

Aerial Survey Observations of Northern Anchovy in the Southern California Bight



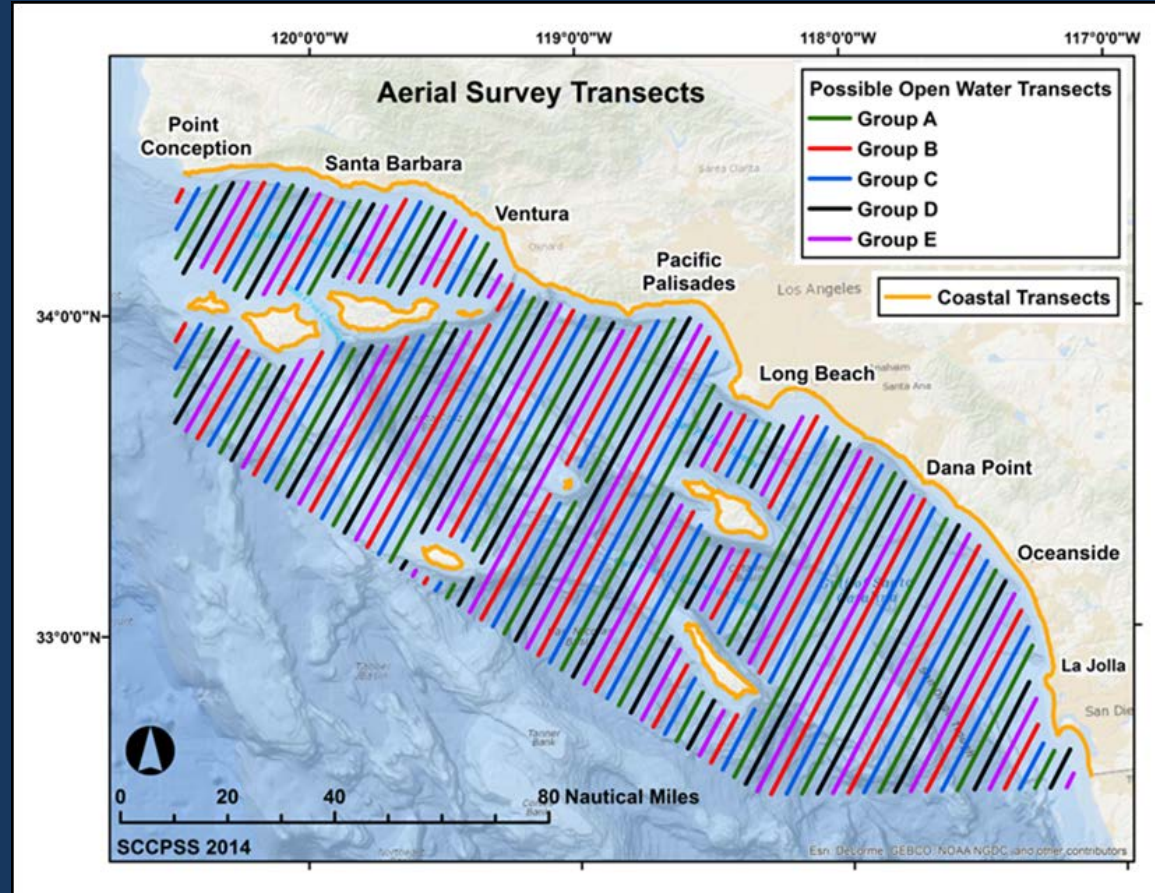
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California Wetfish Producers Association



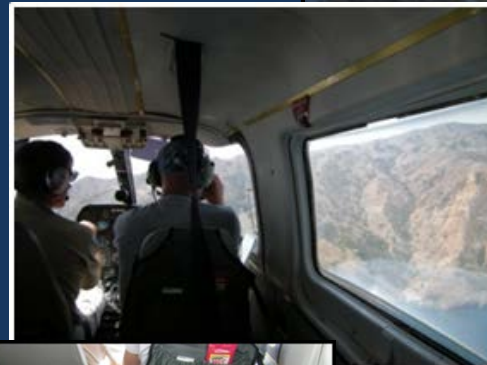
Background

- Began in Summer 2012 as sardine survey
- Added anchovy and mackerel in summer 2013
- Point Conception to U.S.-Mexico border:
 1. Coastal areas
 - mainland
 - islands
 2. Open water areas
 - 16 transects
 - 5 transect groups

