

The Roles of the Greater Farallones National Marine Sanctuary Advisory Council and the Working Group

The Overflight Working Group was formed by Greater Farallones National Marine Sanctuary Advisory Council in their effort to assist the Greater Farallones National Marine Sanctuary (the Sanctuary) with addressing several years of public requests to review the location and dimensions (shape and size) of NOAA regulated overflight zones in certain areas of San Mateo, Marin and Sonoma Counties that are managed by the Sanctuary. The role of the Working Group is to be advisory to the Greater Farallones [Sanctuary Advisory Council \(SAC\)](#). The Working Group does not directly advise the Sanctuary, NOAA, Department of Commerce, or any other federal rulemaking agency. More information about the Working Group and its process is set forth in these Recommendations.

The SAC will consider the Overflight Working Group recommendations at its regular public meeting on February 1, 2017, and the SAC will determine the final suite of recommendations that will go directly to the Sanctuary Superintendent for consideration. The recommendations may suggest either regulatory or non-regulatory actions or both. The Superintendent will review and consider the final SAC recommendations and report back to the SAC regarding any possible actions at a later date.

Both the Working Group recommendations and the SAC decisions are preliminary to any regulatory process. If any final recommendations by the SAC include proposed regulatory changes, and the Sanctuary Superintendent decides to move forward with those changes, then it will require an official federal rulemaking notice and process that includes environmental review as required by law. During that process, if it goes forward, there would be ample opportunity for public review and comment.

Public Comments to the Sanctuary Advisory Council on February 1

The SAC is giving members of the public the opportunity to submit comments on these Recommendations to the Greater Farallones Sanctuary Advisory Council for their consideration at the February 1, 2017 meeting:

Written Comments

If you wish to provide written comments, please email them to Jenn.Gamurot@noaa.gov. All written comments must be received by **January 26th at 5:00 PM** in order for them to be provided to the Sanctuary Advisory Council briefing book.

Spoken Comments

During the February 1, 2017 Sanctuary Advisory Council meeting, there will be 30 minutes allocated for public comments specific to the Overflight Working Group Recommendations. The time allowed for each commenter will be three minutes or less, but likely less dependent on the number of people wishing to comment. Commenters will need to sign in prior to the comment period, and names will be called in the order they are received. The Sanctuary Advisory Council is looking for unique comments. Repeating the same comment from previous speakers is discouraged. Multiple people wishing to make similar comments are encourage to appoint a spokesperson for their collective comments. Since it is quite possible that speaking time will be limited for all commenters, you are urged to submit a written comment if you have extensive unique comments.

The Agenda with the times and location of the February 1 SAC meeting in Pt. Reyes Station and a link to this document will be posted at http://farallones.noaa.gov/manage/sac_meetings.html. The Agenda times may be updated.

George Clyde, Chair
Greater Farallones National Marine Sanctuary Advisory Council
Working Group on NOAA Regulated Overflight Zones

January 19, 2017

To the Members of the Sanctuary Advisory Council
Attn: John L. Largier, Chair

Dear Members of the Sanctuary Advisory Council,

With this letter I am pleased to transmit to you the Recommendations of the Working Group on NOAA regulated low-overflight zones.

As a body, the Working Group was not able to reach the sort of agreement that is typical of a working group, where there is a broad consensus for the recommendations. The group included three pilots, four marine scientists, a representative of the Monterey Bay SAC, and myself. While the group unanimously believes that the birds and marine mammals along our coast and in estuaries are subject to potential disturbance from low-flying aircraft (including drones) and came to agreement on a number of recommendations, in the end, the pilots and the other members remained divided in some important ways regarding how the wildlife can and should be protected.

From the very start of the discussions in late 2015, the pilots advocated for pilot education and outreach instead of the regulatory approach used by the four west coast sanctuaries – establishing NOAA regulated overflight zones (NROZs) where pilots flying below 1,000 feet are subject to citation. The pilots' position is that NOAA should not be attempting to regulate airspace, as that is under the exclusive jurisdiction of the FAA. They also believe that the NROZs can pose serious safety issues for pilots in the area. They believe that pilot education and outreach, coupled with existing FAA regulations regarding minimum flying elevations, is the preferred approach.

The other members of the WG agree on the importance of pilot education and outreach. However, they also believe in NOAA's right to establish and enforce its NROZ regulations, accepting the FAA's stated position that it does not view NOAA's low-overflight rules as an airspace regulation nor as an infringement on the FAA's stated authority.¹ Following the precautionary principle, they believe that the NROZs are an important tool – both in protecting the wildlife through regulatory enforcement and as an effective way to motivate and educate pilots about the locations of vulnerable wildlife and the minimum elevations necessary to protect them from potential disturbance. It is the non-pilot view that outreach and education alone is not as effective as a combination of outreach, education and enforceable regulated low-over-flight zones within the Sanctuary.

¹ 77 Fed. Reg. at p. 3921, fn 1 (January 26, 2012)

In spite of over 60 hours of meetings and teleconferences, the engagement of a professional facilitator and circulation of ten drafts for comment, this fundamental division continued through the final teleconference this week. As a result, the WG members were individually polled for their views on the various proposals that the WG developed, and the results of that polling are included in the Recommendations. The pilots also intend to provide a written statement with their views, which will be distributed to the SAC when published and will be posted at http://farallones.noaa.gov/manage/sac_meetings.html.

Nevertheless, the WG members worked very well together in developing mutual understandings as to the relevant issues, and they achieved significant agreements on some matters. The pilot input helped forge a non-regulatory approach to protecting Devil's Slide Rock and to determine the dimensions and locations of the proposed new and extended NROZs. Their input also resulted in the recommendation that the horizontal dimensions of the existing and future NROZ should be reduced substantially for reasons of compliance and pilot safety.

The attached Recommendations reflect positive and constructive input from the marine biologists and pilots, in spite of the pilots' overall objections to the NROZs. The Recommendations are well considered. Most are supported by virtually all the marine scientists and SAC representatives on the WG and, in some cases, by some or all of the pilots. They will be valuable not only to our Sanctuary, but also to other Sanctuaries and managers of other protected areas with low-overflight issues.

On that basis, the attached Recommendations are ripe for consideration by the SAC at its February 1 meeting. My personal view, as a member of the WG (and not as its Chair), is that the SAC should consider and approve all of the Recommendations, and that they should be forwarded to the Sanctuary Superintendent for action.

Lastly, thank you for appointing me as Chair of the Working Group. It has been a challenging but satisfying assignment during which we all have learned a great deal and hopefully have aided the Sanctuary in its mission of protecting habitat and wildlife in our local waters.

Sincerely,

A handwritten signature in cursive script that reads "George Clyde".

CC: Chair, Monterey Bay National Marine Sanctuary Advisory Council



**Greater Farallones National Marine Sanctuary Advisory Council
Working Group on NOAA Regulated Overflight Zones
Recommendations to Sanctuary Advisory Council
January 19, 2017**

Greater Farallones National Marine Sanctuary Advisory Council Overflight Working Group

Working Group Members²

George Clyde, Chair	Sanctuary Advisory Council Member, GFNMS
Gerry McChesney	Marine Scientist, U.S. Fish and Wildlife Service
Jaime Jahncke, Ph.D.	Marine Scientist, Point Blue Conservation Science
Sarah Allen, Ph.D.	Marine Scientist, National Park Service
Tenaya Norris	Marine Scientist, The Marine Mammal Center
Brian Branscomb	Private and Commercial Pilot
John duGan	Commercial Helicopter Pilot, Bay Aerial Helicopter Tours
Andy Wilson	Pilot and Representative of California Pilots Association
Barton Selby	Monterey Bay National Marine Sanctuary Advisory Council Liaison

Working Group Staff Providing Technical, Logistical and Facilitator Support

Marina Piscalish	Senior Mediator/Facilitator, Center for Collaborative Policy
Sage Tezak	NOAA
Karen Reyna	NOAA
Matt Pickett	NOAA

Thanks to Scott Kathey for his contributions, and to Kate Bimrose and Jenn Gamurot for their administrative assistance.

Credits for photographs on cover page:

Low-flying aircraft, Courtesy of San Francisco Seaplane Tours
Common Murre with fish, Photo by Derek Lee, Point Blue Conservation Science
Harbor seals, Photo by Jason Thompson
Common Murre on the water, Photo by Sophie Webb

² Further information regarding the Working Group members is included in the [Sanctuary Overflight Working Group Reference Materials](#). An electronic copy of these Recommendations will be linked with the February 1, 2017, Sanctuary Advisory Council meeting materials at http://farallones.noaa.gov/manage/sac_meetings.html.

TABLE OF CONTENTS

Introduction2

Background.....4

Recommendations.....6

 Section 1: General Recommendations.....6

 GR-1: Single Purpose for NOAA Regulated Overflight Zones6

 GR-2: Minimum Altitude.....6

 GR-3: Horizontal Dimensions of Coastal NROZs8

 GR-4: Suggested Improvements to FAA Aeronautical Charts9

 GR-5: Implications for Other Sanctuary NROZs12

 GR-6: NROZs Next to the Point Reyes National Seashore14

 GR-7: Class E Airspace Issues14

 GR-8: Class B Airspace Issues16

 GR-9: Disturbance of Wildlife by Unmanned Aerial Vehicles (Drones) Outside of the
NROZs16

 GR-10: Pilot Outreach and Education Recommendations18

 Section 2: Recommendations for Specific NROZ Sites24

ACRONYMS

AGL	Above Ground Level
AIM	Aeronautical Information Manual
AOPA	Aircraft Owners and Pilots Association
CFR	Code of Federal Regulations
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
GFNMS	Greater Farallones National Marine Sanctuary
GGNRA	Golden Gate National Recreation Area
GPS	Global Positioning Systems
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NROZ	NOAA Regulated Overflight Zones
PRNS	Point Reyes National Seashore
SAC	Sanctuary Advisory Council
UAV	Unmanned Aerial Vehicles
VFR	Visual Flight Rules

Introduction

The Greater Farallones National Marine Sanctuary Advisory Council (the SAC) formed the Overflight Working Group to consider and to make recommendations regarding the locations and dimensions of areas where the elevation of motorized aircraft should be regulated to minimize potential disturbance to birds and marine mammals. The areas to be considered were within Greater Farallones National Marine Sanctuary (Greater Farallones Sanctuary or the Sanctuary) and in the Devil's Slide area of Monterey Bay National Marine Sanctuary (Monterey Bay Sanctuary), which is managed by Greater Farallones Sanctuary.

