United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
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IN REPLY REFER TO:
08EVEN00-2015-B-0160

May 14, 2015

Dorothy Lowman, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, #101
Portland, Oregon 97220

Subject: Pacific Fishery Management Council Agenda Item G.3 – Anchovy Update

Dear Ms. Lowman and Council Members:

We, the U.S. Fish and Wildlife Service (USFWS), commend the Council's commitment to ecosystem-based management. The purpose of this letter is to share information regarding recent California brown pelican (*Pelecanus occidentalis californicus*) mortality events and breeding failures. We request that the Council consider this information and evaluate whether additional assessment and management measures are needed to ensure that an adequate forage reserve of northern anchovy (*Engraulis mordax*) is maintained over the long term for California brown pelicans and other marine predators in the California Current Ecosystem (CCE).

The California brown pelican ranges as far north as British Columbia but breeds from the California Channel Islands south to Guerrero, Mexico (Anderson et al. 2013). Nesting occurs on islands in four main locations: in the Southern California Bight (SCB), off southwest Baja California, in the Gulf of California, and off mainland Mexico along the Pacific coastline (USFWS 2007). Approximately 17 percent of the population nests in the SCB at five colonies: Anacapa Island, Santa Barbara Island, Coronado Islands, Islas Todos Santos, and Isla San Martin (Anderson et al. 2013). The largest of the SCB breeding colonies is at Anacapa Island.

California brown pelicans in the CCE prey on northern anchovies and other small schooling fishes, such as Pacific sardines (*Sardinops sagax*) and Pacific mackerel (*Scomber japonicus*) (USFWS 1983, Gress et al. 1990). During the pre-breeding and breeding periods, brown pelicans in the SCB are heavily dependent on the availability of anchovies (Anderson et al. 1980, Gress 1980, Harvey 2008). Northern anchovy availability within foraging distance of colonies is the most important factor influencing pelican breeding success within the SCB (Anderson et al. 1982). Waters within 30-50 kilometers of the colony are critically important for foraging, especially when young are being fed (USFWS 1983).

The brown pelican is protected by the Migratory Bird Treaty Act of 1918 and was federally listed as endangered in 1970 (35 Federal Register (FR) 84960, June 2, 1970). In 2009, the USFWS removed the California brown pelican and all remaining listed brown pelican subspecies

from the Federal List of Endangered and Threatened Wildlife due to recovery (74 FR 59444, November 17, 2009). As part of our decision to delist the California brown pelican, we determined that criterion 2 of the California Brown Pelican Recovery Plan, "assuring long-term protection of adequate food supplies and essential nesting, roosting, and offshore habitat throughout the subspecies' range," had been met (74 FR 59444, November 17, 2009). We noted that "food supplies are assured by the Coastal Pelagic Species Fishery Management Plan" (74 FR 59444, November 17, 2009). Although most essential nesting and roosting habitat throughout the subspecies' range is protected, the California brown pelican has experienced unusual mortality events and a multi-year decline in breeding success since delisting, both of which appear to be due to the lack of adequate forage.

Adult brown pelican mortality events along the California and Oregon coasts were documented from December 2008 to March 2009 and January to February 2010, with emaciation or starvation identified as the primary cause of death in both events (Nevins et al. 2011). In recent years, brown pelicans have been observed preying on common murre (*Uria aalge*) chicks or violently shaking them to force regurgitation. These events occurred on the Farallon Islands and at Point Reyes, California (McChesney 2013) and in Yaquina Head Outstanding Natural Area in Oregon (Horton and Suryan 2012). A murre chick was also found in the stomach of a starved pelican in Crescent City, California (Jaques 2014). While these behaviors have been documented in other pelican species in response to limited prey availability, they have been largely absent along the west coast until recently. Increased scavenging by brown pelicans in harbors and plumage contamination with fish oils have also occurred in association with anomalously low coastal pelagic prey indices (Jaques 2014).

