

Rose Atoll National Wildlife Refuge / Marine National Monument

December 2-8, 2015 Trip Report

Six participants travelled aboard the chartered vessel Double Barrel and visited Rose Atoll from December 2-8, 2015 under permit # 12514-2015-003: Brian Peck (USFWS), T. Todd Jones (NOAA Fisheries Science Center), Shawn Murakawa (NOAA Fisheries Science Center), Mark McDonald (DMWR), Ricky Misa'alefua (NPS), and Mua Utuga (NPS). We camped on the south shore of Rose Island as the previous camp location to the SW had been eroded and coral rubble shifted to make it



unsuitable. The new camp area was selected based on the lack of nesting birds and recent turtle activity.

The focus of this trip was to attach 8 satellite tags to nesting green sea turtles. Other objectives included seabird monitoring, marine debris removal, qualitative coral bleaching survey, and coconut control.



Green sea turtles: This is the fifth consecutive year that this work has been conducted in collaboration with the NOAA Science Center Marine Turtle Biology & Assessment Program, USFWS, and DMWR. Eight satellite tags were attached to nesting turtles. A total of 12 individual turtles were encountered over six nights, and 10 of these were tagged with flipper and PIT tags. Eggs were counted on 10 turtles with over 1,000 total eggs laid. Detailed information regarding this effort will be provided by NOAA.

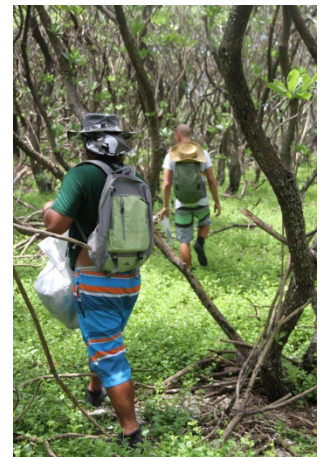


Two surveys were conducted for turtle presence within the lagoon. Several individuals were encountered, including a mating pair in the SE corner of the lagoon.

Approximately 9 hatchlings were encountered trying to access the lagoon near the camp area. Crabs were eating two individuals, the rest made it to the water.

Seabird surveys: Mark McDonald and myself conducted these surveys in the mornings between 7:00 and 10:30 am on December 4, 5, and 6th. General observations included: numerous black noddies nesting at all stages, late stages of brown noddies nesting with little activity, frigatebird chicks present, and numerous red footed booby chicks from downy to fledged. Data will be downloaded from the Trimble unit and analyzed.

In addition, the following shorebirds and other birds were observed: reef heron, wandering tattler, pacific golden plover, ruddy turnstone, long billed cuckoo, and a petrel. The unidentified petrel was seen by Mark McDonald flying overhead towards the island while standing on the beach on the south shore.



Marine Debris and Trespass: Approximately 4 garbage bags of trash were collected over the course of the trip. The amount of trash present along the beach strand was much less than in October. Some trash from the interior of the island was collected, including some of the leftover PVC pipes used for rat poison and PVC pipe used for survey stakes. Some of this had previously been piled up under a Pisonia tree. A FAD float was collected from Sand Island. A large rope approximately 3" diameter and 30' long was collected from the west shore of Rose Island.



Evidence of trespass was detected. This consisted of a concrete cinder block on the sand flat on the NW corner of Rose Island. Directly onshore from this location, a woman's bikini top was found tied to a Tournefortia shrub. Most likely the cinder block was used as an anchor for a dinghy from a yacht or a small boat that had entered into the lagoon.

In addition, a balled up length of monofilament fishing line (approximately 15 lb test) was found on a coral head close to the south shore of Rose Island.

Coral Bleaching: Snorkel surveys were conducted at various points in the lagoon both at the pinnacles and reef flats. Some bleaching was present, approximately at the same level as October 2015. It appeared most corals were recovering from a past bleaching event, it didn't appear fresh.



Coconut Control: Coconuts were cut down by machete on December 4, 6, and 7th. A total of 712 small trees and 7 medium trees (without nuts) were cut down. Several patches of small trees were left as tropicbird nests or juveniles were present. All large trees were left standing.

Miscellaneous Observations:

- 1) A large flock of birds was observed feeding approximately ½ mile offshore as we left the atoll on December 8, most likely over a school of tuna.
- 2) Several small pieces of basalt rocks were found at various locations on the beach at Rose Island. A large two foot long smooth piece of basalt was found about 200' inland on Rose Island. I called David Herdrich, ASG Archaeologist, via satellite phone. He said that he knew about this artifact and it will be included in his report which is due within the month.
- 3) Several blacktip reef sharks were observed inside of the lagoon. Two gray reef sharks were observed at the outside edge of the ava.
- 4) Four Pisonia trees were located, two large trees with dead tops and two younger trees, approximately 25' high. All trees had new growth and had scale insects present but not overwhelming. Small patches of rot were



located at the pesticide injection sites on the two large trees. This may be a source of disease introduction for these trees.

Presentation: On December 10, back in Pago Pago, I coordinated and T. Todd Jones presented preliminary results of turtle tracking to date. Approximately 25 people attended along with KVZK TV, who conducted an interview beforehand.

Other: T. Todd Jones will be adding me to his turtle permits in order to allow me to conduct tagging on my future trips. He left a kit of tagging supplies. If trip logistics allow, I will be flipper and PIT tagging turtles, counting eggs, and taking carapace measurements.

