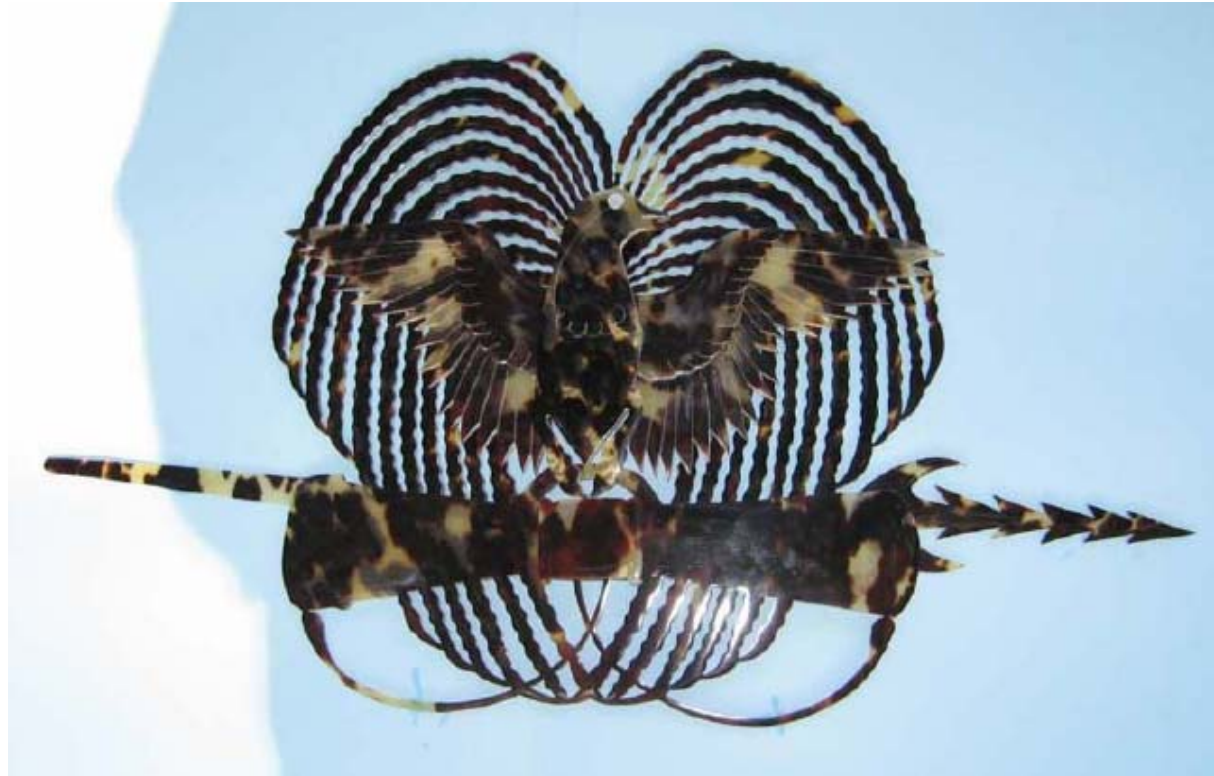


Conservation of Sea Turtles within the Cultural Context of Oceania:
Possibilities beyond Protection



Jeff Kinch

Custom(er) and Consumption, Lore and Law:
Pragmatic Practicalities of Protecting Sea Turtle Resources in Papua New Guinea

Six species are known to occur in the waters of Papua New Guinea's (PNG's)

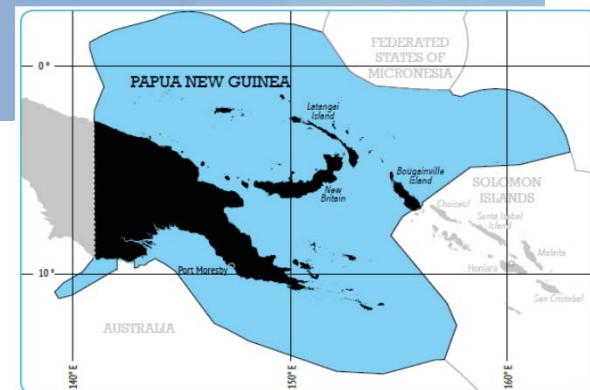
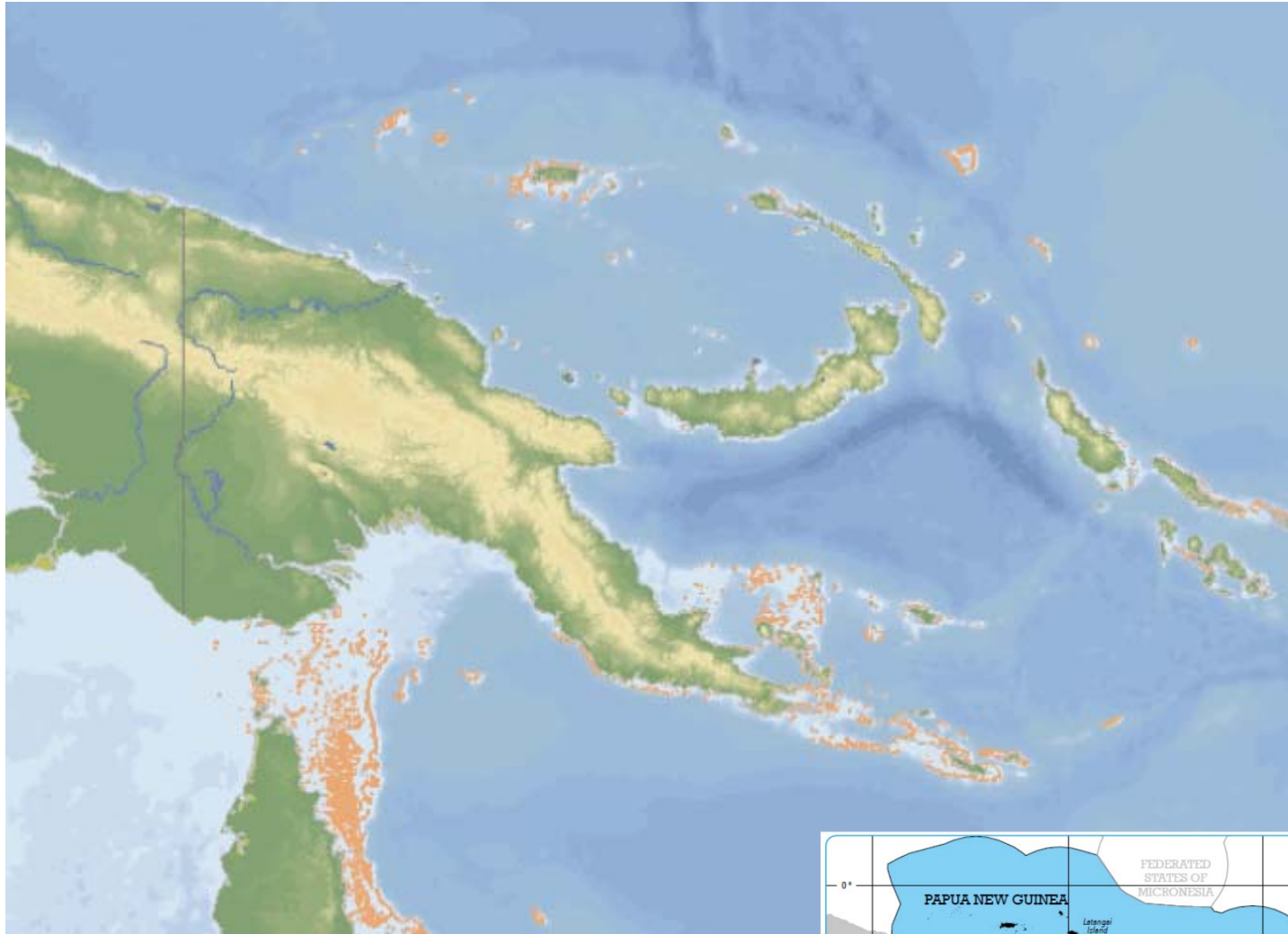
Economic Exclusive Zone (EEZ):

