

**Black Oystercatcher (*Haematopus bachmani*)  
Reproductive Success  
California Central Coast, Monterey Bay Region  
2021**

Northern Monterey County  
(Point Lobos State Natural Reserve to City of Monterey)  
and  
Northern Santa Cruz County to Southern San Mateo County  
(Natural Bridges State Beach to Pescadero State Beach)



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Cover Photo (by H.E. Hanks): PL7 (Whaler’s Cove) fledgling, the only fledgling in the entire Monterey Bay South Coast study area in 2021.

# **Black Oystercatcher (*Haematopus bachmani*) Reproductive Success California Central Coast, Monterey Bay Region 2021**

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## **SUMMARY: MAJOR 2021 MONITORING RESULTS & 2012-2021 FINDINGS**

### **2021 Reproductive Success Summary**

During the 2021 breeding season in the **Monterey Bay region**, a total of 65 territorial pairs were identified, but only 37 pairs (57%) were observed nesting for a total of 50 nesting attempts (37 breeding pairs + 13 re-nesting attempts). From the observed breeding pairs, there were at least 135 eggs laid and 29 chicks hatched, but only 7 chicks fledged, for an **overall breeding success rate of 0.19 per pair**, with only four of the 37 breeding pairs producing fledglings. The 2021 reproductive success per pair is the lowest since the addition of the North Coast study area to the monitoring project in the Monterey Bay region in 2016. Reproductive success has steadily declined since 2018.

In the Monterey Bay **South Coast** study area, a total of 24 breeding pairs and 6 re-nesting attempts were recorded, for a total of 30 nesting attempts, producing a minimum of 61 eggs, 12 chicks, and only one fledgling, for an extremely low reproductive success of 0.04 per pair. This is the only time during 10-years of monitoring that the South Coast had only one recorded fledgling. No fledglings were recorded in the Monterey Peninsula or Pebble Beach monitoring sections. The Point Lobos monitoring section produced the South Bay study area's only fledgling (PL7).

The Monterey Bay **North Coast** study area fared only a little better overall. There were 13 nesting pairs and seven re-nesting attempts for a total of 20 nesting attempts. A minimum of 44 eggs and 17 chicks were produced, with a total of six fledglings from three pairs, resulting in a reproductive success of 0.46 per pair. In the San Mateo monitoring section, only two territorial pairs are known to have nested. For the first time since monitoring of the San Mateo section began, there was no known egg laying among the six territorial pairs on Pescadero Rock.

### **10-Year Reproductive Success (2012-2021) Summary**

For the 10-year monitoring period, a total of 132 fledglings were recorded from 335 breeding pairs for an overall reproductive success per pair of 0.39. The estimate for the overall reproductive success per pair for the Monterey Bay region indicates a BLOY population close to being a population at risk. However, assessing the data from 2016-2021, a period that provides a more robust sampling size and a complete set of six contiguous years with all five monitoring sections, the reproductive success rate is 0.30 per breeding pair, indicating a definite "sign of caution" or a population at risk for the Monterey Bay region's Black Oystercatchers. Although there have been good years and bad years, the overall trend for the Monterey Bay region's BLOY population is clearly trending downward (Figure 3).



## INTRODUCTION – STUDY AREAS

In 2021, the California Central Coast Black Oystercatcher Project monitored nesting activity for a total of 73 Black Oystercatcher (*Haematopus bachmani*) (hereafter occasionally referred to as BLOY, using the International Ornithologists' Union's common name abbreviation) territories. Currently there are 65 territorial pairs in the Monterey Bay region, from Point Lobos State Natural Reserve to Pescadero State Beach, covering coastal sections in three counties and approximately 160 kilometers (100 miles) of coastline. The Monterey Bay region is separated into two study areas: Monterey Bay South Coast (northern Monterey County) and Monterey Bay North Coast (northern Santa Cruz County and southern San Mateo County) (Figure 1).

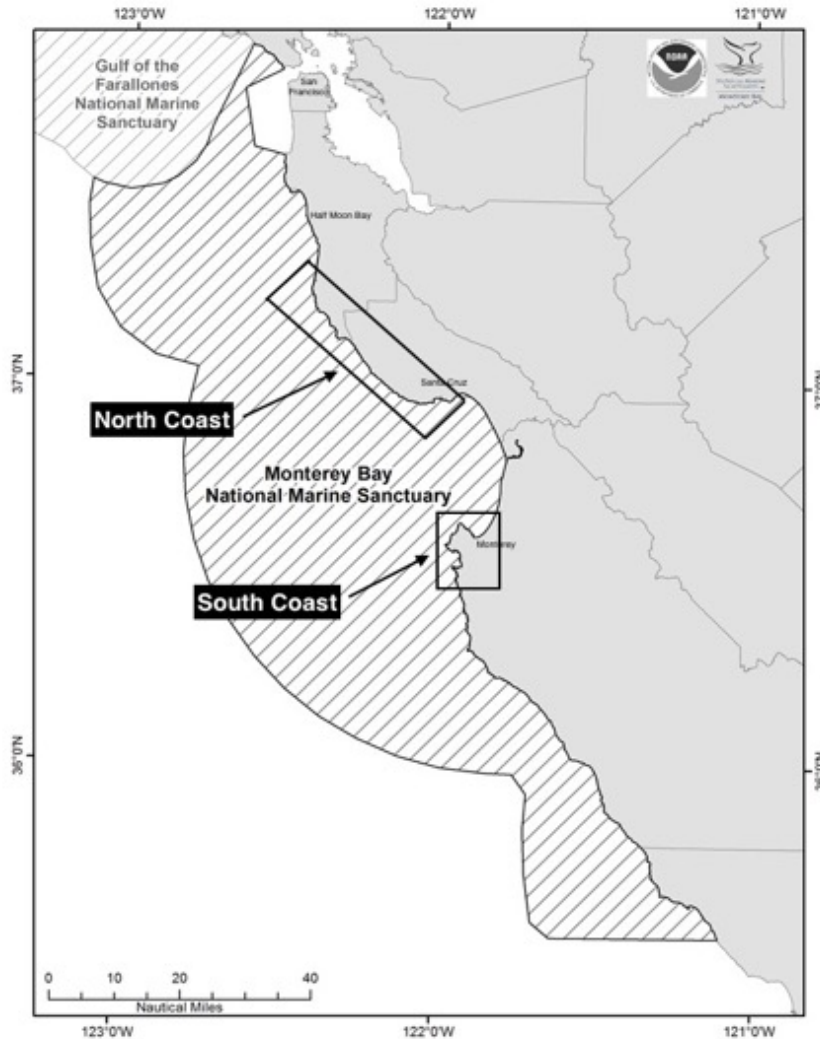


Figure 1. Map showing Monterey Bay South Coast and North Coast Study Areas.

The separation of the Monterey Bay region into two study areas was done for the following reasons: (1) there is a large stretch of sandy shoreline of about 55 kilometers (34 miles) that separates the two study areas; (2) one side of the coast had more monitoring history; and (3) the separation allows for a clear comparison of the productivity between the two study areas.

The Monterey Bay South Coast study area (South Coast) is located along the northern portion of the Monterey County coast extending north from the south end of Point Lobos State Natural Reserve to the Coast Guard Pier in the City of Monterey and is broken into three monitoring sections: (1) Point Lobos (PL) (Point Lobos State Natural Reserve), (2) Pebble Beach (PB) (Stillwater Cove to Point Joe), and (3) Monterey Peninsula (MP) (Asilomar State Beach to Monterey). Both the Monterey Peninsula monitoring section and the Point Lobos monitoring section are completely covered, while the Pebble Beach monitoring section has a number of small breaks due to private property access restrictions.

The Monterey Bay North Coast study area (North Coast) extends north from the south end of Natural Bridges State Beach to the north end of Pescadero State Beach and consists of two monitoring sections: (1) northern Santa Cruz County coast (SC) and (2) southern San Mateo County coast (SM). It should be noted that each of the monitoring sections in the North Coast do not include the entire area of each section of coastline. The Santa Cruz monitoring section includes Natural Bridges State Beach, then a break until Wilder Ranch State Park's Wilder Beach to Three-Mile Beach, then a break until Yellow Bank Cove to Davenport, and finally a break until Pelican Rock to Greyhound Rock. The San Mateo monitoring section includes only the area around Pigeon Point Light Station State Historic Park and the coastline of Pescadero State Beach, this does not include Año Nuevo State Park.

### **Covid-19 Restrictions**

Although less limiting in 2021, Covid-19 restrictions still impacted consistent weekly monitoring of some territories. Hopkins Marine Station did not allow access to BLOY staff until July. This impacted the consistent monitoring of the MP8 and MP10 territories. Until full monitoring was restored, several volunteers working at Hopkins Marine Station provided sporadic monitoring of these territories.

### **METHODS**

The monitoring methodology used is based on the Black Oystercatcher standardized protocols for monitoring population size and reproductive success developed by the US Geological Survey (Elliott-Smith and Haig 2011), with slight modifications adapted by Audubon California. The primary monitoring usually is conducted during the breeding season from mid-April through the end of September.

Although the project has both a professional staff biologist and an assistant biologist/intern working in the field, it is overseen by professional biologists from Audubon California and the US Department of the Interior-Bureau of Land Management's California Coastal National Monument, and is currently operated as a community science effort using volunteers and docents (See *Number of Monitors, Monitoring Hours & Observations*).

For 2021, with key funding from an anonymous donor and additional funding from other entities and various individuals, the California Central Coast Black Oystercatcher Project was able to continue the hiring of the Project Biologist and the Assistant Project Biologist/Intern. The Project Biologist covered all of the North Coast Black Oystercatcher territories once a week and all of the South Coast Black Oystercatcher territories once a month, while the Assistant Project

Biologist/Intern covered all of the South Coast Black Oystercatcher territories once a week. Collectively, this provided a consistent monitoring base for each of the 73 Black Oystercatcher territories throughout the Monterey Bay region.

Black Oystercatcher territory size was determined based on observations made of the individual Black Oystercatcher pair's foraging distance, encounters with neighboring pairs, and distance covered during territorial chases of interloping Black Oystercatchers, as well as areas traveled with young to forage post fledging. Google Earth Pro was used to obtain GPS coordinates, map nest locations, and delineate territory size.

Observations were made using binoculars and spotting scopes from land at each Black Oystercatcher territory for a minimum of 30 to 60 minutes at least once a week during the initial portion of the breeding season. At nesting sites with incubation, the minimal observation time may have reduced to about 15 to 20 minutes, while for those nesting sites with chicks, the observations may have increased to 60 minutes or more while chicks were present or if other Black Oystercatcher activity warranted much longer observations.

In some cases, volunteer monitors with assigned territories made observations almost daily, but at a minimum once a week. Nesting sites with known hatching dates, chicks, or near areas with high human disturbance were monitored more frequently than the minimum in order to document nesting success, predation, human interaction, and inform people about wildlife disturbance and Black Oystercatchers. In the North Coast, part of the Wilder Ranch State Park portion in the Santa Cruz monitoring section includes approximately 6.5 kilometer (4 miles) of a coastline trail with only one main access point. This required the use of a bicycle in order to efficiently monitor 10 territorial pairs within a reasonable timeframe.

