

# SITE INFORMATION SHEET TEMPLATE

## in support of a formal proposal to nominate a site for inclusion in the IOSEA Marine Turtle Site Network

The completed Information Sheet is intended to be submitted to the IOSEA Secretariat, through the national IOSEA Focal Point. As the contents will serve as the primary basis for evaluation of site nominations, responses should be as comprehensive as possible.

**1. Date of submission (DD/MM/YYYY):**

*The date on which the Site Information Sheet was completed.*

09 / 03 / 2015 (revision)

**2. Name and address of compiler(s), if not the IOSEA Focal Point**

*Name and contact information (including affiliation) for the individual(s) who prepared this information sheet, for formal submission through the national IOSEA Focal Point.*

Name:

CIDUR JULSADJIRI

Functional Title:

Chief, Protected Areas and Wildlife Division

Organization:

Department of Environment and Natural Resources–Region IX

Address:

BBC Bldg., Bana St., Sta. Maria District, Pagadian City, Zamboanga del Sur,  
Philippines 7016

Email:

cidurj@yahoo.com

Tel. / Fax: (062) 215-4092

**3. Country:** *The name of the country in which the site is located.*

Philippines

**4. Name of site:** *The name of the site (alternative names should be given in brackets).*

Turtle Islands Wildlife Sanctuary (TIWS)

**5. Geographical coordinates**

*The geographical coordinates (latitude and longitude) of the **approximate centre** of the site, expressed in 'decimal degrees'. For example, the location of the IOSEA Secretariat in Bangkok is 13.763483°, 100.508157°. If the site consists of two or more discrete units, the coordinates of the centres of each of these units should be given. (Add any additional coordinates in a separate annex.)*

**Decimal Degrees** 6.07683° N, 118.31386°E

**6. General location**

*Describe the general location of the site. This should include the site's distance (in a straight line) and compass bearing from the nearest significant administrative centre, town or city. The human population of the listed centre and its administrative region should also be stated. (See also the information requested under point 24: Site Map)*

The TIWS is located at the southwestern tip of the Philippines.

In terms of distance and bearing from significant administrative centers, the general location of TIWS lies about 1,000 km southwest of Manila; about 35 km northeast of Sabah, Malaysia; about 275 km southeast of Palawan Island; and about 200 km northwest of the province of Tawi-Tawi, Philippines. It is right at the edge of the international treaty limits separating the Philippines and Malaysia.

In the remainder of this document, the codes that appear in square brackets alongside each of the titles below refer to sections of a separate document describing the evaluation criteria, which will be informed by the proponents' submission. **Proponents are encouraged to consult the Evaluation Criteria document<sup>1</sup> for more explanation of the rationale behind each criterion and of the detailed information to be used for evaluation purposes.**

## 7. Area [N3]

The approximate surface area of the site to be included in the network (in hectares or square kilometers). If the site is an island, indicate also the total surface area of the coastline directly relevant to turtle conservation. Area should correspond to the map provided under point 24.)

TIWS is composed of six (6) islands namely Taganak, Baguan, Langaan, Boan, Lihiman, and Great Bakkungan. It covers a total area of 242,967 hectares of both land (318 ha.) and water (242,649 ha.).

## 8. Physical features of the site [EB1- 4, S5, S6, N1]

Describe the principal physical characteristics of the site, including the marine turtle habitat types occurring at the site. List the ecosystem types included in the site (nesting beach, foraging habitat, reproductive habitat, migratory habitat) and the approximate area in hectares (or km<sup>2</sup>) of each habitat type included. Indicate whether the site's physical attributes are shared by other sites in the country, or are exceptional/unique.

Table 1. Summary of the Physical Characteristics of the Islands of the Turtle Islands Group (Bate, 1998)

Island	Land Area (ha)	Length of Coastline (metres)	Type of Beach and Length (metres)			Geology
			Sandy	Shingles	Rocky	
Taganak	116	4,950	1,583	655	2,359	Basalt and coralline sand
Boan	76	4,185	888	1,410	1,887	Sandstone, mud and coralline sand
Bakkungan	51	2,958	819	637	1,502	Mud and coralline sand
Lihiman	29	2,311	525	578	1,208	Mud and coralline sand
Langaan	7	470	470	--	--	Coralline sand
Baguan	29	1,717	1,542	--	165	Basalt and coralline sand

As a consequence of the Turtle Islands being located below the typhoon belt, the coral reefs are highly diverse in the absence of typhoons' "homogenizing" effects (Romero 2002). Throughout these islands, coral reefs are well developed in the north and north-eastern sections with mean coral cover ranging from 25% to 47% (Romero 2002).