- green turtle (*Chelonia mydas*);
- hawksbill turtle (*Eretmochelys imbricata*);
- leatherback turtle (*Dermochelys coriacea*);
- loggerhead turtle (*Caretta caretta*);
- flatback turtle (*Natator depressus*); and
- Olive Ridley turtle (*Lepidochelys olivacea*).

PNG has an Economic Exclusion Zone (EEZ) covering an estimated 3,120,000 km² of marine waters. PNG also has a large coastline of approximately 17,110 km in length extending along 14 Maritime Provinces and also has an estimated 41,000 km² of coral reefs.

Each of these Maritime Provinces have a wide and diverse range of social, cultural economic and ecological environments with varying degrees of harvesting and catch on multiple and targeted coastal resources including sea turtles.

The sustainable exploitation of these coastal resources including sea turtles provides many opportunities for development aspirations, economic opportunities and food security for PNG's coastal and island communities as well as those people residing in ever-expanding urban centres.



PNG has:

- a population of approximately 8.5 million;
- an annual population growth rate of 3.2 % per annum (but as high as 5 % in some localities);
- life expectancy of its population in the low 50 years;
- 85 % of the population living by primarily subsistence production;
- 97 % of its land and sea area under local community ownership;
- the lowest Human Development Indices in the Pacific Islands Region; and
- limited government services in the rural areas.

PNG is rated as the:

- 158th Least Developed Country in the World; and
- 135th Least Honest Country in the World.

96 % of PNG's population allege that they subscribe to Christian values.

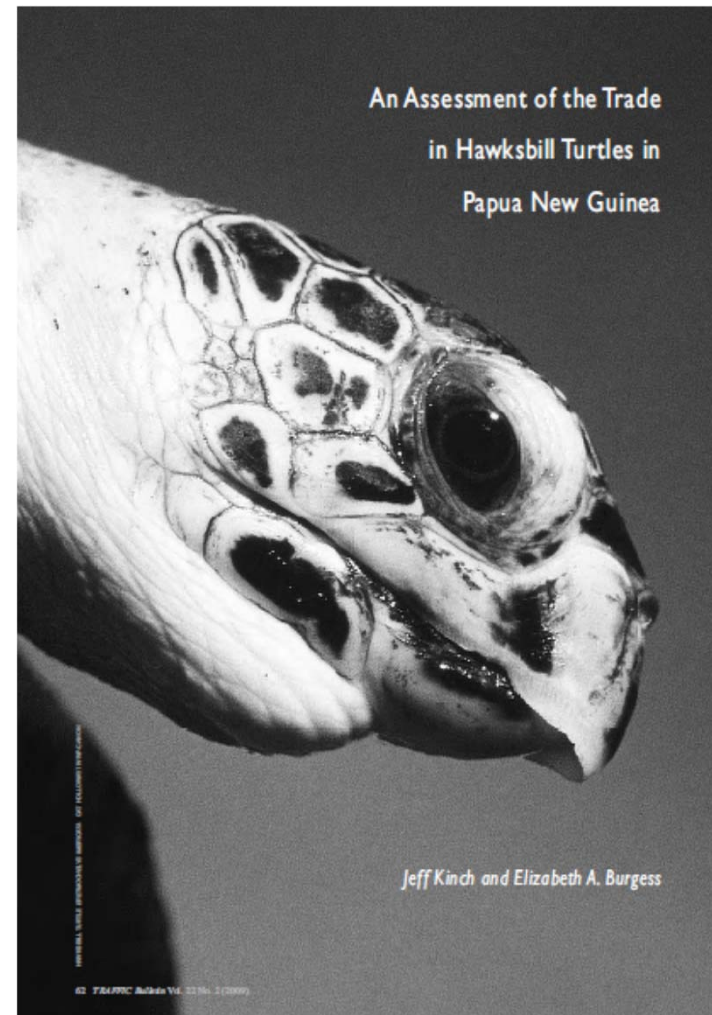
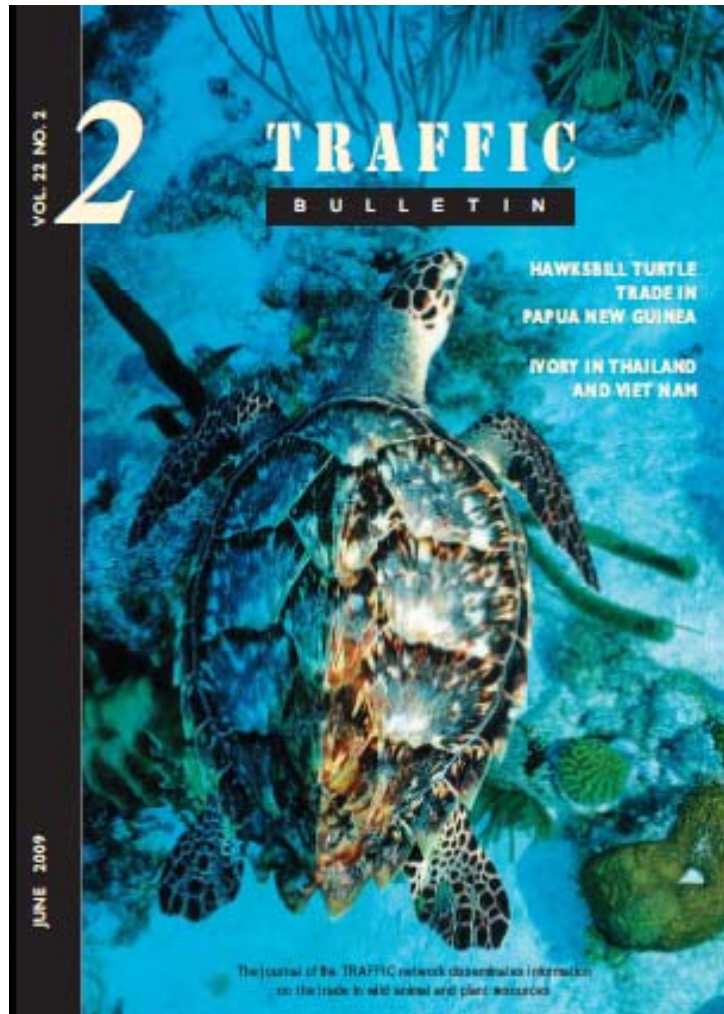
Initial investigations into sea turtle population distribution and take first begun after 1975 in the post-Independence period with surveys conducted by postal census or excursions to various Provinces around PNG.

