

**Black Oystercatcher (*Haematopus bachmani*)  
Reproductive Success  
California Central Coast, Monterey Bay Region  
2022**

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 J.L. Parkin): SM2 (Pigeon Point Lighthouse) three newly hatched chicks.

# **Black Oystercatcher (*Haematopus bachmani*) Reproductive Success California Central Coast, Monterey Bay Region 2022**

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## **SUMMARY OF 2022 BREEDING SUCCESS**

During the 2022 breeding season in the **Monterey Bay region**, a total of 69 territorial pairs were identified, but only 45 pairs (65%) were observed nesting for a total of 57 nesting attempts (45 breeding pairs + 12 re-nesting attempts, also referred to as “replacement clutches”). From the observed breeding pairs (also referred to as “nesting pairs”), there were at least 126 eggs laid, 61 chicks hatched, and 17 chicks fledged, for an **overall breeding success rate of 0.38 per pair**, with 11 of the 45 breeding pairs (24%) producing fledglings. The 17 fledglings were more than double the number of fledglings that were recorded in 2021. Also in 2022, there was an almost equal number of fledglings recorded from the South Coast and North Coast study areas. Although an overall breeding success of 0.38 is much better than the previous year of 0.19, it is still below the model projection of <0.40 representing a population at risk.

In the Monterey Bay **South Coast** study area, a total of 24 breeding pairs and seven re-nesting attempts were recorded, for a total of 31 nesting attempts. A minimum of 68 eggs and 30 chicks were produced, with a total of eight fledglings from five breeding pairs, resulting in a reproductive success of 0.33 per pair. The Monterey Peninsula monitoring section had more fledglings in 2022 than it had in any previous breeding season since 2018, while the Pebble Beach monitoring section had no recorded fledglings in 2022. For the second year in a row, the Point Lobos monitoring section did not have any fledglings from the Bird Island territorial pairs.

In the Monterey Bay **North Coast** study area, a total of 21 breeding pairs and five re-nesting attempts were recorded, for a total of 26 nesting attempts. A minimum of 58 eggs and 31 chicks were produced, with a total of nine fledglings from six pairs, resulting in a reproductive success of 0.38 per pair. In the Santa Cruz monitoring section, there were no fledglings produced north of Wilder State Park. In the San Mateo monitoring section, with 9 territorial pairs known to have nested, only two Pigeon Point territorial pairs produced fledglings, with no fledglings from Pescadero Rock.

## **INTRODUCTION – STUDY AREAS**

In 2022, the California Central Coast Black Oystercatcher Project monitored nesting activity for a total of 79 Black Oystercatcher (*Haematopus bachmani*) (hereafter occasionally referred to as BLOY, using the International Ornithologists’ Union’s common name abbreviation) territories. Currently there are 69 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).

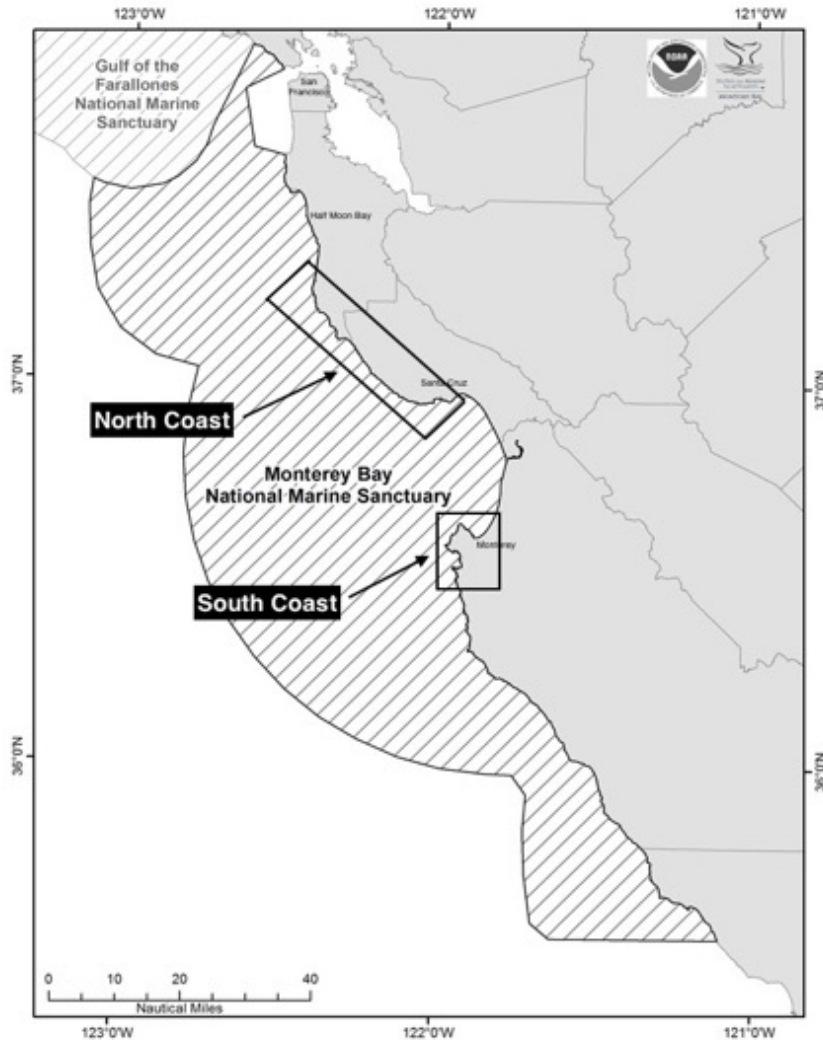


Figure 1. Map showing Monterey Bay South Coast and North Coast Study Areas.

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 east side of 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 their respective section of coastline. The Santa Cruz monitoring section includes Natural Bridges State Beach and the University of California Santa Cruz's Younger Lagoon Reserve, 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.

## **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.

The field work is conducted by a staff consisting of a regional coordinator, a professional staff biologist and an assistant biologist/intern and it is currently operated as a community science effort using more than 40 volunteer monitors (See *Number of Monitors, Monitoring Hours & Observations*).

For 2022, 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 staff biologist and the assistant biologist/intern. The staff 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 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 79 Black Oystercatcher territories throughout the Monterey Bay region (See Appendix 1 for Google Earth maps of BLOY territories within each monitoring section).

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 10 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 2022 breeding season, the California Central Coast Black Oystercatcher Project (BLOY Project) used a total of 43 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 46 monitors. A large majority of the community science monitors were distributed throughout the South Coast with 40 monitors, -- 25 in the Monterey Peninsula monitoring section, 6 for the Point Lobos monitoring section, and 9 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, some 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 13 of the 19 territories in the Santa Cruz monitoring section. In the Monterey Bay South Coast study area, the project staff alone covered 3 territories (MP3, MP15 & MP17) in the Monterey Peninsula monitoring section and 6 territories (PL4, PL5, PL10, PL11, PL12 & PL13) in the Point Lobos monitoring section.

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 31 October 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 79 Black Oystercatcher territories monitored in the Monterey Bay region, there were a total of 2,345 hours of monitoring from 3,874 observations – 1,550 hours from 2,459 observations in the South Coast and 799 hours from 1,420 observations in the North Coast (Table 1).

In the Santa Cruz monitoring section on the North Coast, one community science volunteer alone conducted 558 observations in four territories or 49% of the entire Santa Cruz monitoring section, 39% of the entire North Coast study area observations, and 14% of the entire Monterey Bay Region. Together, the individual observations for the Regional Coordinator, Project Biologist and the Assistant Project Biologist/Intern totaled 2,139 observations or more than 55% of all the observations conducted during the 2022 breeding season.

