

First Successful Nesting of Black Oystercatchers among Endangered California Least Terns along the West Coast of North America

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Abstract: A pair of Black Oystercatchers (*Haematopus bachmani*) established a nest in June 2022 at “Tern Town”, an island located in Hayward, California along the eastern side of the San Francisco Bay. This is the first documented occurrence of oystercatchers successfully nesting and fledgling young in association with California Least Terns. The island provides nesting habitat for three special status species. Since 2015, and for a total of six breeding seasons, the endangered California Least Tern (*Sternula antillarum browni*), the threatened Western Snowy Plover (*Charadrius alexandrinus nivosus*) and species-of-special-concern Black Skimmer (*Rynchops niger*), have nested successfully, in association with American Avocet (*Recurvirostra americana*) and Black-necked Stilt (*Himantopus mexicanus*). We collected shells near the oystercatcher nest to assess their diet. Diet data showed the oystercatchers foraged on, in decreasing order of abundance, Japanese Little-necked Clams (*Ruditapes philippinarum*), Ribbed Mussels (*Geukensia demissa*), Bent-nose Clams (*Macoma nasuta*), Limpets (*Patellostropoda* sp.) and Bay Mussels (*Mytilus edulis*). This new report on breeding Black Oystercatchers indicates that managing habitat for California Least Tern, Western Snowy Plover, and Black Skimmer can also benefit Black Oystercatcher. This site-specific information on breeding Black Oystercatchers supports recovery plan tasks that are consistent with managing habitat for California Least Tern, Western Snowy Plover and Black Skimmer.

Key words: Black Oystercatcher, reproduction, diet, endangered species, California Least Tern, Western Snowy Plover, Black Skimmer.

1. Introduction

The East Bay Regional Park District manages California Least Tern, Western Snowy Plover and Black Skimmer nesting habitat at the Hayward Regional Shoreline (37°37'47" N, 122°8'46" W), located along the eastern shore of San Francisco Bay along the West Coast of North America [1-3]. Black Oystercatchers have been documented nesting near gulls and terns (*Sterna* spp.) and have been observed using their bills to jab at other species chicks that wander into their territory [4, 5]. We conducted this study on Island Five (also known as “Tern Town”) to document the first

occurrence of Black Oystercatchers nesting within an active California Least Tern colony. The habitat area on Island Five was established for the endangered California Least Tern in 2001 and is 0.24 ha (0.6 ac) in size. Volunteers primarily built the island [2, 3] and the area is off limits to the public.

The California Least Tern (*Sternula antillarum browni*) is a migratory species, nesting along the Pacific Ocean beaches, lagoons, and bays of North America from Baja California north to the San Francisco Bay [6]. Least terns are typically on nesting colonies from mid-April through late September [7, 8]. Colony nesting density can vary from 3-7 nests per ha

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[9] to more than 145 nests per ha (1.9 ac) [10]. This bird was listed as a federally endangered species in 1970 [11, 12] and as a state endangered species in 1971 [13].

The Western Snowy Plover (*Charadrius alexandrinus nivosus*) is a small light grayish-brown shorebird with black legs and bill, that wears an incomplete dark breast band [8]. The Western Snowy Plover is federally listed as threatened and is a California Species of Special Concern [14, 15]. The Pacific Coast population of the Western Snowy Plover range extends from Damon Point, Washington, USA to Bahia Magdalena, Baja California, Mexico [16, 17].

The Black Oystercatcher, a large black shorebird with a bright red, chisel-shaped beak [8], is currently listed on Audubon's Priority Birds 2021 [18], which lists species of conservation concern; the species is particularly vulnerable to nest site disturbances or destruction, predators, and oil spills [19]. Additionally, it has been declared a special status species in the United States of America, Canada, and Mexico due to its small global population size (roughly 10,000 to 12,000 individuals), low overall reproductive success and complete dependance on rocky intertidal shorelines which are impacted by human use and sea level rise [19]. The species is uncommon within its range along the west coast of North America and is typically limited to the rocky intertidal. Their nesting habitat ranges from mixed sand and gravel beaches to exposed rocky headlands [4]. Paired members are known to use the same nest site for many consecutive breeding seasons and may remain together for years [4]. Common to all oystercatcher breeding habitat is the presence of low-sloping or level substrate for feeding [4]. Oystercatchers frequently forage in the mid-intertidal

zone where sea mussel (*Mytilus californianus*) and bay mussel (*M. Trossulus*) are dense [20, 21]. Sea mussels taken by oystercatchers in California average 47 mm in length [21].