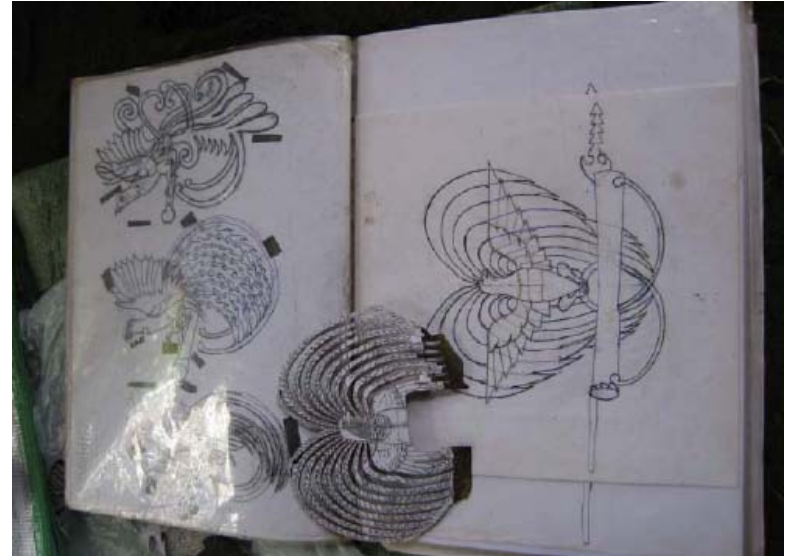
In the late-1980s, market surveys and some ethnographic work were carried out on green and hawksbill turtles in the Western and Gulf Provinces.

The most substantial assessments of nesting and take of green and hawksbill turtles have occurred in the West Calvados Chain of the Milne Bay Province in the late-1990s and early-2000s; and leatherback turtles along the Huon Coast in the Morobe Province.

Additional surveys for leatherback turtles have also occurred on Lihir Island in the New Ireland Province, the now Autonomous Region of Bougainville and the north coast of the Madang Province.

A hawksbill turtle shell (*bekko*) trade was conducted in major Provincial centres around PNG in 2008.





Across the world, 42 Countries and Territories permit the direct take of sea turtles with the level of take has been estimated to be in excess of 42,000 turtles per year with PNG accounting for an estimated 36 % of this total or around 15,217 turtles per year, mainly green turtles, and smaller catches of hawksbill turtles.

Previous estimates in the 1990s, suggested that between 10,000-20,000 green turtles were taken each year in PNG with about 6,000 green turtles sold in markets around PNG.

The sea turtle take for the PNG Western Province side of the Torres Strait Protected Zone which borders the state of Queensland in Australia was estimated during the years of 1985-1987 to be between 953-1,363 sea turtles taken annually with an estimated 96 % of this take being green turtles.

During more recent assessments conducted in Daru, an estimated 222 green turtles were sold at the market during the 2012-2013 season.

Brooker Island – Milne Bay Province

During my anthropological PhD fieldwork in 1998 and 1999, I was residing with a community on Brooker Island in the West Calvados Chain of the Louisiade Archipelago in the Milne Bay Province.

Sea turtles, notably green and hawksbill turtles are heavily utilised by Brooker Island people as a source of food, for feasts and trading, and to a limited extent for sale in local markets.

In the sea territory claimed by Brooker Islanders, the turtle nesting season begins around the same time as *huwalu*, a time of no food which begins in October, and finishes in May.

From September 1998 to May 1999, 190 sea turtles were taken and 549 nests had all viable eggs harvested





Month	Turtle		Eggs	
	Green	Hawksbill	Green	Hawksbill
September 1998	0	0	1	0
October 1998	4	2	5	2
November 1998	23	7	32	21
December 1998	42	18	81	47
January 1999	43	16	73	43
February 1999	12	3	41	14
March 1999	15	1	102	39
April 1999	3	1	34	12
May 1999	0	0	2	0
Total	142	48	371	178

During the 1998-1999 survey, the preferred place for collecting turtles for Brooker Islanders was Jomard Island, accounting for 22 % of all turtles captured in that season.





Island Name	Turtles		Eggs	
	Green	Hawksbill	Green	Hawksbill
Jomard	41	4	70	34
Siva	17	3	57	11
Enivala	15	2	62	10
Panadaludalu	14	4	32	17
Lal	7	7	3	6
Ehiki	6	0	4	4
Panabwaubwa	6	1	33	9
Panaboiboiana	5	0	6	2
Nabaina	4	0	20	21
Noina	4	9	8	11
Bunola	3	0	0	0
Nagobi	3	10	24	39
Panalobwa	3	0	4	3
Panapwa	3	0	17	1
Panasial	3	1	2	2
Yotavi	3	0	7	2
Pananimunimu	2	0	1	0
Abowat	1	1	2	0
Kokulouba	1	1	1	1
Panapatpat	1	0	4	1
Abaiwolan	0	0	7	0
Eyaluguguwa	0	0	0	1
Manua	0	2	3	0
Nitabutabu	0	0	4	1
Nunola Mala	0	2	0	1
Panarora	0	1	0	1
Total	142	48	371	178

1999



2014



Despite several interventions and awareness campaigns, the level of sea turtle take still continues.

Sea Turtle Resources in the
Milne Bay Province, Papua New Guinea:
Results of a Nesting Survey (21-27/01/03) at
Panayayapona and Panadaludalu Islands
(Jomard Islands), with Additional Notes.

Jeff Kinch¹

May 2003

Milne Bay Community-based Coastal and Marine Conservation Program.



With assistance from and special thanks to:
Charlie (Kauywadi) Graham (Misima Island and Village Trainer for Conservation International),
William (Ado) Sam (Brooker Island Ward Development Committee Member for Fisheries and
Agriculture), James (Napa) Lote (Brooker Island), Wendy Jubilee (Brooker Island), and Dorothy
(Dodo) Starford (Brooker Island).



Green turtle nesting at Panadaludalu Island (photo: Kinch, J. 2003).

A report prepared for the:
South Pacific Regional Environment Program, Apia, Samoa;
Department of Environment and Conservation, Port Moresby, Papua New Guinea; and
Environment Australia, Brisbane, Queensland, Australia.

¹ Community Development and Artisanal Fisheries Specialist
Conservation International
PO Box 804, Alotau, Milne Bay Province, Papua New Guinea.
Ph/Fx: 675 641 0359. Email: j.kinch@conservation.org



The Development of a Monitoring Program
for the Management and Sustainable Use
of Sea Turtle Resources in the
Milne Bay Province,
Papua New Guinea.