Table 1. 2022 Black Oystercatcher Monitoring Hours & Observation Numbers - Monterey Bay Region

Study Areas & Monitoring Sections	# of Monitoring Hours	# of Observations
<b>Monterey Bay South Coast</b>		
Monterey Peninsula (MP)	840	1,196
Pebble Beach (PB)	461	763
Point Lobos (PL)	249	500
<b>Sub-Totals</b>	<b>1,550</b>	<b>2,459</b>
<b>Monterey Bay North Coast</b>		
Santa Cruz County (SC)	447	1,130
San Mateo County (SM)	352	290
<b>Sub-Totals</b>	<b>799</b>	<b>1,420</b>
<b>Grand Totals</b>	<b>2,345</b>	<b>3,874</b>

## RESULTS

### Territorial Distribution

#### Monterey Bay South Coast

The South Coast study area had a total of 38 territorial pairs – 13 along the Monterey Peninsula (Appendix 1, Image 1), 13 along Pebble Beach (Appendix 1, Image 2), and 12 at Point Lobos (Appendix 1, Image 3). Of the 38 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, a new pair (MP18) has established and defended a territory carved out of the eastern portion of the MP13 territory between the east side of the cormorant nesting/roosting platform off the east side of El Torito Restaurant and the eastern side of the Coast Guard Pier. Three previous territories (MP3, MP14 & MP15) are still considered abandoned. Additionally, the MP8 and MP17 territories are now considered abandoned as of this year. 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 one territory (PB9) 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, single adults, and newly paired Black Oystercatchers without established territories. In 2022, a formerly designated neutral zone (PB10) had a pair nesting in and defending the territory. 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 30 territorial pairs – 18 along the Santa Cruz monitoring section (Appendix 1, Images 4, 5 & 6) and 12 along the San Mateo monitoring section (Appendix 1, Images 7, 8 & 9). Of the 30 territorial pairs, there were a total of 21 nesting pairs and 9 pairs with an unknown status.



In the Santa Cruz (SC) monitoring section, one territory still remains classified as abandoned (SC11) since the 2019 breeding season. A new territory was added at Greyhound Rock north (SC19). The location of a nest was not found, but this pair had been observed early in the breeding season and had one fledgling that was observed for several weeks during August and September. In the San Mateo (SM) monitoring section, the SM5 territory may now be a neutral zone on Pescadero Rock; However further observations are needed for confirmation. Two new additional territories were observed during the 2022 breeding season. One pair (SM11) defended a small territory between the beach and the SM6 territory boundary and a second pair (SM12) was discovered with two nearly fledged chicks, that subsequently fledged, on the south side of the Pigeon Point Lighthouse.

### **Timing of Breeding**

The Monterey Bay region had a total of 57 nesting attempts (including replacement clutches). Of these, 53 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). Throughout the past 10-year study period (2012-2021), egg laying initiation dates have consistently started around the last week of April and early May.

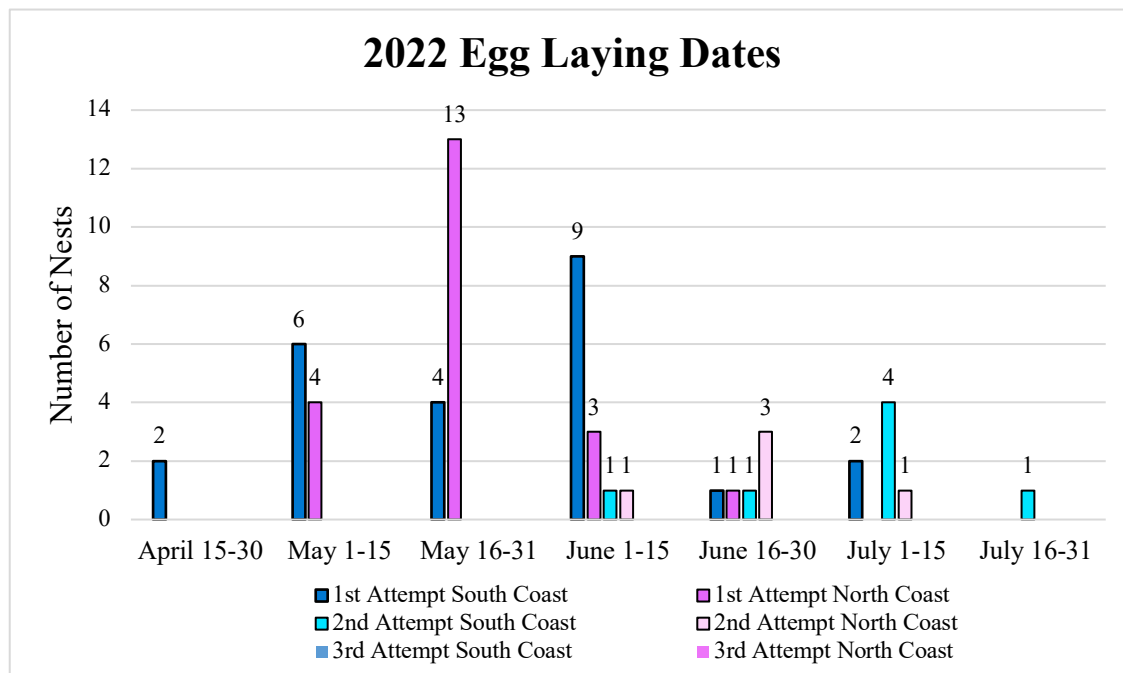


Figure 2. 2022 Monterey Bay region Black Oystercatcher egg laying dates.

In 2022, egg laying in the Monterey Bay region peaked between mid-May and mid-June. Based on observations in late April, the earliest nesting attempts were observed at Point Lobos (PL6) and the Monterey Peninsula (MP13). A total of 10 nesting attempts in early May were observed, six in the South Coast and four in the North Coast. The second half of May had the greatest number of nesting attempts, with 17 attempted initiations, four in the South Coast and 13 in the North Coast. Early June had 14 nesting attempts, slightly less than late May, with 10 in the

South Coast, including one replacement clutch (PL2.2) and four in the North Coast including one replacement clutch (SC17.2). During the second half of June a total of six nesting attempts were recorded, two in the South Coast, including one replacement clutch (MP7.2) and four in the North Coast, including three replacement clutches (SC3.2, SC15.2, and SM8.2). In early July a total of seven nesting attempts occurred, six in the South Coast, including four replacement clutches (MP5.2, MP6.2, MP16.2, and PL7.2). Only one replacement clutch was recorded in the North Coast (SC10.2). Lastly, a second nesting attempt in the South Coast (MP1.2) occurred in late July. No pairs were observed to have had three nesting attempts.

### **Reproductive Success**

During the 2022 breeding season, a total of 69 territorial pairs were identified but only 45 pairs (65%) 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 seven re-nesting attempts occurred along the South Coast, for a total of 31 nesting attempts. These pairs produced a minimum of 68 eggs resulted in 55% nesting success (# of clutches that produced young / # of clutches) (Table 2). The total number of recorded chicks hatched was 30 with only 27% surviving to fledge (# of chicks fledged / # of chicks). The South Coast had a total of eight fledglings from five pairs and a reproductive success of 0.33 per pair (# of fledglings / # of breeding pairs). In the Monterey Peninsula monitoring section, four chicks successfully fledged. One pair fledged two fledglings (MP7.2) and two pairs fledged one chick each (MP10 & MP13). The Point Lobos monitoring section also produced four fledglings, one pair (PL7.2) produced two fledglings, and two other pairs (PL8 & PL14) produced one fledgling each. The Pebble Beach monitoring section did not produce any fledglings.

