Final Report
Evaluation of Potential Time and Area Closures near Point La Jolla, California in Consideration of California Sea Lions with Recommendations

by
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Park and Recreation Department
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INTRODUCTION

Hanan & Associates was retained by the City of San Diego ("City") to provide its professional expertise pertaining to marine mammal biology, specifically related to the sea lions population in Point La Jolla. The City had applied for, and received, an emergency coastal development permit (Permit No. 2572053) for Point La Jolla which was in effect from August 10, 2021 to September 15, 2021. A condition of the emergency permit requires the City to submit a standard Coastal Development Permit application within 180 days of issuance of the emergency CDP agreement. The work of Hanan & Associates pertaining to the sea lion population was used to help develop the City's permit application and the supplemental materials required as part of the overall application submission as the City evaluated an ongoing, seasonal closure of Point La Jolla to during sea lion pupping season.

Previously, Hanan & Associates observed California Sea Lion (CSL), made counts, and enumerated them by age and sex at La Jolla Cove near San Diego, California, from March 11, 2015, to March 19, 2016 (Hanan, 2016). We made these observations at all hours of the day and night. Since then, we have observed seals at Children's Pool and CSL around Point La Jolla monthly. We have found that CSL haul out and occupy at least ten different areas in and around La Jolla Cove. They haul out year-round in locations heavily utilized by the La Jolla community, visitors, and tourists. CSL are occasionally aggressive towards swimmers, beach users, and people who interact closely with them (for petting, pictures, close observation, etc.).

San Diego has been encouraged to close areas to public access around Point La Jolla during CSL pupping and breeding season by the Sierra Club. They presented this closure concept to SD Park and Recreation Department in a brief (Establishing Sea Lion Pupping Season Closure Dates at Pt. La Jolla/Boomer Beach Expert Statements Regarding Pupping & Breeding Season, Sierra Club San Diego Chapter, October 21, 2021). The reason for the suggested closure is assumed to be the protection of CSL, including pups, although not stated in the brief. The brief cites published papers and quotes experts defining the term "rookery" and why Pt. La Jolla/Boomer Beach should be considered a rookery. Perhaps this is true as they also report their counts of CSL live births at 50+ pups for 2020 and 2021 (with 50 pups or greater offered by National Marine Fisheries Service (NMFS) as a rookery). Hanan (2016) reports stillborn pups in 2015 and two

live births as well as stillbirths during the spring of 2016. These accounts appear to be the first reports of CSL live births at this location. During our 2015-2016 observations, we observed CSL hauling out primarily in Area 6 (shelf area below restaurants). Since then, they have moved to haul out mainly in Area 1 (Boomer Beach).

The Sierra Club brief concludes: "Pt. La Jolla/Boomer Beach meets the definition of a rookery as defined by NOAA. While being recognized by NOAA as a rookery, this designation doesn't provide additional protection beyond what the Marine Mammal Protection Act provides. This unique rookery does, however, warrant research, management, and enforcement of the MMPA as it is the only rookery on California's west coast in an urban environment and draws significant tourism."

While we agree with several Sierra Club conclusions and cited evidence of what confirms a rookery, we caution that two years of unverified counts (53 live births each) are not sufficient to declare the area a rookery. CSL presence and pupping may be temporary, and they may abandon the location as quickly as they have occupied it.

A significant phenomenon on the U.S. west coast is called ENSO (El Niño Southern Oscillation), when the Pacific Ocean cycles through periods of warm (El Niño, with low ecosystem productivity) or cold surface temperatures (La Niña, with upwelling of nutrient-rich water and high productivity) (Beaufort and Grelaud, 2017). ENSO affects CSL population fluctuations and pup productivity (McClatchie *et al.*, 2016). The model used by Lowry *et al.* (2017) indicated that female CSL during cold-water conditions (La Niña) produced more pups than during warm water conditions (El Niño). Further, they state that fewer non-pups were present at southern California rookeries during warm-water conditions and more during cold-water conditions.

The Sierra Club recorded their counts during La Niña (cold) events (known periods of high nearshore Pacific Ocean productivity). Pup production and survivorship are known to wane during El Niños (warm, low ocean productivity, and lack of essential fish and squid for CSL forage). CSL, especially lactating female fitness/health, is reduced during El Niño episodes, and pup weight and survivorship decline (Lowry *et al.*, 2017). "The population has come into balance

with its environment," said co-author Sharon Melin, a research biologist at the Alaska Fisheries Science Center who has tracked CSL numbers in Southern California's Channel Islands for years. "The marine environment is always changing, and their population is at a point where it responds very quickly to changes in the environment. When the California Current is not productive, they respond pretty fast and dramatically," Melin said. (NMFS News, 2018).