The motivation for this inquiry came from the Farallones Sanctuary staff to follow up on numerous comments received during regulatory proceedings over several years, most recently in connection with the revisions to the low-overflight regulations of West Coast sanctuaries in 2012 and the Greater Farallones Sanctuary expansion in 2015. In the course of those proceedings and earlier, both Greater Farallones and Monterey Bay Sanctuaries have already established some NOAA Regulated Overflight Zones (NROZs) where flights of motorized aircraft below 1,000 feet that disturb birds or marine mammals violate sanctuary regulations. The existing Greater Farallones Sanctuary NROZs are shown in purple in Figure 1.

One recommendation of the Working Group was substantial reductions in the horizontal dimensions of the NROZs to the minimum dimensions needed to adequately protect birds and marine mammals breeding and resting along the coastline. By reducing the horizontal dimensions of the NROZs, pilots may be more likely to comply with the regulation, and, more importantly, improve pilot and passenger safety. Presently many NROZs in the Sanctuary extend approximately one-and-one-half miles offshore of sensitive coastal wildlife areas. The working group concluded that approximately 1,000 feet would be sufficient in most cases, and that a uniform horizontal dimension for all NROZs that adjoin the coast based on that premise would be more effective than the current horizontal dimensions, which substantially exceed that.

Based on input from the pilots and other sources, the Working Group made a number of recommendations on how to improve the depiction of NROZs and other sensitive areas in the Sanctuary on the Federal Aviation Administration (FAA) aeronautical charts and other materials. The Working Group's Recommendations also include:

- Acknowledgement of the pilot's ultimate authority for the safety of the aircraft under FAA regulations;
- A limited exception to the low-overflight regulations to take into consideration unanticipated weather;
- The long-term permitting of qualified commercial operators to conduct low overflights under specified conditions to ensure that wildlife would not be disturbed (similar to the Farallones Sanctuary permits for shark tour companies), and to improve expedited permitting in some cases where urgency is required;
- Recommendations as to improving protection of wildlife along the coast of the Pt. Reyes National Seashore (PRNS), where the Sanctuary's boundaries do not include the one-quarter mile from the coastline, and therefore the NROZs do not adequately protect wildlife from low overflights on the coastline or outlying rocks. In addition, coordinate with the air tour management plans of the National Park Service (NPS) for PRNS;
- Specific recommendations regarding improved pilot education and outreach, including recommending staff for this responsibility; and

- While the Working Group was not asked to make specific recommendations regarding drones, it did recommend that the Sanctuary and the regional and national offices of the National Marine Sanctuaries program give immediate attention to the growing use of unmanned aerial vehicles (UAVs or drones) and the consequent potential threats to wildlife in the Sanctuaries.

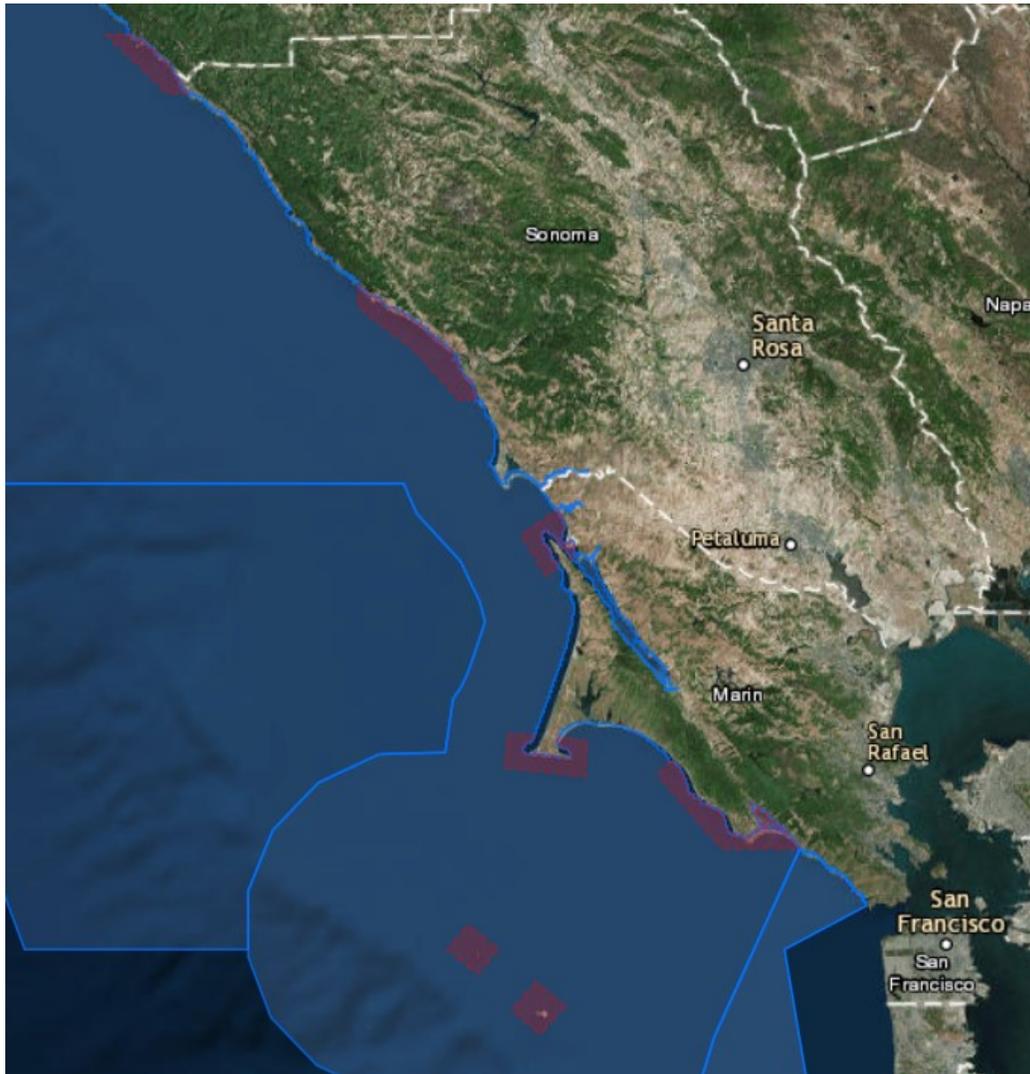


Figure 1 Existing NOAA Regulated Overflight Zones in the Greater Farallones National Marine Sanctuary, shown in purple.

We feel our process could be a model other Sanctuaries follow for establishing or reviewing NROZs. This process included local pilots and biologist in the discussions to determine the minimum zone dimensions needed to protect resources and pilot safety.

Lastly, from the pilot perspective, consistency in zone dimensions across Sanctuaries would be ideal if possible. It would be desirable to provide uniformity for the depiction of the

Sanctuary NROZs on the FAA charts and other FAA documents for the entire West Coast. It is acknowledged that different conditions at other sanctuaries might justify a different approach.

For the specific sites that were considered, except for Devil's Slide Rock, the recommendations are to add new or extended NROZs where flights under 1,000 feet would be subject to the Sanctuary regulations:

- Sonoma Coast between the two existing NROZs, which includes the coast of The Sea Ranch, Stewarts Point and Salt Point,
- Bodega Head and Bodega Rock,
- Along the Marin Coast from the existing NROZ at Tomales Point southward to and including McClures Beach and Elephant Rock,
- Along the Marin Coast and from the existing NROZ at Pt. Reyes along the Drakes Bay coast to the existing NROZ that covers Double Point and the Bolinas coast, and
- The remainder of Tomales Bay, south of the existing NROZ that extends from the mouth to Tom's Point.

Regarding the Devil's Slide area, the Working Group recommended that the Sanctuary ask the FAA to add a special notice on its aeronautical charts requesting pilots fly at least 1,000 feet over this sensitive area, and that the effectiveness of this notice along with other pilot outreach and education, be monitored.

Background

In response to comments received on various Greater Farallones Sanctuary planning documents over the years, the Greater Farallones Sanctuary Advisory Committee (SAC) commissioned the formation of a volunteer working group to examine potential additions and other changes to the Sanctuary's NOAA Overflight Regulation Zones (NROZs). A member of the SAC was appointed as Chair, who worked with Sanctuary staff to form the Working Group.

In forming the Working Group, the Chair sought a small group who could commit to meeting attendance and substantial work between meetings. The ten-member group consisted of four marine scientists familiar with the areas and disturbance of birds and marine mammals, four local pilots (including a commercial helicopter pilot and a representative from the leading advocacy organization for the aviation community in California, the California Pilots Association), a representative from the Monterey Bay Sanctuary Advisory Council, and the Chair. One pilot dropped out mid-way through the process, but the remainder of the Working Group members undertook their responsibilities diligently over a period of 13 months, resulting in these recommendations.

This was the first time in the history of the Office of National Marine Sanctuaries that pilots and members of the aviation community have been actively engaged in crafting low-overflight regulations. Previously, pilot participation was primarily accomplished by providing comments in scoping sessions and during the environmental and regulatory process.

