

MARINE TURTLE, SEABIRD AND MEGAPODE SURVEY OF BABELDAOB, BELILIOU (PELELIU) AND NGEMELIS ISLANDS, REPUBLIC OF PALAU 8-15 AUGUST, 1992

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ABSTRACT

The islands of Beliliou (Peleliu) and Ngemelis and stretches of beach along the east coast of Babeldaob, Republic of Palau, were surveyed for evidence of hawksbill, *Eretmochelys imbricata* and green, *Chelonia mydas* turtles during the peak of the turtle nesting season. Incidental sightings of nesting seabirds and Micronesian Megapodes, *Megapodius laperouse* were also recorded.

Ngerduais beach on the east coast of Babeldaob was the only area surveyed which showed any recent signs of nesting turtles. Local information suggests that only sparse nesting has ever taken place in Babeldaob and the islands of Ngemelis, Angaur and Beliliou in recent years.

Micronesian Megapodes are reported rare on these islands, and there was no evidence of Megapode nesting on any of the sites surveyed.

Although many seabirds are known from these islands, none were observed nesting. However, the Vanikoro Swiftlet, *Aerodramus vanikorensis*, Collared Kingfisher, *Halcyon chloris*, Rufous Night Heron, *Nycticorax caledonicus*, Pacific Reef Heron, *Egretta sacra*, and Black Noddy, *Anous minutus*, were sighted on several of the islands surveyed.

The limited evidence of recent turtle nesting and the lack of evidence of Megapode and seabird nesting combined with the information provided by members of the local communities, indicates that the areas surveyed during this phase of the Rapid Ecological Assessment are not significant nesting areas for these wildlife at this time.

INTRODUCTION

The Rapid Ecological Assessment (REA) was designed to evaluate sites believed to be among the most important ecological or natural areas in Palau. The results of this survey will complement those in 1991 and 1992 to provide complete coverage of all the valuable ecological resources and areas in Palau.

This phase of the REA involved the investigation of the east coast of Babeldaob and the islands of Beliliou, Angaur and Ngemelis. However, Angaur was not surveyed during this phase due to adverse weather conditions.

Green, *Chelonia mydas* and hawksbill turtles, *Eretmochelys imbricata* are two species of sea turtle that have been recorded nesting in Palau. Both the leatherback, *Dermochelys coriacea*, and the loggerhead, *Caretta caretta*, have been sighted in the archipelago but are not known to nest.

The turtle nesting season extends from June to September with a peak in the months of July and August, though some turtles may nest throughout the year (Pritchard 1977).

Although the majority of green and hawksbill turtle nesting occurs in the Southwest Islands and the Rock Islands respectively, small numbers of *C. mydas* and *E. imbricata* are believed to nest on the islands of Beliliou, Ngemelis and Angaur (Pritchard 1977; Milliken & Tokunaga 1987).

Tobin et al. (1957) describes a restriction placed on the turtle hunters of Ngerduais beach, Airai. If a turtle was captured on this beach the hunter was obliged to take the meat to the house of the family of the god of Airai. This suggests that turtle nesting may have occurred on Ngerduais in the past.

Ngemelis Island is featured in the traditional story of the egg-laying cycle of the turtle, which is often depicted on Palauan storyboards. Anon. (1983) summarises the tale as a romantic rendezvous between a young man from Peleliu and a young woman from Koror. The two lovers meet on Ngemelis Island and discover that the turtle egg-laying cycle corresponds to the phases of the moon.

Beliliou was the site of a Palauan hawksbill headstarting program in 1955 (Tobin et al. 1957), but it is likely that most of the eggs were taken from beaches of the Rock Islands.

The Micronesian Megapode, *Megapodius laperouse*, or Bekai, is a dark brownish-black guinea fowl-like bird which nests throughout the year in Palau. This species is rare on Babeldaob, and is most commonly found at Kayangel and in the Rock Islands. The eggs are a common food source for the islanders (Engbring 1988), and this species is listed as endangered in the U.S. Endangered Species Act.