In the North Coast monitoring section, there were a total of 21 nesting pairs and five replacement clutches, for a total of 26 nesting attempts. These pairs produced a minimum of 58 eggs that resulted in 58% nesting success (Table 2). The total number of recorded chicks hatched was 31, with 29% surviving to fledge. The North Coast had a total of nine fledglings from six pairs and a reproductive success of 0.43 per pair. In the Santa Cruz monitoring section, six chicks successfully fledged, two pairs (SC1.2 & SC5) fledged two fledglings each and two pairs (SC7 & SC19) produced one fledgling each. In the San Mateo monitoring section, two pairs produced three fledglings, all at Pigeon Point Lighthouse State Historic Park. One pair (SM2), that has previously been successful in fledging chicks, produced one fledgling and a new pair (SM12) successfully produced two fledglings. No fledglings were produced at Pescadero Rock. Tables 3 through 7 in Appendix 2 show detailed 2022 productivity results for each territory within each monitoring section.

In 2022, the reproductive success of the Monterey Bay region was 0.38 per pair (Table 2). A minimum of 126 eggs were produced, with a minimum of 61 chicks recorded to have hatched. Nesting success was 56% with a 28% fledgling survival rate. Black Oystercatcher chicks often perish within the first week or two. Many of these are due to predation from land and aerial

predators; others are lost due to a failure to thrive or they hatched with some disability. Those that survive for four to six weeks often survive to fledge. During the 2022 breeding season, there was a greater number than usual of large to nearly fledged chicks (between five to seven weeks old) that were lost. A total of seven large to nearly fledged chicks perished just before fledging from five territories (MP1, MP10, PL14, SC4, and SC7). Possible causes of these losses are from night-time predators (both land mammals and owls), king tides, high surf combined with king tides, and human disturbance.

Table 2. 2022 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)	9	31*	17	4	14	64.3	54.8	0.44	0.29	23.5
Pebble Beach (PB)	8	17*	7	0	8	50.0	41.2	0.00	0.00	0.0
Point Lobos (PL)	7	20*	6	4	9	44.4	30.0	0.57	0.44	66.7
<b>Monterey Bay South Coast</b>	<b>24</b>	<b>68*</b>	<b>30</b>	<b>8</b>	<b>31</b>	<b>54.8</b>	<b>44.1</b>	<b>0.33</b>	<b>0.26</b>	<b>26.7</b>
Santa Cruz County (SC)	14	41*	19*	6	18	50.0	46.3	0.43	0.33	31.6
San Mateo County (SM)	7	17*	12*	3	8	75.0	70.6	0.43	0.38	25.0
<b>Monterey Bay North Coast</b>	<b>21</b>	<b>58*</b>	<b>31*</b>	<b>9</b>	<b>26</b>	<b>57.7</b>	<b>53.5</b>	<b>0.43</b>	<b>0.35</b>	<b>29.0</b>
<b>Monterey Bay South + North Coast</b>	<b>45</b>	<b>126*</b>	<b>61*</b>	<b>17</b>	<b>57</b>	<b>56.1</b>	<b>48.4</b>	<b>0.38</b>	<b>0.30</b>	<b>27.9</b>

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

The 2022 breeding season produced a total of 17 fledglings from 11 of the 45 breeding pairs (24%) that nested and more than double the number of fledglings that were recorded in 2021. There was an almost equal number of fledglings recorded from the South Coast and North Coast monitoring sections. The Monterey Peninsula monitoring section had more fledglings in 2022, than it has seen since 2018. This year the Pebble Beach section had no recorded fledglings. The Point Lobos section did not have any fledglings from the Bird Island area, where over the years of this study there have been fledglings produced. In the Santa Cruz section, there were no fledglings produced north of Wilder State Park. Finally, in the San Mateo section there were no fledglings produced at the Pescadero Rock area where five breeding pairs nested. In past years, this area usually produced a number of fledglings. However, for unknown reasons, the number of fledglings produced has significantly dropped during the last several years.

Reproductive success in 2022 (0.38 per pair) increased from 2021 and is near the mean (0.39 per pair) over the previous six years of this study since the North Coast study area was added to the monitoring project in the Monterey Bay region in 2016 (Table 8). The Monterey Bay South Coast saw a significant increase in reproductive success this year from 0.04 per pair in 2021 to 0.33 per pair in 2022 (Table 8), a 29% increase. In the Monterey Bay North Coast, reproductive success remained close at 0.43 per pair in 2022 and 0.46 per pair in 2021. Overall, reproductive success has fluctuated since 2016, but until this year, has been on a steady decline since 2018. This year marks another year that the Black Oystercatcher population of the Monterey Bay

region is a population close to being a population at risk. Factors contributing to this level of reproductive decline may include human disturbance, natural predation, sea level change, availability of food, and toxins (both natural and man-made).

Table 8. *Black Oystercatcher Reproductive Success Per Pair for 2016 through 2022 - Monterey Bay Region*

Site	2016	2017	2018	2019	2020	2021	2022
Monterey Bay South Coast	0.14	0.21	0.31	0.24	0.36	0.04	0.33
Monterey Bay North Coast	0.82	0.84	0.74	0.71	0.27	0.46	0.43
<b>Monterey Bay South Coast + 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>	<b>0.38</b>

[Ref.: Ceja & Hanks 2016, 2017 & 2018; Parkin et al. 2019, 2020 & 2021]

### **Nest Locations**

A total of 57 nesting attempts occurred in the Monterey Bay region. Of those, 50.9% (n=29) nested on offshore rocks (rocks separated from coastal access during higher tides), 43.9% (n=25) nested on mainland rocks (bluffs, onshore rocks, and outcrops), and 5.2% (n=3) nested on beaches (mainly rocky beaches).

Of the 32 pairs that produced young, 43.8% (n=14) nested on offshore rocks, 50.0% (n=16) on mainland rocks, and 6.3% (n=2) on beaches. Eleven breeding pairs fledged young, 18.2% (n=2) on offshore rocks, 63.6% (n=7) on mainland rocks or ledges, and 18.2% (n=2) on rocky beaches. Mainland rocks and ledges had a higher percent of fledgling success than either offshore rocks or rocky beaches. In part, this may be due to the fact that many of these locations are below the bluffs at Wilder State Park or at other state parks whereby access by humans is lower and land predator access is more difficult. Other factors may impact the overall success of rearing chicks to the fledge stage, that are not due to location of nests. These would include the age and experience of the individuals of the breeding pairs, the health of the adults, the health of the food sources fed to the chicks, climate variables (including weather, tides & level of surf) and to some extent the ability of the chicks to learn at an early stage to react to parent's vocal calls.

Images 1, 2, and 3 in Appendix 1 show the 2022 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 2022 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 2022 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, street parking, and parking pullouts, as well as numerous rocky outcroppings that are easily accessed, especially at low tide. To prevent human related access, it is extremely important to use protective measures at many of the Monterey Peninsula nesting spots.

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 Beach is probably the most compromised nesting area in the North, due to people having access along the rocky shoreline to look at tidepools. The second most impacted area in Santa Cruz County is at Greyhound Rock, where people can easily access this large mudstone rock at low tide and stress or directly impact the territorial pairs 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 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 alarm calls, or territorial calls toward any threats.