Summary written by Brian Peck , USFWS Rose Atoll manager 12-18-15. All photos by Brian Peck.



Rose Atoll National Wildlife Refuge / Marine National Monument

January 26-28, 2016 Trip Report, USFWS

Three participants travelled aboard the 39 ft chartered vessel Double Barrel and visited Rose Atoll from January 26-28, 2016: Brian Peck (USFWS-Pago Pago), Amanda Boyd (USFWS-Honolulu), and Kevin Donmoyer (USFWS-Honolulu). The purpose of this trip was to assess damage from Cyclone Victor which passed east of Rose on January 16 and 17. Other objectives included marine debris removal, qualitative coral bleaching survey, and iron debris survey. We slept aboard the Double Barrel to reduce the amount of gear needed (tents, canopies, stove, etc).

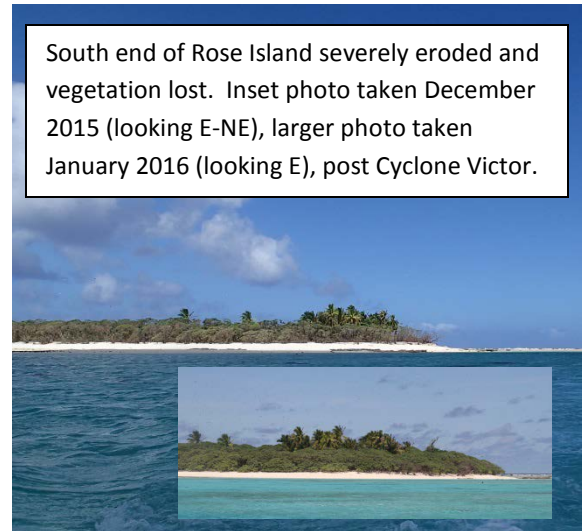
Cyclone Victor damage assessment: Tropical Cyclone Victor passed within about 125 statute miles to the east of Rose Atoll on January 16 and 17 with winds at that time estimated to be 75 knots (Howard Diamond, World Data Center for Meteorology at NOAA, pers. comm. 2/8/16). The modeled storm waves were estimated at 30 ft.



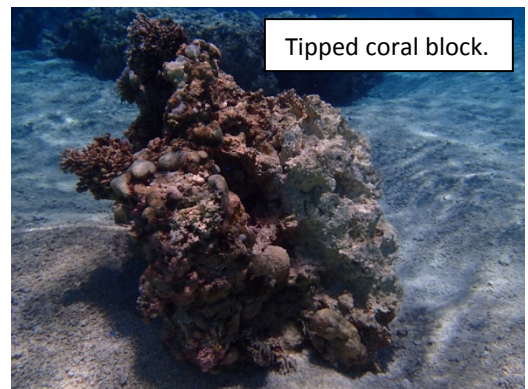
We conducted a rapid assessment from January 26-28. The south and southeast shore of Rose Island was heavily impacted (see pre and post photos at end of this report). Approximately 120 ft (width) and up to 4 ft (vertical) of beach sand and coral rubble was eroded away, including about 30 ft of vegetation. A newly exposed lithified coral shelf was exposed, up to 3 ft high in places. The remaining trees at the new edge were toppled, trunks and branches broken, and stripped of leaves. The previous camp location is no longer usable due to lack of sand/rubble and steep beach

profile. Along the east, west, and north side of the island there was some beachfront erosion but also large areas of sand and coral rubble deposition inland, up to 2 ft deep in places.

The large storm waves appeared to come from a southerly direction. There were what appeared to be new coral blocks (freshly white in color versus blackened) on the reef flat on this aspect of the atoll. There was also newly deposited sand forming a new island at low tide on the inside of the southern corner of the atoll. During a snorkel survey to the south of Rose Island, several large (approximate 10-20 ft diameter) coral heads were tilted and one was resting on its side. The individual corals were mostly undamaged; however some corals on the tilted blocks are now buried in sand.



South end of Rose Island severely eroded and vegetation lost. Inset photo taken December 2015 (looking E-NE), larger photo taken January 2016 (looking E), post Cyclone Victor.



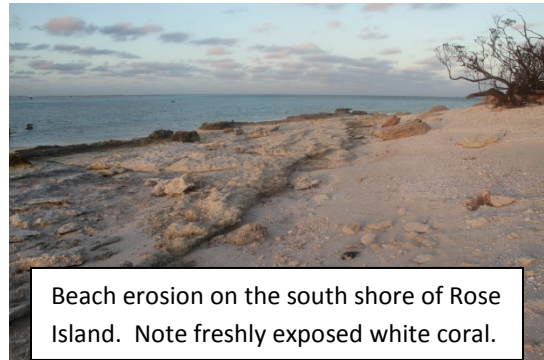
Tipped coral block.

The historic monument was not impacted and was approximately 100 ft inland of the inundation line. The Navy survey marker was almost completely buried by sand, it had been exposed about 2 ft during the December 2015 visit.