Of at least 141 birds recorded from Palau, only 50 species are resident. Of these 50 resident species, 14 are seabirds and 36 are land or wetland species. Five of the land species were introduced by humans, and are not native to Palau. Many additional migrant and vagrant species have yet to be recorded from Palau. No native species have become extinct, although several are rare (Engbring 1988). Although seabirds occur throughout the Archipelago, the largest seabird colonies are located in the remote Southwest Islands and on the islands of Kayangel and Ngeruangel.

METHODS

Several stretches of the east side of the Babeldaob coastline and the islands of Beliliou and Ngemelis (Figure 1) were surveyed for evidence of marine turtle, seabird and Micronesian Megapode nesting. The survey team was dropped off at each location by boat in order to walk the beaches during daylight and determine whether these areas were currently being used for nesting by turtles, Megapodes or seabirds. Beaches were not surveyed at night.

Inhabitants of the local villages were questioned where possible to gather information on nesting areas for turtles, seabirds and Megapodes, and the feeding areas of turtles and dugong.

Each beach was ranked as a potential for turtle nesting (Table 1). These rankings are arbitrary, and are categorised according to the visible evidence of nesting, local knowledge on current nesting areas and previous history of turtle nesting in the area.

RESULTS

The numbered regions on the map of Palau shown in Figure 1 indicate the sites surveyed during this phase of the REA.

The carapace of a freshly killed green turtle was found drifting in the harbour outside the Palau Marina Hotel on 10 August 1992. The midline curved carapace length (CCL) of the turtle was 62.2cm. There was no information available regarding the capture or slaughter of this animal.

Ngeruktabel (Malakal Pass)

One stretch of beach at Ngeruktabel (site 140) was assessed on 8 August 1992. There are no permanent residents in the area. The beach is approximately 100m in length, and the beach strand is virtually covered at high tide.

No nesting turtle tracks or pits were discovered on the beach. Turtle nesting has not been recorded for Ngeruktabel, and it was indicated by local people that this beach has never accommodated nesting turtles. Local fishermen also indicated that turtles feed on the extensive seagrass beds offshore from this beach.

There was no evidence of nesting seabirds or Micronesian Megapodes. Bird species observed were the Rufous Night Heron, *Nycticorax caledonicus*, Pacific Reef Heron, *Egretta sacra*, White-tailed Tropicbird, *Phaethon lepturus*, Brown Noddy, *Anous stolidus*, and Black Noddy, *Anous minutus*.

Orrak/Pkulaklim (Airai)

The island of Orrak/Pkulaklim (site 141) was assessed on 9 August 1992. There are no permanent residents on the island, but it is used as a recreation area on weekends. There are two main stretches of beach, each approximately 100m in length. Mangroves cover the southern side of the island.

A large pile of *Tridacna* shells was situated near the recreational shelter on the southern side of the island, but no turtle bones or scutes were sighted around the cooking areas or shelters. There were no signs of nesting turtles. Although there have been no sightings of turtle nesting recently, local information indicated that turtles nested on the island 5-10 years ago.

There was no evidence of nesting seabirds or Micronesian Megapodes. Bird species observed were the Collared Kingfisher, *Halcyon chloris*, Vanikoro Swiftlet, *Aerodramus vanikorensis*, White Tern, *Gygis alba*, Palau Fruit Dove, *Ptilinopus pelewensis*, Black Noddy and Rufous Night Heron. Several Fruit Bats, *Pteropus mariannus*, were also observed.

Ngerduais beach (Airai)

Ngerduais beach (site 142) was assessed on 9 August 1992. There are no permanent residents inhabiting this area. The beach is approximately 100m in length with dense vegetation beyond the high tide mark. The beach strand was thickly covered with creepers, including *Ipomoea* sp. A local fisherman stated that the vegetation on the island has become thicker and has encroached toward the sea in the past 5-10 years.

One *E. imbricata* turtle track was identified. It was estimated to be approximately one week old due to tide heights.

There was no evidence of seabird or Micronesian Megapode nesting. No seabirds were recorded in the area while surveying this site.

