

Wildlife and Tsunami

A rapid assessment on the impact of tsunami on the Nicobar megapode and other associated coastal species in the Nicobar group of islands



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Summary Report



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Executive Summary

1. The Wildlife Institute of India conducted a status survey of the Nicobar megapode along with other coastal endangered species in the Nicobar group of islands in an effort to document the adverse impacts on their populations due to tsunami that occurred on 26th December 2004. The endemic Nicobar megapode population showed a dramatic decline (nearly 70%) in the number when compared to previous survey carried out in 1993-94. At present there are approximately 800 breeding pairs in the coastal zones of these island group. There was no evidence of Nicobar megapode in Megapode Island WLS and Trax Island during this survey where megapodes were present earlier.
2. The populations of other insular endangered species such as the long-tailed macaque, giant coconut crab, reticulated python, and Malayan box turtle also exhibited on negative impact due to tsunami. The Dugong in the off-shore waters also appeared to have been impacted negatively.
3. Crucial wildlife habitats such as littoral forests, sea grass beds and coral reefs of the island group were also adversely affected. The populations of indicator species of the littoral forests *Barringtonia asiatica* and *Terminalia bialata* were severely impacted. Eighty percent of seagrass beds were found to be destroyed implying critical habitat loss for dugong.
4. The island ecosystem are known for their resilience due to their ability for re-populating habitats and promoting regeneration. However, the restoration of the original biodiversity is possible only if the natural process such as recolonization is facilitated. The aftermath of the tsunami has left the trail of homeless families who need rehabilitation. Finding proper homes and alternate livelihood for them should not undermine ecosystem resilience. Raising plantation crops to generate revenue in the littoral forests should take into account the long term effects of habitat alteration.
5. Significant levels of wildlife habitats have been occupied by the tribals under the leadership of the tribal chiefs (known as Village Captain).. Any conservation awareness programme with the help of these Village Captians would be useful for implementing recovery plans of declining species.
6. The Nicobar Division of the State Forest Department needs to be strengthened to facilitate wildlife protection and to take up appropriate wildlife management actions.

7. A total of 38 permanent monitoring plots have been identified and marked (Table 2) for long term monitoring of megapodes and its habitat. With some basic training, forest staff can collect data from these plots and within a weeks time all islands can be surveyed and collected data analyzed for developing appropriate conservation and management measures.
8. It is suggested that a training programme for staff of Forest Department be facilitated where in the Wildlife Institute of India faculty could provide lands on training for enhancing the wildlife monitoring capability of the staff.

Background

The earthquake of magnitude 9.15 with its epicentre at 3.29°N and 95.94°E off the coast of Sumatra with a focal depth of 30 km occurred on 26th December 2004 at 06: 28: 50 hrs. The earthquake occurred at the interface between the India and Burma plates and the epicentre was very close to the Nicobar group of islands. The tsunami that followed was within a few minutes of the earthquake. The tsunami waves reached the coast first, causing a phenomenon called draw down, where the sea level dropped considerably. The draw down was followed by the crest of the wave, which resulted in sea inundating land, also known as the run-up. There appears to have been three waves in succession, with the second being the largest. The waters took several days to recede completely, leaving in its wake a devastation of unimaginable magnitude on the people and wildlife of Nicobar islands. In Nicobar group of Islands where endemism is very high in some faunal groups such as mammals, birds and reptiles, it was expected that the highly diversified coastal biodiversity with high endemism may have been adversely affected by the tsunami.

With this assumption, the Wildlife Institute of India conducted a status survey of certain focal endangered species and their habitats in the Nicobar group of islands. The survey was carried out in the 15 islands of Great Nicobar, Little Nicobar, Kondul, Menchal, Pilo Milo, Treis, Trax, Meroe, Nancowry, Camorta, Katchal, Tilangchang, Trinket, Teressa and Bampoka islands. The survey was carried out between 10th March and 7th May 2006 with the collaboration and support of the Andaman & Nicobar Island Forest Department.

