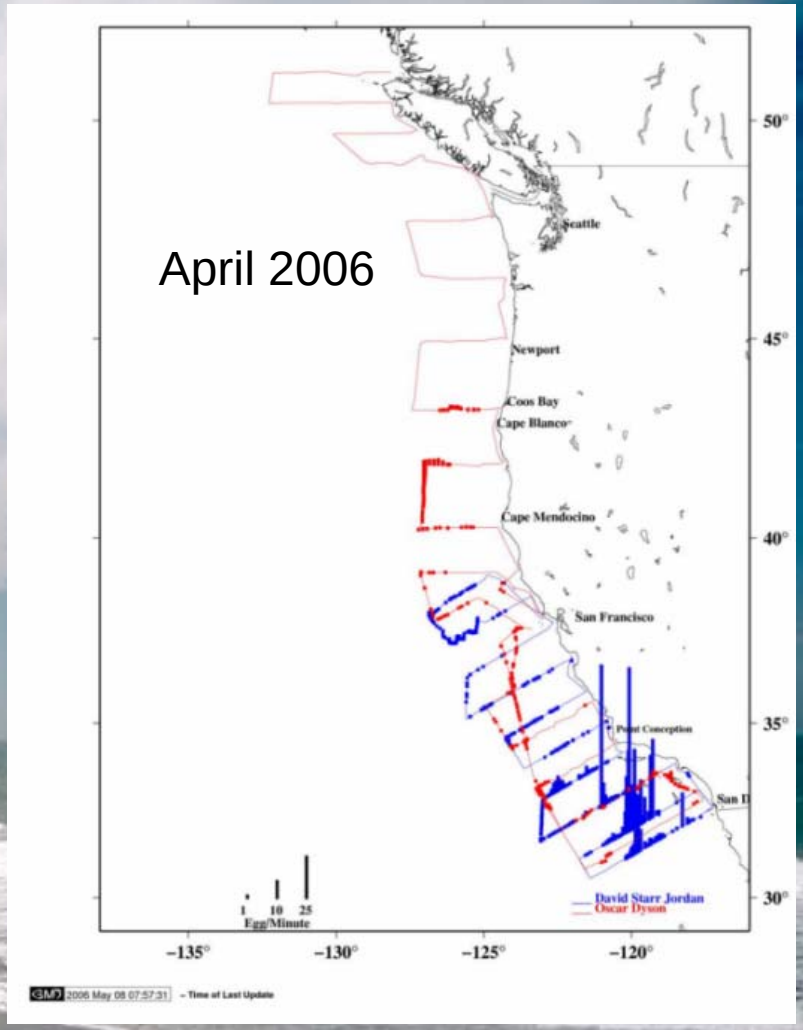
7/24/2000


CANADA
USA
45N
30N
135W
120W
fall/winter spawning routes
spring/summer feeding routes
spawning area
juvenile nursery areas

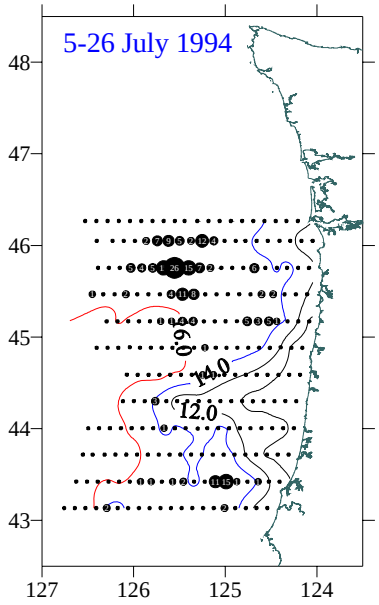

CANADA
VANCOUVER IS.
WASH.
ORE.
CALIF.
San Francisco
Monterey
San Pedro
San Diego
MEXICO
TAGS RELEASED IN THE PACIFIC NORTHWEST
TAGS RELEASED IN CENTRAL CALIFORNIA
TAGS RELEASED IN SOUTHERN CALIFORNIA
TAGS RELEASED IN MEXICO
Scale of Statute Miles
0 200 400 600 800