Even if the La Jolla area is later verified to be a rookery, as the brief states, the "rookery" designation doesn't provide additional protection beyond the Marine Mammal Protection Act (MMPA). Further, the MMPA places all marine mammal management and enforcement with NMFS. No federal or state law requires the City to establish protected areas for CSL or other marine mammals, although the state can apply to the Department of Commerce (NMFS) for management return to the state. There are stipulations: 1. stock must be at OSP, 2. state must have an approved management plan that does not allow the stock to go below OSP.

Hanan & Associates also prepared a Marine Coastal Mammal Plan in coordination with the City, California Department of Fish and Wildlife, and National Marine Fisheries Service, which the City mayor approved in 2017.

California Sea Lion information from the San Diego Marine Coastal Mammal Plan:

Distribution, Stock Structure, and Migration

> California sea lions (CSL) occupy nearshore areas from central Mexico (including the Gulf of California) to Alaska and feed up to 300 miles offshore. They breed and birth their pups during spring and summer in western Baja California, the Gulf of California, and the offshore southern California Channel Islands (Carretta *et al.,* 2021). Adult (up to 800 pounds) and subadult males migrate as far northward as Alaska after breeding season (May-July), while females (up to 250 pounds) and pups tend to stay near the rookeries or the nearshore central and southern mainland. CSL feed on squid and small schooling fish, including mackerel, anchovy, and sardine. They feed on larger fish when CSL depredate catch from sport and commercial fisheries (Hanan *et al., 1989)* and feed naturally on salmon adults and salmon smolt in riverine habitats (NMFS, 1997).

CSL principally occupy the bluffs and sand beaches adjacent to La Jolla Cove in the La Jolla area. They rest in these areas as they travel along their migration routes, and some may be resident animals. La Jolla Cove mainland hauling sites are the first in recent history to be documented in San Diego County or along the southern California mainland. CSL occupy hauling sites at all the offshore islands of the southern California bight (SCB) (San Clemente, San Nicolas, Santa Barbara, Santa Catalina, Anacapa, Santa Cruz, Santa Rosa, and San Miquel), as well as many rocks and pinnacles both offshore and along the mainland including Año Nuevo Island off Monterey, the Farallon Islands off San Francisco. They also haul out in San Diego Bay and Mission Bay on the bait receivers, buoys, docks, and boats. In 2016, the City documented the first viable CSL births, with three pups being born and cared for in early and mid-June.

Reproduction, Fecundity, and Seasonality

CSL are polygynous, with large socially dominant bulls holding harems of up to about 30 females. Females become sexually mature at three years, while males mature physically at seven years. However, sexually mature males may not be socially mature (able to fight off other bulls and maintain a harem) until about ten years. Males arrive at the breeding beaches in late May or June and about two weeks before the females, which give birth to a single pup within days of arrival. Pups are 20 pounds or less at birth but gain weight rapidly with the fat-rich milk. They nurse for approximately four months to a year.

Natural Mortality

Large sharks and killer whales are their primary predators, although some mortality results from interactions with sport and commercial fishing. During El Niño events, mortality increases conspicuously, resulting in the only detectable checks on population growth (Lowry, 1991; McClatchie *et al.*, 2016; Lowry *et al.*, 2017;). These events result in the scarcity of CSL prey items (squid and small schooling fish).

STATUS OF THE STOCK

CSL are not "depleted" under the Marine Mammal Protection Act (MMPA) nor "threatened/endangered" under the Endangered Species Act (Carretta *et al.,* 2021). In 2014, NMFS estimated the U.S. west coast population at 257,606 sea lions with an annual growth rate of 7.0% and a corresponding pup count of 47,691 pups (Carretta *et al.*, 2021). NMFS also estimated Potential Biological Removal (PBR) at 14,011 sea lions per year from the U.S. stock. This number far exceeds the total CSL utilizing the La Jolla area and further emphasizes the fact that this small colony does not impact the CSL population/resource. The MMPA defines PBR as the number of CSL that could be removed from a population, not including natural mortalities, while allowing that stock to reach or maintain its optimum sustainable population (OSP). This stock's annual human-caused mortality and serious injury are ≥ 321 animals (Carretta *et al.*, 2021). Laake *et al.* (2018) found CSL above the maximum net productivity level (MNPL) and within OSP in 2008. This stock status means the CSL population was likely still increasing in 2008 as it approached carrying capacity of the environment (K, the maximum population size an ecosystem can support). It is also likely that ENSO will cause fluctuations in pup production and total population for the foreseeable future (McClatchie *et al.*, 2016).