## **NUMBER OF MONITORS, MONITORING HOURS & OBSERVATIONS**

For the 2021 breeding season, the California Central Coast Black Oystercatcher Project (BLOY Project) used a total of 39 community science monitors, along with a small BLOY Project staff consisting of the Regional Coordinator, the Project Biologist, and the Assistant Project Biologist/Intern, creating a cadre of 42 monitors. A large majority of the community science monitors were distributed throughout the South Coast with 36 monitors, -- 18 in the Monterey Peninsula monitoring section, 13 for the Point Lobos monitoring section, and five in the Pebble Beach monitoring section. The Project Biologist and the Regional Coordinator monitored all territories in both the North Coast and South Coast study areas, while the Assistant Project Biologist/Intern monitored the South Coast study area. This season, none of the community science volunteers monitored in more than one of the five monitoring sections. There were only three community science volunteers monitoring in the southern portion of the Santa Cruz monitoring section. The project staff covered monitoring for the entire San Mateo monitoring section, and entirely covered eight of the 18 territories in the Santa Cruz monitoring section. Even in the Monterey Bay South Coast study area, there were six territories that were entirely covered by the project staff only and not covered by community science monitors, including three in the Monterey Peninsula monitoring section (MP15, MP16 & MP17), two in the Pebble Beach (PB4 & PB15), and one in the Point Lobos monitoring section (PB11). Two of these territories were determined to be "abandoned" and three were identified as "unknown."

The number of monitors, monitoring hours, and observations were determined based on data entries on the Google Sheets set-up for each of the five monitoring sections monitored (MP, PB, PL, SC & SM). The number of monitoring hours and the number of observations between 15 April and 30 September were calculated for each individual monitor. For example, a single Google Sheets entry with two monitors listed for 30 minutes of monitoring was counted as two individual observations with 30 minutes of observation for each monitor (two observations for a total of one hour).

For the 73 Black Oystercatcher territories monitored in the Monterey Bay region, there were a total of 1,596 hours of monitoring from 2,939 observations – 1,094 hours from 2,011 observations in the South Coast and 502 hours from 928 observations in the North Coast (Table 1).

In the Santa Cruz monitoring section on the North Coast, one community science volunteer alone conducted 304 observations in four territories or 42% of the entire Santa Cruz monitoring section, 33% of the entire North Coast study area observations, and 10% of the entire Monterey Bay Region. Together, the individual observations for the Regional Coordinator, Project Biologist and the Assistant Project Biologist/Intern totaled 1,765 observations or more than 60% of all the observations conducted during the 2021 breeding season.

Table 1. *2021 Black Oystercatcher Monitoring Hours & Observation Numbers - Monterey Bay Region*

<b>Study Areas &amp; Monitoring Sections</b>	<b># of Monitoring Hours</b>	<b># of Observations</b>
<b>Monterey Bay South Coast</b>		
Monterey Peninsula (MP)	540	1,010
Pebble Beach (PB)	268	479
Point Lobos (PL)	286	522
<b>Sub-Totals</b>	<b>1,094</b>	<b>2,011</b>
<b>Monterey Bay North Coast</b>		
Santa Cruz County (SC)	267	718
San Mateo County (SM)	235	210
<b>Sub-Totals</b>	<b>502</b>	<b>928</b>
<b>Grand Totals</b>	<b>1,596</b>	<b>2,939</b>

## **RESULTS**

### **Territorial Distribution**

#### *Monterey Bay South Coast*

The South Coast study area had a total of 37 territorial pairs – 13 along the Monterey Peninsula (Appendix 1, Image 1), 12 along Pebble Beach (Appendix 1, Image 2), and 12 at Point Lobos (Appendix 1, Image 3). Of the 37 territorial pairs, there were a total of 24 nesting pairs and 14 pairs with an unknown status during the breeding season. Pairs with an unknown status were counted as not having nested.

In the Monterey Peninsula section, three previous territories (MP3, MP14 & MP15) are now considered abandoned. A territory classified as “abandoned” is a territory that was once occupied by a Black Oystercatcher territorial pair, but monitoring indicated that the territory is no longer occupied by a territorial pair. Since the 2019 breeding season, two territories in Pebble Beach (PB5 & PB13) have been identified as abandoned and two territories (PB9 & PB10) remained as a neutral zone. A “neutral zone” is an area without a territorial Black Oystercatcher pair, but does consist of unattached Black Oystercatchers, including sub-adults and paired Black Oystercatchers without established territories. Along the Point Lobos (PL) monitoring section, two previous territories are still considered abandoned territories (PL9 & PL11).

### Monterey Bay North Coast

The North Coast study area had a total of 27 territorial pairs – 17 along the Santa Cruz monitoring section (Appendix 1, Images 4, 5 & 6) and 10 along the San Mateo monitoring section (Appendix 1, Images 7, 8 & 9). Of the 27 territorial pairs, there were a total of 13 nesting pairs and 14 pairs with an unknown status. A highly unusual observation occurred on Pescadero Rock, with not one single territorial pair attempting to nest during the 2021 breeding season.

In the Santa Cruz (SC) monitoring section, one territory still remains classified as abandoned (SC11) since the 2019 breeding season. Along the San Mateo (SM) monitoring section, the SM6 pair continues to only maintain the portion of their territory near the SM8 territory and not the portion in the center of Pescadero Rock.

### **Timing of Breeding**

The Monterey Bay region had a total of 50 nesting attempts (including replacement clutches). Of these, 49 nests were observed within one to seven days of initiation. Some nests were back calculated from date of hatching to determine approximate nest initiation dates and were included in the nesting attempts.

In the Monterey Bay region, nesting started in late April and early May (Figure 2). Egg laying initiation dates have consistently started around the last week of April and early May throughout this 10-year study. Based on back calculations of chicks hatched, one nesting attempt occurred in late April (PL10). A total of 11 nesting attempts in early May were observed, seven in the South Coast and four in the North Coast. The greatest number of nesting attempts, with 14 attempted initiations, occurred during the second half of May, eight in the South Coast, and five in the North Coast, with one replacement clutch (SC1.2).

Early June had nine nesting attempts, five in the South Coast, and four in the North Coast. During the second half of June a total of 10 nesting attempts were recorded, six in the South Coast, including four replacement clutches (MP5.2, MP13.2, PB11.2 & PL6.2) and four replacement clutches in the North Coast (SC4.2, SC5.2, SM8.2 & SC1.3). A total of four nesting attempts occurred in early July, with one replacement clutch in the South Coast (PL3.2), and one replacement clutch in the North Coast (SC15.2). Lastly, a second nesting attempt in the South Coast (PB8.2) and a third nesting attempt in the North Coast (SC15.3) occurred in late July. Only two North Coast pairs (SC1 & SC15) had three nesting attempts.



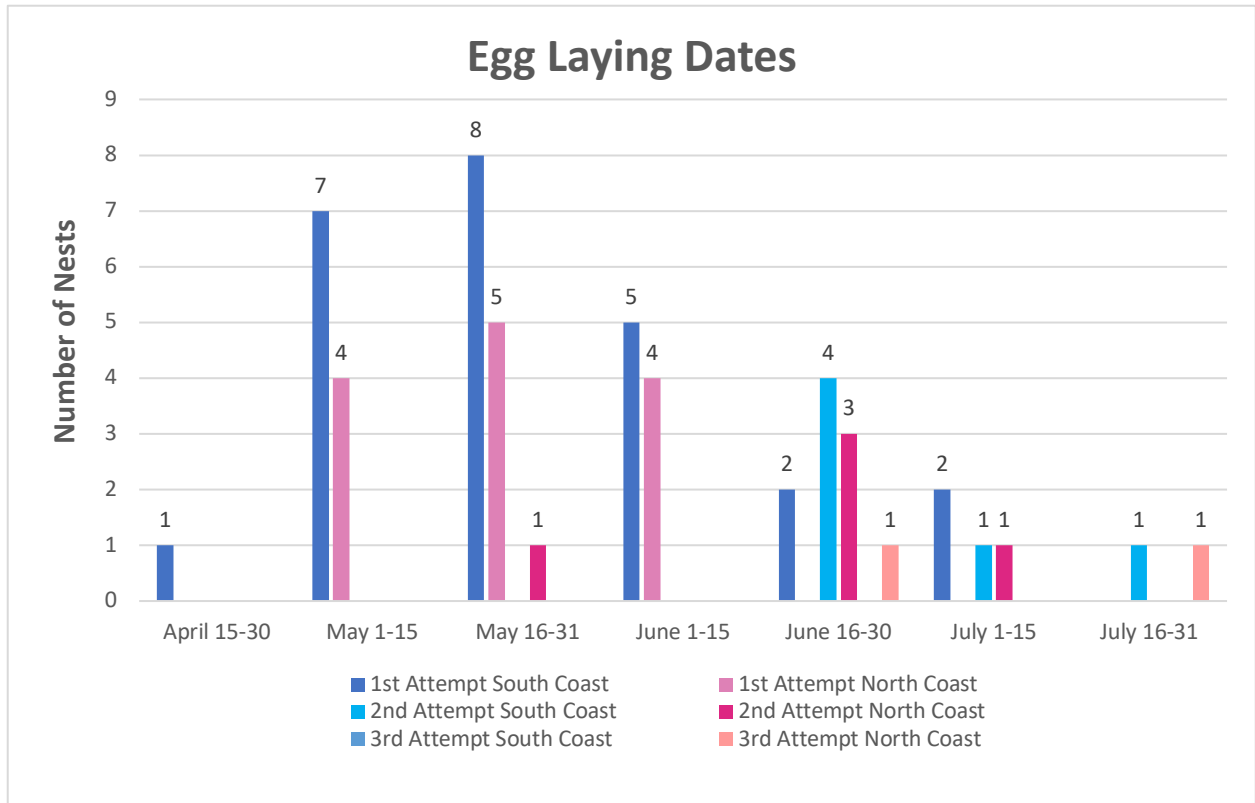


Figure 2. 2021 Monterey Bay region Black Oystercatcher egg laying dates.

### **Reproductive Success**

During the 2021 breeding season, a total of 65 territorial pairs were identified but only 37 pairs (57%) were observed nesting. Due to the diverse coastal topography throughout the Monterey Bay region, exact clutch size for all nesting attempts was not attainable. Many nests were viewed with spotting scopes from distant observation points on land. Therefore, many nesting attempts had an estimated clutch size of two eggs, an average number within the Monterey Bay region, when confirmation was not possible.

A total of 24 nesting pairs and 6 re-nesting attempts occurred along the South Coast, for a total of 30 nesting attempts. These pairs produced a minimum of 61 eggs and resulted in 20% nesting success (# of clutches that produced young / # of clutches) (Table 2). The total number of chicks hatched was 12 with only 8% surviving to fledging (# of chicks fledged / # of chicks). The South Coast had only one fledgling an extremely low reproductive success of 0.04 (4%) per pair (# of fledglings / # of breeding pairs). It was an exceptionally poor reproductive season for the Monterey Peninsula monitoring section. For the third year in a row, no fledglings were recorded in the Monterey Peninsula monitoring section. This year, the Pebble Beach monitoring section also had no fledglings. The Point Lobos monitoring section produced the South Bay study area's only fledgling (PL7). This is the only time during 10-years of monitoring, that the South Coast had only one recorded fledgling.

