

# **Rat Island Habitat Restoration Project**

MMPA Incidental Harassment Authorization  
Final Report



**Rat Island, Aleutian Islands, Alaska**

**Prepared For:**

**Department of Commerce  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Office of Protected Resources**

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## Executive Summary

Operations for the Rat Island Habitat Restoration Project, aimed at eradicating introduced non-native Norway rats (*Rattus norvegicus*) from Rat Island, began September 28, 2008 when the team arrived and conducted the initial marine mammal count. The eradication operation concluded nine days later on October 6, 2008 after completing demobilization of the camp and aircraft and a final marine mammal count.

Initially, weather conditions were typical of the Aleutian Islands in the fall with rough seas and steady winds but soon changed to uncharacteristically clear, calm conditions. These unexpected but favorable weather conditions persisted for the duration of the project, allowing the team to finish sooner than expected.

Marine mammal species observed during the project included Steller sea lions (*Eumetopias jubatus*), Pacific harbor seals (*Phoca vitulina*) and northern sea otters (*Enhydra lutris kenyoni*). Activities associated with the operation were conducted in a manner that minimized exposure of marine mammals to helicopter, watercraft or personnel operations and without known injury to any animals. Particular care was taken during the aerial treatment of the islet near Ayugadak Point. Observation records are summarized in Table 2 and presented in Appendices Tables 3-5.

The number of animals whose behavior was altered as a result of operations was considerably lower than the number of “takes” authorized under the Incidental Harassment Authorization. A comparison of authorized with actual takes is presented in Table 1. There were no individual or population level detrimental effects on Steller sea lion, Pacific harbor seal or northern sea otter health, reproduction or survival or to their coastal and nearshore island habitat as a result of this project. The project was completed successfully in a minimal time window during late fall while adhering to the requirements of the Incidental Harassment Authorization and the Incidental Take Statement.



Scenic overview of Gunner's Cove, base for project operations on Rat Island.

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## INTRODUCTION and BACKGROUND

The restoration of Aleutian ecosystems through introduced predator eradications has long been identified as a priority for Alaska Maritime National Wildlife Refuge (NWR). This project was aimed at eradicating introduced non-native rats from Rat Island, located in the central Aleutians within Alaska Maritime NWR (Figure 1). The method of eradication involved an aerial broadcast of rodenticide and will subsequently involve several years of biological monitoring before claiming success. The project also includes maintaining the island in rodent-free status, facilitating the restoration of the natural island ecosystem by improving habitat quality for native wildlife. The project is fully described in the Environmental Assessment and subsequent Finding of No Significant Impact, both available on the Alaska Maritime NWR website at [http://alaskamaritime.fws.gov/news\\_room.htm](http://alaskamaritime.fws.gov/news_room.htm).

Rat Island was selected because it is the smallest uninhabited refuge island with an invasive rat population that will not be re-invaded by rats from nearby islands after eradication. There are virtually no nesting seabirds on Rat Island and relatively few breeding birds of any kind as evidenced by two field seasons of pre-eradication monitoring. The intent of restoring the natural ecosystem function is to re-establish native seabirds and other native species, thus returning this wilderness island to a healthy natural community. The recovery of other Aleutian Islands after fox eradication and the recovery of other islands after rat eradication gives us confidence that native wildlife and plants will flourish on Rat Island after the rats are removed.