POTENTIAL CLOSURE PERIOD

In 2016, Hanan first reported live CSL birthing at La Jolla (Hanan 2016). Sierra Club presented data to the City of CSL pup counts for 2021, totaling 53 pups; they also state that they counted 53 pups in 2020; although no data was presented to collaborate the 2020 claim. An independent observer, Mr. John Leek, also counted CSL adults and pups during 2019-21. Mr. Leek provided those data to me in Excel spreadsheets. I reviewed a video of his counting techniques and found them reasonable for this exercise. Although Mr. Leek counted total pups per count and Sierra Club counted live births per count, both show the beginning of the 2021 pupping season to be at the end of May (Sierra Club on 5/27/21 and Mr. Leek on 5/29/21). Mr. Leek's data show his first 2019 pup count of 30 pups on 7/8/19 with a maximum total of 34 on 8/13/2019; for 2020, he counted thirteen pups on 6/10/20 with a maximum of 55 pups on 6/25/20. I did not have access to the 2020 Sierra Club data.

Figure 1. Sierra Club Counts

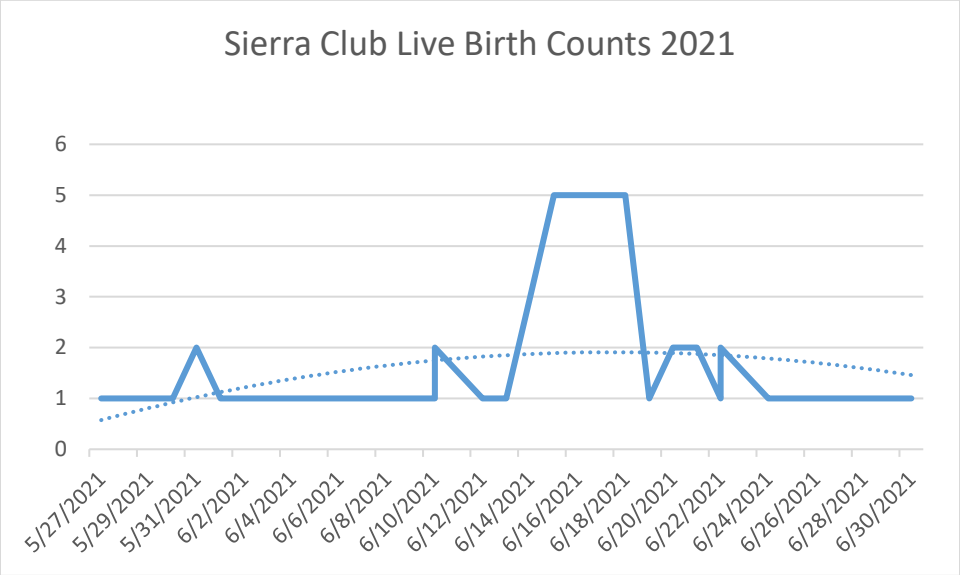
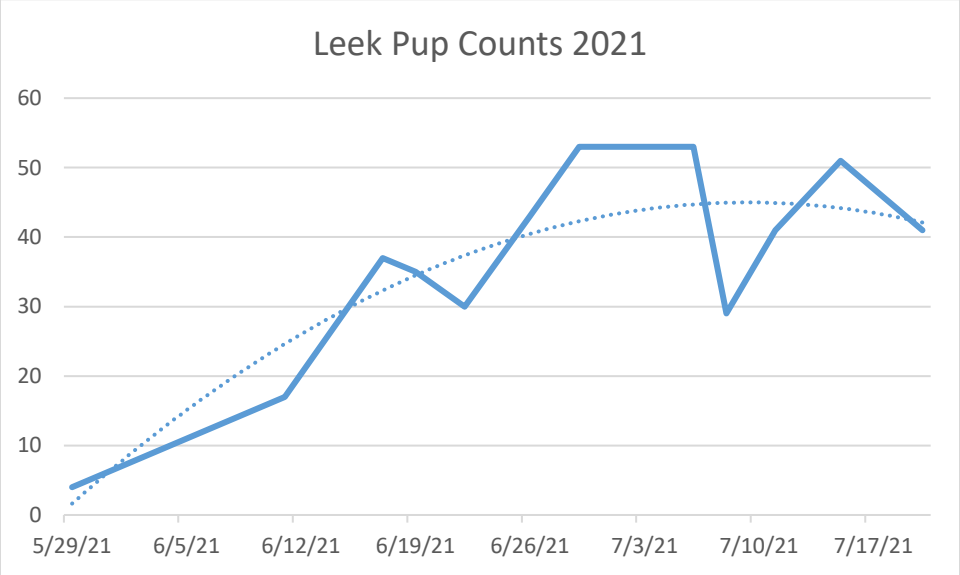