Reproductive success along the North Coast study area was only slightly better than the South Coast study area. A total of only 13 nesting pairs and seven re-nesting attempts occurred along

the North Coast, for a total of 20 nesting attempts. A minimum of 44 eggs were produced (27% less than the previous breeding season) and resulted in 45% nesting success (Table 2). The total number of recorded chicks hatched was 17, with 35% surviving to fledging. A total of six fledglings from three pairs were recorded and resulted in a reproductive success of 0.46 per pair (Table 2). This appears much better than the previous year of 0.27 per pair, but 2021 had nine less breeding pairs and nine less nesting attempts than in 2020. In 2021, two pairs (SC7 & SM6) produced two fledglings each and one pair (SC1.3) produced two fledglings from a third clutch. It is also the only time since monitoring the North Coast that the Pescadero Rock territorial pairs did not produce a single fledgling. In the entire San Mateo (SM) monitoring section, only two of the 10 territorial pairs (20%) are known to have nested and for the first time since monitoring of this section began, there was no known egg laying among the six territorial pairs on Pescadero Rock.

Overall, the reproductive success of the Monterey Bay region was 0.19 per pair (Table 2). A minimum of 135 eggs were produced, but only a minimum of 29 chicks were recorded to have hatched, resulting in 30% nesting success, with 24% surviving to fledging. The 2021 breeding season produced a total of only seven fledglings from only four of the 37 breeding pairs (11% and 10 less breeding pairs than the previous year). The greatest number of fledglings (n=4) were produced from the Santa Cruz monitoring section. Tables 3 through 7 in Appendix 2 show detailed 2021 productivity results for each territory within each section.

Table 2. 2021 Black Oystercatcher Reproductive Success – Monterey Bay Region

Study Areas	# of Breeding Pairs	# of Eggs	# of Chicks	# of Fledglings	# of Nest Attempts	Nesting Success (%)	Hatching Success (%)	Per Pair	Per Nest	Survival to Fledging (%)
Monterey Peninsula (MP)	10	24	2	0	12	8.3	8.3	0.00	0.00	0.0
Pebble Beach (PB)	6	16	0	0	8	0.0	0.0	0.00	0.00	0.0
Point Lobos (PL)	8	21	10	1	10	50.0	47.6	0.13	0.10	10.0
<b>Monterey Bay South Coast</b>	<b>24</b>	<b>61</b>	<b>12</b>	<b>1</b>	<b>30</b>	<b>20.0</b>	<b>19.7</b>	<b>0.04</b>	<b>0.03</b>	<b>8.3</b>
Santa Cruz County (SC)	11	36	14	4	17	41.2	38.9	0.36	0.24	28.6
San Mateo County (SM)	2	8	3	2	3	66.7	37.5	1.00	0.67	66.7
<b>Monterey Bay North Coast</b>	<b>13</b>	<b>44</b>	<b>17</b>	<b>6</b>	<b>20</b>	<b>45.0</b>	<b>38.6</b>	<b>0.46</b>	<b>0.30</b>	<b>35.3</b>
<b>Monterey Bay South + North Coast</b>	<b>37</b>	<b>105</b>	<b>29</b>	<b>7</b>	<b>50</b>	<b>30.0</b>	<b>27.6</b>	<b>0.19</b>	<b>0.14</b>	<b>24.1</b>

Reproductive success in 2021 (0.19 per pair) is the lowest since the North Coast study area was added to the monitoring project in the Monterey Bay region in 2016 (Table 8). Reproductive success has fluctuated in each monitoring section but has steadily declined since 2018, in part due to the decrease in the North Coast reproductive success. Overall, reproductive success has decreased by 31% since 2018. Because the scope of this project has been to determine nesting and fledging success based on viability of eggs and chicks, there is no concrete data, except for perchance observations, of influences other than human disturbance and natural predation that could affect BLOY reproductive success. Other factors such as sea level change, changes in BLOY food sources, or toxins (both natural and man-made) may have played a role in the decrease in reproductive success, but these factors have not been thoroughly studied. In the

future, these are all areas that need to be investigated further in order to better understand the entire picture of Black Oystercatcher population dynamics.

The Monterey Bay South Coast has seen extremely low reproductive success since 2016 (Table 8). This year (2021) has been the least productive year yet with only 0.04 per pair (32% decrease from 2020 and 20% decrease from 2019). In the North Coast, reproductive success has also declined precipitously from previous years. In 2016 and 2017 reproductive success was 0.82 and 0.84 per pair respectively. In 2018 and 2019 that decreased by about 10% to 0.74 and 0.71 per pair. In the last two years, 2020 and 2021, reproductive success decreased even further to 0.27 (44% decrease from 2019) and a slight increase in 2021 to 0.46 (25% decrease from 2019). A more detailed discussion can be found in the 10-year Reproductive Success Summary section of this report.

Table 8. *Black Oystercatcher Reproductive Success Per Pair for 2016 through 2021 - Monterey Bay Region*

Site	2016	2017	2018	2019	2020	2021
Monterey Bay South Coast	0.14	0.21	0.31	0.24	0.36	0.04
Monterey Bay North Coast	0.82	0.84	0.74	0.71	0.27	0.46
<b>Monterey Bay South + North Coast</b>	<b>0.40</b>	<b>0.46</b>	<b>0.50</b>	<b>0.48</b>	<b>0.32</b>	<b>0.19</b>

[Ref.: Ceja & Hanks 2016, 2017 & 2018; Parkin et al. 2019, 2020]

### **Nest Locations**

A total of 50 nesting attempts occurred in the Monterey Bay region. Of those, 49.0% (n=24) nested on offshore rocks (rocks separated from coastal access during higher tides), 46.0% (n=23) nested on mainland rocks (bluffs, onshore rocks, and outcrops), and 6.1% (n=3) nested on beaches (mainly rocky beaches).

Of the 14 pairs that produced young, 42.9% (n=6) nested on offshore rocks, 64.3% (n=9) on mainland rocks, and 7.1% (n=1) on beaches. Four breeding pairs fledged young, 50% (n=2) on offshore rocks and 50% (n=2) on mainland rocks. No fledglings were produced from pairs nesting on beaches. Fledglings were produced equally from mainland rocks and offshore rocks this year.

Images 1, 2, and 3 in Appendix 1 show the 2021 Black Oystercatcher territories and nest locations for the three monitoring sections of the Monterey Bay South Coast study area – Monterey Peninsula, Pebble Beach, and Point Lobos. Image 4 in Appendix 1 shows the entire stretch of the Santa Cruz monitoring section with the Black Oystercatcher territories and nest locations, while Images 5 and 6 in Appendix 1 show in more detail the 2021 territories and nest locations for the Santa Cruz monitoring section. Image 7 in Appendix 1 shows the entire stretch of the San Mateo monitoring section with the Black Oystercatcher territories and nest locations, while Images 8 and 9 in Appendix 1 show in more detail the 2021 territories and nest locations for the San Mateo monitoring section.

## **Disturbance**

### *Vulnerability to Disturbance*

The five monitoring sections of the Monterey Bay region differ greatly in topography, accessibility, land use, and regulations, making each area distinctively different in its vulnerability. The South Coast has one of the most vulnerable sections in the entire Monterey Bay region. The Monterey Peninsula is the most vulnerable to disturbance because it has the most accessible areas. Along the coastline, it has recreational trails, substantial coastline development and parking areas, as well as numerous rocky outcroppings that are easily accessed, especially at low tide. It is extremely important to use protective measures at many of the Monterey Peninsula nesting spots to prevent human related access. A large portion of the Pebble Beach coastline is closed to public access due to private homes and restrictive golf course, hotel, and related coastal developments, as well as fencing and natural barriers. However, there are several Black Oystercatcher territories that are in areas with public access that are heavily used by people. These include near Bird Rock and several golf courses. Other activities contributing to disturbance at Pebble Beach are the special events (e.g., AT&T Pebble Beach Pro-Am & Pebble Beach Motoring Classic) that have large numbers of people and a wide range of related activities (e.g., crowd movement & construction of temporary facilities) that may increase stress on territorial Black Oystercatcher pairs. Although Point Lobos State Natural Reserve is strictly regulated, and some areas are inaccessible to the public, other areas, especially near some of the rocky coves, are more accessible and highly impacted by humans walking onto the rocky outcroppings near Black Oystercatcher foraging areas and possible nesting sites.

The North Coast monitoring section has a mixture of State Parks, rugged topography, and accessible coastline. Natural Bridges State Park is probably the most compromised nesting area in the North, due to people having access along the coastal bench (shelf) to look at tidepools. The second most impacted area in Santa Cruz County is at Greyhound Rock, where people can easily access this large rock at low tide and stress or directly impact the territorial pair that nests on the large rock. The rest of the Santa Cruz monitoring section, including the Wilder Ranch State Park portion of the coast, consists mainly of high coastal bluffs and farmland, making human access more difficult and limiting some of the Black Oystercatcher's natural predators. The San Mateo monitoring section is also a highly vulnerable area of the North Coast. Most of the coast and offshore rocks can be accessed during low tide from a number of parking areas along Highway 1 that are a short walking distance from the intertidal zone. Pescadero Rock is particularly vulnerable at negative low tides when access by humans is less impeded. Given that six Black Oystercatcher pairs have territories on Pescadero Rock (none of which nested during the 2021 season) and two more pairs use separate rocks accessible off the beach, one major incident could have detrimental effects on all of these pairs. It is, therefore, important to use protective measures in this area.

### *Types of Disturbance*

Black Oystercatchers nesting in all five sections of the Monterey Bay region experienced varying degrees of natural and human caused disturbances. A disturbance was recorded when a pair (or one individual of a pair) was seen chasing or flying away, making alert calls, or territorial calls toward any threats.

The most frequently observed natural disturbance for the entire Monterey Bay region was from Black Oystercatcher interlopers (123 observations). Individuals or pairs are very quick to chase away other BLOYs from their territory, even when sitting on eggs or provisioning young. This can have a huge impact on survival of young, considering how frequently some individuals leave their nests.

The second most frequent disturbance was due to various avian species (a total of 59 observations). These can be further detailed as 20 observations from gull species, 14 from raptor and corvid species, and 25 from “other” avian species. A few examples of avian disturbance include juvenile Brown Pelicans (BRPE) roosting on, at, or near BLOY nests and Peregrine Falcons (PEFA) nesting nearby. Nests disturbed by Brown Pelicans included PL1, PL2, PL10, PL13, and SC14. The vast number of juvenile BRPE that came to roost on Prisoner Rock in the North Coast monitoring section, adjacent to Greyhound Rock, literally crushed the SC14 nest for the second consecutive year. Several Peregrine Falcon nests were observed near nesting BLOY at PL1, PL2, PL3, PL10, SC10, SC14, and SC15. At SC10, observers witnessed a take of at least one BLOY chick by the adult PEFA. Interestingly, we suspect the PEFA also took Western Gull chicks from a nest on the rock adjacent to Shark’s Tooth Rock during the same time period. Lastly, the PB8.2 pair had a late re-nest and was greatly disrupted by numerous Turkey Vultures roosting and flying past the nest.

