

Regional Colonial Waterbird Survey Report Los Angeles County, California

Prepared By

Robert A. Hamilton & Daniel S. Cooper
Hamilton Biological, Inc.
316 Monrovia Avenue
Long Beach, CA 90803
<http://hamiltonbiological.com>

Prepared For

County of Los Angeles
Department of Beaches & Harbors
13837 Fiji Way
Marina del Rey, California 90292
Attention: Jennifer Mongolo

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EXECUTIVE SUMMARY

To help evaluate the status of heron, egret, and cormorant rookeries in Marina del Rey in a wider regional context, we researched the 2019 population levels of these colonial waterbirds on the coastal slope of Los Angeles County (from the peaks of the San Gabriel Mountains coastward). This report analyzes results of this current research together with 2019 data on colonial waterbird rookeries in Marina del Rey, and compares it to data collected County-wide and in Marina del Rey in 2009, the last year of a comparable survey. The purpose of this research and analysis is to assist planners and administrators from the County of Los Angeles Department of Beaches and Harbors in ongoing efforts to effectively conserve and manage colonial waterbird rookeries in Marina del Rey. Our study found:

- Over the past decade, Marina del Rey has accounted for 21–24% of all nesting colonial waterbirds on the coastal slope of Los Angeles County.
- The number of colonial waterbird nests detected in Marina del Rey decreased from 137 in 2009 to 98 in 2019 (-28%).
- The number of colonial waterbird nests detected elsewhere in the County (outside of Marina del Rey) decreased from 434 in 2009 to 373 in 2019 (-14%).
- Combining these totals, the number of colonial waterbird nests detected County-wide declined from 571 in 2009 to 471 in 2019 (-18%).
- The number of known active rookery *sites* in the County outside of Marina del Rey has steadily increased, from 19 in 2009 to 30 in 2019 (+58%)

The apparent 10-year decline for areas outside of Marina del Rey in 2019 may have been somewhat inflated due to lack of information on the locations of rookeries in 2009 compared with later years. If the 2009 surveys covered all 30 rookery sites now known in the County outside of Marina del Rey, the County-wide baseline from 2009 presumably would have been higher, resulting in a larger apparent 10-year decline outside of Marina del Rey in 2019. The potential importance of this effect is unknown.

That the number of known active rookery sites across Los Angeles County has increased by 58% during the past decade, even as the overall number of colonial waterbird nests has decreased by 18%, suggests that these birds are spreading out and discovering more habitable areas in which to breed, and that they are incorporating themselves into the broader avian community here.

We are not aware of any landscape/rookery management actions, either in Marina del Rey or elsewhere in the County, that would be likely to cause the levels of decline in the number of nesting pairs of most species recorded during the study period. We consider it likely that a general decline in both local and regional nesting numbers over the past decade mainly reflects regional-scale factors unrelated to the management of rookeries at Marina del Rey or elsewhere.

Regardless of any other considerations, analysis of the local and regional study results demonstrates that, ten years after our first survey efforts, Marina del Rey continues to account for a significant percentage (at least 21%) of colonial waterbirds nesting in the County. For this reason, continued careful management and monitoring of all known and potential colonial waterbird nesting sites in Marina del Rey remains a valid priority for County managers and leaseholders.

INTRODUCTION

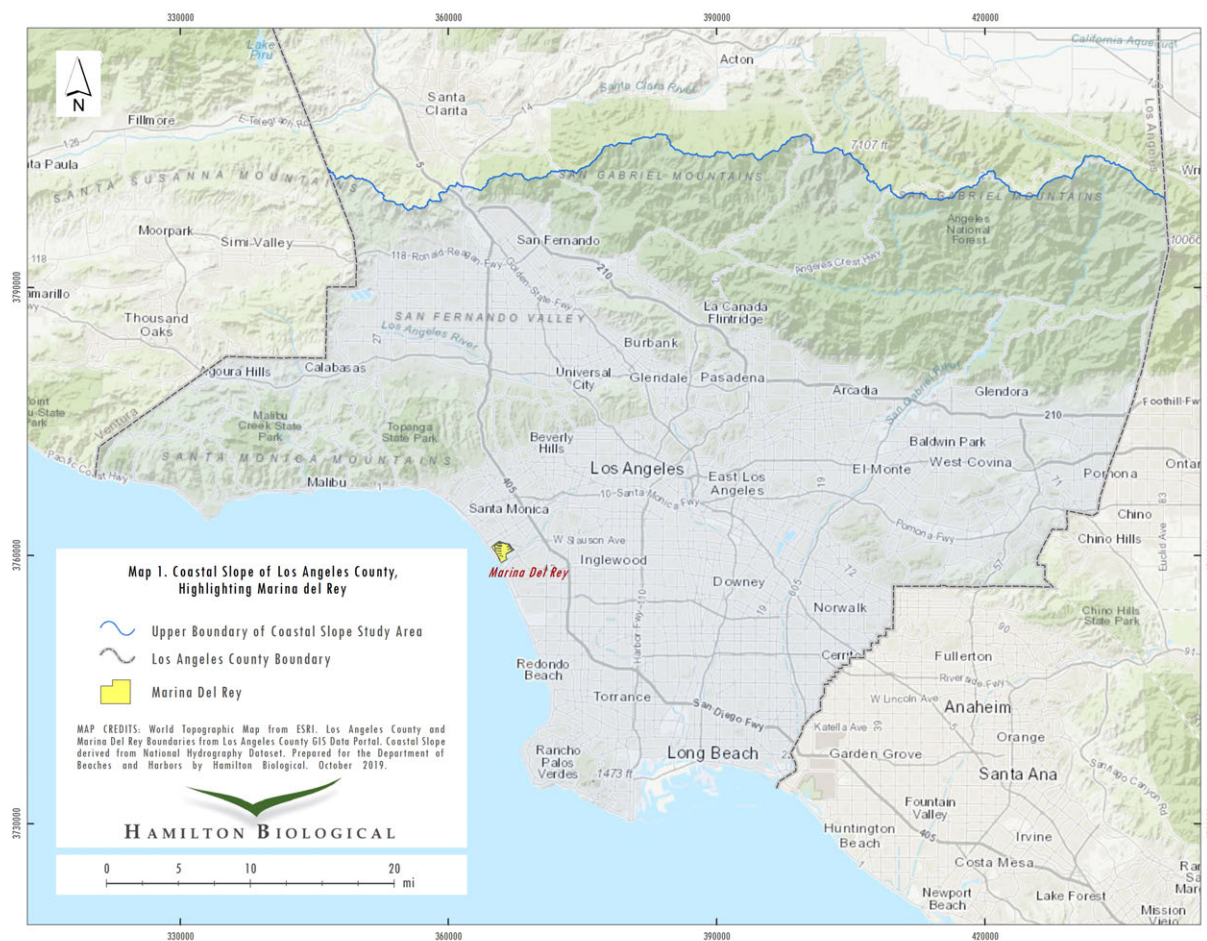
Nesting waterbirds declined dramatically in southern California by the start of the 20th Century, as feathers for the millinery trade led to the decimation of heron, egret, and other species nationwide. As of the mid-1900s, virtually no colonial-nesting waterbirds were known from the Los Angeles area, but by the 1990s a handful of rookeries had been established, mainly in exotic landscape trees near marinas and fishing lakes. In 2009, during preparation of the *Conservation & Management Plan for Marina del Rey, Los Angeles County, California*¹ Robert Hamilton and Dan Cooper conducted surveys of the heron, egret, and cormorant rookeries/ nesting colonies of Marina del Rey, as well as those known to us on the coastal slope of Los Angeles County, outside of the Marina del Rey (see **Map 1** on the next page). Our aim was to evaluate the relative importance of rookeries in Marina del Rey in a wider regional context.

The 2010 Plan recommended that the County undertake periodic County-wide research on the status of these colonies, results of which would be evaluated together with survey data from Marina del Rey to help administrators evaluate the efficacy of local conservation and management approaches. This 2019 Regional Colonial Waterbird survey effort follows through on that recommendation. In the interim, Cooper was contracted by Point Reyes Bird Observatory (now Point Blue Conservation Science) to coordinate a complete survey of colonial-nesting waterbirds across coastal southern California² in 2012, and we incorporate the relevant survey data from that effort here.

Our 2019 effort involved (1) re-surveying nearly all of the colonies that we surveyed in 2009 and 2012; (2) surveying potential rookery sites elsewhere in the County and adjacent areas; and (3) reviewing all relevant 2019 nesting data for colonial waterbirds in the County provided by eBird (<https://ebird.org/>), iNaturalist (<https://inaturalist.org/>), and other published and unpublished sources. Thus, data from 2009, 2012, and 2019 provide a baseline of rookery status in the Los Angeles area at the start of the 21st Century, by which future surveys may be compared.

¹ Hamilton, R. A., and D. S. Cooper. 2010. *Conservation & Management Plan for Marina del Rey, Los Angeles County, California*. Report dated September 6, 2010, prepared for Los Angeles County Dept. Beaches and Harbors.

² The results from the 2012 survey are planned to be submitted for publication as a statewide survey of nesting waterbirds.



Map 1. The study area consists of the coastal slope of Los Angeles County, which extends coastward from the peaks of the San Gabriel Mountains to the edge of the mainland.

METHODS

On all three County-wide surveys (2009, 2012 and 2019), observers — generally Hamilton (RAH) and Cooper (DSC) — checked nearly all known rookeries¹ maintained by Great Blue Herons (*Ardea Herodias*; GBHE), Great Egrets (*Ardea alba*; GREG), Snowy Egrets (*Egretta thula*; SNEG), Black-crowned Night-Herons (*Nycticorax nycticorax*; BCNH) and Double-crested Cormorants (*Phalacrocorax auratus*; DCCO) on the coastal slope of Los Angeles County (i.e., from the peaks of the San Gabriel Mountains coastward). Since 2009, many rookeries containing ten or fewer nests have been discovered, as well as a few larger ones. While many rookeries have been active since

¹ In 2019 we were not able to access a small, very remote Great Blue Heron rookery at Cogswell Reservoir, on the West Fork of the San Gabriel River; this rookery contained three nests in 2009 and five nests in 2012.

2009 (and in some cases since the 1990s), several sites were not used during all three years of the study. Maps B-1 to B-6 in Appendix B show the locations of all nesting sites/rookeries.

Nesting trees are generally recognizable by deposits of fresh guano (also called whitewash) on the ground, and by the often-conspicuous presence of adult birds in the trees. Later in the nesting season, the vocalizations of young birds and adults, in and out of nests, may also help observers in finding active nesting areas.

Our survey methods consisted of driving to a known or suspected rookery site and slowly walking around and visually inspecting (from the ground) all potential nest trees at least once during the spring/early summer nesting season, as time allowed, following methods developed for the U.S. Fish and Wildlife Service by Point Reyes Bird Observatory/Point Blue Conservation Science (W. David Shuford, via email). We also drove as many roads as possible around known hotspots for nesting waterbirds (e.g., Port of Los Angeles/Long Beach) searching for large trees and structures that would likely hold nesting waterbirds. Because nesting is extremely protracted in the local area, with the earliest-nesting species (e.g., Great Blue Heron) initiating nests in early winter, and the latest-nesting egrets and cormorants still feeding young in late summer, it is necessary to conduct at least monthly checks between December and August to more conclusively determine the total number of active nests each year at any given colony. Therefore, our effort represents a “snapshot” of local nesting, typically at the height of the breeding season, that may be compared to subsequent regional surveys.

We used the count of active nests used during a season, such that if a rookery held six active nests early in the year, and then eight active nests were counted in the same rookery later in the year, we used eight nests as the total count for that rookery, since there was usually no way to confirm that individual pairs were re-nesting in the same nests during the same year. If a rookery held 10 active Black-crowned Night-Heron nests in February, and then we observed five of those nests being used by Snowy Egrets later in the year, we counted ten heron nests and five egret nests.

The survey effort in 2009 consisted of a small number of visits to known/likely nesting areas between May 20 and August 26, with all surveys performed by RAH and DSC. In 2012, surveys were conducted between May 3 and July 15 by DSC, working with subcontractors Kimberly Oldehoeft and Matt Whitmire. In 2019, surveys were conducted by RAH and DSC between April 16 and August 31, with more follow-up surveys than had been conducted in 2009 or 2012, to more comprehensively survey all known sites.

Our County-wide survey efforts included checking areas adjacent to Marina del Rey, such as Del Rey Lagoon and the Ballona Freshwater Marsh, where many colonial waterbirds that nest in Marina del Rey are believed to regularly forage. We did not observe nesting of colonial waterbirds in these Marina-adjacent areas during our surveys.

Following each year's survey effort, we reviewed all available eBird/iNaturalist data for all colonial waterbird species known to nest in Los Angeles County for that year, and have tried to keep track of the locations of all colony sites in this region. The main difference between the 2009 survey and subsequent efforts to document rookeries across the County is that, ten years ago, eBird had not yet been widely adopted by the birding community so data therein were sparse, but its popularity has grown each year. iNaturalist started becoming popular only around 2016, and at least one "new" nesting location was discovered in 2019 from data submitted to that online platform. The 2019 County-wide research effort may be considered more comprehensive than the 2012 effort, which in turn was more comprehensive than the 2009 effort, as we are now able to harness the observations of numerous birders across the region who regularly input their sightings into the publicly-accessible eBird and iNaturalist databases.