Figure 2. John Leek's Counts



Although neither Sierra Club nor Mr. Leek's counts have been peer-reviewed, I believe they give us a baseline to determine the pupping period at La Jolla. The Sierra Club data shows a short birthing period (5/27/21- 6/30/21) which ends about a month earlier than the main population at the Channel Islands. Using the Leek data, we see a peak in pup counts in early July (no additions to the total pup count), corresponding to the peak count at the Channel Islands. Using these data

and what we know from the Channel Islands, I'd recommend using June and July as the birthing period at La Jolla and allowing the bulk of the annual pups (80-95%) another month to improve their swimming skills. I would recommend a closure period of June 1 to September 1. I believe this closure period provides an adequate timeframe for pup protection and also a reasonable period for the public to enjoy the summer beach use of La Jolla.

CONCLUSIONS

In conclusion, I would seriously question the need for closure to protect CSL because the U.S. population is at OSP as managed by NMFS according to the MMPA. Therefore establishing closures is not a resource question or need and does not warrant any special protections aside from the MMPA. The City already has an ordinace not to harm wild animals in parks. This should be enforced instead of establishing a time and area closure.

The Laake *et al.* 2018, publication is a significant finding that CSL are above the optimum sustainable population (OSP) level, at carrying capacity of the environment (K) and should be taken into consideration by both the City and the California Coastal Commission. This finding further requires consideration of using appropriate citations regarding the biology of CSL. What was true for a population that was increasing at a rate of seven percent annually, no longer applies to a population that has reached carrying capacity.

The CSL population has increased to occupy expanded areas in the southern California Channel Islands, Año Nuevo Island off Monterey, the Farallon Islands off San Francisco, Pier 39 in San Francisco Bay, and now an area not documented in modern history (La Jolla). In the future, we are likely to see fluctuations in the CSL population above and below carrying capacity of the environment and may include new haul out areas, while abandoning currently occupied locations. These population characteristics are typical of ecosystems at or above the environment's carrying capacity (K).

RECOMMENDATIONS

1. I do not endorse closing any areas of La Jolla for the benefit of CSL, an abundant stock at OSP and fully recovered (Laake *et al.* 2018). We believe NMFS should maintain management authority and ensure the health of CSL following federal law as realized in the MMPA statutes and NMFS rulemaking.
2. Suppose the City decides to put closures in place to reduce harassment of CSL adults and pups. In that case, we recommend the closures be temporary with the flexibility to place them in any areas of concern throughout City limits. We recommend this because CSL do change hauling locations. During our 2015-2016 observations, we observed CSL primarily hauling out in Area 6 (shelf area just southeast of La Jolla cove below restaurants). Since then, they have moved to haul out principally in Area 1 (Boomer Beach). They may move again or abandon La Jolla completely; therefore, there should be no permanent closures.
3. If the City goes ahead with closures to reduce harassment, we recommend amending the SD Marine Coastal Mammal Plan to include procedures for accomplishing this action. Perhaps there could be a threshold of viable pups born at a particular location during a pupping season and verified by park rangers or lifeguards that might trigger such an action. The temporary closure in 2021 worked reasonably well, keeping people away from CSL. We would recommend similar treatments of temporary closures, including signage, blockades of footpaths/access points, and the presence of rangers and docents. Given peak pupping occurs around July 2 at the Channel Islands and pups can swim proficiently at 3-4 months, we recommend the temporary closure (6/1-9/1). Considering NMFS enforcement of harassment protocol, depending on location, we would recommend the public should generally be kept 25 to 50 feet from CSL. Distance depends on whether animals change behavior in response to harassment, such as: moving or becoming agitated or moving their heads to look at or away from disturbance.

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