



## **Objectives and Overview**

Over the past few years, the Council in partnership with the National Marine Fisheries Service, have taken a proactive role in sea turtle conservation and research in the Western Pacific Region. To continue momentum and promote recovery of endangered Pacific sea turtles, the second *Western Pacific Sea Turtle Cooperative Research & Management Workshop* convened May 17-21, 2004. The focus of the workshop was on Southwest Pacific Hawksbills and the West Pacific Leatherback stock.

### *Hawksbill Workshop*

Participants at the Hawksbill Workshop (May 17 -18, 2004) reviewed and exchanged information on a hawksbill sea turtle, stochastic simulation model developed for the Council by Dr. Milani Chaloupka. The workshop: 1) introduced a forum of eleven hawksbill turtle experts and/or conservation managers to the model; 2) explained and demonstrated the interactive stochastic modelling approach; 3) enabled the forum to review inputs and model assumptions incorporated in the model; 4) enabled the forum to interact with the model to collectively explore model assumptions and data inputs; and 5) reviewed expected population responses to risk factors effecting the long-term viability of the Southwestern Pacific hawksbill sea turtle stock. Each participant was provided with the model on a CD with supporting documentation and a color User Guide on how to run the model and set up various scenarios.

### *Leatherback Workshop*

The Leatherback Workshop (May 19 - 21, 2004) provided a forum to consolidate the consortium of leatherback researchers from the western Pacific region to gather and exchange information, promote collaboration, and build consensus for continued leatherback turtle research, conservation and sustainable management. Twenty-five stakeholders primarily from Indonesia (Papua), Papua New Guinea, the Solomon Islands, Vanuatu, Japan, and the United States (namely scientists from NMFS) gathered the most current population trends, quantified nesting beaches, and reviewed current conservation and management efforts of the western Pacific leatherback turtle stock. Working groups identified the most current anthropogenic threats to nesting beaches and foraging grounds, and identified areas to focus additional research efforts. Primary investigators, in collaboration with regional experts, reviewed data gathering techniques, results from the 2003/04 field season, and worked to standardize research methodologies.

## Results and Recommendations

Recommendations developed from the two workshops will be used to help direct essential research, conservation and recovery efforts, and assist with future management decisions of both hawksbill and leatherback nesting stocks in the western Pacific region.

### Hawksbill Workshop

Dr. Milani Chaloupka directed the hawksbill workshop and provided the bulk of presentation material. He gave an explanation of the stochastic simulation model and how information was utilized to build and explore assumptions, functions and competing risk factors affecting the viability of the hawksbill metapopulation in the Southwest Pacific. Data and population demographics used to build the model came from the Australian rookeries of Milman and Heron Islands and Sabah parks in Malaysia. The hawksbill stock in the region appears to be in general decline with numerous population threats, however, evidence of increasing population size has been documented at protected nesting beaches.

Although excellent and comprehensive data does exist for some model parameters, the model is based on limited empirical data. Foraging ground abundance, harvest and subsistence take, incidental take in fisheries, and density dependence effects are generally unknown. The most complete biological information exists for hatchlings, subadults and adults. Recruitment for hawksbill turtles from the pelagic environment is at about 3 to 5 years of age (approximately 35 cm) and maturity is achieved between 25 to 30 years of age after recruitment (thus average age to maturity is between 30 to 35 years of age). Results from the simulation model suggests a population size of approximately three million hawksbill turtles in the Southwest Pacific region, with the primary stock (~10%) originating from the Milman rookery in Australia.

Additional presentations were provided by regional experts. Neca Marcovaldi provided a summary of hawksbill turtles in Brazil and results of over 20 years of research and conservation activities by Projecto TAMAR. To date, a network of 20 stations and associated conservation and monitoring activities protect all sea turtles and their eggs along approximately 1100 km of coastline. Coastal fishing villages are fully integrated into the program with fishermen and local villagers comprising the majority of TAMAR's staff. Studies since the 1990 demonstrate an increasing but fluctuating trend in the number of Brazilian hawksbills.

