

TRIP REPORT ON THE MARINE TURTLE SURVEY OF THE MASKELYNE ISLANDS, VANUATU
6-22 NOVEMBER 1992

Suzanne H. Geermans
South Pacific Regional Environment Programme (SPREP)
C/- Queensland Department of Environment and Heritage
PO Box 155, Brisbane Albert Street, 4002 Queensland Australia

This research and training expedition was organised in conjunction with the South Pacific Regional Environment Programme (SPREP) and the Vanuatu Environment Unit. The survey follows up a questionnaire written in Bislama and sent to various islands in the Vanuatu Archipelago in 1989/1990. A survey was scheduled for November 1991, but was postponed and then cancelled due to typhoon damage. The area designated to be surveyed, the Maskelyne Islands, was chosen from the information provided in response to the questionnaire.

The objectives of this research expedition were to estimate numbers of turtle nesting and the amount of harvest, and to train members of the Vanuatu Environment Unit, as well as any interested members in the local communities, in the methods of tagging, species identification, measurements of the curved carapace length (CCL) and tail length to the carapace (TLC), checking the turtle for damage, barnacles and fibropapillomas, and recording any other relevant information on turtles. Blood samples for genetic analysis were to be collected for the University of Queensland.

POR T VILA

A map of the Vanuatu Archipelago is shown in Figure 1.

Saturday 7 November

The Port Vila markets and several Duty Free shops were investigated to search for the possible sale of turtle products. No turtle meat or eggs were available in the markets, but tortoiseshell jewellery was obtainable in several stores, including 'Goodies' and the 'Afro-Asian' shop. The tortoiseshell items for sale were mainly bracelets and hair combs, ranging in price between 500-5000VT (approximately \$4.60-46.00 AUD at the time of the survey). One of the shopkeepers stated that the tortoiseshell was all supplied locally, from the island of Efate.

Sunday 8 November

A bus tour around the island of Efate was undertaken. The areas of Teouma Bay, Eton beach and Undine Bay were visited. No turtle tracks were sighted at any of the beaches. The bus driver, who had lived in Efate for several years, stated that he knew of no turtle nesting on the island.

Monday 9 November

Some time was spent in the office of the Vanuatu Environment Unit. A discussion regarding the survey schedule took place between Ernest Bani and Jenny Whyte of the Environment Unit, and myself. A thorough search of the Unit's "turtle files" was undertaken in order to obtain local reports, articles and journal papers relating to marine turtles.

Scientific material and local magazine articles pertaining to marine turtles were examined at the Vanuatu National Library. The Vanuatu Cultural Centre was visited in order to collect information and to look for exhibits of traditional utilization of tortoiseshell. The only tortoiseshell item on display was a tribal arm-band.

THE MASKELYNE ISLANDS

The Maskelyne Islands are a small group of islands situated off the southeastern tip of Malakula, as shown in Figure 2.

Tuesday 10 November

An aeroplane was taken from Port Vila to Lamap, and then those taking part in the marine turtle survey were taken across to the Maskelyne Islands by motor boat.

The most densely populated island in the Maskelyne group is Uliueo, (also called Maskelyne), 16°33'S 167°49'E, with approximately 1000 people living in the villages, all of which are located adjacent to the shore.

The contact person for the area is Kalorip Setrach from the village of Pellonk, where the survey team was based. Local information regarding marine turtles was obtained via Kalorip, the village chiefs and several fishermen from each of the villages.

On display in Kalorip's house were three turtle carapaces; two juvenile *Chelonia mydas* and an adult *Eretmochelys imbricata*. The *E. imbricata* was captured last month (October 1992) while mating on the reef. It was subsequently eaten, and Kalorip recalled that there were "yellow eggs" inside. This refers to the immature follicles present in the ovary of a female turtle preparing to breed for the season. The presence of such follicles and the courtship behaviour suggests that the turtle was nesting on one of the islands nearby during the season.

Further discussion revealed that nearly all of the turtles taken for food are captured on the reef, rather than females taken from the nesting beach. Kalorip also stated that about 50 turtles are eaten annually by the people of the Maskelynes (all villages combined), and that most were taken for the celebration of the yam harvest, which is held in early February. It was also discovered that there was no history or knowledge of hawksbill turtle poisoning amongst the villagers.

Several beaches on Uliueo Island which were previously used as turtle nesting areas were investigated. According to local information, no turtles have been sighted on these beaches in 3-5 years.