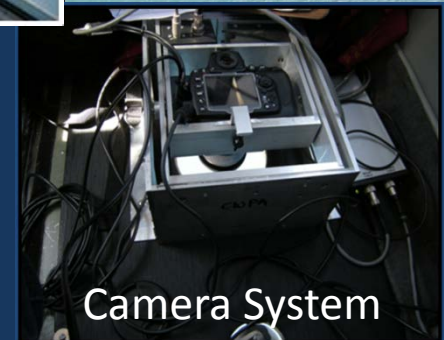


Aerial Transects

- Aerial transects flown based on weather and study design
- FMC camera system
 - Records time, location, altitude
- Altitude
 - Coastal areas – 1,000 ft
 - Open Water – 2,000 ft
 - All – 1,500 ft (Sum 2014)
- Possible sightings investigated
 - Confirm school species, composition
 - Tonnage estimated
- Overhead passes to take photos
- Resume transect



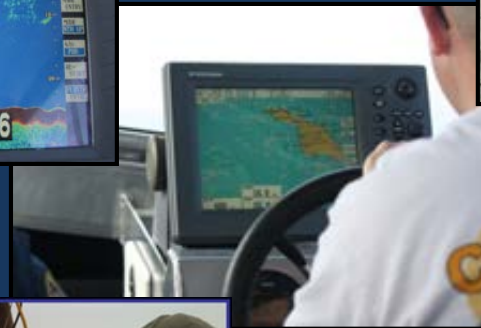
Camera Software



Camera System

Boat Surveys

- Directed by plane observer
- Goals
 - Confirm aerial fish ID
 - Collect samples
- Environmental Conditions
 - SST
 - Temp at Depth
 - Clarity
 - Salinity
- SONAR
 - School density, depth
- Biological Samples
 - Size
 - Maturity



Tow Camera



Boat Surveys

Summer 2012 (July 30 – Sept 27)

- Catalina Harbor, Eagle Rock, Goat Harbor
- Toyon Bay, Seal Beach break wall

Spring 2013 (April 22 – May 21)

- Long Point, Seal Beach break wall
- Rock Quarry, Shipyard

Summer 2013 (Aug 1 – Oct 18)

