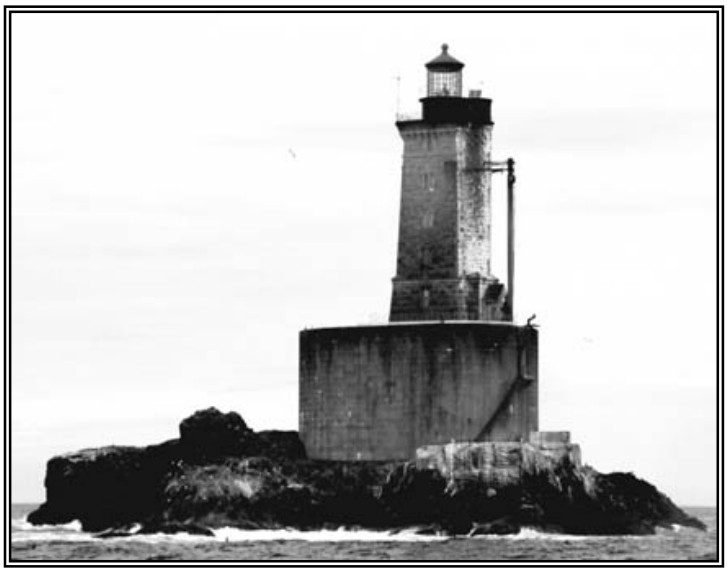
ST. GEORGE REEF
LIGHTHOUSE RESTORATION, MAINTENANCE, AND TOUR OPERATIONS



NATIONAL MARINE FISHERIES SERVICE
OFFICE OF PROTECTED RESOURCES

APPLICATION FOR A MARINE MAMMAL PROTECTION ACT INCIDENTAL HARASSMENT AUTHORIZATION

Applicant: St. George Reef Lighthouse Preservation Society

November 2016

PROJECT DESCRIPTION AND BACKGROUND

The Saint George Reef Lighthouse is located on a small rocky islet known as Northwest Seal Rock (41^0 50'24" N, 124^0 22'06" W), which is part of the St. George Reef, in Del Norte County, California. The island is about 7 km offshore and peaks at 17 feet above mean sea level. The lighthouse covers much of the surface of the island. Original construction of the lighthouse was completed in 1892 and it was operated by the U.S. Coast Guard (USCG) until 1975. The Coast Guard decommissioned the light and ceased to maintain the historic building, which rapidly deteriorated and became subject to vandalism. The St. George Reef Lighthouse Preservation Society (SGRLPS) was founded in 1986 with the goals of restoring the lighthouse and increasing recognition of its important historical role in maritime and regional history. In 1996, the SGRLPS entered into an agreement with the federal and local government to manage and renovate the lighthouse on site.

Wildlife use of the island apparently increased following abandonment by the USCG. Seabirds were first documented nesting on the window ledges of the lighthouse in 1989 (Carter et al. 1992). A restriction in the deed to the SGRLPS precluded access to the lighthouse from March 15-September 30, for any purpose. This restriction was placed by the U.S. Fish & Wildlife Service (USFWS) with the intent of protecting breeding seabirds and other wildlife from disturbance. Due to requests from the SGRLPS for increased access during the closure period, USFWS recommended that the SGRLPS conduct a study of wildlife use of the island. The SGRLPS funded surveys of marine birds and mammals that spanned a four year period, 1997 to 2000 (Crescent Coastal Research, 2001). No seabirds were found nesting at the lighthouse during that period; the most significant wildlife use of the island was by non-breeding sea lions.

Following a review of the wildlife study, the USFWS revised its restriction to no visits from June 1 to October 15, primarily to limit disturbance to pinnipeds, and advised the SGRLPS that a permit was needed to comply with the Marine Mammal Protection Act. The SGRLPS contacted the National Marine Fisheries Service, Long Beach, by telephone, but was not informed of any necessary compliance action at that time (Guy Towers, SGRLPS, pers. comm.). When the SGRLPS applied to the USCG to operate the lighthouse as an aid to navigation in 2004, NOAA, NMFS confirmed the requirement to have authorization for take of marine mammals if any SGRLPS activities caused harassment of pinnipeds hauling out on the island.

Visits to the lighthouse have been halted pending modifications to the landing site location. The landing zone has been relocated nearer the edge of the caisson, increasing the distance of the rotor from the lighthouse tower by the required footage. Please see the enclosed "St. George Reef Lighthouse Heliport" plan submitted by CALTRANS, which includes special operating procedures. Once all requirements are completed, tours will resume, and previously started work will resume on windows, woodwork, floors and ceilings in all rooms. In addition, metal work, plumbing, wiring, and repointing of the stone work on the caisson will restart.

(1) A detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals

A. Restoration:

The SGRLPS initiated physical restoration of the historic lighthouse on Northwest Seal Rock in 1996. Restoration activities include removal of peeling paint and plaster, restoration of interior plaster and paint, refurbishing structural and decorative metal, reworking original metal support beams throughout the lantern room and elsewhere, replacing glass as necessary, and upgrading the present electrical system. Power to the island is provided by an air compressor and gas generator. The beacon light is to be powered by solar energy. Because Northwest Seal Rock has no safe landing area for boats, work crews and equipment will be transported from the mainland to the Lighthouse by a light helicopter, a Raven R44, that lands on top of the engine room at the Lighthouse, about 48 feet above the rock island. Materials are transported by a basket attached to the underside of the helicopter. When the helicopter with the basket arrives at the Lighthouse, the helicopter hovers over the island and the basket is placed on the engine room of the Lighthouse. When the helicopter flies with the basket, it is unable to land at the platform and thus, hovers at least 150 feet above Northwest Seal Rock. Volunteers remove the materials from the basket and the helicopter returns to the mainland with the basket in tow. Typically, volunteers remain at the Lighthouse overnight the first two days of the trip and return to the mainland on the third day. Even though the helicopter is primarily used to transport volunteers and materials on the first and last days of the three day activity, the helicopter may fly to and from the Lighthouse on all three days of the restoration and maintenance activities.