2. Methods

Nesting and reproductive success data (nest chronology, clutch size, hatching success) were collected using the Type 1 Colony Survey Method [22, 23]. In this method, permitted biologists entered the colonies twice a week to mark nests using numbered 5-cm diameter washers vertically cemented into a small plaster of Paris base. This type of intensive, in-colony monitoring yields data on clutch size, hatching and fledging success, and evidence of any predation. The oystercatcher diet data were gathered by collecting, identifying, and measuring dropped bivalves and mussels at their nest site to determine the percentage of prey fed to their offspring.

3. Results

The Black Oystercatcher established a nest on June 6, 2022, on the eastern edge of the "Tern Town" island (37.629739 N Lat., 122.146039 W Long.), located at the Hayward Regional Shoreline, in California, USA, and ultimately produced one fledgling (Fig. 1). The diet data that were gathered by collecting dropped bivalves and mussels at their island nest site showed that the percentage of prey fed to their offspring was composed of, in decreasing order of abundance, Japanese Little-necked Clam (*Ruditapes philippinarum*), Ribbed Mussel (*Geukensia demissa*), Bent-nose Clam (*Macoma nasuta*), Limpet sp. (*Patellogastropoda* sp.), and Bay Mussel (*Mytilus edulis*) (Table 1).



Fig. 1 Nesting Black Oystercatcher (*Haematopus bachmani*) at Tern Town located at the Hayward Regional Shoreline, California, USA. (Photographed by David L. Riensche).

4. Conclusion

The Black Oystercatcher is a locally fairly common resident of the rocky Pacific coastline [24] and known to breed in just a few locations within the East Bay Regional Park District, which manages landholdings in Alameda and Contra Costa Counties in California. The majority of identified nesting sites were in the Central San Francisco Bay, which provides some similar habitat conditions to the rocky intertidal. Nesting occurred at Bird Rock, a small rock adjacent to Brooks Island in the Richmond area of Contra Costa County, and at the West Brother Island near Pt. San Pablo [25]. Within Alameda County they have nested on the breakwater islands west of the United States Hornet at the former Alameda Naval Air Station, and they have

also nested at Alameda's Ballena Bay (Ramos, personal observation), as well as along the Emeryville Crescent [26]. Black Oystercatchers have been documented breeding at two locations in the South San Francisco Bay, which provides a very different habitat from the rocky intertidal, including at Eden Landing Ecological Reserve, a California Department of Fish and Wildlife property located directly south of Hayward Regional Shoreline. Since 2016 they have nested at Eden Landing on a small island in pond E10 near riprap that provides suitable foraging habitat and were confirmed to fledge chicks in most years (Pearl, personal observation).

Young European Black Oystercatchers have been shown to exhibit high rates of breeding philopatry [27], and it has been hypothesized that American Black

Oystercatchers do as well [28]. Considering the proximity of the Eden Landing nest site to Hayward Regional Shoreline, it is possible that at least one of the oystercatchers from the “Tern Town” pair hatched in prior years from Eden Landing. Oystercatchers have also been documented nesting farther south in the bay in San Mateo County at pond SF2 in the Ravenswood Complex of Don Edwards SF Bay National Wildlife Refuge (Pearl, personal observation). These oystercatchers were first documented breeding at SF2 in 2018 when they nested on the same constructed island (island 17) as a colony of Caspian Terns (*Hydropogon caspia*) and Black Skimmers, and they have since nested on this and other islands in the pond each year (Pearl, personal observation). Riprap located in the pond and along water control structures provides suitable foraging habitat.