The most frequently observed natural disturbance for the entire Monterey Bay region was from Black Oystercatcher interlopers (277 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 the survival of young, considering how frequently some individuals leave their nests. The number of these observations more than doubled from 2021 (123 observations) possibly due to more non-resident BLOY in the Monterey Bay region and/or due to more observer hours and observers catching snap shots of these interactions. In San Mateo County, there were groups of non-nesting BLOYs, numbering three to eight birds, disturbing all the territorial pairs on and near Pescadero Rock. These interlopers were first observed during the early weeks of the breeding season and some may have been looking for territories. A pair of interlopers created non-stop disruption to the SM6 pair, which lost both of their two-week-old chicks due to the constant defense of their territory and brood. Other interlopers caused disruption to both the SM7 and SM10 pairs while nesting on Pescadero Rock. There was no re-nesting on Pescadero Rock possibly due to the large number of interlopers and to the large flocks of Brown Pelican and Heermann's Gull roosting on Pescadero Rock. This may be the case at several other sites in the Monterey Peninsula as well.

The second most frequent disturbance was due to various avian species, with a total of 179 observations (compared with 59 in 2021). These can be further detailed as 31 observations from gull species, 19 from raptors, 39 from 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, large flocks of mainly Heermann's gulls, flocks of roosting Cormorant species, and Peregrine Falcons (PEFA) nesting nearby. Nests disturbed by Brown Pelicans included MP1, MP2, MP5, MP16, PB2, PB8, PB12, PB14, PL1, PL2, PL10, PL13, SC3, SC4, SC14, SM4, SM7, & SM10.

Human disturbance contributed a total of 66 observations (compared with 43 in 2021), 43 of which were by non-research related incidences. These were all incidences of people walking out onto coastal rocks and causing disturbance to BLOYs. The research related incidences were a combination of project staff roping off rocks at the beginning and end of the breeding season and specific nest checks on some nests, academic research from various institutions, and drone research flights.

There were 25 observations of a disturbance by unauthorized drone activity to 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.

There was a total of 20 observations of disturbance from fishing, boating, and waves. Fishing and boating tend to occur less frequently than many other impacts, but they still attribute to the disturbance impacts put on this species. There were nine observations of waves causing a disturbance. Waves are a natural disturbance and are often noticed by observers when BLOY are foraging; However, waves can be a larger factor in chick mortality than has been documented.

Large waves can occur during the day or especially at night and wash young chicks into the water.

There were eight observations of disturbances to BLOY from pets. This disturbance generally occurs in monitoring sections that have easier human access points and probably occur more frequently than indicated by the number of observations included in this study. Dogs are a big concern in areas along the Monterey Peninsula, Pebble Beach, Santa Cruz County, and San Mateo County. They are frequently off-leash and can get very close to nesting birds in these areas. The BLOY perceive dogs as a predator; therefore, reacting with alarm calls and flushing when dogs are nearby.

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. There were no observations of sea lions crushing eggs in nests; However, this could be a factor at some nest sites. Lastly, there is most likely more predation pressure from owls, given there are no observations occurring at night.

## **PROTECTIVE MEASURES**

### **Ropes, Signs, 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 15 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 11 nesting pairs (MP1, MP2, MP5, MP12, MP16, PB8, SC1, SM6, SM7, SM8 & SM10). 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 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 and on the western side of John Denver Rock where the MP12 pair chose to nest. To add protection to the MP2 nesting attempt and young chicks, ropes with signs were placed around Gull Rock East and extended on the eastern side of the rocks. 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 (Image 11).

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



Images 10, 11 & 12. 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 (center); and Pebble Beach Company’s sign put up to add protection to Black Oystercatcher nesting at the Seal Rock pullout along 17-Mile Drive (right).

The only physical protection measure applied in the Santa Cruz monitoring section was the use of signage supplied by the Younger Lagoon Reserve and placed at the top of the bluff near the Seymour Marine Discovery Center where people rappel down the bluff to the ocean. The SC1 breeding pair successfully produced two fledglings from this nest site. The success was in part due to the vigilance of a BLOY monitor interacting with the public to alert them to stay a safe distance from the nesting pair. (Image 13 & 14).



Images 13 & 14. Sign made by Younger Lagoon Reserve and placed on the bluff above the SC1 nesting site.

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. In addition, ropes with signs were placed at the climbing locations onto the SM6 and SM8 nesting sites. Both of these sites produced chicks, but the chicks did not survive to fledging.



In total, the physical protection measures that protected the 12 nesting attempts produced two of the Monterey Bay region’s seventeen fledglings or (12%) of the region’s 2022 fledgling production.

Table 9. 2022 Monterey Bay Region Physical Protection Measures for Potential & Actual BLOY 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	3	0	0
	MP1.2	Gazebo Rock	Posted Closure	2*	2	0
	MP2	Gull Rock East	Ropes & Signs	3	3	0
	MP4	Point Pinos West	Ropes & Signs	0	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	2*	2	0
	MP16.2	Point Pinos Middle	Ropes & Signs	2*	0	0
Pebble Beach	PB7	Bird Rock South	Cable & Signs	0	0	0
	PB8	Bird Rock North	Cable & Signs	2*	0	0
<b>Monterey Bay North Coast</b>						
Santa Cruz	SC1	Natural Bridges	Sign	3	3	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	0
	SM7	Pescadero Rock 5	Ropes & Signs	2*	2	0
	SM8	Pescadero Rock 6	Rope & Sign	2*	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	2*	2*	0
			<b>TOTAL:</b>	<b>33*</b>	<b>17*</b>	<b>2</b>

\*Estimated number of eggs

## Outreach

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 number of international tourists. When appropriate, the wildlife disturbance brochure and the card with the City of Pacific Grove’s ordinances related to drone operation and wildlife disturbance were handed out.

This season, the most notable outreach initiative was the hiring of a Latino intern by Monterey Audubon Society through a grant from the California Coastal Conservancy’s Whale’s Tail license plate program. The goal of the local initiative was to recruit and pay an intern from the Latinx student community at California State University Monterey Bay (CSUMB) to assist with the BLOY monitoring project in the Monterey Bay region. The intern spent many hours in the field monitoring BLOYs and talking to the public. It is estimated that the intern had outreach contacts with more than 200 people along the coastline, informing the public about BLOYs and

local marine protected areas. He also discussed his own pathway into the scientific field and university studies. In addition, he assisted with the BLOY and wildlife monitoring of various drone-related research projects along the Monterey Peninsula. The intern also developed a BLOY poster presentation for a scientific research conference at CSUMB.

Several of our BLOY monitors were actively involved in working with local governmental entities for BLOY and coastal resource protection, primarily with the City of Pacific Grove. This included working with some of the Pacific Grove City Council members and making progress towards establishing a wildlife commission for the City, amending the City's Local Coastal Program with the California Coastal Commission, approving a city BLOY protection protocol, and modifying the city's drone permitting for research and commercial use only. A shoreline information session on wildlife disturbance issues, especially BLOY reactions to drones, was given to Pacific Grove Police Department officers. In addition, one of the BLOY monitors was recently sworn in as one of the two new members of the Pacific Grove City Council.