Restoration activities include removal of peeling paint and plaster, restoration of interior plaster and paint, refurbishing structural and decorative metal, reworking original metal support beams throughout the lantern room and elsewhere, replacing glass as necessary, and upgrading the present electrical system. Power to the island is provided by an air compressor and gas generator. The beacon light is to be powered by solar energy. Trips to the site are made by small helicopter, owned and operated by Air Shasta Rotor and Wing, LLC, Redding, CA. The Raven R44, which seats three passengers and one pilot, is a compact-sized (1134 kilograms (kg)) (2500 pounds (lbs)) helicopter with two-bladed main and tail rotors. Both sets of rotors are fitted with noise-attenuating blade tip caps that would decrease flyover noise. Volunteers involved in restoration are taken out 3 at a time. The number of helicopter trips is estimated at no more than 36 landings/takeoffs per month (*i.e.*, one weekend per month-Friday, Saturday, and Sunday). On Fridays, there could be up to a potential of eight flights to the Lighthouse bringing 12 – 15 crew members and equipment/material and six flights back to the mainland for a total of 16 flights on day one. The first flight would depart from Crescent City Airport (Latitude: 41°46′48″ N; Longitude: 124°14′11″ W) at 9:00 am for a six-minute flight to Northwest Seal Rock. The helicopter would land and take-off immediately after offloading personnel and equipment every 20 minutes (min). The total duration of the first day's aerial operations would last for approximately three hours (hrs) and 26 min and would end at approximately 12:34 p.m. Once the restoration crew is transported to the Lighthouse, the majority of the crew would remain overnight (Friday and Saturday) and return the last day of restoration and maintenance activities (Sunday). Even though SGRLPS would use the helicopter to transport work crew members and materials on the first and last days of the three-day activity, the helicopter would likely fly to and from the Lighthouse on all three days of the restoration and maintenance activities.

For the second day (Saturday), the SGRLPS proposes a flight plan comparable to, but likely less than, what is described above for Friday (up to five arrivals and five departures) and below for

Sunday (four arrivals and four departures) flight activities to Northwest Seal Rock. The first flight would depart from Crescent City Airport at 9:00 a.m. for a six-minute flight to Northwest Seal Rock. The total duration of the second day's aerial operations would last for no more than 3 hours, depending on the number of crew members transported to and off Northwest Seal Rock.

For the final day of operations, SGRLPS proposes to conduct a maximum of eight helicopter flights (four arrivals and four departures) to transport the remaining crew members and equipment/material back to the Crescent City Airport. The total duration of the last day's aerial operations for restoration and maintenance would last for approximately two hrs and 14 min.

B. Tours:
The SGRLPS also began conducting public tours to the lighthouse by helicopter in 1998 in conjunction with restoration activities and proposes to conduct public tours at the Lighthouse during the last day of the proposed restoration schedule. SGRLPS visitors would be transported by helicopter during the Sunday work window period. Additional flights would be conducted solely for the transport of tourists to and from the Lighthouse, but those flights would be conducted in the later hours of the morning, when most, if not all of the sea lions are expected to have left Northwest Seal Rock (*i.e.*, it is expected animals will have been harassed off Northwest Seal Rock from previous activities). The maximum number of expected tourists is 36 people per tour day. The total number of helicopter trips on a tour day (Sunday) is estimated at 17, all between the hours of 9:00 am to 1:00 pm. It is expected that each flight would land every 15-20 minutes. Thus, the total duration of the last day's aerial operations, including the restoration and maintenance activities described previously (two hour and 14 minute duration) would last for approximately four hrs. The scheduled duration of each visit is 1 hour per tour group. The last tour group would leave the Lighthouse before 1:00 pm. No additional allowance is included for animals that might be affected by additional flights for the transportation of tourists. Return trips from the Lighthouse to the mainland would include construction workers, some equipment, and some tourists. An additional eleven flights would be flying to the Lighthouse to transport tourists. The corresponding return flights would transport tourists, construction equipment, or remaining construction workers. Although some of these flights would be conducted solely for the transportation of tourists, those flights would be flown at a time when no pinnipeds are expected to be at the Lighthouse, since it is expected that all animals on the island would flush into the water by the first few helicopter flights. See Table 1 for an example of a Lighthouse tour in conjunction with restoration activities.

C. Light Maintenance:
As required by the United States Coast Guard, in order to maintain St. George Reef Lighthouse as a Private Aid to Navigation, the SGRLPS needs to conduct annual, and at most biannual, maintenance of the light (during restoration and post-restoration). During restoration, this maintenance will coincide with restoration trips during the work window. To access Northwest Seal Rock, the same helicopter (Raven R44) used for restoration activities will be employed. Light maintenance is expected to take no longer than 3 hours and would coincide with the helicopter flights described earlier. Should the beacon light fail during the work window (January 1 through April 30 and November 1 through December 31), a trip to the Lighthouse will be made by helicopter (same as above) by one crew of 2-3 people. Only 1-2 helicopter

landings at the Lighthouse are anticipated to service the light during an emergency situation (*i.e.*, beacon light failure during the work window) for a maximum of 4 flights. The helicopter may remain on site or transit back to shore and make a second landing to pick up the repair personnel.

D. Emergency Light Maintenance:
If the beacon light fails, a trip to the lighthouse will be made by helicopter (same as above) by one crew of 2-3 people. Only 1-2 helicopter landings are anticipated to service the light during an emergency situation. Should emergency light maintenance need to occur outside of the work window, the SGRLPS will contact the NMFS Southwest Regional office immediately and prior to beginning any emergency work to discuss minimization measures to reduce potential impacts to marine mammals.