Important findings

1. Of the 686.75 km long coast line of Nicobar group of islands, 235.4 km long stretch coastal habitats were sampled for the endangered endemic bird the Nicobar megapode along with Crab eating macaque, Giant rubber crab, Reticulated-python, salt water crocodile, Malayan box turtle, as well as Dugong, sea grass beds, coral reefs, mangroves and sea turtles.
2. The mound nesting Nicobar megapode highly prefer to use the coastal habitats for their survival. It was estimated that a total of 788 breeding pairs of the Nicobar megapode now occur in the coastal habitat of these islands. When compared to the previous survey which was carried out in 1993-94, **approximately 70% of the Nicobar megapode population has declined**. It is assumed that the 20% of megapode population which has been believed to living in the interior forests in the island were not affected by the tsunami.
3. *Megapodius nicobariensis nicobariensis* occurs on all the seven islands of Nancoway group of islands. The potential coastal habitat of this sub species has shrunken and currently, only 37% of the former coastal habitats available for them to build mound. It was also estimated that presently around 97 active mounds occurs. A maximum of 194 breeding pairs were estimated in the coastal habitats of these islands. The population of *Megapodius nicobariensis nicobariensis* was continuously declining on all islands but in Tillanchang and Trinket their population has increased moderately. However, in overall there was a 70% of population decline in this sub species.
4. *Megapodius nicobariensis abbotti* occurs on all the southern group of Nicobars but in Pilo Milo, Megapode and Trax islands megapodes are believed to be either exterminated or are too small in number to detect them. The largest population of megapodes occurred on the Great Nicobar islands where around 405 breeding pairs were estimated and the second largest population was encountered on the Little Nicobar Island. Both these islands now support the largest group of about 96% of the megapodes. However, when compared to the previous surveys (Sankaran 1995), 65% of the population of this sub-species has declined.
5. More than 90% of the mounds were built within 30 m distance from the shore and this preference for nesting near the beach is due to availability of certain substratum.

Compared to previous surveys (Sankaran 1995) the concentration of mounds towards the fringe of sea shore was high and this is assumed due to the limitation in the availability of coastal habitat after tsunami.

6. It was assessed that the tsunami may have killed the coastal populations of megapodes in the Great Nicobar group of islands, however, poaching and habitat destruction may also have been responsible for the declining of megapodes in the Nancowry group of islands.
7. ***Megapode Island WLS is now totally under the seawater.*** There was no terrestrial fauna and flora in this island. Entire megapode population in this Island is either extinct or flew to adjoining Great Nicobar Island (Kokoen area).
8. ***There was no sign of megapodes in the Trax Island.*** Megapode population in this Island are either extinct or too small in number to detect.
9. As expected, there was a strong correlation between island size and megapode populations. Great Nicobar is holding the largest population of this species followed by the Little Nicobar. But, in the case of Nancowry group of islands, due to disturbance factors, the smaller islands are holding larger populations than the larger islands.
10. **Giant coconut crab:** Giant coconut crab usually prefers coastal habitat which have been severely affected due to tsunami. There was no sign of adult giant rubber crab presence in most of these islands; however, evidence of their presence was seen in the Menchal, Tillanchang and Katchal islands.
11. **Malayan Box turtle:** This is the only semi-aquatic land turtle present in this group of islands. A total of 16 dead shells were found on various parts of the coastal habitat of Great Nicobar islands showing that this species has also been badly hit by the tsunami.
12. **Reticulated python:** Though this species was reported all over the Great Nicobar Island and young ones were commonly seen in the lowland forests (coastal region) during 1996-98 but, during this survey after spending 42 field days there was no single record of python in this group of islands especially in the lowland forests which have been badly destroyed by the tsunami.
13. **Crab eating macaque (long tailed macaque):** A total of 16 troops of long-tailed macaque were sighted from the 62 sampling stations. 11 troops from Great Nicobar, two troops from Little Nicobar and three troops from Katchal Island. The troop sizes varied from 7 to 98 individuals. The largest troop was sighted in the Katchal

(Kapanga). Near Indira Point, a skull of long-tailed macaque was found near the sea shore, which may have been killed by tsunami waves. It is believed that majority of the macaque may have escaped from the killer waves but they have lost their important food resources and habitat to tsunami.

