



# An Assessment of Marine Turtle Exploitation In Papua New Guinea

---

*By Job Opu. May 2018*

**Final Report prepared for the Secretariat of the Pacific Regional Environment Programme, Apia Samoa**



## **Acknowledgement.**

The Secretariat of the Pacific Regional Environment Programme is specifically acknowledged and thanked for the funding support provided that went into compiling the information for this report.

Very special thanks to the following key individuals who responded and provided much needed information in a timely manner: Ms Sharon Koitut, Mr. Luke Ndrasal. Ms Mildred Kelly, Mr. Selarn Kaluwin, Ms. Sylvia Miap , Ms Annisha Sapul, Mr. Glen Koenig, Ms Azallea Anota, Ms. Yvonne Tio, Ms. Jane Atip, Ms. Elsie Wilson. Mr. Newell Sinaigawi, Mr. Desmond Vagelo, Dr. Rodney Kamiata , Mr. John Joseph, Mr. Daniel Okena , Mr. Wenceslaus Magun, Ms. Abigail Kaumu , Ms. Evangelyn Kisa, Mr. Derek Warakai , Mr. Erick Sakin, Ms Lorreta Ambi, Mr. Luke Tanikrey , Ms Josey Gigiba, Ms. Juwella Masera , Ms Susannah Apopo, Mr. Hiviki Morea , Mr. Felix Daroa, Ms. Miriam Ovasuru, Mr. Vagi Rei, Mr. John Genolagani , Ms. Liberty Betuel. Mr. David Mitchel, Mr. Noel Wangunu, Ms. Hayley Versace, Ms Lulu Osembo, Mr. Johnny Sorenz , Mr. Damien Ase, and Mr. Lester Seri.

Professor Simon Saulej, Dr. Gae Gowai and Mr. Bernard Suruman are thanked for their advice and support during the drafting of this report.

To the future of marine turtle conservation in our oceans.

# TABLE OF CONTENTS

---

Acknowledgement.....	1
ACRONYMS .....	4
EXECUTIVE SUMMARY .....	5
1. Objectives and Methodologies .....	6
2. Marine Turtles in Papua New Guinea .....	8
3. Overview of PNG Geography. ....	11
4. Turtle Exploitation in Maritime Provinces of PNG .....	12
4.1 New Guinea Island Region (Manus, New Ireland, West and East New Britain Provinces, Autonomous Region of Bougainville) .....	12
4.2 The MOMASE (Morobe, Madang and Sepik Provinces)Region .....	15
4.3 Southern Region (Western, Gulf, Central /NCD, Milne Bay and Oro Provinces .....	18
4.4 Discussions on Outcomes of the Interviews .....	21
4.4.1 Biology Status and Distribution of Marine Turtles.....	21
4.4.2 Exploitation of Marine Turtles .....	23
Graph 3. Estimated Marine Turtle Catch in Northern Region in 2016 and 2017.....	25
.....	25
5. Review of Turtle Conservation Programs and Local Laws .....	26
5.1. Turtle Conservation Programs .....	26
5.1.1. Labu Tale leatherback Turtle Monitoring Project .....	26
5.1.2. Kamiali Leatherback Turtle Conservation Program .....	26
5.1.3. Madang Sea Turtle Restoration Project.....	27
5.1.4. Jormad Marine Turtle Conservation Project.....	27
5.1.5. Conflict Islands Conservation Initiative (CICI) .....	27
4.4.4 PNG National Laws on Turtles and National Turtle Conservation Programs.....	28
6. Conclusions .....	30
6.1 Recommendations.....	31
7. Proposed Programme for an Outreach/Public Awareness Campaign.....	32
8. References .....	34

Appendix 1. Key contact and stakeholders

## Maps

Map1.	Papua New Guinea Provincial Boundaries	10
Map 2.	New Guinea Islands Region	10
Map 3.	MOMASE Region	13
Map 4.	Southern Region	16

## Figures

Figure 1.	Green turtle on sale at Ward 3 market Lorengau Manus.	8
Figure 2.	Juvenile green turtle for sale at town market, Manus	21
Figure 3.	Leatherback turtle caught for a feast, Manus.	21
Figure 4.	Harnessing satellite tag on leatherback turtle, Kamiali.	25
Figure 5.	Turtle Tagging, Jormad Turtle Conservation Project	25
Figure 6.	Marine Turtle Awareness to School children, Madang	25
Figure 7.	Turtle Tagging, Conflict Islands, Milne Bay Province.	25

## Tables

Table 1.	Names of Maritime Provinces corresponding to numbers	10
Table 2.	Marine Turtle Distribution and Harvest in New Guinea Islands	11
Table 3.	Marine Turtle Distribution and Harvest in MOMASE Region	13
Table 4.	Marine Turtle Distribution and Harvest in Southern Region.	17

## Graphs

Graph 1.	Estimated Turtle Catch in New Guinea Islands 2016 / 2017	21
Graph 2.	Estimated Turtle Catch in MOMASE Region in 2016 / 2017	22
Graph 3.	Estimated Turtle Catch in Southern Region in 2016 / 2017	22

## ACRONYMS

CEPA	Conservation and Environment Protection Authority
SPREP	Secretariat of the Pacific Regional Environment Programme
ToR	Terms of Reference
PNG	Papua New Guinea
NGOs	Non-Government Organisations
NFA	National Fisheries Authority
UNDP SGF	United Nations Development Program – Small Grants Fund
MBP	Milne Bay Province
IUCN	International Union for Conservation of Nature
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
IOSEA	Indian Ocean and South East Asian
ADB	Asian Development Bank
EEZ	Exclusive Economic Zone
TNC	The Nature Conservancy
WWF	World Wildlife Fund
MECCN	Manus Environment Conservation and Community Network
ARB	Autonomous Region of Bougainville
MOMASE	Morobe Madang Sepik (regions)
NCD	National Capital District
NCDC	National Capital District Commission
VDT	Village Development Trust
MAKATA	Mas Kagin Tapani Inc.
CBO	Community Based Organisation
UNEP	United Nations Environment Program
CMS	Convention on the Conservation of Migratory Species
CTI	Coral Triangle Initiative.
RMTCP	Regional Marine Turtle Conservation Program.

## EXECUTIVE SUMMARY

In the early 1980s Spring's report on marine turtle species distribution indicated there were 6 species of turtles that could be found in PNG water including the green, hawksbill, leatherback, loggerhead, olive ridley and the flatback turtles. Over 30 years later, there is growing doubt if the other two species, the olive ridley and the flatback turtles do actually occur in PNG waters as well. This need to be confirmed.

A total of 37 reliable key stakeholders were interviewed in this exercise and the results are that marine turtles landed in markets for domestic consumption were estimated at 4760 turtles in 2016 and 5320 turtles in 2017. Provinces that landed most catches were Manus, Milne Bay and Western Provinces. Species with the highest numbers caught were the green, followed by hawksbill and the leatherback turtles. There was no mention of loggerhead turtles being caught and /or eaten. Provinces that did not report any turtles catches were West Sepik (Sandaun) and Oro Provinces. Out of the 15 Maritime Provinces only the two provinces did not report any turtle catches. The number of turtle catches is very alarming for both years. The numbers are best estimates but may not reflect the actual amount that is being harvested.

Under the Fauna (Protection and Control) Act 1976, the leatherback turtle is totally protected and killing the turtle and/or harvesting of eggs is prohibited. Local coastal communities are allowed to harvest and utilize other species but only using traditional fishing methods and only for household domestic / consumption. However from this exercise, it has been noted that leatherback turtles have been killed and consumed within the community and eggs collected and consumed or sold in town markets. Green and hawksbill turtles are being caught and increasingly being sold in town and city markets. Considering that there is harvesting and selling of turtles, this indicates the lack of enforcement of the existing legislation.

PNG is a Party to 3 regional arrangements for marine turtle conservation and sustainable management. These include the Regional Marine Turtle Action Plan under SPREP, the IOSEA arrangement and the Regional Plan of Action under the CTI. CEPA is the focal point for these regional arrangements however there is very little activity under these programs in PNG.

Three turtle conservation programs are currently running in PNG and are only associated to certain parts of PNG.. These programs are more focused on community based nesting turtle tagging and monitoring and protection of nesting beaches. These locality focused programs also determine their education and awareness on the plight of marine turtles that is limited to a smaller community and not to a wider community especially those who hunt and sell and those who buy marine turtle products.

Education and awareness on the plight of the marine turtles is basically lacking throughout PNG. Whatever program there is, are done on an ad hoc basis and is short lived. Awareness materials are also lacking. There is an urgent need for PNG to review its National Marine Turtle Conservation Program and carry out an intensive awareness program.

## 1. Objectives and Methodologies

Terms of Reference (ToR) for this study focused on marine turtle harvest in Papua New Guinea (PNG). Turtles have been hunted for centuries in PNG, supplying some of the basic needs of subsistence village society: food, tools, decoration, and items of trade. Shifts in traditional subsistence society to modern cash economy in major centres of PNG have had an effect on marine resource utilization (Spring, 1980). Where locals barter, cash sales have taken over. Turtle sales in town markets have been a growing concern in PNG over the years and this report intends to highlight this issue and put forward recommendations to address this issue.

Specific duties included

- Collect readily available information from all 15 maritime provinces of PNG on turtle harvest and sales in town markets during the calendar year 2016
- Review current turtle programs implemented by the national government and local and provincial authorities, including their legal frameworks and implications for their conservation and management of turtles
- Visit the two provinces with the reported highest turtle harvest in 2017, Milne Bay and Western Provinces) to work with local NGOs to gather more first-hand information on turtle harvest
- Establish networks with stakeholders in these two provinces, including the provincial government and NGOs
- Propose a programme for an outreach/public awareness campaign.

This study began at the end of March 2018 through May 2018. The author first developed a list of contact for each maritime province by consulting with Conservation and Environment Protection Authority, National Fisheries Authority (NFA), UNDP SGF, and Provincial Fisheries Office throughout the 15 Maritime Provinces. International and national NGOs and community based organisations were contacted next. Where possible, local NGOs from the provinces were also contacted. The list developed from this desktop exercise was used to make initial contact via email and phone with relevant stakeholders throughout the maritime areas of PNG. Questionnaires were sent out to contacts in Maritime Provinces and consultations undertaken through emails, phone calls and face to face consultations. Through these contacts, a list was developed.

Interviewing is the process of compiling information by asking questions. Interviews provide opportunity for: obtaining information at no costs and less time, summarising information from knowledgeable people, compiling information that has been maintained where written information is/was scarce, supplementing other data, sharing of information and collaboration of information. Due to time limitation and logistical limitations, interview with maritime provincial contacts were the main method used in obtaining information. This was through person to person interview, phone calls and email exchanges.

Questions leading the discussions were set out as follows:

- Biology status and distribution
  - How many turtles are seen in this area (abundance: numbers seen per area, how many nests per area)
  - What type or species

- Where are turtles found
- How many turtles were found in that area previously?
- Utilization and Commercialisation
  - Are turtles sold in the community, town markets or other areas?
  - What are turtles used for?
  - How many turtles were utilised and/or sold in 2016?
  - Have number of turtle sales in market increased?
  - What are the selling prices of turtles?
- Laws and conservation programs and attitude towards them
  - Are there any local agreements or laws that control collecting of sea turtles?
  - Are there any conservation programs?
  - Are there any government agencies or other organisations managing sea turtles in the Maritime Provinces?

While there was initial intension to also do market surveys and interviews with local turtle hunters, this was not possible due to time and logistical constraints. This could be looked at in future studies.

Readily available information on marine turtle takes especially in 2016 from Maritime Provinces were sourced and compiled through desktop literature reviews and contacting and interviewing relevant stakeholders in these provinces. Contacts with provincial stakeholders were made through phone calls and emails wherever possible and face to face consultations. Information and data gathered especially on turtle takes were also compared against data from 2017 (Opu, 2018).