(2) The date(s) and duration of such activity and the specific geographical region where it will occur

A. Restoration:
Work trips are proposed for a six-month period (November 1 through April 30, annually), during one weekend each month and lasting no more than three days (*e.g.*, Friday, Saturday, and Sunday). The duration of each visit would be 1-3 days. After that, maintenance trips are anticipated at a lower frequency for maintenance and minor repairs.

B. Tours:
Tours are proposed to occur on Sundays during the restoration period (November 1 through April 30, annually). The total number of helicopter trips on a tour day (Sunday) is estimated at 17, all between the hours of 9:00 am to 1:00 pm. It is expected that each flight would land every 15-20 minutes. Thus, the total duration of the last day's aerial operations, including the restoration and maintenance activities described previously (two hour and 14 minute duration) would last for approximately four hrs. The scheduled duration of each visit is 1 hour per tour group. The last tour group would leave the Lighthouse before 1:00 pm.

C. Light Maintenance
As required by the United States Coast Guard, in order to maintain St. George Reef Lighthouse as a Private Aid to Navigation, the SGRLPS needs to conduct annual, and at most biannual, maintenance of the light. Maintenance is expected to be no longer than 3 hours.

D. Emergency Light Maintenance
Emergency trips to the light may be necessary outside of the work window, *i.e*., from May 1-October 30. Landings at the lighthouse would only take place in the event that the light failed to operate and thus, ceased to serve as an aid to navigation. Trips to the island during the summer and early fall are expected to be very rare, and not needed each year. In the event of failure of the light, a single helicopter with 2-3 persons would land at the site and dispatch 1-2 technicians to service the light. Duration of the trip is expected to be no longer than 3 hours. The helicopter may remain on site or transit back to shore and make a second landing to pick up the repair personnel.

Table 1 - An example of a Lighthouse tour in conjunction with restoration activities (Sundays only) at St. George Reef Lighthouse, Crescent City, CA.

Flight No.	Time	Crew Out	Crew at Lighthouse	Tourists In	Tourists Out	Tourists at Lighthouse
	Before 09:00	0	15	0	0	0
1	09:00	3	12	3	0	3
2	09:15	3	9	3	0	6
3	09:30	3	6	3	0	9
4	09:45	3	3	3	0	12
5	10:00	0	3	3	3	12
6	10:15	0	3	3	3	12
7	10:30	0	3	3	3	12
8	10:45	0	3	3	3	12
9	11:00	0	3	3	3	12
10	11:15	0	3	3	3	12
11	11:30	0	3	3	3	12
12	11:45	0	3	3	3	12
13	12:00	0	3	0	3	9
14	12:15	0	3	0	3	6
15	12:30	0	3	0	3	3
16	12:45	0	3	0	3	0
17	13:00	3	0	0	0	0

(3) The species and numbers of marine mammals likely to be found within the activity area

Four species of marine mammals have been observed on Northwest Seal Rock, the Steller sea Lion (*Eumatopias jubatus*), California sea lion (*Zalophus californianus*), Pacific Harbor Seal (*Phoca vitulina richardii*), and Northern fur seal (*Callorhinus ursinus*). No breeding by any of these species has ever been documented on the island. Post breeding and non-breeding sea lions of both species use the site regularly in summer, harbor seals infrequently haul out there, and fur seals are rare visitors; only one has ever been detected on the island (CCR, 2001).

Steller sea lions:
Steller sea lions are present on Northwest Seal Rock from at least April through mid-October with greatest numbers in June and July (CCR, 2001). During the 1997-2000 study, numbers of Steller sea lions were very low in April, but increased during May to a mean of 87 animals (range = 20-186, N= 4 counts). Maximum counts are 355 animals in late June (CCR, 2001) and 354 in July. Numbers apparently drop back to relatively low levels by early fall. In September-October, 1998, 55-56 Steller sea lions were present. Winter use is presumed to be minimal, due to inundation of the natural portion of the island by large swells.

There is a Steller sea lion rookery at the southern end of the St. George Reef on an island known as Southwest Seal Rock, about 4 km south of the project site. Portions of the sea lion population using the lighthouse island in the spring are adult males, females (including pregnant females) and juveniles. In the fall all age classes are likely present, including females and pups that have presumably dispersed from the rookery at Southwest Seal Rock. Up to 19 pups were observed at Northwest Seal Rock in October 1998. Pups have not been detected on Northwest Seal Rock during the July aerial photo surveys (M. Lowry, NMFS, SWFSC, unpubl. data). Occasional

birthing appears to take place at the haulout at St. George Reef Lighthouse. One recently born pup was seen on the island in 1991 (*in* CCR, 2001) and one newborn was observed from the lighthouse during the site visit by NMFS on 13 May 2005 (M. DeAngelis, NMFS, pers. comm.). The pup was abandoned by its mother and later died.

California sea lions:
California sea lion abundance at Northwest Seal Rock appears to be highly variable, with populations building in May and declining by August. The highest count was 541 individuals in June, but this was during the 1998 El Nino event, and is probably not representative of more normal conditions. During May, numbers have ranged from 10-154 (mean= 81; N= 4). Recent counts by NMFS in July (2000-2004) have been very low. The total numbers of California sea lions recorded in 2000 and 2003 were 3 and 11, respectively (M. Lowry, NMFS, SWFSC unpubl. data).

Harbor Seals:
Harbor Seals were observed on Northwest Seal rock only once in 20 surveys during 1997-2000 (CCR, 2001). Six individuals were counted in August 1998.

Northern fur seals:
One northern fur seal was seen on the island, in October 1998 (CCR, 2001).

Table 2 - General information on marine mammals that could potentially haul out on Northwest Seal Rock, November 2016 through November 2017.