Human disturbance contributed a total of 43 observations, 31 of which were by non-research related incidences. These were all incidences of people walking out onto coastal rocks and causing disturbance to BLOYs.

There were 17 observations of drones disturbing BLOY pairs. We have documented in previous reports the reactions of BLOY to drones during the breeding season. It is extremely disruptive to pairs with nests and especially to those with young. The adults expend tremendous amounts of energy provisioning their young and keeping them safe from natural predators. When a drone is flying nearby, BLOYs continually alarm call and fly around to protect their young, just as they would with most avian predators.

Finally, pets (7 observations) are a large source of disruption especially in certain monitoring sections. People walking around and allowing their dogs to be off leash on intertidal shelves and rocks can create chaos. The number of incidences is probably much greater given that monitors are not present at all times. Monterey Peninsula, Natural Bridges, and Pescadero Rock monitoring sections have the highest incidences of pets, mainly dogs, walking out on rocks or beaches disturbing nesting birds. This was a constant issue for the SC1 pair at Natural Bridges State Park because of the proximity of their nest site to tide pools along the intertidal shelf where there is easy access during lower tides.

Natural predation from land mammals was not actually observed this season, but many nests with eggs may have been lost due to predation by coyotes, weasels, ground squirrels, fox, bobcats, and raccoons. This may occur more frequently at night and in areas where there are less people.



## PROTECTIVE MEASURES

### Signs. Ropes. Cables & Cones

In a continuing attempt to minimize human disturbance to nesting pairs, protective measures using a variety of signing techniques were put in place at nesting locations known to have high human activity. The extent of protective measures used depended on what was feasible for the particular nesting area. This year, the seasonal protective measures were implemented from April through October.

Physical protective measures were used for 17 territories with 12 nesting attempts in four of the seven Monterey Bay region’s monitoring sections – Monterey Peninsula, Pebble Beach, Santa Cruz, and San Mateo. As seen in Table 9, these seasonal measures provided protection for a total of nine nesting pairs (MP1, MP2, MP4, MP5, MP12, PB8, SM6, SM8, & SC1). All but two (SC1 & PB8) of the seasonal protective measures were put in place for Black Oystercatcher territorial pairs nesting or attempting to nest on offshore rocks that fall within the jurisdiction of the California Coastal National Monument, with six territorial pairs in Monterey Peninsula (MP1, MP2, MP4, MP5, MP12 & MP16), one in Pebble Beach (PB7), one in Santa Cruz (SC1), and eight in San Mateo (SM3, SM4, SM5, SM6, SM7, SM8, SM9 & SM10) monitoring sections.

On the Monterey Peninsula, ropes and signs were placed around the entire area of High Rock and Pyramid Rock on the Point Pinos Islet, protecting the MP4 and MP16 nesting site on the islet’s western end, and entirely around Sentinel Rock protecting the MP5 nesting attempts on the northern side of the middle of the islet. At Crespi Cove, a rope with signs was put across the southern side of Crespi Rock; However, with limited access to John Denver Rock, due to construction of the Pacific Grove Coast Trail and the upgraded Asilomar No. 5 parking area, the MP12 pair chose to nest on the middle of the western side of John Denver Rock. A rope with signs was strung around that nesting location. For the first time, a rope with signs was placed on the eastern side of Gull Rock West to add protection to the MP2 nesting attempt. Once again, State Parks placed a temporary closure on MP1 at Gazebo Rock off the shoreline at the northern end of Asilomar State Beach. Instead of physically roping and signing the nesting location, State Parks used a “virtual roping” technique. A notice that included an aerial view of the coastline and Gazebo Rock with an outline of the closure area was posted on traffic A-frames that were placed on at least two of the stairway access points (Images 10 & 11).



H.E. Hanks



H.E. Hanks

Images 10 & 11. Standard sign used with ropes on CCNM rocks (left); State Parks area closure notice on traffic A-frame for a “virtual closure” at Gazebo Rock off the northern end of Asilomar State Beach (right).

At Pebble Beach’s Bird Rock pullout along 17-Mile Drive, the Pebble Beach Company put up metal eye-bars with a cable and attached signs they developed to provide protection to the “Sensitive Nesting Habitat for Black Oystercatchers” (Images 12 & 13).



H.E. Hanks



H.E. Hanks

Images 12 & 13. Pebble Beach Company’s sign put up to add protection to Black Oystercatcher nesting at the Seal Rock pullout along 17-Mile Drive.

The only physical protection measure applied in the Santa Cruz monitoring section was the use of signage on an orange traffic cone visibly placed on the intertidal shelf near the SC1 nesting site, located just below DeAnza Mobile Home Park on the west side of Santa Cruz. The breeding pair successfully produced two fledglings from this third attempt nest. The success was in part due to the vigilance of a BLOY monitor and the assistance of State Park volunteers interacting with the public to alert them to stay a safe distance from the nesting pair, as well as signage on an orange cone visible on the intertidal shelf (Images 14 & 15).



J.L. Parkin



J.L. Parkin

Images 14 & 15. Natural Bridges State Park orange cone with attached warning sign with picture of BLOY nesting (left); Parent and nearly fledged chick (SC1.3) foraging on intertidal shelf (right).

For the San Mateo monitoring section, ropes with signs were strung around the entire western side and across most of the northern portion of Pescadero Rock off Pescadero State Beach. This provided protection for the SM3, SM4, SM5, SM7, SM9, and SM10 territorial pairs, but no

nesting was recorded. In addition, ropes with signs were placed at the climbing locations onto the SM6 and SM8 nesting sites. Both of these sites produced chicks and SM6 fledged two chicks.

In total, the physical protection measures that protected the 12 nesting attempts produced four of the Monterey Bay region’s seven fledglings or more than half (57%) of the region’s 2021 fledgling production.

Table 9. 2021 Monterey Bay Region Black Oystercatcher Physical Protection Measures for Potential & Actual Nesting Sites

Region & Section	Nest #	Nest Location	Protection Method	# of Eggs	# of Chicks	# of Fledglings
<b>Monterey Bay South Coast</b>						
Monterey Peninsula	MP1	Gazebo Rock	Posted Closure	2*	0	0
	MP2	Point Pinos West	Ropes & Signs	2*	0	0
	MP4	Point Pinos West	Ropes & Signs	2*	0	0
	MP5	Point Pinos East	Ropes & Signs	2	0	0
	MP5.2	Point Pinos East	Ropes & Signs	2*	0	0
	MP12	Crespi Cove/JD Rock	Ropes & Signs	2	0	0
	MP16	Point Pinos Middle	Ropes & Signs	0	0	0
	PB7	Bird Rock South	Cable & Signs	0	0	0
Pebble Beach	PB8	Bird Rock North	Cable & Signs	2*	0	0
	PB8.2	Bird Rock North	Cable & Signs	2*	0	0
<b>Monterey Bay North Coast</b>						
Santa Cruz	SC1.3	Natural Bridges	Cone & Sign	2	2	2
San Mateo	SM3	Pescadero Rock 1	Ropes & Signs	0	0	0
	SM4	Pescadero Rock 2	Ropes & Signs	0	0	0
	SM5	Pescadero Rock 3	Ropes & Signs	0	0	0
	SM6	Pescadero Rock 4	Ropes & Signs	2	2	2
	SM7	Pescadero Rock 5	Ropes & Signs	0	0	0
	SM8	Pescadero Rock 6	Rope & Sign	3	0	0
	SM8.2	Pescadero Rock 6	Rope & Sign	2	1	0
	SM9	Pescadero Rock 7	Ropes & Signs	0	0	0
	SM10	Pescadero Rock 8	Ropes & Signs	0	0	0
				<b>TOTAL:</b>	<b>25*</b>	<b>5</b>

\*Estimated number of eggs

## **Outreach**

Due to the continuing Covid-19 pandemic, outreach activities were very limited. Some outreach continued in the form of contacts between monitors and curious locals and coastal visitors from around the state and around the country, and a few international tourists, but these contacts were only a fraction of past efforts. On the Monterey Peninsula, almost none of the wildlife disturbance brochures, developed a few years ago by a multi-agency/multi-organization working group and paid for by the Monterey Peninsula Audubon Society, were handed out, nor was the card with the City of Pacific Grove’s ordinances related to drone operation and wildlife disturbance.

## RELATED MONITORING ITEMS

### AMOY Visited Monterey Peninsula

In late February 2021, a vagrant pied (having two or more colors) oystercatcher appeared at Yankee Point south of Point Lobos State Natural Reserve, and then was observed at Otter Point along the Pacific Grove shoreline on 9 March before appearing from at least 12-14 March with about a half dozen Black Oystercatchers on the rocky shoreline of Asilomar State Beach (Images 16 & 17).



H.E. Hanks



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Images 16 & 17. *Vagrant American Oystercatcher (AMOY), Haematopus palliatus, Subspecies Frazari* observed in the Monterey Bay South Coast study area in February-March of 2021.

We identified the pied oystercatcher as an adult female. The question began to circulate as to whether this female oystercatcher was an American Oystercatcher (*Haematopus palliatus*) or an American Oystercatcher X Black Oystercatcher (*Haematopus bachmani*) hybrid. To address this question, Don Roberson, *Monterey Birds* website, wrote an article titled “*The Oystercatcher Shell Game: Hybrid or frazari? Does it matter?*”. He concluded that the pier oystercatcher is a vagrant of the west Mexican race of American Oystercatcher (AMOY), *Haematopus palliatus*, Subspecies *frazari*. He stated that, “It is surely an oystercatcher hatched within the known range of *frazari*, and very likely from Baja California.” He added that the plumage of this “rare vagrant to central California,” that “after decades to recover from the over-collecting there... expresses the standard *frazari* genome with its long history of archaic hybridization.” Simply speaking, seeing an American Oystercatcher *frazari* on the Central Coast is a rare occurrence.

### Attempted Release of IBR Fledgling

In early June of 2021, the International Bird Rescue (IBR)’s San Francisco Bay-Delta Wildlife Center in Fairfield received a three-day old Black Oystercatcher chick, a species that is a huge challenge in rehabilitation. After the BLOY chick fledged and had been flying for two weeks, we were contacted regarding release options. We recommended releasing it in a BLOY neutral zone where there would be no conflict with a territorial pair and the possibility of learning survival skills, including foraging skills, from other BLOYs. We suggested the Ocean Road Neutral Zone (ORNZ) at Pebble Beach.



On August 3, 2021, we assisted with the release at the ORNZ. At the time of the release, a single adult and one 1<sup>st</sup> year subadult were foraging about 30 meters from the release spot. We were able to release the fledgling on a low rock about 10 meters onto the wrack (Images 18 & 19).