Jeanne Mortimer gave a presentation on the status, trends, threats and available data of hawksbill turtles in the Indian Ocean, and a detailed analysis of hawksbills in the Seychelles based on long-term studies at Cousins and Aride Islands (since 1970 and 1976 respectively). Jeanne provided excellent information on the historical export and exploitation of hawksbill turtles in the region (at least 81,700 turtles harvested between 1894 -1982), and expressed an important take home message: nesting beach management works! Although there has been an overall decrease (25%) of the hawksbill population in the Seychelles, at protected sites 142% population increase has been achieved versus 60% decrease at unprotected sites.

Damien Broderick and John Pita gave a joint presentation on hawksbills status in the Solomon Islands indicating that adult harvest remains a significant threat in the area and

expressed an urgent need to implement monitoring and intensive conservation activities. John presented information supporting the Arnavon islands to be a significant hawksbill rookery in the Solomon Islands; the most recent survey in 2000 estimated that 270 female hawksbills laid 785 nests. Damien concluded that the historic commercial harvest in the Solomon's was unsustainable (over 10,000 turtles harvested) and that current subsistence harvesting is probably limiting recovery. This was further supported by data comparing rookeries at Milman Island in Australia versus the Solomon Islands. At Milman, there are a high proportion of experience breeders with shorter remigration intervals and larger clutches, where as in the Solomon Islands there are a low proportion of experience breeders, longer remigration intervals (5-7 yrs) and smaller clutches.

Hiroyuki Suganuma gave a brief overview of hawksbill turtles in Indonesia. He reported that between 1961-1987, the hawksbill Bekko shell trade from Indonesia to Japan resulted in over 7,000 turtles harvested per year. Of the 474 islands or sites surveyed by Suganuma and his staff, only eight had over 100 nests. Available information suggests that egg harvest remains a significant threat in the region.

A portion of the workshop was dedicated to reviewing anthropogenic threats to nesting beaches and foraging grounds, and building a threat matrix for hawksbills in the region (see attached). This information will be used by the sea turtle recovery team when they work to review and update the 1998 ESA hawksbill recovery plan. Through the discussion generated by the threat matrix, and exploratory use of the model by participants, recommendations were generated by the workshop participants.

Recommendations include:

- Density dependence and environmental variability are the most subjective parameters in the model, thus it was emphasized that future research activities focus on these parameters.
- Hawksbill turtles show a unique characteristic in that subadults that have not reached adult size have the capacity to breed. For example, the entire breeding population is threatened by direct harvest in the Solomon Islands, therefore managers (or model users) need the ability to manipulate the model to address this threat directly.
- Through dialogue it was determined that results from a hawksbill population dynamics study in Australia conducted by Colin Limpus was lacking and in need of publishing. This study was comprised of nesting and foraging ground work in the Northern Territory and Queensland. It was recommended that the Council's Turtle Advisory Committee (TAC) send a letter to the director of the Environmental Protection Agency to encourage the publishing of this work.
- Laparoscopy data is crucial to strengthening population demography and the value of the model. The workshop recommends and encourages laparoscopy work throughout the region.
- Participants recommend that the Council's TAC write to SPC to ask them to collect turtle genetic samples of species encountered during fishery operations.
- The importance of Sabah Parks, Malaysia was recognized as a significant hawksbill rookery in the region. However, beach management practices appear to be outdated

- and inefficient. Participants recommend that Sabah Parks consider changing their nesting beach practices to increase hawksbill population size in the region (i.e., encourage shading of nests, eliminate hatcheries, encourage *in-situ* nesting, and allow hatchlings to enter the water in a more natural, unstructured way).
- There are still many hawksbill turtle mysteries in the southwest Pacific. For example, Damien Broderick restated that there is a genetic stock of hawksbills (~ 40%) foraging at Heron Island, Australia that has yet to be identified, and it is not clear where the Milman nesting population migrates to forage.
  - Fish Aggregating Devices (FAD's) were discussed as an important and increasing entanglement threat to hawksbill turtles. A quantification of FAD threats in the region is suggested.