Species	Stock	Regulatory Status[1, 2]	Stock Abundance[3]	Occurrence and Seasonality
California sea lion (*Zalophus californianus*)	U.S.	MMPA - NC ESA – NL	296,750	Year-round presence
Northern fur seal (*Callorhinus ursinus*)	California Breeding	MMPA - D ESA – NL	14,050	Rare
Pacific harbor seal (*Phoca vitulina*)	California	MMPA - NC ESA – NL	30,968	Occasional, spring
Steller sea lion (*Eumetopias jubatus*)	Eastern Distinct Population Segment	MMPA - D ESA – DL	60,131 – 74,448	Year-round presence

[1] MMPA: D = Depleted, S = Strategic, NC = Not Classified.
[2] ESA: EN = Endangered, T = Threatened, DL = Delisted, NL = Not listed.
[3] 2015 NMFS Stock Assessment Reports: Carretta *et al*. (2015) and Muto et al. (2015).

Table 3 - Marine mammal observations from the 2010-2012 Monitoring Reports from previous Incidental Take Authorizations to SGRLPS.

Species	2010	2011	2012	2013[1]	2014[1]	2015[1]
Steller Sea Lions	0	164	0	NA	NA	NA
California Sea Lions	0	162	0	NA	NA	NA
Harbor Seals	0	0	2	NA	NA	NA
Northern Fur Seal	0	0	0	NA	NA	NA

[1] SGRLPS did not conduct any operations during the 2013, 2014, or 2015 seasons.

(4) A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities

A. Steller Sea Lion (*Eumetopias jubatus*).
Steller sea lions consist of two distinct population segments: the western and eastern distinct population segments (DPS) divided at 144° West longitude (Cape Suckling, Alaska). The western segment of Steller sea lions inhabit central and western Gulf of Alaska, Aleutian Islands, as well as coastal waters and breed in Asia (e.g., Japan and Russia). The eastern segment includes sea lions living in southeast Alaska, British Columbia, California, and Oregon. The eastern DPS includes animals born east of Cape Suckling, AK (144° W) and the latest abundance estimate for the stock is 60,131 to 74,448 animals (Muto and Angliss, 2015).

The nearest Steller sea lion breeding area relative to the project site is at Southwest Seal Rock (41^0 49'00" N, 124^0 21'00" W). The rookery comprises a significant portion of the California total, and numbers of pups born there have ranged from 293 to 444.

Steller sea lion numbers at Northwest Seal Rock ranged from 20 to 355 animals (CCR, 2001). Counts of Steller sea lions during the spring (April - May), summer (June - August), and fall (September - October), averaged 68, 110, and 56, respectively (CCR, 2001). A multi-year survey at NWSR between 2000 and 2004 showed Steller sea lion numbers ranging from 175 to 354 in July (M. Lowry, NMFS/SWFSC, unpubl. data). SGRLPS presumes that winter use of Northwest Seal Rock by Steller sea lions is minimal due to inundation of the natural portion of the island by large swells.

For the 2010 season, the Society reported that no Steller sea lions were present in the vicinity of Northwest Seal Rock during restoration activities (SGRLPS, 2010). Based on the monitoring report for the 2011 season, the maximum numbers of Steller sea lions present during the April and November 2011, work sessions was 2 and 150 animals, respectively (SGRLPS, 2012). During the 2012 season, the Society did not observe any Steller sea lions present on Northwest Seal Rock during restoration activities. The Society did not conduct any operations for the 2013-2014, 2014-2015, and 2015-2016 seasons.

B. California Sea Lion (*Zalophus californianus*)
The estimated population of the U.S. stock of California sea lion is approximately 296,750 animals and the current maximum population growth rate is 12 percent (Carretta *et. al*., 2015).

California sea lion breeding areas are on islands located in southern California, in western Baja California, Mexico, and the Gulf of California. During the breeding season, most California sea lions inhabit southern California and Mexico. Rookery sites in southern California are limited to the San Miguel Islands and the southerly Channel Islands of San Nicolas, Santa Barbara, and San Clemente (Carretta *et. al*., 2015). Males establish breeding territories during May through July on both land and in the water. Females come ashore in mid-May and June where they give birth to a single pup approximately four to five days after arrival and will nurse pups for about a week before going on their first feeding trip. Females will alternate feeding trips with nursing bouts until weaning between four and 10 months of age (NMML, 2010).

Adult and juvenile males will migrate as far north as British Columbia, Canada while females and pups remain in southern California waters in the non-breeding season. In warm water (El Niño) years, some females range as far north as Washington and Oregon, presumably following prey.

Crescent Coastal Research (CCR) conducted a three-year (1998-2000) survey of the wildlife species on NWSR for the Society. They reported that counts of California sea lions on NWSR varied greatly (from six to 541) during the observation period from April 1997 through July 2000. CCR reported that counts for California sea lions during the spring (April - May), summer (June - August), and fall (September - October), averaged 60, 154, and 235, respectively (CCR, 2001).

Based on the monitoring report for the 2011 season, the maximum numbers of California sea lions present during the April and November 2011 work sessions was 2 and 90 animals, respectively (SGRLPS, 2012). There were no California sea lions present during the March, 2012 work session (SGRLPS, 2012).

C. Harbor Seal (*Phoca vitulina richardii*)

The estimated population of the California stock of Pacific harbor seals is approximately 30,968 animals (Carretta *et. al*., 2015). There is no current estimate of abundance available for the Oregon/Washington stock (Carretta *et. al*., 2015). They are not listed under the Endangered Species Act (ESA) and are not considered "depleted" or "strategic" under the MMPA.

Breeding takes place at many locations and rookery size varies from a few to many hundreds of pups at rookeries. The nearest pupping location relative to the project site is at Castle Rock shoals.