Wednesday 11 November

A boat was taken to two of the nearby islands, both of which have seen nesting turtle activity in the past twelve months. The islands of Vulai and Sakao were surveyed to look for evidence of recent turtle nesting.

Vulai Island, 16°35'S 167°47'E, is an uninhabited island southwest of Uliueo, across Sugarlump Reef (see Figure 2). The survey area was situated along the east coast of the island, and the survey team separated the beaches into four areas totalling about 900m in length, where turtle tracks have been sighted in past nesting seasons. Beach 1 is approximately 250m long and is separated from Beach 2 by a large section of coral rubble. Beach 2 is approximately 300m long and is separated from Beach 3 by volcanic outcrops. Beach 3 is approximately 50m long and Beach 4 is approximately 300m in length. The shoreline vegetation consists mainly of *Cocos nucifera*, *Pandanus* sp., *Casuarina equisetifolia* and *Hibiscus tiliaceus*.

Two turtle tracks, 3-4 days old, were sighted on Beaches 3 and 4. One track belonged to the species *Chelonia mydas*, and the other was an *Eretmochelys imbricata* track. Both turtle tracks seemed to be false crawls (ie: unsuccessful nesting), and although some of the men dug for the eggs, none were found.

Sakao Island, 16°30'S 167°49'E, is an uninhabited island situated northeast of Uliueo (see Figure 2). Sakao is visited nearly every day, as it is utilised by the people of the Maskelynes as a gardening island, where root crops such as yam, taro and kumara are grown.

The survey area was situated on the southern tip of the island, and was separated into four beaches totalling about 1.5km in length, where turtle tracks have been sighted in previous seasons. Beach 1 is approximately 200m long and is separated from Beach 2 by a stretch of mangroves. Beach 2 is approximately 200m long, and is cut off from Beach 3 at high tide because the vegetation reaches the shoreline. Beach 3 is approximately 700m long, and is separated from Beach 4 by a stretch of mangroves. Beach 4 is approximately 500m in length. The shoreline vegetation consists mainly of *Cocos nucifera*, *Pandanus* sp., *Callophyllum inophyllum*, *Barringtonia* sp. and mangroves.

There was no evidence of recent turtle nesting on Sakao Island.

Thursday 12 November

An outrigger canoe was taken onto the reef and some of the local fishermen "called" for turtles. The men cry out the names of their dead ancestors, believing that the turtles will lift their heads above the water and listen for a second, then dive down. Several turtles were seen, but only from a distance. Unfortunately, we could not get close enough to catch the turtles from the canoe.

An outrigger canoe was taken to the uninhabited island of Khuneveo, situated off the southeastern tip of Uliveo Island. Apparently turtle nesting occurred on Khuneveo before the village was abandoned in 1965. Nowadays there are only pigs and goats residing on the island, although people from Lutes village paddle across every day or two to give the animals food and water. Much of the island is covered with mangroves. There were no signs of turtle nesting.

The nearby uninhabited islands of Batghutong, Livlakhoas and Metai are all covered with mangroves along the shoreline. No turtles have ever been known to nest on any of these islands.

Late in the evening, several fishermen from the villages of Pellonk and Lutes went out onto the reef to capture turtles.

Friday 13 November

The fishermen from Pellonk captured two turtles, a juvenile *C. mydas* and a juvenile *E. imbricata*. The technique for tagging, measuring, recording information and the taking of blood samples for genetic analysis was demonstrated. Members of the Environment Unit and some of the local villagers took part in the training. The information regarding these two turtles is displayed in Table 1.

Three turtles, two juvenile *C. mydas* and an adult male *E. imbricata*, were captured on the reef by the fishermen of Lutes village. As in Pellonk village, the technique for tagging, measuring, recording information and the taking of blood samples for genetic analysis was demonstrated to the onlookers. The information regarding these turtles is displayed in Table 1.

The blood samples were taken from turtles of the feeding area at Uliveo Island and were sent to the University of Queensland for analysis of mitochondrial DNA in order to determine where these turtles migrate to nest.

Saturday 14 November

Discussion with a group of women from Pellonk village revealed that a turtle track (species unknown) had been sighted on Sakao Island in the past few days. This indicates that a turtle nested on the island between 11-14 November.

Sunday 15 November

Due to local information regarding turtle nesting on the nearby islands, it was decided to spend several nights surveying Vulai and Sakao for nesting turtles. Permission was obtained from the chiefs of Peskarus and Pellonk villages to camp on these islands.