Local pilots were interviewed and invited for positions on the Working Group. The pilots selected to participate have various FAA pilot certificates and ratings, including private, commercial, rotor wing, Air Transport Pilot and flight instructor. All are local and extremely familiar with the Northern California coastline, FAA Airspace, the FAA's Federal Aviation

Regulations (FARs) and local airports, including Half Moon Bay Airport. The pilots and other members of the Working Group made site visits to areas under consideration, and many complex issues were discussed in depth. This well-informed Working Group participated in many give-and-take discussions, informed each other, and produced creative and constructive results, many of which were beyond what was contemplated at the start.

The process was further informed by written comments from stakeholders selected by the Working Group as being knowledgeable with wildlife and aviation considerations at the various sites and in the region, and a facilitator was engaged to advance the process.

The Working Group considered options for protecting important seabird and marine mammal breeding and resting areas along the coast and important waterbird and marine mammal foraging areas in coastal estuaries (not off-shore foraging areas away from the coast). While the Working Group has made a number of very specific recommendations, the group conveyed an underlying theme. The key to protecting wildlife from potential disturbance by low-flying aircraft is ultimately pilot outreach and education, which can include education through providing textual and graphical information on the FAA sectional aeronautical charts.

After numerous meetings, conference calls and site visits, the pilots believe that outreach and education is the most effective way to protect marine mammals and birds. There are several recommendations for pilot education and outreach that were formulated through a pilot education and outreach subcommittee (see Recommendation GR-10). Indeed, some pilots believe that low-overflight regulations are not necessary and could even be counterproductive, as they may be viewed by pilots as an inappropriate effort by the National Oceanic and Atmospheric Administration (NOAA) to regulate airspace that should be under the exclusive jurisdiction of the FAA. Additionally, having the threat of a violation, citation or penalties where aviation safety is concerned may also be inappropriate. (Separately, the pilots' are providing a statement to the SAC expressing their views and concerns, which will be posted here when delivered: http://farallones.noaa.gov/manage/sac_meetings.html.)

However, subject to those qualifications for some members, it was also the consensus of the Working Group that a clear and accurate notation of the NROZs and the NOAA regulations on the FAA aeronautical charts was itself an extremely effective educational tool, particularly when combined with a thorough pilot outreach program. Showing the NROZs as marked zones on the FAA charts with an explanatory text box is probably the best way of reaching, informing and reminding both local and visiting pilots of the need to protect wildlife from potential disturbance by low overflights. Consequently, a key component of the Working Group's recommendations is in Recommendation GR-10, which focuses on pilot outreach and education throughout the region, and in the recommendations for pilot outreach and education for the specific sites.

While the Working Group agreed that low-flying aircraft can disturb wildlife, the members noted that there are other human disturbances of wildlife, often more significant than low-flying aircraft. Nevertheless, it was agreed that reducing potential disturbance of wildlife by low-flying aircraft is beneficial, and that education, outreach and well-considered regulations noted prominently on the FAA aeronautical charts are appropriate.

Many of the materials and presentations considered by the Working Group are at this link: [Sanctuary Overflight Working Group Reference Materials](#).

Recommendations

The Working Group has made a suite of recommendations that fall into two categories: general and site specific. All general recommendations are prefaced with “GR” followed by a number. Some general recommendations have multiple sub-recommendations.

Section 1: General Recommendations

The following recommendations are listed by topic. In every case there was a vote, the results are shown by member with a “0” to “6” ranking, with “6” being the most favorable and “0” being the most unfavorable. Sarah Allen was unable to attend the final teleconference and gave Tenaya Norris her proxy, who voted on her behalf.

GR-1: Single Purpose for NOAA Regulated Overflight Zones

The Sanctuary’s regulations establish “Special Wildlife Protection Zones.” These serve several purposes, with provisions that apply to transiting cargo vessels and approaching white sharks, in addition to disturbance of wildlife by low-flying aircraft.

The Working Group has focused solely on low overflights that might disturb birds and marine mammals and has made recommendations regarding the locations and dimensions of the NROZs to protect these resources. The Working Group did not consider other roles that the Special Wildlife Protection Zones may play, or disturbance of wildlife from sources other than motorized aircraft within the Sanctuary.

Because of possible confusion arising out of the existence of various protected areas for various purposes, the Working Group recommends that the Sanctuary revise its regulations to designate NROZs with the single purpose of preventing disturbance from low overflights, and not for the purpose of regulating other activities within the same zones as is done now in the “Special Wildlife Protection Zones.”

GR-2: Minimum Altitude

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	6	3	3	4	4	1	1	1

The minimum altitude of 1,000 feet in the existing and proposed NROZs was discussed at length, with pilots advocating 500 feet above ground level (AGL) for consistency with the FARs, which require that pilots remain 500 feet above open water or uncongested areas and 1,000 feet above congested areas (14 CFR §91.119). The areas where low overflight zones are being proposed are uncongested. For consistency with FARs, the pilots advocated using the same altitudes that pilots are already familiar with and trained to fly over open water or uncongested areas – 500 feet AGL. Also, based reports regarding restoration and monitoring of

common murre colonies, the pilots believe flushing events from aircraft at 500 feet AGL or more are very rare.³ With this research and the FARs in mind, the pilots advocated for this distance.

Ultimately, based information and input from Working Group members, the Working Group agreed to recommend continuation of the 1,000-foot minimum for existing and new NROZs, but with these additional recommendations:

GR-2-a

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	1	6	4	6	6	5	5	5

It is recommended that the NROZ regulations be revised to exempt flights below 1,000 feet in the NROZs that are necessary for pilot safety that result from unanticipated weather⁴.

Along coastal areas, weather and visibility conditions can change rapidly with cloud ceilings often falling below 1,000 feet

According to the pilots on the Working Group, NROZs along the coastline have the potential to confuse or distract pilots who pass through or over these areas. According to FAA, the pilot is recognized as being directly responsible for and having the final authority as to the operation of the aircraft, per [Title 14 of the Code of Federal Regulations, §91.3](#) (14 CFR § 91.3). The pilots have made a specific recommendation that pilots be exempt from NOAA violations and prosecutions when descending into low overflight zones to avoid adverse weather and/or when exercising their responsibilities and authority during an in-flight emergency under 14 CFR § 91.3. The pilots have requested a policy statement from NOAA that the NROZ regulations do not trump the authority of pilots to fly lower than 1,000 feet in accordance with 14 CFR 91.3 in response to an in-flight emergency requiring immediate action or otherwise as required under FAA regulations.

Pilots are hesitant to declare emergencies. Low overflight zones along the coast are located where there is often unpredictable weather, including reduced ceiling and visibility associated with the marine layer and low clouds. Fear of being cited for an NROZ violation could delay a pilot’s decision to declare an emergency if there were civil penalties and large financial fines associated with flight into NROZs.

³ The marine scientists on the Working Group disagree with the pilots’ view that flushing events from aircraft at 500 feet AGL or more are very rare. Studies regarding disturbances are included in the [Sanctuary Overflight Working Group Reference Materials](#).

⁴ Weather is unpredictable on the coastline and is prone to a “marine layer” with the potential to change numerous times throughout the day. Aircraft/Pilots have the need to adjust altitude along the coast because of these weather changes i.e. reduced visibility, fog, cloud ceilings etc.

GR-2-b

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahnce	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	6	6	5	6	6	5	5	5

The Sanctuary should consider granting long-term permits for flights below 1,000 feet in NROZs to qualified commercial pilots and operators for special purposes, including education, tourism and photography. It is recommended that permits would be designed to provide full protection of wildlife, taking into account the type of aircraft, the proposed nature of flights (e.g., hovering vs. fly-by, minimum altitudes and horizontal distance from sensitive areas), species protective status, seasonal periods of breeding, important or sensitive breeding and resting areas, and other relevant factors. In some cases, pilots would need to obtain permits from other agencies as well. Permitting should be coordinated with the NPS commercial air tour regulations associated with Golden Gate National Recreation Area and Point Reyes National Seashore.

In addition to long-term permits, it may be desirable to consider a concessionaire program in the Sanctuary for qualified pilots whose business includes regular flights in the NROZ areas and elsewhere in the Sanctuary.

The process for granting expedited permits where there is an immediate and urgent need for low overflights within NROZs should be improved. Examples would be search and rescue operations commissioned by family members after official searches have been terminated or where there is a need for air coverage of newsworthy events. These expedited permits would be subject to all Sanctuary permit requirements.

The permitting processes could be aided by a programmatic environmental assessment that would support a quick turn-around for permit applications.

Special permitting requirements should be considered for UAV operators.

GR-3: Horizontal Dimensions of Coastal NROZs

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahnce	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
4	6	6	5	5	5	2	1	1

The existing NROZs along the ocean coast and PRNS boundary extend about 1.5 miles from the shoreline. The Working Group agreed that this is more than necessary to protect birds and pinnipeds breeding or resting on shore from low overflights. While the 1.5-mile-wide boundaries create a buffer zone around areas identified as important for birds and marine mammals and are more visible on aeronautical charts than narrower ones, the seaward extent of these zones could affect pilot safety. The unnecessarily wide NROZs generate negative reactions by pilots, undermining the credibility of the NROZs. Data from U.S. Fish & Wildlife Service

seabird monitoring at Devil’s Slide shows that nearly all aircraft disturbances to seabirds occur from aircraft below 1,000 ft. altitude and within 1,000 ft. horizontal of the nesting colony.

The goal should be protection of the resources, simplicity to comply and enforce, effectiveness as an outreach tool and consistency with the precautionary principle. Accordingly, the Working Group recommended that existing and new NROZs that adjoin the ocean coast extend approximately 1,000 feet seaward from the most seaward points of the coast, as well as offshore rocks and islands.

The Working Group considered two methods of drawing the outer NROZ boundaries:

- Literally following the 1,000-ft guideline minimizes the distance from shore in the event of emergency, where the aircraft’s ability to glide to shore may be critical. Also, the pilot’s ability to gauge the glide distance to safety becomes more difficult further from shore without specialized instruments.
- Using a measure of one-half mile from the coast would adequately protect seabirds and marine mammals along the coast and would be simple to communicate. But, the half-mile boundary would extend slightly further off shore in many areas, so it could also impact pilot safety as compared to literally following the 1,000-foot line.