14. **Coral reef:** Good patches of coral reefs were seen around the Nicobar group of islands during 1995-98. Of these, most of the coral reefs, especially from the west coast of all islands were damaged by the tsunami. However, patches of coral reefs seen from the North-eastern coasts of most of the islands. Because of tsunami, coral reef species that are found at specific depths have to adjust to the new depths they are subjected to due to the submergence.
15. **Seagrass beds and Dugong:** 15 islands were surveyed by boat for sea-grass beds and dugong. Two patches of sea grass beds seen between Camorta jetty and Champin jetty of Nancowry Island. A dugong mother with a calf was sighted in this patch. Except this, I could not locate any other seagrass patches elsewhere of these islands. It is believed that seagrass communities are also one of the most affected group due to tsunami.
16. **Sea turtle:** During this survey, 140 sea turtles nests were found on the Great Nicobar Island and 54 sea turtles nests were seen on the Trinket and Tillanchang Islands. Several new nesting beaches have been formed all along the west coast of the Great Nicobar Island. Pigs and monitor lizards were observed eating turtle's eggs on most of the beaches.
17. **Quails:** Two species of quails are present in the grasslands of the Nancowry group of islands. Grassland habitat is only available in the Nancowry group of islands in the entire Andaman and Nicobar islands. Both the quail sub-species are endemic to the Nicobar islands and they are highly threatened due to construction of roads and other buildings in their habitats which has been taking place after tsunami.
18. **Flora:** The most affected plant species are *Barringtonia asiatica*, *Terminalia bialata*, *Pandanus spp* and mangroves. It was observed that almost ***all Barringtonia trees of the coastal areas have been washed away by the tsunami.*** Around 10 lakh dead Terminalia tree stumps are standing all along the coasts of these islands which may take 3-5 years to decompose fully.
19. Fortunately, regeneration of Barringtonia, Terminalia and Pandanus species were seen in all the sampling points. It may take 5-10 years for these species to re-establish

their communities, provided there would not be any major human intervention in these areas.

20. **Protected Areas.** Three islands in the Nicobar group, Tillanchong, Batti Malv and Megapode Island, all uninhabited, are wildlife sanctuaries. Great Nicobar is a Biosphere Reserve (885 km²), whose core area consists of two National Parks, the Galathea National Park (110 km²) and the Campbell Bay National Park (426 km²). All the Protected Areas were sampled and it is observed that the Megapode Island Sanctuary has disappeared and other PAs have been severely affected by tsunami.
21. **Departmental Infrastructure :** State Forest Department has lost their entire establishment at Great Nicobar, Katchal, Teressa and Tillanchang islands. All the anti-poaching camps have been washed away and are yet to be re-established due to lack of man power and logistic facilities.

Threats for wildlife

1. In Nicobar, most of the people lost their relatives and properties and need to be rehabilitated in safer places with all kind of infrastructures including roads. In this connection, the State Forest Department should take utmost care in choosing the rehabilitation sites, roads etc without undermining the importance of ecologically sensitive areas such as low land forests, megapode nesting sites, sea turtle nesting sites, coral reefs, seagrass beds, grass lands etc.
2. Since the plantation of Coconut/Arecanet is considered important for the future survival of tribals, there is a lot of possibility that the plantations will encroach on the majority of the potential coastal habitats of the Nicobar megapode and its associated species which need to be checked
3. After tsunami, most of the low-lying coastal areas have been submerged and megapodes have started building their mounds in evacuated villages. But when the tribals started returning, they began hunting these megapodes.
4. Since, more than 95% of coconut plantations, which was the major source of income for tribals have been washed away by the tsunami, in coming years, it is expected that tribals will be left with fishing and hunting of wildlife for their survival apart from whatever supports they have been getting from the Government. Each tribal family has one to four airguns. The Nicobar megapode, Pied Imperial Pigeon, Andaman Green Imperial Pigeon, Green Pigeon and Nicobar Pigeon are the most favoured target of these airguns and this aspect needs to be given special attention.
5. Near Koshingdon (West coast of Great Nicobar), an abandoned camp was found which may have been used by the International poachers. There is a possibility that poachers may be taking advantage of absence of people in this region.
6. In-adequate Protected Area Coverage especially for megapodes on the Nancowry group of islands. Less than 3% of habitat of *Megapodius nicobariensis nicobariensis* now under protection in the Tillanchang Wildlife Sanctuary.
7. Lack of awareness among people about the importance of forest and wildlife.
8. Presence of large number of introduced species such as cats and dogs posing threat to megapodes and sea turtles nesting places.