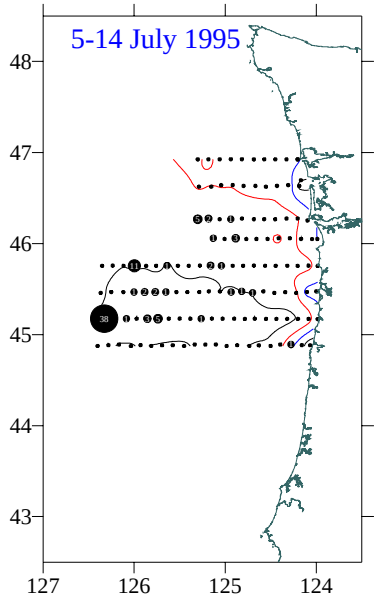
Sardine spawning surveys

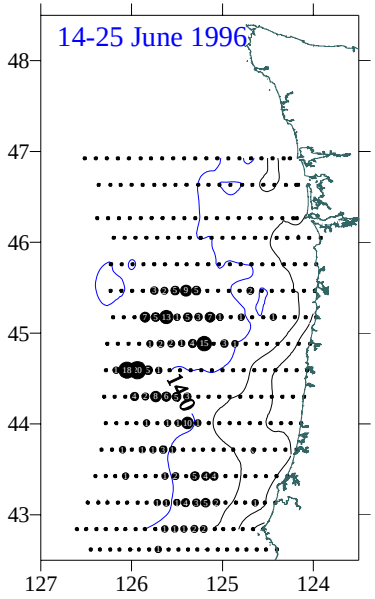


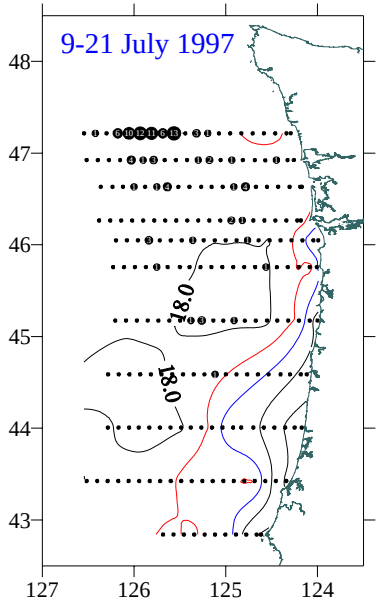


Pacific sardine (*Sardinops sagax*)