The evenings of 15-17 November were spent surveying Vulai Island. Upon arrival, the beach was surveyed to locate any nesting tracks from the previous few days. One turtle track, 3-4 days old, was found on Beach 3. Although very faint, the track was identified as a false crawl belonging to the species *E. imbricata*. A perimeter walk of the island revealed that more than half of the island's shoreline is covered by mangroves.

Each night was spent walking the beaches of Vulai looking for evidence of nesting turtles. However during the survey, no turtle nesting or emerging hatchlings was recorded.

An estimate of the nesting population for Vulai Island was attained by using a formula taken from Hughes (1974). For the variables used, this formula gave an estimate of the nesting population to be approximately 13 for the 1992 season (Figure 3).

Wednesday 18 November

The survey team transferred from Vulai to Sakao Island. The evenings of 18-19 November were spent surveying the beaches at Sakao. No turtle nesting was evident on either night, and no hatchlings were recorded emerging. A sea snake track was recorded and a coconut crab, *Birgus latro*, was sighted close to the shore.

A local fisherman reported seeing a turtle track on Vulai Island on 19 November.

Table 2 depicts the number of turtles harvested in the Maskelyne Islands and the estimated nesting population for the area, using local information. These figures illustrate that the current level of harvest cannot sustain the nesting population.

SUMMARY

No nesting turtles were encountered for the duration of the survey, although three turtle tracks (two *E. imbricata* and one *C. mydas*) were sighted by the survey team on Vulai Island, and two additional tracks were reported from Vulai and Sakao Islands by local people.

Five turtles were captured by village fishermen on the reef, and the techniques of tagging, measuring, taking blood samples and recording general information such as the presence of damage, barnacles and fibropapillomas, was demonstrated to a large crowd of people, including members of the Vanuatu Environment Unit.

Discussions were conducted between members of the Environment Unit and villagers from Pellonk, Peskarus and Lutes, regarding marine turtle conservation and the objectives of the survey. The villagers indicated that the majority of turtles eaten in the village are captured by fishermen on the reef. Few turtles, if any, are captured while nesting. Since no turtle nesting occurs on Uliveo Island, the men would have to stay overnight on one of the nearby islands such as Vulai, to capture a nesting female turtle. Also, the chances of catching a nesting female are low, as nesting in the area is an infrequent occurrence.

This area was chosen as a survey site resulting from the information obtained from a questionnaire distributed amongst several villages within the Vanuatu Archipelago. It would be an added advantage to conduct a preliminary investigation before undertaking a survey expedition. For example, a set of detailed questions sent to the contact person for the area would provide more information regarding local turtle nesting. This would act as a follow-up to the questionnaire sent out in 1989/1990, and would assist in determining how to structure the survey and how much time should be spent surveying each island/beach.

Information obtained from local inhabitants together with the results acquired during the survey indicate that the Maskelyne Islands are not used on a significant level for marine turtle nesting.