An important limitation in the data is that some of the survey efforts, especially those in 2009 and 2012, did not cover some of the larger SNEG/BCNH rookeries early enough in the season to determine the numbers of nests for each species (SNEGs and BCNHs often use the same nests). For example, the 2009 survey of the large SNEG/BCNH rookery on East Ocean Boulevard in Long Beach did not take place until August 3, after most of the birds had fledged, and numerous fledglings of each species were observed. For purposes of general analysis in the 2010 *Conservation and Management Plan*, the 110 nests active earlier that year were assigned equally to SNEG and BCNH (55 nests each), but the actual number of nesting pairs of each species may have been quite different. The same issue arose in 2012, when 138 nests at four SNEG/BCNH rookeries County-wide, and 44 nests in Marina del Rey, could not be assigned to species. In 2019, 21 nests at one rookery (Ports O' Call Village) could not be assigned to species, even though they had clearly been active earlier that year, with fresh guano on the ground, intact nests, and individuals of both species in the nest trees.

For Marina del Rey, the number of unknown SNEG/BCNH nests (44) is substantial relative to the total number of confirmed SNEG nests (59) and confirmed BCNH nests (102). Importantly, the 44 uncertain nests were all recorded in 2012, such that the overall trend between 2009 and 2019 is not affected (because no uncertain nests were recorded during 2009 or 2019). Thus, with the above-stated caveat, we can evaluate apparent species-level trends for SNEG and BCNH populations in Marina del Rey. We also evaluate the trend for the combined SNEG + BCNH nesting populations separately, where applicable.

For Los Angeles County outside of Marina del Rey, the number of unknown SNEG/BCNH nests (269) is large relative to the total number of confirmed SNEG nests (81) and confirmed BCNH nests (314). Furthermore, substantial numbers of uncertain nests were recorded in 2009 (110), 2012 (138), and 2019 (21). Thus, for the County as a whole, we analyze the trend for the SNEG + BCNH nesting populations, combined, but forego a species-specific trend analysis for these two species.

RESULTS

Marina del Rey

Table 1, below, summarizes the results of Marina-wide surveys conducted by Hamilton and Cooper in 2009, by Point Reyes Bird Observatory/Point Blue Conservation Science in 2012, and by Environmental Intelligence in 2019 (*Final nesting bird survey report, Marina Del Rey, Los Angeles County, California*. Report dated August 2019, prepared for Los Angeles County Dept. Beaches and Harbors). For details on locations and dates of nesting observations, please refer to tables and maps in Appendices A and B.

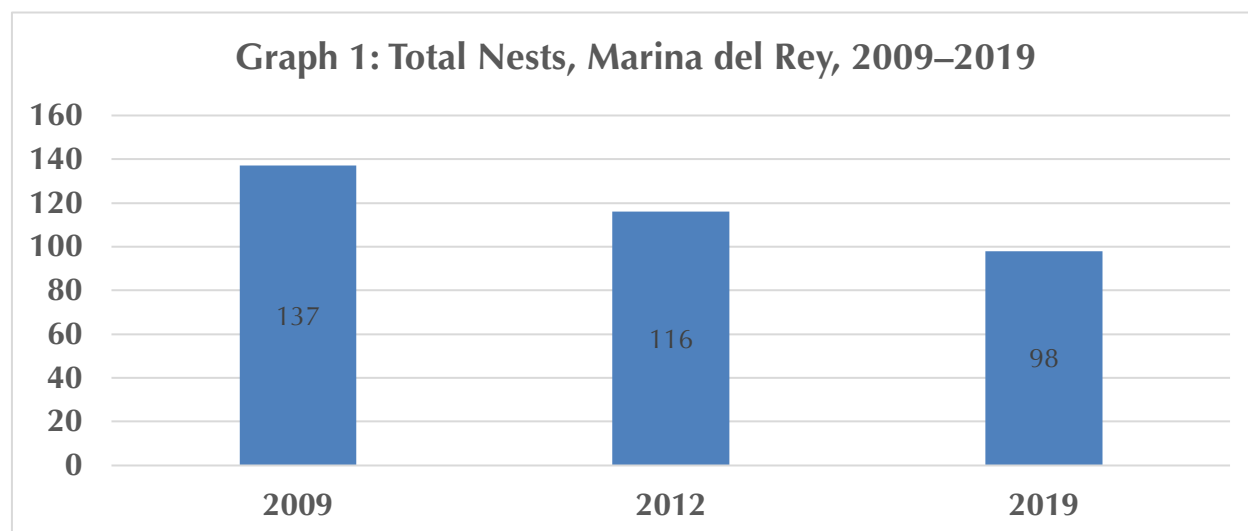
Table 1: Summary of Nests Detected in Marina del Rey, 2009 – 2019.

Species	2009 Nests	2012 Nests	2019 Nests
Great Blue Heron	33	28	19
Great Egret	5	1	0
Snowy Egret	35	10	14
Black-crowned Night-Heron	45	9	48
SNEG or BCNH (species uncertain)	0	44*	0
Double-crested Cormorant	19	24	17
TOTAL	137	116	98
<i>SNEG + BCNH (combined)</i>	<i>80</i>	<i>63</i>	<i>62</i>

*During 2012, 44 nests belonging to SNEG or BCNH could not be determined to species.

Trend for Colonial Waterbirds in Marina del Rey (All Species Combined)

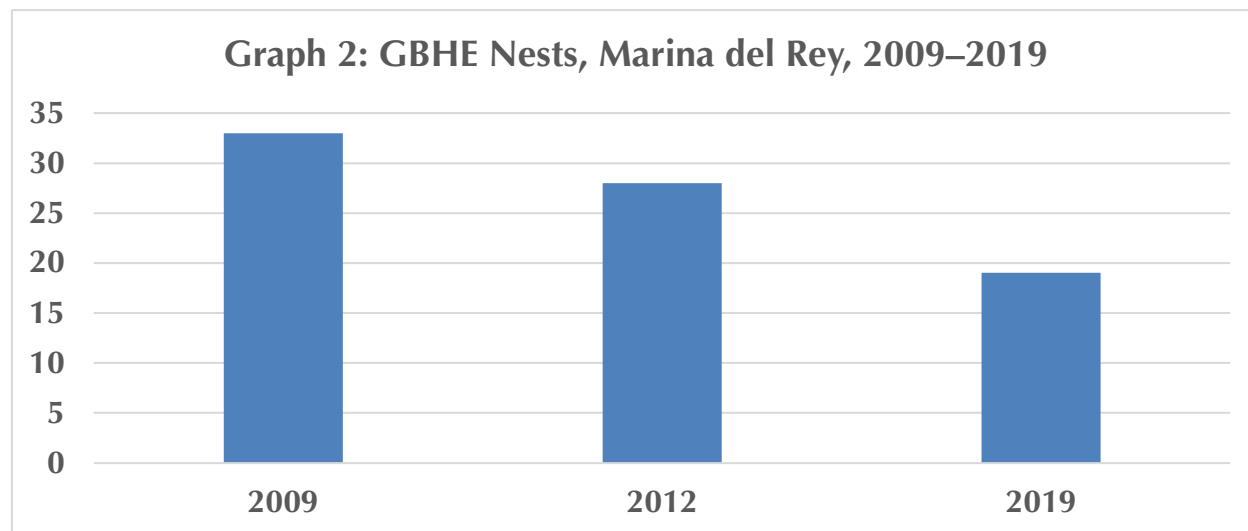
As shown in Table 1, above, the overall number of colonial waterbird nests in Marina del Rey dropped steadily over the past decade, from 137 in 2009 to 98 in 2019 (-28%). See Graph 1, below.



Trends for each species are briefly discussed and graphically depicted below.

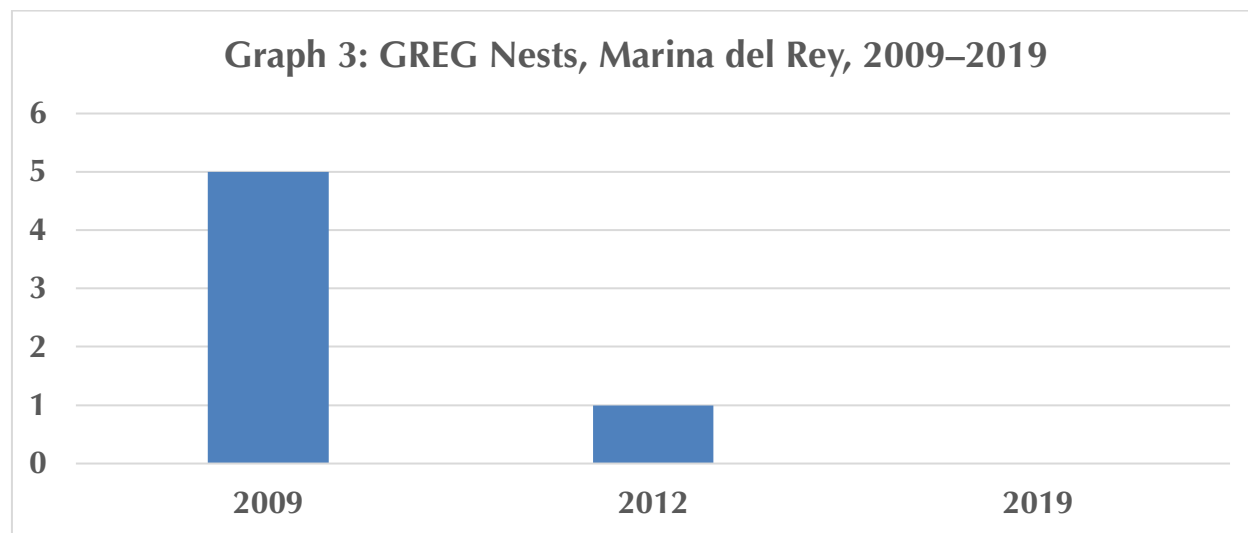
Trend for the Great Blue Heron in Marina del Rey

From 2009 to 2019, the number of Great Blue Heron nests steadily declined from 33 to 19 (-42%). See Graph 2.



Trend for the Great Egret in Marina del Rey

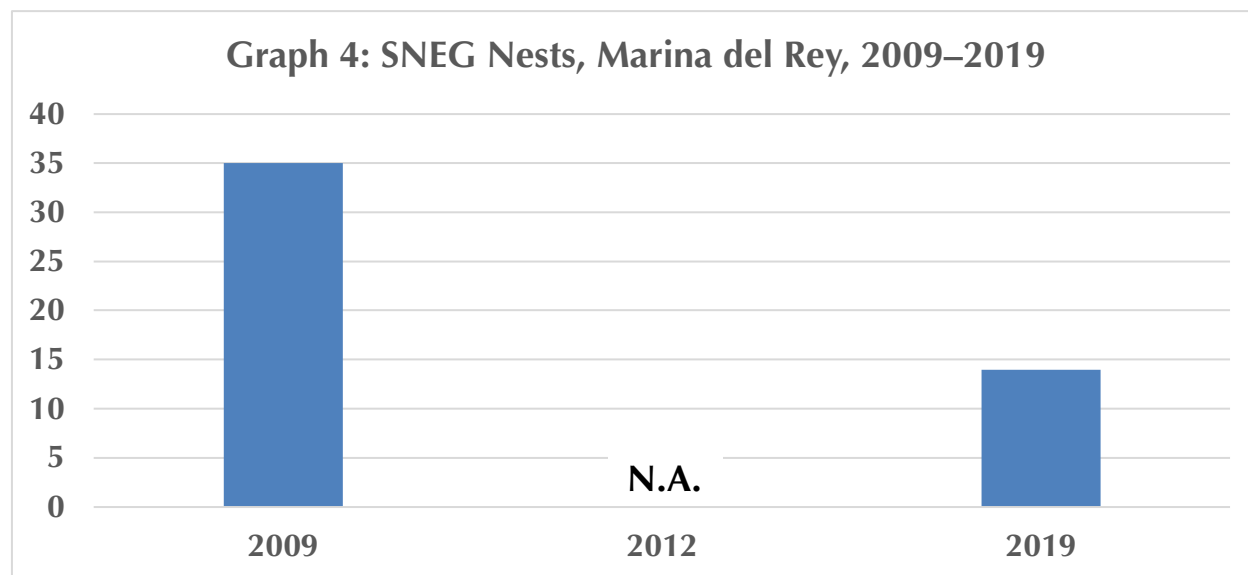
This species established five nests in 2009, which had declined to one nest by 2012, and zero by 2019 (Graph 3).



Note that the Great Egret remains a very rare breeding species in southern California, and currently nests at only one known location in Los Angeles County.