Jeff Kinch¹

August 2002

A Proposal to the South Pacific Regional Environment Program
for the
Milne Bay Community-based Coastal and Marine Conservation Program



Hawksbill Turtle in the Milne Bay Province

Turtle Tagging and Monitoring in Milne Bay Province
December 2003

PNG/01/010

Noel Wangunu¹, Donna Kwan², Ian Bell³ and John Pita⁴

March 2004

Milne Bay Community-based Coastal and Marine Conservation Program



Report prepared for Conservation International, PNG Department of Environment and
Conservation and South Pacific Regional Environmental Program



Green Turtle being measured at Iral Island (photo: Donna Kwan², 2003)

¹ Conservation International, P.O. Box 804, Alotau, Milne Bay Province, Papua New Guinea
² School of Tropical Environmental Studies & Geography, James Cook University, Townsville QLD 4810
³ Queensland Parks & Wildlife Services, P.O. Box 3597, Townsville QLD 4810
⁴ Department of Environment and Conservation, P.O. Box G24, Honiara, Solomon Islands.

From the 22nd-27th of January 2003, a total of 27 green and eight hawksbill turtles nesting on Panayayapona Island and eight green turtle only nesting on neighbouring Panadaludalu Island from the 25th-27th of January 2003.

In a follow-up survey from the 1st-21st of December 2003, 25 green and seven hawksbill turtles at Panayayapona Island with 27 green and six hawksbill turtles recorded nesting at Panadaludalu Island.





The Conflict Group

In 1996, turtles had been killed and their stomachs removed and the carcasses left to rot

In 2000, more than 30 turtles had parts of their bodies cut out while others were just left to die.

In 2003, there were reports that approximately 20-30 turtles had had their flippers cut off and left to die.

Every year . . . ???

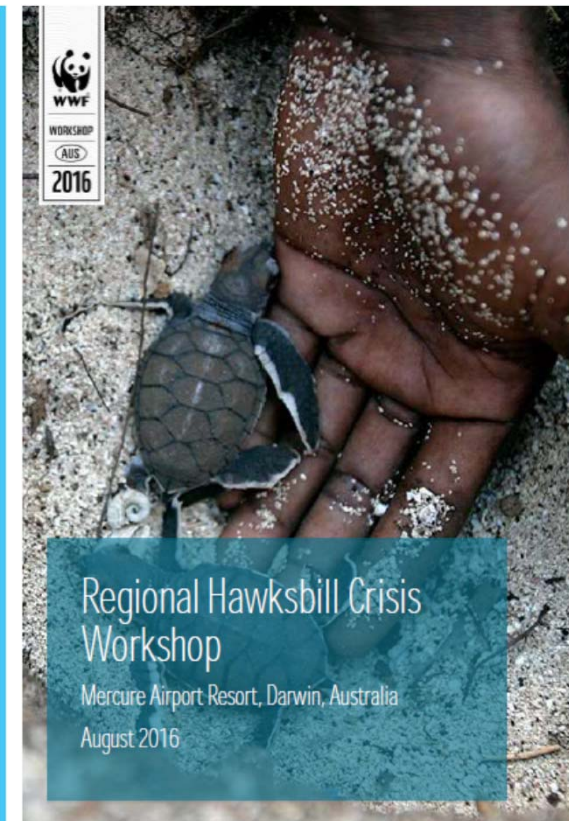
Ian Gowrie-Smith, the owner of the Conflict Group since 2009 has instituted the Conflict Island Conservation Initiative.

From the 1st-21st of December 2003, 20 nesting green and six hawksbill turtles were recorded nesting at Irai Island, 10 green turtles only at Tobiki Island and 29 green and three hawksbill turtles on Lunn Island.

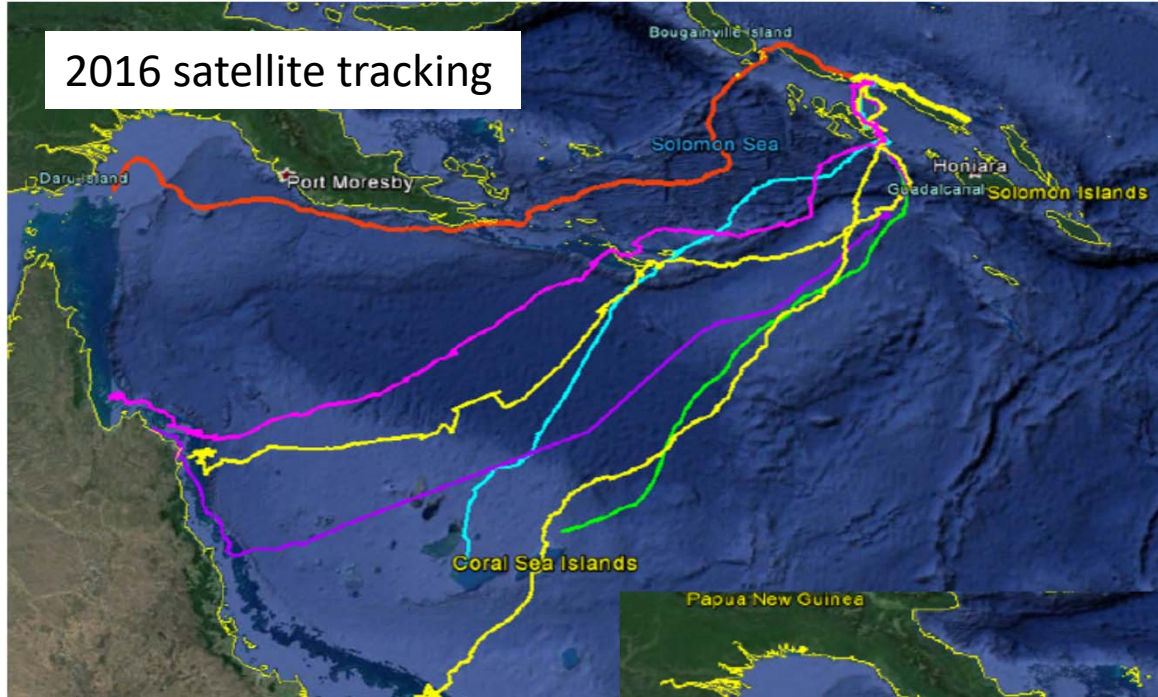
Christine Hof: *Investigating hawksbill turtle migratory paths and foraging grounds as sinks and strongholds, or targeted sources driving critical population declines.*

From the 29th December 2017 to the 12th of January 2018:

