

CALIFORNIA COASTAL PELAGIC SPECIES AERIAL SURVEY
SPRING 2021 PRELIMINARY RESULTS

In spring 2021, the California Coastal Pelagic Species Survey (CCPSS) was flown in the Southern California Bight (“Southern California”) from south of Point Conception to San Diego (Figure 1). The CCPSS surveyed areas inshore of National Oceanic and Atmospheric Administration (NOAA) Acoustic Trawl survey track lines, covering shallower waters that are not sampled by NOAA research vessels. Survey flights were coordinated to coincide as closely as possible with acoustic surveys conducted in offshore and nearshore areas by NOAA ship *Reuben Lasker* and Fishing Vessel *Long Beach Carnage*, respectively. This report documents preliminary results for CCPSS. For details on survey design and methods, please refer to the California Department of Fish and Wildlife Supplemental Report 1 under Agenda Item E.4.

Ten of 11 Southern California strata (all strata between S1-S6, except S3E in Santa Monica Bay) were surveyed between March 22 and April 2 (Figure 1). Airspace restrictions surrounding Los Angeles International Airport greatly limit activity within stratum S3E, and so S3E was not surveyed. The study area is separated into primary survey strata and expansion strata. Expansion strata are predesignated areas (labeled with an E), where mean density of flown surveyed areas can be applied to calculate biomass if they are not flown. In this survey, all survey and expansion strata except S3E were flown and biomass was estimated using direct observation data from the other ten strata.

Total sardine and anchovy biomass were estimated at 13,467 metric tons (mt) and 7,369 mt, respectively. Based on historical average monthly sea surface temperature data and the sardine habitat model, sardine observed from this survey are likely from the northern subpopulation.

The 2021 results are in line with previous CCPSS surveys showing higher biomass of sardine compared to anchovy in Southern California. Sardine were observed in all surveyed areas, with heaviest concentrations off Santa Barbara and along the coast from Long Beach to San Diego (Figure 2). Anchovy were primarily observed between Santa Barbara and Ventura, with smaller biomass concentrations near Malibu and San Diego (Figure 3).