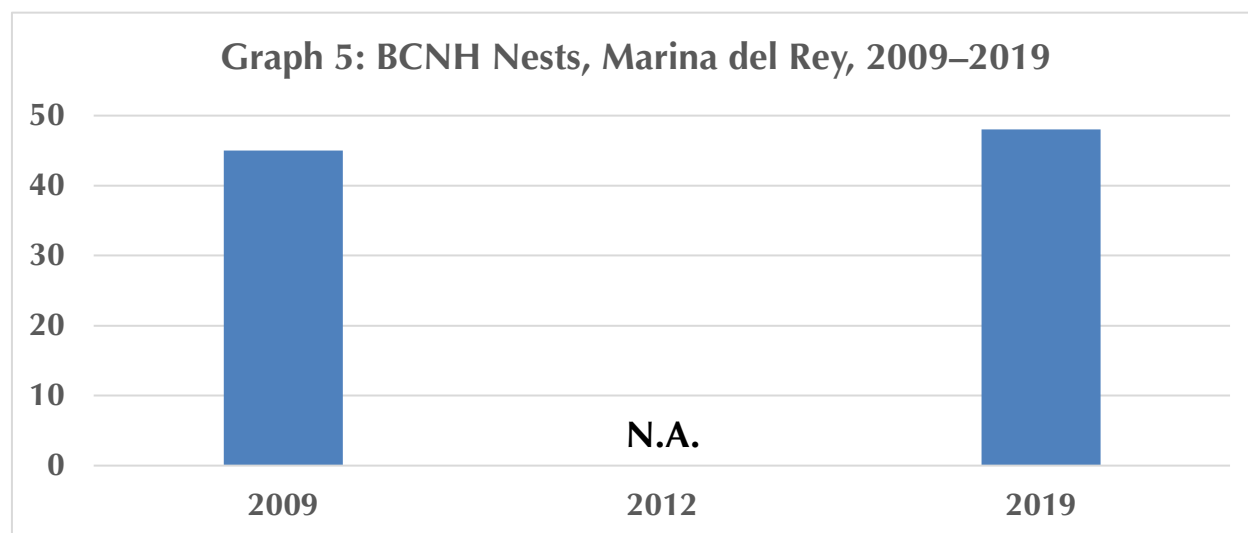
Trend for the Snowy Egret in Marina del Rey

From 2009 to 2019, the Snowy Egret experienced one of the greatest apparent declines in Marina del Rey (35 to 14 nests; -42%). Graph 4, below, excludes data from 2012, because during that year 44 BCNH/SNEG nests could not be confidently identified to species.



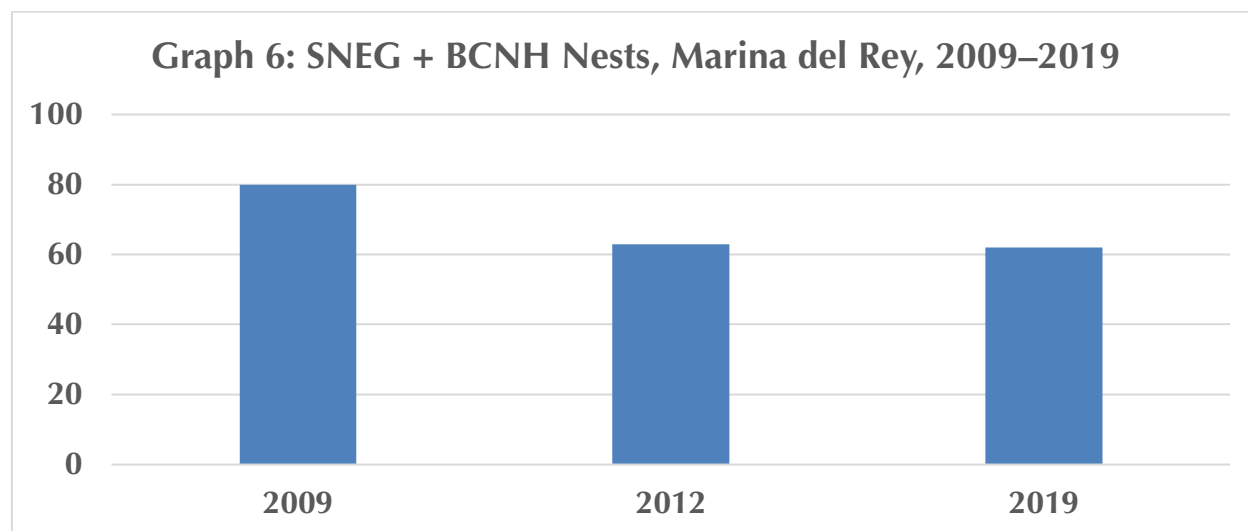
Trend for the Black-crowned Night-Heron in Marina del Rey

From 2009 to 2019, the number of BCNH nests detected in Marina del Rey increased slightly (45 to 48 nests; +7%). Graph 5, below, excludes data from 2012, because during that year 44 BCNH/SNEG nests could not be confidently identified to species.



Trend for SNEG + BCNH in Marina del Rey

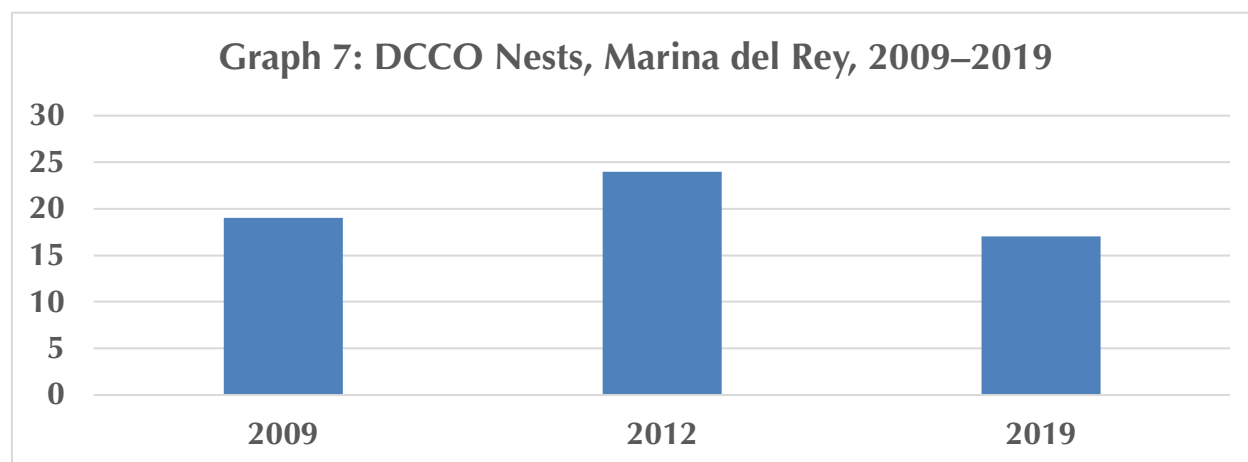
The bottom row of Table 1, and Graph 6 below, show that the aggregate number of SNEG + BCNH nests in Marina del Rey declined from 80 to 63 from 2009 to 2012 (-21%), then lost only one more nest from 2012 to 2019 (-1%), for an overall decline of 22%.



Given that the number of known SNEG nests decreased by 42% from 2009 to 2019, as the number of BCNH nests increased by 7%, it is likely that most or all of the decline depicted in Graph 6 reflects reduced numbers of SNEG nests.

Trend for the Double-crested Cormorant in Marina del Rey

From 2009 to 2012, nests of the Double-crested Cormorants increased from 19 to 24 (+26%), but from 2012 to 2019 the population declined to 17 nests (-29%), for a ten-year loss of 2 nests (-11%). See Graph 7.



Los Angeles County Outside of Marina del Rey

Table 2, below, provides the results of County-wide surveys conducted by Hamilton and Cooper in 2009, by Point Reyes Bird Observatory/Point Blue Conservation Science in 2012, and by Hamilton and Cooper in 2019.

Table 2: Colonial Waterbird Nests and Nesting Sites in Los Angeles County (exclusive of Marina del Rey), 2009 – 2019

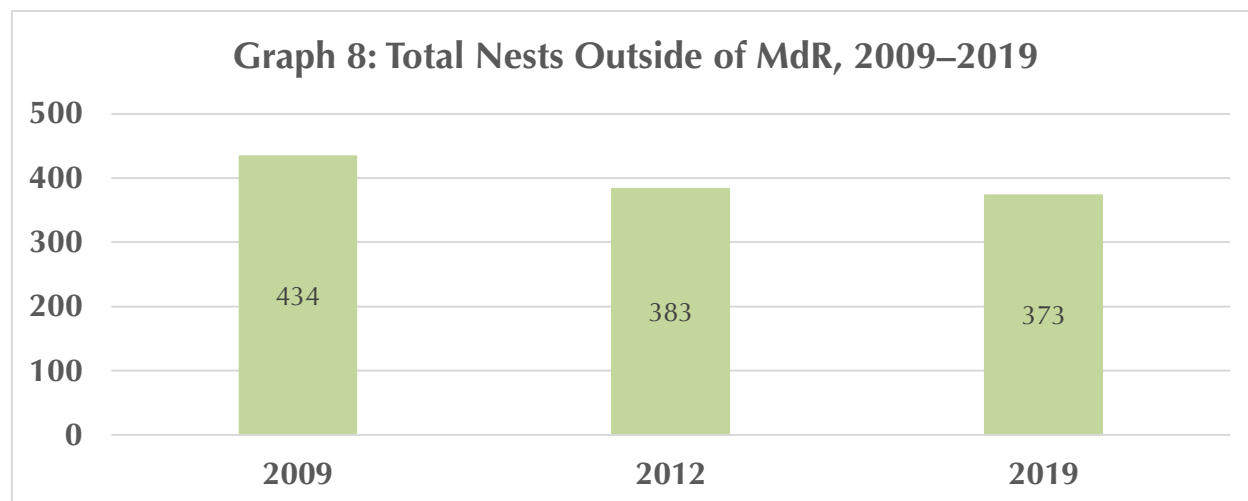
Species	2009 Nests (Sites)	2012 Nests (Sites)	2019 Nests (Sites)
Great Blue Heron	85 (9)	98 (13)	86 (16)
Great Egret	10 (1)	3 (1)	3 (1)
Snowy Egret	0 (1)*	54 (7)*	27 (7)*
Black-crowned Night-Heron	105 (6)*	48 (9)*	161 (8)*
SNEG or BCNH (uncertain)	110 (1)	138 (4)	21 (1)
Double-crested Cormorant	124 (3)	42 (2)	75 (5)
TOTAL	434 (19)**	383 (25)**	373 (30)**
<i>SNEG + BCNH (combined)</i>	<i>215 (6)</i>	<i>240 (9)</i>	<i>209 (8)</i>

*During each year, many SNEG and BCNH nests could not be determined to species.

** For purposes of calculating number of nesting sites (rookeries), SNEG and BCNH were considered together, since they generally use the same sites and often the same nests.

Trends for Colonial Waterbirds Outside of Marina del Rey

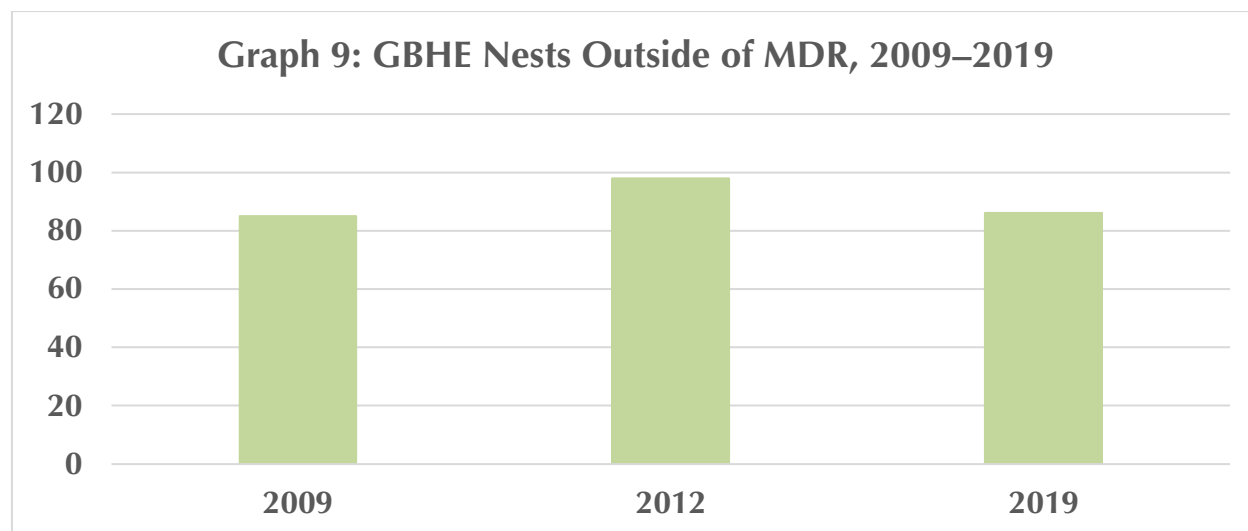
As shown in Table 2, the number of nests detected in the County, outside of Marina del Rey, dropped from 434 in 2009 to 373 in 2019 (-14%). See Graph 8, below.