### Leatherback Workshop

The leatherback workshop was the first of its kind to convene researchers and resource managers from the four countries in the western Pacific/Melanesian area which have nesting leatherbacks: Indonesia (Papua), Papua New Guinea, Solomon Islands and Vanuatu. It also provided a great opportunity for the Council to convene the primary investigators from the three leatherback programs implemented during the 2003/04 nesting season (Warmon Beach, Papua; Kei Islands, Papua; Kamiali Wildlife Area, PNG). The workshop was lead by Peter Dutton (NMFS/SWFSC), and was organized to give participants a comprehensive overview of all the leatherback research projects currently being conducted in the western Pacific region.

In total, 15 presentations were given at the workshop. Peter Dutton laid the groundwork with the first presentation, giving an overview of the background and history of leatherback research in the region. He was followed by Scott Benson who gave the most recent, and comprehensive summary of known leatherback migratory movements in the Pacific, as well as the results of an aerial survey conducted in PNG which identified additional leatherback nesting beaches during January 2004. Presentations followed by project leaders of Papua, Papua New Guinea, the Solomon Islands and Vanuatu who gave detailed presentations of leatherback nesting trends in their respective countries. Additional information which expressed continued regional efforts to aid in the recovery of turtle species was provided by the Fishery Agency of Japan, SPREP, and NMFS (contractor).

Upon conclusion of the presentations, the workshop was transformed into a working group where participants developed a threat matrix for leatherbacks in the western Pacific region. This threat matrix will be used by the sea turtle recovery team to help update the 1998 ESA leatherback recovery plan (see attached). To develop future priorities for research and conservation, project leaders from all four countries had the unique opportunity to compile their raw data to acquire a summary of the best available leatherback data in the region. Participants quantified all known leatherback nesting beaches, the number of approximate nests (or number of females nesting) at each site, a relative measure of the quality of the data (excellent, poor, fair, incomplete), and a complete inventory of specific threats occurring at each site (see attached). Additionally, the workshop provided an excellent forum for much needed dissemination, or

sharing, of data with a number of unpublished agency reports (or gray literature) distributed amongst participants.

The workshop concluded with a day of informal clinics. Primary researchers from the various programs reviewed data collection methods, their raw data from the 2003/04 field season, and acquired data analysis assistance. The programs in this region (with the exception of those in Indonesia lead by WWF) are still in their infancy compared to the long-term programs of the east Pacific or Atlantic. Regardless, personnel are motivated and dedicated to collect the best possible data. Peter Dutton and other NMFS staff provided classroom style education in turtle monitoring and research techniques; information which will enhance and facilitate data collection protocol during upcoming nesting seasons. It was identified that programs are proficient in tagging and measuring turtles, however, there has been a lack in emphasis to count and manage nests. Overall, project leaders acquired new knowledge to better manage their nesting beaches and left the workshop empowered.

Research recommendations identified:

- pit tag scanners be supplied to all programs
- all programs encouraged to double tag all turtles (pit and flipper)
- programs encouraged to tag during peak nesting periods and monitor nesting activity (tracks) during non peak periods
- programs should continue to tag, but redirect emphasis towards data collection methods to better identify nesting periodicity and the number of nests per season

It was further recommended that a regional organization, or network, be established to address the specific needs of the West Pacific leatherback stock. This network should include research and conservation methods, and involve the community, researchers, and resource managers. It was concluded that a Melanesian turtle meeting be held in Oct 2004 in the Solomon Islands to continue momentum to build local capacity for research and conservation, and maintain and expand the leatherback network. The focus the meeting will be on education and awareness (of all turtle species) and research methods (of leatherbacks). WWF-Fiji will coordinate the meeting, and a steering committee was identified [comprised of: Anne Trevor, Ken MacKay, George Petro, John Pita, Creusa Hitepeuw, Vagi Rei, Job Opu, Peter Dutton and Irene Kinan]. The bulk of the workshop will be conducted in the local language (pigin) and will have a significant portion dedicated to (classroom style) research and monitoring methods.