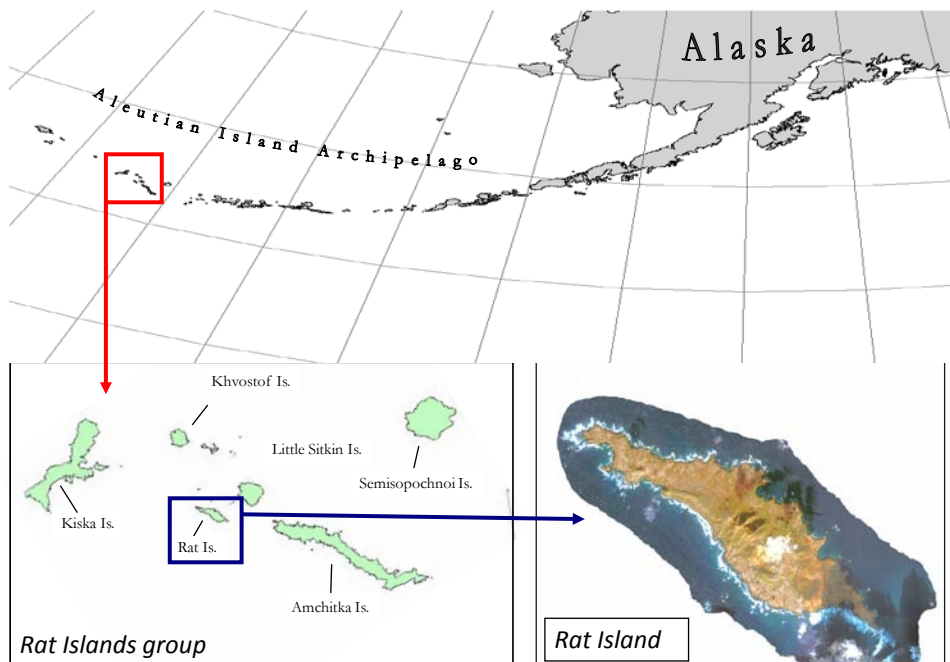


Figure 1. Location map of Rat Island in the Rat Islands group of Aleutian Islands.

The protection of natural biodiversity is mandated by the Alaska National Interest Lands Conservation Act (ANILCA), by U.S. Fish and Wildlife Service policy, and by other legal authorities. The project objective reinforces these mandates: rat eradication is consistent with our responsibility to manage and conserve migratory bird populations under the Migratory Bird Treaty Act, conventions and other applicable laws, including ANILCA, which give Alaska Maritime NWR legal authority to conserve marine birds, other migratory birds, marine mammals and the habitats on which they rely, and to protect and preserve the wilderness character of the area.

The project, as designed and implemented, did not jeopardize any Endangered Species Act (ESA) threatened or endangered species or their habitats. At Rat Island these would include the endangered Steller sea lion and threatened northern sea otter, as well as the Marine Mammal Protection Act (MMPA) protected Pacific harbor seal. In addition, the islet located 1.6 km (1 mi) off Ayugadak Point on Rat Island is a Steller sea lion rookery, qualifying as critical habitat under the Endangered Species Act. The islet is also potential rat habitat and the thick kelp beds between the main island and this islet make rat migration to and from the islet possible. As planned, bait was delivered to the islet off Ayugadak Point with an adaptive alternative-baiting strategy that minimized helicopter disturbance to the rookery.