## **RELATED MONITORING ITEMS**

### **BLOY California Coastwide “Index Survey” & Monterey Bay Region**

Beginning in 2022, the California Coastwide BLOY Project initiated a 10-year “Index Survey” of the BLOY breeding pairs in the five BLOY monitoring regions – Mendocino Coast, Sonoma Coast, San Francisco Bay, Monterey Bay, and San Luis Obispo Coast. The 10-year Index Survey (or “Index Monitoring”) initiative is needed to ensure the continual monitoring and assessment of the reproductive success of the BLOY population in the event the regions cannot continue to monitor the full amount of breeding pairs as covered during the 2012-2021 10-year monitoring initiative. The 2022-2031 10-year “Index Survey” is intended to be the consistent monitoring of a selected sample of the BLOY breeding pairs monitored during the previous five years (2017-2021). A 25% non-randomly selected sample was made using a stratified unaligned probability sampling strategy using the monitoring sections as the sampling strata and breeding pairs as the sampling units. For the Monterey Bay region, this involved the selection of 12 breeding pairs with two in the Point Lobos monitoring section (PL1 & PL6); two in the Pebble Beach monitoring section (PB1 & PB3); three in the Monterey Peninsula monitoring section (MP1, MP6 & MP9); three in the Santa Cruz monitoring section (SC3, SC4 & SC18); and two in the San Mateo monitoring section (SM2 & SM9). The first-year results for the 2022 Index Survey are shown in Table 10.

With only a single fledgling among the 12 Index Survey breeding pairs, that represents a breeding success of 0.08 (8.3%). With a breeding success of 0.38 for the monitored BLOY pairs in the Monterey Bay region, that is a 0.30 difference. It should, however, be noted that the Index Survey data for the Monterey Bay region is for use with the Index Survey data from the other four BLOY monitoring regions in order to obtain a projected breeding success rate for the entire California coastwide effort.

Table 10. 2022 Monterey Bay Region Black Oystercatcher “Index Survey” Breeding Pair Status.

Monitoring Sections	Breeding Pairs	Status	Eggs	Chicks	Fledglings	Notes
<b>Point Lobos</b>	PL1 Bird Island South	Failed	3	0	0	No chicks
	PL6 Headland Cove	Failed	2	0	0	No chicks
<b>Pebble Beach</b>	PB1 Stillwater East	Failed	2	0	0	Short nesting period
	PB3 Stillwater North	N/A	0	0	0	No nesting
<b>Monterey Peninsula</b>	MP1 Gazebo Rock	Failed	2	2	0	2 chicks lost – Near Fledging
	MP6 13 <sup>th</sup> Street	Failed	2	1	0	2 chicks lost – Small downy
	MP6.2 13 <sup>th</sup> Street	Failed	2	2	0	2 chicks lost – Small downy
	MP9 Oak Rock	Failed	0	0	0	No nesting
<b>Santa Cruz</b>	SC3 Fern Grotto South	Failed	2	0	0	No chicks
	SC3.2 Fern Grotto South	Failed	2	2	0	2 chicks lost – Small downy
	SC4 Fern Grotto North	Failed	3	2	0	2 chicks lost – Near fledging
	SC18 Strawberry North	Failed	3	2	0	2 chicks lost – Small downy
<b>San Mateo</b>	SM2 Pigeon Point	Fledged	3	3	1	2 chicks lost – Small downy; <b>1 fledgling</b>
	SM9 Pescadero 7	N/A	0	0	0	No nesting

### **BLOYS & Drone Monitoring**

In 2022, the BLOY Project was involved in the BLOY and wildlife monitoring of 108 drone (UAS or unmanned aerial system) flights that were part of 35 events involved with 4 drone projects. A “drone flight” is a launching and landing of the drone regardless of the time in flight. A “drone event” is a group of drone flights by a specific entity or organization on a specific day at a specific site or location. The local BLOY Project was involved with these drone flights in order to: (1) record BLOY reaction to a variety of drones, drone flight patterns, and drone operations; (2) document BLOY reactions to the drones during both breeding season and non-breeding season; and (3) reduce or prevent disturbance by the various drone flights to BLOYS and other wildlife, especially other avian species. Below are brief discussions of each drone project (See Table 11 in Appendix 3 for a complete listing of the 2022 monitored drone events).

### **Sea Otter Disturbance Study**

This is the second year of the Sea Otter Disturbance Study (Otter Study) and the BLOY Project’s involvement. The first year was 2020 (with no flights in 2021 due to the Covid pandemic). The Otter Study is a joint project with the California Department of Fish and Wildlife – Office of Spill Prevention and Response, U.S. Fish and Wildlife Service – Southern Sea Otter Recovery Program, and Sea Otter Savvy, a non-profit organization. The Otter Study is attempting to determine sea otter reaction to drones and how best to use drones in future sea otter census efforts and sea otter studies. The majority of the drone events and flights monitored by the BLOY Project in 2022 were conducted by the Otter Study with 20 events and 53 flights. All flights were either from Perkins Point Vista in Pacific Grove (12 events with 36 flights) or Coast Guard Pier in Monterey (8 events with 17 flights). The MP9 pair, a non-nesting pair, was

monitored at Perkins Point Vista, and the MP13 nesting pair (and a pair that fledged a single chick) was monitored at the Coast Guard Pier. In addition, a new pair, MP18, that moved into the eastern portion of the MP13 territory, was also monitored. Although there were numerous times that the MP13 pair, as well as the MP18 pair, did alert and alarm calls, there was only a single time that the MP13 male BLOY flew out towards the drone, but turned back when it saw the drone being mobbed by gulls.

### Kelp Barrier Study

For a fourth year, the BLOY Project monitored the Kelp Barrier Study at Stanford University's Hopkins Marine Station in Pacific Grove. There were six events and 30 flights, including a nine-flight drone event. The BLOY territories involved in these flights were MP7, MP8, and MP10. Both the MP7 and MP10 pairs had eggs, chicks, and fledglings during a number of the flights. Although the drone flight grid was shorted to void the western side of the grid where the two BLOY pairs nested, there was an unusual occurrence during one event when a third BLOY pair (most likely the MP6 pair) flew in from the west and circled the drone before the drone was brought in for a landing. During the second flight that day, one of the BLOYs from the third pair flew back and dived on the drone, ending the day's drone flights.

### ROXSI Project

The ROXSI (ROcky shores eXperiments and Simulations) is a multi-university/organization project funded by the Office of Naval Research and dealing with studying wave and current dynamics in a rocky coast environment. The drone portion of the project in Monterey Bay area involved the Naval Research Laboratory (NRL) in Mississippi; Oregon State University (OSU) in Eugene, Oregon; and Scripps Institution of Oceanography-University of California San Diego (OSI) in La Jolla, California. Each used large custom designed research drones outfitted with different monitoring sensor payloads (e.g., LiDAR & ultrasonic). The NRL and OSU drones flew off the south side Pico Avenue Cove at Asilomar State Beach in Pacific Grove, while the OSI drone flew off the south side of China Rock in the northern coastal area of Pebble Beach. Between the three drones, there were eight events and 23 flights. The Asilomar drone flights involved the non-nesting MP11 territorial pair and about six interloping BLOYs, all of which had limited reaction to the drone operations. On the other hand, the Scripps drone flew in the PB10 territory that had a newly found BLOY territorial pair that was nesting on a rock near the drone launch site. The large and noisy gas engine OSI drone had the BLOY pair doing continual alarm calls throughout most of the drone flights. Once it was identified that the BLOY pair had a nest with chicks, the launch site was moved further away, but the noisy drone still caused the BLOYs to occasionally fly out towards or around the drone.

### CSUMB Lower Intertidal Project

After the BLOY breeding season, the BLOY Project monitored one of the California State University Monterey Bay (CSUMB) intertidal drone study events involving two flights from Pescadero Point. Although at least five BLOY territories were involved in the flight area (PB1, PB2, PB3, PB4 and PB12), no BLOYs were observed during either flight.

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We are particularly appreciative for the funding the California Central Coast Black Oystercatcher Project received in 2022. 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. Once again, we are forever grateful for our anonymous donator who saved our monitoring effort and ensured the successful completion of our 11<sup>th</sup> year of the BLOY monitoring project 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 special thank you to Monterey Audubon Society for providing the local home for the BLOY Project and managing the project's funding account.