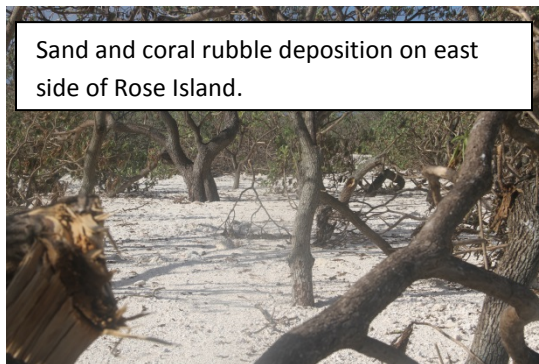
Turtles: We visited each of the nine turtle nests that were located during the satellite tagging trip in early December. All of the nests located on the south, southeast, and east shore appeared to have been eroded away. Nests further inland or on the west side were not impacted as much, however inundation and sand/rubble deposition did occur. There were numerous turtle eggs scattered amongst the debris line on Rose Island.



Exposed lithified coral ledge.



Beach erosion on the south shore of Rose Island. Note freshly exposed white coral.



Sand and coral rubble deposition on east side of Rose Island.

There were 18 fresh turtle tracks on Rose Island when we first arrived on January 26. We raked these clean. There were two tracks on each subsequent day on the 27 and 28. Several of the tracks led directly to the newly exposed lithified coral shelf, whereby the track immediately turned back towards the water.

There were no turtle tracks on Sand Island when we first arrived on January 26. We checked on the 27 and 28 with no tracks. The top of Sand Island is smoothed over; there is no evidence of past nests.

Seabirds: We counted a total of 290 dead birds on Rose Island (Table 1). This number represents only a fraction of the total as we only surveyed parts of the island and many dead birds most likely washed away. Upon arrival on the afternoon of January 26 we walked the shoreline and beach of Rose Island. We located 79 dead birds, many of which were washed up on the last high tide line. Within a 50 ft radius of the two large *Pisonia* trees we counted 13 dead birds. We also observed several booby and frigatebird chicks, still alive but with broken wings.



We conducted a seabird survey (Minimum Incubation Count) on three transects (4, 7, 10) across the north, middle, and south portions of Rose Island on January 27. There were very few chicks of any stage or species along transect 7 and 10 and no chicks on transect 4. The data will be downloaded and analyzed from the Trimble unit. We counted 49 dead birds along transect 4, 48 along transect 7, and 77 along transect 10.

Table 1. Count of dead birds located on Rose Island.

Date	Transect	Species Code	Common Name	Stage	Number	Comments
1/26/2016	General	BLNO	Black Noddy	Adult / Fledged	29	Rose Island Perimeter Walk
1/26/2016	General	Booby	Booby Species	Downy	2	Rose Island Perimeter Walk
1/26/2016	General	RFBO	Red-footed Booby	Downy	1	Rose Island Perimeter Walk
1/26/2016	General	BRNO	Brown Noddy	Adult	12	Rose Island Perimeter Walk
1/26/2016	General	Frigate	Frigatebird Species	Immature	1	Rose Island Perimeter Walk
1/26/2016	General	SOTE	Sooty Tern	Adult / Fledged	34	Rose Island Perimeter Walk
1/27/2016	General	BLNO	Black Noddy	Adult / Fledged	5	50ft around two large Pisonia trees
1/27/2016	General	Frigate	Frigatebird Species	Immature	1	50ft around two large Pisonia trees
1/27/2016	General	RFBO	Red-footed Booby	Downy	7	50ft around two large Pisonia trees
1/27/2016	General	SOTE	Sooty Tern	Adult / Fledged	24	Debris line North of Transect 4
1/27/2016	10	BLNO	Black Noddy	Adult / Fledged	56	Nesting bird data entered in to Trimble
1/27/2016	10	BRNO	Brown Noddy	Adult	2	Nesting bird data entered in to Trimble
1/27/2016	10	Frigate	Frigatebird Species	Immature	1	Nesting bird data entered in to Trimble
1/27/2016	10	RFBO	Red-footed Booby	Adult	1	Nesting bird data entered in to Trimble
1/27/2016	10	RFBO	Red-footed Booby	Downy	13	Nesting bird data entered in to Trimble
1/27/2016	10	RFBO	Red-footed Booby	Immature	3	Nesting bird data entered in to Trimble
1/27/2016	10	RTTR	Red-tailed Tropicbird	Adult	1	Nesting bird data entered in to Trimble
1/27/2016	7	BLNO	Black Noddy	Adult / Fledged	30	Nesting bird data entered in to Trimble
1/27/2016	7	BLNO	Black Noddy	Downy	1	Nesting bird data entered in to Trimble
1/27/2016	7	Booby	Booby Species	Downy	1	Nesting bird data entered in to Trimble
1/27/2016	7	BRBO	Brown Booby	Adult	1	Nesting bird data entered in to Trimble
1/27/2016	7	BRNO	Brown Noddy	Adult	2	Nesting bird data entered in to Trimble
1/27/2016	7	Frigate	Frigatebird Species	Adult	1	Nesting bird data entered in to Trimble
1/27/2016	7	RFBO	Red-footed Booby	Immature	1	Nesting bird data entered in to Trimble
1/27/2016	7	RFBO	Red-footed Booby	Downy	7	Nesting bird data entered in to Trimble
1/27/2016	7	SOTE	Sooty Tern	Adult / Fledged	4	Nesting bird data entered in to Trimble
1/27/2016	4	BLNO	Black Noddy	Adult / Fledged	1	Nesting bird data entered in to Trimble
1/27/2016	4	SOTE	Sooty Tern	Adult / Fledged	48	Nesting bird data entered in to Trimble

Of the 49 dead birds on transect 4, all but one were Sooty terns. We counted an additional 24 Sooty terns north of the transect line. The nesting colony of Sooty terns had been washed over and most of the dead birds and eggs that we located were in the debris line.