H.E. Hanks



H.E. Hanks

Images 18 & 19. *Fledgling was reluctant to leave its travel box (right); Fledgling #1 shortly after release (left).*

After standing there taking in this very new environment for more than 10 minutes, the fledgling began peeping and calling. About 10 minutes later, it took a short flight, looping over the wrack and the other two BLOY, returning near the spot it had been standing. The adult BLOY flew over to check out this new fledgling and made a couple of semi-aggressive moves toward the fledgling. The fledgling's reaction to the adult, was to move closer to the people standing on the beach. Attempts to direct the fledgling back toward the wrack failed and it had to be physically placed back on the rocks. It began peeping again, thus attracting the subadult BLOY. The subadult was more aggressive causing the fledgling to fly towards the land. A normal BLOY response would be to fly a short distance off further along the coast, not towards land. This fledgling flew away from the intertidal and toward the road. Fortunately, it landed in low growing coastal scrub and was recaptured and put back in its travel box to return to IBR. Unfortunately, this release attempt was a failure. The fledgling's reactions indicated that it had no skills for survival in the wild.

Because the release attempt failed, and not being very hopeful about another release attempt, IBR began searching for an institution willing to take the fledgling (Fledgling #1). During this time, another BLOY fledgling (Fledgling #2) was rescued and brought to IBR by Monterey County SPCA from Sobranes Point in Big Sur on 1 September. This fledgling, which had been raised in the wild, had a sizable neck laceration that needed some surgical repair. The two BLOY have been kept together at IBR in the hopes that the wild fledgling could teach the captive raised one some skills and be released together near Sobranes Point. In the meantime, the Pinola Conservancy, a private aviary certified by the Association of Zoos and Aquariums, agreed to take Fledgling #1. Located near Shreveport, Louisiana, the Pinola Aviary contains 300 species of birds, including one Black Oystercatcher and two American Oystercatchers. They breed birds for zoos and other private aviaries. Although their facility is not open to the public, they do provide an educational resource through their website that contains photographs, live web cams, and educational tools for anyone fascinated by birds.



## **CLASI Tower & Drone Monitoring**

At the end of the 2021 BLOY breeding season in the Monterey Bay region, the BLOY Project was contacted regarding plans by the Naval Postgraduate School’s Department of Meteorology to install a temporary meteorological tower or mast on Point Cabrillo on Hopkins Marine Station (Image 20). On 6 August, we monitored the installation of the temporary mast. Since the nesting attempts for MP7, MP8, and MP10 failed with no re-nesting attempts, there was no potential impact to nesting BLOY. During the tower installation, both the MP7 and MP8 pairs were present during the installation activity. We limited the movement of the installation crew (four people plus the principal investigator) to minimize disturbance to the MP7 pair, as well as the Harbor Seals on the West Beach on the west side of the Hopkins Marine Station. One of the MP8 BLOYs flew onto the rocks about 15 to 20 meters to the northwest of the installation site and appeared to be watching the activity, before it flew back to the north.

The installation of the temporary meteorological mast was part of a multi-university, multi-agency project called the “Coastal Land-Air-Sea Interaction Experiment” or “CLASI,” a U.S. Navy-funded scientific endeavor that measure wind, waves, and currents at the sea and shore interface in order to develop more precise weather forecast modules. The CLASI effort includes a series of offshore buoys deployed throughout Monterey Bay, temporary meteorological towers, and drone flights, both from land and small boat launches.



H.E. Hanks



H.E. Hanks



H.E. Hanks

Images 20, 21 & 22 *Installing the 20’ aluminum meteorological mast (left); Launching CLASI drone (middle) at the Great Tidepool and the AEGIS E900 hexacopter with Sony A6600 camera and TriSonica Mini weather station (right).*

In addition to monitoring the installation of the temporary meteorological tower, the BLOY Project monitored the three CLASI land launched drone or UAS (unmanned aircraft system) activities operated by University of Miami using an AEGIS E900 hexacopter with Sony A6600 camera and TriSonica Mini weather station (Images 21 & 22). All three drone launch dates – 27 September, 30 September, and 1 October – were from the Great Tidepool (MP2) area along the

Pacific Grove coast. With two launches on each day, each launch was straight up to 25 meters (about 80') and then straight out to the buoy locations about 400 meters (¼ mile) offshore, with a straight return and a drop landing. BLOYs were only present during the 27 September launches, and the BLOYs reaction to the drone flights was only slight. On that date, the MP2 pair was resting and preening on top of the large flat rock on the southeast side of Gull Rock East. With the first launch, both BLOYs stood looking towards the drone but no other reactions. When the drone landed, there was only a slight look from the BLOY pair. The second launch produced only a slight reaction from the BLOYs. The interesting thing is that the MP2 BLOYs were more than 1,000 feet (300 meters) away from the drone launching and landing site.

## **10-YEAR REPRODUCTIVE SUCCESS SUMMARY: 2012-2021**

The 10-year BLOY reproductive success monitoring project in the Monterey Bay region began in 2012, as part of the California coastwide effort, and was completed in 2021. Although monitoring data was collected in part of the Monterey Bay South Coast study area in 2012 and a smaller monitoring sampling effort was conducted in 2013, consistent monitoring in both the Monterey Bay South Coast study area and the Monterey Bay North Coast study area did not begin until 2014. From 2014 through 2020, the number of BLOY territories monitored increased each year. Nevertheless, the seasonal data from 2014 through 2021 produced a robust enough sample size to provide comparable annual reproductive success data for both study areas and the entire region.

Table 10 in Appendix 3, entitled “Monterey Bay Region Reproductive Success Per Pair, 2012-2021” displays the reproductive success rate per breeding pair for each of the 10 years of monitoring. During the 10-year monitoring period, there have been as little as five breeding pairs monitored (2013) and as many as 52 breeding pairs (2018). Reproductive success per pair was as low as 0.17 (2012 & 2015) and as high as 0.75 (2014). The 2021 rate of 0.19 is the lowest of the full Monterey Bay region’s monitoring period of 2016-2021.

In total, for the 10-year monitoring period, 132 fledglings were recorded from 335 breeding pairs for an overall reproductive success per pair of 0.39. Using the initial model developed by Meehan et al. (2018), a model based on a literature survey of vital BLOY rates using primary data from Alaska and British Columbia, pair reproductivity success per pair estimates below 0.35 are “likely a sign of caution” (i.e., population at risk). Therefore, the estimate for the overall reproductive success per pair for the Monterey Bay region indicates a BLOY population close to being a population at risk. However, assessing the data from the 2016-2021, a period, that provides a more robust sampling size and complete set of six contiguous years with all seven monitoring units, the reproductive success rate is 0.30 per breeding pairs (87 fledglings from 288 breeding pairs), indicating a definite “sign of caution” or a population at risk for the Monterey Bay region’s Black Oystercatchers. Although there have been good years and bad years, the overall trend for the Monterey Bay region’s BLOY population is clearly trending downward (Figure 3).

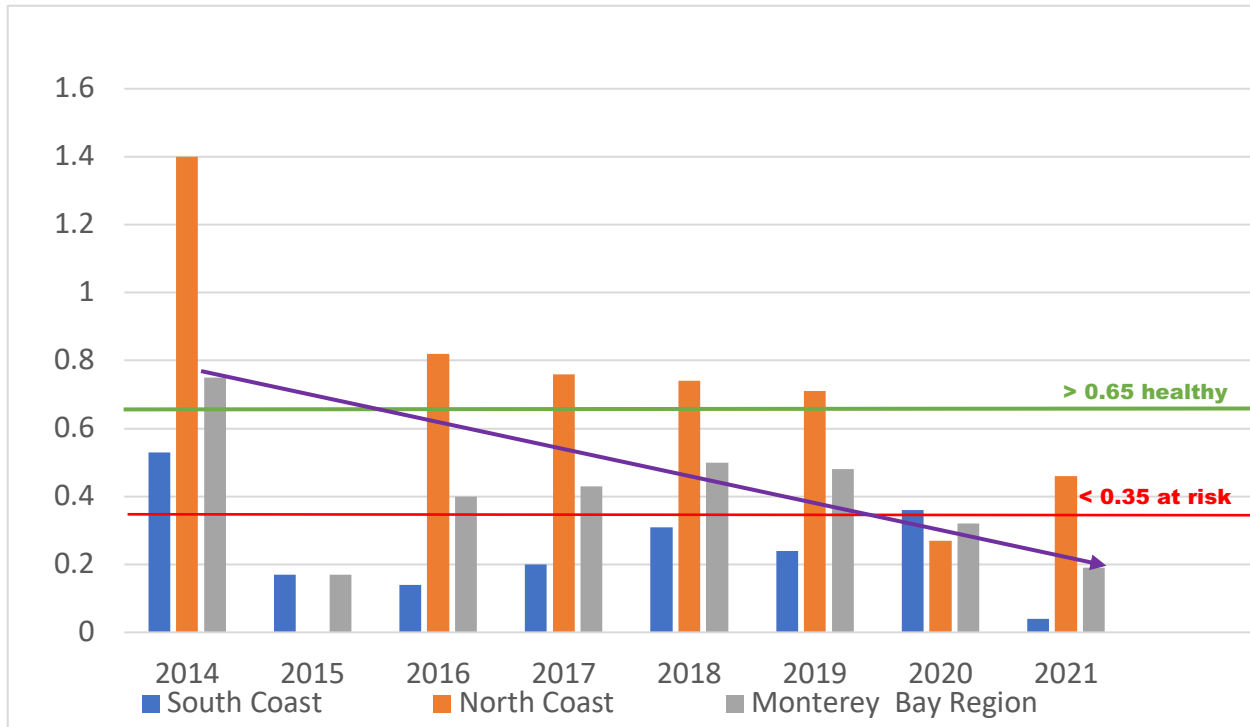


Figure 3. Monterey Bay Region Reproductive Success Per Breeding Pair. 2014-2021, showing a clear downward trend (purple arrow); above the 0.65 green line indicates a good sign for a local population, while below the 0.35 red line is likely sign of caution for the local population (Meehan et al. 2018).

## WHERE DO WE GO FROM HERE?

Audubon California has determined that an additional 10-year “Index Survey” (or “Index Monitoring”) initiative is needed in order to continue the assessment of the reproductive success of the California Black Oystercatcher (BLOY) population. A 10-year “Index Survey” is the consistent monitoring (from 2022 through 2031) of a selected sample of the BLOY breeding pairs monitored as part of the 2012-2021 California coastwide monitoring effort. Audubon California, however, will continue to provide technical assistance, but are not able to continue to coordinate the effort. Currently two options are being considered. These options are: (1) a Non-Randomly Selected Sampling approach and (2) a Stratified Unaligned Probability Sampling approach. Both approaches would serve as an indicator of productivity coastwide, but the second option allows for strong statistical inferences about the entire population, avoids bias, and lessens the error factor. This is the approach that the California Central Coast Black Oystercatcher Project has proposed. Which approach will be selected has yet to be decided. Regardless of which “Index Survey” option is chosen, the California Central Coast Black Oystercatcher Project is planning on continuing monitoring at the same level that we have been doing, assuming that the citizen science monitors are willing to continue, and funding can be obtained to cover at least a project biologist to ensure consistent coverage, data collection, and data analysis.