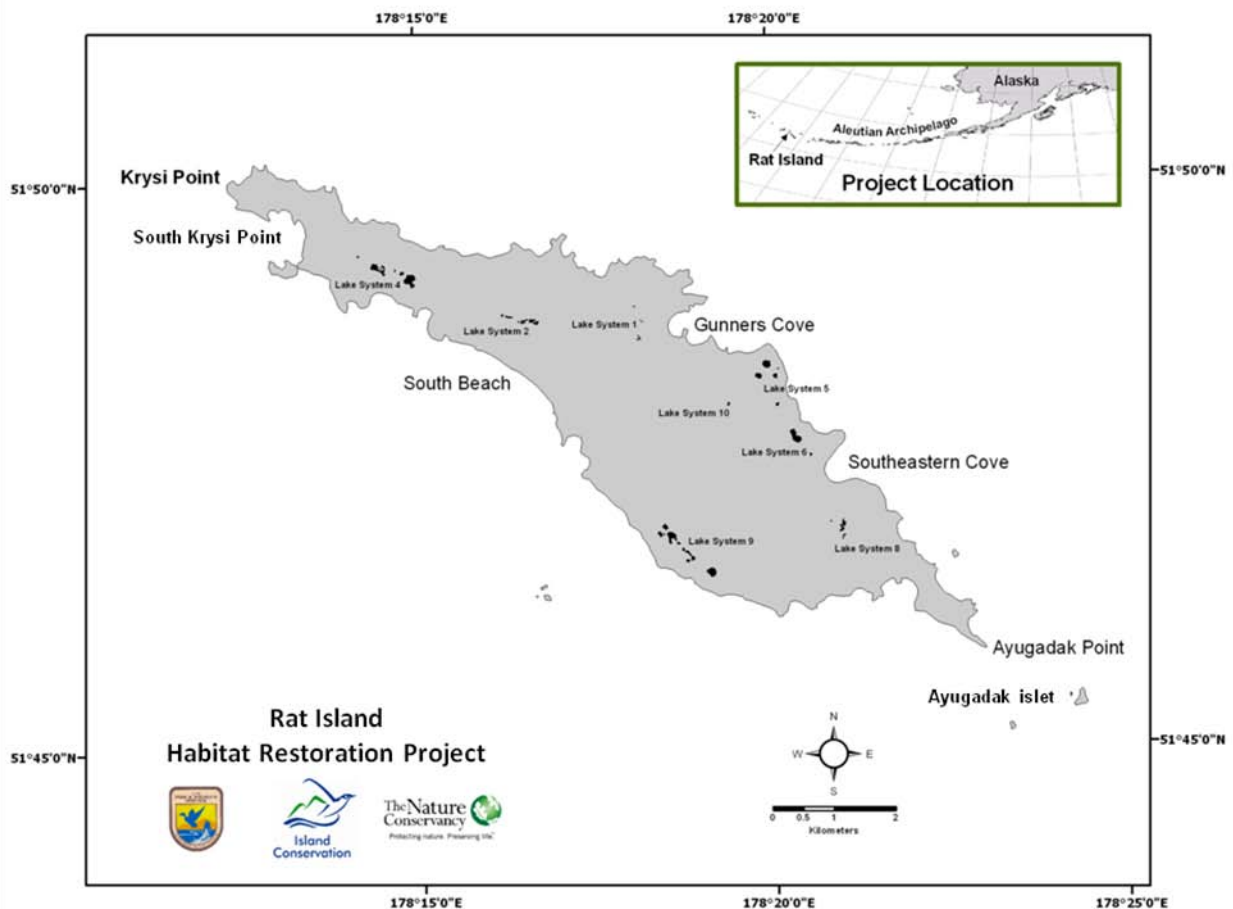


Figure 2. Map of Rat Island with place names referenced in text.

## METHODS

Operations for the Rat Island Habitat Restoration Project began Sunday, September 28, 2008 when the team arrived at the island. Upon arrival, a vessel-based count of marine mammals was conducted at the islet near Ayugadak Point and at Krysi Point, both known pinniped concentration areas at Rat Island. Weather conditions early in the project were typical of the Aleutian Islands in the fall with rough seas and steady winds. However, these conditions soon changed to uncharacteristically clear, calm conditions that persisted for the remaining duration of the project. The excellent weather provided the best case scenario and allowed the team to finish the work sooner than expected. The team departed Rat Island Monday, October 6, 2008 after completing a final marine mammal count.

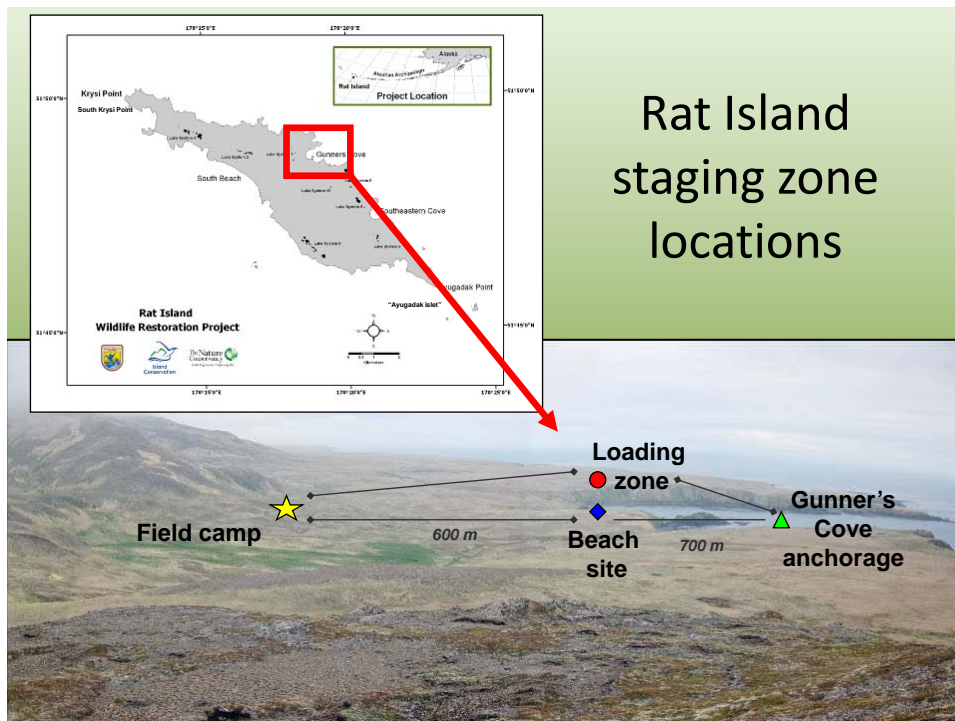


Figure 3. Operation base detail showing distances of helicopter flight lines from the ship anchorage to the staging zones.