There were very few Black Noddy nests remaining in *Tournefortia* trees along transects 7 and 10. This was in stark contrast to the seabird survey conducted in early December 2015 where most of the *Tournefortia* commonly had between 6-10 nests.

Of the 290 total dead birds that we counted, 251 were adults and/or fledged chicks and 39 were immature. There were 122 Black Noddy, 16 Brown Noddy, 3 unidentified Booby, 33 Red-footed Booby, 1 Brown Booby, 4 unidentified Frigatebird, 1 Red-tailed Tropicbird, and 110 Sooty Tern.

In addition, the following shorebirds and other birds were observed: reef heron, wandering tattler, pacific golden plover, and ruddy turnstone. Amanda noticed the distinct smell of a petrel (or possibly a shearwater) while conducting the seabird survey in the interior of the island.

One noticeable observation was that Rose Island did not have a strong smell of bird guano. During my last two visits in October and December of 2015 this smell was overwhelmingly present. As seabirds use smell to return to their islands, it may be more difficult for them to locate after a significant storm event with washover and heavy rainfall. This, added to the likely displacement of seabirds during the storm due to strong winds, may further reduce populations in addition to direct mortality.

Marine Debris and Trespass: Approximately 3 garbage bags of trash were collected over the course of the trip. There was additional trash in the debris line that we did not have time to collect. A large rope approximately 4" diameter and 10' long was collected from the east shore of Rose Island. A piece of a fiberglass and metal boat was found off the north shore of Sand Island. It measured approximately 15 ft long by 8 ft wide. A piece of fishing net 30 ft by 5 ft (purse seine type) was nearby. We collected the net and left the boat.

No sign of recent trespass was detected.



A bullet casing was found on the south shore of Sand Island. It was heavily corroded and had coral growth. There are no visible markings; however it is similar in size and shape to a Winchester .30-06 Springfield cartridge casing used by the military in the past or in hunting rifles. Two similar 0.30-caliber cartridge casings were found during an Army Corps of Engineers investigation in 1996 regarding the past use of Rose Atoll as a possible dive bomb practice area (Rose NWR CCP, p. 3-10). However, it currently is not known if this cartridge is historic (1943 onward) or modern.

Coral Bleaching: We conducted a snorkel survey of the shallow reef to the south of Rose Island on January 27. Widespread bleaching was present, appearing to be in the early to mid-stages. Many corals were bleached



on the top third and still healthy below. Some had bands of healthy coral in the middle but were bleached on the top and bottom. Almost all of the coral heads in this area had corals that were fully or partially bleached, a significant increase from the last qualitative survey in early December 2015.



Iron Debris: We walked the southwest reef flat on January 27 at low tide in search of iron debris from the 1993 *Jin Shiang Fa* shipwreck that may have been washed up by the storm waves. We located two pieces of iron approximately 6 in by 18 in. There were other pieces that may have been iron but were heavily covered in crustose coralline algae. Two pieces of electric wire approximately 5 ft long were also recovered. Black cyanobacteria was present and locally in dense patches. There likely is more iron and other debris on the reef flat that warrants further action.



Miscellaneous Observations:

- 1) Two smooth basalt rocks were located on and near the south shore of Rose Island. They were each approximately 12 in by 6 in.
- 2) Several blacktip reef sharks were observed inside of the lagoon, including one that was approximately 6 ft long.
- 3) We visited the two large *Pisonia* trees with dead tops. The new beachfront is now considerably closer to the southernmost tree; approximately 30 ft of vegetation buffer has been eroded away. There was 3 in of sand deposition in the area around this tree. The northernmost of these two *Pisonia* was at the inundation debris line.
- 4) Kevin and Amanda set up a game camera, secured to a *Tournefortia* tree on the west side of Rose Island. It is pointing out to the lagoon and away, with the intent of capturing vessels that enter the lagoon. It is preset to take 4 pictures throughout the day. Hull identification numbers most likely will not be distinguishable; but this will give us a sense of the frequency and type of vessels entering the lagoon.

Other: See attached tropical cyclone climatology report prepared by Howard Diamond, PhD; Director, World Data Center for Meteorology at NOAA's National Centers for Environmental Information/Center for Weather and Climate.

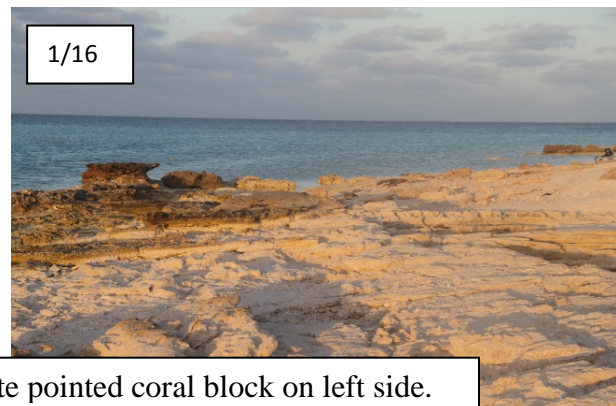
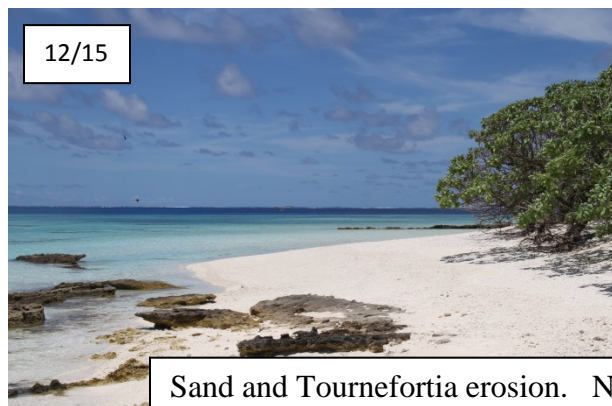
Trip report written by Brian Peck, USFWS Rose Atoll NWR & MNM Manager 2-11-16.