In central California more than 90% of Black Oystercatcher foraging habitat is washed occasionally by waves; wave-splashed mussels’ gape more frequently and thus are more susceptible to oystercatcher attacks [21, 29]. In such locations, an individual bird visually locates a mussel with its shells partially separated, then quickly jabs its bill to sever the bivalve’s adductor muscle. With the tip of its bill the bird either removes the soft parts of the mussel to consume on site or detaches the mussel from its substrate for processing elsewhere. Parenting birds will detach and carry whole mollusks away from the surf zone to feed their young [4]. The nesting pair of Black Oystercatchers at Tern Town carried whole mollusks, ranging from 334-712 m from a breakwater area adjacent to the Cogswell Marsh, at the Hayward Regional Shoreline, to feed their young (Fig. 2).



Fig. 2 Black Oystercatcher adult and chick (*Haematopus bachmani*) at Tern Town located at the Hayward Regional Shoreline, California, USA. (Photographed by David L. Riensche).

Table 1 Percentage of prey, determined from collections of used shells, in diet of a Black Oystercatcher (*Haematopus bachmani*) pair breeding in a California Least Tern Colony at Hayward Regional Shoreline, California, USA, 2022.

Prey species	Sample number	% of Diet	Average size
Japanese Littleneck Clam <i>Ruditapes philippinarum</i>	34	46.5	33.97 mm
Ribbed Mussel <i>Geukensia demissa</i>	23	31.5	61.74 mm
Bent-Nosed Clams <i>Macoma nasuta</i>	9	12	50.67 mm
Limpets <i>Patellogastropoda</i> sp.	5	0.06	20.6 mm
Bay Mussels <i>Mytilus edulis</i>	2	0.02	36 mm

While Black Oystercatchers are known to nest near gulls and terns (*Sterna* spp.), occasionally less than 3 m away [4, 5] this is the first documented occurrence within an active California Least Tern colony. Adult oystercatchers are known to use their bills to jab at gull or tern chicks that wander too close to their territory [4, 5], yet we witnessed no such incident. This site-specific information on breeding Black Oystercatchers near endangered California Least Tern, threatened Western Snowy Plover and species-of-special-concern Black Skimmer will assist in developing management programs that identify special site protection plans and aid in the recovery of these special status species.

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References

- [1] Riensche, D. L. 2007. "California Least Tern Habitat Enhancement and Nesting in the East Bay Regional Park District, California." *Transactions of the Western Section of the Wildlife Society* 43: 62-71.
- [2] Riensche, D. L., Elliott, M. L., and Euing, S. H. 2012. "Breeding Status, Nesting Densities & Diet Trends of Two Endangered California Least Tern Colonies." *Journal of Environmental Science and Engineering* 7: 1136-45.
- [3] Riensche, D. L., Gidre, S. C., Beadle, N. A., and Riensche, S. K. 2015. "Western Snowy Plover Nest Site Selection and Oyster Shell Enhancement." *Western Wildlife* 2: 38-43.
- [4] Andres, B. A., and Falxa, G. A. 1995. "Black Oystercatcher (*Haematopus bachmani*). In *The Birds of North America*, N. 155, edited by A. Poole and F. Gills. Washington, D.C.: The Academy of Natural Science, Philadelphia, and The American Ornithologists' Union.
- [5] Vermeer, K., Morgan, K. H., and Smith, G. E. 1992. "Black Oystercatcher Habitat Selection, Reproductive Success, and Their Relationship with Glaucous-Winged Gulls." *Colonial Waterbirds* 15: 14-23.
- [6] U.S. Fish and Wildlife Service. 1980. *California Least Tern Recovery Plan*. Portland, Oregon: U.S. Fish and Wildlife Service, Region 1.
- [7] Massey, B. W. 1974. "Breeding Biology of the California Least Tern." *Proceedings of the Linnean Society of New York* 72: 1-24.
- [8] Cogswell, H. L. 1977. *Water Birds of California*. Berkeley, California: University of California Press.
- [9] Swickard, D. K. 1972. "The status of the Least Tern at Camp Pendleton, California." *California Birds* 3: 49-58.
- [10] Rigney, M., and Granholm, S. 1990. "Least Tern (*Sterna antillarum*)." In *California's Wildlife: Birds* (Vol. 2), edited by D. C. Zeiner, W. F. Laudenslayer Jr., K. E. Mayer, and M. Marshall. Sacramento, California: California Statewide Habitat Relationships System, California Department of Fish and Game, pp. 278-9.
- [11] U.S. Fish and Wildlife Service. 1973. *Threatened Wildlife of the United States*. Bureau of Sport Fisheries and Wildlife. Resource Publication, p. 114.
- [12] U.S. Fish and Wildlife Service. 1980. *California Least Tern Recovery Plan*. Portland, Oregon: U.S. Fish and Wildlife Service, Region 1.
- [13] California Department of Fish and Game. 1976. *At the Crossroads: A Report on California's Endangered and Rare Fish and Wildlife*. State of California, Sacramento, California.
- [14] Federal Register. 2012. "Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Pacific Coast Population of the Western Snowy Plover." 77: 36728-869.