Ultimately, the Working Group agreed to recommend literally following the 1,000-ft line.⁵

The actual boundaries may be smoothed and straightened to be consistent with NOAA policies favoring straight lines for protection zones. To meet pilot safety concerns it is recommended that there be as many GPS points as practicable, keeping the glide distance and safety of aircraft in mind.

GR-4: Suggested Improvements to FAA Aeronautical Charts

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	6	6	5	5	5	2	1	1

The Working Group recommends that the Sanctuary and NOAA ask the FAA to consider making some changes with respect to the designation of the Sanctuary and the NROZs on its aeronautical charts. The Working Group recommended minimizing complexity on the FAA aeronautical charts pertaining to NROZs, as it may cause pilot confusion and may make it more difficult for new and student pilots, as well as experienced pilots unfamiliar with the area, to find necessary information on the chart. This is especially true in the complex airspace such as San Francisco Bay Area.

Below is an excerpt from the current chart as an example:

⁵ See special consideration for NROZs along the Pt. Reyes National Seashore Boundary, Recommendation GR-6, below.

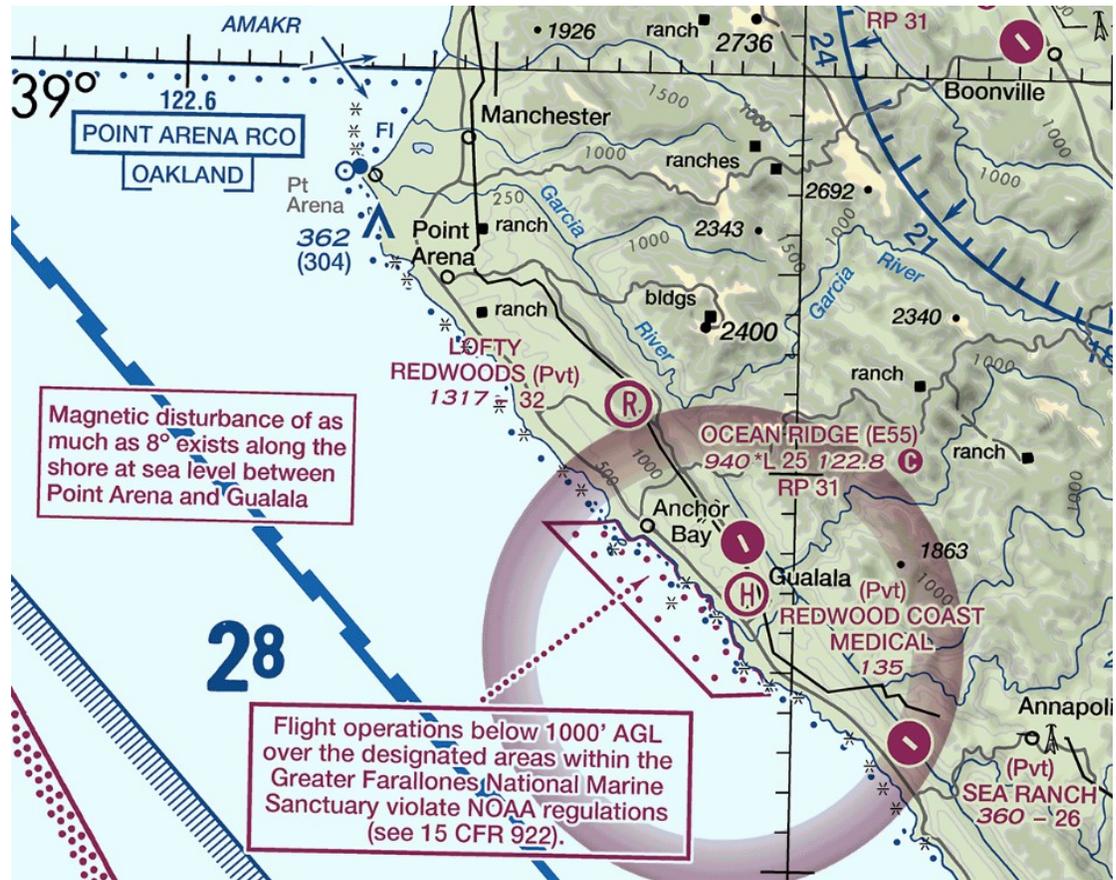


Figure 2 Portion of FAA San Francisco Sectional Chart. Blue dots along the Sanctuary boundaries indicate that aircraft are requested to maintain a minimum elevation of 2,000 feet over the Sanctuary. Magenta boundary lines and dots indicate Sanctuary NROZs.

GR-4-a Blue Dots around Sanctuary Boundaries

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	6	6	6	6	6	5	5	5

The FAA aeronautical aviation charts use blue dots to outline areas where aircraft are requested to maintain a minimum of 2,000 feet AGL. These include certain designated inland areas marking federally protected lands, as well as areas like the Greater Farallones and Monterey Bay Sanctuaries that are considered to be “noise sensitive areas.” See [FAA Advisory Circular 91-36D](#) and [Section 7-4-6 of the FAA Aeronautical Information Manual Official Guide to Basic Flight Information and ATC Procedures \(AIM\)](#).

The blue dots marking the sanctuaries’ boundaries signify an FAA recommendation that pilots maintain an elevation of 2,000 feet over the entire Greater Farallones and Monterey

Bay Sanctuaries. This recommendation is frequently ignored. Furthermore, the blue dot designations showing sanctuary boundaries are confusing and effectively diminish the impact of the 1,000-foot minimum altitudes in the NROZs. The Working Group recommends that the Sanctuary ask the FAA to delete the blue dots designating the sanctuaries' boundaries.

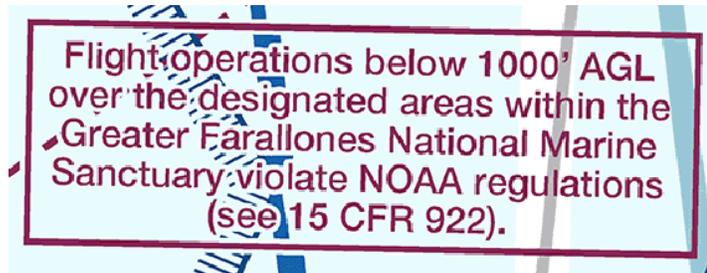
GR-4-b Improved Marking of NROZs

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	6	6	5	6	6	5	5	5

Currently, the boundaries of the Sanctuary NROZs are indicated by a set of magenta colored dots and solid lines. Pilots expressed confusion over the meaning of the dots. In addition, if the horizontal width of coastal NROZs is reduced to approximately 1,000 feet, the dots will be less visible on the FAA aeronautical charts. To put this in perspective, the diameter of the magenta dots inside the boundaries of NROZs on the chart above represent approximately 1,000 feet. While the narrower NROZs will still be visible, the magenta dots will be confusing. The Working Group recommends eliminating the magenta dots and that the charts should show all NROZ boundaries simply with solid magenta colored lines.

GR-4-c: Improved Legend Explaining NROZs

Even with narrower areas, the NROZs will easily be noticed by pilots because of the text box that points to the NROZs, as shown in the above chart example. However, the Working Group recommends improving the text currently used, but was unable to agree on a specific recommendation:



Two recommendations that received mixed support were these:

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	0	3				3	3	3

1. Recommend to the FAA to revise the text box in the following respects:

- Show a reference to the NOAA website, <http://sanctuaries.noaa.gov/flight>, rather than the CFR citation.
- State the purpose of the regulation: protecting wildlife.
- Clarify that it is not an FAA flight rule.

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	0	6				3	3	3

2. Recommend to the FAA that this text be used in the box:

Flight operations below 1000' AGL in this NOAA Regulated National Marine Sanctuary Designated Area may violate NOAA wildlife protection regulations – not a flight rule violation

Also, there was a favorable discussion of recommending to the FAA use of the Canadian symbol below indicating areas where wildlife may be disturbed . This would be for the NROZ text boxes and elsewhere in areas where there should be an advisory (like Devil's Slide Rock). The meaning of the symbol would be put in the chart legend and the Airman's Information Manual.



GR-5: Implications for Other Sanctuary NROZs

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	6	1	5	1	1	3	3	3

To help pilots recognize and understand the NORZs in the Sanctuary and other sanctuaries, it would be desirable for the NROZs to follow the same principles and FAA chart designations in all sanctuaries. Accordingly, the Working Group recommends that the SAC recommend that the Olympic Coast, Monterey Bay and Channel Islands National Marine Sanctuaries consider revising their regulations to the extent possible to conform to these recommendations. Secondly, the Working Group recommends that NOAA ask the FAA to revise its charts to reflect a uniform approach to displaying the NROZs of these sanctuaries. This recommendation should be made to each sanctuary, to the West Coast Regional Office of the National Marine Sanctuaries, and to the Headquarters of the Office of the National Marine Sanctuaries.

GR-6: NROZs Next to Point Reyes National Seashore

In Marin County the Sanctuary boundaries adjacent to PRNS begin at the boundary of the Seashore, which follows the PRNS boundaries that extends one-quarter mile (1320 feet) from the coast. Below is an example of the PRNS coast, with an existing NROZ in purple approximately one-quarter mile offshore of the vulnerable coastline:



Figure 3 The purple area is an existing NROZ at Pt. Reyes. It is about one-quarter mile (1320 ft.) off-shore from the coast and therefore does not cover wildlife on the immediate coast and rocks.

Because of these circumstances, the extra level of protection and pilot education that the NOAA overflight regulations provide in the NROZs elsewhere in the Sanctuary do not cover the PRNS coast and nearby coastal rocks, leaving a quarter-mile gap. The Sanctuary regulations do not extend into this area because it is beyond the Sanctuary boundaries.