Current turtle programs implemented by the national government and local and provincial authorities, including their legal frameworks and implications for their conservation and management of turtles were also reviewed. Review of turtle program involved desktop literature review and consultation with relevant program coordinators. Turtle program in this report is defined as marine turtle tagging and monitoring activities, satellite tagging, education and awareness, and research (population sampling etc.). The section also looks at previous program and current programs including initiation, maintaining and their demise for program that faced issues and couldn't continue.

A report by Opu (Opu, 2018) on turtle harvest in PNG indicated two main provincial towns that had high numbers of marine turtle sales in the local town markets. These were Daru in Western Province and Misima Island (Bwagoia) in the Milne Bay Province. A short 2 day visit was made to Daru. Local authorities and NGOs were met and consultations undertaken. A short 2 day visit was also made to Alotau, the administrative centre for Milne Bay Province. Visit to Misima Island that had a highest turtle harvest count in 2017, was not possible due to logistical constraints. Local Authorities were also met and consulted. Three local NGOs were consulted as well. Data from these trips were compiled and contact details with individual were also compiled. Furthermore, networks with stakeholders in these two provinces, including the provincial government and NGOs were also established.

Programme is proposed for an outreach/public awareness campaign towards the end of this report. Examples of such programs were obtained from reviews and also from previous experiences. These were then tailored down to meet current situation in PNG.

## 2. Marine Turtles in Papua New Guinea

Marine turtles are of economic, cultural, and spiritual importance to local communities in PNG. Coastal communities have had close associations with turtles for millennia. The animals have economic value because they provide sustenance, particularly for remote and isolated communities where alternative sources of protein may not be readily available or affordable. Turtles play a significant role in the customary economy of many communities. The spiritual and cultural significance of these animals is illustrated in the stories, traditions and contemporary activities of many coastal Indigenous communities and acted out in numerous ceremonies.

Along with the importance turtles have for coastal communities, turtles are also highly regarded by the rest of PNG and her neighbours in the Pacific region for the important place they have in PNG and the regions rich and unique marine biodiversity. Unfortunately, populations of turtles are under threat from many human activities including:

- By-catch in fisheries
- Predation of turtle eggs by native and introduced animals
- Coastal development
- Marine debris
- Loss of habitat
- Illegal, unregulated and unreported take (turtles and/or eggs) by foreign fishers in PNG waters
- Unquantified and potentially unsustainable harvest by coastal communities
- Activities in other range states such as hunting in the Solomon Islands and West Papua/Indonesia

These threats have prompted the development and implementation of a number of actions by government of PNG; however there is no real commitment in terms of funding and resource allocation and in most cases, priority is given to other activities.

Through early turtle research work in the 1970s and early 1980s (*Spring 1984*) six species of marine turtles were reported known to occur in PNG waters. These are the green ( *Chelonia mydas* ), hawksbill ( *Eretmochelys imbricata* ), leatherback ( *Dermochelys coriacea* ), loggerhead ( *Caretta caretta* ), olive ridley ( *Lepidochelys olivacea* ) and flatback ( *Natator depressa* ). Green, leatherback and hawksbill turtles are the most common in PNG waters. Information from Spring was mainly through questionnaires sent out and information collated.

Ten years after Spring's turtle work, Lockhart (1989) did a follow up survey on turtles conducted between February and June 1989. Lockhart reported that more than 3000 forms were circulated. 500 replies were received and the results received were biased especially in distinguishing among turtle species. While 3 common ones were easily identified as green, hawksbill and the leatherback, loggerhead caused confusion in areas where there were no loggerheads encountered before or where it was most unlikely to occur. There was no mention of olive ridley and flatback turtles. Lockhart's paper indicated 4 species of turtles occurring in PNG, which are 2 species less than the number of species listed in Spring's early paper.

**Table 1.** Sea Turtle Conservation Status and Nesting Information in Papua New Guinea.

Species	PNG Conservation status	IUCN Red list and other Conservation Designations	Known nesting locations
Green ( <i>Chelonia mydas</i> )	Endangered - Protected (domestic harvest allowed)	Endangered CITES Appendix I Bonn Appendix I	Nesting sites in PNG mostly on coastal and island sandy beaches all throughout PNG coasts and in Torres Strait. Foraging areas are along coastal areas seagrass meadows throughout PNG marine areas as well. Nesting year round with peak in late December / early January.
Hawksbill ( <i>Erectmochelys Imbricata</i> )	Endangered - Protected (domestic harvest allowed)	Critically endangered CITES Appendix I Bonn Appendix I	Nesting in PNG throughout sandy beaches. Peak nesting January to February.
Leatherback ( <i>Dermochelys Coriacea</i> )	Critically endangered / total protection (total ban on harvest of eggs and taking of turtles)	Vulnerable CITES Appendix I Bonn Appendix I	Low density nesting on northern coast of PNG and the New Guinea Islands region. Nesting October to March (peak December to January). Some nesting between June and August.
Loggerhead ( <i>Caretta carretta</i> )	unknown	Vulnerable CITES Appendix I Bonn Appendix	No nesting currently known in PNG. Occasional visitor to the eastern Papuan coasts
Olive Ridley ( <i>Lepidochelys olivacea</i> )	unknown	Vulnerable CITES Appendix I Bonn Appendix I	Unknown
Flatback ( <i>Natator depressa</i> )	unknown	Data deficient CITES Appendix I	No nesting known in PNG.

Green turtles are the slowest growing of all the turtles and take the longest to reach sexual maturity. They are highly migratory and have a circumglobal distribution. Leaving the nesting beach as hatchlings, it is thought they begin an oceanic phase. After a number of years, they recruit to coastal areas rich with seagrass and algae. Here they forage and grow until maturity. At maturity they undertake breeding migrations which can span thousands of kilometres between feeding and nesting. The green turtle's aggregation areas in PNG are known to predominantly occur along the south and eastern coast of PNG and the islands of Milne Bay. Green turtles which breed in New Caledonia have been shown to migrate to foraging areas in PNG (Read et al., 2014).

Leatherback turtles nest widely, though at low density, along the north coast of PNG and also on islands including Long Island in Milne Bay. It was reported in IOSEA (2006) that during 1996, an estimated 50 to 100 leatherbacks were nesting per annum along the entire north coast of PNG. Satellite telemetry has revealed that after nesting the leatherbacks travelled east and south-east then south to the Coral Sea. A single female travelled south to the southern transition zone (adjacent to New Zealand) before turning north (IOSEA, 2006). A couple of turtles were also tracked from Huon Coast in Lae, PNG to southern Californian waters (DEC 2005). Previous metal tagging work has indicated they return to nest along to the same beach on a 2 year cycle (DEC 2002)

Hawksbill turtles occur throughout the seas of tropical and subtropical regions and are native to PNG. They are thought to nest on mainland PNG and the islands of PNG. Like most turtle species,

they are highly migratory and wide ranging. At about 30 cm in length they recruit to coastal habitats including coral reefs, seagrass beds and mangroves. As they grow, there is a tendency for large turtles to inhabit deeper waters. Genetic studies demonstrated that female turtles return to their natal beaches to breed (Mortimer and Donnelly, 2008).

From anecdotal information collected over the years, loggerhead turtles have been encountered on the southern part of PNG mainland, from the Western Province through the Gulf, Central and down to the Milne Bay Provincial waters. However, there are no known nesting sites for the loggerhead in PNG. A few adult males have been known to be residential all year around the Jormad Island Reefs<sup>1</sup>.

In alignment with the Convention on Biological Diversity (CBD) the government of PNG is determined to protect threatened species throughout the region.



**Figure 1.** Green turtle (turned upside down) for sale at Ward 3 market, Lorengau Town, Manus.  
(Photo Courtesy of Job Opu).

---

<sup>1</sup> Personal conversations with Joseph Betuel, a local Brooker Island Village elder. July 2011.

### **3. Overview of PNG Geography.**

PNG occupies the eastern half of the island of New Guinea with approximately 700 surrounding islands. The western half of the island, West Papua, is occupied by Indonesia. More specifically, seven-eighths of the country's total land area sits on the island of New Guinea, with offshore islands accounting for the remaining one-eighth.

PNG comprises 22 provinces, of which 15 have maritime elements, including the five island provinces of East New Britain, Manus, New Ireland, West New Britain, and North Solomon's (now referred to as the Autonomous Region of Bougainville). The remaining 10 are mainland coastal provinces: Central Province, Gulf Province, Madang, Milne Bay, Morobe, Oro, National Capital Region, East Sepik, West Sepik (Sandaun), and Western Province.

PNG's principal marine and coastal ecosystems include 13,840 km<sup>2</sup> of coral reefs, 4,200 km<sup>2</sup> of mangrove swamp forests, and extensive seagrass beds. The country is home to at least 500 species of stony coral, 1,635 reef-associated fish species, 43 mangrove species, and 7 seagrass species (ADB 2014).

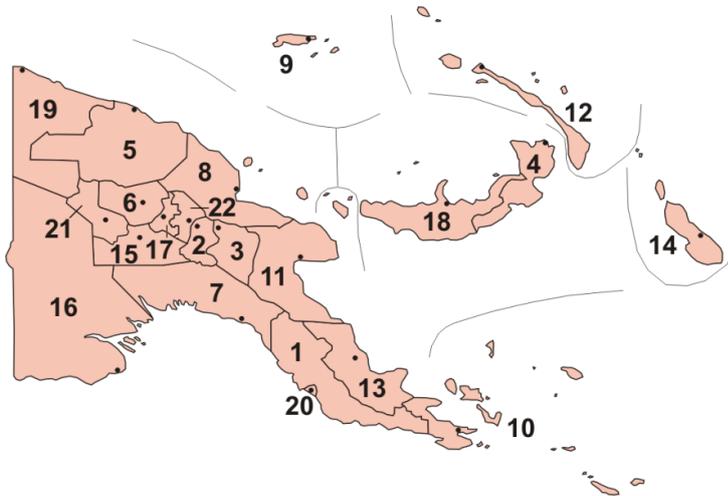
While PNG's extensive coastal reefs and offshore patch reefs show a high degree of biodiversity, Papua New Guinea (PNG) has a total land area of 462,000 square kilometres (km<sup>2</sup>), making it the largest Pacific island country. Its exclusive economic zone (EEZ), at 3.12 million km<sup>2</sup>, is the world's second largest. The country's sparsely distributed population of only 7 million makes PNG's population density of approximately 9 people per km<sup>2</sup> the lowest in the South Pacific (ADB 2014).

PNG is surrounded by three major oceanic bodies—the Bismarck Sea to the north, the Solomon Sea to the north and east, and the Coral Sea to the south and east. A fourth major oceanic body of water, the extensive Gulf of Papua, lies between PNG and Australia. Because of PNG's extensive 17,000-kilometer coastline, and its significant EEZ comprising 3.12 million km<sup>2</sup>, the country is home to a wide variety of marine environments, ranging from tidal wetlands and estuaries to deep ocean basins. PNG is renowned for its significant marine biodiversity and pristine coral reefs and coastal environments. The country's waters extend well beyond coastal shelves, and include deep ocean basins that remain almost completely unexplored.

Given such a vast expanse of territorial waters and numerous islands with associated sandy beaches and corals reefs including seagrass meadows it is not surprising that 6 species of marine turtles occur.

## 4. Turtle Exploitation in Maritime Provinces of PNG

Out of the 22 provinces in PNG, 15 have maritime elements. The other seven provinces are located in the highlands of PNG.