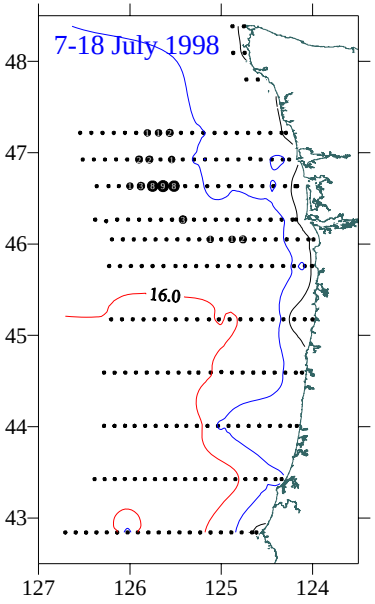


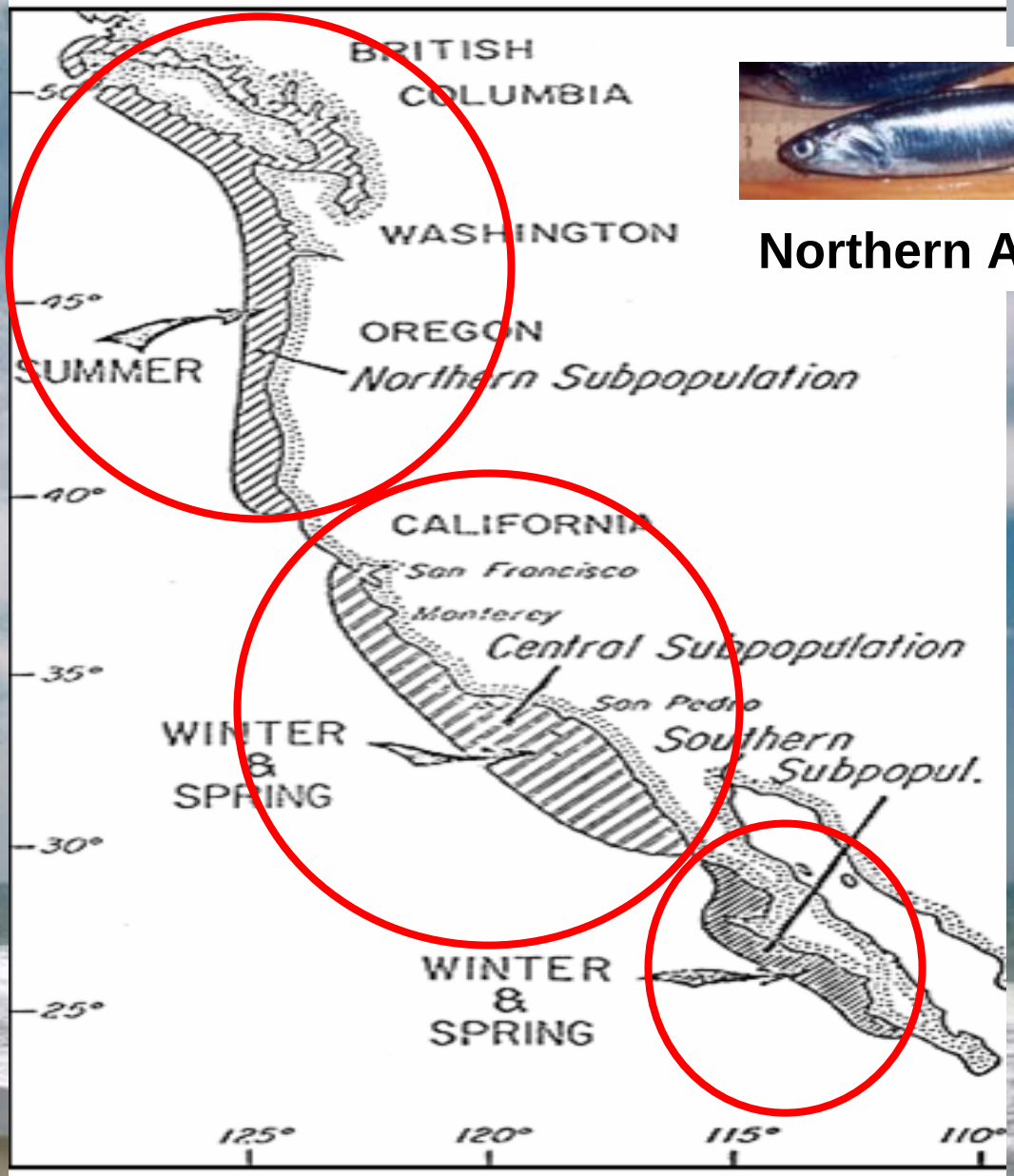


NMFS Ichthyoplankton Sampling 1994-1998

Sardine Larvae per 0.05m^2

Temperature at 3 m

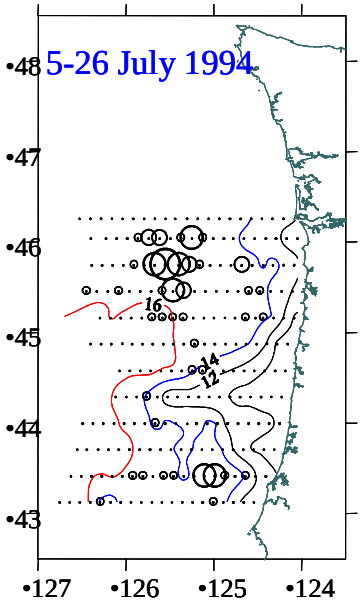


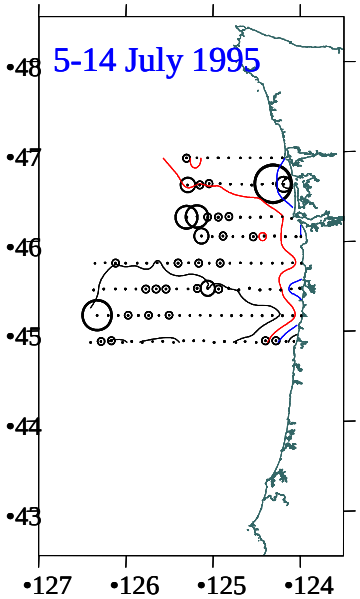


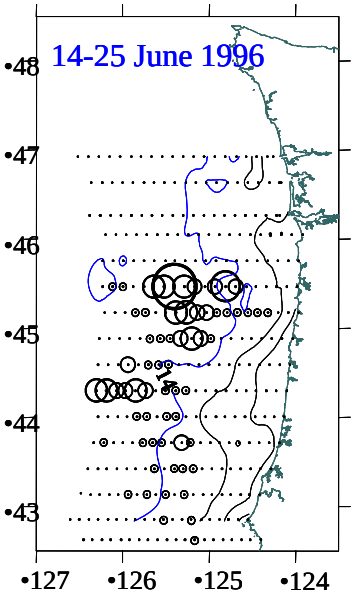
Northern Anchovy

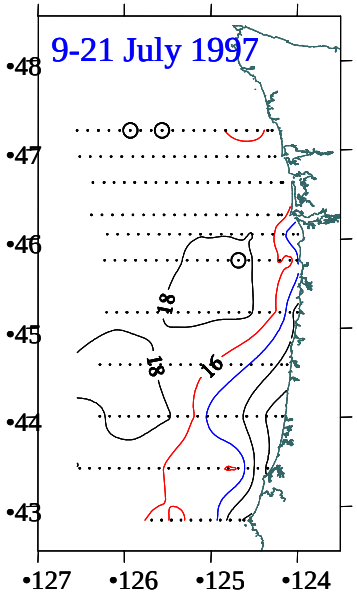
From Pacific Fishery Management Council (1978)

Northern anchovy (*Engraulis mordax*) spawning







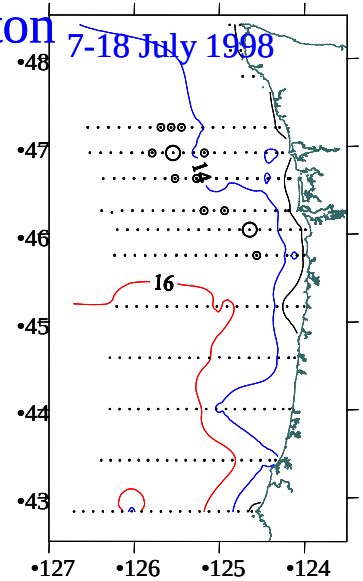


NMFS Ichthyoplankton Sampling 1994-1998

Temperature at 3 m

No. of eggs/0.05 m^2

- 1 to 5
- 6 to 10
- 11 to 20
- 21 to 30
- 31 to 40
- 41 to 50



Jack mackerel
(*Trachurus symetricus*)

Pacific hake
(*Merluccius productus*)

Final Thoughts

- Nearshore areas – Biological Hot Spots
- Important for salmon – fall chinook
- Important for juvenile fishes and crabs
  - Anchovy, smelt, Pacific sand lance, sardine, etc.
  - English sole, sand sole, starry flounder, etc.
  - Surf Perch (many species)
- Predatory fishes move in when conditions are appropriate.
- Still lots of unknowns because it is hard to sample.

