

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).

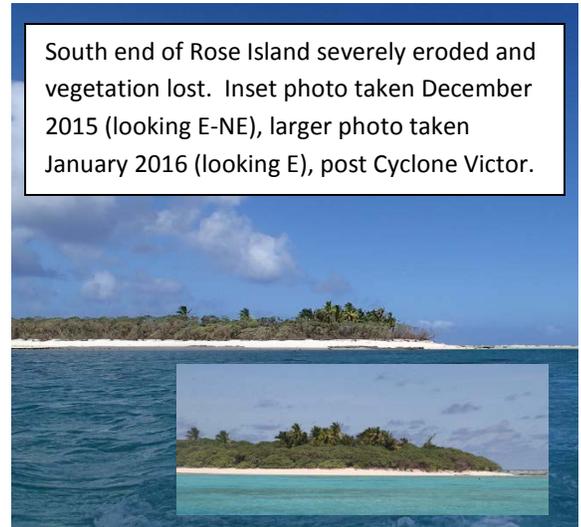
Cyclone Victor damage assessment: Tropical Cyclone Victor passed within about 125 statute miles to the east of Rose Atoll on January 16 and 17 with winds at that time estimated to be 75 knots (Howard Diamond, World Data Center for Meteorology at NOAA, pers. comm. 2/8/16). The modeled storm waves were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



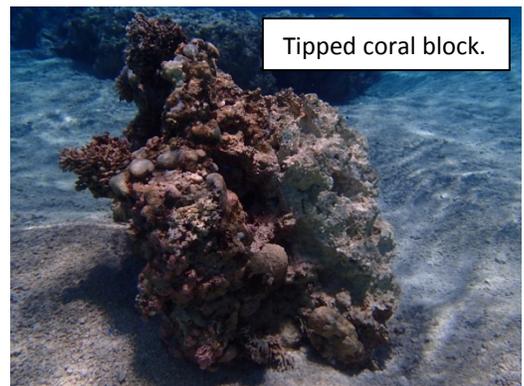
We conducted a rapid assessment from January 26-28. The south and southeast shore of Rose Island was heavily impacted (see pre and post photos at end of this report). Approximately 120 ft (width) and up to 4 ft (vertical) of beach sand and coral rubble was eroded away, including about 30 ft of vegetation. 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.

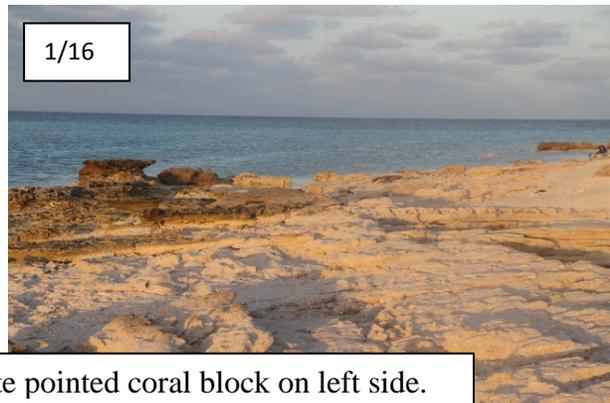
Trip report written by Brian Peck, USFWS Rose Atoll NWR & MNM Manager 2-11-16.

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.