Photos by Amanda Boyd, Kevin Donmoyer, and Brian Peck.

Pre and Post Cyclone Victor Photos:



Beach erosion with newly exposed lithified coral ledge and uprooted and damaged *Tournefortia*.



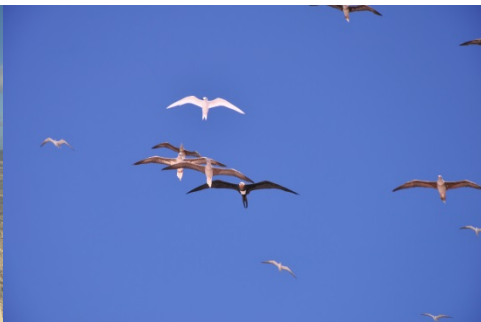
Sand and *Tournefortia* erosion. Note pointed coral block on left side.



Approximately 30 ft of Tournefortia trees eroded away; beach starting to rebuild.



Beach and Tournefortia erosion. Note angled large coral block on right/lower right side.



Rose Atoll National Wildlife Refuge / Marine National Monument

August 30 – September 3, 2016 Trip Report, USFWS

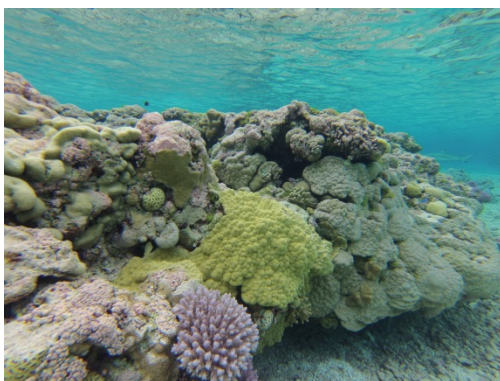
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http://www.fws.gov/refuge/rose_atoll_marine_national_monument/

Six participants travelled aboard the 39 ft chartered vessel Double Barrel and visited Rose Atoll from August 30 to September 3, 2016: Brian Peck (USFWS), Alice Lawrence (Department of Marine and Wildlife-Coral Reef Advisory Group (DMWR-CRAG)), Douglas Fenner (NOAA contractor), Kim Kayano (DMWR), Motusaga Vaeoso (DMWR-CRAG), and Kim McGuire (DMWR-CRAG). The purpose of this trip was to conduct baseline seabird and coral community monitoring, control coconuts, and remove marine debris. We camped on the southeast shore of Rose Island in order to avoid extensive Sooty Tern nesting colonies.

Coral Reef Surveys: Alice Lawrence and Douglas Fenner led snorkel based surveys of coral blocks on the reef flat inside of the lagoon.

Alice Lawrence, Motusaga Vaeoso, and Kim McGuire surveyed and took photo quadrants on a total of 65 coral blocks in the southeast, southwest, and northwest portions of the lagoon. DMWR will be providing a summary of the data collected on giant clams, sea cucumbers, COTS, urchins, and algae.



Douglas Fenner provided his raw data and the following summary: I surveyed coral species on 47 blocks, but missed some blocks which the others did because it took me longer to do blocks. There were an average of 7.8 hard coral species per block, and 8.5 species when soft corals were included with hard. There were a total of 54 hard coral species plus two soft corals. There are 7 new records for Rose, and several possible new species, both need skeleton samples to confirm. I calculated for each species how many blocks it was on, and found that one species was on 96% of blocks, 24

species were only on one block each. There were only a few species that were on most blocks, and many species that were on few blocks. That's a typical finding. Also, the modal abundance estimate per block was "rare" for 43 species, "uncommon" for 6 species, and "dominant" for one species. No species had "abundant" or "common" as their modal abundance. So the two measures both indicate that most species were relatively rare, a common finding.

Green Sea Turtles: There was 1 fresh turtle track and four old on Rose Island on August 30 upon arrival. I raked these clean. There was one new track on both September 1 and 2 located on the southeast side of the island. We observed one female on the night of August 30. She had dug one test pit and was moving through the *Tournefortia* shrubs when we left her.



I did not visit Sand Island during this trip.

The following table shows the number of turtle tracks observed daily (from the previous night) at Rose and Sand Islands for each visit between October 2015 and September 2016.