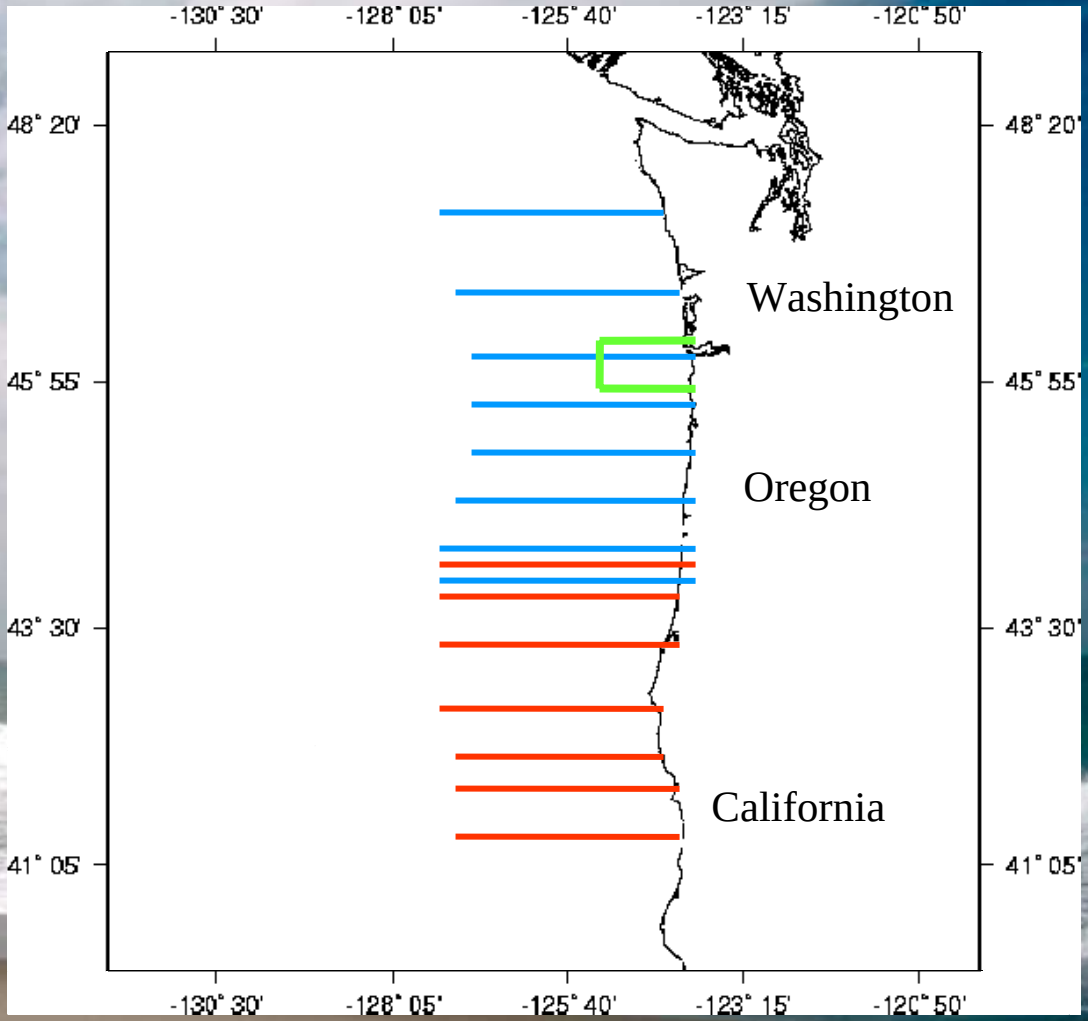
Thanks

Ongoing NMFS pelagic ecosystem studies

Spatial Coverage of Sampling

NMFS Salmon Surveys

- BPA Columbia River Plume Study
- GLOBEC
- BPA Predator Surveys



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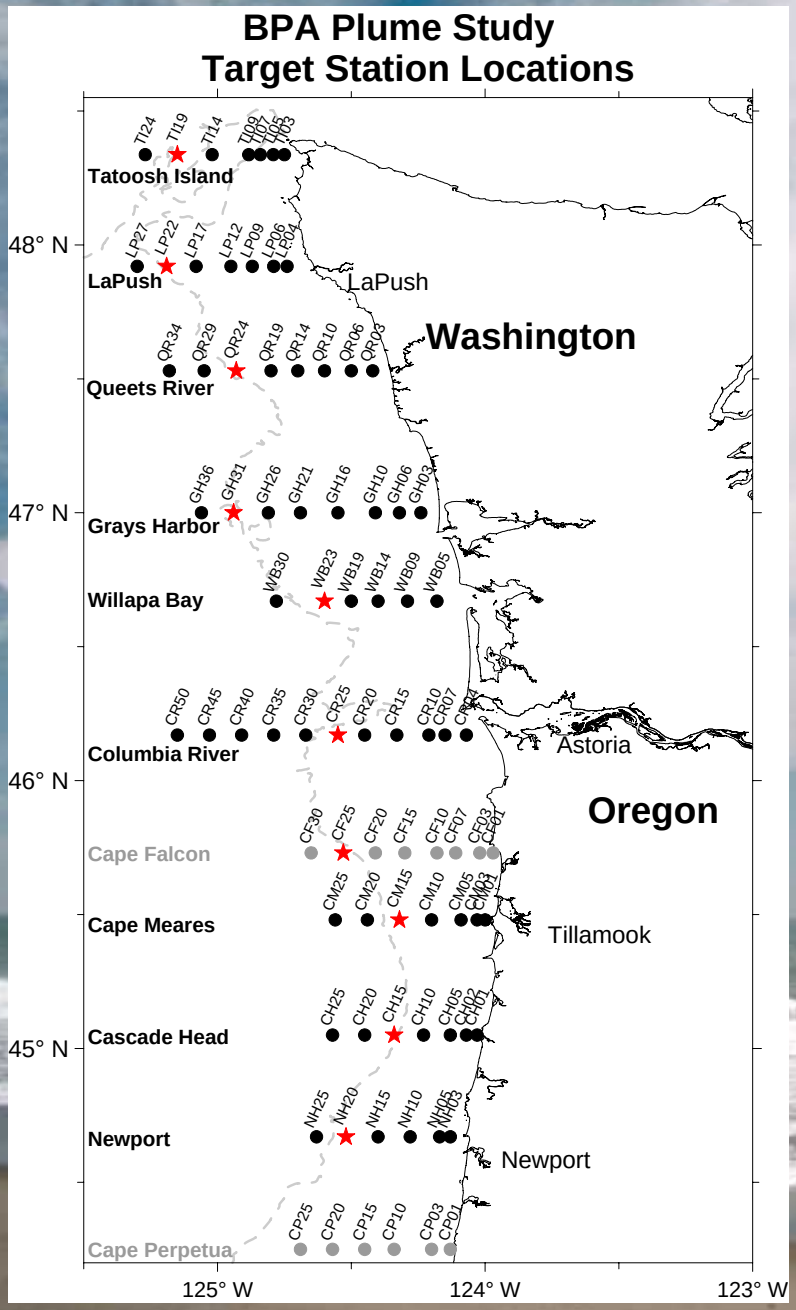
BPA Plume Study
Target Station Locations
Tatoosh Island
LaPush
Queets River
Grays Harbor
Willapa Bay
Columbia River
Cape Falcon
Cape Meares
Cascade Head
Newport
Cape Perpetua
LaPush
Washington
Astoria
Oregon
Tillamook
Newport
48° N
47° N
46° N
45° N
125° W
124° W
123° W