Figure 1. Map of Vanuatu archipelago

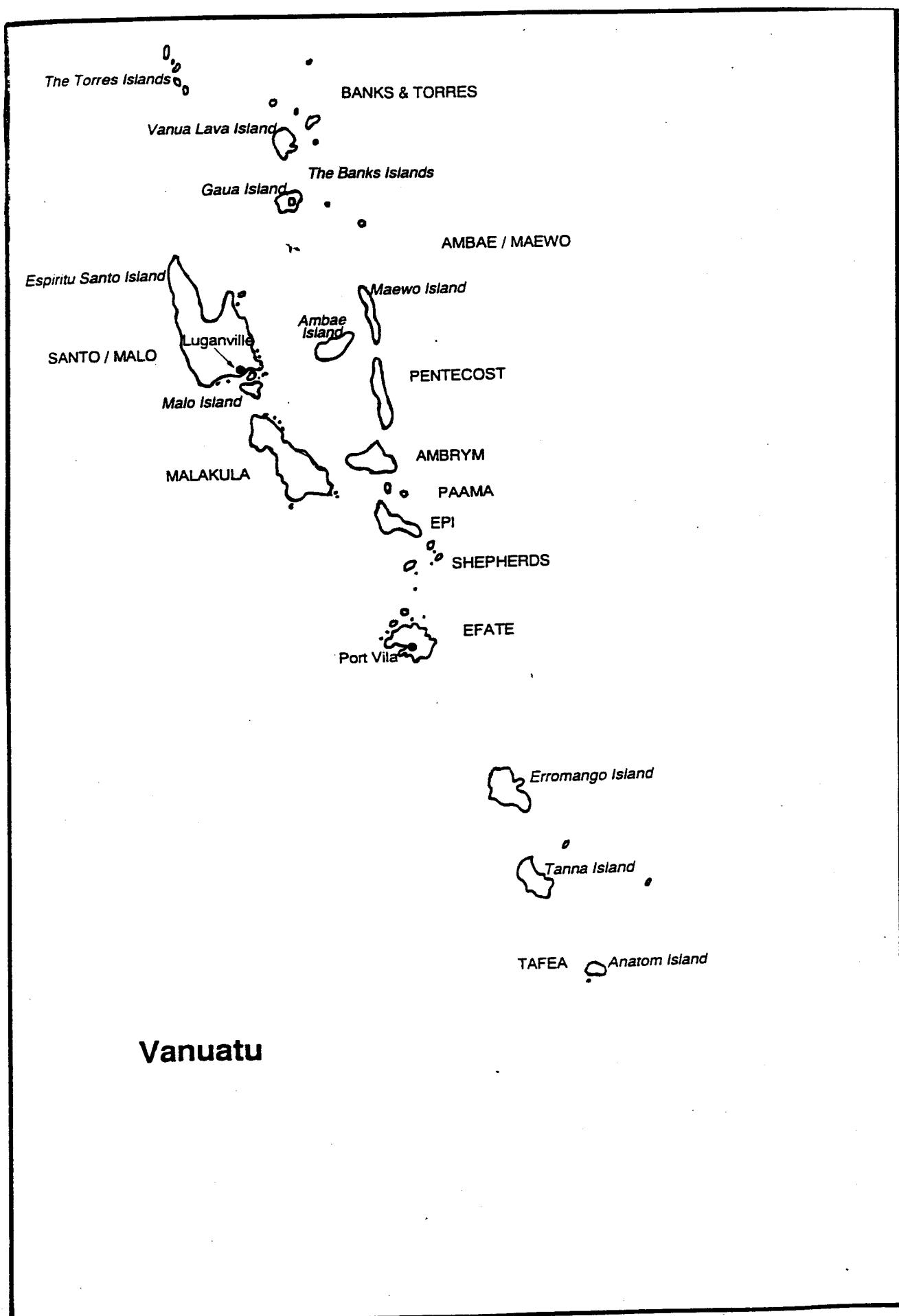


Figure 2. Map of Southeastern Malakula, incorporating the Maskelyne Islands

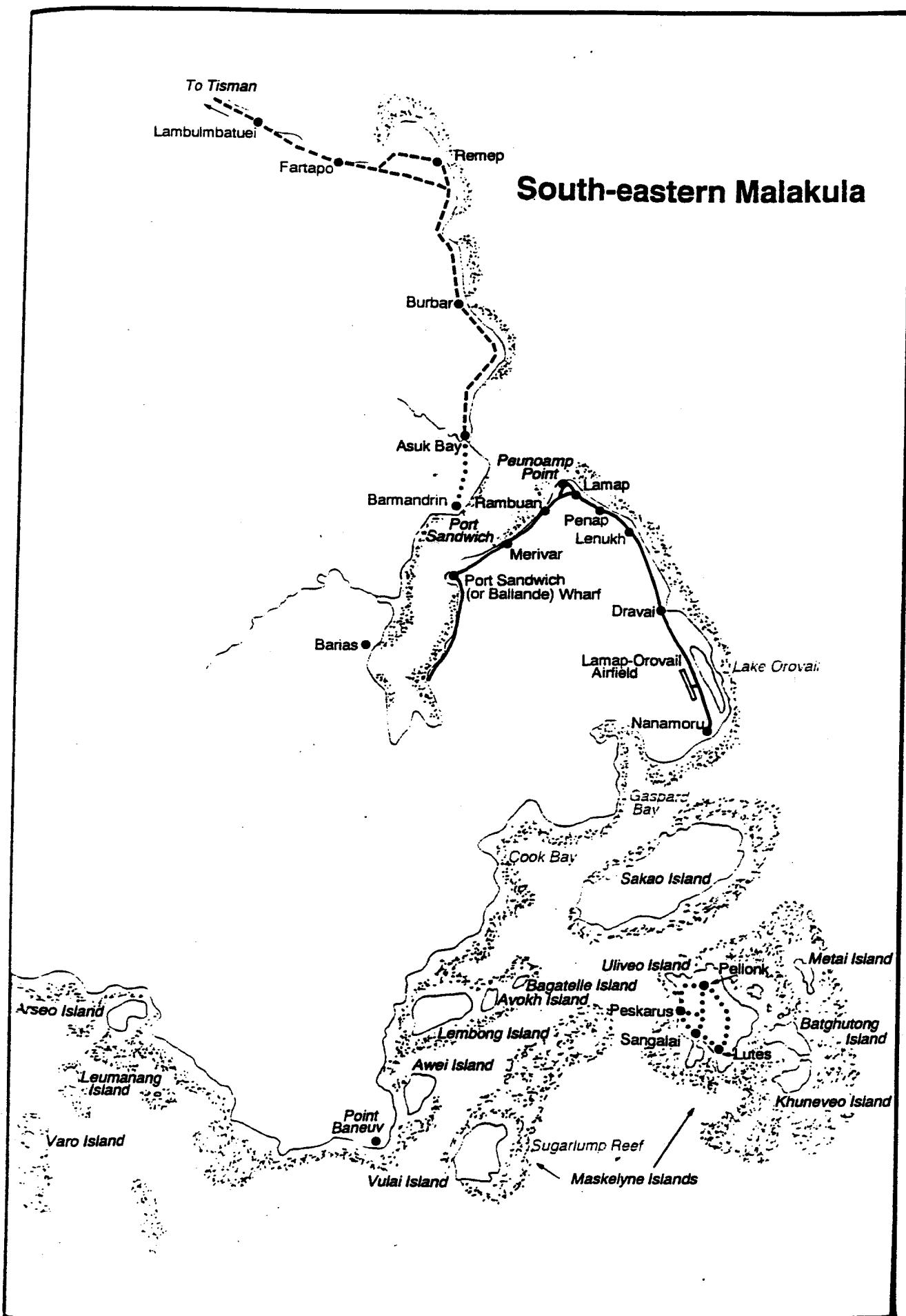


Figure 3. Estimate of nesting population for Vulai Island, Vanuatu for the 1992 season

No. active females = estimated nightly emergence X nesting success (%)
X renesting interval (days)

The figure obtained represents approximately 70% of the total nesting population (Hughes 1974).

In this equation, the renesting interval was taken to be 12 days, and nesting success to be 25% (three of the four tracks were definitely unsuccessful). The estimate was made using the track counts sighted during the survey.

estimated nightly emergence = 4 tracks in 12 days = 3.00
nesting success = 25%
renesting interval = 12 days

No. active females = 3.00 x 0.25 x 12
= 9.00

Total nesting population for the season = 12.86

Estimate of the total population for Vulai Island in the 1992 season is approximately 13 nesting turtles.

Table 1. Tagging information of turtles captured on the reef at Uliveo Island, Vanuatu

TAG NUMBERS	DATE	SPECIES	LOCALITY	CCL (cm)	TLC (cm)	NOTES
R1401/R1402	13/11/92	Green	Pellonk village	49.0	+0.5	Unsexed - juvenile
R1403/R1404	13/11/92	Hawksbill	Pellonk village	51.7	-2.0	Unsexed - juvenile