The eradication operation was carried out as planned, placing a priority on minimizing marine mammal disturbance. Marine mammal counts were chiefly conducted by vessel, primarily aboard the Refuge's research vessel *M/V Tiglax*. The exception were some sea lion counts at Krysi Point which were conducted by land because the vessel was at the opposite end of the island supporting counts at the Ayugadak islet rookery during the same time period.



Figure 4. Temporary field camp on Rat Island uplands.



Figure 5. Loading bait into hopper suspended beneath the helicopter.



Figure 6. Helicopter broadcasting bait over upland tundra plateau on Rat Island.

Additionally, incidental observations were recorded by field crew walking beaches, from the helicopters, during skiff operations, and from the support vessel. Marine mammal species observed during the project included Steller sea lions, Pacific harbor seals and northern sea otters. As reported in Tables 3-5 of the Appendices, incidental observations of pinnipeds noted marine mammals conducting normal behaviors around the island. Observation details regarding dates, time, species, number of animals and responses are also located in the Appendices tables.

## RESULTS

No marked animals were seen during the course of the project and no unusual behavior was observed. Additionally, no cetaceans were observed in the vicinity during the nine day operation. The number of animals whose behavior was altered as a result of project operations

was considerably lower than the number of “takes” authorized under the Incidental Harassment Authorization (see Table 1 below). All responses fell well within the range of incidental take under Level B harassment and primarily consisted of alert head raises without moving or limited, short-term displacement resulting from aircraft noise due to helicopter overflights.

**Table 1. Authorized and actual takes of marine mammals during aerial broadcast operations of the 2008 Rat Island Habitat Restoration Project**

Species	Authorized Total Take	Actual Total Take	Authorized Individual Take	Actual Individual Take
Steller sea lion	450	191	385	102
Pacific harbor seal	250	31	100	31

Details regarding the number and type of responses associated with each activity for both seals and sea lions, from direct monitoring and incidental observations, can be found in Table 2 below.

**Table 2. Summary of marine mammals responding during the 2008 Rat Island Habitat Restoration Project activities.**

Date	Location	Activity	Response	# SSL non-pups	# SSL pups	# HASE non-pups	# HASE pups	Total Responses
<b>A. Observed responses on Rat Island:</b>								
30-Sep-08	Krysi Pt.	Helicopter	Flush	1	0	0	0	1
30-Sep-08	Krysi Pt.	Helicopter	Change direction	4	0	0	0	4
30-Sep-08	S. Krysi Pt.	Helicopter	Flush	0	0	5	0	5
1-Oct-08	Gunner's Cove	Helicopter	Dove	1	0	0	0	1
1-Oct-08	Gunner's Cove	Skiff	Alert	0	0	1	0	1
3-Oct-08	South side of Rat Is.	Personnel	Flush	0	0	25	0	25
4-Oct-08	Gunner's Cove	Personnel	Change direction	2	0	0	0	2
5-Oct-08	Krysi Pt.	Helicopter	Alert	5		0	0	5
5-Oct-08	Krysi Pt.	Helicopter	Flush	6	0	0	0	6
						SSL: Total takes on Rat Island		19
						HASE: Total takes on Rat Island		31
<b>B. Observed responses on the islet off Ayugadak Point:</b>								
2-Oct-08	Ayugadak	Helicopter	Flush	63	20	0	0	83
3-Oct-08	Ayugadak	Vessel	Alert	12	0	0	0	12
6-Oct-08	Ayugadak	Vessel	Alert	41	5	0	0	46
						SSL: Total takes on the islet off Ayugadak Point		141
						HASE: Total takes on the islet off Ayugadak Point		0