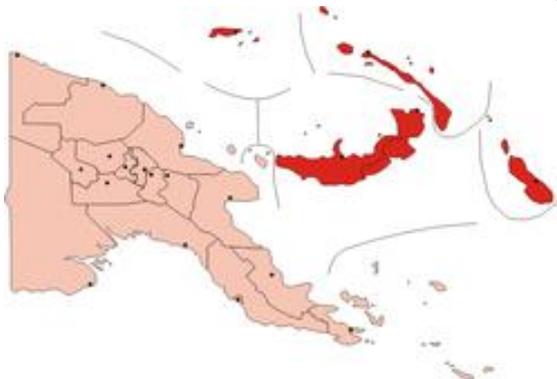


**Table 1. Names of Marine Provinces corresponding to numbers on map.**

No.	Province
16	Western
7	Gulf
1	Central
20	National Capital District
10	Milne Bay
13	Oro
11	Morobe
8	Madang
5	East Sepik
19	West Sepik (Sandaun)
18	West New Britain
4	East New Britain
9	Manus
12	New Ireland
14	Bougainville

**Map 1.** Map of PNG with political boundaries of all 22 provinces of PNG. (Source- Wikipedia).

### 4.1 New Guinea Island Region (Manus, New Ireland, West and East New Britain Provinces, Autonomous Region of Bougainville)



Maritime Provinces are divided regionally into New Guinea Islands, the MOMASE and the Papuan Regions. While it is not clear why there are such regional divisions, PNG Government uses regional setups for planning purposes and for this purpose maritime regions are used to highlight major marine features associated with these regions that determine the nesting, foraging habitats /areas and distribution of commonly occurring marine turtles in PNG.

**Map 2. Map of New Guinea Islands Region (source Wikipedia)**

New Guinea Islands region is located to the north of PNG and comprise Manus further north, New Ireland, New Britain and Bougainville island provinces. New Britain Island is further divided into East and West New Britain provinces. These bigger islands are surrounded by smaller islands and are mountainous with forest covers and surrounded by coral reefs and seagrasses with numerous wide sandy beaches . Mangroves also occur at river mouths, lagoon and deltas. Green turtles and hawksbill turtles occur (personal observations) nesting on sandy beaches and foraging in the reefs and seagrass areas. Leatherback turtles have been know to occasionally nest in all the major islands where there are black sandy beaches close to river mouths, and in very low concentration, and from the months of October to March (Rei. Pers.comm). Leatherback turtles are highly migratory and are seasonal visitors to PNG waters and migrate long distance northeast or to the south east during nesting off seasons to forage for food.

Through stakeholder consultations with additional desktop review information on turtle distribution and harvest in major towns of the New Guinea Islands Region of PNG were collated and are summarised below. Again the questions for the consultations included: Marine turtle biology status and distribution, utilization and commercialisation, and laws and conservation programs and perceptions towards them.

**Table 2. Marine Turtle Distribution and harvest in New Guinea Islands Region.**

Locality (Province)	Biology Status and Distribution	Utilization and Commercialisation	Laws and conservation programs and attitude towards them
<p><b>Manus Province</b> (Contributors: Ms Sharon Koitut, Mr. Luke Ndrasal, Ms Mildred Kelly, Mr. Selarn Kaluwin, Ms. Sylvia Miap).</p>	<ul style="list-style-type: none"> <li>Moderate numbers of turtles are encountered in the Manus marine areas.</li> <li>Species in order of abundance – Green, hawksbill and leatherback</li> <li>Green and hawksbill have been observed in reefs around Manus while leatherback has been observed in Tulu beaches south of main island Manus</li> <li>While green and hawksbill are still encountered on the reefs. Nesting leatherback turtles on Tulu have not been observed for the last 5 years.</li> </ul>	<ul style="list-style-type: none"> <li>Turtles are sold in community markets, lorengau town markets. Turtles are also caught and eaten by coastal communities for every social events such as funeral service, hausboi<sup>2</sup> openings and church gatherings. Recently turtles have been sold to mobile funding for childrens school fees and this is an increasing activity.</li> <li>Turtles are used mainly for alternate protein and as a delicacy by locals and people living in Lorengau town.</li> <li>Turtles taken in Manus was estimated at <b>1200 turtles</b> in 2017 (Opu 2018). This recent survey indicated approximately the same number of turtles were harvested in 2016.</li> <li>Turtle sales in Lorengau town markets have somewhat increased over the last 5 years.</li> <li>Prices of turtles varies depending on sizes. Small dinner plate size sells for 50 PGK while large mature sizes sell for 500PGK. It has been also noted that prices in turtles sales has increased as well.</li> </ul>	<ul style="list-style-type: none"> <li>Currently there are no laws and agreements that control collecting of sea turtles in Manus.</li> <li>There are several marine conservation programs carried out the TNC, WWF, MECCN. However, there are no specific programs that address marine turtle conservation and management</li> <li>Manus Provincial Government recently set up an Environment Unit staffed by a Conservation Scientific Officer</li> </ul>
<p><b>New Ireland Province</b> (Contributors: Ms Annisha Sapul, Mr. Glen Koenig, Ms Azallea Anot)</p>	<ul style="list-style-type: none"> <li>Moderate numbers of turtles are seen in the New Ireland marine areas. Recent surveys in the Mussau Islands further north of the main island of New Ireland has indicated that marine turtles are in abundance on the reefs. (ed. Whitmore 2015)</li> <li>Species in order of abundance – Green, hawksbill and leatherback</li> </ul>	<ul style="list-style-type: none"> <li>Turtles sales in Kavieng town market is not so common. Turtles sold are often butchered at home and turtle meat only sold in markets. Turtles have been noted sold to people from other provinces who were passing by vessels.</li> <li>Turtles are used mainly for</li> </ul>	<ul style="list-style-type: none"> <li>Currently there are no laws and agreements that control collecting of sea turtles in New Ireland Province.</li> <li>There are no specific programs that address marine turtle conservation and management</li> <li>New Ireland Provincial Government recently set up an</li> </ul>

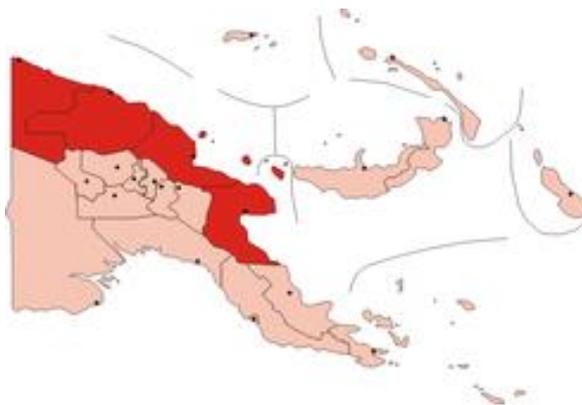
<sup>2</sup> Communal house only used by adult males of the communities

	<ul style="list-style-type: none"> <li>• Green and hawksbill have been observed in reefs around New Ireland while leatherback has been observed in southern New Ireland beaches</li> <li>• While green and hawksbill are still encountered on the reefs. Nesting leatherback turtles in Southern New Ireland have not been observed for the last 5 years.</li> </ul>	<p>alternate protein and as a delicacy by locals and people living in Kavieng town.</p> <ul style="list-style-type: none"> <li>• Turtles take in Kavieng was estimated at 100 turtles in 2017 (Koenig pers.comm). This recent survey indicated the approximately the same number was harvested in 2016.</li> <li>• Turtle sales in Kavieng market has remained the same over the last 5 years.</li> <li>• Large matured females were sre for k100 and medium sized adults were for k70, smaller juvenilles and post-adults are sold between k20 - k50.</li> </ul>	<p>Environment Unit staffed by a Climate Change officer. Whether the officer does any turtle conservation work apart from climate change work is unknown at this stage.</p>
<p><b>East New Britain Province</b> (Contributers: Ms. Yvonne Tio, Ms. Jane Atip)</p>	<ul style="list-style-type: none"> <li>• Moderate numbers of turtles are seen in East New Britain marine areas.</li> <li>• Species in order of abundance – Green hawksbill and leatherback</li> <li>• Green and hawksbill have been observed in reefs around East New Britain while there leatherback is unknown</li> <li>• While green and hawksbill are still encountered on the reefs and sandy beaches nesting, nesting leatherback turtles in Eas New Britain have not been observed for the last 5 years.</li> </ul>	<ul style="list-style-type: none"> <li>• Turtles sales in Kokopo town market is not common. Whatever turtles sold are often butchered at the beach front where local boats come in with their fsh catches .</li> <li>• Turtles are used mainly for alternate protein and as a delicacy by locals and people living in Kokopo town.</li> <li>• Turtles catch in East New Britain was estimated at 50 turtles in 2017 (Tio. pers.comm). This recent survey indicated the approximately the same number was sold as in 2016.</li> <li>• Turtle sales in Kokopo market has remained the same over the last 5 years.</li> <li>• Prices of turtles sold in market unknown.</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no laws and agreements that control collecting of sea turtles in East New Britain.</li> <li>• There are no specific programs that address marine turtle conservation and management</li> <li>• East New Britain Provincial Government has an Environment Unit staffed by an Environent officer. Whether the officer does any turtle conservation work apart from climate change work is unknown at this stage.</li> </ul>
<p>West New Britain (Ms. Elsie Wilson. Mr. Newell Sinaigawi, Mr. Desmond Vagelo)</p>	<ul style="list-style-type: none"> <li>• Moderate numbers of turtles are seen in west New Britain marine areas.</li> <li>• Species in order of abundance – Green hawksbill and leatherback</li> <li>• Green and hawksbill have been observed in reefs around West New Britain while there leatherback is known to nest occassionally in the Garu area.</li> <li>• While green and hawksbill are still encountered on the reefs and sandy beaches nesting, nesting leatherback turtles in West New Britain have not been observed for the last 5 years</li> </ul>	<ul style="list-style-type: none"> <li>• Turtles sales in Kimbe town market is not common. In the past whole live adult turtles were sold, however there are no turtles sales anymore in markets .</li> <li>• Turtles are used mainly for alternate protein and as a delicacy by locals and people living in Kimbe town.</li> <li>• There were no turtle catches in 2016 and 2017.</li> <li>• Turtle sales in Kimbe market has decreased.</li> <li>• Prices of turtles sold previously in market unknown.</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no laws and agreements that control collecting of sea turtles in West New Britain.</li> <li>• There are no specific programs that address marine turtle conservation and management</li> <li>• West New Britain Provincial Government has an Environment Unit staffed by a environent officer. Whether the officer does any turtle conservation work apart from climate change work is unknown at this stage.</li> </ul>

<p>Autonomous Region of Bougainville (ARB) (Contributors: Dr. Rodney Kamiata)</p>	<ul style="list-style-type: none"> <li>• Moderate numbers of turtles are seen Bougainville marine areas.</li> <li>• Species in order of abundance – Green hawksbill and leatherback</li> <li>• Green and hawksbill have been observed in reefs around Bougainville while the leatherback is known to nest occasionally in the southern area of Bougainville.</li> <li>• While green and hawksbill are still encountered on the reefs and sandy beaches nesting, nesting leatherback turtles in Bougainville have been observed occasionally and there have been suggestions that there is steep decline in numbers. In a 2005 to 2007 survey ARB leatherback nests were estimated between 160 – 415 nests per year (Kinch et al 2012).</li> </ul>	<ul style="list-style-type: none"> <li>• Turtles hunting and sales in Bougainville are somewhat scatchy.</li> <li>• Kinch (Kinch et al 2012) reported a total 21 leatherback turtles were taken for food in the last decade. Consensus by the communities in these areas indicated leatherback turtle population has declined within the last 30-50 years. It was estimated that turtle catches in Bougainville was approximately 100 in 2016 and about 50 in 2017. The reasons for the decrease is number of catches in unknown.</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no laws and agreements that control collecting of sea turtles in ARB</li> <li>• There are no specific programs that address marine turtle conservation and management</li> <li>• ARB Government has an Environment Unit staffed by a environment officer. Whether the officer does any turtle conservation work apart from climate change work is unknown at this stage.</li> </ul>
---	---	--	--

## 4.2 The MOMASE (Morobe, Madang and Sepik Provinces) Region

MOMASE region comprises the Morobe, Madang and the two Sepik, East and West Sepik provinces of PNG. They occupy the southern half of PNG mainland. They have major fresh water runoff that include the Sepik and the Markham Rivers. Coral reefs are located away from the influence of these rivers in these provinces and more so with the outer islands located in these maritime provinces.