- [15] California Department of Fish and Wildlife. 2019. *List of the State and Federal Endangered and Threatened Animals of California*. Sacramento, CA: California Department of Fish and Game.
- [16] Page, G. W., Warriner, J. S., Warriner, J. C., and Patton, P. W. C. 1995. "Snowy Plover (*Charadrius alexandrinus*).” In *The Birds of North America* (No. 154), edited by Poole, A., and Gill, F. Washington, D.C.: The Academy of Natural Sciences, Philadelphia, Pennsylvania, and The American Ornithologists Union, pp. 1-24.
- [17] U.S. Fish & Wildlife Service. 2007. "Recovery Plan for the Pacific Coast Population of the Western Snowy Plover (*Charadrius nivosus nivosus*).” U.S. Fish and Wildlife Service, Sacramento, CA, USA.
- [18] Audubon's Priority Birds. 2021. https://nasnationalprod.s3.amazonaws.com/prioritybirdsreport_final.pdf.
- [19] Weinstein, A., Trocki, L., Levalley, R., Doster, R. H., Distler, T., and K. Krieger. 2014. "A First Population Assessment of Black Oystercatchers (*Haematopus bachmani*) in California.” *Marine Ornithology* 42: 49-56.
- [20] Groves, S. 1982. "Aspects of Foraging in Black Oystercatchers (Aves: Haematopodidae).” Ph.D. thesis, University of British Columbia, Vancouver.
- [21] Falxa, G. A. 1992. "Prey Choice and Habitat Use by Foraging Black Oystercatchers: Interactions between Prey Quality, Habitat Availability, and Age of Bird.” Ph.D. thesis, University of California Davis.
- [22] Marschalek, D. A. 2005. "California Least Tern Breeding Survey, 2004 Season. Habitat Conservation and Planning Branch, Species Conservation and Recovery Program Report, 2005-01.” California Department of Fish and Game, Sacramento, California, p. 55.
- [23] Elliott-Smith, E., and Haig, S. 2011. "Standardized Protocols for Monitoring Populations Size and Reproduction Success in the Black Oystercatcher (*Haematopus bachmani*).” US Geological Survey, Corvallis, Oregon.
- [24] Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, California: Ibis Publishing Company.
- [25] Glover, S. A. 2009. *Breeding Bird Atlas of Contra Costa County*. Walnut Creek, California: Mount Diablo Audubon Society, p. 260.
- [26] Richmond, B., Green, H., and Rice, D. C. 2011. *Alameda County Breeding Bird Atlas*. Berkeley, California: Golden Gate Audubon Society, p. 219.
- [27] Kersten, M., and Brenninkmeijer, A. 1995. "Growth, Fledging Success and Post-fledging Survival of Juvenile Oystercatchers *Haematopus ostralegus*.” *IBIS* 137 (3): 396-404.
- [28] Hazlitt, S. L., and Butler, R. W. 2001. "Site Fidelity and Reproductive Success of Black Oystercatchers in British Columbia.” *Waterbirds: The International Journal of Waterbird Biology* 24 (2): 203-7.
- [29] Hartwick, E. B. 1976. "Foraging Strategy of the Black Oystercatcher (*Haematopus bachmani* Audubon).” *Canadian Journal of Zoology* 54: 142-55.