Immediate management actions required

1. The State Forest Department have lost their entire infrastructure facilities in the Nicobar group of islands which need to be restored immediately with modern facilities such as good patrolling boats, wireless communication etc.
2. The State Forest Department should also take necessary steps to prevent any plantations in the prime habitat of the Nicobar megapode and nesting beaches of the sea turtles. Plantations of coconut and arecanut may be encouraged only in the vicinity of tribal villages. There should not be any plantation of Pandanus spp. along with coconut which may invite human-wildlife conflicts in future, as pandanus fruits are one of the preferred food of long-tailed macaque which is also known for destroying coconut crop.
3. In Nancowry group of islands, most of the grassland habitats are targeted for permanent settlement and plantation works which needs to be checked. Administration has started plantation of cashew which may be avoided. Alternatively, native species of bamboo plantation may be encouraged which would help tribals to build their houses as well as to make furniture for sale.
4. Long term monitoring of certain endangered species and their habitat is urgently required. In this regard, the Wildlife Institute of India has identified some permanent sites for long term monitoring of coastal populations of megapodes and its habitats (Table 2) which need to be monitored by trained forest staff.
5. A conservation awareness programme needs to be initiated immediately through tribal Captains of Nicobarese villages. This programme should clearly address reasons for the decline in Nicobar megapode and other associated wildlife populations, and how these trends can be arrested or reversed. Since the habitat destruction and hunting are major human induced causes for the declining of megapodes, this needs to be explained to them properly.
6. Restoration of the megapode habitat on the west coast of the Great Nicobar Island is urgently required. Most of the people from this coast were killed by tsunami waves and less than 10 persons belonging to this coast survive now that too in rehabilitation

camps. Since, west coast of this island is no more suitable for people to live, therefore, the entire coastal areas need to be included in the existing Protected Areas and there should not be any plantation project initiated here. More than 100 km long coast line of west coast has a lot of potential to become a better habitat for megapodes as well as other coastal species including sea turtles to nest.

7. In-adequate PA coverage is also believed to be one of the reason for the declining of megapodes, hence, a proposal need to be prepared to consider the Little Nicobar and Nancowry group of islands are 'Conservation Reserves'.
8. Re-establishment/establishment of 'Wildlife monitoring-cum-anti poaching camps' in Navy Dera, Kopenkeat, Chingham/38 km, Kondul, Pilo Milo, South Katchal, Kakkana (Kamorta), Trinket, Tillanchang and Bamboka is urgently required. These camps may be established on nearby hill areas as freshwater is also available in these areas (except Trinket and Bamboka).
9. Minimum of two patrolling motorboats with communication systems are immediately required for the Great Nicobar group of Nicobar islands. Two more boats are required for Katchal and Kamorta islands. These boats may also be useful for the staff to travel to anti-poaching camps.
10. Creation of a post of the Assistant Conservator of Forests for Nancowry group of islands is very important to safeguard whatever biodiversity is left now. Range Forest Officers of Katchal and Camorta islands have to work under this ACF.
11. Special incentives need to be provided to staff who have been posted in the anti-poaching camps in these remote islands.



Figure: An incubation mound nest of the Nicobar megapode.