Ngarsul

The offshore habitat at Ngarsul was investigated on 9 August 1992. The area is rich in seagrass, and according to local fishermen turtles and dugong are often seen feeding at high tide. One green turtle was sighted swimming in the area.

Beliliou (Peleliu)

While in transit to Beliliou, bird species observed were the Little Pied Cormorant, *Phalacrocorax melanoleucos*, Great-crested Tern, *Sterna bergii*, and Black-naped Tern, *Sterna sumatrana*.

Three beaches on Beliliou were assessed on 10 August 1992. Beliliou has a population of 500-600 people. There are villages close by to the three beaches surveyed. Turtle nesting was recorded on Honeymoon beach by Pritchard (1977), and Beliliou was the site of the first hawksbill headstarting program in 1955 (Tobin et al. 1957), although most of the eggs were probably taken from nests laid in the Rock Islands. It was indicated that few turtles, if any, nest on Beliliou nowadays.

Orange beach (site 143) is a quiet picnic spot for tourists, but is a popular destination because of the two war monuments situated in the area. The beach itself is approximately 1.25km long, with a reef flat 1.0-1.5km wide at low tide. The vegetation is dense around the high tide mark and at the time of the survey there was much debris along the shoreline.

No turtle tracks or nest pits were discovered, and there was no evidence of seabird or Micronesian Megapode nesting. Bird species sighted were the Collared Kingfisher, Black Noddy and White Tern.

Bloody (Scarlet) beach (site 144) is situated near the Ngerewal picnic area and the Peleliu Peace Memorial Park, a popular spot for tourists. The beach is approximately 1.25km long and crescentic in shape.

Two turtle bones (plastron and carapace) were discovered below the high tide mark. These bones may have washed up onto the beach, as no other turtle bones or scutes were sighted in the vicinity. No turtle nesting tracks or pits were found.

There was no evidence of nesting seabirds or Micronesian Megapodes. Bird species sighted were the White-tailed Tropicbird and Collared Kingfisher.

In transit to Honeymoon beach, the Banded Rail, *Rallus philippensis*, and the Micronesian Starling, *Aplonis opaca*, were sighted.

Honeymoon beach (site 144) is a particularly well-known tourist spot due to the swimming hole and seasonal surf. There is also a picnic area at Honeymoon beach. The beach is approximately 1.0km long with a 250m wide rocky flat at low tide. The sand is interspersed with small pockets of coral rubble. The northern end of the beach has a gentle slope from just above the high tide mark to the vegetation line.

No turtle tracks or nest pits were found. A nesting turtle track was recorded on this beach by Pritchard (1977).

There was no evidence of nesting seabirds or Micronesian Megapodes. No seabirds were recorded in the area while surveying this site.

Melekeok - Ngeremechluch - Ochiberames

The stretch of beach near Melekeok Point (site 147) was surveyed on 11 August 1992. The villages of Melekeok and Ngeremechluch are situated adjacent to the coast, and the main road runs parallel to the beach front. Small areas of sand are interspersed among the mangroves, vegetation and rocky outcrops.

A turtle plastron bone was found below the high tide mark. This bone could have washed in with the tide, as there were no other bones in the vicinity. No turtle nesting tracks or pits were sighted. Conversation with the villagers indicated that although infrequent, turtle tracks had been sighted in the past few years.

There was no evidence of seabird or Micronesian Megapode nesting. Bird species sighted were the Little Pied Cormorant, Collared Kingfisher, Whimbrel, *Numenius phaeopus*, and Rufous Night Heron.

Ngerburch - Ngkleklau (Ngiwal - Ngkerklau)

The coast between Ngerburch and Ngkleklau (site 146) was surveyed on 11 August 1992. The two villages are situated along the coastline, and are separated by rocky outcrops and mangroves interspersed between small sections of beach.

There were no turtle tracks or nest pits on any stretches of beach between the villages. Offshore from Ngerburch were extensive seagrass beds which, according to local information, are feeding areas for turtles and dugong.

There was no evidence of seabird or Micronesian Megapode nesting. Bird observations were the Rufous Night Heron, Pacific Reef Heron, Micronesian Pigeon, *Ducula oceanica*, Collared Kingfisher and Vanikoro Swiftlet.