Activities associated with the Rat Island Habitat Restoration Project were conducted in a manner that minimized exposure of marine mammals to helicopter, watercraft or field crew operations. Early plans called for an alternative baiting strategy on the islet off Ayugadak Point. This part of the operation was planned to be supported from M/V *Tiglox* in August in conjunction with pre-eradication monitoring. Once at the islet, it was noted that the IHA had not yet been obtained and bait stations were not left deployed. No disturbance to the rookery was noted. Particular care was taken during the aerial treatment of the islet near Ayugadak Point. In this case, the helicopter left Rat Island and approached the islet very slowly, starting from an elevation over 1,000 feet and gradually decreasing altitude in slow circles before applying bait in a single pass and returning directly to Rat Island. The entire process was completed during a period of 15 minutes. This gradual and deliberate approach resulted in the sea lions present at the rookery initially becoming aware of the aircraft and then calmly moving into the water. As a result, we prevented a stampede of animals and reduced the potential for injury among them.

There were no observed individual or population-level detrimental effects on Steller sea lion, Pacific harbor seal or northern sea otter health, reproduction or survival as a result of this project. No animals were deliberately approached by field crew and in all cases measures were taken to minimize the number of marine mammals disturbed by any operation activity. Although the coastal geography excluded observations being made at close distances, there was no conspicuous evidence of active molting among the sea lions.



Figure 7. The sea lion rookery islet located off Ayugadak Point.



Figure 8. Steller sea lion bull on rocky shoal off Krysi Point.



Figure 9. Biologists surveying sea lions on the Ayugadak islet rookery from the bow of the M/V *Tiglox*.

During the coastal area aerial application, precautions were taken to avoid spreading bait into the nearshore marine environment, as planned. Coastal application aerial transects were conducted in a manner that prevented stampedes and allowed animals to return to haul-outs between overflights. Field crew making observations from land near Krysi Point were placed in an area that would not allow human scent to be carried to the animals being observed.

There was no discernable impact to Steller sea lion, Pacific harbor seal or northern sea otter habitat in the course of this project. Specifically, there was no alteration to, loss or modification of physical habitat and no anticipated effect on the prey base of either species.

## CONCLUSION

The Rat Island Habitat Restoration Project was conducted over an unexpectedly short time period, without known injury to any marine mammals and well within the scope of the IHA. The meticulous planning for this project provided ample room for adaptive strategies to be utilized, benefited by the favorable weather conditions, thereby improving the eradication effort overall.

The aerial broadcast of rodenticide was completed successfully while adhering to the requirements of the Incidental Harassment Authorization and the Incidental Take Statement, producing negligible impact to the local populations of marine mammals.



Figure 10. Helicopter sling-loading gear back to the M/V *Tiglax* during demobilization.

## **APPENDICES**

Tables 3-5 of marine mammal observations follow, documenting all sightings and observed responses to eradication activities on Rat Island in the fall of 2008:

**Table 3. Marine Mammal Observations associated with helicopter operations at the islet off Ayugadak Point, Rat Island in 2008.**

**Table 4. Marine Mammal Observations associated with helicopter operations at Krysi Point, Rat Island in 2008.**

**Table 5. Incidental Marine Mammal Observations at Rat Island in Fall 2008.**

**Table 3. Marine Mammal Observations associated with helicopter operations at the islet off Ayugadak Point, Rat Island in 2008**