This region takes in the second largest city of the nation, Lae, which is the capital of Morobe Province. Lae is situated at the beginning of the Highlands Highway, the main transport corridor to the coast. The East Sepik province produces cocoa, coffee, copra and sugar, while Madang is the country's second largest producer of cattle. With its tropical humid climate, normally between 24 and 32 degrees Celsius, it is envied by many around the country.

**Map 3. Map of the MOMASE region of PNG**

Through stakeholder consultations with additional desktop review information on turtle distribution and harvest in major towns of the New Guinea Islands Region of PNG were collated and are summarised below. Again the questions for consultations included: Marine turtle biology status and distribution, utilization and commercialisation, and laws and conservation programs and attitude towards them

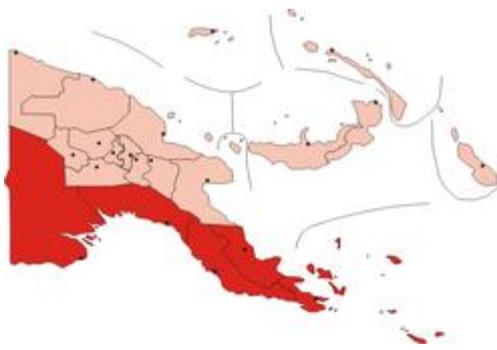
Table 2. Marine Turtle Distribution and harvest in MOMASE Region.

Locality (Province)	Biology Status and Distribution	Utilization and Commercialisation	Laws and conservation programs and attitude towards them
<p><b>Morobe Province</b> (Contributors: Mr. John Joseph, Mr. Daniel Okena).</p>	<ul style="list-style-type: none"> <li>• Number of turtles vary along mainland coasts and outer islands. Green and hawksbills are encountered on coastal fringing reefs and outer island reefs while leatherback turtles are encountered during nesting seasons along known nesting sites.</li> <li>• Species in order of abundance are the green, hawksbill and leatherback turtles.</li> <li>• Green and hawksbill have been observed on fringing reefs around Morobe while leatherback has been observed along the Huon Coast black beach just out of Lae city all the way to Morobe patrol post on the southwest morobe coasts and north eastern coasts past Wasu station.</li> <li>• While green and hawksbill are still encountered on the reefs. Nesting leatherback turtles have declined in numbers over 10 years from 8-12 nesting turtles per night in peak nesting season to 2-3 nesting turtles per night in peak season.</li> </ul>	<ul style="list-style-type: none"> <li>• Turtles (mainly green) are sold at the water front in Lae city where community boats come in to dock and not directly in Lae city market. Turtles are also caught and eaten by coastal communities for social events such as funeral service and church gatherings.</li> <li>• Turtles are used mainly for alternate protein and as a delicacy by locals and people living in Lae city. Leatherback turtles when slaughtered are shared only within the communities and not sold in markets.</li> <li>• Turtles take in Morobe was estimated at <b>300</b> in 2017 (Joesph. pers.comm). This recent survey indicated approximately 250 was harvested in 2016.</li> <li>• Turtle sales in Lae city markets have fluctuated over the years. However turtle eggs sales mainly taken from leatherback turtle nests have decline over the last 10 years.</li> <li>• Prices of turtles sold varies depending on pieces of cut turtle. Turtle are hardly sold whole. Prices range from K5.00 – K15.00. It has been also noted that prices in turtles sales has increased as well over the years. Turtle eggs are sold for K1.50 each.</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no provincial laws and agreements that control collecting of sea turtles in Motobe Province. However there are several community rules on 3 locally protected nesting beaches of leatherback turtles In Labu Tale protected beach (1 km), No nesting leatherback turtles are to be disbured or killed including no take of eggs from nests. In Kamilai Wildlife Management Area nesting beach (5 km) no nesting leatherback turtles are to be disturbed or harmed and no eggs to be harvested. In Singarokai nesting beach ( 1km) under the Yus Conservation Area, nesting turtles are not be harmed or taken and also no turtles to be hunted in adjacent fringing reefs.</li> <li>• Labu Tali Conservation Area: Giant leatherback turtles come here between late November and early February to lay eggs.</li> <li>• Kamiali Wildlife Management Area: Here in the Kamiali Wildlife Management Area, local people run eco tours to see turtles nesting and offer visitors the chance to swim, fish, snorkel, walk or paddle canoes</li> </ul>
<p>Madang (Contributors: Mr. Wenceslaus Magun, Ms. Abigail Kaumu)</p>	<ul style="list-style-type: none"> <li>• Moderate numbers of hawksbill and green turtles are encountered in Madang coastal lagoon that contain pritine to near pristine coralreefs and seagrass beds. Mleatherback turtle are seasonal visitors to certain parts of Madang beaches</li> </ul>	<ul style="list-style-type: none"> <li>• Turtles sales in Madang town is not common. Turtles are rarely sold in Madang markets</li> <li>• Turtles are used mainly for alternate protein and as a delicacy by locals . Leatherback turtle were slaughtered by the Mur community of Rai Coast and exchanged / barter for yams with</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no provincial nor local level government laws and agreements that control collecting of sea turtles in Madang Province. However certain communities along the coasts have set up turtle conservation beaches.</li> <li>• Mas Kagin Tapani (Makata) Inc., a local NGO have been working with</li> </ul>

	<p>during nesting seasons.</p> <ul style="list-style-type: none"> <li>• Species in order of abundance – Green, hawksbill and leatherback turtles.</li> <li>• Green and hawksbill have been observed in reefs in Madang lagoon and towards the south and north coasts where there are reefs, while leatherback have been observed on nesting beaches also on the north and south coast of Madang.</li> <li>• While green and hawksbill are still encountered on the reefs. Incidents of nesting leatherback turtles in Madang are becoming very rare and only 2 are encountered each year along the coasts of Madang and over the last 5 years (Kaumu. pers.comm).</li> </ul>	<p>the inland people. This cultural practice has now been banned and the Mur community started a leatherback conservation project 5 years ago (Magun. Pers.comm).</p> <ul style="list-style-type: none"> <li>• Figures are unknown for turtle take in Madang but assume that about 200 turtles have been taken by local communities for special events and feasts (Kaumu, pers comm) in 2017 and 150 in 2016.</li> </ul>	<p>5 local communities over the last 10 years and have developed Conservation Deeds as a legal platform for protection with these communities. Laws have been set up under these deeds to protect and conserve all nesting leatherback turtles along the protected beaches.</p> <ul style="list-style-type: none"> <li>• Madang Provincial Government recently set up an Environment Unit staffed by a Climate Change officer. Whether the officer does any turtle conservation work apart from climate change work is unknown at this stage.</li> </ul>
<p>East Sepik (Contributors: Ms. Evangelyn Kisa, Mr. Derek Warakai)</p>	<ul style="list-style-type: none"> <li>• Turtles of coastal reefs and islands of East Sepik are largely unknown although it is believed that there are still available populations of Green and Hawksbills out there. Leatherback turtle is very rare</li> <li>• Species in order of abundance – Green and hawksbill and leatherback</li> <li>• Green and hawksbill have been observed in reefs around East Sepik while leatherback is unknown</li> <li>• While green and hawksbill are still encountered on the reefs and sandy beaches nesting, nesting leatherback turtles in East Sepik is very rare and have not been observed for the last 5 years.</li> </ul>	<ul style="list-style-type: none"> <li>• Turtles sales in Wewak town market is now becoming common. Whatever turtles sold are often butchered at the beach front where local boats come in with their fish catches. These are then sold in Wewak Town markets</li> <li>• Turtles are used mainly for alternate protein and as a delicacy by locals and people living in Wewak town.</li> <li>• Turtles sold in Wewak town market was estimated at 100 turtles in 2017 (Kisa. pers.comm). This recent survey indicated the approximately the same number was sold as in 2016.</li> <li>• Turtle sales in Wewak market has remained the same over the last 5 years.</li> <li>• Prices of turtle pieces sold in market range from K5.00 – K20.00 depending on the size of the piece of meat.</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no laws and agreements that control collecting of sea turtles in East Sepik.</li> <li>• There are no specific programs that address marine turtle conservation and management</li> <li>• East Sepik Provincial Government has an Environment Unit staffed by an environment officer. The office currently has his hands full and does not do any marine conservation and/or turtle conservation work. Likewise the Provincial Fisheries Officer does not do any turtle conservation work.</li> </ul>
<p>West Sepik (Mr. Erick Sakin, Ms Lorreta Ambi, Mr. Luke Tanikrey)</p>	<ul style="list-style-type: none"> <li>• A few turtles are seen in West Sepik marine areas along the coastal fringing reefs and outer island reefs. Leatherback turtles are confined more towards the</li> </ul>	<ul style="list-style-type: none"> <li>• Turtles sales in Vanimo town market is not common. Turtles are occasionally sold at the water front when fishermen come in from the sea on boats with occasional turtle catch. These are</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no laws and agreements that control collecting of sea turtles in West Sepik.</li> <li>• There are no specific programs that address marine turtle conservation and management</li> </ul>

	<p>black beach sand stretch of Aitape area (Ambi. pers comm)</p> <ul style="list-style-type: none"> <li>• Species in order of abundance – Green, hawksbill and leatherback</li> <li>• While green and hawksbill are still encountered on the reefs and sandy beaches nesting, nesting leatherback turtles in West Sepik (Aitape) have not been observed for the last 5 years</li> </ul>	<p>then butchered on the beach and sold to the town folk.</p> <ul style="list-style-type: none"> <li>• Turtles are used mainly for alternate protein and as a delicacy by locals and people living in Vanimo town.</li> <li>• There were no turtle sales in 2016 and 2017.</li> <li>• Turtle sales in Vanimo beach front has decreased from about 5 turtles to none for the last 3 years.</li> <li>• Prices of turtles sold previously in market unknown.</li> </ul>	<ul style="list-style-type: none"> <li>• West Sepik Provincial Government has an Environment Unit staffed by a environment officer. The officer doesn't do any turtle conservation work (Sakin. Pers .comm).</li> </ul>
--	---	--	---

### 4.3 Southern Region (Western, Gulf, Central /NCD, Milne Bay and Oro Provinces



Map 4. Southern Region shaded.

Southern region comprises 4 Provinces and one administrative District: These include the Western, Gulf, Central, the National Capital District, Milne Bay and Oro Province. PNG’s capital city Port Moresby is located in the National Capital District (NCD) that has a Governor and administered through the National Capital District Commission (NCDC). The National Parliament, National Government departments and statutory bodies, and many major business and institutional organisation are based in NCD.

Western Province is located towards the south -western end of PNG and at the border that is shared with West Papua. Western Province also shares its water boundaries with West Papua to the west and Australia to the south. There are numerous islands and reefs within this border areas with large areas of seagrass and significant foraging habitats for turtles and dugongs. Daru serves as its administrative town.

Gulf Province is located east next to Western Province. Gulf province has a couple of major freshwater runoff that has resulted in dense mangrove growth and cover along its coasts. Coral reefs have not been able to establish themselves along these coasts. Kerema serves as its administrative town.

Central Province is located on the southern coast of Papua New Guinea and surrounds Port Moresby and the NCD. The Papua Barrier Reef begins in here and runs down eastern Papua coasts with islands and associated fringing reefs and patch reefs. Mangroves and seagrass are also prominent features along the coastline and bays and lagoons of Central Province.

Milne Bay Province is located towards the easternmost tip of PNG. It boasts numerous islands, with associated fringing, patch reefs and the Papua Barrier reef. Alotau serves as its administrative town.

Northern Province, also known as Oro Province, is a coastal province north of Port Moresby and Central Province. It obtains income from oil palm plantations and some limited tourism at Tufi and from those who walk the Kokoda Track. The province has fringing reefs and mangroves along its coast with sunken barrier reefs, patch reefs and islands with sandy beaches.