## **ACKNOWLEDGEMENTS**

A very special thank you to all of the volunteers from the Bureau of Land Management's California Coastal National Monument, Pacific Grove Museum of Natural History, and Point Lobos State Natural Reserve. Your monitoring work, dedicated effort, and passion for the protection of the Black Oystercatcher is the core value of this project.

We are particularly appreciative for the funding the California Central Coast Black Oystercatcher Project received in 2021. It covered a contract for the Project Biologist and a stipend for the Assistant Project Biologist/Intern. This funding would not have been possible without an extremely generous \$15,000 grant from an anonymous donor to which we are tremendously grateful. Especially during a continuing pandemic when we needed the funded biologist positions to ensure complete and consistent coverage of all of the BLOY territories. Once again, we are forever grateful for our anonymous donator who saved our monitoring effort and ensured the successful completion of the 10<sup>th</sup> year of our 10-year study in the Monterey Bay region.

We are also appreciative for a variety of small donations from a number of individual donors. We thank you all!

A very special thank you to Martha Nitzberg and Natural Bridges State Park for posting signs and volunteers on the intertidal shelf near the SC1 nesting pair. This pair successfully fledged two chicks with the aid of many volunteers.

A special thank you to Monterey Audubon Society for providing the local home for the BLOY Project and managing the project's funding account.

A thanks to the Pacific Grove Museum of Natural History for hosting the California Central Coast Black Oystercatcher Project as one of the museum's community science programs.

A gracious thanks to Audubon California for its continual support, data compilation and analysis, and coordination of the overall California coast-wide Black Oystercatcher program, of which the California Central Coast Black Oystercatcher Project is a part.

Thanks to the BLM's California Coastal National Monument for overseeing the California Central Coast Black Oystercatcher Project and providing technical guidance as needed. And thanks to California State Parks for permitting access to continue monitoring at their locations within the Monterey District and for closing off a section of Asilomar State Beach in order to protect a nesting site.

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**MONTEREY BAY REGION  
BLACK OYSTERCATCHER TERRITORIES & NESTING SITES  
2021**



Image 1. 2021 Black Oystercatcher territories and nest locations for the Monterey Peninsula (MP) monitoring section.

**MONTEREY BAY REGION - BLOY TERRITORIES & NESTING SITES 2021 (Cont'd.)**

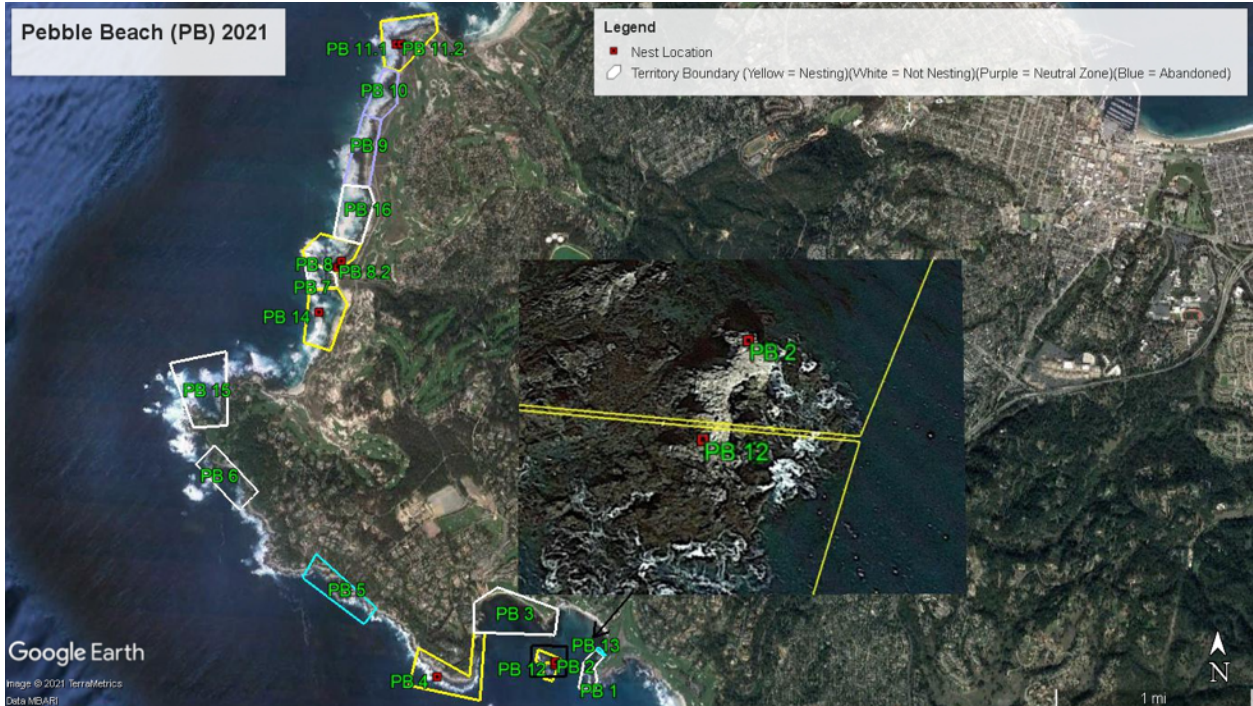


Image 2. 2021 Black Oystercatcher territories and nest locations for the Pebble Beach (PB) monitoring section.



Image 3. 2021 Black Oystercatcher territories and nest locations for the Point Lobos (PL) monitoring section (Point Lobos State Natural Reserve).



**MONTEREY BAY REGION - BLOY TERRITORIES & NESTING SITES 2021 (Cont'd.)**

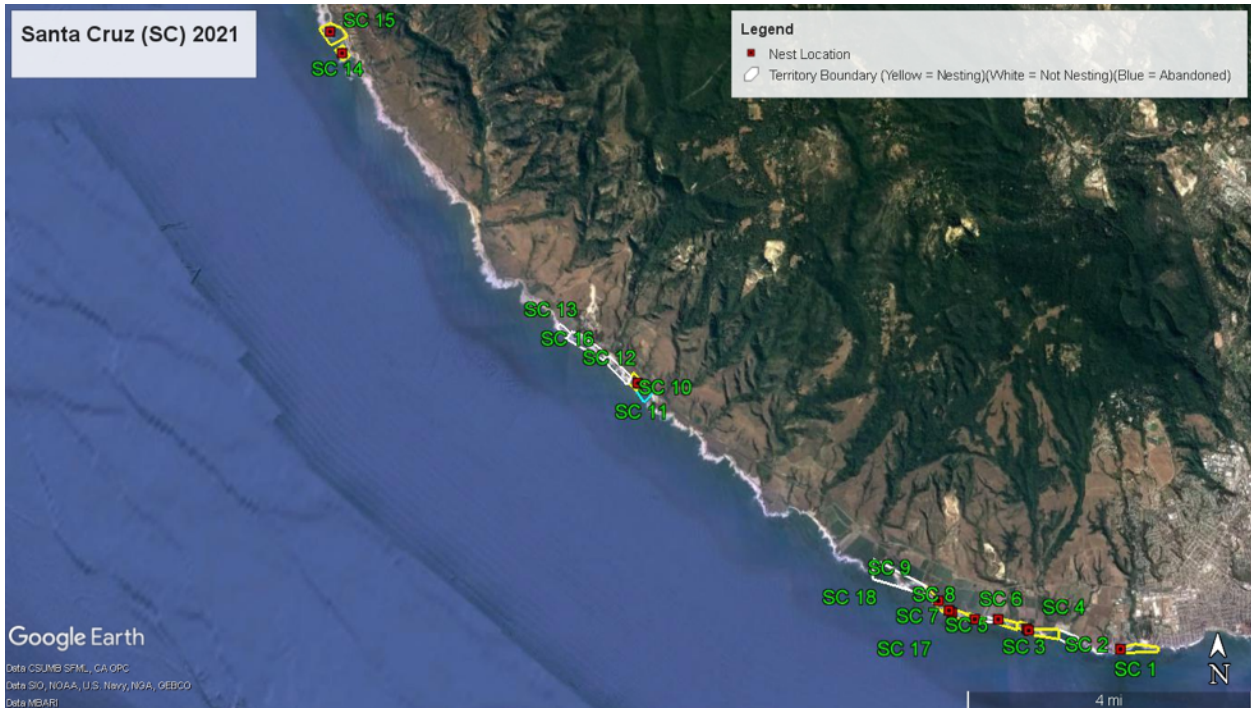


Image 4. 2021 Black Oystercatcher territories and nest locations for the Santa Cruz County (SC) monitoring section.



Image 5. 2021 Black Oystercatcher territories and nest locations for the Santa Cruz County (SC) monitoring section's southern portion (Natural Bridges State Beach to 3-Mile Beach, Wilder Ranch State Park).

**APPENDIX 1-3**



**MONTEREY BAY REGION - BLOY TERRITORIES & NESTING SITES 2021 (Cont'd.)**

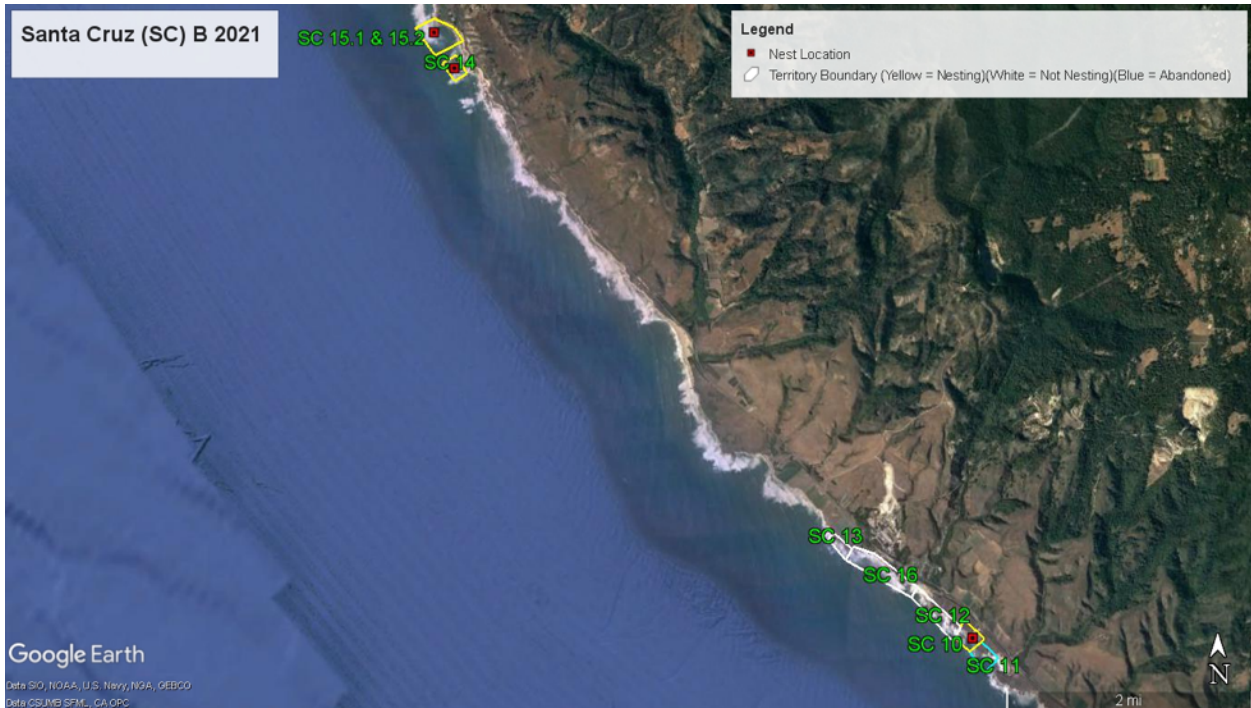


Image 6. 2021 Black Oystercatcher territories and nest locations for the Santa Cruz County (SC) monitoring section's northern portion (Shark's Tooth Cove to Greyhound Rock).