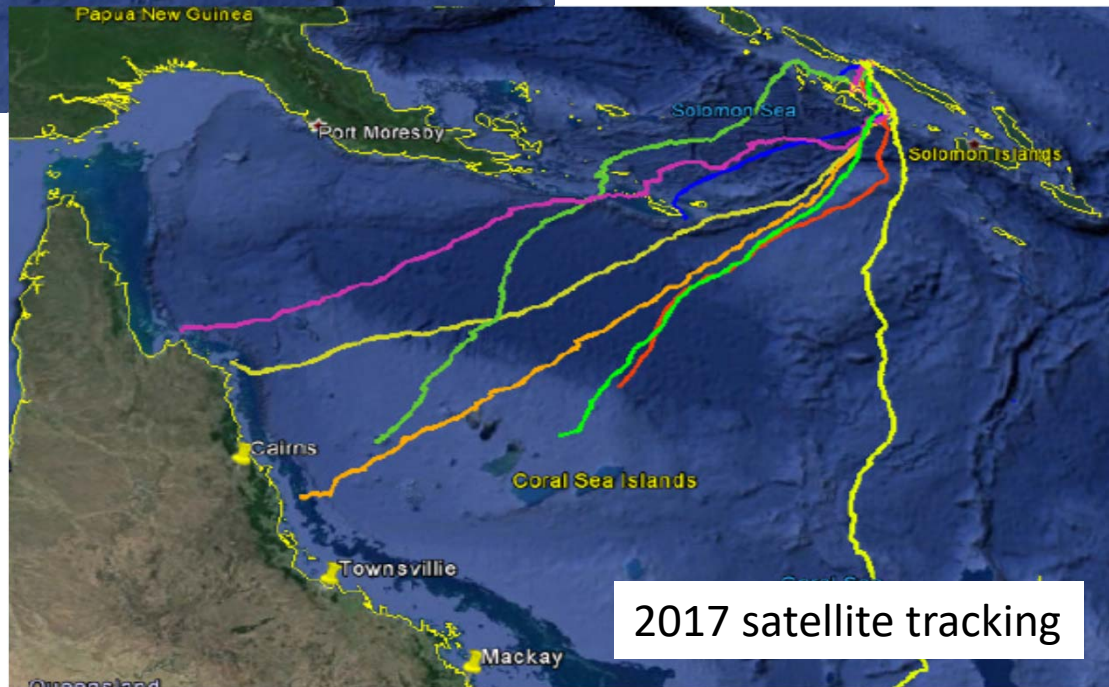
- 62 green and 9 hawksbill turtles were tagged;
- 10 genetic and stable isotope samples were taken;
- 26 data loggers deployed; and
- 10 hawksbill turtles were satellite tagged.



2016 satellite tracking



The Nature Conservancy



2017 satellite tracking

Huon Coast – Morobe Province

Leatherback turtle nesting in PNG has been reported to occur:

- along the north coast of PNG;
- on the islands of the New Guinea Islands Region;
- the now Autonomous Region of Bougainville; and the
- Milne Bay Province.

There have also been reported cases of leatherbacks nesting on the south coast of PNG.

The largest leatherback nesting area however in PNG is along the Huon Coast of the Morobe Province and is thought to be the second largest nesting population in the western Pacific.

Along the Huon Coast, nesting beach surveys began at Labu Tale and Busama in the early-1980s with an estimated 10-15 turtles nest reported per night



A Socio-economic Assessment of
THE HUON COAST
Leatherback Turtle
Nesting Beach Project

(LABU TALE, BUSAMA, LABABIA, AND PAJAWA),
MOROBE PROVINCE, PAPUA NEW GUINEA

BY JEFF KINCH JULY 2006



FINAL REPORT PREPARED FOR THE
Western Pacific Regional Fisheries Management Council
Honolulu, Hawaii, USA



In 1992, the Village Development Trust (VDT) with support from the World Wide Fund for Nature (WWF), began working on an Integrated Conservation and Development (ICAD) project with villagers from Lababia, Buso, Kui and Siboma and Paiawa in an attempt to head off commercial logging, and to assist villagers in establishing alternative livelihood projects.

A year later, a team from WWF found that these same villagers had only a limited knowledge of conservation; a strong hand-out mentality and were actually in support of logging. To keep the ICAD alive, the WWF began working with villagers from Lababia specifically to establish a Wildlife Management Area (WMA) over the majority of their land and marine territory and to establish a small conservation zone for the protection of leatherback turtles.

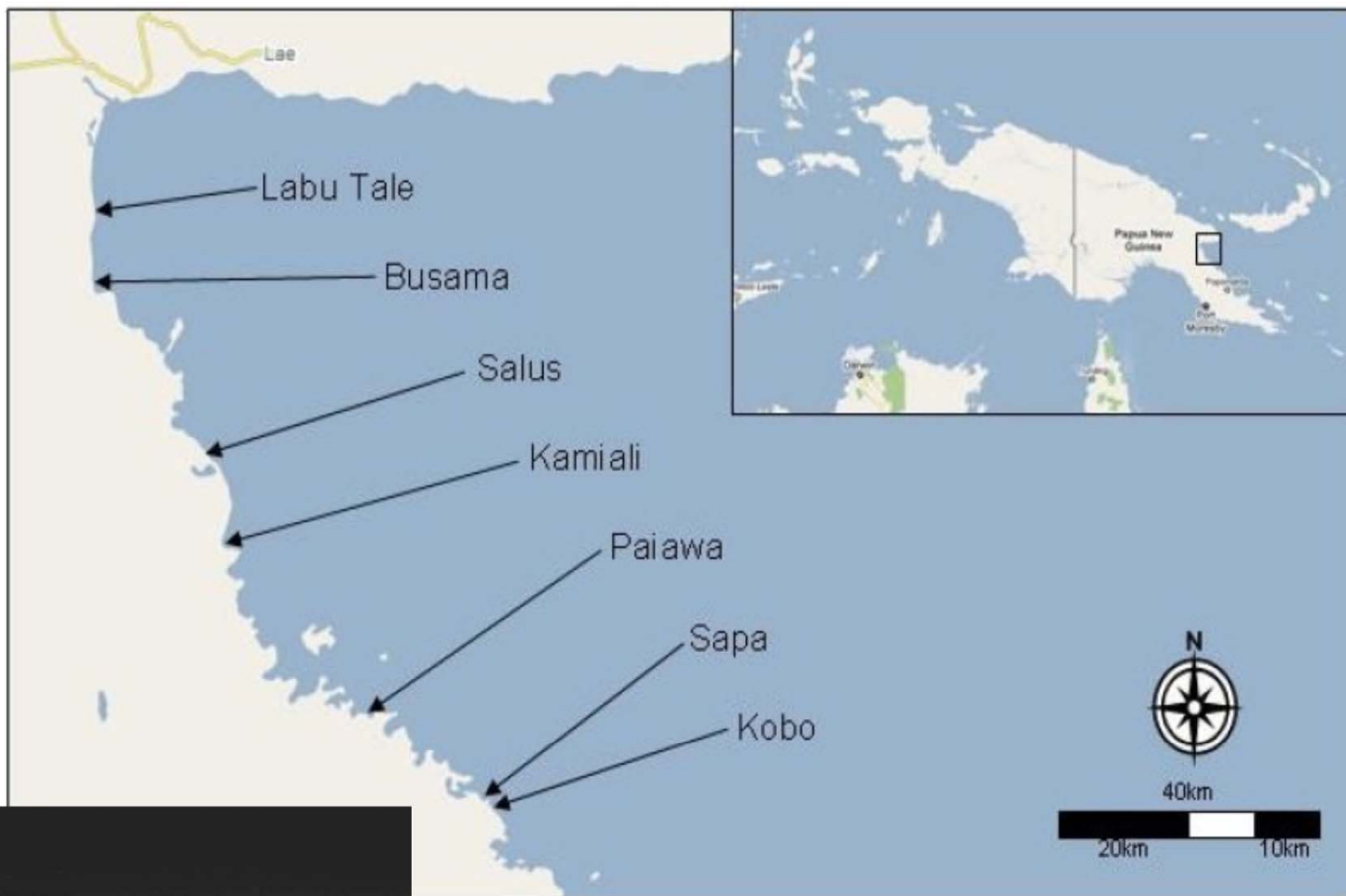
The villagers of Lababia went along with this as they were anxious to capitalise on any income producing opportunities if they could attract the interest of organisations, and the leatherback turtles were their ticket to donor funding.