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A thank you to Younger Lagoon Reserve for designing and placing signage on the bluff near Seymour Marine Discovery Center to prevent people from rappelling down the bluff to the beach area where the SC1 pair nested.

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**MONTEREY BAY REGION  
BLACK OYSTERCATCHER TERRITORIES & NESTING SITES  
2022**

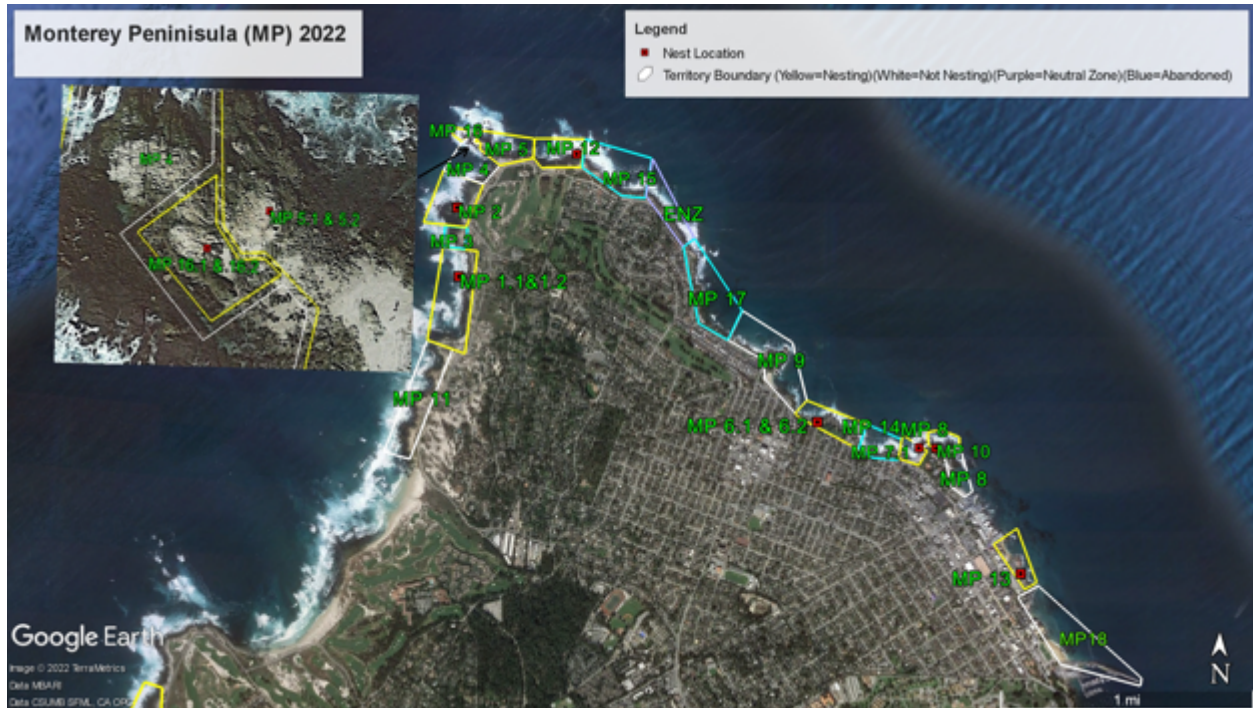


Image 1. 2022 Black Oystercatcher territories and nest locations for the Monterey Peninsula (MP) monitoring section.



MONTEREY BAY REGION - BLOY TERRITORIES & NESTING SITES 2022 (Cont'd.)



Image 2. 2022 Black Oystercatcher territories and nest locations for the Pebble Beach (PB) monitoring section.

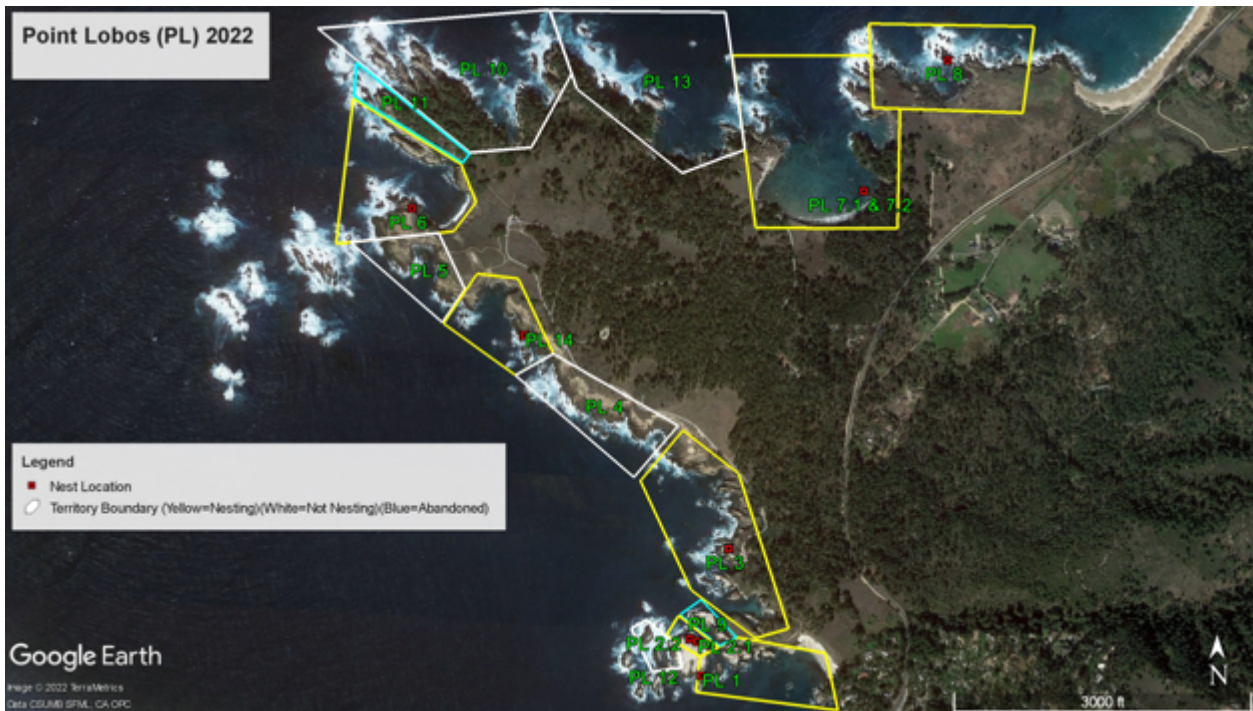


Image 3. 2022 Black Oystercatcher territories and nest locations for the Point Lobos (PL) monitoring section (Point Lobos State Natural Reserve).

APPENDIX 1-2



MONTEREY BAY REGION - BLOY TERRITORIES & NESTING SITES 2022 (Cont'd.)



Image 4. 2022 Black Oystercatcher territories and nest locations for the Santa Cruz County (SC) monitoring section.



Image 5. 2022 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 2022 (Cont'd.)



Image 6. 2022 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. 2022 Black Oystercatcher territories and nest locations for the San Mateo County monitoring section (SM).

APPENDIX 1-4



MONTEREY BAY REGION - BLOY TERRITORIES & NESTING SITES 2022 (Cont'd.)