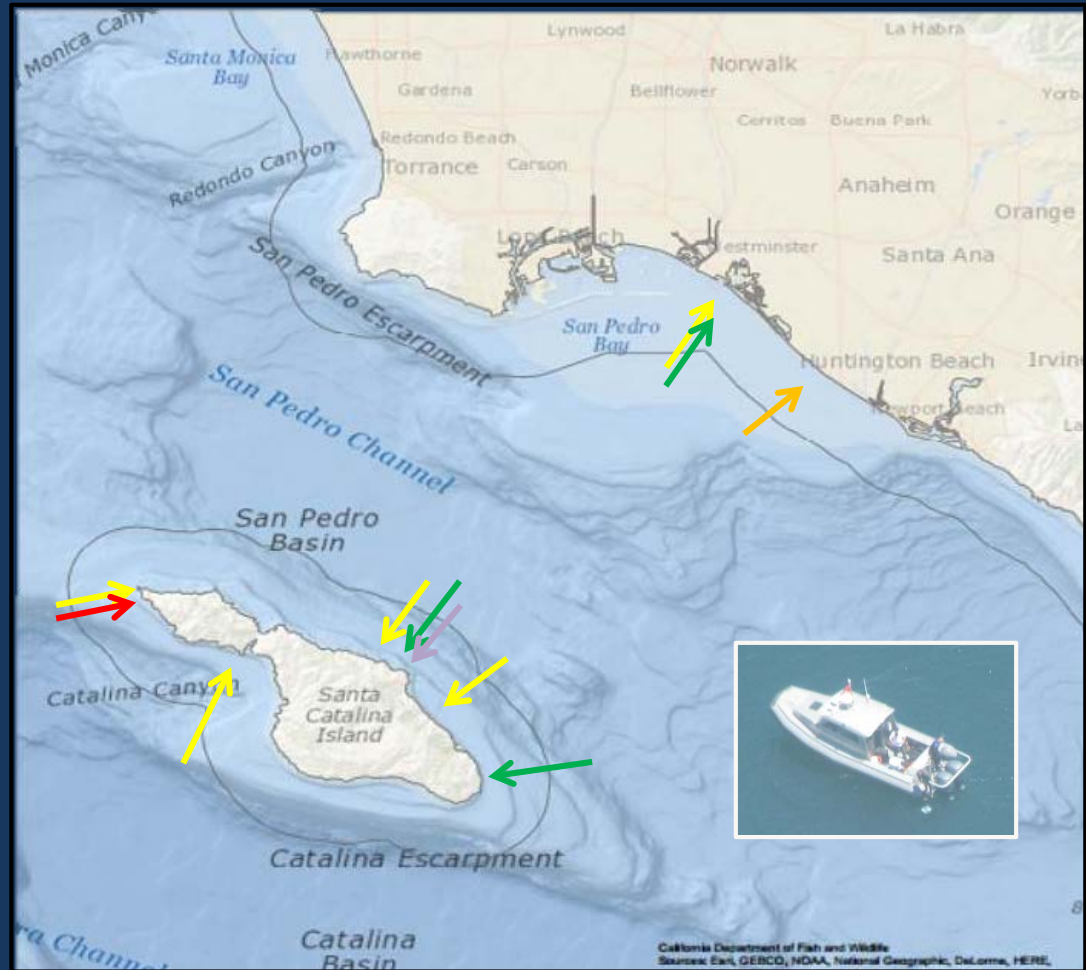
- Eagle Rock

Spring 2014 (May 28 – June 11)