The NPS does not have regulations specifically addressing low overflights within the PRNS boundaries. The NPS has regulations banning aircraft (including UAVs) from taking off from or landing on parklands, but they do not specifically provide overflight protection from aircraft that land or take off outside of park boundaries. While there is protection from disturbance of wildlife by low-flying aircraft through the laws and regulations of the NPS, US Fish and Wildlife Service and National Marine Fisheries Service, the additional enforcement provisions of the NROZs are not available in the one-quarter mile along the coast.

In light of these circumstances, the Working Group recommends:

GR-6-a

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	5	5	5	6	6	2	0	0

All existing and new NROZs along the PRNS ocean coast should extend from the Sanctuary/PRNS boundary out 1,000 feet seaward from the boundary (rather than approximately one-and-one-half miles, as they do now). This would provide as much protection as possible given the Sanctuary/PRNS boundary, and the 1,000-ft. NROZs on the FAA charts are also an educational tool for pilots.

GR-6-b

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	5	1	3	4	4	0	0	0

To provide better protection for coastal wildlife within one-quarter mile off the PRNS, the Sanctuary should:

- Consult with PRNS and the NPS to expand the Sanctuary’s boundaries to cover the one-quarter mile strip along the coast along the PRNS. Wildlife is not protected from low-flying aircraft by NROZs in these areas. Therefore, an expansion of Sanctuary boundaries, in consultation with the NPS, may be desirable for both the Sanctuary and PRNS.

There is precedent for Sanctuary boundaries overlapping NPS parkland elsewhere along the coast, including a portion of the NROZ covering Bolinas Lagoon, which is within the Golden Gate National Recreation Area (GGNRA), and the southern portion of the NROZ along Stinson Beach, where the GGNRA boundaries extend one-quarter mile off-shore, but the Sanctuary boundaries follow the coast.

However, many of the PRNS coastal areas that would be overlapped are Wilderness Areas that were created prior to the establishment of the Sanctuary. The NPS does not favor overlapping jurisdictions for Wilderness Areas under its management, so obtaining joint agency agreements to the Sanctuary’s expansion in these areas would likely be challenging. Another issue could be NPS concerns that low-overflight permits issued by the Sanctuary could undermine existing NPS protections, so that would need to be addressed.

- Encourage PRNS and the NPS, in consultation with the FAA, to adopt regulations similar to the Sanctuary’s NROZ Sanctuary to cover these special circumstances – where the NPS boundaries adjoin National Marine Sanctuary NROZ boundaries. This would be a special case that would not be precedent for other NPS lands.
- Explore other ways in which the Sanctuary, the NPS and the FAA may provide

additional protection from low overflights and pilot education in the one-quarter-mile strip.

GR-7: Class E Airspace Issues⁶

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	6	6	5	6	6	4	3	3

In addition to site-specific recommendations (near The Sea Ranch airstrip and Tomales Bay), the Working Group generally considered the implications of Class E airspace over the NROZs (including the existing NROZs near Pt. Arena and in the Bolinas/Stinson Beach area), which could require pilots to reduce altitude to 700 feet in an NROZ. We recommend that NOAA consult with the FAA regarding any Class E airspace within existing or proposed NROZs, as Class E airspace requirements supersede NOAA regulations where they are in conflict.

GR-8: Class B Airspace Issues⁶

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	4	6	5	4	4	1	0	0

Pilots on the Working Group recommend against new NROZs below Class B airspace (including FAA designated Flyways below Class B airspace). NOAA Regulated Overflight Zones reduce the available airspace for aircraft to operate, in this case, along the coast. These areas are busy and popular transition areas for VFR aircraft. Reducing the available airspace increases the risk of mid-air collisions. Other members of the Working Group noted that there are different types of Class B airspace that are less restrictive than others. None of the existing or proposed NORZs is below Class B airspace, but we recommend that NOAA monitor changes in Class B airspace and consult with the FAA as to any conflicts, as Class B airspace requirements supersede NOAA regulations where they are in conflict and otherwise can have implications for pilots flying in NORZs.

GR-9: Disturbance of Wildlife by Unmanned Aerial Vehicles (UAVs or Drones) Outside of the NROZs

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	6	6	5	6	6	3	3	3

⁶ See [Airspace Definitions](#) and other materials in the [Sanctuary Overflight Working Group Reference Materials](#) for definitions and explanations of Class B and Class E airspace.

From the very start and throughout the process, the Working Group members expressed concerns regarding the potential for disturbance of birds and marine mammals in the sanctuaries by unmanned aerial vehicles (UAVs or Drones). While UAVs provide an excellent way for the public to view and photograph sanctuary resources, the sanctuaries need to give special attention to the disturbances to wildlife that they can cause.

Launched from shore or from boats, UAVs have easy access to sensitive areas. Their ability to hover increases the likelihood that a bird or marine mammal could view them as predators, and their wide-angle focal lengths encourage close flight.

Although the Working Group was not given a charge to make recommendations on this issue and was not constituted with representatives of UAV users and the UAV industry to be able fairly to consider the matter, the Working Group desired to make some recommendations on this subject, and the SAC authorized this at its August 2016 meeting. One of our members prepared a statement of the concerns. [Barton Selby's Comments on Drones and Related Matters \(11/20/16\)](#)

As a preliminary matter, it was a working assumption of the Working Group that the current NROZ regulations applied to flights of UAVs along with other motorized aircraft. They are included as “motorized aircraft” under the language prohibiting “disturbing marine mammals or seabirds by flying motorized aircraft at less than 1,000 feet over the waters...”. 15 CFR §922.82(a)(11). This is reflected in the National Marine Sanctuary FAQs webpage on the overflight regulations, <http://sanctuaries.noaa.gov/flight/faqs.html>, (11/11/16):

Question: Are model aircraft and Unmanned Aircraft System (drone) operations restricted within sanctuary overflight regulation zones?

Answer: Yes. Model aircraft and Unmanned Aircraft Systems (drones) that are propelled by motors qualify as motorized aircraft under regulations of the sanctuaries, and therefore must adhere to sanctuary overflight restrictions. As with traditional aircraft, they could operate above the sanctuaries' minimum altitude limits, provided Federal Aviation Administration (FAA) regulations allow them to fly at such altitudes. Current FAA rules impose altitude limitations on model aircraft and other Unmanned Aircraft Systems.

However, because this may not be obvious to some, the Working Group recommends that the sanctuaries' regulations be clarified so there is no doubt of their coverage of UAVs in the NROZs. This would help ensure compliance by recreational and commercial UAV pilots and assure that researchers and others involved in non-recreational UAV use within the sanctuaries would obtain permits for their activities, if appropriate.

Additionally, the exploding use of private UAVs in other parts of the sanctuaries presents a significant issue. These include recreational UAV users and commercial and recreational photographers, news reporters, fishing boats, tour boats for observation of whales and other wildlife, and monitoring of wildlife by individuals and organizations. A good summary of the threat is at <http://montereybay.noaa.gov/resourcepro/resmanissues/aircraft.html>.

The threats are not only to wildlife along the coast and in estuaries. Based on data from the [Applied California Current Ecosystem Studies Project](#) (ACCESS), there are significant and predictable concentrations of wildlife, including birds feeding with whales, within the sanctuaries well off-shore. See [Presentation by Jaime Jahncke, “Off-shore areas where marine](#)

[wildlife may be subject to disturbance” \(2016\)](#). These may also be subject to disturbance by UAVs launched from recreational and commercial boats (as well as other low-flying aircraft).

Under the circumstances, the Working Group strongly recommends that the sanctuaries and the National Marine Sanctuaries regional and national offices give special and early attention to this growing threat to sanctuary resources. These include the NROZs as well as areas within the sanctuaries that are not protected by NROZs. The Working Group recommends a dedicated program to gather information and research UAV’s and their present and projected impacts on sanctuary resources.

An aggressive program of outreach and education should be considered as a primary action (including signage at beaches, parks and other places where UAVs are launched along the coast and estuaries, as well as marinas and boat launches that serve boats that may carry UAVs). It should be recognized that UAV operators may lack knowledge or concern regarding their impact on wildlife, generally and in particular locations where they operate, and outreach and education should be tailored accordingly.

As a last resort, new regulations covering UAVs for areas outside of the NROZs may also be indicated. These could include restrictions on launching UAVs within the Sanctuary, following the approach of the NPS in National Parks and managers of many other protected areas.

GR-10: Pilot Outreach and Education Recommendations

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahnce	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	2	2	3	3	3	5	5	5

The Working Group showed a strong consensus that the most important activity to protect birds and marine mammals from potential disturbance by low-flying aircraft is pilot outreach and education. Education and outreach is far more important than regulations and enforcement. Indeed, much of the discussion regarding new and revised regulations and improved notations on FAA charts was driven by this conviction.

The advantage of an effective outreach program is that it will educate pilots about the issues and the regulation interaction between the governing agencies. It will also reach more people than an enforcement program. Outreach has the potential to protect all U.S. coastlines and a very large number of marine mammals and seabirds, not only the ones inside the NROZs.

Additionally, an outreach and education program, rather than restrictions, would benefit birds and mammals in other areas of the nation as awareness among the aviation community is increased. The Seabird Protection Network, an existing but small NOAA outreach program, could be an effective avenue for educating the pilot community if provided additional staff and resources.

The Working Group made these specific recommendations regarding pilot outreach and education.