Northwest Seal Rock is not an important haulout site for harbor seals, and it is not a rookery. This is likely due to its distance offshore, relatively steep topography and full exposure to swells and seas. Harbor seals were seen on only 1of 20 CCR surveys of the island (CCR, 2001).

CCR noted that harbor seal use of Northwest Seal Rock was minimal, with only one sighting of a group of six animals, during 20 observation surveys. They hypothesized that harbor seals may avoid the islet because of its distance from shore, relatively steep topography, and full exposure to rough and frequently turbulent sea swells. For the 2010 and 2011 seasons, the Society did not observe any Pacific harbor seals present on Northwest Seal Rock during restoration activities (SGRLPS, 2010; 2011). During the 2012 season, the Society reported sighting a total of two harbor seals present on Northwest Seal Rock (SGRLPS, 2012)

D. Northern Fur Seal (*Callorhinus ursinus*)

Northern fur seals breed in Alaska and migrate along the west coast during fall and winter. Due to their pelagic habitat, they are rarely seen from shore in the continental United States, but individuals occasionally come ashore on islands well offshore (*i.e.*, Farallon Islands and Channel Islands in California). One male was seen on Northwest Seal Rock in October 1998. It is possible that a few animals may use the island more often that indicated by the CCR surveys, if

they were mistaken for other otariid species. The population estimate for the California stock is 14,050 (Caretta et al., 2015).

CCR observed one male northern fur seal on Northwest Seal Rock in October, 1998 (CCR, 2001). It is possible that a few animals may use the island more often that indicated by the CCR surveys, if they were mistaken for other otariid species (*i.e*., eared seals or fur seals and sea lions) (M. DeAngelis, NMFS, pers. comm.). For the 2010, 2011, and 2012 work seasons, the Society did not observe any northern fur seals present on Northwest Seal Rock during restoration activities (SGRLPS, 2010; 2011; 2012).

(5) The type of incidental taking authorization that is being requested (i.e., takes by harassment only; takes by harassment, injury and/or death) and the method of incidental taking

This is an application for an Incidental Harassment Authorization for take of pinnipeds by SGRLPS activities at St. George Reef Lighthouse on Northwest Seal Rock. The type of take expected is Level B harassment of pinnipeds during helicopter landings and takeoff from the island. Harassment may be caused by pinnipeds temporarily moving from the rocks and lower structure of the lighthouse into the sea due to the noise and appearance of helicopter during approaches and departures. No injury or death is expected, due to controlled helicopter approaches (see below) and the small size of the island, which gives the animals relatively instant access to the water.

For those pinnipeds that return to the lighthouse island during restoration activities, no disturbance response has been observed due to the presence of people on or in the lighthouse structure. In addition, people cannot access the platform at the base of the lighthouse or the natural rock of the island, unless there is an emergency situation.

(6) By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in paragraph (a)(5) of this section, and the number of times such takings by each type of taking are likely to occur

A. During the proposed normal window of operations (November 1 - April 30) an estimated 0-60 Steller sea lions may be disturbed in varying degrees by helicopter activity at the lighthouse. In the event of an emergency trip to the lighthouse for repairs in summer, more Steller sea lions may be present (up to 350-400 animals) and a portion of these are expected to respond to helicopter disturbance. An observed range of 0-40% of all pinnipeds present on the island were temporarily displaced due to helicopter landings in 1998. Data suggested that the majority of these animals returned to the island, once helicopter activities ceased, over a period of minutes to 2 hours.

An estimated maximum of up to 25 older, but still nutritionally dependent, Steller sea lion pups and their mothers may be present at Northwest Seal Rock and affected by helicopter trips in the fall. Pups are mobile on land and fully capable of swimming to and from the island once they

are at Northwest Seal Rocks. No long term separations between mothers and pups are anticipated due to the brief nature of the disturbance events. A female was observed nursing a pup during one landing in 1998 (CCR, 2001). All other age and sex classes present may also be temporarily affected.

California sea lions, primarily sub-adult males, are likely to be disturbed by some of the helicopter activities on the island. A range of 0-200 non-breeding animals may be present and potentially disturbed in a given day during normal (non-El Nino) years (CCR, 2001).

Harbor seals rarely occur on the project site and no pupping takes place on the island. No harbor seals have been seen during the normal window of operations, thus no impact is expected from restoration or light maintenance. An emergency visit to the island in summer to repair the light could affect up to 6 adult Harbor seals.

The presence of a Northern Fur Seal on the project site is expected to be very rare. Helicopter activities may disturb up to one adult, migrating, fur seal per year in the unusual case that there was overlap of a fur seal and human activity at the island.

Based on previous monitoring of the marine mammals at NWSR from 2010- 2012, we estimate that approximately 2,880 California sea lions (calculated by multiplying the maximum number California sea lions present on NWSR (160) by 18 days of the restoration and maintenance activities), 2,790 Steller sea lions (NMFS' estimate of the maximum number of Steller sea lions that could be present (155) by 18 days of the restoration and maintenance activities), 36 Pacific harbor seals (calculated by multiplying the maximum number of harbor seals present on NWSR (2) by 18 days), and 6 Northern fur seals (calculated by multiplying the maximum number of northern fur seals present on NWSR (1) by 18 days) could be potentially affected by Level B behavioral harassment over the course of the IHA.