Date	Rose Island # fresh tracks	Sand Island # fresh tracks
10/3/15	2 (Raked 8 clean)	0 (Raked 8 clean)
12/2/15	0 (Raked 19 clean)	Didn't check
12/3/15	1	0 (Raked 7 clean)
12/4/15	1	0
12/5/15	2	0
12/6/15	5	0
12/7/15	2	1
12/8/15	4	1
1/26/16	0 (Raked 18 clean)	0
1/27/16	2	0
1/28/16	2	0
3/21/16	0 (Raked 2 clean)	0
3/22/16	0	Didn't check
3/23/16	0	Didn't check
4/1/16	0	Didn't check
4/2/16	0	Didn't check
4/3/16	0	0
8/30/16	1 (Raked 5 clean)	Didn't check
9/1/16	1	Didn't check
9/2/16	1	Didn't check

Cyclone Victor Recovery Assessment: Tropical Cyclone Victor passed within about 125 statute miles to the east of Rose Atoll on January 16 and 17, 2016 with winds at that time estimated to be 75 knots (Howard Diamond, World Data Center for Meteorology at NOAA, pers. comm. 2/8/16). The modeled storm waves were estimated at 30 ft.



Most of the damaged *Tournefortia* shrubs along the south facing beachfront continued to have new growth sprouting from broken limbs or trunks. There were also new starts less than a foot tall growing in the coral rubble beach front.

We conducted beach profiles to quantitatively measure the changes in the beach at two locations along the south shore of Rose Island. Comparison data will be presented in future reports.

Pre and Post Cyclone Victor Photos:



Note initial beach erosion with newly exposed lithified coral ledge and uprooted and damaged *Tournefortia* (1/16). New coral rubble deposition up to 2 feet (4/16), eroded again (9/16).



12/1



1/16



4/16



9/16

Beach continuing to rebuild with new coral rubble berm about 4 feet high.



10/1
5



12/1
5



1/16



4/16



9/16

Beach and Tournefortia erosion with subsequent deposition.
Note angled large coral block on right/lower right side.

Seabird Transects: Upon arrival, we noticed extensive Sooty Tern nesting colonies almost completely encircling Rose Island. The nesting appeared to be in the footprint of the inundation area from Cyclone Victor, which was still largely devoid of underbrush and had extensive broken branches scattered on the ground. We attempted to conduct the normal seabird survey (Minimum Incubation Count) transects on September 1, but were unable to due to the Sooty Tern colonies. Instead we conducted one long meandering count, stopping approximately every 7.5 meters to record data. There were numerous Black Noddies on nests, along with Red Footed Boobies, Brown Boobies, Frigatebirds, and Brown Noddies. One Long Tailed Cuckoo was observed.



On September 2 we conducted a Sooty Tern colony boundary survey, mapping the perimeter and estimating densities of nesting terns. All terns appeared to be on eggs, we did not observe any chicks.

Kim Kayano conducted shorebird surveys on Rose Island on August 31 and September 1 and provided the following information. A total of 16 Pacific Golden Plover, 11 Ruddy Turnstone, and 1 Wandering Tattler were detected on island.

Surveys were undertaken by walking the perimeter of the island and by scanning for birds ahead using binoculars and a spotting scope. As much as possible, effort was made to keep from double counting individuals but the features of the island made it difficult as birds flew out of line of sight. The survey was conducted during low tide, and much of the sandbank was exposed for use. However, this area was completely exposed to full sun during the survey and temperature was very high which may have affected activity levels. Even with this increased potential feeding area, available habitat did not seem optimal for shorebird usage.

It is very likely that Rose Island is used as a stopover site by migrating shorebirds, and unlikely that individuals are residing on the island for extended periods of time as feeding habitat seemed in low abundance and quality. Therefore, turnover rates must be high with new individuals continuously arriving on island while others depart.

In addition, Kim Kayano conducted a census of the Brown Noddy nesting colony from a stationary point using a spotting scope. The colony occupied the northern end of the island that was barren of vegetation. Nests were situated just out of pecking reach from each other. 133 adult pairs were counted attending a nest (either one parent incubating, or one parent incubating as the other stood next to the nest) and 18 downy chicks were counted unattended by an adult. Brown Noddy nests were also seen throughout the vegetated portion of the island in areas unoccupied by Sooty Terns.

Coral Bleaching: We conducted several snorkel surveys of the shallow reef to the south of Rose Island. No new bleaching was present, with some corals that had been bleached last season algae covered on the top inch.

Marine Debris: Typical quantities (3 bags) and types of marine debris were collected along the shoreline at Rose Island. We did not visit Sand Island. We recorded the types of debris using the DMWR data collection sheet. The following table shows the number by type of debris collected.

Type	Rose	Sand	Total for this Trip	Cumulative Total (9/16 – 9/16; 1 trip)
Plastic bottles	34	NA	34	34
Plastic food containers	2	NA	2	2
Plastic pieces	24	NA	24	24
Lighter	2	NA	2	2
Foam pieces	6	NA	6	6
Glass bottles	4	NA	4	4
Metal cans	0	NA	0	0
Metal debris	0	NA	0	0
Fishing buoys	1	NA	1	1
Fishing line	0	NA	0	0
Fishing net	0	NA	0	0
Fishing rope	3	NA	3	3
Fishing lures & hooks	0	NA	0	0
Flip flops	7	NA	7	7
Toothbrush	0	NA	0	0
Fluorescent light bulb	1	NA	1	1
Hard hat	0	NA	0	0
Total	84	NA	84	84

Trespass and Game Cameras: I downloaded the game camera that is set up on the west shore of Rose Island. On August 10 at 11:35 am, three men were photographed walking the beach, going north. They noticed the camera and walked up to it but did not disturb it. One was carrying a machete. No vessel was photographed.