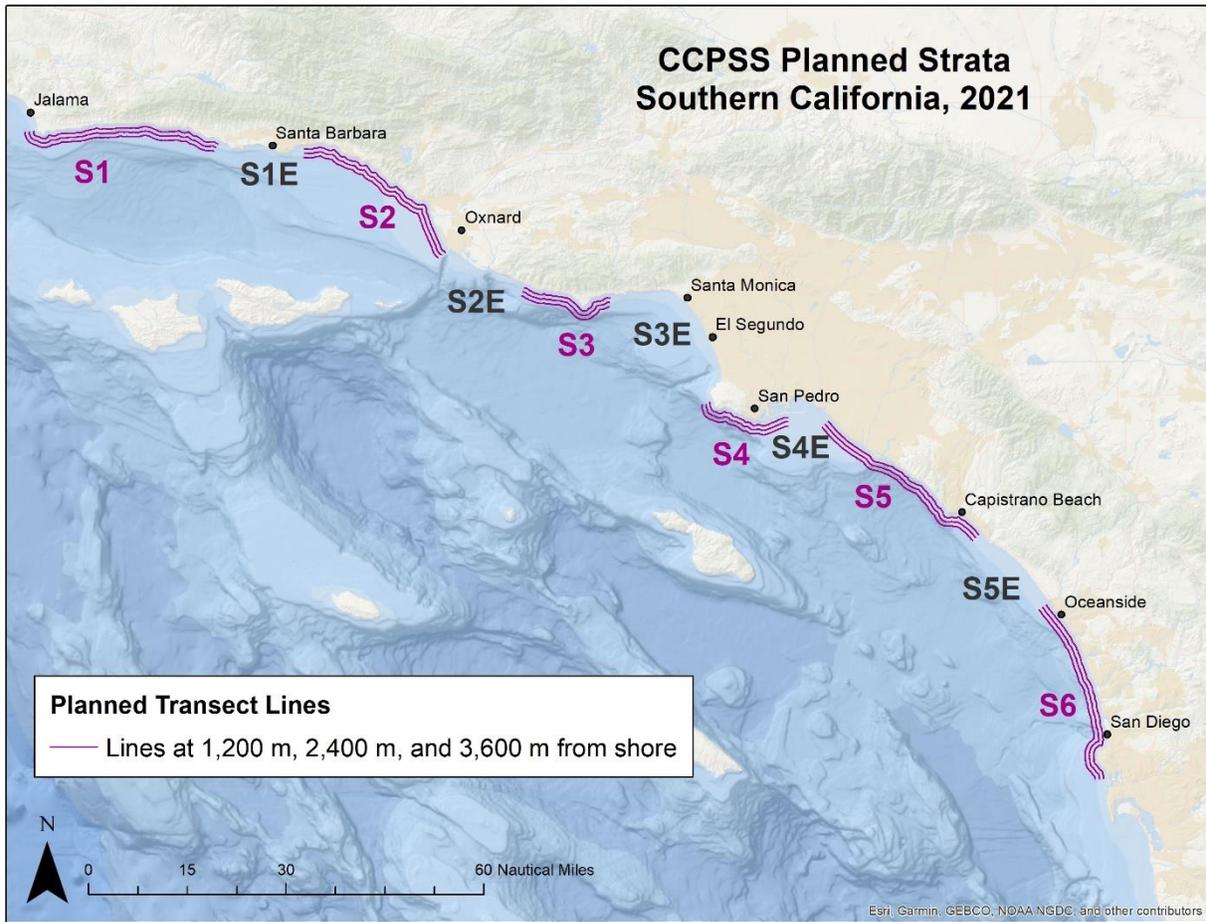


Figure 1. CCPSS strata for Southern California. Survey strata are in purple, strata for expansion of data are in black and denoted with “E”. Note strata S3 and S4 are smaller to circumvent airspace restrictions. In spring 2021, all Southern California survey and expansion strata were surveyed except S3E.



Figure 2. Pacific sardine observations over all replicates from spring 2021 for Southern California. Note: these observations are considered to be that of northern subpopulation sardine.

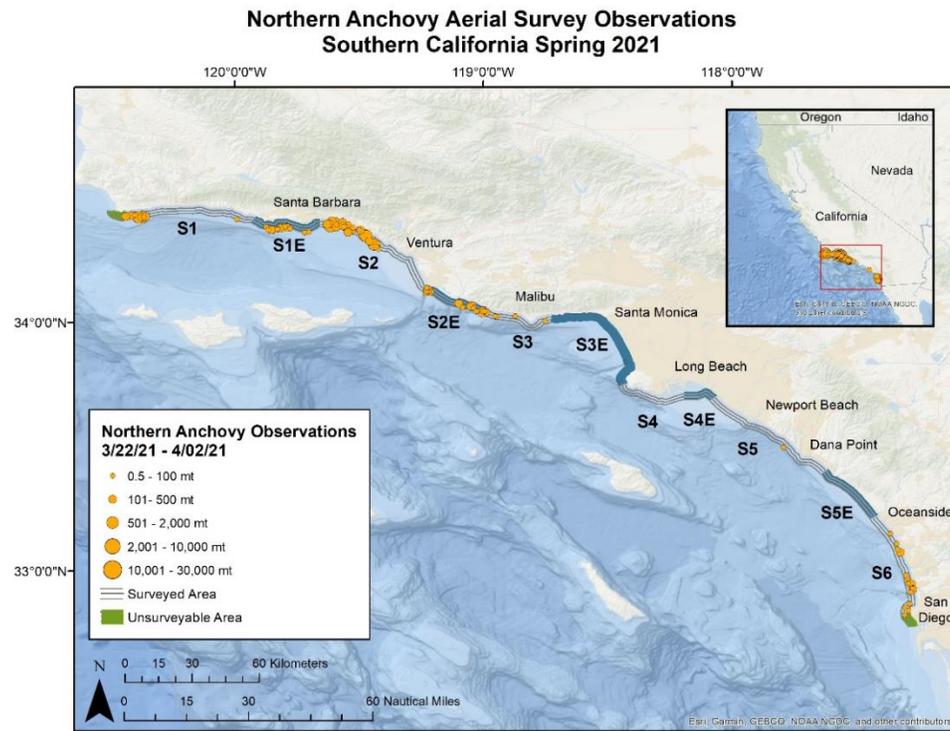


Figure 3. Northern anchovy observations over all replicates from spring 2021 for Southern California.