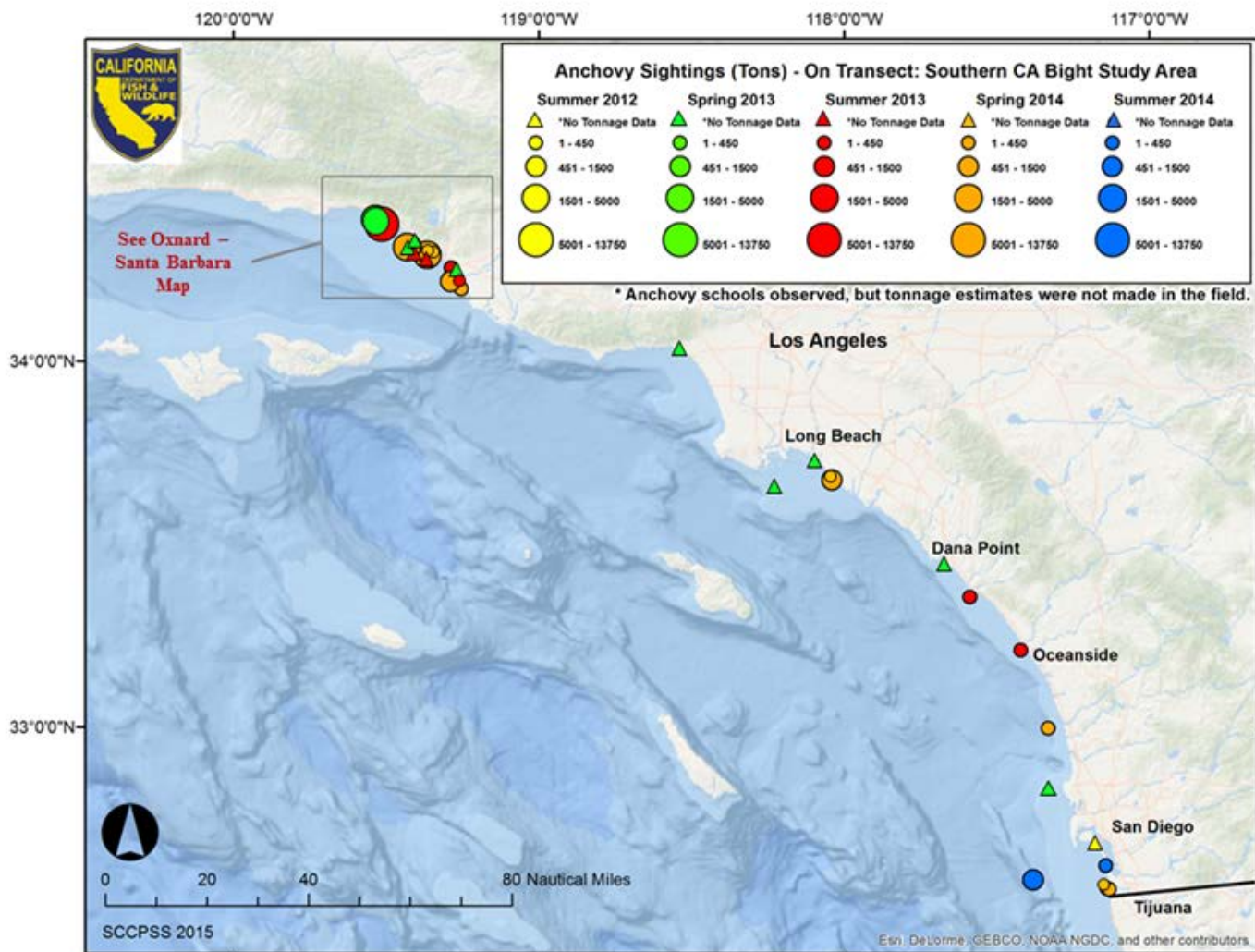
- Huntington Beach pier

Summer 2014 (Aug 8 – Oct 2)