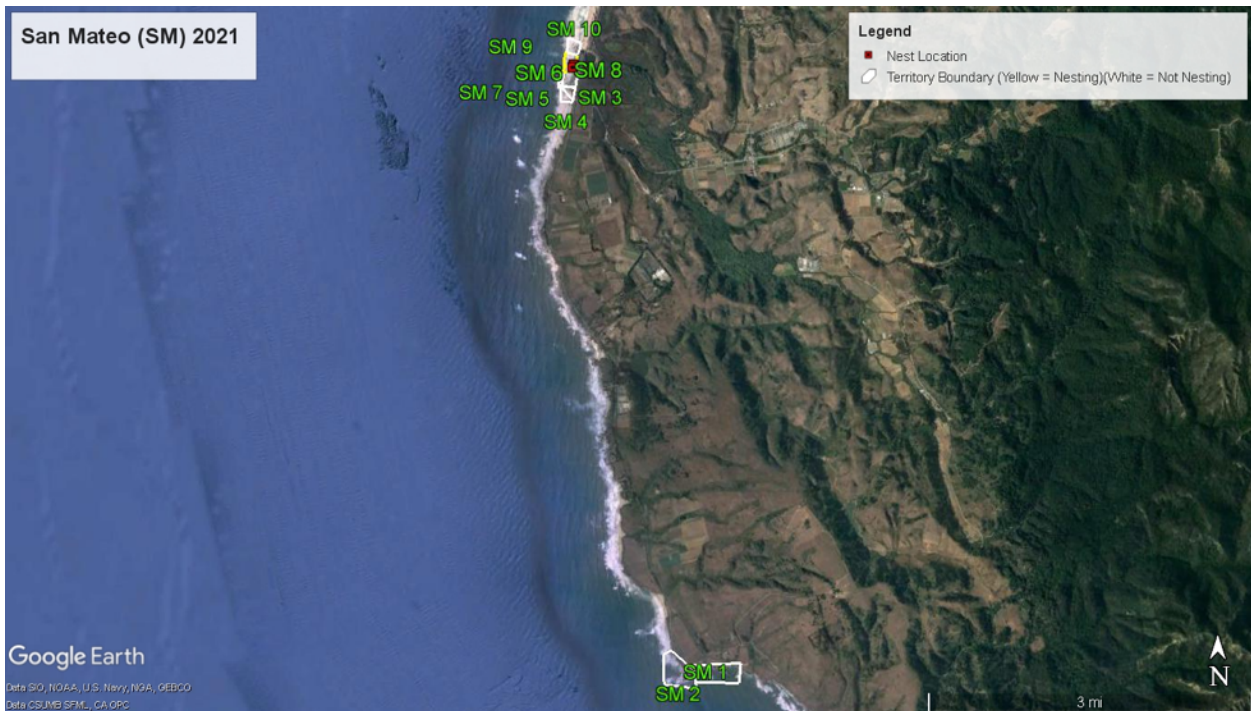


Image 7. 2021 Black Oystercatcher territories and nest locations for the San Mateo County monitoring section (SM).

**MONTEREY BAY REGION - BLOY TERRITORIES & NESTING SITES 2021 (Cont'd.)**



Image 8. 2021 Black Oystercatcher territories and nest locations for the San Mateo County (SM) monitoring section's southern portion (Prisoner Rock and Pigeon Point).



Image 9. 2021 Black Oystercatcher territories and nest locations for the San Mateo County (SM) monitoring section's northern portion off the shoreline of Pescadero State Beach.



**MONTEREY BAY REGION  
BLACK OYSTERCATCHER REPRODUCTIVE PRODUCTIVITY  
2021**

Table 3. *Monterey Bay South Coast Productivity – Monterey Peninsula (MP) Monitoring Section*

<b>Nest #</b>	<b>Name</b>	<b># of Eggs</b>	<b># of Chicks</b>	<b># of Fledglings</b>
MP1	Gazebo	2*	0	0
MP2	Gull Rock West	2*	0	0
MP3	Barnacle Rock	0	0	0
MP4	Point Pinos West	2*	0	0
MP5	Point Pinos East	2	0	0
MP5.2	Point Pinos East	2*	0	0
MP6	13 <sup>th</sup> Street	2	0	0
MP7	Hopkins West	2*	0	0
MP8	Hopkins East	2*	0	0
MP9	Lover Point West (Oak Rock)	0	0	0
MP10	Hopkins North	2	0	0
MP11	Asilomar	0	0	0
MP12	Crespi Cove	2	0	0
MP13	Coast Guard Pier (El Torito)	2	2	0
MP13.2	Coast Guard Pier (El Torito)	2	0	0
MP14	3 <sup>rd</sup> Street	0	0	0
MP15	John Denver Rock East	0	0	0
MP16	Point Pinos (Pyramid-Prom Rocks)	0	0	0
MP17	Perkins Park	0	0	0
<b>Total:</b>		<b>24*</b>	<b>2</b>	<b>0</b>

*\*Unknown clutch size; at least two eggs were believed to be present.*

**APPENDIX 2-1**

**MONTEREY BAY REGION BLACK OYSTERCATCHER  
REPRODUCTIVE PRODUCTIVITY – 2021 (Cont'd.)**

Table 4. *Monterey Bay South Coast Productivity – Pebble Beach (PB) Monitoring Section*

<b>Nest #</b>	<b>Name</b>	<b># of Eggs</b>	<b># of Chicks</b>	<b># of Fledglings</b>
PB1	Stillwater Cove East	0	0	0
PB2	Stillwater Cove South	2*	0	0
PB3	Stillwater Cove North	0	0	0
PB4	Ghost Tree (Stillwater Point)	2*	0	0
PB5	Lone Cypress	0	0	0
PB6	Cypress Point Lookout	0	0	0
PB7	Bird Rock South	0	0	0
PB8	Bird Rock North	2*	0	0
PB8.2	Bird Rock North	2*	0	0
PB9	Ocean Road Neutral Zone (ORNZ)	0	0	0
PB10	China Rock South	0	0	0
PB11	Point Joe	2*	0	0
PB11.2	Point Joe	2*	0	0
PB12	Stillwater Cove Pescadero Rock	2*	0	0
PB13	Stillwater Cove Northeast [Abandoned]	0	0	0
PB14	Bird Rock West	2*	0	0
PB15	Cypress Point North	0	0	0
PB16	Bird Rock East	0	0	0
<b>Total:</b>		<b>16*</b>	<b>0</b>	<b>0</b>

*\*Unknown clutch size; at least two eggs were believed to be present.*



**MONTEREY BAY REGION BLACK OYSTERCATCHER  
REPRODUCTIVE PRODUCTIVITY – 2021 (Cont'd.)**

Table 5. *Monterey Bay South Coast Productivity – Point Lobos (PL) Monitoring Section*

<b>Nest #</b>	<b>Name</b>	<b># of Eggs</b>	<b># of Chicks</b>	<b># of Fledglings</b>
PL1	Bird Island SE	0	0	0
PL2	Bird Island NE	2*	0	0
PL3	China Cove (Weston South)	2*	0	0
PL3.2	China Cove (Weston South)	2*	0	0
PL4	Sand Hill Cove (Weston South)	0	0	0
PL5	Sea Lion Cove	0	0	0
PL6	Headland Cove South	3	3	0
PL6.2	Headland Cove South	2*	1	0
PL7	Whalers Cove	2*	2	1
PL8	Moss Cove	2*	0	0
PL9	Middle Rock North	0	0	0
PL10	Cypress Cove	2*	2	0
PL11	Headland Cove North [Abandoned]	0	0	0
PL12	Bird Island Rocks	0	0	0
PL13	Guillemot Rock	2*	0	0
PL14	Sand Hill Cove	2*	2	0
<b>Total:</b>		<b>21*</b>	<b>10</b>	<b>1</b>

*\*Unknown clutch size; at least two eggs were believed to be present.*

**MONTEREY BAY REGION BLACK OYSTERCATCHER  
REPRODUCTIVE PRODUCTIVITY – 2021 (Cont'd.)**

Table 6. *Monterey Bay North Coast Productivity – Santa Cruz (SC) Monitoring Section*

<b>Nest #</b>	<b>Name</b>	<b># of Eggs</b>	<b># of Chicks</b>	<b># of Fledglings</b>
SC1	Natural Bridges	2*	0	0
SC1.2	Natural Bridges	2*	0	0
SC1.3	Natural Bridges	2	2	2
SC2	Wilder Beach	0	0	0
SC3	Fern Grotto Beach South	2*	0	0
SC4	Fern Grotto Beach North	2	0	0
SC4.2	Fern Grotto Beach North	3	2	0
SC5	Sand Plant Beach North	2*	0	0
SC5.2	Sand Plant Beach North	2*	1	0
SC6	Sand Plant Beach South	2*	0	0
SC7	Strawberry Beach North	2*	2	2
SC8	3 Mile Beach South	2*	2*	0
SC9	3 Mile Beach North	0	0	0
SC10	Shark's Tooth Rock	2	2	0
SC11	Shark's Tooth Cove South	0	0	0
SC12	Davenport South	0	0	0
SC13	Davenport North	0	0	0
SC14	Pelican Rock	2*	0	0
SC15	Greyhound Rock	3	3	0
SC15.2	Greyhound Rock	2*	0	0
SC15.3	Greyhound Rock	2*	0	0
SC16	Davenport Bluff Middle	0	0	0
SC17	Ohlone Bluff	0	0	0
SC18	Strawberry Beach West	2*	0	0
<b>Total:</b>		<b>36*</b>	<b>14*</b>	<b>4</b>

*\*Unknown clutch size; at least two eggs were believed to be present.*

**MONTEREY BAY REGION BLACK OYSTERCATCHER  
REPRODUCTIVE PRODUCTIVITY – 2021 (Cont'd.)**

Table 7. *Monterey Bay North Coast Productivity – San Mateo (SM) Monitoring Section*