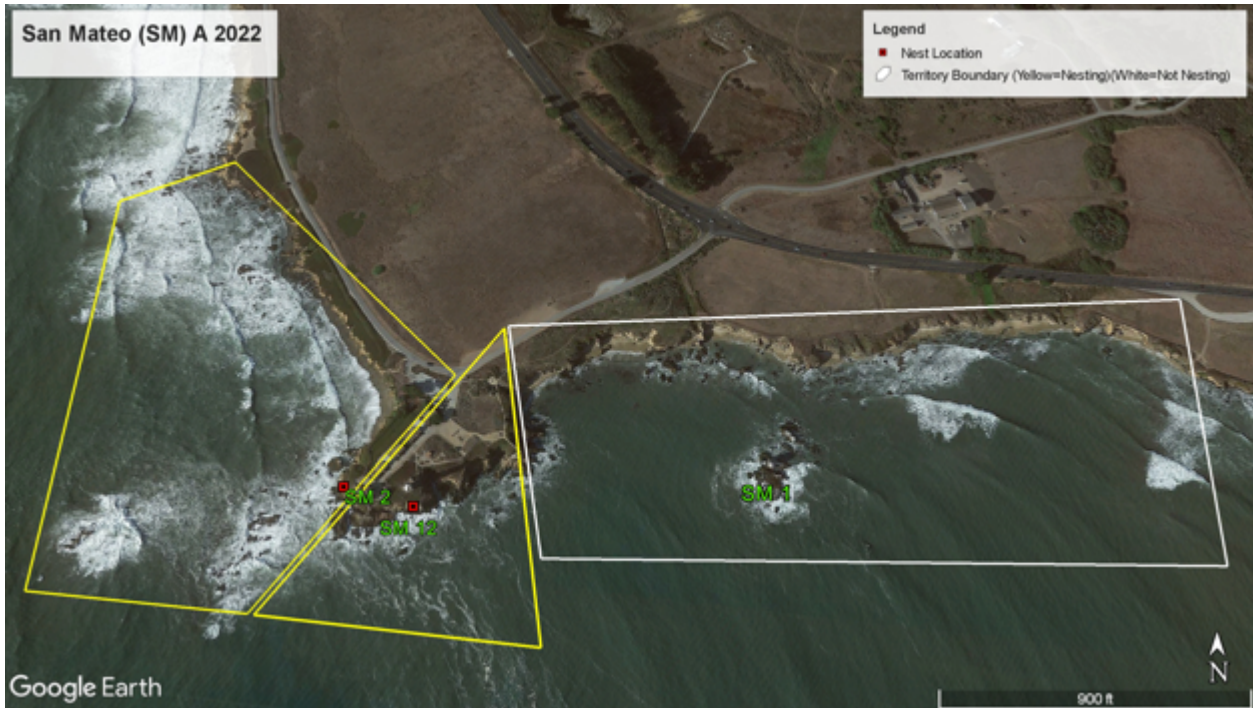


Image 8. 2022 Black Oystercatcher territories and nest locations for the San Mateo County (SM) monitoring section's southern portion (Prisoner Rock and Pigeon Point).

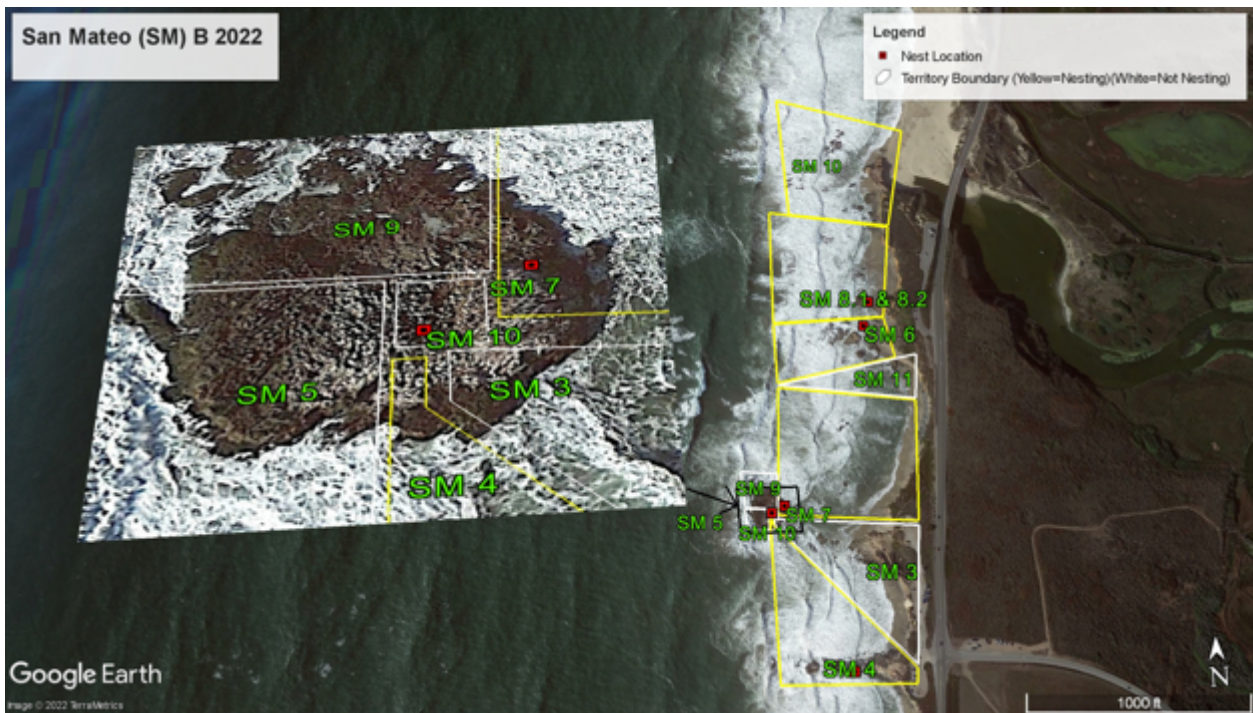


Image 9. 2022 Black Oystercatcher territories and nest locations for the San Mateo County (SM) monitoring section's northern portion off the shoreline of Pescadero State Beach.

APPENDIX 1-5

**MONTEREY BAY REGION  
BLACK OYSTERCATCHER REPRODUCTIVE PRODUCTIVITY  
2022**

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	3	0	0
MP1.2	Gazebo	2*	2	0
MP2	Gull Rock West	3	3	0
MP3	Barnacle Rock	0	0	0
MP4	Point Pinos West	0	0	0
MP5	Point Pinos East	2	0	0
MP5.2	Point Pinos East	2*	0	0
MP6	13 <sup>th</sup> Street	2	1	0
MP6.2	13 <sup>th</sup> Street	2	2	0
MP7	Hopkins West	2*	1	0
MP7.2	Hopkins West	2*	2	2
MP8	Hopkins East	0	0	0
MP9	Lover Point West (Oak Rock)	0	0	0
MP10	Hopkins North	3	3	1
MP11	Asilomar	0	0	0
MP12	Crespi Cove	2	0	0
MP13	Coast Guard Pier (El Torito)	2*	1	1
MP14	3 <sup>rd</sup> Street	0	0	0
MP15	John Denver Rock East	0	0	0
MP16	Point Pinos (Pyramid-Prom Rocks)	2*	2	0
MP16.2	Point Pinos (Pyramid-Prom Rocks)	2*	0	0
MP17	Perkins Park	0	0	0
MP18	Charthouse	0	0	0
<b>Total:</b>		<b>31*</b>	<b>17</b>	<b>4</b>