GR-10-a

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
4	0	4	4	4	4	5	5	5

NOAA Supported Position(s) for Pilot Outreach (including UAVs) – The Working Group believes that the need to reach out and inform pilots to avoid disturbance of birds and marine mammals by low overflights in the Sanctuary and other sanctuaries is of such importance as to warrant a NOAA staff position dedicated to pilot outreach. Focusing on wildlife and its vulnerability in pilot messaging is not effective in itself. Rather, it is key to have someone who can address these issues through the lens of a pilot, with due consideration of pilot safety as well as the protection of the birds and marine mammals – a pilot talking to pilots. The Working Group recommends that the Sanctuary recommend to other West Coast sanctuaries, the West Coast Regional Office and the Office of National Marine Sanctuaries that a position be created as follows:

Title: NOAA Pilot Outreach Coordinator

Requirements: Commercial Pilot with Instrument Rating (preferably helicopter qualified)

Hours per week: Part or full time (performed by one or more people)

Responsibilities to be managed/delegated:

1. Interface with and build relationships with FAA’s Flight Standards District Offices, airports, designated pilot examiners (all ratings), flight Instructors, AOPA, Experimental Aircraft Association, California Pilots Association, US Coast Guard, Washington Pilots Association, Oregon Pilots Association, Seaplane Pilots Association, The Academy of Model Aeronautics, airport managers, and other local and regional pilots’ organizations in the local sanctuary areas.
2. Work with FAA to resolve regulatory issues and advance sanctuary interests regarding changes to Classification of Airspace, chart markings, etc.
3. Design and teach/present a NOAA familiarization course/seminar/webinar as an outreach tool and a prerequisite for those pilots who seek sanctuary permits for limited low overflights in NROZs with a training certificate. These could be for NOAA aviation contractors and commercial pilots (fixed wing or helicopters) whose businesses include film documentation, photography, research, education, and sightseeing and concessionaires if a concessionaire program is established.
4. Coordinate any changes with NOAA regulations or the dimensions of NROZs required due to FAA flight or air space changes.

5. Coordinate with environmental regulatory and advocacy organizations to address their concerns and to help develop pilot awareness of wildlife issues and to help the regulators and environmental advocates understand aviation and pilot safety issues.
6. Consult with NOAA, the FAA and other agencies regarding wildlife disturbance issues arising from UAV use and develop UAV pilot education programs and outreach for sanctuary areas.
7. Answer questions of pilots in all media formats (phone, email, blogs and social media).

GR-10-b

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	6	6	6	6	6	3	3	3

Additions to FAR/AIM – The key reference manual for pilots is the FAA’s Aeronautical Information Manual. It is often published with the applicable Federal Aviation Regulations and known colloquially by their initials as the FAR/AIM or simply the FAR (<http://www.faraim.org/>). The Working Group recommends that information referencing the National Marine Sanctuaries’ NROZs be included in the Aeronautical Information Manual.

GR-10-c

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	6	6	6	6	6	6	6	5

Correct and Improve the Office of National Marine Sanctuaries Overflight Webpages
The Office of National Marine Sanctuaries provides websites regarding potential disturbance of wildlife by low-flying aircraft:

- <http://sanctuaries.noaa.gov/flight/welcome.html>,
- <http://sanctuaries.noaa.gov/flight/faqs.html>, and
- <http://sanctuaries.noaa.gov/management/permits/aircraft.html>.

However, these webpages incorrectly use the words including the root word “restrict” and “prohibit”, which is inaccurate, confusing and off-putting to pilots, who look to the FAA for all regulation of airspace. The Working Group understands that these pages and other descriptions of the sanctuary regulations are being revised and updated, but want to make sure that this concern is expressed.

GR-10-d

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahneke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	3	6	5	5	5	4	4	5

The internet and websites provide many educational opportunities. For example:

1. Provide a direct link from the sanctuaries’ websites to improved NOAA information for pilots, rather than indirectly through the Seabird Protection Network or the Office of National Marine Sanctuaries websites (although those could be cross linked). An example of a direct link from a sanctuary webpage is the [Olympic Coast National Marine Sanctuary webpage](#).
2. Educational programs to which flight instructors can send new pilots, which would provide a certificate of some sort for people who take the course. This could be qualification requirement for long-term sanctuary permits.
3. Create a blog or other interactive website to keep pilots involved with these issues. Possibly costs could be covered or offset by offering vendors advertising space for the aviation community or grants from wildlife protection groups.
4. With some airports there are site specific websites that are included in pre-flight planning, that could include information about the NROZs and potential wildlife disturbance as well as a link to the NOAA regulations. E.g., http://www.wsdot.wa.gov/aviation/AllStateAirports/CopalisBeach_CopalisState.htm. Including information in pre-flight planning materials is an excellent way to reach experienced pilots and pilots from out of the area.
5. Add information regarding the NROZ in “Additional Remarks” section of the FAA Chart Supplement/Airport Directory, the AOPA Airport Directory, www.airnav.com and similar pilot information sources for airports where sanctuaries are typical destinations from that airport (in addition to those identified in the site specific recommendations above).

GR-10-e

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahneke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	3	6	5	5	5	4	4	5

Contribute information about the need for wildlife protection from low overflights to existing websites that pilots already utilize:

1. FAA websites, including those open to advertising which could also publish messages and links regarding NOAA Regulated Overflight Zones as pro bono advertising.

2. Newsletters and blogs of pilot associations, including Airport Advocate of California Pilots Association.
3. Commercial websites serving pilots and the aviation community, such as AOPA.
4. Military and US Coast Guard websites may provide opportunities for pilot education regarding wildlife protection and the sanctuary regulations.

GR-10-f

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	5	6	5	5	5	6	6	6

Target flight schools, FAA certification programs, flight instructors, and pilot education programs: pilot examiners, Flight Standards District Offices and airport managers. Contacts should be developed at a personal level, establishing personal relationships with key individuals that lead the organization/community.

1. Military and US Coast Guard flight schools, where thousands of pilots are trained each year (including replacement air groups that fly up and down the coast)
2. FAA Safety Team program (FAAST), <https://www.faasafety.gov/>.
3. Preparation of training syllabus on avoiding wildlife disturbance in coastal areas, including the sanctuaries. This would be made available as a syllabus for the several on-line providers of courses for pilots, certifications and flight instructors. This training could also be required as a condition for permits that the sanctuary would consider for commercial pilots.
4. Provide written materials for backing up the on-line information with on-the-ground education.

GR-10-g

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	4	6	6	5	5	6	6	6

Improve written materials and the program of written outreach to pilots, with pilot input as to the text. An example of a good poster is at [printable flyer of the Overflight Poster](#).

GR-10-h

SAC Members		Marine Scientists				Pilots		
George Clyde- GF	Barton Selby - MB	Gerry McChesney	Jaime Jahncke	Tenaya Norris	Sarah Allen	John duGan	Brian Branscomb	Andy Wilson
6	5	6	6	5	5	5	6	6

Maintain the updates and accuracies of any FAA information on the proposed, flyers documents and web sites This is of critical importance to pilots.

Section 2: Recommendations for Specific NROZs (See the map that follows this table)

Except as indicated in Areas 2i (Devil’s Slide Rock) and 2j (Tomales Bay), all of the pilots voted against these proposals and all other members voted for them.

Area (NROZ)	Wildlife to be Protected	Recommendation	Reasons for this Recommendation	Special Considerations and Member Comments	Education and Outreach
<p>2a. Existing Sonoma County NROZs alongside Gualala to the north and Jenner to the South</p>	<p>These areas host most of the largest and most diverse seabird breeding colonies on the Sonoma County coast, including Fish Rocks, Gualala Point Island, Russian Gulch, Russian River Rocks, Arched Rock and Gull Rock. Relatively new and expanding colonies of Common Murres occur at Fish Rocks, Gualala Point Island, and Gull Rock. Other species nesting in relatively large numbers include Brandt's Cormorant, pelagic cormorant, pigeon guillemot, and western gull. Fort Ross Reef is the most important haul-out on the</p>	<p>Reduce the seaward horizontal dimension of these two NROZs from approximately 1.5 miles to approximately 1000 feet from the most seaward points of the coast and from offshore rocks and islands.</p>	<p>See above discussion of horizontal dimensions of NROZs.</p>	<p>For the Steller sea lion colony (which includes pups) near Fort Ross, the 1,000 ft. horizontal separation may not be adequate for hovering helicopters at 1,000 ft. elevation. – S. Allen</p>	<p>For Boonville, Anchor Bay, Lofty Redwoods, Ocean Ridge, Redwood Coast Medical, Sea Ranch and other nearby airports, add information regarding the NROZ in “Additional Remarks” section of the FAA Chart Supplement/Airport Directory, the AOPA Airport Directory and similar pilot information sources.</p> <p>For local coastal access points such as public beaches, parks, campgrounds, harbors and vessel launching sites, provide signage that advises boaters and other coastal users of NOAA regulations regarding UAV usage in NROZs. See general recommendations in Section 4 regarding UAVs.</p>

Area (NROZ)	Wildlife to be Protected	Recommendation	Reasons for this Recommendation	Special Considerations and Member Comments	Education and Outreach
	<p>Sonoma Coast for rare Steller sea lions; fairly large numbers of California sea lions also haul out there as well as Northwest Cape Rocks. Several important harbor seal pupping and haul-out areas occur along here, including the large Russian River mouth site. A small Steller sea lion rookery and California sea lion haul out occurs within the area.</p>				
<p>2b. Area between the two existing Sonoma County NROZ's, approximately 20 miles of coastline including The Sea Ranch, Stewarts Point and Salt Point State Park. This NROZ joins two existing NROZs.</p>	<p>This area has haul-out areas and rookeries for harbor seals along a string of haul-out sites on offshore rocks and pocket beaches. Hundreds of seabirds also frequent the area, including several small colonies of Pelagic Cormorants and Pigeon Guillemots.</p>	<p>Add a new NROZ between the two existing zones, along the Sanctuary coastal boundary and extending approximately 1000 feet seaward from the most seaward points of the coast and from offshore rocks and islands.</p>	<p>While wildlife in this area is not as concentrated as in existing NROZs, there are ample marine mammals and birds to warrant protection from low overflights in this area, and having a single NROZ for this entire coastal area is more informative to pilots and easier for pilot education and outreach, compliance and enforcement.</p> <p>Wildlife in this remote area may be less accustomed to human</p>	<p>NOAA, in consultation with local airport authorities, pilots and the FAA, should address the aviation safety concerns, including Class E Airspace, if any, that the extended overflight zone near The Sea Ranch would have on aircraft taking off from or landing at the airstrip at The Sea Ranch.</p>	<p>Notification to Sea Ranch property owners of new NROZ.</p> <p>Signage at The Sea Ranch airstrip, at Sea Ranch Community Center and at the Boonville, Anchor Bay, Lofty Redwoods and Ocean Ridge airports.</p> <p>For Sea Ranch, Boonville, Anchor Bay, Lofty Redwoods, Ocean Ridge, and other nearby airports, add information regarding the NROZs in "Additional Remarks" section of the FAA</p>