Table 1. Summary of the Nicobar megapode *Megapodius nicobariensis* survey 2006 (after tsunami)

Island	Potential Coastal Habitat for mound building										Non-conducive coastal habitat for mound building				Total no. of active mounds	Total no. of breeding pairs
	Total area (km)	Total area sampled (km)	No. of transects	Observed active mounds	Estimated active mounds	Estimated abandoned mounds	Estimated inactive mounds	Mound/2km	SD	SE	Total area (km)	Total area sampled (km)	Observed active mounds	Estimated active mounds		
Great Nicobar	130	42.5	20	64	195.8	45.9	21.4	3.20	2.65	0.59	83	12	1	7	203	405
Kondul	1	1	1	1	1.0	0.0	0.0	NA	NA	NA	6.5	2	0	0	1	2
Little Nicobar	55	17.5	9	25	78.6	31.4	9.4	2.78	1.92	0.64	23	6	1	4	82	165
Menchal	1	0.5	1	3	6.0	2.0	0.0	NA	NA	NA	2.3	1	0	0	6	12
Meroe	2	2	1	2	2.0	1.0	0.0	NA	NA	NA	3.25	1	0	0	2	4
Pilo Milo	0	1.5	1	0	0.0	1.0	0.0	NA	NA	NA	3	3	0	0	0	0
Trax	0	1	1	0	0.0	0.0	0.0	NA	NA	NA	1.2	1.2	0	0	0	0
Treis	2	2	1	3	3.0	1.0	0.0	NA	NA	NA	0.7	0.7	0	0	3	6
Nancowry	17	16	8	7	7.4	1.0	0.0	0.88	1.13	0.40	27.3	10	0	0	7	15
Katchal	30	14	7	4	8.6	2.1	0.0	0.57	0.98	0.37	48	12	0	0	9	17
Camorta	35	21	11	4	6.7	6.7	0.0	0.36	0.51	0.15	77.5	12	0	0	7	13
Tillanchang	15	9	5	16	26.7	16.7	0.0	3.20	0.84	0.37	27	6	0	0	27	53
Trinket	15	11.5	6	20	26.1	0.0	0.0	3.33	2.50	1.02	15	4	0	0	26	52
Teressa	20	16	7	7	8.8	0.0	0.0	1.00	1.16	0.44	33.25	6	0	0	9	18
Bampoka	5	2	1	5	12.5	2.5	0.0	NA	NA	NA	7.75	1	0	0	13	25
Total	328	157.5	80	161	383.0	111.3	30.8				358.75	77.9	2	11	394	788

Table 2 . Details about transects surveyed in the potential coastal habitat and the location of permanent transects for the continuous monitoring of the Nicobar megapode population.