Date	Location	Time	Activity	Sea lion non-pups	Sea lion pups	Response	Harbor Seal	Response	Comments
26-Sep	Ayugadak	10:00	pre staging	26+	unknown*	no response	0	N/A	Very rough sea conditions, vessel could not get within 1 km (* too far to view pups).
1-Oct	Ayugadak	9:15	post staging	65	8+	no response	0	N/A	Clear, calm; Counts from Tiglax @ 500 m.
2-Oct	Ayugadak	14:30	before helicopter	63	10+	no response	0	N/A	Clear, calm; Counts from Tiglax @ 500 m.
2-Oct	Ayugadak	15:10	during overflight	63	20	first alert then gradually flush**	0	N/A	Clear, calm; Counts from Tiglax @ 500 m.
2-Oct	Ayugadak	15:25	after flight	1	0	no response	0	N/A	adult bull.
2-Oct	Ayugadak	15:40	after flight	5	0	no response	0	N/A	adult bulls.
2-Oct	Ayugadak	15:55	after flight	5	0	no response	0	N/A	adult bulls.
2-Oct	Ayugadak	16:10	after flight	7	3	no response	0	N/A	
2-Oct	Ayugadak	16:25	after flight	11	14	no response	0	N/A	
2-Oct	Ayugadak	16:40	after flight	13	14	no response	0	N/A	
2-Oct	Ayugadak	16:55	after flight	16	16	no response	0	N/A	
2-Oct	Ayugadak	17:10	after flight	21	18	no response	0	N/A	About 25 additional sea lions were in the water within 10 m of the rookery and another 10-15 were in the water about 50m away.
3-Oct	Ayugadak	15:50	day after flight	73	10+	12 adults became alert	0	N/A	Partly cloudy, fairly calm; Counts from Tiglax @ 750 m. A few adults became alert as the ship turned to leave as our exhaust and noise from the stack was directed toward the rookery.
4-Oct	Ayugadak	12:05	pre demobilization	72	8+	no response	0	N/A	
6-Oct	Ayugadak	18:30	post demobilization	85	12+	41 adults and 5 pups became alert	0	N/A	About half the animals became alert as the ship turned to leave.

\*\* Helicopter made a first circle over the rookery islet at 1,000 ft and about half of the non-pups became alert. The second pass was at about 500 ft and on this pass they all became alert and began to gradually go into the water. Most were in the water near shore before the helicopter made the broadcast run and when it passed low overhead, they dove and swam up to 50 m away.

**Table 4. Marine Mammal Observations associated with helicopter operations at Krysi Point, Rat Island in 2008**

Date	Location	Time	Activity	Sea lion non-pups	Sea lion pups	Response	Harbor Seal	Response	Comments
26-Sep	Krysi Pt.	11:00	Pre staging	0	0	N/A	0	N/A	Counts from Reliance @1,000 m, poor viewing due to rough seas.
30-Sep	Krysi Pt.	9:20	Pre helicopter	0	0	N/A	0	N/A	Obs. from vantage point on land @500 m (coastal bluff).
30-Sep	Krysi Pt.	9:30	Helicopter overflights begin	0	0	N/A	0	N/A	
30-Sep	Krysi Pt.	9:46	Helicopter overflights continue	0	0	N/A	0	N/A	Helicopter leaves area several times for more bait.
30-Sep	Krysi Pt.	10:57	Final helicopter overflights	4	0	changed direction	2	unknown	2 seals far offshore in bay entrance, in view intermittently. 4 sea lions in water near haul-out: on 1st pass, 2 changed direction and swam off, 2 stayed there; during 2nd and 3rd passes, the remaining 2 changed direction and swam off.
30-Sep	Krysi Pt.	11:00	Helicopter done	0	0	N/A	0	N/A	
30-Sep	Krysi Pt.	11:25	No helicopter in area	0	0	N/A	1	N/A	1 seal in water 25m offshore of Krysi Pt.: disappears.
30-Sep	Krysi Pt.	11:31	No helicopter in area	0	0	N/A	2	N/A	2 seals 15m offshore in bay: swimming towards shore
30-Sep	Krysi Pt.	11:39	No helicopter in area	0	0	N/A	1	N/A	1 seal 30m offshore in bay: in view briefly, disappears.
30-Sep	Krysi Pt.	11:50	No helicopter in area	0	0	N/A	2	N/A	1 seal on rock 100m out in bay, 1 in water close to rock.
30-Sep	Krysi Pt.	12:07	No helicopter in area	1	0	N/A	0	N/A	Sea lion in water 10 m offshore.
30-Sep	Krysi Pt.	12:10	No helicopter in area	1	0	N/A	0	N/A	Sea lion closer inshore, checking out the beach.
30-Sep	Krysi Pt.	12:14	No helicopter in area	1	0	N/A	0	N/A	Sea lion swims back out to sea, disappears.
30-Sep	Krysi Pt.	12:19	No helicopter in area	1	0	N/A	0	N/A	Sea lion hauls onto rock, then off again.
30-Sep	Krysi Pt.	12:21	No helicopter in area	1	0	N/A	0	N/A	Sea lion 10m offshore, disappears.
30-Sep	Krysi Pt.	12:27	No helicopter in area	1	0	N/A	0	N/A	Sea lion hauled onto same rock as before.
30-Sep	Krysi Pt.	12:49	No helicopter in area	1	0	N/A	1	N/A	Sea lion still on rock; seal 10m offshore in bay.
30-Sep	Krysi Pt.	13:10	Helicopter on approach to pick up observer	1	0	flush	1	unknown	Seal on a rock slips into water while helicopter very far off; sea lion slips into water as helicopter became audible.
4-Oct	Krysi Pt.	10:26	Pre-second baiting	7	0	N/A	0	N/A	Partly cloudy, fairly calm; Counts from Tiglax @ 800 m.
5-Oct	Krysi Pt.	9:12	Pre helicopter	5	0	N/A	0	N/A	Clear, sea calm with 3' swell; Counts from Tiglax @ 800 m.
5-Oct	Krysi Pt.	9:20	Helicopter flights begin in the vicinity	5	0	alert	0	N/A	
5-Oct	Krysi Pt.	9:22	Helicopter passed over at 500 ft*	5	0	flush	0	N/A	
5-Oct	Krysi Pt.	9:30	Helicopter left for more bait	0	0	N/A	0	N/A	
5-Oct	Krysi Pt.	9:35	No helicopter in area	1	0	N/A	0	N/A	1 bull hauled out.
5-Oct	Krysi Pt.	10:00	No helicopter in area	1	0	N/A	0	N/A	
5-Oct	Krysi Pt.	10:07	Helicopter returned to finish baiting	1	0	flush	0	N/A	