Through stakeholder consultations with additional desktop review information on turtle distribution and harvest in major towns of the New Guinea Islands Region of PNG were collated and are summarised below. Again the questions for consultations included: Marine turtle biology status and distribution, utilization and commercialisation, and laws and conservation programs and attitude towards them

**Table 3. Marine Turtle Distribution and harvest in Southern Region**

Locality (Province)	Biology Status and Distribution	Utilization and Commercialisation	Laws and conservation programs and attitude towards them
<p><b>Western</b> (Contributors: Ms Josey Gigiba, Ms. Juwella Masera)</p>	<ul style="list-style-type: none"> <li>• Moderate numbers of turtles are seen in the Western marine areas.</li> <li>• Species in order of abundance – Green and hawksbill. Loggerhead. Leatherback is rarely seen</li> <li>• Green, hawksbill and loggerheads have been observed in reefs and seagrass around Western</li> <li>• While green and hawksbill are still encountered on the reefs. Stray nesting leatherback turtles have been reported previously along the coasts however it is very rare.</li> </ul>	<ul style="list-style-type: none"> <li>• Turtles are sold in community markets, along beach fronts and outside peoples backyards in Daru town and markets. Turtles are also caught and eaten by coastal communities for every social events such as funeral service, hausboi openings and church gatherings. Turtles are also sold in town to mobilise school fees for school children.</li> <li>• Turtles are used mainly for alternate protein and as a delicacy by locals and people living in Daru town.</li> <li>• Turtles take in Daru was estimated at <b>1350 turtles</b> in 2017 (Opu 2018). This recent survey indicated approximately 1200 turtles was harvested in 2016.</li> <li>• Turtle sales in Daru town markets have somewhat increased over the last 5 years.</li> <li>• Prices of turtles sold varies depending on sizes. Small dinner plate size sells for 50 PGK while large mature sizes sell for 400PGK. It has been also noted that prices in turtles sales has increased as well.</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no laws and agreements that control collecting of sea turtles in Daru.</li> <li>• CEPA has assisted Western Provincial Government in developing a Dugong and Marine ATurtle Managaant Plan for the province. Thi was lauched about 3 years ago, however attempts at getting more information on this manageent plan from the province was not possible.</li> <li>• There were several marine conservation programs carried out by various institutions . However there are no ongoing specific programs that address marine turtle conservation and management</li> <li>• Daru Provincial Government does not have an officer that is responsible for marine turtle conservation.</li> </ul>

<p><b>Gulf Province</b> (Contributors: Ms Susannah Apopo, Mr. Hiviki Morea,)</p>	<ul style="list-style-type: none"> <li>• Occasional marine turtles are encountered at sea.</li> <li>• Species in order of abundance – Green, hawksbill and occasional loggerhead</li> <li>• Green and hawksbill have been observed in reefs</li> <li>• While green and hawksbill are still encountered on the reefs sightings of loggerhead and leatherback turtles are very rare.</li> </ul>	<ul style="list-style-type: none"> <li>• Turtle sales in Kerema town is very rare. The interviews indicated about 10 turtles were harvested in 2016 and about 29 turtles were harvested in 2017 in the Gulf Province. Information on markets sale and prices of turtles sold were not known.</li> <li>• Turtles are rarely eaten at all in the Gulf, as per information that came in and whatever turtle that is caught is sold to people from outside of Gulf Province that reside in the province.</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no laws and agreements that control collecting of sea turtles Gulf Province except for work done on the Fresh water Turtle – pig nosed turtle.</li> <li>• There are no specific programs that address marine turtle conservation and management. However, there is a fresh water turtle conservation project by WWF that is addressing fresh water pig-nose turtle. The project address conservation, rehabilitation, and a major education and awareness component.</li> <li>• Gulf Provincial Government has a Provincial Fisheries Officer however there is no information on whether this person is also responsible for turtle conservation.</li> </ul>
<p><b>Central (includes NDC) Province</b> (Contributors: Mr. Felix Daroa, Ms. Miriam Ovasuru, Mr. Vagi Rei, Mr. John Genolagani)</p>	<ul style="list-style-type: none"> <li>• Moderate numbers of turtles are seen in Central Province marine areas.</li> <li>• Species in order of abundance – Green, hawksbill and Loggerhead</li> <li>• Green and hawksbill turtles have been observed in reefs around Central Province with occasionally loggerhead turtle while leatherback turtle is unknown</li> <li>• While green and hawksbill turtles are still encountered nesting on the mainland coastal and island sandy beaches, loggerhead turtle is not known to nest in central province.</li> </ul>	<ul style="list-style-type: none"> <li>• Turtle take in Central Province are sold in Port City markets (Koki, Malaoro and Rainbow) market. Usually green turtles are butchered and meat pieces sold. However since early 2017 there has been a ban in turtle sales in city markets and currently no turtles sold.</li> <li>• Turtles are used mainly for alternate protein and as a delicacy by locals and people living in Port Moresby city.</li> <li>• Turtles sold in Port Moresby was estimated at 100 turtles in 2016 (Rei. pers.comm). There was no turtle sold after the ban in late 2016 to 2017. The ban is still in effect today.</li> <li>• Prices of turtles sold in market at that time depended on size of meat and range from K5 to K20.</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there is a ban on turtle sales in town market of sea turtles in Port Moresby as declared by the Governor of National Capital district and enforced by market rangers.</li> <li>• There are no specific programs that address marine turtle conservation and management except the city ban on turtles. There were 2 TV short awareness footage on turtle conservation that ran for a couple of years but then stopped. One was funded by Indian Ocean</li> <li>• Central Provincial Government Administration has an Provincial Fisheries Officer who also do turtle conservation awareness work.</li> </ul>
<p><b>Milne Bay Province</b> (Contributors: Ms. Liberty Betuel, Mr. David Mitchel, Mr. Noel Wangunu, Ms. Hayley Versace, Ms Lulu Osembo, Mr. Johnny Sorenz)</p>	<ul style="list-style-type: none"> <li>• Significant numbers of turtles are seen in all around Milne Bay Provinces</li> <li>• Species in order of abundance – Green, hawksbill, Loggerhead and leatherback</li> <li>• Green, hawksbill and loggerheads have been observed in reefs around Milne Bay waters while there leatherback is known to nest occasionally on a few large islands like Misima.</li> <li>• While green and hawksbill are still encountered on the reefs and sandy beaches nesting, nesting leatherback turtles in Misima have not been observed for the last 5 years</li> </ul>	<ul style="list-style-type: none"> <li>• Turtles sales in Alotau town market is common. Turtles are not sold whole but butched and pieces sold. Turtle are sold whole in markets in government stations on larger islands such as Trobrian and Misima Islands.</li> <li>• Turtles are used mainly for alternate protein and as a delicacy by locals and people living in town areas. Turtles are also killed and cooked and served to celebrate feasts and church activities. Whole turtles are given as gifts to Pastors and churches.</li> <li>• Large numbers of turtles have been sold and continue to be sold both in Alotau markets and thorough out district stations especially on the larger islands of Trobrian and Misima in Milne</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no laws and agreements that control collecting of sea turtles in Milne Bay Province.</li> <li>• There are 3 turtle tagging and monitoring programs currently underway in Milne Bay Province. Jormad Turtle Tagging and Monitoring Program, Conflict Islands Turtle Monitoring Program, and Eco-Friendly Advocates Turtle program. These program are focused on tagging and releasing nesting turtles and monitoring of nests and hatchling counts there is no program focused on education and awareness of the conservation and sustainable management of marine turtles in general.</li> </ul>

		<p>Bay.. Hawksbill turtle eggs are also harvested by locals in large quantities.</p> <ul style="list-style-type: none"> <li>• Turtle takes in Milne was estimated to be 1500 in 2016 as compared to 2000 in 2017 (opU. 2018).</li> <li>• Prices of turtles sold range from 200k (small)-300k (large)per turtle depending on the sizes.</li> </ul>	
<p><b>Oro Province</b> (Contributers: Mr. Damien Ase, Mr. Lester Seri)</p>	<ul style="list-style-type: none"> <li>• Moderate numbers of turtles are seen in the marne areas of Oro along coastal fringing reefs and outer island reefs.</li> <li>• Species in order of abundance – Green, hawksbill and leatherback. No records of Loggerhead.</li> <li>• Green and hawksbill have been observed in reefs around Oro while the leatherback is known to nest occassionally on the northern coastline of Oro along blacksandy beaches.</li> <li>• While green and hawksbill are still encountered on the reefs and sandy beaches nesting, nesting leatherback turtles in Oro have not been seen over the last few years and the locals blieve they do not nest anymore.</li> </ul>	<ul style="list-style-type: none"> <li>• There is no turtle sales in Popondetta the administrative center for Oro. Like wise turtles are rarely found in markets at the waterfront where there is selling of fish.</li> <li>•While Turtles are sometimes used as food source in the Province, it is very rare for communities to kill turtles as food source. The interviewees believe turtles are hardly hunterd in Oro provincial waters and that there have not been any harvesting in 2016 and 2017.</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are no laws and agreements that control collecting of sea turtles in Oro Prouvnce</li> <li>• There are no specific programs that address marine turtle conservation and management</li> <li>• Oro Provincial Government has an Environment Unit staffed by a environent officer. Whether the officer does any turtle conservation work apart from climate change work is unknown at this stage.</li> </ul>

#### 4.4 Discussions on Outcomes of the Interviews

A total of 37 reliable key stakeholders were interviewed to obtain information on marine turtle exploitation in the maritime Provinces of PNG. Five from Manus Province, 3 from New Ireland Province, 2 from East New Britain Province, 3 from West New Britain Province , 1 from the Autonomous Region of Bouganville, 2 from Morobe Province, 2 from Madang Province, 2 from East Sepik Province, 2 from West Sepik Province, 2 from Western Province, 2 from Gulf Province, 4 from Central Province that also included the National Capital District, 6 from Milne Bay Province, and 2 from Oro Province. Individuals interviewed included representatives from the National Government, Provincial Government, international and local NGOs and Community Conservation group representatives. Interviews were done through emails, phone calls and person to person contact. A full list of key stakeholders (interviewees) with contact details are provided in Appendix 1 of this report.

##### 4.4.1 Biology Status and Distribution of Marine Turtles

Green, hawksbill, leatherback and loggerhead turtles occur in PNG waters as picked up durng the interview process. Loggerhead turtles are more confined to the southern waters of PNG from the Western Province pass the waters of the nations capital Port Moresby and to Milne Bay waters on the eastern tip of PNG. Green and hawksbill turtles have been encountered nesting on beaches all over PNG, leatherback turtle is more confined to the northern black sandy beach coastline and

bigger islands in the New Guinea Island regions. Information coming in especially on leatherback turtles indicate that nesting populations have drastically declined.

All information compiled together indicate that there is moderate population of Green and Hawksbill turtles still out there in PNG marine habitats. Loggerhead turtles are more restricted to the southern waters of PNG and less common. Information on leatherback turtles is worrying in that nesting leatherback turtles in known nesting sites have drastically declined and in some instances are hardly ever seen again on some nesting beaches. More work needs to be done on population counts and species distribution to provide a more statistically reliable and accurate information on the status of these turtles.

#### **4.4.2 Exploitation of Marine Turtles**

Marine turtles throughout PNG waters are exploited by the coastal communities in different ways and for different reasons.

##### ***4.4.2. a. Food source.***

Turtle meat is used as an alternate food source on occasions by coastal communities especially in Western Province, Central Province, Milne Bay Province, Morobe Province, Madang Province, East Sepik Province and all the island provinces in the New Guinea Island region. It is a delicacy in the Western Province and is common in dinner plates in the evening meals along the coastal communities and people living in Daru town (Gigiba, pers.comm. 2018). In Manus, island communities keep turtles in cages and pens in shallow waters next to their houses. When the weather gets too rough to go out fishing, turtles are butchered instead and shared in evening meals (Kaluwin. Pers.comm.2018).