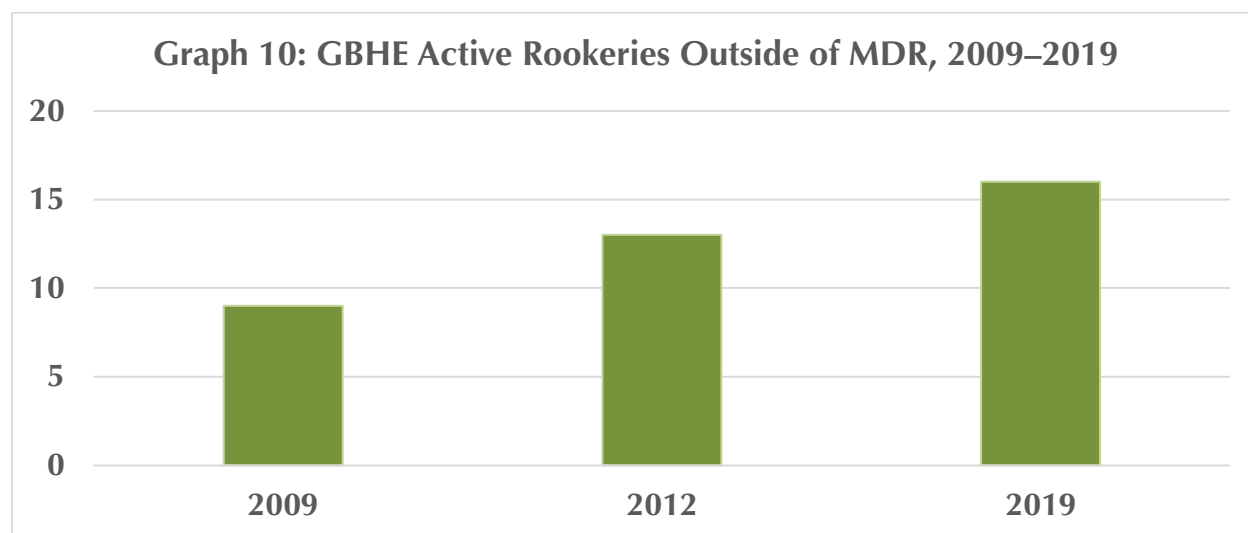
Trends for each species are briefly discussed and graphically depicted below.

Trends for the Great Blue Heron Outside of Marina del Rey

From 2009 to 2012, the number of Great Blue Heron nests increased from 85 to 98 (+15%), then declined back to 86 nests by 2019 (-12%), for an overall increase of 1% (Graph 9).

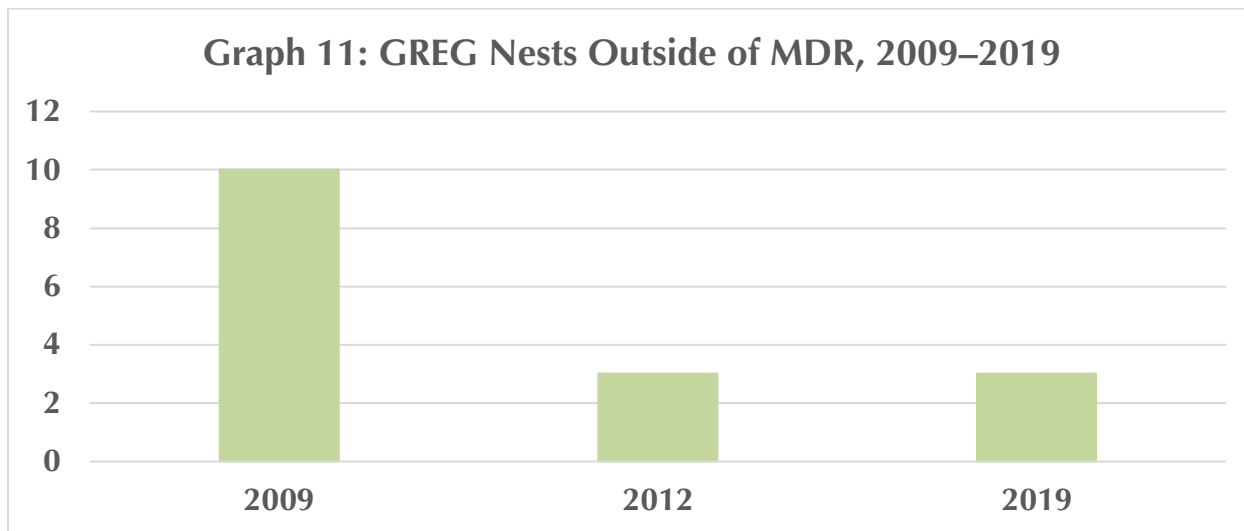


From 2009 to 2019, as the number of GBHE nests fluctuated, the number of known active rookery sites steadily increased (Graph 10).

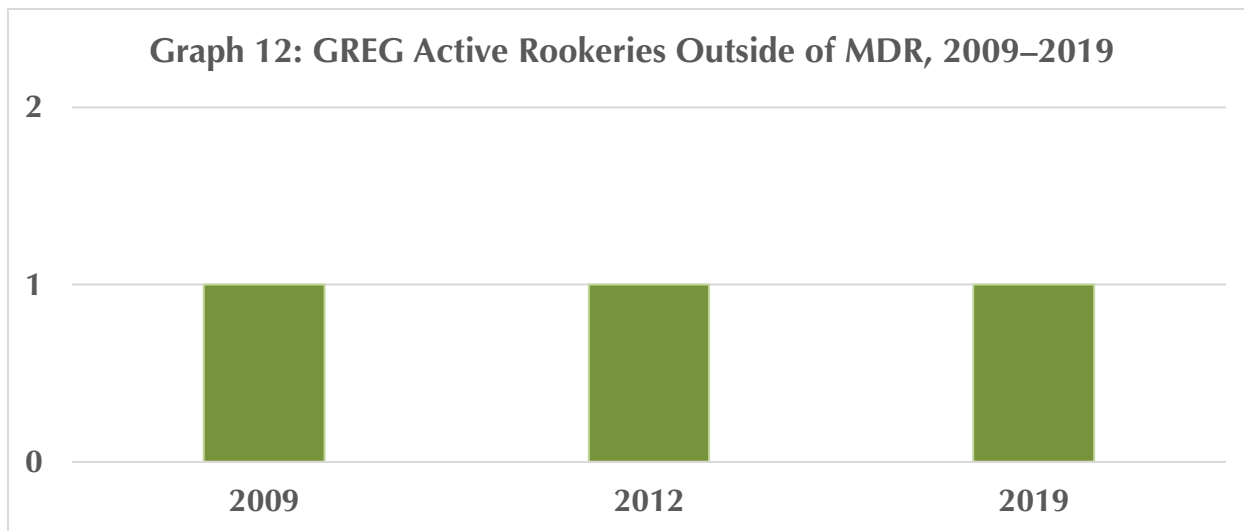


Trends for the Great Egret Outside of Marina del Rey

From 2009 to 2012, the number of Great Egret nests decreased from 10 to 3 (-70%). See Graph 11.

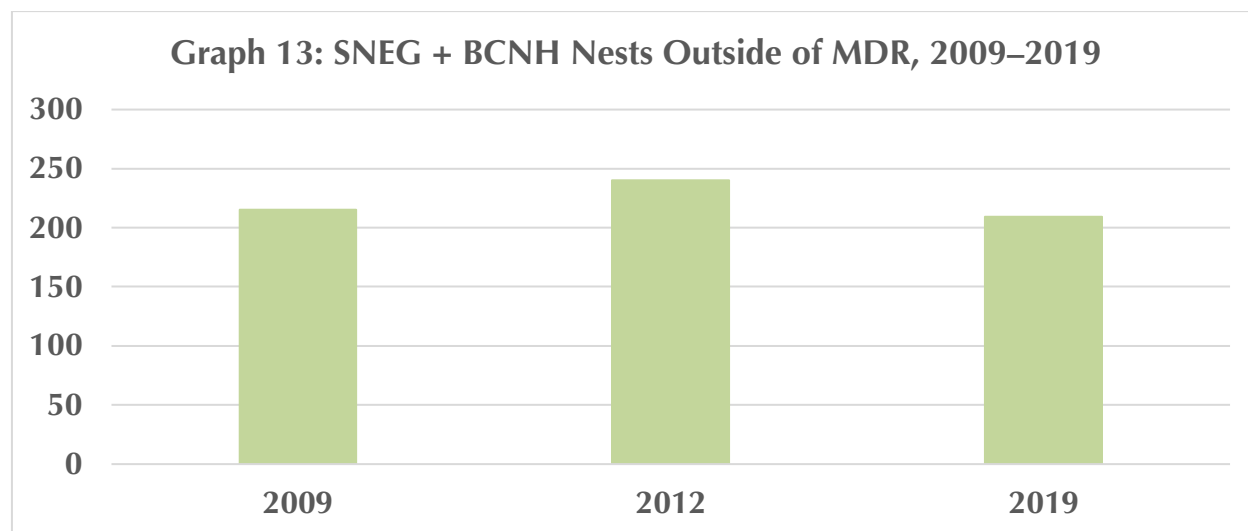


From 2009 to 2019, Great Egrets nested at only one location outside of Marina del Rey (trees behind the Malibu Country Mart). See Graph 12.

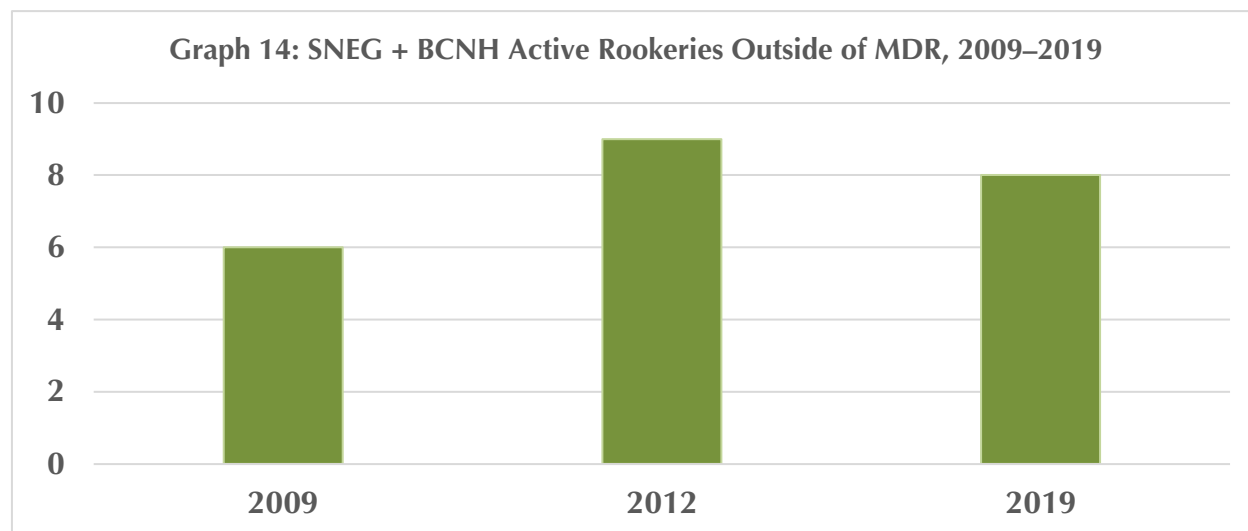


Trends for SNEG + BCNH Outside of Marina del Rey

From 2009 to 2012, the combined number of nests of Snowy Egret plus Black-crowned Night-Heron increased from 215 to 240 (+12%), then declined back to 209 nests by 2019 (-13%), for an overall decrease of 3% (Graph 13).

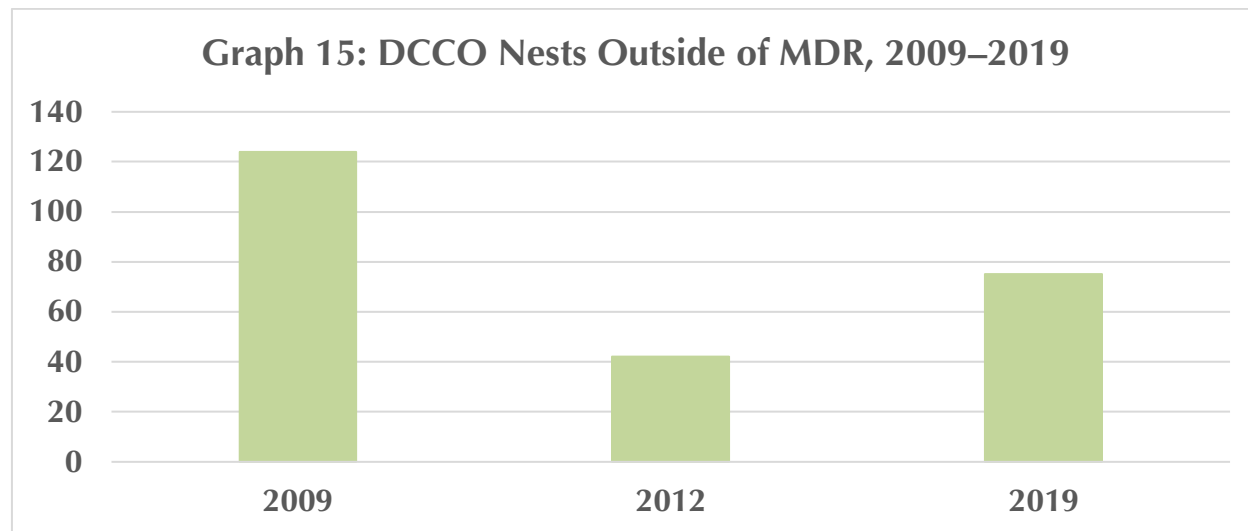


From 2009 to 2012, the number of known active SNEG/BCNH rookery sites increased from 6 to 9 (+50%), then declined back to 8 sites in 2019, for an overall increase of 33% over the ten-year period. See Graph 14.