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

**MONTEREY BAY REGION BLACK OYSTERCATCHER  
REPRODUCTIVE PRODUCTIVITY – 2022 (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	2*	0	0
PB2	Stillwater Cove South	2*	1	0
PB3	Stillwater Cove North	0	0	0
PB4	Ghost Tree (Stillwater Point)	3	2	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	1	1	0
PB9	Ocean Road Neutral Zone (ORNZ)	0	0	0
PB10	China Rock South	3	3	0
PB11	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>17*</b>	<b>7</b>	<b>0</b>

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

**MONTEREY BAY REGION BLACK OYSTERCATCHER  
REPRODUCTIVE PRODUCTIVITY – 2022 (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	3	0	0
PL2	Bird Island NE	2*	0	0
PL2.2	Bird Island NE	2	1	0
PL3	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	2*	0	0
PL7	Whalers Cove	3	0	0
PL7.2	Whalers Cove	2	2	2
PL8	Moss Cove	2*	1	1
PL9	Middle Rock North	0	0	0
PL10	Cypress Cove	0	0	0
PL11	Headland Cove North [Abandoned]	0	0	0
PL12	Bird Island Rocks	0	0	0
PL13	Guillemot Rock	0	0	0
PL14	Sand Hill Cove	2*	2	1
<b>Total:</b>		<b>20*</b>	<b>6</b>	<b>4</b>

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

**MONTEREY BAY REGION BLACK OYSTERCATCHER  
REPRODUCTIVE PRODUCTIVITY – 2022 (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	3	3	2
SC2	Wilder Beach	0	0	0
SC3	Fern Grotto Beach South	2*	0	0
SC3.2	Fern Grotto Beach South	2*	2	0
SC4	Fern Grotto Beach North	3	2	0
SC5	Sand Plant Beach North	3	2	2
SC6	Sand Plant Beach South	3	3	0
SC7	Strawberry Beach North	2*	2	1
SC8	3 Mile Beach South	0	0	0
SC9	3 Mile Beach North	0	0	0
SC10	Shark's Tooth Rock	2*	0	0
SC10.2	Shark's Tooth Rock	2*	0	0
SC11	Shark's Tooth Cove South	0	0	0
SC12	Davenport South	2*	0	0
SC13	Davenport North	0	0	0
SC14	Pelican Rock	2*	0	0
SC15	Greyhound Rock	2*	0	0
SC15.2	Greyhound Rock	2*	0	0
SC16	Davenport Bluff Middle	2*	2	0
SC17	Ohlone Bluff	2*	0	0
SC17.2	Ohlone Bluff	2*	0	0
SC18	Strawberry Beach West	3	2	0
SC19	Greyhound Rock North	2*	1*	1
<b>Total:</b>		<b>41*</b>	<b>19*</b>	<b>6</b>

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

**MONTEREY BAY REGION BLACK OYSTERCATCHER  
REPRODUCTIVE PRODUCTIVITY – 2022 (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	3	3	1
SM3	Pescadero 1	0	0	0
SM4	Pescadero 2	2*	0	0
SM5	Pescadero 3	0	0	0
SM6	Pescadero 4	2*	2	0
SM7	Pescadero 5	2*	2	0
SM8	Pescadero 6	2*	0	0
SM8.2	Pescadero 6	2*	1	0
SM9	Pescadero 7	0	0	0
SM10	Pescadero 8	2*	2*	0
SM11	Pescadero 9	0	0	0
SM12	Pigeon Point South	2*	2*	2
<b>Total:</b>		<b>17*</b>	<b>12*</b>	<b>3</b>

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



**MONTEREY BAY REGION  
BLACK OYSTERCATCHER PROJECT DRONE (UAS) MONITORING  
2022**

*Table 11. Monterey Bay Region BLOY Project Drone (UAS) Monitoring 2022*

<b>Date</b>	<b>Project &amp; Entity</b>	<b>Location</b>	<b># of Flights</b>	<b>BLOY Territory</b>
16 February 2022	Kelp Barrier Study Ocean Sciences Dept., UCSC	Hopkins Marine Station Pacific Grove	4	MP7, MP8 & MP10
25 February 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	4	MP9 & MP17
2 March 2022	Otter Study CDFW, USFWS, SOS	Coast Guard Pier Monterey	3	MP13
11 March 2022	Otter Study CDFW, USFWS, SOS	Coast Guard Pier Monterey	3	MP13
14 March 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	3	MP9
16 March 2022	Kelp Barrier Study Ocean Sciences Dept., UCSC	Hopkins Marine Station Pacific Grove	4	MP7, MP & MP10
8 April 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	2	MP9
20 April 2022	Kelp Barrier Study Ocean Sciences Dept., UCSC	Hopkins Marine Station Pacific Grove	9	MP7, MP8 & MP10
18 May 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	3	MP9
20 May 2022	Kelp Barrier Study Ocean Sciences Dept., UCSC	Hopkins Marine Station Pacific Grove	3	MP7, MP8 & MP10
23 May 2022	Otter Study CDFW, USFWS, SOS	Coast Guard Pier Monterey	3	MP13 & MP18
25 May 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	3	MP9
3 June 2022	Otter Study CDFW, USFWS, SOS	Coast Guard Pier Monterey	3	MP13 & MP18
17 June 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	4	MP9
21 June 2022	Kelp Barrier Study Ocean Sciences Dept., UCSC	Hopkins Marine Station Pacific Grove	3	MP7, MP8 & MP10
24 June 2022	Otter Study CDFW, USFWS, SOS	Coast Guard Pier Monterey	2	MP13 & MP18
8 July 2022	ROXSI Project Naval Research Laboratory	Asilomar State Beach Pacific Grove	1	MP11

**APPENDIX 3-1**

**MONTEREY BAY REGION BLACK OYSTERCATCHER PROJECT  
DRONE (UAS) MONITORING – 2022 (Cont'd.)**

<b>Date</b>	<b>Project &amp; Entity</b>	<b>Location</b>	<b># of Flights</b>	<b>BLOY Territory</b>
8 July 2022	ROXSI Project Oregon State University	Asilomar State Beach Pacific Grove	2	MP11
8 July 2022	ROXSI Project Scripps Institute, UCSD	China Rock South Pebble Beach	2	PB10
13 July 2022	ROXSI Project Oregon State University	Asilomar State Beach Pacific Grove	8	MP11
14 July 2022	ROXSI Project Scripps Institute, UCSD	China Rock South Pebble Beach	1	PB10
16 July 2022	ROXSI Project Naval Research Laboratory	Asilomar State Beach Pacific Grove	1	MP11
18 July 2022	ROXSI Project Oregon State University	Asilomar State Beach Pacific Grove	7	MP11
19 July 2022	ROXSI Project Scripps Institute, UCSD	China Rock South Pebble Beach	1	PB10
1 August 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	3	MP9
12 August 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	3	MP9
15 August 2022	Otter Study CDFW, USFWS, SOS	Coast Guard Pier Monterey	1	MP13 & MP18
16 August 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	2	MP9
1 September 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	3	MP9
7 September 2022	Otter Study CDFW, USFWS, SOS	Coast Guard Pier Monterey	1	MP13 & MP18
20 September 2022	Kelp Barrier Study Ocean Sciences Dept., UCSC	Hopkins Marine Station Pacific Grove	7	MP7, MP8 & MP10
23 September 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	3	MP9
11 October 2022	Otter Study CDFW, USFWS, SOS	Coast Guard Pier Monterey	1	MP13 & MP18
17 October 2022	Otter Study CDFW, USFWS, SOS	Perkins Park Vista Pacific Grove	3	MP9
26 October 2022	Lower Intertidal Project CSUMB	Pescadero Point Pebble Beach	2	PB1, PB2, PB3.PB4 & PB12

**APPENDIX 3-2**