sl. no	Island	Place	Total Length	Substratum			Mega pode sighting	GPS N	GPS E	Transect direction from GPS location	Transect for Permanent monitoring	
				Active mounds	Abandoned mounds	Inactive mounds						
1	Great Nicobar	Trinket Bay	2	5	0	0	Sandy	Yes	71247.7	935103.2	North	Y
2	Great Nicobar	South Trinket	2	4	1	1	Sandy-loam	Yes	71305.5	935208.5	North	
3	Great Nicobar	Lawful North	2	4	1	1	Sandy-loam	Yes	71143.7	935255.9	North	
4	Great Nicobar	lawful	2	8	4	1	Sandy-loam	Yes	71018.1	935242.8	North	Y
5	Great Nicobar	North Dungi nala	2	3	1	0	Sandy	No	70352.9	935419.1	North	
6	Great Nicobar	Navy Dera South	2	1	0	0	Sandy-loam	No	70438.5	935341	North	
7	Great Nicobar	Navy Dera	2	2	2	1	Sandy	Yes	70814.4	935306.8	North	Y
8	Great Nicobar	Chodi nala	2	5	4	3	Loamy	Yes	70726.7	935314.8	North	Y
9	Great Nicobar	Ganges creek	2	0	0	0	Clay	No	71405.9	934951.5	West	Y
10	Great Nicobar	Indira point	2	0	0	0	Sandy	No	64525.2	934936.1	North	
11	Great Nicobar	Megapode camp	2	2	0	0	Clay	No	64552.1	935010.7	North	Y
12	Great Nicobar	Binfen	2	0	0	0	Sandy	No	64811.7	935247.1	South	
13	Great Nicobar	Pulo Bhabi	2	4	1	0	Sandy	No	65402.4	934613.3	South	Y
14	Great Nicobar	Kosingdon	4.5	10	1	0	Sandy	Yes	65616.8	934508.8	North	Y
15	Great Nicobar	Alexandria	2	3	0	0	Sandy	No	65851.8	934358.9	North	
16	Great Nicobar	Pulo Kunj	2	1	0	0	Sandy	No	70148.9	934016.8	South	
17	Great Nicobar	Pilo Bakka	2	2	0	0	Sandy-loam	No	64941.1	934735.8	South	Y
18	Great Nicobar	Pulo Bed	2	2	0	0	Sandy	No	70352.1	934010.6	South	
19	Great Nicobar	Rekoret	2	6	0	0	Sandy	No	70810.5	934021.2	South	Y
20	Great Nicobar	Habra Bay	2	2	0	0	Sandy	No	71119.3	934220.1	West	Y
21	Kondul	Kondul	1	1	0	0	Sandy	Yes	71231.8	934307.9	North	Y
22	Little Nicobar	Pulo Patia	2	2	1	0	Loamy	Yes	71918.5	934341.6	North	
23	Little Nicobar	North Patia	1.5	6	1	1	Sandy	Yes	72121.2	934511.6	North	Y
24	Little Nicobar	Pulo Panja	2	2	2	1	Sandy-loam	Yes	72256.1	934437.1	North	
25	Little Nicobar	School Point	2	1	3	0	Loamy	No	72339.4	934333.2	North	Y
26	Little Nicobar	Minlana	3	5	2	1	Clay-Loam	No	72505.9	934236.1	South	Y
27	Little Nicobar	Pulo Kiyang	1.5	0	1	0	Sandy-loam	No	71504	933827.8	South	
28	Little Nicobar	Muhincohin	2	4	0	0	Sandy-loam	No	71812.6	933748.2	South	
29	Little Nicobar	Bahua	2	2	0	0	Sandy	No	71933.7	933817.4	North	
30	Little Nicobar	Enfok	1.5	3	0	0	Sandy	No	72217.7	933829.9	West	Y
31	Menchal	Men	0.5	3	1	0	Loamy	No	72343	934554.2	North	Y