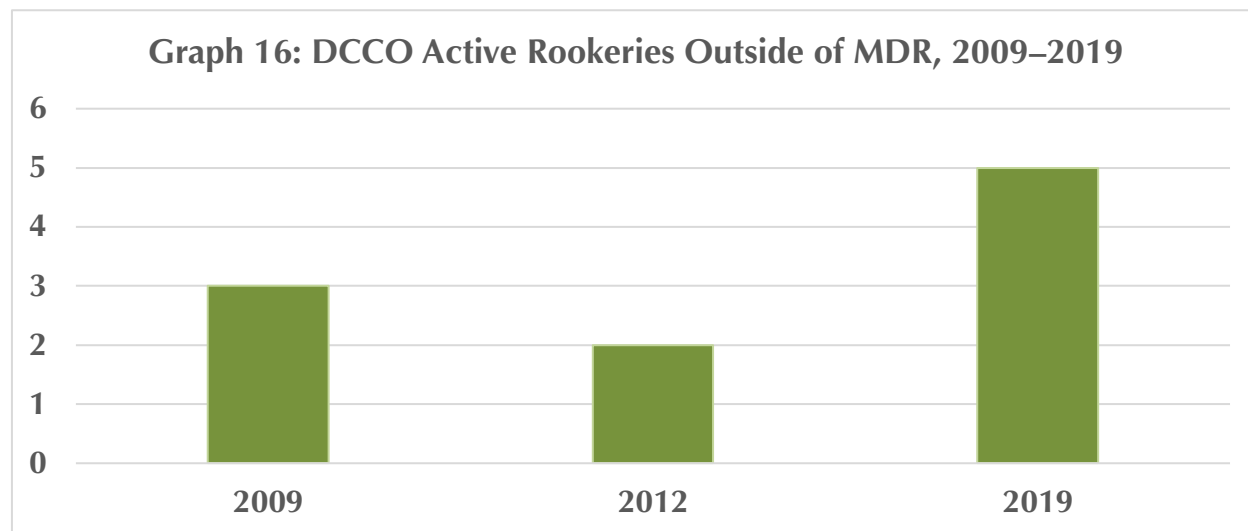


Trends for the Double-crested Cormorant Outside of Marina del Rey

From 2009 to 2012, the number of Double-crested Cormorant nests declined from 124 to 42 (-66%), then rebounded to 75 nests by 2019 (+79%), for an overall decrease of 39% (Graph 15). The County-wide status of nesting cormorants was affected, to some degree, by removal of the Commodore Schuyler Heim bridge, which held 89 nests in 2008/2009. Removal of the bridge started in 2011 and continues to date. The degree to which the displaced cormorants may have nested elsewhere in the County is unknown.

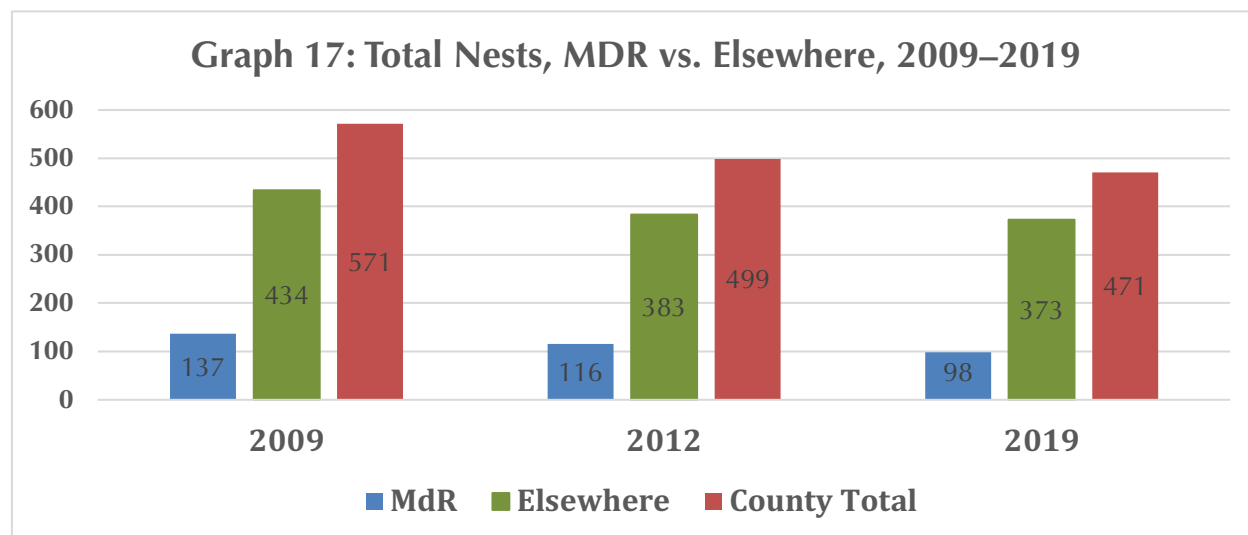


From 2009 to 2019, as the number of DCCO nests decreased by 39%, the number of known active rookery sites increased from 3 to 5 (+67%). See Graph 16.



ANALYSIS

Graph 17, below, relates the total number of nests recorded in Marina del Rey to the total number of nests recorded elsewhere in the County, and to the County-wide total, in 2009, 2012, and 2019.



From 2009 to 2012, the number of nests detected in Marina del Rey declined by 15% and the number of nests detected outside of Marina del Rey declined by 12%, yielding a County-wide decline of 13% for that three-year period.

From 2012 to 2019, the number of nests detected in Marina del Rey declined by 16% and the number of nests detected outside of Marina del Rey declined by 3%, yielding a County-wide decline of 6% for that seven-year period.

From 2009 to 2019, the number of nests detected in Marina del Rey declined by 28% and the number of nests detected outside of Marina del Rey declined by 14%, yielding a County-wide decline of 18% for that ten-year period.

From 2009 to 2019, Marina del Rey's share of the County-wide total for colonial waterbird nests declined from 24% to 21%.

Tables 3–5, on the following pages, provide species-specific breakdowns of nests recorded in Marina del Rey, nests recorded elsewhere in the County, and the County-wide totals, for 2009, 2012, and 2019.

Table 3: Representation of Marina del Rey Nests in County-wide Total, 2009

	Active Nests			
Species	2009 MDR	2009 Elsewhere	TOTAL	% in MDR
Great Blue Heron	33	85	118	28
Great Egret	5	10	15	33
Snowy Egret	35	0	35	N.A.*
Black-crowned Night-Heron	45	105	150	N.A.*
SNEG or BCNH (uncertain)	0	110	110	N.A.*
Double-crested Cormorant	19	124	143	13
TOTAL	137	434	571	24
<i>SNEG + BCNH (combined)</i>	<i>80</i>	<i>215</i>	<i>295</i>	<i>27</i>

* The proportion of “uncertain” SNEG/BCNH nests was too high to allow for the proportion of either SNEG or BCNH nests in MDR to be determined.

Table 4: Representation of Marina del Rey Nests in County-wide Total, 2012

	Active Nests			
Species	2012 MDR	2012 Elsewhere	TOTAL	% in MDR
Great Blue Heron	28	98	126	22
Great Egret	1	3	3	33
Snowy Egret	10	54	64	N.A.*
Black-crowned Night-Heron	9	48	57	N.A.*
SNEG or BCNH (uncertain)	44	138	182	N.A.*
Double-crested Cormorant	24	42	66	36
TOTAL	116	383	499	23
<i>SNEG + BCNH (combined)</i>	<i>63</i>	<i>240</i>	<i>303</i>	<i>21</i>

* The proportion of “uncertain” SNEG/BCNH nests was too high to allow for the proportion of either SNEG or BCNH nests in MDR to be determined.

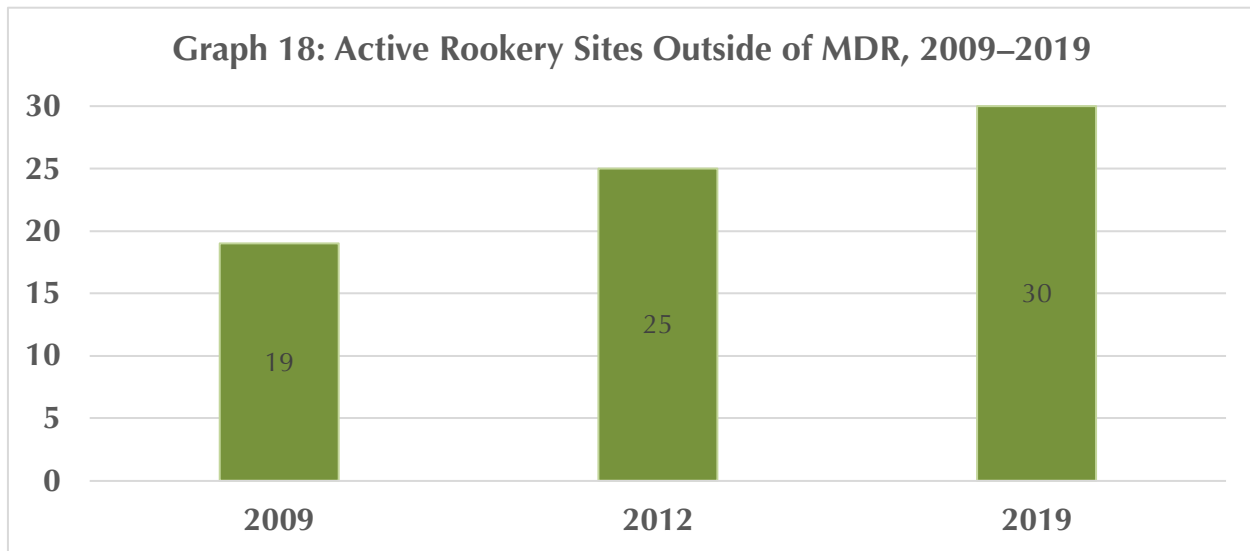
Table 5: Representation of Marina del Rey Nests in County-wide Total, 2019

Species	Active Nests			
	2019 MDR	2019 Elsewhere	TOTAL	% in MDR
Great Blue Heron	19	86	105	18
Great Egret	0	3	3	0
Snowy Egret	14	27	41	34
Black-crowned Night-Heron	48	161	209	23
SNEG or BCNH (uncertain)	0	21	21	N.A.
Double-crested Cormorant	17	75	92	18
TOTAL	98	373	471	21
<i>SNEG + BCNH (combined)</i>	<i>62</i>	<i>209</i>	<i>271</i>	<i>23</i>

As shown in the preceding tables, Marina del Rey has long functioned as an important rookery area in Los Angeles County, accounting for roughly one-third of the Snowy Egret nests, and roughly one-fifth to one-quarter of the Double-crested Cormorant, Great Blue Heron, and Black-crowned Night-Heron nests.

In general, County-wide, tree structure and layout of the rookery sites in 2019 appeared more or less the same as in previous years. We have observed that even trees harshly trimmed nearly annually (e.g., at Malibu Country Mart, near Malibu Lagoon) continue to support nesting waterbirds every year. Thus we do not identify any major changes in management practices in Marina del Rey or elsewhere in the County that seem likely to have produced the declines in waterbird nesting numbers represented in the data. We consider it much more likely that these declines reflect large-scale environmental factors beyond the scope of local management practices. With many colonies, including the largest ones, located along the immediate coast, it is possible that recurring anomalous warm-water conditions in the ocean off the coast of southern California, combined with a record-setting drought that lasted from 2011 to 2015, reduced the amount of prey available to colonial waterbirds in Marina del Rey and across the wider region during the past decade.

Referring back to Table 2 on page 10, and Graph 18 below, note that the number of known active rookery sites in the County outside of Marina del Rey has steadily increased, from 19 in 2009 to 30 in 2019 (+58%).



See also the species-specific graphs on pages 12–15, which show that each species (other than the Great Egret, which remains very rare) was found nesting at more locations across Los Angeles County in 2019 than in 2009, despite the drop in overall nesting activity.

The identification of several new rookeries outside of Marina del Rey in 2012 and 2019 probably reflects, to some degree, the general accumulation of information over time (as more birders cover larger areas and report their observations more frequently into eBird and other online databases) as well as the more comprehensive nature of the 2012 and 2019 County-wide surveys compared with the 2009 effort. If the 2009 surveys covered all 30 rookery sites now known, the County-wide baseline from 2009 probably would have been somewhat higher, resulting in a somewhat larger apparent 10-year decline outside of Marina del Rey in 2019. The potential importance of this effect is unknown.