Results and products generated from the Council's leatherback workshop (threats matrix, nesting beach spreadsheets, and research recommendations) will be used to generate a three year action plan for leatherback research in the west Pacific/Melanesian region.

Summary of identified nesting beaches:

- Papua: 5 beaches total – 2 monitored/ 3 unmonitored
- PNG: 6 beaches total – 1 monitored/ 5 unmonitored
- Solomon: 10 beaches total – 4 monitored/ 6 unmonitored
- Vanuatu: 2 beaches total – 1 monitored/1 unmonitored



Leatherback turtle workshop group photo. From left to right, top to bottom: Tetsuya Kawashima, Rodney Galama, Scott Benson, Tina Fahy, Liu Chi-Chao, Yoshi Matsuzawa, George Petro, Hiroyuki Suganuma, Jeanne Mortimer, Hideki Nakano, Ken MacKay, Levi Ambio, Karol Kisokau, Tomo Eguchi, Vagi Rei, Irene Kinan, George Balazs, Anne Trevor, Taro Takeshita, Kitty Simonds, Creusa Hitipeuw, Peter Dutton, John Pita, John Senego, and Heidi Gjertsen. Not pictured are: Jacob Bakarbessy, Mike McCoy, and Milani Chaloupka.

## Southwest Pacific Hawksbill Stock - Threat Matrix

### THREATS RANKED (1-4)

**1 = High threat level; high importance to take action**

**2 = Medium threat level**

**3 = Low threat level; low importance to take action**

**4 = No threat level (not applicable)**

High level threats versus medium level threats ranked and/or prioritized based on tasks that are within reason to implement given available monetary resources.

<u>Threat</u>	<u>Adults</u>	<u>Juveniles</u>		<u>Hatchlings</u>	<u>Eggs</u>
		<u>Neritic</u>	<u>Ocean</u>		
<b>Threats to Hawksbills on Nesting Beaches</b>					
Direct harvest (humans)	1	4	4	4	1
Coastal construction (disruption of nesting & hatching activities)	3	4	4	3	3
Nest predation by native, domestic and feral animals	3	4	4	4	2.5
Artificial lighting	3	4	4	3	4
Data deficiencies (nesting activity, monitoring trends, define stock boundaries, genetics)	1	4	4	2	3
<b>Threats to Hawksbill Nesting Habitat</b>					
Degradation due to erosion-control measures, jetties, breakwaters	4	4	4	4	4
Sand, coral rubble removal	4	4	4	4	4
Vehicular driving	4	4	4	4	4
Global climate change, global warming*					
<b>Threats to Hawksbills in Marine Habitats</b>					
Direct harvest	1	1	4	4	4
Data deficiencies (distribution, abundance, migration, growth rates, survivorship, threats on foraging grounds)	1	1	1	3	4

<b><u>Threats</u></b>	<b><u>Adults</u></b>	<b><u>Juveniles</u></b>		<b><u>Hatchlings</u></b>	<b><u>Eggs</u></b>
		<b><u>Neritic</u></b>	<b><u>Ocean</u></b>		
Entanglement and ingestion of marine debris	3	3	3	4	4
Boat collisions	3	3	4	4	4
Disease	3	3	4	4	4
<b><u>Incidental take in Fisheries</u></b>					
Longline	3	3	3	4	4
Purse seine	3	3	3	4	4
Trawl	3	3	3	4	4
Coastal fisheries (gillnet)	1	1	4	4	4
Pound nets/traps	4	4	4	4	4
FADs**	4	4	3	4	4
Hook and line	3	3	4	4	4
Dynamite Fishing	3	3	3	4	4
<b>Threats to Hawksbills in Marine Habitat</b>					
Data deficiencies (identification of important habitat)	3	2	2	4	4
Degradation of reefs by boating, diving activities (tourism)	4	4	4	4	4
Degradation of reefs by pollution, including agricultural runoff, cyanide	2	2	4	4	4

\* global issue, more information is needed

\*\*emerging issue

## Western Pacific Leatherbacks - Threat Matrix

### RISK MATRIX: THREATS RANKED (1-4)

**1 = High threat level; high importance to take action**

**2 = Medium threat level**

**3 = Low threat level; low importance to take action**

**4 = No threat level (not applicable)**

High level threats versus medium level threats ranked and/or prioritized based on tasks that are within reason to implement given available monetary resources.