With this came growing problems of unrealistic expectations from the villagers of Lababia especially when they saw large discrepancies between the benefits which they received from the ICAD, and the quality of life enjoyed by the staff at the Village Development Trust who were contracted to implement the ICAD and the WMA process. Jealousy was rife and conflict emerged between families, sub-clans and clans.

More consistent efforts for leatherback turtle conservation began in 1998 under the Kamiali Integrated Conservation Development Group (KICDG).

In 2003, the Western Pacific Regional Fisheries Management Council (WPRFMC) became involved due to the issue concerning the closure of the Hawaiian long-line tuna fishery due to leatherback turtle interaction.

Following concerns over the financial accountability by the KICGD, the WPRFMC instituted the the Huon Coast Leatherback Turtle Conservation Project (HCLTCP) which began monitoring and conservation activities in the WMA at Lababia and later expanding to incorporate other communities along the Huon Coast.



During the main period of WPRFMC from 2006-2013:

- 1,839 leatherback turtles laid nests along the Huon Coast;
- near-saturation tagging of all leatherback turtles nesting along the Huon Coast, with steady encounters with previously-unrecorded nesters; and
- produced an estimated 87,805 leatherback turtle hatchlings.

Nest and hatchling protection measures were developed during the HCLTCP which involved the construction and deployment of locally-made bamboo grids over leatherback turtle nests which prevented predation by dogs and a disincentive to humans to harvest eggs, though egg harvesting continued in areas that were outside the HCLTCP.

The bamboo grids were a low-cost solution to protecting nests, and effectively bolstered hatchling production and population recruitment.

Year/Place	Labu Tale	Busama	Lababia	Paiawa	Sapa	Kobo	Salus
2006-2007	41	80	59	7	11	12	26
2007-2008	270 with no nesting at Paiawa						
2008-2009	28	119	35	23	0	5	Nil
2009-2010	41	96	25	7	17	13	5
2010-2011	59	284	84	45	34	21	Nil
2011-2012	39	101	47	0	6	0	Nil
2012-2013	35	68	78	Nil	4	14	Nil
2013-2014	No data collected						

Number of nests laid

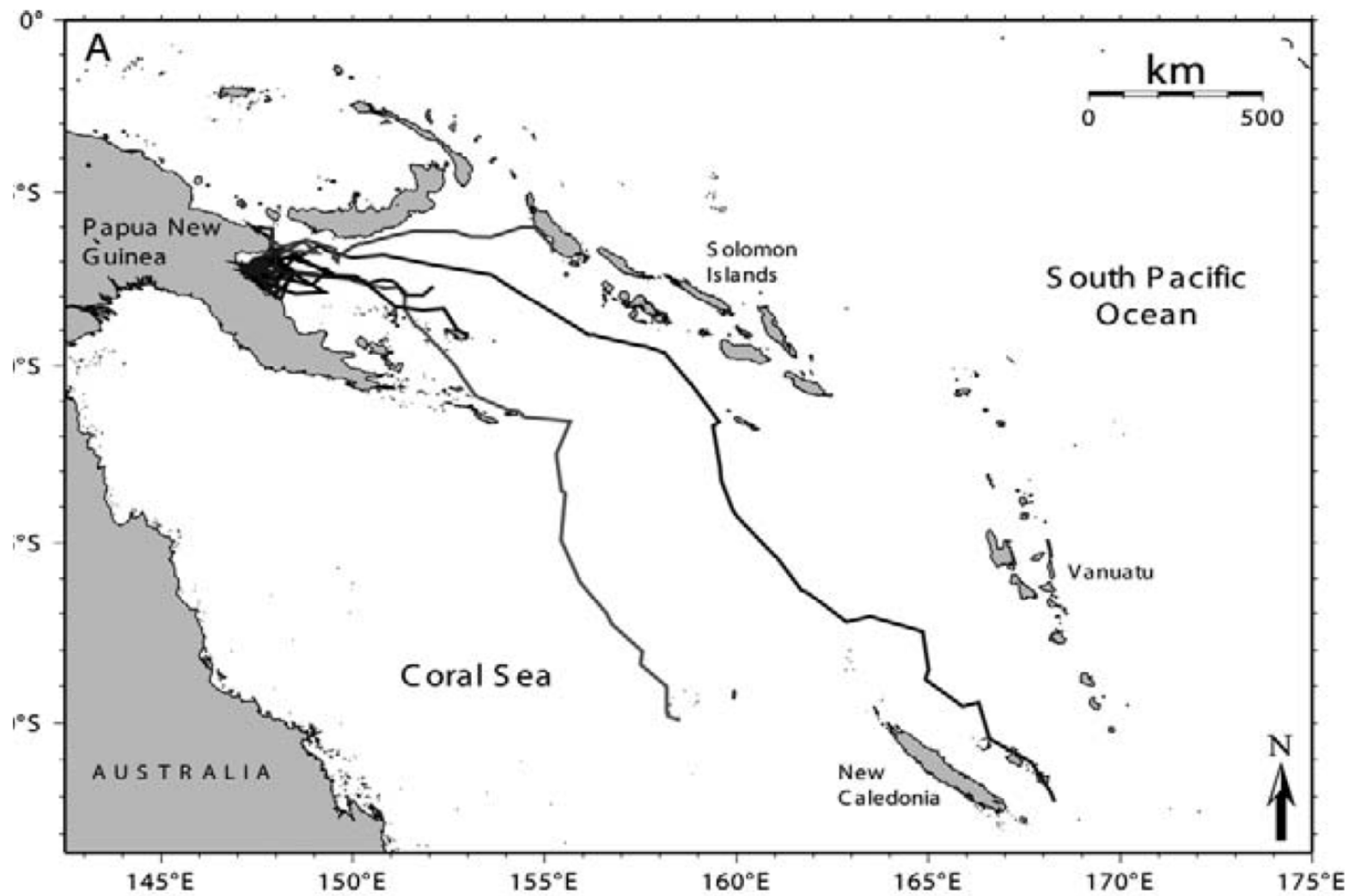
Year/Place	Labu Tale	Busama	Lababia	Paiawa	Sapa	Kobo	Salus
2006-2007	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
2007-2008	Unknown	Unknown	Unknown	Nil	Unknown	Unknown	Nil
2008-2009	80	76	92	100	0	100	Nil
2009-2010	76	73	69	100	85	76	100
2010-2011	94	91	100	100	92	95	Nil
2011-2012	91	90	100	0	100	0	Nil
2012-2013	95	93	98	Nil	80	88	Nil
2013-2014	No data collected						

Nesting success (%)



There was also aerial surveys and satellite tagging





Post-nesting migration tracks

In historical periods, egg exploitation along the Huon Coast would have likely have had a minimal impact on the leatherback turtle populations, as the villages were small and scattered, with little access to markets.