Along the coast of southern California, colonial waterbirds seem to be following a “colonize-expand-increase” pattern seen in invasive and successful species globally. A rather dramatic proliferation of nesting colonial waterbirds on the coastal slope of Los Angeles County, which started in the 1990s, may have reached a natural plateau at roughly 500 nesting pairs. That the number of known active rookery sites across Los Angeles County has increased by 58% during the past decade, even as the overall number of colonial waterbird nests has decreased by 18%, suggests that these birds are spreading out and discovering more habitable areas in which to breed, and that they are incorporating themselves into the broader avian community here. This may have the effect of certain colony sites dwindling as offspring increasingly disperse across the region in search of new breeding territories, thus failing to completely replace the adults

lost to mortality in their natal colony. As the newer colony sites become more firmly established, the overall numbers of nesting waterbirds could jump again in the future.

RECOMMENDATIONS

Analysis of the local and regional study results demonstrates that, ten years after our first survey efforts, Marina del Rey continues to account for roughly one-fifth of the total number of colonial waterbirds nesting on the coastal slope of Los Angeles County. For this reason, continued careful management and monitoring of known and potential colonial waterbird nesting sites in Marina del Rey (and the larger Los Angeles coastal slope) remains a valid priority for County managers and leaseholders.

Assuming the main drivers of the ten-year population decline in Marina del Rey, and the wider region, involve reductions in prey resulting from large-scale environmental phenomena such as rising ocean temperature, rather than inadequacies in protection of rookery sites, we do not have any habitat-management recommendations beyond maintaining the policies identified in the 2010 *Conservation & Management Plan*. Those policies protect actively nesting birds as well as trees that have been used by nesting colonial waterbirds during the preceding five years. This directive has been effective at keeping rookeries active at Marina del Rey over the past decade, and documenting their status annually, and it should be employed into the future.

Because colonial waterbirds have such a protracted nesting period, often starting in January and continuing in “waves” through August, we recommend that any efforts to document the status of these species in Marina del Rey, or elsewhere in the region, commence no later than mid-March and continue into August. The larger rookery sites, especially, should be visited multiple times during the nesting season.

Finally, we believe that conducting County-wide surveys every 5–10 years would be useful in continuing to gauge the evolving status of the Marina del Rey rookeries relative to the County-wide status.

APPENDIX A

COLONIAL WATERBIRD NESTING RECORDS, 2009, 2012, 2019

Tables A-1 to A-6, below, provide complete lists of colony sites in the County *exclusive of Marina del Rey* and the status of each breeding species in 2009, 2012, and 2019. In the tables, rookery sites are generally listed from south to north.

Maps B-1 to B-6, after the tables, show the locations of each rookery site.

Data from 2009 comes from: Hamilton, R.A. and D.S. Cooper. 2010. *Conservation and Management Plan, Marina del Rey, Los Angeles County, California*. Report dated September 16, 2010, prepared for County of Los Angeles, Dept. Beaches and Harbors and Dept. Regional Planning. The 2009 data are not included in eBird checklists.

Data from 2012 were generally collected by DSC as part of a statewide effort to document heron breeding numbers, as yet unpublished. Note that two “2012” observations were made by DSC in 2013 and 2014. The 2012 data are not included in eBird checklists.

Data from 2019 (current study) are generally supported by eBird checklists, hyperlinked in Tables A-1 to A-6.

Lack of observation at a location surveyed during a given year is denoted by “0”.

Lack of observation at a site *not* surveyed during a given year is denoted by “—”.

Abbreviations: GBHE = Great Blue Heron; GREG = Great Egret; SNEG = Snowy Egret; BCNH = Black-crowned Night-Heron; DCCO = Double-crested Cormorant.

**Table A-1: Great Blue Heron Rookeries
Los Angeles County Outside of MDR, 2009, 2012, 2019**

Location	2009	2012	2019	Detail (2019 Unless Stated Otherwise)
Alamitos Bay	0	0	2	East Ocean Blvd; RAH 6/2/19; https://ebird.org/view/checklist/S60091996
Alamitos Bay	14	0	3	Fire Station Mole; RAH 6/6/19; https://ebird.org/view/checklist/S59471571
Alamitos Bay	0	20	5	East Marina Drive; RAH 6/25/19; https://ebird.org/view/checklist/S59471287 ;
Queensway Bay	0	15	30	Vic. Queen Mary; RAH 5/2/19 and 6/18/19 https://ebird.org/view/checklist/S60083719 and https://ebird.org/view/checklist/S60080643
Port of Long Beach	3	0	0	Navy Mole; RAH 8/4/09
Port of Los Angeles	5	0	0	Pier 400; RAH 8/4/09

Location	2009	2012	2019	Detail (2019 Unless Stated Otherwise)
Port of Los Angeles	2	0	4	Signal Street; RAH 8/6/09; DSC 4/21/19; https://ebird.org/view/checklist/S55632972
Port of Los Angeles	0	16	3	South Seaside Avenue/USGS Station; DSC 6/16/12; DSC 4/21/19; https://ebird.org/view/checklist/S55633184 ; Constance Ilg 5/8/19; https://ebird.org/view/checklist/S56010256
Wilmington Marina (Ports)	—	—	6	RAH 5/2/19 and 6/16/19; https://ebird.org/view/checklist/S60084987 and https://ebird.org/view/checklist/S60086148
El Dorado Regional Park	—	2	1	Area 3; Brian Daniels 6/13/19; https://ebird.org/view/checklist/S57340136
San Gab. River Spreading Grounds	9	—	0	Pico Rivera; Larry Schmahl 2009 (reported to DSC)
Legg Lake	35	6	11	Whittier Narrows Recreation Area; DSC 4/16/19; https://ebird.org/view/checklist/S55631783
Puddingstone Reservoir	0	1	0	Rod Higbie 5/9/12 (reported to DSC)
Santa Fe Dam	—	—	1	Lois Brunet 2/27/19; https://ebird.org/view/checklist/S53206946
San Gabriel Reservoir	—	14	0	San Gabriel Mts; 10 nests at north reservoir and 4 nests at south reservoir; DSC 7/5/12 unpubl.
Cogswell Res.	3	5	—	San Gabriel Mountains; RAH 6/12/12
Echo Park Res.	4	0	0	Los Angeles
Silver Lake Res.	—	3	3	DSC 4/17/19; https://ebird.org/view/checklist/S55632193
Atwater Village	—	—	2	Los Angeles near Glendale; DSC 4/17/19; https://ebird.org/view/checklist/S55632016
Hansen Spreading Grounds	—	—	3	Brad Rumble 4/28/19 and 7/4/19; https://ebird.org/view/checklist/S55514879 and https://ebird.org/view/checklist/S57923021
Vic. Lake Balboa	10	4	6	Van Nuys; DSC 5/24/12; Kerry Ross 2/16/19; https://ebird.org/view/checklist/S52831899 and DSC 5/23/19; https://ebird.org/view/checklist/S56703639
Malibu Colony Road	0	1	0	Malibu; DSC 6/13/12
King Gillette Ranch	—	1	0	Calabasas; DSC 2013 (date unspecified, included in 2012 data).
Malibou Lake	0	0	4	Agoura; DSC 6/8/19; https://ebird.org/view/checklist/S57224679
Westlake Lake	—	10	2	Westlake Village; DSC 12/8/14 (included in 2012 data); DSC 5/5/19; https://ebird.org/view/checklist/S55861249
	85	98	86	Great Blue Heron Nests
	[9]	[13]	[16]	Great Blue Heron Nesting Locations

Table A-2: Great Egret Rookeries
Los Angeles County Outside of MDR, 2009, 2012, 2019

Location	2009	2012	2019	Detail (2019 Unless Stated Otherwise)
Malibu Country Mart Trees	10	3	3	Malibu; 2009 observation data not available; DSC 5/23/12; DSC 4/26/19; https://ebird.org/view/checklist/S55633827
	10	3	3	Great Egret Nests
	[1]	[1]	[1]	Great Egret Nesting Locations

Table A-3: Snowy Egret Rookeries
Los Angeles County Outside of MDR, 2009, 2012, 2019

Location	2009	2012	2019	Detail (2019 Unless Stated Otherwise)
Alamitos Bay	0	7	3	Long Beach; North Marina Drive/Fire Station Mole; DSC 6/2/12; RAH 6/6/19; https://ebird.org/view/checklist/S59471571
Belmont Shore	0*	6*	4	Long Beach; East Ocean Blvd; RAH 8/3/09; DSC 6/2/12; RAH 4/30/19 and 6/18/19; https://ebird.org/view/checklist/S55607590 and https://ebird.org/view/checklist/S60091298
Queensway Bay	0	7*	0	Catalina Landing; DSC 6/3/12
Port of Los Angeles	0	25	0	Terminal Island, Ferry Street; DSC 6/8/12
Port of Los Angeles	0	0	1*	Ports O' Call Village; DSC 4/21/19; https://ebird.org/view/checklist/S55632761
Wilmington Marina (Ports)	—	—	6	Wilmington; RAH 6/16/19; https://ebird.org/view/checklist/S60086148
El Dorado Regional Park	—	3	10	Long Beach; Duck Ponds (southwestern part of park); DSC 6/3/12; RAH 5/30/19; https://ebird.org/view/checklist/S60097338
Malibu Country Mart Trees	0	6	1	Malibu; DSC 5/23/12; Merryl Edelstein 6/21/19; https://ebird.org/view/checklist/S57566002
Westlake Lake	—	—	2	Westland Village; DSC 5/5/19; https://ebird.org/view/checklist/S55861249
	0*	54*	27*	Snowy Egret Nests
	[1]	[6]	[7]	Snowy Egret Nesting Locations

* Unknown numbers of Snowy Egrets nested at Belmont Shore in 2009, at Belmont Shore and near the Queen Mary (Queensway Bay) in 2012, and at Ports O' Call Village in 2019 (survey timing did not allow for distinguishing SNEG nests from BCNH nests). For purposes of this report, all such "unknown" nests are treated as SNEG/BCNH (see Table 3e).

**Table A-4: Black-crowned Night-Heron Rookeries
Los Angeles County Outside of MDR, 2009, 2012, 2019**

Location	2009	2012	2019	Detail (2019 Unless Stated Otherwise)
Alamitos Bay	—	1*	6	Long Beach; North Marina Drive/Fire Station Mole; DSC 6/2/12; RAH 6/6/19; https://ebird.org/view/checklist/S59471571
Belmont Shore	0*	2*	75	Long Beach; East Ocean Blvd; RAH 8/3/09; DSC 6/2/12; RAH 4/30/19 and 6/18/19; https://ebird.org/view/checklist/S55607590 and https://ebird.org/view/checklist/S60091298
Queensway Bay	35	0	0	Long Beach, Shoreline Drive; RAH 8/24/09
Queensway Bay	22	2	4	Long Beach, vic. Queen Mary; RAH 8/4/09; DSC 6/12/12; RAH 5/2/19; https://ebird.org/view/checklist/S60083810
Queensway Bay	0	4	0	Long Beach, Catalina Landing; DSC 6/3/12
Port of Los Angeles	0	25	0	Terminal Island, Ferry Street; DSC 6/8/12
Port of Los Angeles	0	6	7*	Ports O' Call Village; DSC 4/21/19; https://ebird.org/view/checklist/S55632761
Port of Los Angeles	20	0	0	Terminal Island Customhouse; RAH; 8/3/09
Port of Los Angeles	18	0	0	Terminal Island, Ways Street; RAH; 8/3/09
Wilmington Marina (Ports)	—	—	62	Wilmington; RAH 5/2/19 and 6/16/19; https://ebird.org/view/checklist/S60084987 https://ebird.org/view/checklist/S60086148
El Dorado Regional Park	—	2	2	Long Beach; Duck Pond; RAH 5/30/19 https://ebird.org/view/checklist/S60097338
Redondo Beach Esplanade	—	2	0	Redondo Beach; DSC 5/3/12
Lincoln Park	0	0	1	Los Angeles; DSC 4/17/19; https://ebird.org/view/checklist/S55631884
MacArthur Park	0	0	4	Los Angeles; RAH 5/22/19; https://ebird.org/view/checklist/S60096726
Lake Balboa Area	10	0	0	Van Nuys
Malibu Country Mart Trees	0	4	0	Malibu; DSC 5/23/12
	105*	48*	161*	Black-crowned Night-Heron Nests
	[6]	[9]	[8]	Black-crowned Night-Heron Nesting Locations

* Unknown numbers of Black-crowned Night-Herons nested at Belmont Shore in 2009, at Alamitos Bay and Belmont Shore in 2012, and at Ports O' Call Village in 2019 (survey timing did not allow for distinguishing BCNH nests from SNEG nests). For purposes of this report, all such "unknown" nests are treated as SNEG/BCNH (see Table 3e).