Table 3. Authorized Take Numbers for Each Species on Northwest Seal Rock

Species	**Estimate of Take**
Steller sea lion *(Eumetopias jubatus)* Eastern Distinct Population Segment	2790
California sea lion *(Zalophus californianus)*	2880
Pacific harbor seal *(Phoca vitulina)*	36
Northern fur seal *(Callorhinus ursinus)*	18

B. Number of times that each type of taking is likely to occur.

The only type of take expected is displacement into the water. The pinnipeds on Northwest Seal Rock appear to show rapid habituation to helicopter landing and departure (CCR 2001, G. Towers, SGRLPS, pers. comm.). While up to 40% of the sea lions present on the rock have been observed to enter the water on the first of a series of helicopter landings, as few as 0% have flushed on subsequent landings on the same date (Fig. 1). However, it is likely that up to 100% of the seals will be flushed during the entire series of helicopter landings. Data collected in 1998 indicated that relatively few animals responded to the disturbance when helicopter landings

occurred at short intervals (Fig. 2). The estimated 10 landings, at relatively short intervals, on a given restoration or tourism date may be considered as one bout of "taking" with variable impacts on each landing; however, since they occur on the same day as restoration activities, no additional take should occur.

1) One to two day bouts of restoration activity, including helicopter landings that may cause taking, are expected to occur as many as 18 times (6 months, 1-3 day trips per month) per season during January through April and November through December).
2) Light maintenance will occur at least once, if not twice, in one year between January through April and November through December. The light maintenance will occur in conjunction with restoration activities described in number 1.
3) Emergency maintenance will occur only as necessary from May 1-October 30. The expected number of taking events from this activity is 0 to 4 incidents. If emergency work is necessary outside of the work window, from May 1-October 30, the SGRLPS will contact NMFS-SWR and USCG immediately and prior to, beginning any emergency as this action is not covered by the biological opinion.
4) Tours will occur on the same days as restoration activities (Sundays between Nov 1 and April 30), and therefore, should not cause additional take.

(7) The anticipated impact of the activity upon the species or stock

It is expected that all or a portion of the marine mammals hauled out on the island will depart the rock and move into the water upon initial helicopter approaches (CCR, 2001). The movement to the water is expected to be gradual, as opposed to a stampede, due to the disturbance minimization approach technique (see Section 11), small size of the aircraft, relatively quiet rotors, and behavioral habituation on the part of the animals, as helicopter trips continue throughout the day. During bouts of helicopter activity some animals may be temporarily displaced from the island and either raft in the water or relocate to other haul outs. Most animals are expected to return soon after helicopter activities cease for that day. Additionally, the number of takes per species is small compared to the overall stock abundance (Table 4). Therefore, the long term effect on the island as a non-breeding haul out is expected to be negligible.

Table 4. The percentage of the stock affected by the number of takes per species.

Species	Take Number	Stock Abundance	Percent of stock
California sea lion (*Zalophus californianus*)	2880	296,750	0.97
Steller sea lion (*Eumetopias jubatus*)	2790	60,131 – 74,448	4.64-3.75
Pacific harbor seal (*Phoca vitulina*)	36	30,968	0.35
Northern fur seal (*Callorhinus ursinus*)	18	14,050	.12

(8) The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses

Not Applicable.

(9) The anticipated impact of the activity upon the habitat of the marine mammal populations, and the likelihood of restoration of the affected habitat

There are no long or short term physical impacts on the habitat. All restoration activities occur on the upper levels of the lighthouse that are not used by marine mammals. All waste and discarded materials and equipment are removed from the island after each visit.

(10) The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved

There will be no physical impact on habitat.

(11) The availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and on their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance

A. Window of normal operations limitation. By restricting helicopter flights to November 1 to April 30, harassment impacts will affect a lower number of pinnipeds. Also, it is expected that any Steller sea lion pups present at the site will be at least 3 months of age and agile on land and in the ocean, thereby minimizing the risk of injury.

B. Helicopter approach and timing techniques.

1) The most severe impacts (stampede) are precipitated by rapid and direct helicopter approaches. By making the initial approach to one side of the island at higher altitude (*e.g.*, 800-1,000 ft), then circling lower, and making the final approach from the northwest, where density of pinnipeds tends to be lower, adverse impacts can be minimized.

2) Sea lions have shown habituation to helicopter flights within a day at the project site. By clustering helicopter arrival/departures within a short time period, animals are expected to show less response to subsequent landings. Steller sea lion female-pup pairs were observed nursing during takeoff and landing activities subsequent to the initial landing (CCR 2001).

C. Avoidance of visual and acoustic contact with people on island. Tourists, SGRLPS members, and restoration crews will be instructed to avoid unnecessary noise and not expose themselves visually to pinnipeds around the base of the lighthouse. Although no impacts from these activities were seen during the CCR study, it is relatively simple to avoid this potential impact.

D. The door to the lower platform (which is used at times by pinnipeds) will remain closed and barricaded to all tourists and other personnel. The door will only be opened when necessary and at a time when no animals are present on the lower platform.

E. Automation of light station equipment. Complete automation of the light generating system and automatic backup system will minimize maintenance and emergency repair visits to the island. The light is solar powered using one solar panel; an installed second panel serves as a backup which is automatically activated if needed. A second smaller bulb in the lantern is activated if the primary bulb fails. Use of high quality, durable materials and thorough weatherproofing is planned to minimize trips for maintenance and repair in the future. All tools and supplies are stored on the island so that a minimal number of transport trips will be necessary.

(12) Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, the applicant must submit either a plan of cooperation or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses.

Not Applicable

(13) The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. Monitoring plans should include a description of the survey techniques that would be used to determine the movement and activity of marine mammals near the activity site(s) including migration and other habitat uses, such as feeding. Guidelines for developing a site-specific monitoring plan may be obtained by writing to the Director, Office of Protected Resources

To describe the abundance, species composition, and age/sex categories of pinnipeds using Northwest Seal Rock and to measure the amount and severity of any impacts from SGRLPS activities, an experienced biologist will be present on a the first flight of each day of activities. This observer will be able to identify all species of pinnipeds expected to use the island, and qualified to determine age and sex classes when viewing conditions allow. Proposed monitoring requirements in relation to the Society's proposed activities would include species counts, numbers of observed disturbances, and descriptions of the disturbance behaviors during the activities, including location, date, and time of the event. In addition, the Society would record observations regarding the number and species of any marine mammals either observed in the water or hauled out. Using these methods, modifications to island visitation with respect to timing and approach may be implemented to further reduce impacts.