Ngemelil Island Complex

Ngemelil island was a popular refuge for turtles whose shells and meat were prized collections which only the wealthy could afford (Anon. 1983). Four islands at Ngemelil (sites 148-152) were surveyed on 13 and 15 August 1992.

There are no permanent inhabitants on Bailechesengel (Bairakaseur) island (site 148), but a recreational shelter, used mainly on weekends, is situated on the northwestern side of the island. There is one major stretch of beach extending approximately 500-600m and several small sandy pockets interspersed between rocky outcrops and vegetation. High tide covers much of the available nesting habitat.

No nest pits or turtle tracks were discovered, and there was no evidence of nesting seabirds or Micronesian Megapodes. Bird species sighted were the Black Noddy, Micronesian Starling, Collared Kingfisher, White Tern, Fruit Bat, Vanikoro Swiftlet, Micronesian Pigeon and Pacific Reef Heron.

Three houses are situated on the island of Dmasech (site 149), two of which are permanently occupied. The third house is owned by the Koror State Government and is a shelter for recreational use. The west coast of this island consists of small areas of sand interspersed with rocky outcrops. A 600m-long stretch of beach is situated on the east coast of the island.

No evidence of turtle nesting was discovered. Conversation with members of the local community indicated that some nesting (species not identified) used to occur on the island. According to local information, both *C. mydas* and *E. imbricata* feed on the reef nearby.

There was no evidence of seabird or Micronesian Megapode nesting. No seabirds were recorded in the area while surveying this site.

Iiblau island (site 150) is separated from Dmasech by a narrow channel of water. This island has no permanent residents and no recreational shelters. The beach on the eastern side of the island is approximately 1.0km in length. The west coast of the island was inaccessible due to the tide, and thus was not surveyed.

No turtle tracks or nest pits were found. Local information suggests that turtles have previously nested on Iiblau. Apparently residents from Dmasech used to travel across to this island to collect nesting turtles. One turtle carapace bone was discovered on the intertidal sand flat, but no other bones were found.

There was no evidence of nesting seabirds or Micronesian Megapodes. Bird species observed were the Fruit Bat and Vanikoro Swiftlet.

The northeastern beach on Cheleu (Garyo) (site 152) extends approximately 200m, and consists of sand interspersed with occasional rocky outcrops. A large amount of debris was situated along the vegetation line at the time of the survey. The other sections of the island were not surveyed at this time.

No turtle nesting tracks or pits were found, and there was no evidence of seabird or Micronesian Megapode nesting. No seabirds were recorded in the area while surveying this site.

Ulimang - Uluchel (Ngarard - Oll)

The coast between Ulimang (site 151) and Uluchel was surveyed on 14 August 1992. Two houses with permanent residents are situated along the coastline between the two villages. The beach is approximately 1.5km long and consists of sand interspersed with rocky outcrops. There was much debris and leaf litter at the high tide mark at the time of the survey.

No turtle tracks or nest pits were discovered along this section of coastline. Local information indicates that sea turtle nesting has never occurred along this stretch of coast.

There was no evidence of nesting seabirds or Micronesian Megapodes. Bird species observed were the Collared Kingfisher, Pacific Reef Heron, Black-naped Tern, White-tailed Tropicbird, Rufous Night Heron, Little Egret, *Egretta garzetta*, and Little Pied Cormorant.

Ulong (Rock Islands)

Dr. J. Maragos surveyed Ulong on 13 August 1992 and found three turtle nest pits of unknown age, indicating some nesting activity.

DISCUSSION

Past literature (Pritchard 1977; Milliken & Tokunaga 1987) indicates that some nesting activity has occurred on Babeldaob and the islands of Beliliou and Ngemelis, surveyed during this phase of the REA, but on a limited scale compared with the frequency of nesting occurring by *Chelonia mydas* in the Southwest Islands and *Eretmochelys imbricata* in the Rock Islands. Local information also suggests that only sparse nesting of either species has ever occurred on Babeldaob and the islands of Ngemelis and Beliliou.