***Table A-5: Unknown SNEG/BCNH Rookeries
Los Angeles County Outside of MDR, 2009, 2012, 2019***

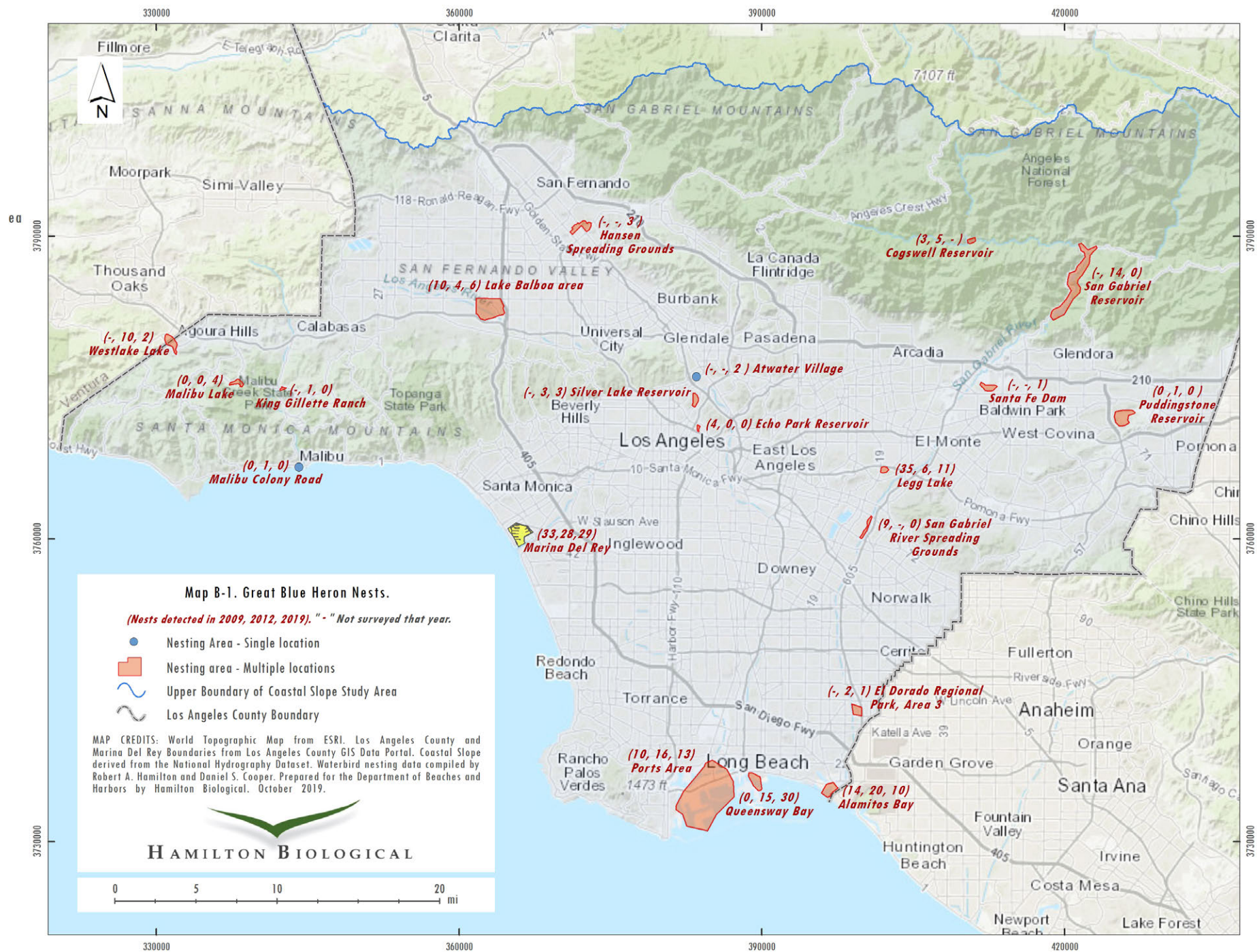
As discussed previously, the timing of surveys did not allow for numerous nests of small egret/heron species to be identified to species. The following table provides the data on these “unknown” nests, which belonged either to Black-crowned Night-Herons or to Snowy Egrets.

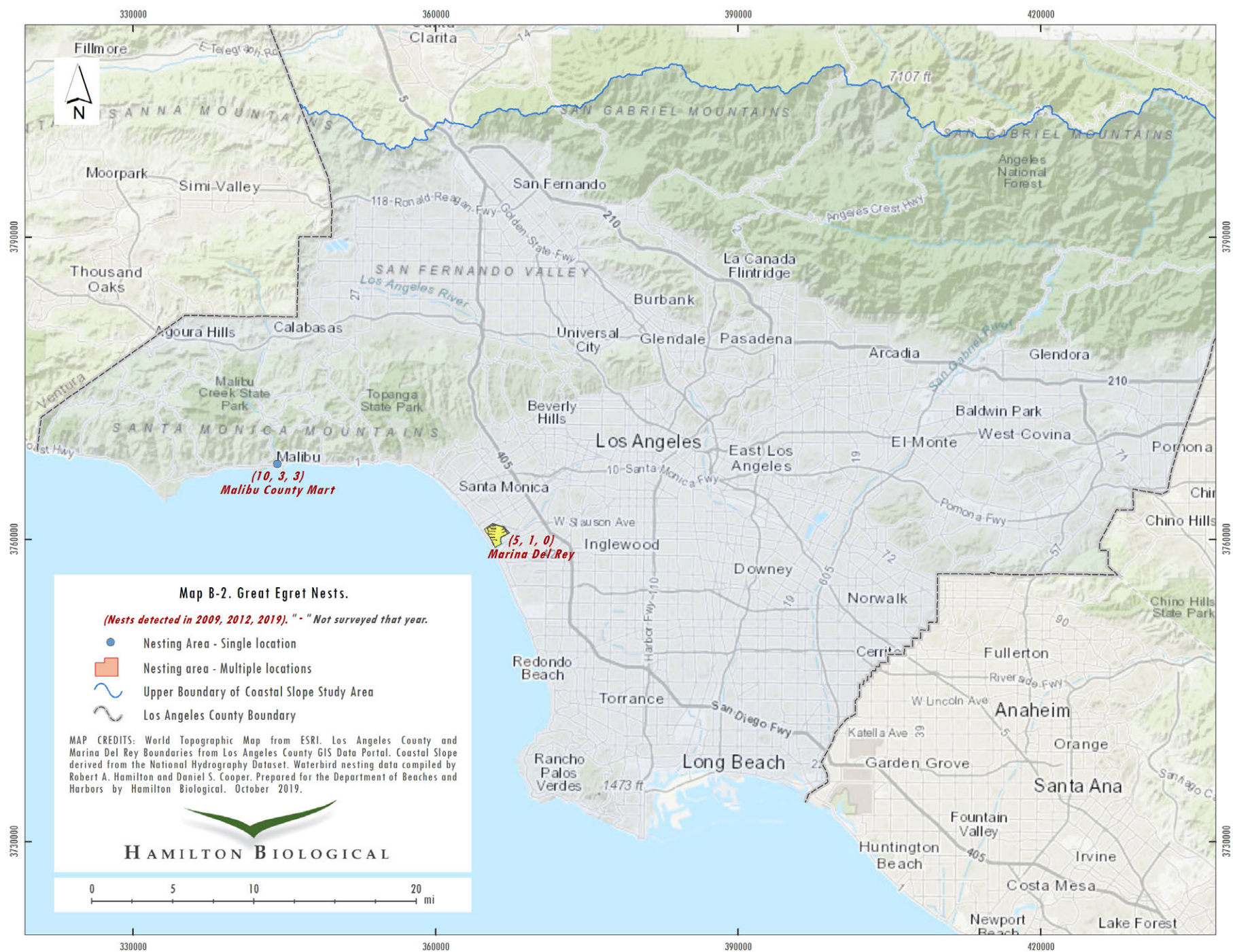
Location	2009	2012	2019	Detail (2019 Unless Stated Otherwise)
Alamitos Bay	0	14	0	Long Beach; North Marina Drive; DSC 6/2/12
Belmont Shore	110	45	0	Long Beach; East Ocean Blvd; RAH 8/3/09; DSC 6/2/12
Queensway Bay	0	45	0	Long Beach; Harry Bridges Memorial Park; DSC 6/3/12
Queensway Bay	0	34	0	Long Beach; Catalina Landing; DSC 6/3/12
Port of Los Angeles	0	0	21	Ports O' Call Village; DSC 4/21/19; https://ebird.org/view/checklist/S55632761
	110	138	21	Unknown BCNH/SNEG Nests

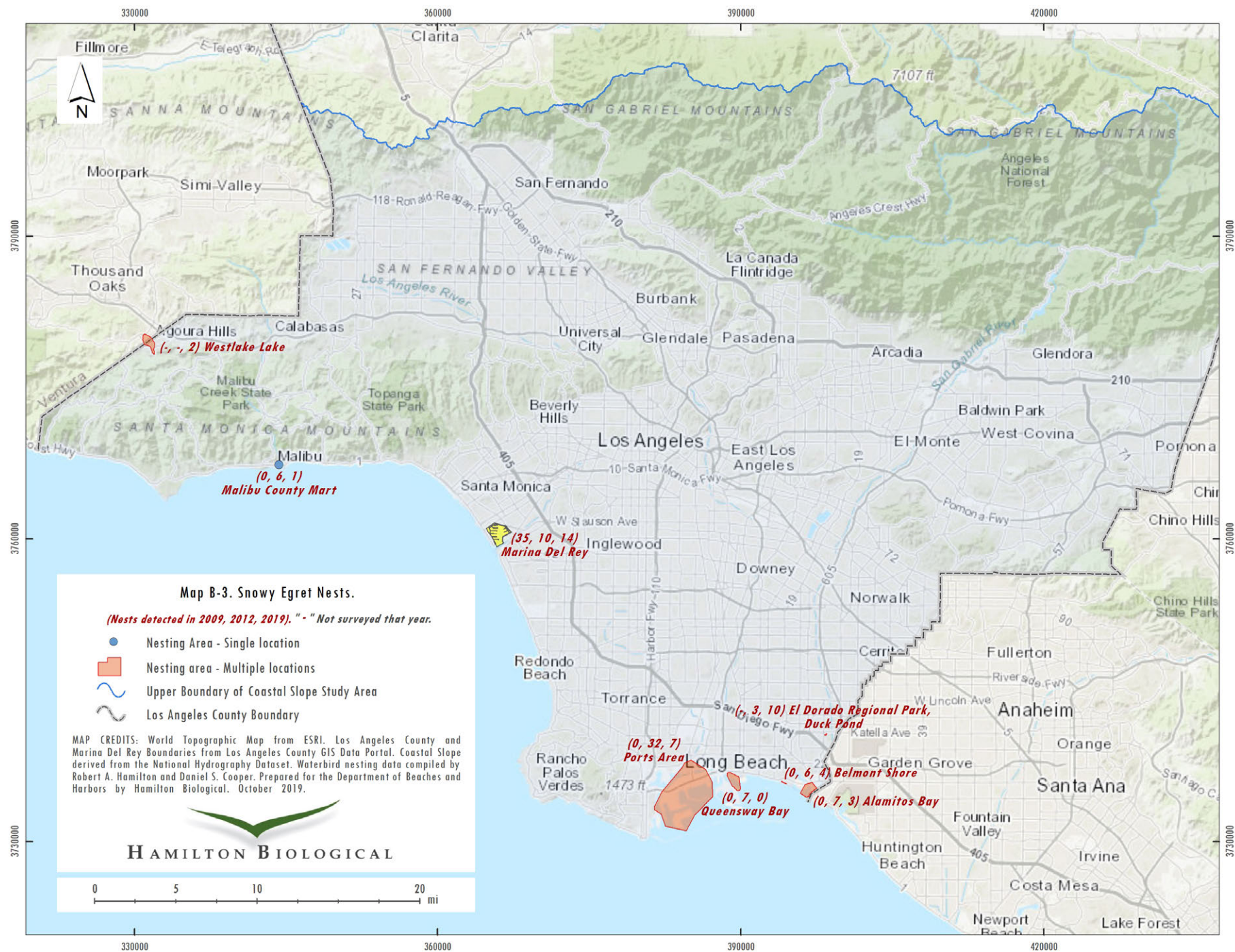
***Table A-6: Double-crested Cormorant Rookeries
Los Angeles County Outside of MDR, 2009, 2012, 2019***

