



MPA Baseline Program

Annual Progress Report



Principal Investigators - please use this form to submit your MPA Baseline Program project annual report, including an update on activities completed over the past year and those planned for the upcoming year. This information will be used by the MPA Baseline Program Management Team to track the progress of individual projects, and will be provided to all MPA Baseline Program PIs and co-PIs prior to the Annual PIs workshop to facilitate discussion of project integration. Please submit this form to California Sea Grant when complete (sgreport@ucsd.edu, Subject [Award Number, project number, PI, "Annual Report"].)

Project Information

Project Year 2014 MLPA Region North Coast

Project Title & Number Comprehensive Seabird Baseline Monitoring in the MLPA North Coast Study Region [Project # R/MPA-35C]

PI name Rick Golightly Co-PI name Daniel Barton

PI Contact Info Co- PI Contact Info (please list additional PIs and contact info in the "Project Personnel" section if necessary)

Address Department of Wildlife, Humboldt State University, 1 Harpst Street, Arcata, CA 95521

Email Richard.golightly@humboldt.edu Daniel.barton@humboldt.edu

Phone 530 304 4118 707 826 3430

## Project Goals & Objectives

The proposed project is designed to develop a robust baseline characterization of North Coast Study Region (NCSR) Marine Protected Area (MPA) marine ecosystems by quantifying seabird abundance, distribution, reproduction, diet, and related interannual variance. The proposed project is further designed to provide a repeatable monitoring framework from which to identify initial and long-term response of seabirds and marine ecosystems to the establishment of Marine Protected Area (MPAs). This project is a collaborative three-element endeavor with three specific objectives. *Aerial Photographic Element*: The first objective is to provide a region-wide census of seabird breeding populations for focal species (in 2014) and to determine the extent of interannual variation and relationship to oceanographic forcing over a 19-year time series (1996-2014) using a combination of previously collected data, new data collection, and analysis. *Castle Rock Reproduction and Diet Element*: The second objective is to quantify nesting phenology, reproductive success, chick diet, and foraging effort of the most abundant seabird (common murre) in the NCSR over a nine-year period (2007-2014) using previously collected data and new data collection. *Shore-based element*: The third objective is to determine the distribution of foraging flocks and foraging rates, breeding population size and productivity, roosting distributions, and rates of human disturbance at breeding sites and roosting sites for focal species. Additionally, a citizen science element will provide community engagement and evaluation of the use of citizen scientists in monitoring programs utilizing this design. This baseline characterization depends on the value of seabirds to indicate response of marine ecosystems to management changes and oceanographic conditions, and the value of seabirds as high-trophic level predators and integral components of healthy marine ecosystems.

**Summary of Project Activities Completed to Date**

*Overview of Project Year 2014 Activities, including progress towards meeting goals & objectives*

*Castle Rock Reproduction and Diet Element*

The camera system on Castle Rock operated successfully for the entire field season. We monitored 86 common murre nest sites for productivity metrics, conducted 34 diet surveys recording approximately 950 fish or other forage, and conducted 4 time budget watches during chick rearing. 23 Brandt's cormorant nests were monitored for reproductive success. The video streamed uninterrupted for public access during the entire season. In September in cooperation with the US Fish and Wildlife Service, the camera and transmitters were removed from the island for annual maintenance. In the upcoming months we will be analyzing food deliveries and completing analysis of time budget watches. The video is now being reviewed to identify fish species (about 50% completed in the reporting period) and construct time budgets (about 25% completed in the reporting period). Reproductive efforts (phenology and success) for both murre and cormorants were summarized (that component is now 100% complete).

*Shore-based Element*

During the summer field season of 2014, we conducted seabird population transects, foraging observations, and monitored nests for success in 5 study areas within the North Coast Study Region: Crescent City, Trinidad Head, Cape Mendocino, Kibesillah, and Mendocino Headlands. Three observers (two technicians and co-PI Barton) surveyed 5 different transects population transects and 10 foraging observation stations weekly from late April through early August, and monitored accessible seabird nests within these study areas for success on a weekly basis. Surveys were almost completely conducted on-protocol and covered the intended matched-pair MLPA/reference site design effectively, although periods of heavy fog during the summer occasionally limited survey extent. Crescent City data collection started later in the season than intended due to alteration of the structure of collaborative effort and departure of Crescent Coastal Research from the project. All data entry was completed during the reporting period, and precise transect geo-referencing and descriptions were created to ensure repeatability of any future survey efforts. Point Blue assisted by providing GIS support, methodological assistance and protocols consistent with other MLPA study regions, and we are currently developing data summaries for reporting to the monitoring enterprise. Following the field season of 2014, we coordinated data organization with Point Blue Conservation Science. Humboldt State graduate student Shannon Murphy has begun developing her seabird/MLPA-related research for the 2015 field season, and will be focusing on studying nest success and nest-site behavior of seabirds as a monitoring metric for MLPA effects. This will include a citizen science component and we have developed citizen reporting forms so as to ensure data quality and speedy reporting. Additionally Barton has met with Bureau of Land Management personnel to coordinate citizen science in the Trinidad Area. The upcoming 2015 field season will continue efforts developed during the 2014 season.

*Aerial Photographic Element*

During the 2014 field season we conducted a baseline survey of Northcoast seabird colonies in cooperation with partners from CU Santa Cruz and the US Fish and Wildlife Service. We have counted False Klamath, Green, White, Flatiron and several smaller colonies from the 2014 photos. Counting for 2014 for Castle Rock has begun. We completed the analyses of 2010 and 2012 archived aerial photographs of Castle Rock National Wildlife Refuge. In one of the two years, counting required more technician time than we had budgeted. In a series of email and phone exchanges in September and October, Golightly, Barton, and Capitolo (UC Santa Cruz) developed changes to the counting protocol to ensure that counts or estimates will be available for all years for incorporation into the trend analysis. These are now being formalized in a document that will be included in our next reporting period.