After World War II, egg exploitation increased, with leatherback turtle eggs changing from a protein supplement to a commercialized commodity and it is entirely possible that the leatherback population in PNG has experienced near total egg loss for some 40+ years.

Along the Huon Coast in the Morobe Province, narrow nesting beaches are subject to seasonal or storm-related erosion and accretion cycles, resulting in leatherback turtle nests being lost.

Rivers frequently breach at different times of the year at different sites and nests located close to the river bank and other natural drainage systems are exposed. Nests are also destroyed during high tides. Losses can be between 40-100 %.



Year/Place	Labu Tale	Busama	Lababia	Paiawa	Sapa	Kobo	Salus
2006-2007	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
2007-2008	Unknown	Unknown	Unknown	Nil	Unknown	Unknown	Nil
2008-2009	0	0	5	7	0	0	Nil
2009-2010	10	4	11	0	0	3	0
2010-2011	0	15	6	0	1	0	Nil
2011-2012	0	0	0	0	0	0	Nil
2012-2013	0	0	13	Nil	0	0	Nil
2013-2014	No data collected						

Nests lost to erosion/flooding

Year/Place	Labu Tale	Busama	Lababia	Paiawa	Sapa	Kobo	Salus
2006-2007	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
2007-2008	Unknown	Unknown	Unknown	Nil	Unknown	Unknown	Nil
2008-2009	0	0	0	0	0	0	Nil
2009-2010	0	9	0	0	0	1	0
2010-2011	0	0	0	0	4	0	Nil
2011-2012	0	5	0	0	0	0	Nil
2012-2013	0	11	0	Nil	0	0	Nil
2013-2014	No data collected						

Nests lost to human take

The HCLTCP employed a community-based approach which involved local communities in monitoring activities, beach management and conservation initiatives focussed on reducing nesting beach impacts and to optimize hatchling production.

Community incentives were also offered with support for specific projects within respective communities such as assistance with school or church activities and infrastructure.

Operations of the HCLTCP was not easy with community conflict a continual concern.

The dependence of participating communities relying on the WPRFMC also raised questions on the financial sustainability of these projects along the Huon Coast as nesting beach protection depended on long-term support with local communities.



The issue for the WPRFMC was that there was an increasing focus on using economic incentives or 'payment for ecosystem services' or 'compensation' or 'reincarnated ICADs' to protect leatherback turtle nesting beaches and to offset the opportunity costs of egg harvesting.

Before the leatherback turtle project and the associated economic rewards there was little interest in conserving leatherback turtles at Lababia.

Concerns to using incentives are:

- land tenure issues;
- limited experience by communities with formal legal frameworks;
- limited local economic opportunities;
- possible displacement of biodiversity loss to other areas;
- possible financial irregularities; and the
- creation of social conflict.

The major concern however is that when funding is exhausted or payments stop, conservation efforts will also cease and this is what happened on the Huon Coast. Trust funds.

At Busama and Labu Tale, the community cut down on their beach length in response to the reduced incentives, and the reduced coverage resulted in nesting events being missed and a reduction in the quality and quantity of data recorded.

Reduction in effort by communities due to reduced incentives, also resulted in a substantial number of leatherback turtle nests being poached by outsiders and neighbouring villages along participating project beaches, and it is becoming harder for the communities involved in the project to deal with the incoming groups of people using the coastline.

In addition to this is increasing conflict amongst different groups migrating to the coast, in part due to growing human populations. Adding to all this is greater civil unrest and land disputes. Murders.

The HCLTCP stopped in 2014.

them on performance.

Central Provincial Transport Authority staff displaying their new uniforms. — Nationalpic by TED WIKA KALEO

Leatherbacks at risk

VILLAGERS in Huon Gulf, Morobe, are eating the eggs of the endangered leatherback turtles because they had been mistreated by conservation officers, a spokesman said.

Salamaua local level government president Philemon Tomala confirmed that the people were eating the eggs because they were upset over the mismanagement and

mishandling of funds by officers in charge of the conservation programme.

Tomala said the people had lost interest in the conservation of the endangered species because they had been unfairly treated by the officers.

They claimed that local guides were not paid allowances to patrol the beaches at night.

Leatherback turtle eggs are a traditional delicacy for locals living along the beach from Labu Miti and Busamang villages, Kobo, to Wainoduna villages in Huon Gulf.

The conservation programme was set up and funded by international donors some years ago.

He said Busamang and Labu Tale villagers began digging up the protected nests and eating the eggs to-

wards the end of last year.

Labu Tale councillor Aaron Aima said the people had for the past two years been watching over the turtle nests without being given any assistance and allowance.

"We are all still waiting for funding but nothing is coming," he said.

A Labu villager said they would follow their neighbours from Busamang to consume the eggs.

Historically, there was not a strong need to regulate sea turtle use in PNG.

Resource management practices where they existed were rather directed primarily towards issues of resource distribution and social reproduction, or what could be termed 'cultural' sustainability, rather than towards issues of 'ecological' sustainability.

Practices did exist however that could be construed as having a conservation outcome.

Many practices have been lost to colonialism, missionisation, capitalistic aspirations, Western consumption and the introduction of new technologies.

In PNG, only the leatherback turtle is protected under 1966 *Flora and Fauna Protection and Control Act* which stipulates that any person who knowingly buys, sells, offers or consigns for sale, or is in possession or in control of a protected animal is liable to a fine of PGK 500.00 (USD 152.00).

This Act also provides for the establishment of WMAs like the one at Lababia on the Morobe Coast. The establishment of a WMA requires the demarcation of social and spatial boundaries and a schedule of rules and penalties to be recognized in consultation with the Conservation and Environment Protection Authority (CEPA, formerly the Department of Environment and Conservation) and the respective Local Level Government (LLG) where the WMA will be established.

The taking of sea turtles by Papua New Guineans within Australia's EEZ (i.e. the Torres Strait Protected Zone) is allowed under the 1985 Torres Strait Treaty as long as they are traditional inhabitants of 'Treaty' Villages though each Party should to its best endeavours identify and protect fauna that are or may become threatened with extinction.

Ward or Local Level legislation under Sections 42 and 44 of the Organic Law.

Under Section 42, village laws can be established that protect renewable and non-renewable natural resources, and develop parks, reserves, gardens, scenic and scientific centres.

Section 44 is also relevant in the context of dispute settlement, local environment, domestic animals, flora and fauna, protection of traditional sacred sites, and the imposition of fines for breaches of any of its laws.