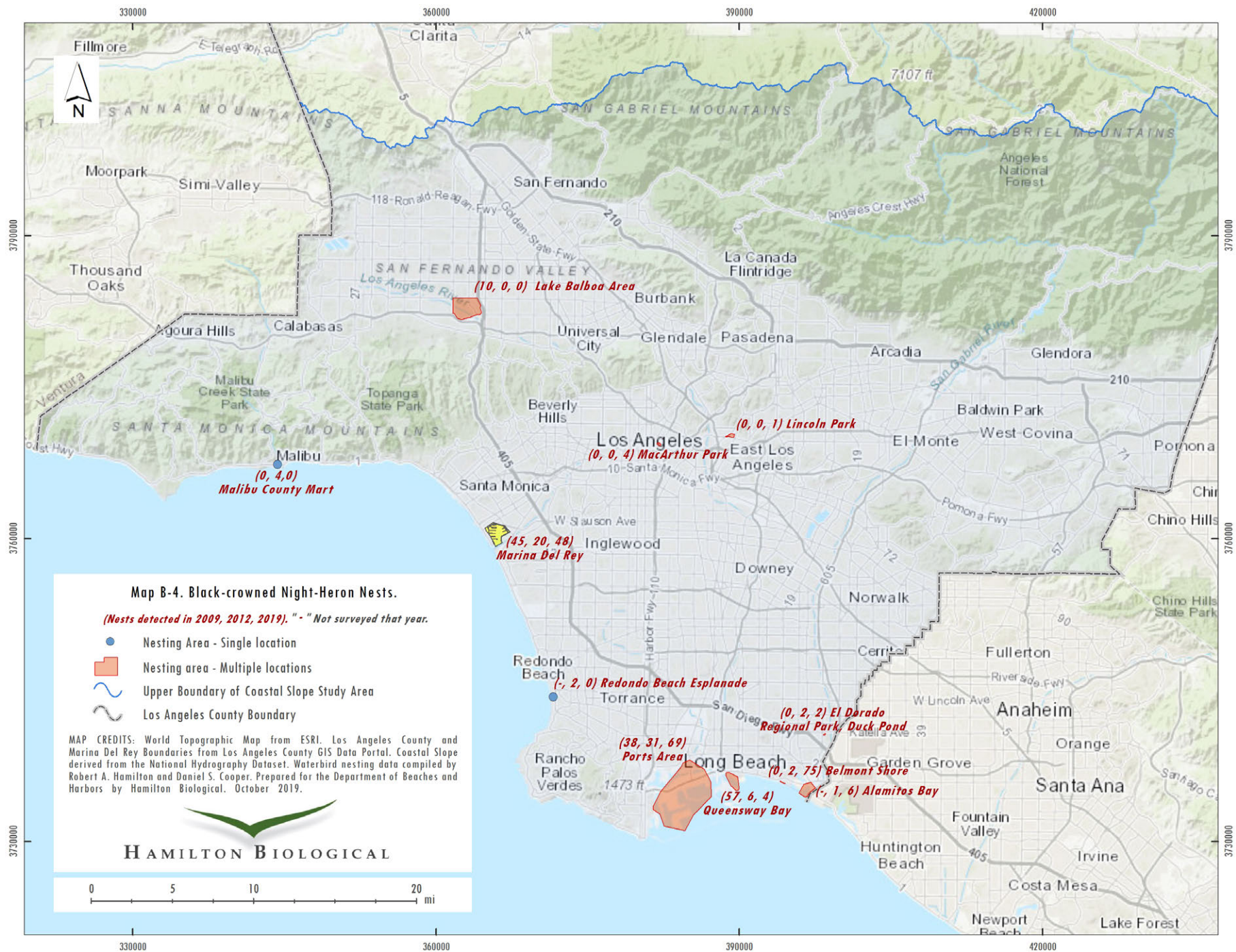
Location	2009	2012	2019	Detail (2019 Unless Stated Otherwise)
Vic. Heim Bridge (Ports)	89	0	0	Terminal Island; Kathy Keane 2008 (reported to RAH)
Legg Lake	15	30	24	Whittier Narrows Recreation Area; DSC 4/16/19; https://ebird.org/view/checklist/S55631783
San Gabriel Reservoir	—	0	1	San Gabriel Mts; Tracy Drake 4/27/19; https://ebird.org/view/checklist/S55483115
Lake Balboa Area	20	12	19	Van Nuys; Sepulveda Basin Wildlife Area; DSC; 4/10/19 xx
Malibu Country Mart Trees	0	0	5	Malibu; DSC 4/26/19; https://ebird.org/view/checklist/S55633827
Westlake Lake	—	—	26	Westlake Village; DSC 3/3/19 and 5/5/19; https://ebird.org/view/checklist/S53357015 and https://ebird.org/view/checklist/S55861249
	124	42	75	Double-crested Cormorant Nests
	[3]	[2]	[5]	Double-crested Cormorant Nesting Locations

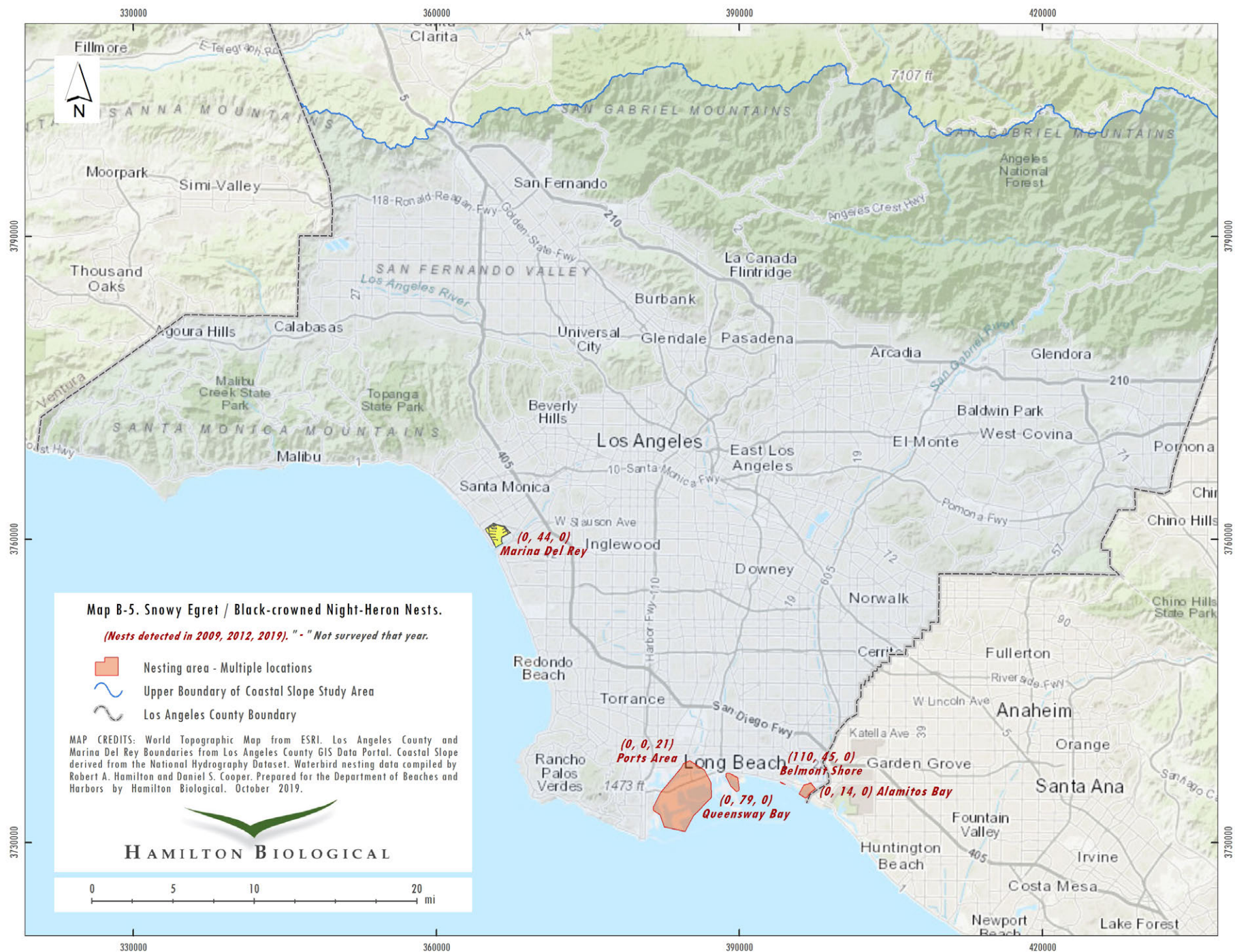
APPENDIX B
MAPS OF ROOKERIES, 2009, 2012, 2019











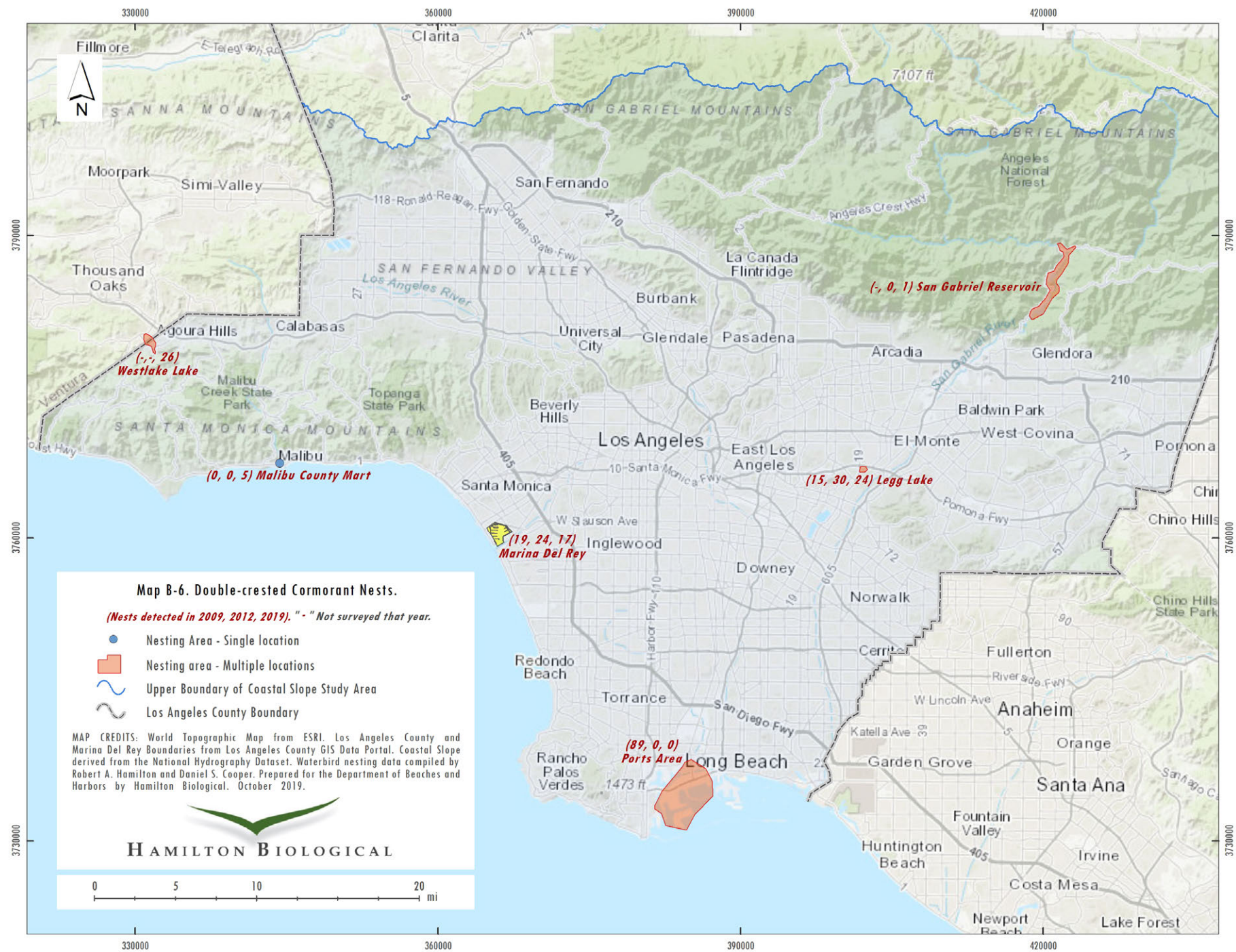




Photo C-1. Great Blue Herons.
Adults at nest in palm tree.
Wilmington Marina, Wilmington.
May 2, 2019.

Photo: Robert A. Hamilton.

Photo C-2. Great Blue Herons.
Juveniles at nest in palm tree.
Wilmington Marina, Wilmington.
June 16, 2019.

Photo: Robert A. Hamilton.



Photo C-3. Snowy Egrets.
Chicks at nest in ficus tree
(with adult in background).
Wilmington Marina, Wilmington.
June 16, 2019.

Photo: Robert A. Hamilton.



Photo C-4. Ficus nesting tree used by Snowy Egrets and Black-crowned Night-Herons. Wilmington Marina, Wilmington. May 2, 2019.

Photo: Robert A. Hamilton.

Photo C-5. Black-crowned Night-Heron, leucistic adult. Wilmington Marina, Wilmington. June 16, 2019.

Photo: Robert A. Hamilton.



Photo C-6. Snowy Egret adult and two Black-crowned Night-Heron fledglings. East Ocean Blvd., Long Beach. June 18, 2019.

Photo: Robert A. Hamilton.



Photo C-7. Adult Black-crowned Night-Heron at nest in palm tree. MacArthur Park, Los Angeles. May 22, 2019.

Photo: Robert A. Hamilton.

Photo C-8. Black-crowned Night-Herons nesting in tules. MacArthur Park, Los Angeles. May 22, 2019.

Photo: Robert A. Hamilton.



Photo C-9. Snowy Egret fledglings at nest in palm tree. El Dorado Duck Pond, Long Beach. May 30, 2019.

Photo: Robert A. Hamilton.