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32	Meroe	Meroe	2	2	1	0	Sandy	No	73257.1	932450.4	South	Y
33	Pilo Milo	Pilo Milo	1.5	0	1	0	Clay	No	72402.3	934134.1	North	
34	Trak	Trak (NCHM)	<1	0	0	0	Sandy	No	72839.1	933755.5	South	Y
35	Treis	Treis	2	3	1	0	Sandy	No	72831.5	933852.8	North	Y
36	Nancowry	North to Tapang	2	0	0	0	Sandy	No	80044.4	933411.7	North	Y
37	Nancowry	Tapang	2	0	0	0	Sandy	No	75913.5	933448.1	North	
38	Nancowry	Connaught Bay	2	3	0	0	Sandy	Yes	75605	933446.1	North	Y
39	Nancowry	North to Cape Connaught	2	1	1	0	Sandy-loam	No	75627	933342.6	North	
41	Nancowry	South to Hindrah	2	1	0	0	Sandy-loam	No	75716.1	933243.6	North	
42	Nancowry	South to Lapat	2	0	0	0	Sandy-loam	No	75847.5	933058.3	North	Y
43	Nancowry	North Lapat	2	2	0	0	Sandy	No	75918.7	933032.3	North	
44	Nancowry	Chinla	2	0	0	0	Sandy-loam	No	75947.5	933310	West	
45	Katchal	South Point	2	2	0	0	Loamy	No	75508	932753.7	South	Y
46	Katchal	South to Kallatopaini	2	0	0	0	Sandy-loam	No	75541.4	932742	South	
47	Katchal	East Bay	2	0	1	0	Sandy-loam	No	75736	932527.7	South	
48	Katchal	Yuns Yenkui	2	0	0	0	Sandy-loam	No	75313	932157.2	North	Y
49	Katchal		2	0	0	0	Sandy	No	80034.8	932423.2	North	
50	Katchal	South to Jula	2	2	0	0	Sandy	No	80120.8	932301.9	West	
51	Katchal	Jula	2	0	0	0	Sandy	No	80034.7	932122.7	East	
52	Camorta	Near Pullaw (Expedition harbour)	2	0	0	0	Sandy	No	80427.2	933030.2	South	
53	Camorta	Dring	2	1	1	0	Loamy	Yes	80618.4	932929.8	South	Y
54	Camorta	South to Dring Harbour	2	1	1	0	Clay	No	80445.5	932903.6	South	
55	Camorta	North to Ittiya Harbour	2	0	0	0	Clay	No	81038.6	932740.6	South	
56	Camorta	Ronyok	2	1	1	0	Sandy-loam	No	80812.8	932741.9	South	Y
57	Camorta	Ol Hinpun	2	0	0	0	Sandy	No	80953.8	932723.7	South	
58	Camorta	Nighreak	2	0	0	0	Sandy	No	81157.7	932938.8	South	
59	Camorta	Bada Eneka	2	0	1	0	Clay	No	80447.6	933244.1	North	
60	Camorta	Kakana	2	0	0	0	Sandy	No	81005.6	933133.3	North	
61	Camorta	Kakana North (Interior)	1	1	0	0	Loamy	No	81235.5	933222	North	Y
62	Camorta	Kakana Noth coastal	2	0	0	0	Sandy	No	81139.5	933232.1	North	
63	Tillanchang	Castle bay	1	2	1	0	Sandy	Yes	82634.8	933823.9	North	Y
64	Tillanchang	South to Cape	2	3	1	0	Sandy	No	83215.3	933757.7	South	Y

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65	Tillanchang	Mand Near Maharani Peak	2	3	2	0	Sandy-loam	No	83042.4	933841.9	South	
66	Tillanchang	Noth cheela	2	4	3	0	Sandy	No	82925.4	933745.8	North	
67	Tillanchang	Cape Winifred	2	4	3	0	Sandy	No	82624.9	933712.8	South	Y
68	Trinket	Piyang	2	4	0	0	Sandy	No	80513.8	933522.5	South	
69	Trinket	Muk Kang	1.5	3	0	0	Sandy	No	80346.5	933529.8	South	
70	Trinket	Safed Balu	2	1	0	0	Sandy-loam	No	80712.5	933354.4	East	
71	Trinket	Trinket (Laful)	2	2	0	0	Sandy	No	80338.3	933432.5	North	Y
72	Trinket	Trinket	2	2	0	0	Sandy-loam	No	80455.8	933500.5	North	
73	Trinket	Near Light House	2	8	0	0	Sandy	Yes	80303.5	933458.1	South	Y
74	Teressa	North to Bangala	4	1	0	0	Sandy-loam	Yes	81854.5	930754.1	North	Y
75	Teressa	Alurang	2	2	0	0	Sandy-loam	No	81944.3	930548.5	North	Y
76	Teressa	Hiram	2	0	0	0	Sandy	No	81534.3	930546.1	South	
77	Teressa	Minyuk	2	0	0	0	Sandy	No	81528.6	930813.6	South	Y
78	Teressa	Laksi	2	0	0	0	Sandy	No	81219.4	930934.1	North	
79	Teressa	Kolaru	2	1	0	0	Sandy	No	81328.4	931108.1	South	
80	Teressa	Rakraka	2	3	0	0	Sandy	No	81206.4	931209.8	West	Y
81	Bampoka	Poakat	2	5	1	0	Sandy	No	81432.9	931325.9	North	Y



Figure: Malayan box turtle is the only semi-aquatic land turtle present in the islands are affected by tsunami.



Figure. Southern part of the Great Nicobar Islands before and after tsunami.