##### ***4.4.2.b. Cash Sales.***

Turtles are sold in city and town markets for cash to cater for the livelihoods of coastal community driven by cash economy. In Provinces such as Manus, Western and Alotau and Misima, number of turtles sales in the market reaches alarming figures (for example 15 adult green turtles) in late December and early January each year. This corresponds to a couple of months leading up to the school academic years whereby parents catch turtles to sell at markets to mobilise school fees for the children. Turtles sell well and with fisherman coming in with 4-6 turtles, enough money is made through their sales to support 2 – 4 school children. In town markets where turtles are usually sold, there seem to be an increase in number of turtles sold and is seen as a lucrative marine resource that can earn large amount of cash in a short time (Kelly. Pers.comm.2018). By far, this is the main driver in increased and large number of turtles being sold in known turtle selling markets as admitted by most interviewees.

##### ***4.4.2.c. Traditional Barter.***

Turtles are used in traditional barter exchange systems between coastal and inland communities. This is specifically noted between Calvados Islanders and the big island of Misima (Betuel. Pers.comm 2018) where turtles are exchanged for traditional building materials and food stuff such as banana and sago that can't be grown and/or obtained in smaller rocky islands. Turtles are exchanged for food crops such as yam in the Rai coast (Magun. Pers.comm) between the Mur community of Rai Coast and the inland mountain communities. When yams are ready to be harvested inland, word is sent to the coastal community. A time is arranged and a leatherback turtle is caught and exchanged for yams. The yam harvest season coincides with turtle nesting season.

##### ***4.2.2.d. Community Feasts.***

Turtles are harvested in numbers and slaughtered and cooked to celebrate an opening of church, end of mourning period for a death etc. This has been noted in Manus, Western, Madang and Milne Bay Provinces. In the outer islands of Manus, especially with the famous Titan tribes (traditional seafarers), when a hausboi<sup>3</sup> is completed and before it is opened up for the mature male of the tribe

---

<sup>3</sup> Hausboi: A big long traditional house that adult males of a tribe dwell in. Fishing gears, paddles for canoes. Harpoons etc. are kept in this house as well until needed. No female members of the tribe are allowed into the "hausboi".

to dwell in, 5-10 turtles are harvest at any one time, slaughtered,cooked and shared in a feast. After the feast the hausboi is opened and adult males of the tribe move in to dwell in it.

**4.2.2.e. Gifts.**

Turtles are given as gifts to the teachers, local church pastors in appreciation of their services to the communities during farewell ceremonies. This has happened in Manus (*Kelly, pers.comm 2018*), Milne Bay (*Betuel, pers.comm. 2018*) and Western Provinces (*Masere, pers.comm. 2018*).

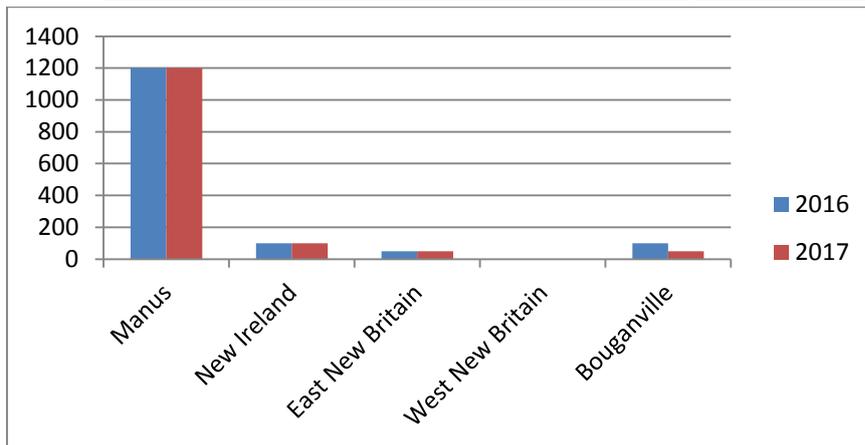


**Figure 2.** Juvenile Green Turtles for sale in Lorengau town market in Manus (*Photo credit: Job Opu*)



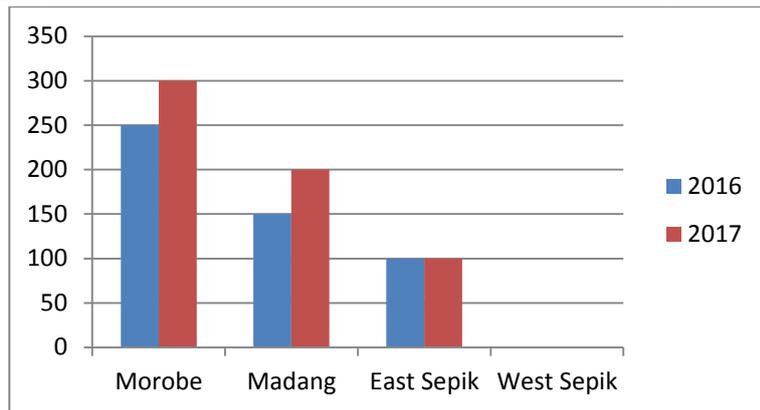
**Figure 3.** Leatherback turtle caught for a funeral feast in Manus. (*Photo credit: Selarn Kaluwin*)

**Graph1** Estimated Turtle Catch in New Guinea Islands Region in 2016 and 2017.



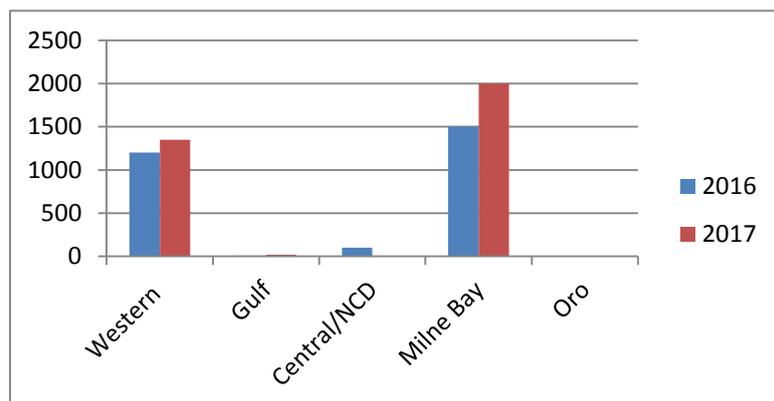
Manus Province had the largest turtle catch in 2016 and 2017. Estimated 1200 turtles were caught in 2016 and the same amount in 2017. Turtles caught were sold for cash and used in traditional feasts. New Ireland, East New Britain and Bouganville (ARB) harvest 100 turtles or less both in 2016 and 2017 while harvest in West New Britain was very minimal if not none at all.

**Graph 2. Estimated Marine Turtle Catch in MOMASE Region in 2016 and 2017**



Morobe Province had the largest catch among the MOMASE Provinces. An estimated 250 turtles were caught in Morobe in 2016 and 300 in 2017. Estimated increase of 50 turtles. Madang was next with 150 turtles in 2016 and 200 turtles in 2017. Again an estimated increase of 50 turtles. East Sepik estimated turtle catch was at 100 turtles both in 2016 and 2017. West Sepik was the only province that reported no takes of turtles in 2016 and 2017.

**Graph 3. Estimated Marine Turtle Catch in Northern Region in 2016 and 2017**



Turtle catch in Western Province was estimated at 1200 in 2016 and 1400 in 2017, an estimated increase of 200 turtles. Turtle catch in the Gulf Province was estimated to be less than 10 in both years. Turtle catch in Central Province and NCD had an estimated total of 100 in 2016, however after city ban of turtles sales in late 2016, there were no turtle catches reported in 2017. Milne Bay had the highest catch in the region and in PNG with 1500 in 2016 and 2000 in 2017, an increase by 500 turtles. No turtles were reported caught in Oro Province for both years.

Three Provinces in PNG that stand out in turtle catch in 2016 and 2017 are Manus, Western and Milne Bay Provinces. If there is to be any intensive awareness campaign carried out to stop marine turtle harvest and exploitation, these 3 should be the first provinces to be targeted. Morobe, Madang and East Sepik to be targeted as well because they also had turtles harvest over the two years as well. The results from the interviews indicate that where turtles are harvested, the numbers were the same in 2016 and 2017 in Manus while in the other turtle harvest provinces the numbers have increased. No decrease was noted. This need to be taken seriously and necessary steps taken to reduce and or stop turtle harvest in these provinces. **It should be also noted that while this report is being written, turtle harvest and sales continue in these 3 provinces.**

## **5. Review of Turtle Conservation Programs and Local Laws**

Literature review and feedback from interviews indicated that there are no provincial government laws to protect marine turtles specifically (Joseph. Pers.comm. 2018). Along the Huon Coast in Lae, Morobe Province, a few kilometers of leatherback nesting beaches are protected by communities of Labu and Kamiali during the nesting seasons. No turtles are to be harmed and turtles nests are protected. Harvesting of turtle eggs are also prohibited. Penalties are also enforced when a community member breaks a rule. In Madang, several coastal communities have signed Conservation Deed(s) to protect nesting leatherback Turtles on the nesting beaches. Similar arrangement has also been done further down the Madang coastline along Rai Coast. However some community members continue to break this law and lack of enforcement is a major setback to the conservation efforts (Magun, pers.comm. 2018).

### **5.1. Turtle Conservation Programs**

Over the years, several turtle conservation programs were initiated, some have winded down while a few are still running. A few were also initiated and currently ongoing.

#### **5.1.1. Labu Tale leatherback Turtle Monitoring Project**

The Project is based along the Huon Coasts of Morobe Province was initiated by University of Technology in Lae in the 1980s (Lockhart. 1987). This program involved turtle tagging and monitoring, education and awareness to local communities and lower grade student exchange visits with Lae City school children and Labu Tale Community school children. There was also a small eco-tourism venture that allowed for visitors from the city to camp at nights along the beach to observe turtle nesting at nights. The program went well when it started, however when the lecturers (who initiated the program) from the University left, the program slowly winded down and stopped altogether. Later on turtle scientist from abroad also visited and did some monitoring work with wildlife officers from the Department of Environment and Conservation based out of Port Moresby. Awareness on the plight of the leatherback turtles was concentrated locally and did not go nationwide. The project does not exist anymore.

#### **5.1.2. Kamiali Leatherback Turtle Conservation Program**

The program was initiated in late 1990s and ran through to early 2000s. Lababia community, with assistance from Village Development Trust (VDT) a local NGO, the PNG Department of Environment and Conservation, and the Secretariat of the Pacific Regional Environment Programme (SPREP) led the way with a community effort to protect the leatherbacks in PNG (Rei. pers.comm 2018). The community has set aside its land as a wildlife preserve area (Kamiali Wildlife Reserve) and the villagers were involved in monitoring and conservation of the leatherback turtles that nest on their beach. In addition to counting and tagging the turtles each night, they protect nests that are laid along a portion of the beach. Scientists from the USA also came to work alongside the PNG Leatherback Team in a new international initiative to save the Pacific leatherback from extinction. The program involved satellite tagging and monitoring, education and awareness and capacity building for local wildlife officers. Awareness was concentrated on the local communities concerned and did not go nationwide. Later on some disagreements arose between the communities and the project scientists and when the scientists left the project was not able to continue (Joseph. pers.comm.2018).