Each beach was ranked arbitrarily as a potential for turtle nesting (Table 1). Ngerduais beach on the east coast of Babeldaob was the only area surveyed which showed any recent signs of nesting turtles. Nest pits were also discovered on Ulong Island in the Rock Islands, but as Miller (1989) explains, this does not always signify recent turtle nesting.

Hawksbill nesting occurs mainly from June to September with a peak in the months of July and August (Pritchard 1977). This expedition was undertaken during the proposed nesting peak, but only one turtle track was recorded from all of the areas surveyed. This suggests that nesting on the islands of Babeldaob, Beliliou and Ngemelis is scarce.

Micronesian Megapodes are reported locally common from Kayangel to Angaur, rare on Babeldaob and most common in Kayangel and the Rock Islands (Engbring 1988). There was no evidence of Megapode nesting in these areas during this REA expedition.

Although many nesting seabirds are reported on these islands, no seabirds were sighted nesting. Vanikoro Swiftlets, Collared Kingfishers, Rufous Night Herons, Pacific Reef Herons and Black Noddies were recorded on several of the islands surveyed.

Information from local inhabitants indicates that Ngarsul is utilised as a feeding area for turtles and dugong. Dugong also feed on the east side of Babeldaob from Konrei to the south of West Passage near the Koror Power Plant, Agol and Ngardmau Bay.

The REA was carried out in order to evaluate sites believed to be ecologically important in Palau. The limited evidence of recent turtle nesting and the lack of evidence of Megapode and seabird nesting combined with the information provided by members of the local communities, indicates that the areas surveyed during this phase of the REA are not significant nesting areas for these wildlife at the present time.

Figure 1. Map of Palau identifying survey sites by name and number.