Aerial photographic surveys may provide the most accurate means of documenting species composition, age and sex class of pinnipeds using the project site during human activity periods. Aerial photo coverage of the island will be completed by the biologist from the same helicopter

used to transport SGRLPS personnel to the island during restoration of tourist trips. Photographs of all marine mammals hauled out on the island will be taken at an altitude greater than 300 meters, during the first landing on each visit included in the monitoring program. Photographic documentation of marine mammals present at the end of the day will also be made for a before and after comparison. These photographs can be made available to NMFS or other marine mammal experts for inspection and further analysis.

Monitoring frequency is expected to be determined through consultation with NMFS as a condition of this requested permit.

If at any time injury, serious injury, or mortality of the species for which take is authorized should occur, or if take of any kind of any other marine mammal occurs, and such action may be a result of the Society's activities, the Society would suspend survey activities and contact NMFS immediately to determine how best to proceed to ensure that another injury or death does not occur and to ensure that the applicant remains in compliance with the MMPA.

SGRLPS would submit a draft report to NMFS' Office of Protected Resources no later than 90 days after the expiration of the proposed IHA, if issued. The report will include a summary of the information gathered pursuant to the monitoring requirements set forth in the proposed IHA, including species, number, location, and behavior of any marine mammals observed throughout all monitoring activities, an estimate of the number (by species) of marine mammals exposed to human presence associated with the Society's activities (number of takes), and a summary of the monitoring and mitigation measures.

(14) Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects.

SGRLPS visits to the Northwest Seal Rock site provide an opportunity for research and coordination of effort with research and management entities. Population data from aerial surveys, evaluation of helicopter impacts, and means of minimizing effects on pinnipeds can be shared with the Oregon Dept. of Fish and Wildlife (ODFW), USFWS, NMFS and others. If additional funding is obtained, further research objectives may be achieved. Examples of this include potential use of remote cameras to help with regional assessments of seasonal pinniped distribution, movement patterns, and habitat use, in coordination with long-term monitoring being conducted at Southwest Seal Rock by ODFW and NMFS.

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Figure 1. Numbers of pinnipeds hauled out at Northwest Seal Rock throughout a series of helicopter landings at the lighthouse during restoration activities on October 17, 1998; 0925-1515. Data are from CCR (2001). Shown are the number of sea lions present immediately before a landing and the number of those that moved into the water, apparently in response to the helicopter, during the landing. Most of the animals present were California sea lions.