On July 27 a large unidentified motor vessel was photographed directly off the channel entrance to the lagoon.



I set up a second game camera on a juvenile Tropicbird that was on a nest near camp on the south side of the island.

Coconut Control: On September 2 we used machetes to control 52 small coconut palms. We drilled 12 holes into one large coconut palm and applied Roundup. All 52 small coconuts were surrounding the large palm. We did not enter the main coconut grove as Sooty Terns were nesting.

The following table shows the number of coconut trees controlled at Rose Island for each visit between October 2015 and September 2016. Small < 10 ft, Medium 10- 25 ft, Large > 25 ft

Month	Year	# of small coconut trees controlled	# of medium coconut trees controlled	# of large coconut trees controlled
October	2015	~500	0	0
December	2015	712	7	0
January	2016	0	0	0
March	2016	0	0	0
April	2016	366	0	0
September	2016	52	0	1
Total		1,630	7	1

Trip report by Brian Peck, USFWS Rose Atoll NWR & MNM Manager 1-10-17.

Photos by Brian Peck, except coral photo-quadrant by Alice Lawrence (DMWR-CRAG).



Rose Atoll National Wildlife Refuge / Marine National Monument

November 30 – December 6, 2016 Trip Report, USFWS

http://www.fws.gov/refuge/Rose_Atoll/

http://www.fws.gov/refuge/rose_atoll_marine_national_monument/

Six participants travelled aboard the 39 ft chartered vessel Double Barrel and visited Rose Atoll from November 30 to December 6, 2016 under permit # 12514-2016-001: T. Todd Jones (NOAA Fisheries Science Center), Shawn Murakawa (NOAA Fisheries Science Center), Ricky Misa'alefua (NPS), Mua Utuga (NPS), Stephen Barclay (USFWS), and Brian Peck (USFWS). We camped on the south shore of Rose Island in an area of few nesting birds and recent turtle activity.



The focus of this trip was to attach satellite tags to nesting green sea turtles. Other objectives included seabird monitoring, marine debris removal, qualitative coral bleaching survey, beach profiles, and coconut control.

Green sea turtles: This is the sixth consecutive year that this work has been conducted in collaboration with the NOAA Science Center Marine Turtle Biology & Assessment Program, USFWS, NPS, and DMWR. A total of 36 individual turtles were encountered over six nights, and 17 of these were tagged with flipper and PIT tags. Eight satellite tags were attached to nesting turtles. Eggs were counted for 13 nests with 1,268 total eggs laid (average = 98 eggs). We deployed temperature loggers around the midpoint (at egg count 50) in 10 nests. These loggers will be retrieved during the March trip. Detailed information will be provided by NOAA in a future report.

A boat based survey was conducted for turtle presence within the lagoon. Several individuals were encountered, including a mating pair and one hawksbill.

Approximately six hatchlings were encountered trying to access the lagoon at various locations around Rose Island over the six nights. Crabs were eating three individuals, the rest made it to the water.

The following table shows the number of turtle tracks observed daily (from the previous night) at Rose and Sand Islands for each visit between October 2015 and December 2016.

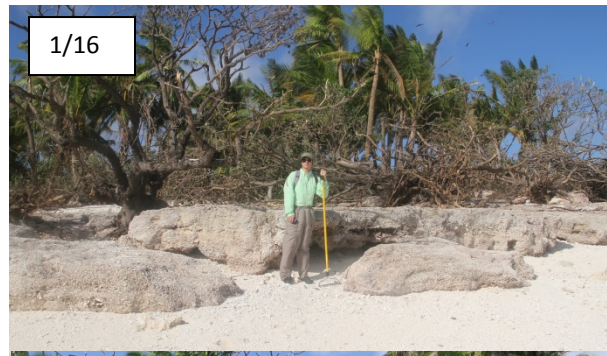
Date	Rose Island # fresh tracks	Sand Island # fresh tracks
10/3/15	2 (Raked 8 clean)	0 (Raked 8 clean)
12/2/15	0 (Raked 19 clean)	Didn't check
12/3/15	1	0 (Raked 7 clean)
12/4/15	1	0
12/5/15	2	0
12/6/15	5	0
12/7/15	2	1
12/8/15	4	1
1/26/16	0 (Raked 18 clean)	0
1/27/16	2	0
1/28/16	2	0
3/21/16	0 (Raked 2 clean)	0
3/22/16	0	Didn't check
3/23/16	0	Didn't check
4/1/16	0	Didn't check
4/2/16	0	Didn't check
4/3/16	0	0
8/30/16	1 (Raked 5 clean)	Didn't check
9/1/16	1	Didn't check
9/2/16	1	Didn't check
11/30/16	3	0
12/1/16	6	1
12/2/16	6	7
12/3/16	6	1
12/4/16	9	1
12/5/16	23	1

Cyclone Victor Recovery Assessment: Tropical Cyclone Victor passed within about 125 statute miles to the east of Rose Atoll on January 16 and 17, 2016 with winds at that time estimated to be 75 knots (Howard Diamond, World Data Center for Meteorology at NOAA, pers. comm. 2/8/16). The modeled storm waves were estimated at 30 ft.

Most of the damaged *Tournefortia* shrubs along the south facing beachfront continued to have new growth sprouting from broken limbs or trunks. There were also new starts less than a foot tall growing in the coral rubble beach front.

We conducted one beach profile to quantitatively measure the changes in the beach at the BLAST survey marker along the south shore of Rose Island. Comparison profiles will be presented in future reports.