<u>Threat</u>	<u>Adults</u>	<u>Juveniles</u>	<u>Hatchlings</u>	<u>Eggs</u>
<b>Threats to Leatherbacks on Nesting Beaches</b>				
Direct harvest (humans)	2	4	4	1
Coastal construction (disruption of nesting & hatching activities)	4	4	1.5	1.5
Nest predation by domestic, native and feral animals	3	4	3	2
Artificial lighting	4	4	3*	4
Data deficiencies (nesting activity, identify nesting beaches, determine and monitor trends, nesting beach origins, define stock boundaries, genetics)	1	4	1	1
<b>Threats to Leatherback Nesting Habitat</b>				
Degradation due to erosion-control measures, jetties, breakwaters	4	4	3	3
Sand removal & mining practices	4	4	4	4
Vehicular driving*	3	4	3	3
Degradation by upland, coastal erosion, siltation (mining)	4	4	2	2
Global warming*	3	4	3	3

Threats to Leatherbacks in marine habitats				
Direct harvest	2	2	4	4
Data deficiencies (distribution, abundance, migration, growth rates, survivorship, threats on foraging grounds)	1	1	4	4
Entanglement and ingestion of marine debris	3	3	3	4
Boat collisions	3	3	4	4
<u>Incidental take in Fisheries</u>				
Longline	1.5	1.5	4	4
Purse seine	3	3	4	4
Trawl	2.5	2.5	4	4
Coastal fisheries (gillnet, ___?)	1	1	4	4
Pound nets/traps/pots	3	3	4	4
FADs	3	3	4	4
Hook and line	3	3	4	4
Disease	4	4	4	4
Predation	3	3	3	4
Threats to marine habitat				
Data deficiencies (identification of important foraging habitat)	1	1	1	4
Degradation of reefs by boating, diving activities	4	4	4	4
Degradation by upland, coastal erosion, siltation, including mining, pollution	3	3	4	4
Degradation of pelagic habitat by oil trans-shipment	3	3	4	4
Jellyfish Fishery*	3	3	4	4

\*emerging issue

**Western Pacific Leatherback (*Dermochelys coriacea*) Nesting Populations**

Beach (>20 Dc nests)	Size (km)	Nesting Season by Month (P=Peak)												# Nests	# tagged	Threats	Moni- tored?	Quality of data	Notes
		J	F	M	A	M	J	J	A	S	O	N	D						
<b>Papua</b>																			
<b>Jamursba-Medi</b> [consists of: Wembrak, Batu Rumah, Lapon and Warmamedi]	18						P	P						1,865- 3,601  1,999- 2,426	70	feral/domestic pig, domestic dog, logging, tidal inundation	Yes	Exc. (Nests) Poor (tagging)	WWF data, 2002, 2003 Complete season Everlasting Nature of Asia, 2002 - 2003
War-Mon	6	P	P											1,508		feral pig, logging, tidal inundation, egg collection	Yes	Exc.	WWF data, 2003 Complete season
Mubrani-Kaironi	20													unk <sup>1</sup>		egg collection, feral pig	No	Incom- plete	Adipati and Patay, 1984 Season unclear
Sidey-Wibain	18													unk <sup>1</sup>		egg collection, feral pig	No	Incom- plete	Adipati and Patay, 1984 Season unclear
Yapen Island	5													unk		egg collection, tidal inundation	No	Incom- plete	Maturbongs, 1999 Season unclear