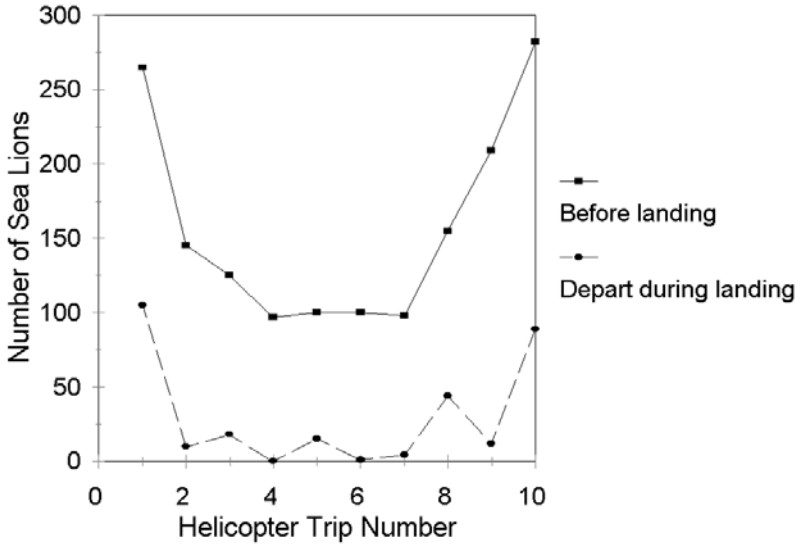
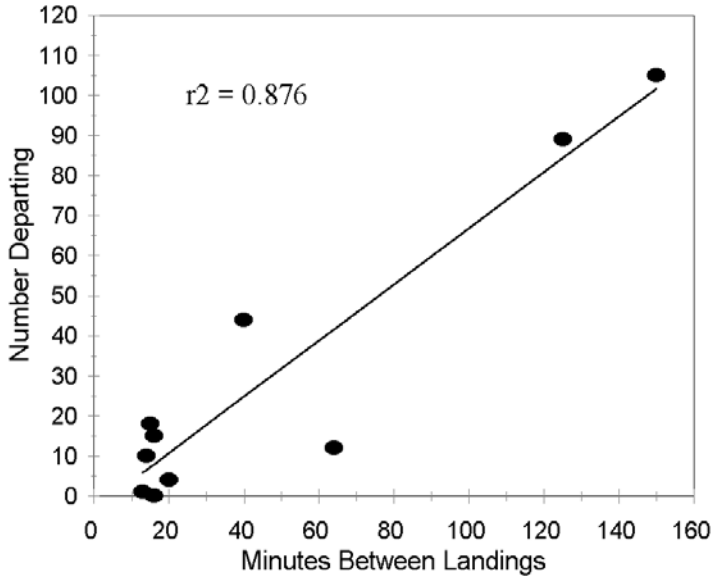
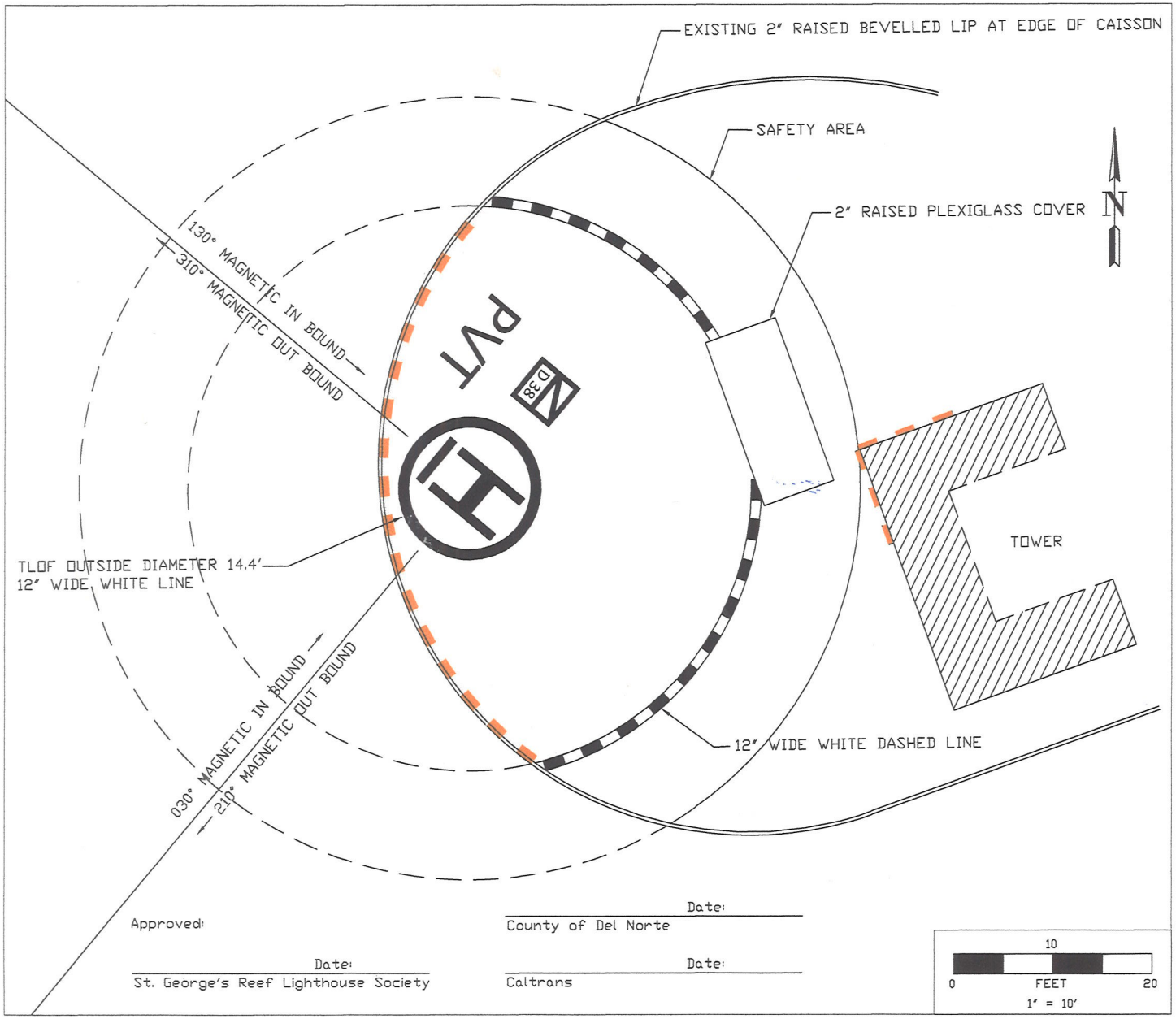


Figure 2. Relationship between numbers of pinnipeds departing in response to helicopter landings and minutes between landings. Data are from CCR (2001).





St. George Reef Lighthouse Heliport

HELIPORT DATA PANEL:

Location: Approximately 7 NM Northwest of Jack McNamara Airport (CEC), Crescent City CA

Heliport Center Coordinates on Caisson:
Latitude 41 Deg. 50' 11" N
Longitude 124 Deg. 22' 33" W

Design Helicopter: Robinson R-44 Raven
Overall Length: 38'
TLOF Diameter: 14.4'
FATO Diameter: 57'
Heliport Safety Area: 11'
Undercarriage width: 7.2'

Note: Helipad designed and marked in accordance with FAA AC 150/5390-2C Heliport Design section 203, 207B, and 215. A variance is requested for a FAR Part 77, 2:1 Transitional Slope Penetration by the lighthouse tower.

FATO Elevation Approximately: 60' MSL

Inbound Heading: 130 / 030 Deg. Magnetic
Outbound Heading: 310 / 210 Deg. Magnetic

Special Operating Requirements:

1. **Day VFR only.**
2. **Winds no greater than 10 Knots.**
3. **Seas no greater than 10 Feet.**
4. **No standing water on heliport.**
5. **An alternating aviation orange and white pattern will be painted and maintained on the tower wall adjacent to the heliport between 2' and 8' above the caisson from the corner extending 10' either side. This paint scheme will also be applied to the top of the beveled caisson edge within the FATO.**
   - *Reference FAA AC 70/7460-1L, Obstruction Marking and Lighting Section 2.1 and Figure A-15.*
6. **No passengers / personnel will deplane or emplane the helicopter while rotor is turning.**
7. **Staff will ensure that that the caisson is clear of all passengers / personnel and equipment during all helicopter operations.**
8. **Prior permission and heliport briefing is required for all helicopter operators.**
9. **Pilot or staff will guide passengers to and from aircraft to ensure a safe distance from caisson edge.**
10. **A windsock shall be erected near the top of the lighthouse during helicopter operations.**

Not an official document. This map is for planning purpose only.

Original Skylight-Wooden Top on cement foundation

Partial removal of granite & marine plywood covering - also shows safety marking on tower.

Wooden top and cement foundation removal revieled a granite sub base

Heliport Landing