5-Oct	Krysi Pt.	10:10	Helicopter done	0	0	N/A	0	N/A	
5-Oct	Krysi Pt.	10:15	No helicopter in area	1	0	N/A	0	N/A	
5-Oct	Krysi Pt.	10:30	No helicopter in area	1	0	N/A	0	N/A	
5-Oct	Krysi Pt.	10:45	No helicopter in area	1	0	N/A	0	N/A	
5-Oct	Krysi Pt.	11:00	No helicopter in area	2	0	N/A	0	N/A	
5-Oct	Krysi Pt.	11:15	No helicopter in area	2	0	N/A	0	N/A	
5-Oct	Krysi Pt.	11:30	No helicopter in area	2	0	N/A	0	N/A	
5-Oct	Krysi Pt.	11:45	No helicopter in area	2	0	N/A	0	N/A	
5-Oct	Krysi Pt.	12:00	No helicopter in area	2	0	N/A	0	N/A	
5-Oct	Krysi Pt.	12:15	No helicopter in area	2	0	N/A	0	N/A	2 bulls asleep.
6-Oct	Krysi Pt.	17:30	post demobilization	4	0	no response	1	no response	Overcast, fairly calm; Counts from Tiglax @ 600 m.
* Helicopter made the first circle over the Krysi Pt. haul-out at 1,000 ft altitude where 3 of 5 sea lions became alert. Second pass was at 500 ft, 4 of 5 gradually go into water and 5th animal ultimately enters water before the helicopter made the first broadcast run. As the helicopter passed over low, the sea lions dove and swam up to 50 m away.									

**Table 5. Incidental Marine Mammal Observations at Rat Island in Fall 2008**

Species	Non-pups	Date	Location	Time	Activity	Response
Harbor Seal	5	30-Sep	Krysi Pt.	11-13:00	primarily in nearshore waters	intermittent observations of seals using the bay at Krysi Pt. throughout morning while no helicopter was in the area.
Harbor Seal	5	30-Sep	south Krysi Pt.	15:00	helicopter overflight during baiting	seals flushed gradually and remained in nearshore waters (incidentally observed from second helicopter; not a known haul-out).
Steller sea lion	1	1-Oct	Gunner's Cove	11:00	helicopter flight overland to hand baiting area	in water when observed, dove.
Harbor Seal	1	1-Oct	Gunner's Cove	19:00	skiff to Tiglax	became alert but stayed on the rock as the skiff went by.
Sea Otter	2	2-Oct	Ayugadak Pt.	14:40	Tiglax passed by at 500 m	were swimming and changed directions.
Harbor Seal	25	3-Oct	big sandy beach on south side	13:00	walking beach to look for rats, seals went into water and stayed nearshore	flushed gradually and remained in nearshore waters.
Steller sea lion	2	4-Oct	Gunner's Cove	17:00	walking beach to look for rats, sea lions went into water and stayed nearshore	in water, changed direction.