Beach (>20 Dc nests)	Size (km)	Nesting Season by Month (P=Peak)												# nests	# tagged	Threats	Moni- tored?	Quality of Data	Notes		
		J	F	M	A	M	J	J	A	S	O	N	D								
<b>PNG</b>																					
Kamiali	11	P												P	P	107* (min)	40-72	predation (lizards, pigs, crocs) egg collection, erosion, gardening (remove trees), debris from river	Yes	Incom- plete (nests); Good (tagging)	Wildlife management area. 4.2 km currently monitored. Aerial surveys (one day), with ground truth.
Buang- Buassi	5.5	P												P	P	104* (min)	1	predation (lizards, pigs) egg collection, artificial lighting, coastal devt, debris from river	No	Incom- plete	Aerial surveys (one day), no ground truth. Beach is large and good for nesting, protection has begun.
Fulleborn	7.5													P	P	26 (min)		logging, egg collection, erosion, nest predation (feral dogs, crabs)	No	Incom- plete	Data collected on aerial survey (one day), 2004
Korapun	3.25	P												P	P	14 (min)		feral pigs, iguana	No	Incom- plete	Data collected on aerial survey (one day), 2004

Beach (>20 Dc nests)	Size (km)	Nesting Season by Month (P=Peak)												# nests	# tagged	Threats	Moni- tored?	Quality of Data	Notes	
		J	F	M	A	M	J	J	A	S	O	N	D							
Salus	4.57												P	P	19 (min)		feral pigs, iguana	No	Incom- plete	Data collected on aerial survey (one day), 2004
Bouganville	5	P											P	P	10		feral pigs, iguana, sedimentation	No	Incom- plete	T. Leary, 1990 (Laluai Pt)
<b>Solomons</b>																				
<b>Western Province</b>																				
Baniata (Rendova Is)	2-3	P												P	65*	none	wave erosion	Yes vil- lagers	Fair	Longest nesting beach in Solomons
Havila (Rendova Is)	2-3													P	38*	none	wave erosion	Yes vil- lagers	Fair	
Quero (Tetapara Is)	.2														20	none	monitor lizards, wave erosion	ran- gers	Poor	3 other nesting beaches with 10-20 nests
<b>Isabel</b>																				
Sasakolo	~1													P	150+ (167?)	7 ('93) 25 ('95) 27 ('01)	monitor lizards, croc.	Yes	Fair	Need assistance for continuation. Incomplete season surveyed for all three years.

Beach (>20 Dc nests)	Size (km)	Nesting Season by Month (P=Peak)												# nests	# tagged	Threats	Moni- tored?	Quality of Data	Notes	
		J	F	M	A	M	J	J	A	S	O	N	D							
Litogahira	1.5													P	150 (200+?)		monitor lizards, croc., egg collection, logging	Yes mini- mal	Incom- plete	Urgent need to monitor. Incomplete season surveyed.
Lilika	?													P	150		monitor lizards, croc., egg collection, logging	No	Incom- plete	Urgent need to monitor
Salona	?													P	150		monitor lizards, croc, egg collection, logging	No	Incom- plete	Urgent need to monitor
Katova Bay (E coast)															20-30		monitor lizards, croc., egg collection, logging	No	Incom- plete	Based on 1980, 1989
Rakata Bay															20+		monitor lizards, crocodile, egg collection, logging	No	Incom- plete	Based on 1980, 1989
<b>Choiseul</b>																				
Vachu River	2														50		egg collection, monitor lizards, croc.	No	Incom- plete	Based on 1980, 1989, 1990 surveys

Beach (>20 Dc nests)	Size (km)	Nesting Season by Month (P=Peak)												# nests	# tagged	Threats	Moni- tored?	Quality of Data	Notes		
		J	F	M	A	M	J	J	A	S	O	N	D								
<b>Vanuatu</b>																					
Votlo (Southern Epi)	4	P													P	31	9	feral animals, flooding river, storm surge	Yes	Fair	Trial survey by VTRM (Nov, 02- Feb, 03
Malakula	?																	egg collection, meat harvest			Should be monitored. 5-6 potential nesting beaches