<b>Nest #</b>	<b>Name</b>	<b># of Eggs</b>	<b># of Chicks</b>	<b># of Fledglings</b>
SM1	Prisoner Rock	0	0	0
SM2	Pigeon Point	0	0	0
SM3	Pescadero 1	0	0	0
SM4	Pescadero 2	0	0	0
SM5	Pescadero 3	0	0	0
SM6	Pescadero 4	3	2	2
SM7	Pescadero 5	0	0	0
SM8	Pescadero 6	3	0	0
SM8.2	Pescadero 6	2	1	0
SM9	Pescadero 7	0	0	0
SM10	Pescadero 8	0	0	0
<b>Total:</b>		<b>8</b>	<b>3</b>	<b>2</b>

*\*Unknown clutch size; at least two eggs were believed to be present.*

Table 10. *Monterey Bay Region Black Oystercatcher Ten-Year Reproductive Success Monitoring Results by Season, 2012-2021*

**2012 Black Oystercatcher Reproductive Success – Monterey Bay**

Site	Breeding Pairs	Nest Attempts	# of Eggs	# of Chicks	# of Fledglings	Nesting Success	Hatching Success	Per Pair
Monterey Peninsula (MP)	5	8	16*	3*	1	25%	19%	.20
Pebble Beach (PB)	4	5	10*	2*	1	40%	20%	.25
Point Lobos (PL)	3	3	8*	6*	0	200%	75%	.00
<b>Monterey Bay South</b>	<b>12</b>	<b>16</b>	<b>34*</b>	<b>11*</b>	<b>2</b>	<b>69%</b>	<b>32%</b>	<b>.17</b>
Santa Cruz County (SC)	-	-	-	-	-	-	-	-
San Mateo County (SM)	-	-	-	-	-	-	-	-
<b>Monterey Bay North</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**2012 Overall Reproductive Success – Per Pair: .17**

**2013 Black Oystercatcher Reproductive Success – Monterey Bay**

Site	Breeding Pairs	Nest Attempts	# of Eggs	# of Chicks	# of Fledglings	Nesting Success	Hatching Success	Per Pair
Monterey Peninsula (MP)	5	6	18	9	2	67%	50%	.40
Pebble Beach (PB)	-	-	-	-	-	-	-	-
Point Lobos (PL)	-	-	-	-	-	-	-	-
<b>Monterey Bay South</b>	<b>5</b>	<b>6</b>	<b>18</b>	<b>9</b>	<b>2</b>	<b>67%</b>	<b>50%</b>	<b>.40</b>
Santa Cruz County (SC)	-	-	-	-	-	-	-	-
San Mateo County (SM)	-	-	-	-	-	-	-	-
<b>Monterey Bay North</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**2013 Overall Reproductive Success – Per Pair: .40**

**2014 Black Oystercatcher Reproductive Success – Monterey Bay**

Site	Breeding Pairs	Nest Attempts	# of Eggs	# of Chicks	# of Fledglings	Nesting Success	Hatching Success	Per Pair
Monterey Peninsula (MP)	9	13	25*	9	2	52%	36%	.22
Pebble Beach (PB)	-	-	-	-	-	-	-	-
Point Lobos (PL)	6	7	17*	12	6	41%	32%	1.00
<b>Monterey Bay South</b>	<b>15</b>	<b>20</b>	<b>42*</b>	<b>21</b>	<b>8</b>	<b>48%</b>	<b>32%</b>	<b>.53</b>
Santa Cruz County (SC)	-	-	-	-	-	-	-	-
San Mateo County (SM)	5	5	10*	7	7	50%	71%	1.40
<b>Monterey Bay North</b>	<b>5</b>	<b>5</b>	<b>10*</b>	<b>7</b>	<b>7</b>	<b>50%</b>	<b>71%</b>	<b>1.40</b>

**2014 Overall Reproductive Success – Per Pair: .75**

**2015 Black Oystercatcher Reproductive Success – Monterey Bay**

Site	Breeding Pairs	Nest Attempts	# of Eggs	# of Chicks	# of Fledglings	Nesting Success	Hatching Success	Per Pair
Monterey Peninsula (MP)	11	15	33*	12	2	40%	36%	.18
Pebble Beach (PB)	8	10	22*	6	2	30%	27%	.25
Point Lobos (PL)	7	9	19*	6	1	33%	32%	.14
<b>Monterey Bay South</b>	<b>26</b>	<b>34</b>	<b>74*</b>	<b>24</b>	<b>5</b>	<b>35%</b>	<b>32%</b>	<b>.19</b>
Santa Cruz County (SC)	-	-	-	-	-	-	-	-
San Mateo County (SM)	-	-	-	-	-	-	-	-
<b>Monterey Bay North</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**2015 Overall Reproductive Success – Per Pair: .17**

\* Estimated number of eggs or chicks

### 2016 Black Oystercatcher Reproductive Success – Monterey Bay

Site	Breeding Pairs	Nest Attempts	# of Eggs	# of Chicks	# of Fledglings	Nesting Success	Hatching Success	Per Pair
Monterey Peninsula (MP)	10	14	33*	9	1	36%	27%	.10
Pebble Beach (PB)	9	9	22*	7*	2	56%	32%	.22
Point Lobos (PL)	9	11	27*	13*	1	63%	48%	.11
<b>Monterey Bay South</b>	<b>28</b>	<b>34</b>	<b>82*</b>	<b>29*</b>	<b>4</b>	<b>50%</b>	<b>35%</b>	<b>.14</b>
Santa Cruz County (SC)	10	12	34*	16	7	58%	47%	.70
San Mateo County (SM)	7	7	17*	10	7	71%	59%	1.00
<b>Monterey Bay North</b>	<b>17</b>	<b>19</b>	<b>51*</b>	<b>26</b>	<b>14</b>	<b>63%</b>	<b>51%</b>	<b>.82</b>

2016 Overall Reproductive Success – **Per Pair: .41**

### 2017 Black Oystercatcher Reproductive Success – Monterey Bay

Site	Breeding Pairs	Nest Attempts	# of Eggs	# of Chicks	# of Fledglings	Nesting Success	Hatching Success	Per Pair
Monterey Peninsula (MP)	12	14	38*	5	1	36%	14%	.08
Pebble Beach (PB)	8	9	25*	10	2	56%	44%	.25
Point Lobos (PL)	9	11	25*	7	3	63%	26%	.33
<b>Monterey Bay South</b>	<b>29</b>	<b>39</b>	<b>88*</b>	<b>20</b>	<b>6</b>	<b>28%</b>	<b>23%</b>	<b>.21</b>
Santa Cruz County (SC)	12	15	35*	22	7	79%	65%	.58
San Mateo County (SM)	8	9	19*	13	9	78%	68%	1.13
<b>Monterey Bay North</b>	<b>20</b>	<b>23</b>	<b>54*</b>	<b>35</b>	<b>16</b>	<b>78%</b>	<b>70%</b>	<b>.80</b>

2017 Overall Reproductive Success – **Per Pair: .45**

### 2018 Black Oystercatcher Reproductive Success – Monterey Bay

Site	Breeding Pairs	Nest Attempts	# of Eggs	# of Chicks	# of Fledglings	Nesting Success	Hatching Success	Per Pair
Monterey Peninsula (MP)	11	15	37*	5	3	33%	24%	.27
Pebble Beach (PB)	10	13	31*	7	3	46%	23%	.30
Point Lobos (PL)	8	11	27*	18	3	73%	67%	.38
<b>Monterey Bay South</b>	<b>29</b>	<b>39</b>	<b>95*</b>	<b>34</b>	<b>9</b>	<b>49%</b>	<b>36%</b>	<b>.32</b>
Santa Cruz County (SC)	14	16	40*	23	8	69%	58%	.57
San Mateo County (SM)	9	12	30*	17	9	67%	57%	1.00
<b>Monterey Bay North</b>	<b>23</b>	<b>28</b>	<b>70*</b>	<b>40</b>	<b>17</b>	<b>68%</b>	<b>57%</b>	<b>.74</b>

2018 Overall Reproductive Success – **Per Pair: .50**

### 2019 Black Oystercatcher Reproductive Success – Monterey Bay

Site	Breeding Pairs	Nest Attempts	# of Eggs	# of Chicks	# of Fledglings	Nesting Success	Hatching Success	Per Pair
Monterey Peninsula (MP)	9	12	27*	5*	0	25%	19%	0.00
Pebble Beach (PB)	6	7	14*	7	4	57%	50%	.67
Point Lobos (PL)	6	8	17*	7	1	50%	41%	.17
<b>Monterey Bay South</b>	<b>21</b>	<b>27</b>	<b>58*</b>	<b>19</b>	<b>5</b>	<b>41%</b>	<b>33%</b>	<b>.24</b>
Santa Cruz County (SC)	12	16	38*	20*	7	69%	53%	.58
San Mateo County (SM)	9	12	25*	13*	8	75%	52%	.89
<b>Monterey Bay North</b>	<b>21</b>	<b>28</b>	<b>63*</b>	<b>33*</b>	<b>15</b>	<b>71%</b>	<b>53%</b>	<b>.71</b>

2019 Overall Reproductive Success – **Per Pair: .48**

\* Estimated number of eggs or chicks

### 2020 Black Oystercatcher Reproductive Success – Monterey Bay

Site	Breeding Pairs	Nest Attempts	# of Eggs	# of Chicks	# of Fledglings	Nesting Success	Hatching Success	Per Pair
Monterey Peninsula (MP)	10	16	32*	3	0	13%	9%	.00
Pebble Beach (PB)	8	11	24*	10	2	36%	42%	.25
Point Lobos (PL)	7	9	19*	8	7	44%	42%	1.00
<b>Monterey Bay South</b>	<b>25</b>	<b>36</b>	<b>75*</b>	<b>21</b>	<b>9</b>	<b>28%</b>	<b>28%</b>	<b>.36</b>
Santa Cruz County (SC)	14	21	42*	13*	4	38%	31%	.29
San Mateo County (SM)	8	8	18*	13*	2	88%	72%	.25
<b>Monterey Bay North</b>	<b>22</b>	<b>29</b>	<b>60*</b>	<b>26*</b>	<b>6</b>	<b>52%</b>	<b>43%</b>	<b>.27</b>

2020 Overall Reproductive Success – **Per Pair: .32**

### 2021 Black Oystercatcher Reproductive Success – Monterey Bay

Site	Breeding Pairs	Nest Attempts	# of Eggs	# of Chicks	# of Fledglings	Nesting Success	Hatching Success	Per Pair
Monterey Peninsula (MP)	10	12	24*	2	0	8%	8%	.00
Pebble Beach (PB)	8	8	16*	0	0	0%	0%	.00
Point Lobos (PL)	8	10	21*	10	1	50%	48%	.13
<b>Monterey Bay South</b>	<b>24</b>	<b>30</b>	<b>61*</b>	<b>12</b>	<b>1</b>	<b>20%</b>	<b>20%</b>	<b>.04</b>
Santa Cruz County (SC)	11	17	36*	14*	4	41%	39%	.36
San Mateo County (SM)	2	3	8	3	2	67%	38%	1.00
<b>Monterey Bay North</b>	<b>13</b>	<b>20</b>	<b>44*</b>	<b>17*</b>	<b>6</b>	<b>45%</b>	<b>39%</b>	<b>.46</b>

2021 Overall Reproductive Success – **Per Pair: .19**

\* Estimated number of eggs or chicks