R1405/R1406	13/11/92	Hawksbill	Lutes village	79.0	+24.0*	Male - adult
R1407/R1408	13/11/92	Green	Lutes village	55.5	-0.5	Unsexed - juvenile <i>Chelonibia testudinata</i> present
R1409/R1410	13/11/92	Green	Lutes village	62.5	+1.0	Unsexed - juvenile

* This turtle is an adult male, based on tail length.

NB: Blood samples were taken from each turtle for genetic analysis.

No turtles showed any signs of fibropapillomas.

Table 2. Summary of estimated nesting and harvest numbers of turtles for the Maskelyne Islands, Vanuatu

ISLAND	NO. NESTING TURTLES / YEAR	NO. TURTLES HARVESTED / YEAR
Uliveo	Nil	50
Vulai	10-20	Nil
Sakao	<5	Nil
Khuneveo	Nil	Nil
Batghutong	Nil	Nil
Livlakhoas	Nil	Nil
Metai	Nil	Nil
TOTALS:	15-25	50

Note: This data relies purely on information obtained from discussions with the local islanders.

ACKNOWLEDGMENTS

This survey was conducted as part of the SPREP Regional Marine Turtle Conservation Programme (RMTCP) in conjunction with the Vanuatu Environment Unit. Special thanks to the people in the Maskelyne Islands for their information and enthusiasm.

REFERENCES

Hughes, G.R. (1974). The Sea Turtles of South-East Africa.
I. Status, morphology and distributions. Investigational Report No. 35.
Durban : The Oceanographic Research Institute