† Locals report approximately 20-25 nesting leatherbacks on Mubrani-Kaironi and Sidey Wibain

\* = # crawls

Threats and Actions to be Addressed									
	Legal Protectn	Nest Predation	Erosion	Meat Harvest	Egg Harvest	Logging/ Mining	Coastal Fishing	Coastal Construction	Data Deficiencies
<b>Papua</b>									
Jamursba-Medi	Soon	feral pig, dogs	Yes	No	No	Yes (logging)	Potential	No	Yes
War-mon	No	feral pig, dogs	Yes	No	Little (subs)	Yes (logging)	Potential	No	Yes
Mubrani-Kaironi	No	Feral pig, dogs	Yes	No	Yes (subsist)	Yes (unk)	Potential	No	Yes
Sidey-Wibain	No	Feral pigs, dogs	Yes	No	Yes (subsist)	Yes (unk)	Potential	No	Yes
Yapen Island	No	Feral pigs, dogs	Yes	No	Yes (subsist)	Yes (unk)	Potential	No	Yes
<b>PNG</b>									
Kamiali +	Yes	Lizards, pigs, crocodile	No	No	Yes (medium)1 (both)	Potential (both)	Yes (potential)	Potential (ongoing tourism project)	Yes
Buang-Buassi	No	Lizards, pigs	No	No	Yes (very high 80-90%) (both)	Potential (both)	Yes (potential)	Yes, and spreading	Yes
Fulleborn	No	Feral dogs, crabs	Yes	No	Yes (both)	Potential (both)	Low	No	Yes
Korapun	No	Feral pigs, dogs	Yes	No	Yes (both)	Yes (logging)	Shark/tuna longlining, prawn trawling	No	Yes
Salus	No	Feral pigs, dogs	Yes	Yes (subsist)	Yes (both)	Yes (logging)	Shark/tuna longlining, prawn trawling	No	Yes

Bouganville	No	Feral pigs, iguanas	Yes	No	Yes (very high)	Yes (copper mining)	Longlining	No	Yes
Solomons									
Baniata (Rendova Island)	No*	unknown	Waves (seasonal)	Previously	Yes (in 2003) (subsist)	Potential (logging)	Coastal fishing	No	Only crawls not nests
Havila (Rendova Island)	No*		Waves (seasonal)	Previously	Yes (in 2003) (subsist)	Potential (logging)	Coastal fishing	No	Only crawls not nests
Quero (Tetapare)	Yes	Monitor lizards	Waves (seasonal)	No	?	No	No (protected area)	No	Not daily coverage
Sasakolo	Soon*	Monitor lizards, croc.	Waves	No	Yes (low)	No	No	No	Yes
Litogahira	No*	Monitor lizards, croc.	Waves	No	Yes (high**)	Yes (logging)	Coastal fishing	No	Yes
Lilika	No*	Monitor lizards, croc.	Waves	No	Yes (high**)	No	Coastal fishing	No	Yes
Salona	No*	Monitor lizards, croc.	Waves	No	Yes (high**)	No	Coastal fishing	No	Yes
Vanuatu									
Votlo (Southern Epi)	No (beach banners)	Feral pigs	Flooding rivers, storm surge	Previous, not practiced anymore	Previous, not practiced anymore	None	Subsistence and commercial	None	Yes
Malakula	No			Yes	Yes				Yes

\*National legislation of the Solomons protects leatherbacks. There is a ban on harvest of meat, eggs, or any commercial trade of leatherback products, but it does not empower communities to declare ordinances. This may change with the passing (1998) and gazetting (Sept., 2003) of the Wildlife Protection and Management Act. On Isabel, there is a wildlife protection ordinance, which empowers communities to declare the customary area as a protected area, which includes enforcement. In the Western Province,

\*\*These beaches are close to villages; therefore, high egg collection. Sasakolo is more remote.

+ Since 2002, Kamiali has had a complete ban on egg collection.