Area (NROZ)	Wildlife to be Protected	Recommendation	Reasons for this Recommendation	Special Considerations and Member Comments	Education and Outreach
			disturbances and therefore more vulnerable to disturbance from low overflights.		<p>Chart Supplement/Airport Directory, the AOPA Airport Directory and similar pilot information sources.</p> <p>For local coastal access points such as public beaches, parks, campgrounds, harbors and vessel launching sites, provide signage that advises boaters and other coastal users of NOAA regulations regarding UAV usage in NROZs. See general recommendations in Section 4 regarding UAVs.</p>
2c. Bodega Head and Bodega Rock	Along the coast of Bodega Head, there are four species of seals and sea lions that haul-out, and there is a small harbor seal rookery at Bodega Head. Bodega Rock hosts a major Brandt's Cormorant colony and a major California sea lion haul-out that is also utilized by small numbers of Steller sea lions,	Add new NROZ along the Sanctuary coastal boundary from Mussel Point south to Doran Beach including Bodega Rock. This NROZ extends seaward from the Sanctuary coastal boundary approximately 1000 feet from the coast or any more seaward rocks, including Bodega Rock. The southern boundary of this NROZ should be a line from the southern extent of this NROZ (1000 feet south of Bodega Rock) to the Sanctuary boundary at Doran Beach so as to avoid a gap between Bodega Rock and the rest of the NROZ.	Important area for both bird nesting and marine mammal haul outs. There is a history of air tours over the area to view the "hole" from the planned nuclear power plant.	NOAA, in consultation with the U.S. Coast Guard, should address any aviation safety or other issues that the new overflight zone at Bodega Head and Bodega Rock would have for helicopters or UAVs landing at or taking off from Coast Guard Station Bodega Bay.	For Doran Beach, Bodega Harbor, Spud Point Marina, and local public beaches, harbors and vessel launching sites, provide signage that advises boaters of UAV usage in NROZs. See general comments in Section 4 regarding UAVs.

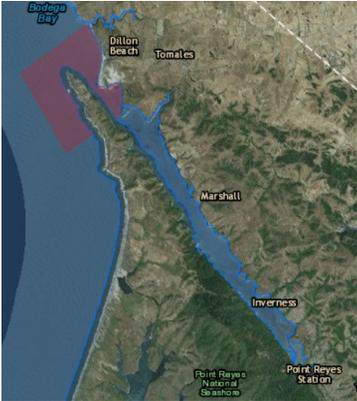
Area (NROZ)	Wildlife to be Protected	Recommendation	Reasons for this Recommendation	Special Considerations and Member Comments	Education and Outreach
	elephant seals and harbors seals.				
2d. Existing NROZ at Tomales Point and Bird Rock, along the Sanctuary/PRNS boundary.	There are three species of seals and sea lions that haul-out, and there are several large harbor seal rookeries that extend from Bird Rock south to Elephant Rock south of McClures Beach. These are mainly Harbor seals, but also California Sea Lions haul out on Bird Rock and some Elephant seals on the adjacent beaches. Numerous species of seabirds nest on Bird Rock including a large Brandt's Cormorant colony and rare Ashy Storm-petrels. Brown Pelicans, Brandt's Cormorants, and other seabirds utilize the rock as a roost outside the breeding season. Numerous species of seabirds nest on Bird Rock	Beginning at Tomales Point and extending southward, reduce the seaward horizontal dimension of this NROZ from approximately 1.5 miles to approximately 1,000 feet from the Sanctuary Boundary.	Important area for both bird nesting and marine mammal haul outs and harbor seal rookery.		For Dillon Beach, Lawson's Landing, Miller Park, and other local public beaches, harbors and vessel launching sites, provide signage that advises boaters of UAV usage in NROZs. See general comments in Section 4 regarding UAVs.

Area (NROZ)	Wildlife to be Protected	Recommendation	Reasons for this Recommendation	Special Considerations and Member Comments	Education and Outreach
	including rare Ashy Storm-petrels.				
2e. Extended NROZ to cover McClures Beach and Rock and Elephant Rock along the Sanctuary/PRNS boundary	There are three species of seals and sea lions that haul-out, and there is are several large harbor seal rookeries that extend from Bird Rock south to Elephant Rock. Elephant seals also haul out on the beaches.	Extend existing NROZ at Tomales Point/Bird Rock southward along the Sanctuary boundary to include McClures Beach and Elephant Rock with a horizontal dimension of approximately 1,000 feet from the Sanctuary boundary.	Important area for both bird nesting and marine mammal haul outs and rookeries There are no unique airspace issues here that need to be addressed. No special use needs shown on charts.	These are cliffs, 400-500 feet; can pilots get to the shoreline given proposed overflight restrictions in this area? - Pilot comment	
2f. Existing NROZ at Pt. Reyes along Sanctuary/PRNS boundary	There are four species of seals and sea lions that haul-out, and breed at Pt Reyes. Numerous species of seabirds nest there in large numbers, including rare Ashy Storm-petrels.	Reduce the seaward horizontal dimension of this NROZ from approximately 1.5 miles to approximately 1,000 feet from the Sanctuary boundary.	Highly significant colonies of marine mammals and nesting and roosting seabirds.	Gray whales with calves travel very close to shore at Point Reyes Headland as they migrate north. - SA	
2g. Existing NROZ covering Double Point and south to Bolinas mostly along the Sanctuary/PRNS boundary	There are three species of seals and sea lions that haul-out, and there is a large harbor seal rookery on Stormy Stack and in cove at Double Point. Sea Lions haul out on Stormy Stack and	Reduce the seaward horizontal dimension of this NROZ along the PRNS boundary from approximately 1.5 miles to approximately 1,000 feet from the Sanctuary/NPS boundary. For coastal areas south of PRNS (off of Bolinas and Stinson Beach), reduce the seaward horizontal dimension from approximately 1.5 miles to approximately 1000 feet from the most seaward points of the coast and from offshore rocks and islands. No changes in the NROZ covering	Highly significant colonies of marine mammals (one of largest harbor seal colonies in state) and nesting and roosting seabirds.		

Area (NROZ)	Wildlife to be Protected	Recommendation	Reasons for this Recommendation	Special Considerations and Member Comments	Education and Outreach
	Elephant seals on the beaches. Numerous species of seabirds nest on Stormy stack including rare Ashy Storm-petrels.	Bolinás Lagoon are recommended.			
2h. New NROZ(s) between the two existing NROZ's identified above, commencing at the southeast end of the Pt. Reyes NROZ and following the coast of Drakes Bay along the Sanctuary/PRNS boundary alongside Drakes Beach, the mouths of Drakes Estero and Limantour Estero, Limantour Beach, Point Resistance and Millers Point Rocks, to the north end of the existing Double Point - Bolinas NROZ	Along the northwest and west of this NROZ there is a large elephant seal rookery and haul-out area as well as a California sea lion haul-out area. There are significant harbor seal rookeries and haul-out areas at the northwest end of beach, in Drakes Estero (one of largest in state), and also at Drakes Beach, and at Limantour Beach. At Pt. Resistance there is a significant Common Murre colony. Drakes Bay itself is an important foraging area for seabirds and other waterbirds. Drakes Bay is a	Extend and connect the two existing NROZs along Pt. Resistance, Millers Point Rocks and the entire coast of Drakes Bay along the Sanctuary boundary with a horizontal dimension into Drakes Bay of approximately 1,000 feet from the Sanctuary boundary.	Effectively protects the various wildlife areas along the Drakes Bay shore including Pt. Resistance and Millers Point Rocks. While foraging birds are present in the bay itself during some seasons, restricting low overflights there seems unnecessary as the NROZ along the coast and the topography effectively should discourage low overflights over the entire bay.	Gray whales with calves travel and rest very close to shore at Drakes Bay as they migrate north. -SA	