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*Highlights from project progress so far, such as successes achieved, new collaborations or partnerships, or interesting stories from the past year that may be suitable for a blog post or other media venue*

We have worked with California State Parks, the California Department of Fish and Wildlife, the US Fish and Wildlife Service, and the Bureau of Land Management (California Coastal National Monument) to ensure that local, regional, and statewide land managers are aware of this project both through formal channels (i.e. permitting) and less formal discussions and meetings. Additionally, in collaboration with our partners at US Fish and Wildlife Service we obtained resources to continue the reproduction and diet data collection at Castle Rock in 2015 (not funded in the MLPA process). Video from the island is now streaming live and available to the public at [www.humboldt.edu/castlerockseabirds](http://www.humboldt.edu/castlerockseabirds) .

*Description of any unforeseen events and substantial challenges, and resulting effects on project activities and progress. Please indicate any issues that may affect other PI's or require coordination with other Baseline partners (e.g., ME, DFG, Sea Grant).*

We have previously consulted with the Monitoring Enterprise and Sea Grant regarding the unexpected departure of one of the co-PIs from our collaboration. This represented a substantial challenge that did influence the spatial and temporal extent of data collection for approximately 20% of the proposed work on the shore-based monitoring element (at the northern extent of our region only) but we have been able to adjust our data collection and study design to meet this issue.

Due to unanticipated large population sizes of common murres at some colonies in recent years, counts of murres have used more resources than budgeted. We are adjusting sampling effort to ensure accurate trend analyses for all years that photos are available.

*Data status (i.e., paper/raw format or digitized; if digitized, what format?)*

From the Castle Rock element, all data is archived in video format and is largely converted to a spreadsheet format as described above. From the shore-based element, all data has been entered into excel spreadsheets consistent with other MLPA seabird monitoring projects in other regions, and additionally, all field data notebooks have been scanned for permanent data archival. From the aerial photographic element, all photographs taken in 2014 have been archived and backed up, and progress in counting birds in photographs from 1996-2014 is ongoing, as described above in the summary of completed project activities.

**Activities Planned for following Project Year \_\_ (if applicable) – Please describe remaining work and approximate timelines for completing that work, including any anticipated budget variances necessary to complete the project.**

*Aerial Photographic Element:* Field portions of this element are complete. The first objective was to provide a region-wide census of common murre and cormorant breeding populations (in 2014). Secondly, we plan to determine the extent of inter annual variation and relationship to oceanographic forcing over a 19-year time series (1996-2014) using a combination of previously collected data, new data collection, and analysis. Photo counting and data analysis are ongoing and upcoming, with final reporting to occur this calendar year.

*Castle Rock Reproduction and Diet Element:* Field portions of this element are complete, although this study continues using a different funding source. The objective was to quantify nesting phenology, reproductive success, chick diet, and foraging effort of the most abundant seabird (common murre) in the NCSR over a nine-year period (2007-2014) using previously collected data and new data collection. Data summary and analysis is ongoing, with final reporting occurring this calendar year.

*Shore-based element:* Field data collection for this objective will occur again in 2015 to provide two years of data. We continue to determine the distribution of foraging flocks and foraging rates, breeding population size and productivity, roosting distributions, and rates of human disturbance at breeding sites and roosting sites for focal species. Additionally, a citizen science element currently being implemented (including outreach talks, website development, and protocol implementation) will provide community engagement and evaluation of the use of citizen scientists in monitoring programs utilizing this design. Final reporting will occur for this element in 2016.

No further variances or deviation from project timelines not previously discussed with Sea Grant are envisioned.

**Project Personnel** – Please indicate additional project personnel involved in your MPA baseline project, including students and volunteers, or additional PI contact information if necessary, as well as the nature of their assistance in the project project.

	<i>Students Supported</i>	<i>Student Volunteers</i>	<i>Nature of Assistance</i>
<i>K-12</i>	<i>0</i>	<i>0</i>	<i>-</i>
<i>Undergraduate</i>	<i>2</i>	<i>1</i>	<i>Field data collection</i>
<i>Masters</i>	<i>6</i>	<i>1</i>	<i>Field data collection</i>
<i>PhD</i>	<i>0</i>	<i>0</i>	<i>-</i>

*Number of other Volunteers not counted above and the nature of their assistance in the project:*

N/A (although our upcoming citizen science efforts in 2015 will include additional volunteers!)

*Additional PI contact info not listed on first page:*

*co-PIs*

Daniel Robinette, Point Blue Conservation Science  
 Jaime Jahncke, Point Blue Conservation Science  
 Breck Tyler, University of California – Santa Cruz

*Associated Staff*

Phil Capitolo, University of California – Santa Cruz  
 Julie Howar, Point Blue Conservation Science  
 Eric Nelson, U.S. Fish and Wildlife Service  
 Ken Griggs, U.S. Fish and Wildlife Service

**Cooperating Organizations and Individuals** - Please list organizations or individuals (e.g., federal or state agencies, fishermen, etc.) that provided financial, technical or other assistance to your project since its inception, including a description of the nature of their assistance.

Name of Organization or Individual	Sector (City, County, Fed, private, etc.)	Nature of cooperation (If financial, provide dollar amount.)
U.S. Fish and Wildlife Service	Federal	Integral to Castle Rock NWR monitoring (see proposal for details – refuge personnel and support are critical for this portion of the project)
California State Parks	State	Permitting, access, and field housing/camping
California DFW	State	Aircraft use

**Project Outputs and Materials:** Please provide any other project-relevant information, such as descriptions of attached materials, media coverage your project has received, presentations, publications, images etc.

None yet.