California brown pelicans have also experienced a series of years of poor breeding success at Anacapa Island. This general decline began in 2009 and continued in subsequent years (A.L. Harvey pers. comm.). Nearly complete colony failure occurred in 2012, when only five chicks are known to have fledged (Harvey et al. 2013). No brown pelican data were collected on Anacapa Island in 2013. In 2014, very low reproductive success was observed throughout much of the California brown pelican's breeding range (Anderson and Gress 2014, Harvey and Mazurkiewicz 2015). At Anacapa Island, early-season nest abandonment was very high in 2014, with an estimated 65 percent of nests abandoned, resulting in an estimated colony productivity rate of 0.16 to 0.33 young fledged per nest attempt (Harvey and Mazurkiewicz 2015). This productivity rate is, at best, approximately half the mean productivity rate at Anacapa Island (0.63 young fledged per nesting attempt in 1985-2005) (USFWS 2007). Productivity estimates for the 2015 breeding season are not yet available.

Brown pelicans have evolved a "boom or bust" reproductive strategy to compensate for stochastic environmental fluctuations, such as El Niño-Southern Oscillation (ENSO) events, which have been associated with reduced reproductive success and significant mortality of brown pelican chicks (Hayward 2000). However, impacts from an ENSO event are generally limited to a single breeding season. Although brown pelicans have the flexibility to respond to changing food supplies through variable reproductive rates, a long-term decline in anchovy abundance could have serious impacts on the California brown pelican population, particularly if

other forage fishes are not available as alternate food sources (Anderson et al. 1982, USFWS 2007). Uncertainty concerning future oceanographic regimes in light of global climate change highlights the need for management protections to ensure that adequate forage fish reserves are maintained for marine predators, particularly in times of scarcity.

Additional evidence points to the generally reduced availability of northern anchovy to marine predators in the CCE. A 25-year decline in overall seabird abundance has been attributed primarily to a decline in northern anchovy (Sydeman et al. 2015). The recent well-publicized mortality of California sea lions (*Zalophus californianus*) has coincided with reduced availability of Pacific sardine and northern anchovy in the CCE (Leising et al. 2014). Similarly, Brandt's cormorants (*Phalacrocorax penicillatus*) breeding in central California exhibited a sharp decline in nest numbers and reproductive success in 2008, with small breeding population sizes and poor productivity continuing through 2012 (Bechaver et al. 2013, Warzybok et al. 2013, Fuller et al. 2014). A major die-off of Brandt's cormorants in spring 2009 was determined to be associated mostly with starvation (Gibble et al. 2010). Analysis of regurgitated pellets showed a sharp decline in the representation of northern anchovy in the diets of Brandt's cormorants beginning in 2008 (Elliott et al. 2015), the same year that breeding numbers and productivity declined.

We commend the Council's commitment to ecosystem-based management of fisheries, as demonstrated by the Council's March 2015 action to protect unmanaged forage fish species. We also recognize that the directed, non-tribal fishery for Pacific sardine will be closed through the 2015-2016 season. While closure of the fishery will protect Pacific sardine, it may redirect fishing effort to other coastal pelagic species that are important forage for marine predators, including northern anchovy. While there is currently no directed northern anchovy fishing effort in the SCB, landings of northern anchovy have increased in the Monterey Bay area each year since 2011. If new markets develop, additional fishing pressure may be placed on northern anchovy. Without a recent biomass estimate, it is unknown whether the 25,000 metric ton Annual Catch Limit for the central subpopulation of northern anchovy serves a protective function for the subpopulation itself or for the marine mammals, birds, and fish that depend on it. We therefore urge the Council to obtain and analyze the information necessary to assess the current status of northern anchovy and to consider whether additional management measures for northern anchovy are warranted.

If you have questions regarding this letter, please feel free to contact Lilian Carswell of my staff at (805) 612-2793 or Lilian_Carswell@fws.gov.

Sincerely,

Roger P. Root

Acting for Stephen P. Henry
Field Supervisor

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