### **5.1.3. Madang Sea Turtle Restoration Project**

The Project was initiated by a local NGO. Mas Kagin Tapani (MAKATA) Inc, under the leadership of Mr. Wenceslaus Magun. The project's main aim was to mobilize and bring together local coastal communities along northern coast of Madang to manage their marine areas and in so doing also protect leatherback turtle nesting grounds. With assistance provided by SPREP in terms of tagging materials, a turtle tagging and monitoring program was initiated by Karkum in 2007 and was then later spread along the coast towards the north and down the coast towards the Rai Coasts. The project concentrated on empowering communities and developing conservation deeds as legal platform for marine resources management and very less time on actually tagging and monitoring of the leatherback turtles and small a green turtle population that also nested along those coasts (pers. obs). The conservation deed also spelt out that the nesting turtles were protected and not to be harmed and the nesting beaches and beach vegetation including patch reefs were also protected. Penalties and fees were also laid out in the deed. There was also very little awareness undertaken and was targeted at the local communities. The project has now come to a stop due to funding constraints and management issues.

### **5.1.4. Jormad Marine Turtle Conservation Project**

The Project was initiated by Ms Liberty Betuel with support from her Brooker Island communities in Milne Bay in 2010 and has been running for almost 8 years now (pers.obs). Turtle tagging (SPREP tags) and monitoring program concentrated on Jormad Island sandy beaches and Bramble Haven reefs(rodeo capture tag and release). In addition to the tagging and monitoring, education and awareness of the plight of marine turtles are carried out in local community schools. Ms Betuel has also created a facebook account that promotes turtle conservation and her project. There is no legal mechanism set in place that allows for protection of turtle in the project area, however the Jormad Turtle Conservation Project eventually want to progress and declare Jormad Island as a Marine Protected Area.

### **5.1.5. Conflict Islands Conservation Initiative (CICI)**

CICI was initiated by the management of Panasesa Island Resort with a goal in effective protection and conservation of the ecosystems and species within the Conflict Island Atoll through sustainable ecological and economic management, located on the largest island in the Conflict chains. Conflict island chain is a group of islands that is privately owned. The islands have extensive white sandy beaches that are conducive for green and hawksbill turtles nesting. Owners of the chain of islands decided to sustainably protect nesting turtles and nests (eggs) on the sandy beaches and hence have started a program that do turtle tagging and monitoring, volunteer programs on turtle conservation during peak nesting seasons. CICI run marine based internships with an aim to help promote positive conservation messages throughout Papua New Guinea and engage through community awareness programs with the people to provide a sustainable and protected future for these communities. Programs range from in water studies on reef fish and corals to shark diversity studies and turtle tagging programs. A turtle hatchery was developed in November 2016, with 1,200 eggs collected in the first season.



Figure 4.. Harnessing satellite radio tag on leatherback turtle – Kamiali (Photo courtesy – Vagi Rei)



Figure 5. Turtle tagging Jormad Turtle Conservation Project. (Photo courtesy of Liberty Betuel)



Figure 6. Marine turtle awareness to school Children in Mur, Madang (Photo Courtesy of MAKATA)



Figure 7. Turtle Tagging Conflicts Islands. (Photo Courtesy of CICI.)

#### 4.4.4 PNG National Laws on Turtles and National Turtle Conservation Programs

PNG National Constitution recognises land and marine resources tenure as being owned by community and clans groups. This is the most important feature of resources conservation and sustainable management in PNG. Whether species or habitat conservation, local communities have to be fully involved from the start of the project/program to achieve its expected outputs and outcomes.

Main legislation for conservation in PNG is the Fauna (Protection and Control) Act 1978. There are number of legislations that support this as well. Under the Fauna Act, all turtle species are listed as restricted but are allowed to be hunted by local communities using traditional methods and only to be consumed in the community and not allowed to be sold in markets, except for leatherback turtles. Leatherback turtles is fully protected under the Act and are not to be hunted at all and nests not to be disturbed and eggs taken. Enforcement of turtles and other species specific regulations are difficult in PNG due to the lack of resources and manpower. The national government through Conservtion and Environment Protection Authority(CEPA) is now working closely with NGOs, local community based Organisations (CBOs), private organisation, and local communities to strengthen species conservation practices to address turtle and other species conservation initiatives.

PNG is a member to 3 regional turtle conservation initiatives. Under the SPREP arrangements, PNG has a national marine turtle conservation plan that is linked to the regional marine turtle action plan. Execution of this action plan by CEPA is somewhat lacking due to funding constraints and lack of manpower. PNG also is a part of an arrangement under the Indian Ocean South East Asia (IOSEA) Marine Turtle Memorandum of Understanding, an intergovernmental agreement concluded under the auspices of the UNEP / Convention on Migratory Species (CMS). It aims to protect, conserve, replenish and recover marine turtles and their habitats of the Indian Ocean and South-East Asian region, working in partnership with other relevant actors and organisations. PNG also share its turtle resources with south East Asia. Currently there is very little work done under this arrangement.

PNG is also a member to the Coral Triangle Initiative (CTI), a multi-lateral partnership aimed at sustainable management of the marine and coastal biological resources of the Coral Triangle region. It comprises all or parts of the exclusive economic zones of six countries: Philippines, Malaysia, Indonesia, TimorLeste, PNG and Solomon Islands. Under this arrangement PNG has in place a national plan of action – “PNG Marine Program on Coral Reefs Fish and Food Security” that links up with the regional plan of action under the CTI. There are 5 major thematic areas under the plan and Endangered Marine Species fall into Goal: Improved status of sharks, sea turtles, seabirds, marine mammals, corals, seagrass, mangroves and other identified threatened species. As with the other arrangement, there is very little work done in country on marine turtles under the CTI arrangement.

Going down to the provinces, there are no active turtle conservation and management programs undertaken by the provinces. There is also no awareness by provincial governments and local town authorities targeting known turtle markets such as Daru, Misima and Lorengau. That probably is one of the reasons also why fisherman feel free to sell their turtles in the market. Port Moresby markets such as Koki fish market, Manu fish market and Rainbow fish market were notorious for turtle sales prior to the turtle ban sales in 2016. Following the announcement of the ban and enforced by market rangers, fisherman simple stopped selling turtles in these markets.

## 6. Conclusions

In the early 1980s Spring's report on marine turtle species distribution indicated there were 6 species of turtles that could be found in PNG waters. These included and in order of abundance, the green, hawksbill, leatherback, loggerhead, olive ridley and the flatback turtles. Ten years later, Lockhart's paper on turtle species distribution in PNG documented 4 species that included green, hawksbill, leatherback, and loggerhead. After Lockhart's reports, technical reports and anecdotal information over the years mention the 4 species that Lockhart listed and there is no further reference made to the other two species. There is growing doubt if the other two species, the olive ridley and the flatback turtles do actually occur in PNG waters as well.

For this exercise, a total of 37 reliable key stakeholders were interviewed. Five from Manus Province, 3 from New Ireland Province, 2 from East New Britain Province, 3 from West New Britain Province, 1 from the Autonomous Region of Bougainville, 2 from Morobe Province, 2 from Madang Province, 2 from East Sepik Province, 2 from West Sepik Province, 2 from Western Province, 2 from Gulf Province, 4 from Central Province that also included the National Capital District, 6 from Milne Bay Province, and 2 from Oro Provinces.

Marine turtle catch in PNG waters that landed in markets and for domestic consumption were estimated at **4760** turtles in 2016 and **5320** turtles in 2017. Provinces that landed most catches were Manus, Milne Bay and Western Provinces. Species with the highest numbers caught were the green, followed by hawksbill and the leatherback turtles. There was no mention of loggerhead turtles being caught and /or eaten. Provinces that did not report any turtles catches were West Sepik (Sandaun) and Oro Provinces. Out of the 15 Maritime Provinces only the two provinces did not report any turtle catches. The number of turtle catches is very alarming for both years. The number are best estimates but may not reflect the actual amount that is being harvested

Under the Fauna (Protection and Control) Act 1976, the leatherback turtle is totally protected and killing the turtle and/or harvesting of eggs is totally prohibited. Local coastal communities are allowed to harvest and utilize other species but only using traditional fishing methods and only for household domestically / consumption. However from this exercise, it has been noted that leatherback turtles have been killed and consumed within the community and eggs collected and consumed as well as sold in town markets. Green and hawksbill turtles are being caught and increasingly being sold in town and city markets. Enforcement is basically lacking.

PNG is a party to 3 regional arrangements for marine turtle conservation and sustainable management. These include the Regional Marine Turtle Action Plan under SPREP, The IOSEA arrangement and the Regional Plan of Action under the CTI. CEPA is the focal point for these regional arrangements however there is very little activity under these programs in PNG.

Three turtle conservation programs are currently running in PNG and are only associated to certain parts of PNG and does not cover all PNG. These programs are more focused on community based nesting turtle tagging and monitoring and protection of nesting beaches. These locality focused programs also determine their education and awareness on the plight of marine turtles that is

limited to a smaller community and not to a wider community especially those who hunt and sell and those who buy marine turtle products.

Education and awareness on the plight of the marine turtles is basically lacking throughout PNG. Whatever program there is, are done on an *ad hoc* basis and is short lived. Awareness materials are also lacking.

## 6.1 Recommendations

- A thorough marine turtle population distribution and species confirmation need to be undertaken throughout PNG marine waters to give an indication of population distribution and status including confirmation of all six species of marine turtles
- A follow up questionnaires and interview exercise need to be undertaken thoroughly throughout all Maritime Provinces, including targeting all town and local markets to gather more reliable and accurate information on sea turtles take and or sales.
- Estimated marine turtle take for 2016 and 2017 is quite alarming. A vigorous marine turtle awareness program need to be undertaken as soon as possible targeting the 3 main provincial towns to start off with. Provincial authorities, provincial NGOs and other concerned CBOs and stakeholders should mobilize and visit markets, fishermen and turtle harvesting communities to campaign against turtle harvest so fisherman can stop turtle harvest and the general community can stop buying turtle meat. This need to be properly planned and arranged and should be immediately undertaken. This should also include getting the town authorities to put a ban on turtle sales in city and town markets as had been done for Port Moresby
- CEPA to take a lead in enhancing and strengthening PNG National Turtle network under the CTI National Plan of Action by networking, exchange of information and organising for a national workshop to put review the national marine turtle action plan and mobilize funds to carry out the program. Also in so doing, CEPA need to also revisit the IOSEA arrangement , the SPREP RMTCP,
- CEPA to take the lead to mobilize turtle awareness materials such as posters, brochures and booklets from regional organisations such as SPREP, STRP and also produce materials using local *tok pisin* language with clear messages and distribute materials to schools and communities through coastal provinces of PNG.
- CEPA to encourage and assist existing marine turtles programs such as: MAKATA Turtle Recovery Program , Jormad Turtle Conservation Program, Conflict Islands Conservation Initiative and step in to assist wherever possible and in its capacity as the government organisation mandated by the national government to conserve and sustainably manage marine turtles and other endangered marine species.

## 7. Proposed Programme for an Outreach/Public Awareness Campaign.

Turtle harvest in 2016 and 2017 is alarming. Three provinces stood out in the number of turtles harvested. Appropriate actions need to be undertaken immediately to address turtle take as it has been noted that turtle harvest and sales are still going on in these provinces and towns with turtle's landings also increasing. This proposed program is in to fold. The first, to address turtle harvest in the 3 provinces, and secondly to address turtle conservation and management throughout PNG.

Aims of the program.

- I. Develop strategies and actions to address turtle harvest in Western, Milne Bay and Manus Provinces. Work in collaboration with the Provincial Government contacts and NGO contacts as identified in this exercise through exchange of information, mobilising awareness materials and developing methodologies in carrying out campaign etc.
- II. With CEPA taking the lead, revisit the IOSEA, SSPREP – RMTCP and CTI marine turtle conservation and management arrangement and revise and commit PNG to these actions.