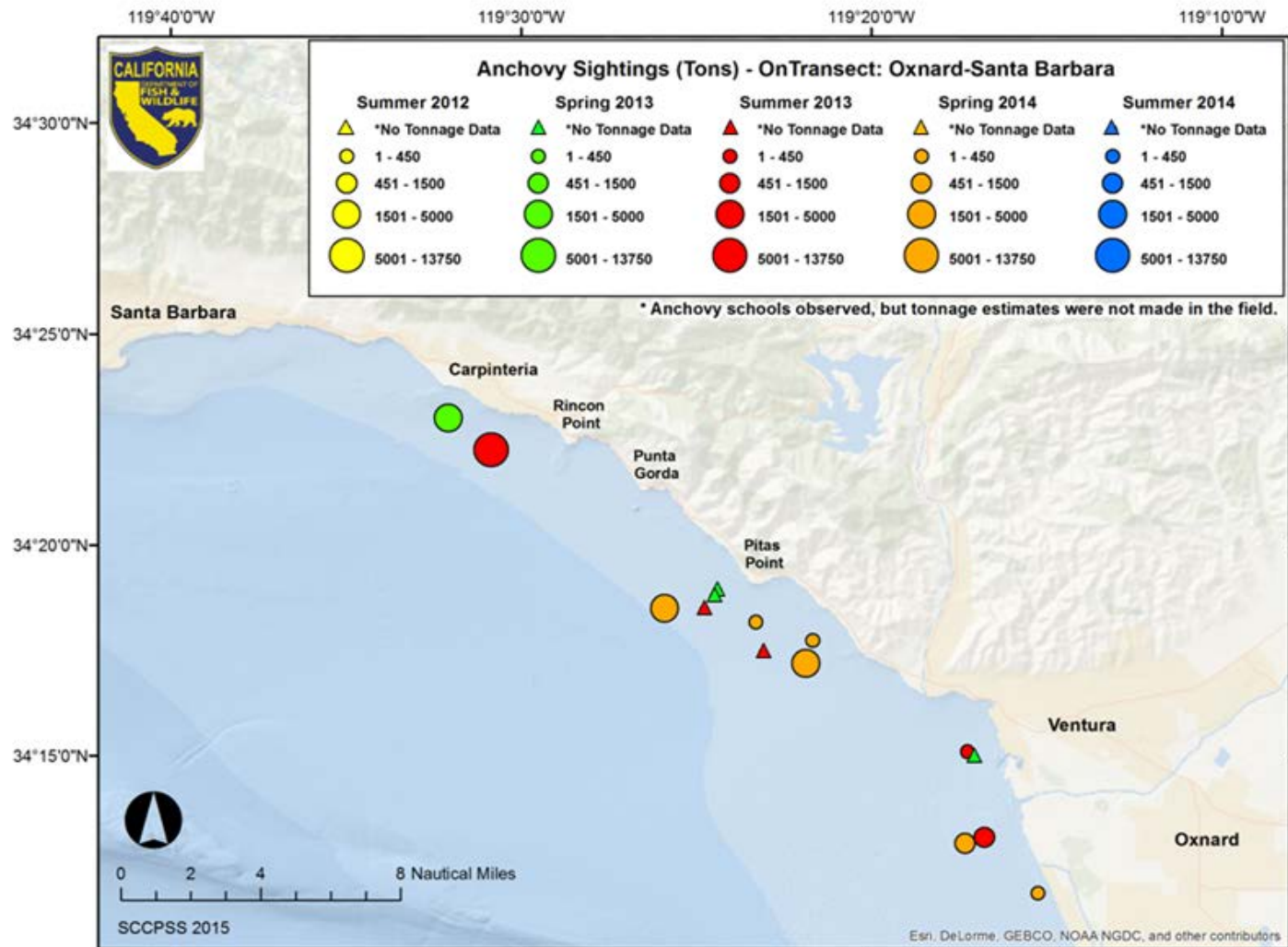
- Long Point



Results - Anchovy



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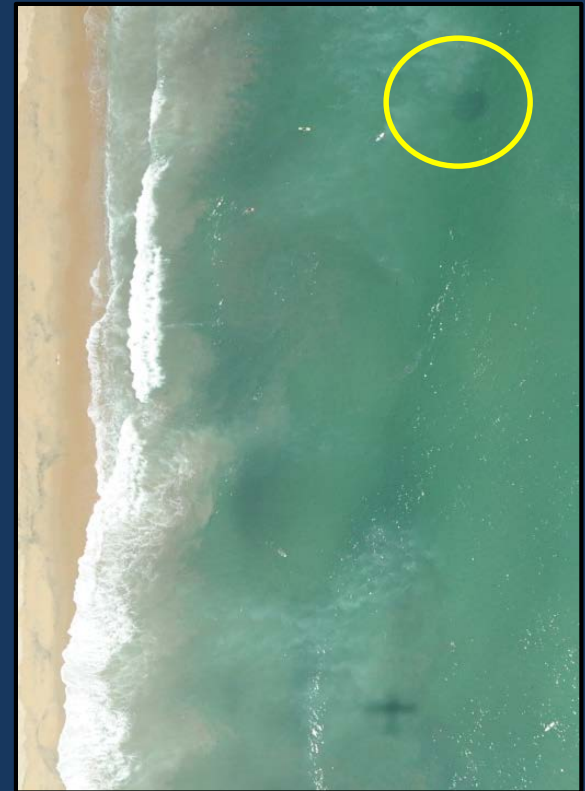
Results - Anchovy

Season	Total Estimate (mt)	Num. Sightings (Total)	Num. Sightings w/Estimates	Avg mt/sighting	Species composition of sightings	
					Pure	Mixed
Summer 2012 (Jul-Aug)	0	1	0	N/A	1	-
Spring 2013 (Apr-May)	5,000	9	1	5,000	7	2
Summer 2013 (Aug-Oct)	14,532	7	5	2,906	4	3
Spring 2014 (May-Jun)	6,810	11	11	619	10	1
Summer 2014 (Aug)	980	2	2	490	2	-
TOTAL	27,322	30	20	911	24	6

Anchovy Photographs



Off Ventura - August 2013



Huntington Beach - May 2014

Next Steps

- Spring 2015 field season
 - Delayed due to repairs
 - Diverted to bluefin tuna offshore
- Previous anchovy assessments
 - NMFS-contracted spotter pilot logbook survey
- Methodology Review
 - Proposed review November 2013 PFMC
 - SWFSC review April 2014

Summary

- Survey began Summer 2012
- Collaboration between CDFW, CWPA
- Surveyed sardine, adding anchovy and mackerel in Summer 2013
- Aerial field observations note species composition and generate tonnage estimates
- Confirmed sightings documented with photos
- Boat surveys sample fish observed from air to confirm ID and obtain biological information
- Northern anchovy in coastal mainland areas, with heavy concentrations off Santa Barbara-Ventura
- Survey data can be used to inform stock assessments and management of anchovy and other CPS

Thank You

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