These sections provide room to draw up local-level conservation laws that could be used to establish (future) permanent beach closures and to ban egg take.

In PNG, almost all nesting beaches and marine habitats are owned by a large number of clan and sub-clan groups whose tenure rights are recognised in the National Constitution (though other legislations override this).

Given the difficulty of enforcing species specific conservation regulations in PNG and the lack of resources by the PNG Government to operate effectively, recovery measures for sea turtles will continue to lay with communities with support from external agencies.

Subsequently, any plans for the sustainable use or conservation of sea turtles in PNG requires innovative methods that recognise community rights to sea turtle resources and habitats, while attempting to conserve (and 'recover') these sea turtle species where applicable.

Turtle resources should not to be restricted from traditional subsistence harvesting, trade or use and further work needs to be completed to determine the population status of turtle resources and their vulnerability.

The restriction on the commercial sale of turtle resources could be considered however and any changes made by CEPA to the turtle protection status should reflect this.

People in PNG are interested in improving their quality of life and see modern (Western) consumer goods, services and lifestyles as adding to that quality.

The development of any sea turtle monitoring, management and conservation programmes in PNG will not result in any reduction in harvesting of sea turtles and their eggs unless there is an improvement in the local economy for the many and mostly rural coastal and island people of PNG.

This is particularly important, given the cultural value of both the protein that sea turtles and their eggs provide and the additional economic benefits of sale of eggs, meat and handicrafts and the easy ability to capture them, which of course adds to their already significant economic value in dietary terms.

Overall, the conservation and management of turtle resources is a complex challenge in PNG, particularly because knowledge of the factors that determine sustainable harvest rates is limited.

Subsequently, there is a need to conduct assessments of the subsistence and semi-commercial take to quantify and characterise sea turtle exploitation at the local, provincial and national level, including trade and marketing patterns, and the importance to livelihoods from the income derived from sea turtle exploitation.

There is also a need to implement an outreach strategy for the general public, with the aim of increasing awareness and appreciation of sea turtles and their life cycle, and the benefits of sustainable management.

Lastly, given the difficulty of identifying stock boundaries and the capacity of turtle to move across jurisdictional boundaries, it will also be important to co-ordinate management initiatives across international jurisdictions.



UNEXPLOITED



AFTER 7 YEARS OF 100 % EGG HARVEST



AFTER 15 YEARS OF 100 % EGG HARVEST



AFTER 35 YEARS OF 100 % EGG HARVEST

Overall, it is to the peoples of PNG's advantage that sea turtle resources, along with the rights of use endure, but there is a need to take a holistic approach that looks at the whole development context of communities where interventions are required

and remembering that PNG is the 159th Least Developed Country with the lowest Human Development Indices in the Pacific Islands Region

This is important if we want to avoid statements like the following:

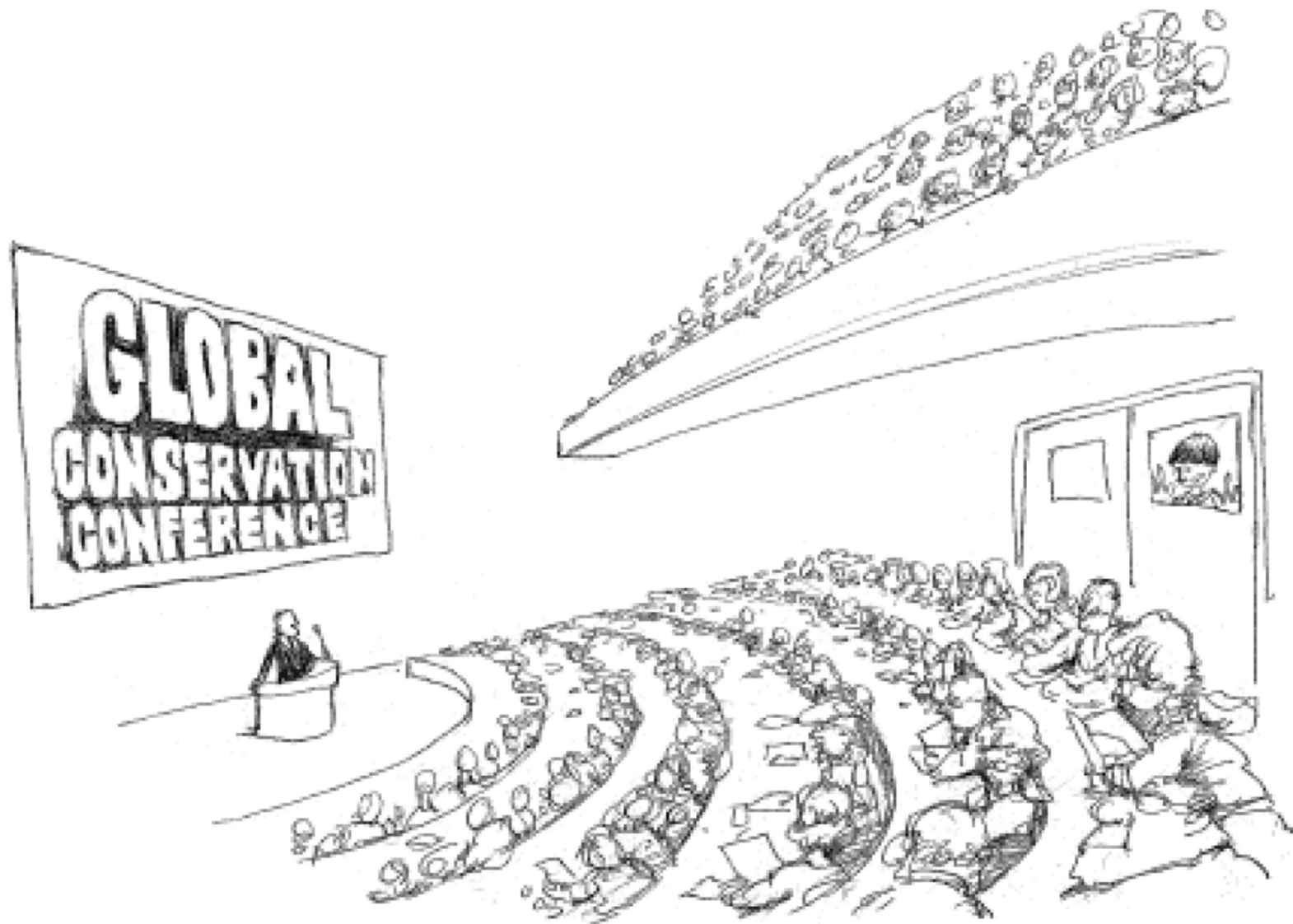
'the donors may have the money, but we own the beach'; and

'when a fisherman was asked what he would tell his grandchildren if he discovered that he was responsible for killing the last hawksbill turtle on earth, he answered 'I'll tell them how good it tasted" '

Finally, we also need to be careful of the traps of 'Bio-Paternalism' . . .



“Relax, we’re from Conservation Incorporated”



“So let the discussion on indigenous community consumption begin . . . ”