Objectives	Activity	Duration
<b>Objective 1. Address Intense Marine Turtle Harvest in 3 provinces</b>		
1.1 Publicise and distribute findings of this report	1.1. a. Distribute this report to provincial contacts including government and NGOs that was developed during the interview exercise and highlight the high turtle intakes.	July 2018. (As soon as SPREP accepts and clears this report).
	1.1.b. Do a presentation of this report in CEPA and invite all national stakeholders in Port Moresby to attend and shares ideas on way forward	July 2018
1.2. Carry out awareness in the 3 main provinces	1.2. a. Mobilise funds to visit these provinces and hold a 2 day workshop each to highlight the issues and develop provincial actions including education and awareness in these provinces and identify organisations and target audience to carry out this awareness.	August 2018
	1.2. b. Visit Provinces and carry out provincial workshops. Also give public talks (awareness) at town markets on the issues of turtle harvest. Draft and do press release on local papers. Radio talk back shows on local radio stations.	August 2018
1.3 Ban turtle sales in City and Town markets	1.3.a. CEPA to Initially work with local authorities in Western, Milne Bay and Manus Provinces to identify all the markets that sell turtles	September 2018
	1.3.b. CEPA to liaise with local authorities and draft instruments and get local authorities to declare ban on turtles sales in local and town markets. Put up ban notices, and announce in local radio stations and press releases. Get local market councillors to enforce ban.	September 2018

<b>2.0 PNG Turtle Network Reviewed and strengthen</b>		
2.1 Review National Marine Turtle Action Plan	2.1.a. Draft a national workshop program paper on current marine turtle issues such as a comprehensive education and awareness program with clear aims. Objectives and expected outputs and get CEPA to endorse.	September 2018
	2.1.b. Develop proposal and mobilise funds for a nation workshop	September 2018
	2.1.c. Invite all maritime provincial representative including NGOs and community based groups to the national workshop to review and update national action plan with an emphasis on intensive Education and Awareness program/campaign.	October 2018
2.2. Strengthen networking and exchange of Information	2.2.a. strengthen networks and exchange of information at the national workshop.	October 2018
	2.2.b. Develop a Facebook Page for PNG National Turtle Conservation	October 2018
<b>3.0 Education and Awareness Materials mobilised and /or produced and distributed</b>		
3.1. Awareness Material Mobilisation	3.1.a. CEPA to take lead in mobilising awareness materials such as posters, brochures etc... by reproducing whatever it has and approaching turtle conservation programs in the region to request materials from them as well and make a stock of this.	August 2018
	3.1.b. Distribute materials to provincial contacts to send to schools so they can be displayed for public and children to see	September 2018
3.2. Education videos on marine turtles obtained and played on local TV	CEPA to take lead in sourcing marine turtle's videos to be aired on local TV. CEPA to also look at and mobilising funds to support such TV program.	September 2018

## 8. References

- BEDDING S.J. & LOCKHART R. ( 1989) Sea Turtle Conservation emerging in Papua New Guinea. Marine Turtle Newsletter 47. University of California-San Diego, La Jolla, California, USA.
- BEDDING S.J. & LOCKHART R. ( 1990) Leatherback Turtle Conservation at Maus Buang and Labu Tali. PLES - An Environmental magazine for The South Pacific Region. The University of Papua New Guinea, Port Moresby , Papua New Guinea.
- BEDDING S.J. & the Unitech Conservation Committee ( 1988). Maus Buang and Labu Tali Leatherback Turtle Conservation 1987- 1988. Mathematics and Statistics Department report. The Papua New Guinea University of Technology, Lae, Papua New Guinea.
- KINCH, J. 2006. Socio-economic Assessment Study for Huon Coast. Final technical report to the Western Pacific Regional Fisheries Management Council, Honolulu Hawaii USA.
- LIMPUS C.J & PARMENTER C.J. ( 1986) The sea turtles of the Torres Strait region. Pages 95-107, Proc. of the Torres Strait Fisheries Seminar. Port Moresby, 11- 14 February 1985.
- LOCKHART, R. ( 1989) Marine Turtles of Papua New Guinea. Technical Report 1-89 The Mathematics and Statistics Department, The Papua New Guinea University of Technology, Lae, Papua New Guinea, (Also obtainable from: Koeltz Scientific Books, D-6240 Koenigstein, P.O. Box 1360, West Germany).
- Magun, W., 2017. The Turtles Return. Lessons from the Managed Marine Areas in Karkum, Madang, PNG.
- Opu, J. 2018. Marine Turtle Harvest in PNG. A Growing Concern. Preliminary Report. *Unpublished Report*.
- OPU, J. 2014, Turtle Training Workshop Report Mur, Rai Coast Madang PNG. Mas Kagin Tapani Inc.
- Ruhana H, Ni K Yahya, Leh Mui Ong, Lim Kian Kheng, Zulkainain Zainal Abidin Mohd Jainal 2017. Public Awareness Program and Development of Education Toolkit for Green Sea Turtle Conservation in Sarawak, MALAYSIA
- SPRING C.S. ( 1980). Turtles, Men and Magic, Papua New Guinea Wildlife Division, P.O, Box 2585, Konedobu, Papua New Guinea,
- SPRING C.S. ( 1984) Status of Marine Turtle Populations in Papua New Guinea. Proceedings of the World Conference on Sea Turtle Conservation 1981. In: Conservation of Sea Turtles (Ed. by Karen A. Bjorndal), Smithsonian Institution Press, Washington DC. pp 281-289, vol.3., no. 3, pp 54-65.

## Appendix 1. List of Interviewees

Province	Names	Organisation	Contact details
Manus	Ms Sharon Koitut - Conservation Officer Mr. Luke Ndrasal – Scientific Officer Ms Mildred Kelly – Community Officer Mr. Selarn Kaluwin – Councillor MS. Sylvia Maip – Manus field Manager	Manus Provincial Government Manus Provincial Government Manus Environment Conservation Network Mbuke Marine Conservation Project Wildlife Conservation Society	<a href="mailto:sharon.koitut@gmail.com">sharon.koitut@gmail.com</a> <a href="mailto:luke.ndrasal02@gmail.com">luke.ndrasal02@gmail.com</a> <a href="mailto:mildredkelly143@gmail.com">mildredkelly143@gmail.com</a> <a href="mailto:skaluwin@gmail.com">skaluwin@gmail.com</a> <a href="mailto:snoble@wcs.org">snoble@wcs.org</a>
New Ireland	Ms. Annisha Sapul- Kavieng field Manager Mr. Glen Koeing – Marine Facilitator MS. Azallea Anota – Post Grad Student	Wildlife Conservation Society Wildlife Conservation Society Marine – Universit of Papua New Guinea	<a href="mailto:asapul@wcs.org">asapul@wcs.org</a> <a href="mailto:gkoieng@wcs.org">gkoieng@wcs.org</a> <a href="mailto:aanota39@gmail.com">aanota39@gmail.com</a>
East New Britain	Ms Yvonne Tio – Manager Marine Ms. Jane Atip – Environment Officer	Conservation and Environment Protection East New Britain Provincial Government	<a href="mailto:tioyvonne11@gmail.com">tioyvonne11@gmail.com</a> <a href="mailto:atipjane1@gmail.com">atipjane1@gmail.com</a>
West New Britain	Ms. Elsie Wilson – Community worker Mr. Newel sinagawi – Fisheries Advisor Mr Desmond Vagelo – Climate Change Off	Kimbe Live and Irn West New Britain Provincial Government West New Britain Provincial Government	<a href="mailto:Elsie.wil@gmail.com">Elsie.wil@gmail.com</a> <a href="mailto:mienganau@gmail.com">mienganau@gmail.com</a> <a href="mailto:dvagelo@gmail.com">dvagelo@gmail.com</a>
ARB	Dr. Rodney Kmiata - Antropologist	National Research Insitute	<a href="mailto:rkamiata@gmail.com">rkamiata@gmail.com</a>
Morobe	Mr. John Joseph – Fisheries Advisor Mr. Daniel Okena – Field Biologist	Morobe Provincial Government Tree kangaroo Conservation Project	<a href="mailto:jstekjoseph@gmail.com">jstekjoseph@gmail.com</a> <a href="mailto:daniel.okena@treekangaroo.org">daniel.okena@treekangaroo.org</a>
Madang	Mr. Wenceslaus Magun – Diretor Ms. Abigail Kaumu – Marine Biologist	MAKATA Inc. Karkar Island Community Organisation	<a href="mailto:magun.wences@gmail.com">magun.wences@gmail.com</a> <a href="mailto:abigailkaumu233@gmail.com">abigailkaumu233@gmail.com</a>
East Sepik	Ms. Evangelyn Kisa – Coordinator Mr. Derek Warakai – Environment Officer	Kape Wom Mangrove project East Sepik Provincial Government	<a href="mailto:evahshawn@live.com">evahshawn@live.com</a> <a href="mailto:derekwarakai@gmail.com">derekwarakai@gmail.com</a>
West Sepik	Mr. Erick Sakin – Climate Change officer Mr. Luke Tanikrey – Environment Officer Ms. Loretta Imba	West Sepik Provinvial Government CEPA Wset Sepik Provincial Government	<a href="mailto:e.sakin6633@gmail.com">e.sakin6633@gmail.com</a> <a href="mailto:luke.tanikrey@gmail.com">luke.tanikrey@gmail.com</a> <a href="mailto:loziiimba@gmail.com">loziiimba@gmail.com</a>
Western	Ms. Dainah Gigiba – Sn Fisheries Officer Ms. Juwella Masere	Western Provincial Government Mabuduana Communitybased Organisation	<a href="mailto:gigiba.dainah472@gmail.com">gigiba.dainah472@gmail.com</a> <a href="mailto:jmasere@gmail.com">jmasere@gmail.com</a>

Gulf	Ms Susannah Apopo – Community Officer Mr Hiviki Morea – Fisheries Officer	Ihu Development Trust ( Gulf Province). Gulf Provincial Government	<a href="mailto:Susan_opu@hotmail.com">Susan_opu@hotmail.com</a> <a href="mailto:Hiviki.m@gmail.com">Hiviki.m@gmail.com</a>
Central. NCD	Mr. Felix Baure - Director Ms. Miriam Ovasuru – Fisheries Officer Mr. Vagi Rei – Manager , Endangered Species Mr. John Genolagani – Marine Lecturer	Tubusereai Mangrove Rehabilitation Project Central Provincia Government CEPA Uinveristy of Papua New Guinea (UPNG)	<a href="mailto:Felix.baure@gmail.com">Felix.baure@gmail.com</a> <a href="mailto:mquilim.ovasuru@gmail.com">mquilim.ovasuru@gmail.com</a> <a href="mailto:rei.vagi@gmail.com">rei.vagi@gmail.com</a> <a href="mailto:jgenolagani@gmail.com">jgenolagani@gmail.com</a>
Milne Bay	Ms. Liberty Betuel – Project Coordinator Mr. David Mitchel – Excetive Diretor Mr Noel Wangunu – Marine Coordinator Ms. Lulu Osembo – Environment Officer Mr. Johnny Sorenz. –Provincial Fisheries Advisor Ms. Hayley Versace – Manager	Jormad Turtle Conservation Project Alotau Environent Advocates Alotau Environment Advocates Milne Bay provncial Government National Fisheries Authority – Alotau Office Conflict Islands Conservation Initiative	<a href="mailto:betuellm@gmail.com">betuellm@gmail.com</a> <a href="mailto:dmitchell.eca@gmail.com">dmitchell.eca@gmail.com</a> <a href="mailto:nwangunu.eca@gmail.com">nwangunu.eca@gmail.com</a> <a href="mailto:lulu.osembo@milnebay.gov.pg">lulu.osembo@milnebay.gov.pg</a> <a href="mailto:johnny.soranzie@milnebay.gov.pg">johnny.soranzie@milnebay.gov.pg</a> <a href="mailto:conservation@conflictislands.com">conservation@conflictislands.com</a>
Oro	Mr. Damien Ase - Legal Advisor Mr. Lester Seri – Policy Advisor	Private Consultant Wildlife Conservation Society	<a href="mailto:daseari2@yahoo.com">daseari2@yahoo.com</a> <a href="mailto:lester.seri@gmail.com">lester.seri@gmail.com</a>