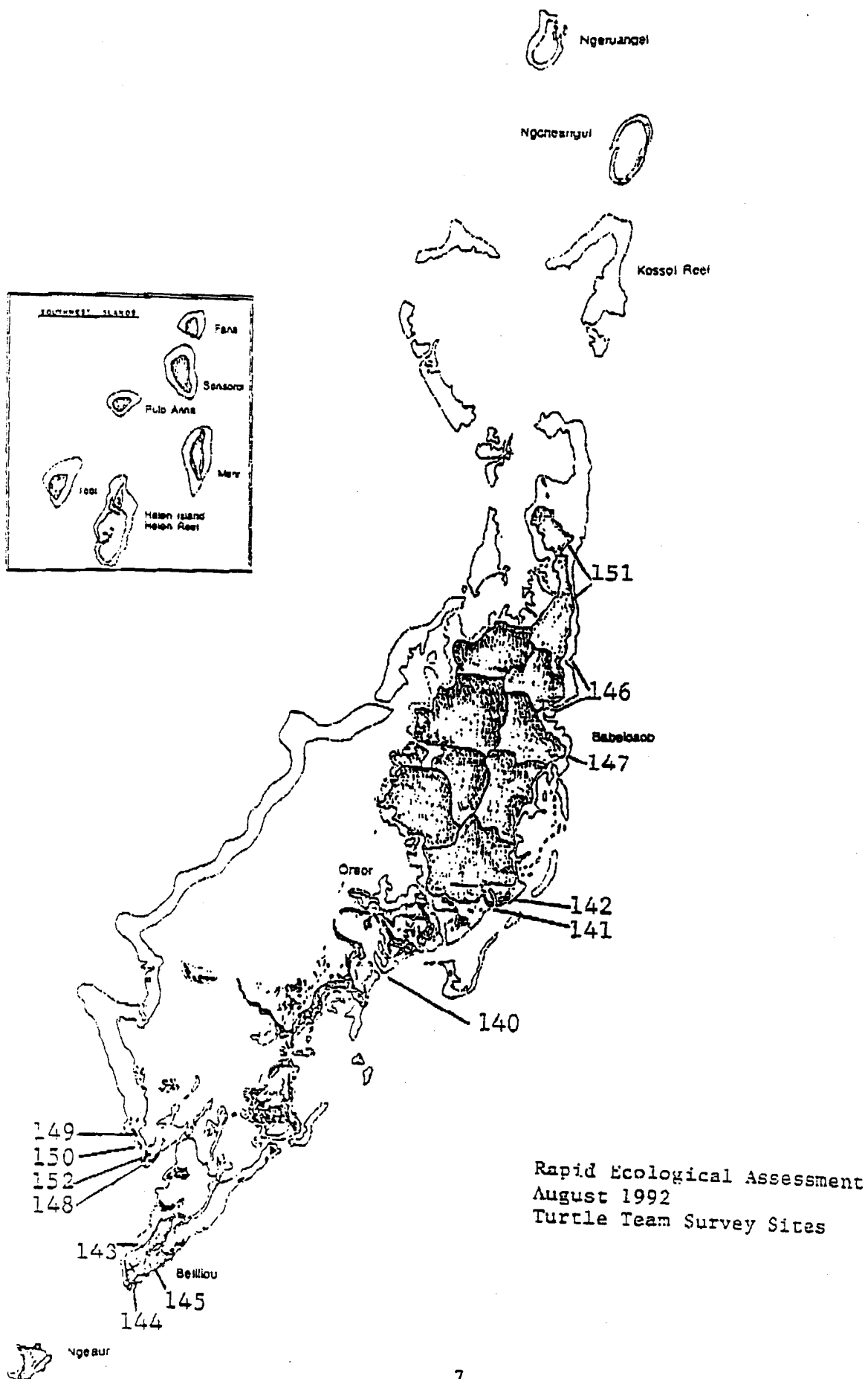


Table 1. Information regarding turtle nesting for the areas surveyed.

AREA SURVEYED	CURRENT NESTING	PREVIOUS NESTING	EVIDENCE	RANK
NGERUKTABEL	No	No	Nil	0
ORRAK/PKULAKLIM	No	Yes	Nil	1
NGERDUAIS	Yes	Yes	Track	3
BELILIOU - ORANGE BEACH	No	Yes	Nil	1
BELILIOU - BLOODY BEACH	No	Yes	Bones found ⁺	1
BELILIOU - HONEYMOON BEACH	Yes	Yes	Nil	2
MELEKEOK - OCHIBERAMES	Yes	Yes	Nil	2
NGERBURCH - NGKLEKLAU	No	No	Nil	0
NGEMELIS - BAILECHESENGEL ISLAND	No	Yes	Nil	1
NGEMELIS - DMASECH ISLAND	Yes	Yes	Nil	2
NGEMELIS - IIBLAU ISLAND	No	Yes	Bones found ⁺	1
NGEMELIS - CHELEU ISLAND	No	Yes	Nil	1
ULIMANG - ULUCHEL	No	No	Nil	0
ULONG (ROCK ISLANDS)	Yes	Yes	Nest Pits [*]	2-3

⁺ Although turtle carapace and plastron bones were found at these study sites, there was no other indication of nesting. As these bones were found in the intertidal areas, they may have washed in from elsewhere, and so are not used as nesting indicators.

^{*} Miller (1989) points out that although nest pits are evidence of nesting activity they are not reliable indicators of current nesting numbers or patterns. This is due to the fact that they remain visible for extended periods of time.

Rank 0 - no previous history of nesting, no signs of nesting, local information suggests no nesting currently occurs

Rank 1 - previous nesting history, no signs of nesting, local information suggests no nesting currently occurs

Rank 2 - previous nesting history, no signs of nesting, local information suggests nesting does still occur

Rank 3 - previous nesting history, visible signs of turtle nesting

Rank 4 - previous nesting history, signs of extensive turtle nesting

ACKNOWLEDGMENTS

This survey was sponsored by The Nature Conservancy under contract of the Republic of Palau. The survey time for one of the authors (SG) was donated by the South Pacific Regional Environment Programme.

The authors wish to thank the MMDC personnel for their assistance with logistics, particularly McCarthy and Pablo for driving the boats and assisting with local knowledge, Jim from Beliliou who kindly provided the survey team with transport around the island, and all the local people who supplied information regarding turtles, Megapodes, dugong and seabirds.

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