Area (NROZ)	Wildlife to be Protected	Recommendation	Reasons for this Recommendation	Special Considerations and Member Comments	Education and Outreach
	foraging and migratory pathway for gray whales and humpback whales.				
<p>2i. Devil’s Slide Area</p> <p>(Everyone voted a “6” for this except for Bart Selby, who voted “5”, and Sarah Allen and Tenaya Norris, who were not present at the time this was considered)</p>	<p>There are significant breeding colonies of Common Murre, Brandt's Cormorant, Pelagic Cormorant, Pigeon Guillemot, and other species on Devil’s Slide Rock (“Egg Rock”) and along the mainland cliffs in this area.</p>	<p>At this time the Working Group is not recommending a new regulatory zone at this site.</p> <p>The Working Group recommends the following actions be implemented concurrently:</p> <ol style="list-style-type: none"> 1) Request the FAA to change chart markings to make pilots aware of Devil’s Slide Rock and risks to resources: <ul style="list-style-type: none"> • Create marking on the chart that combines two approaches currently in use over the Lawrence Livermore Laboratory and Alameda Air Station. Use a Magenta Circle and insert a text box that explains that it is a “sensitive nesting area” and “request 1000 Ft. AGL.” <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">Sensitive Nesting Area. Pilots are requested to avoid flight below 1000 Ft. AGL in this area. See Supplement.</p> </div> <p style="margin-left: 20px;">A mock-up of this warning on the FAA charts is linked here.</p> <ul style="list-style-type: none"> • If NOAA would like support to address this with FAA, US Fish & Wildlife Service and others can be asked to write letter of support or even attend meeting, if thought to be helpful. 2) Immediately engage with FAA’s current process to re-consider Class B Airspace to better support this need. i.e., ask FAA to move the current Class B airspace away 	<p>The Devil’s Slide Rock Sub-Group’s Meeting Goal was to develop draft recommendations for review by the WG re: Devil’s Slide Rock that advance the precautionary principle without creating excessive constraints on pilots, risking pilot safety.</p> <p>The Sub-Group had these Grounding Assumptions:</p> <ul style="list-style-type: none"> • There are resources to protect on Devil’s Slide Rock • There are airspace issues regarding nearby Class B airspace that complicate the issue of regulating this area for overflight. <p>The nearby cliffs, the proximity of Half Moon Bay Airport and the known low-ceiling fog conditions also were factors considered.</p>	<p>Has anyone thought about putting a system up to take a picture of low flights? Using infrared or something to note when something is in the zone and can take a picture. This technology can be pieced together. This could be useful for educating about or correcting low overflight and monitoring effectiveness of the efforts. NOAA currently does some of this work related to aircraft monitoring during sensitive seasons for the birds/mammals. – B. Selby</p>	<p>Continue active education and apparently successful pilot outreach for this site by the Seabird Protection Network and others.</p>

Area (NROZ)	Wildlife to be Protected	Recommendation	Reasons for this Recommendation	Special Considerations and Member Comments	Education and Outreach
		<p>from Devil's Slide to provide more room to allow pilots more easily to maneuver around Devil's Slide Rock to better protect birds</p> <p>3) Gather Data</p> <ul style="list-style-type: none"> • Gather data on whether this approach worked. Commit to a time to revisit this. 			

<p>2j. Tomales Bay</p>	<p>Tomales Bay is probably the most important estuary between San Francisco and Humboldt Bays for wintering waterfowl, especially Black Brant (a species of goose), diving ducks such as surf scoters, greater scaup, and bufflehead, and other ducks such as northern shovelers and American wigeon. A large double-crested cormorant colony and harbor seal rookery occurs on Hog Island. It is also an important area for nesting and foraging Osprey and bald eagles recently began nesting and foraging there as well.</p> <p>Large harbor seal rookeries occur in Tomales Bay. Harbor seals give birth on sand bars near the mouth of the estuary and at Hog Island. It is an important foraging area for California sea lions and harbor seals, particularly during the winter salmon and Pacific</p>	<p>The Working Group was unable to agree on a Recommendation for Tomales Bay, the mouth of which is included in an existing NROZ.</p>  <p>Below are two proposals considered, the first favored by the pilots as their first choice and the second favored by all the other members of the Working Group.</p> <p>Note - Each option includes a significant Pilot Education and Outreach effort, much like that discussed in the Devil’s Slide study area.</p> <p>A. No extension of the existing 1,000’ NROZ, but ask FAA to mark the Tomales Bay area south of the existing NROZ with magenta coloring, a text box similar Devil’s Slide Rock and possibly a graphic symbol of a bird (see Recommendation GR-4-c).</p> <p>B. Extend the existing 1000-ft. minimum elevation NROZ south to cover the remainder of Tomales Bay up to the Sanctuary boundaries.</p> <ul style="list-style-type: none"> Recommend that the NOAA consult with FAA to address any issues that might arise because of the Class E airspace (as described in GR-7 above) in the southern part of the Bay. Consider whether there should be an exclusion from this minimum altitude for seaplanes or amphibious aircraft unless 	<p>From Sub-Group Notes (before WG consideration:</p> <p>Reasons for this Recommendation</p> <ul style="list-style-type: none"> Wildlife to be protected exist throughout the entire Bay. However, it is recognized that the greatest concentration of breeding species, including cormorants and seals are in the northern part of the Bay, from the mouth of the Bay to south of Hog Island; It is recognized that any recommendation advanced should protect species, protect pilot safety and where possible, advance uniformity in the dimensions of the protective zones to improve pilot compliance without risking safety. The more uniform and universal restrictions/regulations, across zones, the better. However, this shared view is complicated by the unique features of various study areas and cannot always be upheld when negotiating options for protecting areas. Relevant FAA regulations that relate to Option B are captured below: FARs > Part 91 > Section 119 - Minimum safe altitudes: General section 91.117 section 91.121 Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes: (a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface. (b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open air 	<p>Comments provided to Tomales Bay Sub-Group</p> <ul style="list-style-type: none"> George Clyde Bart Selby <p>See the member comments from the straw poll, linked here.</p>	<p>For local public beaches, shore-side viewing areas, tourist destinations, campgrounds, parks harbors and vessel launching sites, provide signage that advises of NOAA regulations regarding UAV usage in NROZs in Tomales Bay. See general recommendations in Section 4 regarding UAVs.</p>
------------------------	--	--	---	---	--

	<p>herring spawn. Steller sea lions rarely occur in the bay, also.</p>	<p>they are transiting the airspace with no intention to land (as proposed by Aaron Singer of SF Seaplanes in his Stakeholder Comment). This exclusion from the NROZ regulations could be seasonal to avoid disturbance and flushing of the large numbers of wintering birds. The Working Group decided it did not have enough information on this subject to make a recommendation, although were strong views pro and con.</p>	<p>assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.</p> <p>(c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.</p> <p>(d) Helicopters. Helicopters may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the Administrator.</p>		
--	--	--	--	--	--

MAP OF RECOMMENDED REVISED AND NEW NROZS

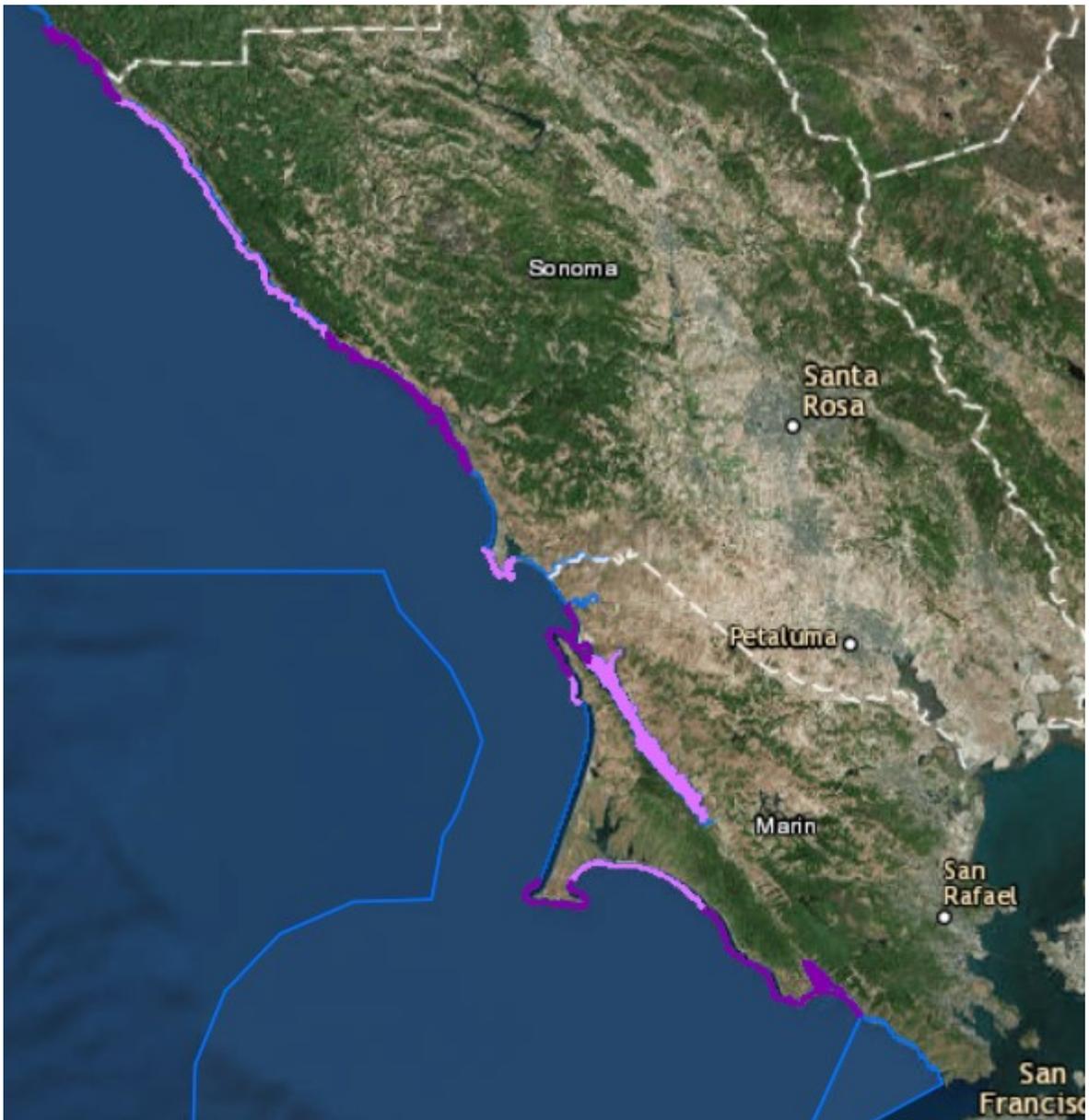


Figure 3 – Areas colored purple are existing NROZs, with reduced horizontal dimensions. Areas colored pink are new proposed NROZs as described above (with the full extent shown for Tomales Bay). In addition, there would be a request of a minimum elevation of 1,000 feet at Devil’s Slide Rock.