Pre and Post Cyclone Victor Photos:



Note initial beach erosion with newly exposed lithified coral ledge and uprooted and damaged *Tournefortia* (1/16). New coral rubble deposition up to 2 feet (4/16), eroded again (9/16 and 12/16).



Beach on southeast corner of Rose Island continuing to rebuild with new coral rubble berm about 4 feet high.



Beach and Tournefortia erosion with subsequent minor deposition and erosion.
Note angled large coral block on right/lower right side.

Seabird Surveys: We conducted a seabird survey (modified Minimum Incubation Count) on all transects on December 2 and 4. General observations included: numerous fully and partially fledged Sooty Terns, moderate White Terns on eggs or with chicks, few Black Noddy, Brown Noddy, Red Footed Booby, Masked Booby, Frigatebirds, and Red Tailed Tropicbirds on nests or with chicks. Data will be downloaded from the Trimble unit and analyzed.



In addition, the following shorebirds and other birds were observed: reef heron (including two young on nests), wandering tattler, pacific golden plover, ruddy turnstone, Grey Backed Terns (on Sand Island), and one long billed cuckoo.



Coral Bleaching: We conducted several snorkel surveys of the shallow reef to the south of Rose Island throughout the trip. Scattered and minimal bleaching was present, appearing to be in the very early stages. Several of the corals in this area were partially dead and algae covered, mainly on their tops, most likely caused by last year's minor bleaching event.

Pisonia Restoration Project: We investigated the scale infestations on some of the remaining Pisonia trees on island. The lower leaves and branches were moderately infested; however the middle to upper leaves had few to no scales present. We discovered a new Pisonia tree growing approximately 30 ft to the north of the southernmost tree. It was growing in the inundation debris line left from Cyclone Victor in January 2016, likely a broken limb starting to regrow. It was approximately 10 ft tall.



Marine Debris: Typical quantities (5 bags) and types of marine debris were collected along the shoreline at Rose and Sand Islands. We recorded the types of debris using the DMWR data collection sheet. The following table shows the number by type of debris collected.

Type	Rose	Sand	Total for this Trip	Cumulative Total (9/16 – 12/16; 2 trips)
Plastic bottles	21	35	56	90
Plastic food containers	0	0	0	2
Plastic pieces	15	27	42	66
Cigarette lighter	1	0	1	3
Foam pieces	3	3	6	12
Glass bottles	8	1	9	13
Metal cans	1	0	1	1
Metal debris	0	1	1	1
Fishing buoys	4	3	7	8
Fishing line	0	0	0	0
Fishing net	2	0	2	2
Fishing rope	0	0	0	3
Fishing lures & hooks	0	2	2	2
Flip flops	7	6	13	20
Toothbrush	0	1	1	1
Fluorescent light bulb	1	1	2	3
Hard hat	1	0	1	1
Total	64	80	144	228



Trespass and Game Camera: I downloaded the game camera that is set up on the west shore of Rose Island. On September 22 at 1:37 pm, one woman and one man were photographed walking the beach, going south. They did not notice the camera, stopped to take off shoes, and walked past. No vessel was photographed.

I downloaded the game camera that was set up on a juvenile tropicbird in September. Photographs show the juvenile on the nest from 9/2 through 9/12, when it departs and does not return. There were no photographs of adults feeding the juvenile. There were numerous photos of other species (reef heron, brown noddly, black noddly, and ruddy turnstone) walking past the nest and/or interacting with the tropicbird. I relocated this camera to the southwest corner of Rose Island to try and capture the suspected mooring location of yachts that are trespassing. It was extremely hot with internal camera temperatures reading 101 F, and the camera was intermittently working.

Coconut Control: On December 4 and 5 we used machetes to control 719 small, 4 medium, and 2 large coconut palms. I applied Roundup to the cut marks in the two large coconut palms. We left several patches around nesting tropicbirds. The one large coconut palm that had been treated with Roundup in September was dead and all fronds had fallen off, only the trunk remains standing.



The following table shows the number of coconut trees controlled at Rose Island for each visit between October 2015 and December 2016. Small < 10 ft, Medium 10- 25 ft, Large > 25 ft

Month	Year	# of small coconut trees controlled	# of medium coconut trees controlled	# of large coconut trees controlled
October	2015	~500	0	0
December	2015	712	7	0
January	2016	0	0	0
March	2016	0	0	0
April	2016	366	0	0
September	2016	52	0	1
December	2016	719	4	2
Total		2,349	11	3

Miscellaneous:

- 1) We inspected the Jin Shiang Fa shipwreck site by snorkel survey. There were three main scars that each had iron debris in the bottom. The reef in these scars appeared freshly scraped clean, with little new coral or crustose coralline algae growth. Patchy cyanobacteria was present but not dense throughout this area.
- 2) On December 10, back in Pago Pago, I coordinated and T. Todd Jones presented preliminary results of turtle tracking to date to approximately 20 people.
- 3) T. Todd Jones will be adding me to his turtle permits in order to allow me to conduct tagging on my future trips. He left a kit of tagging supplies. If trip logistics allow, I will be flipper and PIT tagging turtles, counting eggs, retrieving temperature loggers, and taking carapace measurements.

Trip report by Brian Peck, USFWS Rose Atoll NWR & MNM Manager 1-17-17. Photos by Brian Peck, USFWS.