The islands are elongated along a northeast-southwest orientation with the main axis lying along a geological feature crossing the Sulu Sea, the Cagayan "Mapun" Ridge; the rise in sea levels from 15,000 years to the present has submerged the ridge to its existing depth (Palma *et al.* 2003).

## 9. Ecological resources [EB1- 4, S5, S6, N1]

Describe the ecological resources at the site, including sea turtles and other noteworthy biodiversity. Describe the marine turtle species / management units occurring at the site, if they are known. Where possible, provide an abundance estimate for each marine turtle species/management unit (e.g. in terms of average number of turtles nesting annually or foraging). **Evaluation Criteria EB1a and EB1b** offer guidance on how to describe the relative importance of a site frequented by one or more marine turtle species. Indicate whether the site's ecological resources are shared by other sites in the country or are exceptional/unique.

Sea turtles, including eggs, are particularly important natural resources. TIWS is a nesting ground for two (2) species of sea turtles, i.e., green turtles (*Chelonia mydas*) and hawksbill turtles (*Eretmochelys imbricata*). Based on DENR records, 414,529 complete nests of green and hawksbill turtles were recorded in the TIWS from 1984 to 2013 (Tables 2 and 3) with an average of 13,817 per year. In fact,

<sup>1</sup> Criteria for the Evaluation of Nominations to the Network of Sites of Importance for Sea turtles in the Indian Ocean – South-East Asia Region, IOSEA Marine Turtle MoU Secretariat. <http://ioseaturtles.org/sitenetwork-evaluation.php>

the Philippine Turtle Islands, together with the Sabah, Malaysia Turtle Islands have gained world recognition as one of the only two remaining major nesting areas of green turtles in the Southeast Asia Region having more than 1,000 nesters annually (Palma et al. 2003). In 1995, an estimated 4,355 nesting females laid eggs in TIWS.

Table 2. Annual data on complete nests of green turtles in the TIWS from 1984 to 2013

Year	Baguan	Taganak	Lihiman	Langaan	Bakkungan	Total
1984	2,294	993	1,458	2,308	316	7,369
1985	3,852	1,424	1,150	1,639	142	8,207
1986	5,211	2,302	1,747	2,817	649	12,726
1987	4,086	1,829	1,327	1,243	107	8,592
1988	5,463	2,713	1,419	1,745	206	11,546
1989	6,194	2,999	1,610	1,407	391	12,601
1990	3,938	1,812	1,246	1,206	367	8,569
1991	9,381	3,472	2,705	1,382	306	17,246
1992	6,068	2,081	1,626	1,475	384	11,634
1993	7,921	2,445	2,019	1,777	393	14,555
1994	7,785	2,099	2,858	1,673	242	14,657
1995	12,311	3,264	3,486	2,344	368	21,773
1996	7,278	2,301	2,196	1,714	404	13,893
1997	10,849	2,378	2,916	2,257	462	18,862
1998	5,584	1,475	2,599	1,591	375	11,624
1999	10,451	2,481	2,984	2,273	403	18,592
2000	6,274	1,493	1,987	1,637	310	11,701
2001	6,379	1,675	2,329	1,378	358	12,119
2002	5,050	2,393	2,833	1,875	311	12,462
2003	4,332	1,999	3,297	2,553	327	12,508
2004	6,757	2,804	3,733	2,789	385	16,468
2005	5,445	1,159	1,922	1,081	242	9,849
2006	7,027	972	2,645	1,542	140	12,326
2007	6,354	1,142	2,582	1,382	80	11,540
2008	7,464	1,153	2,617	1,550		12,784
2009	10,229	1,843	2,523	2,009		16,604
2010	9,390	1,239	2,062	1,313		14,004
2011	14,220	1,274	3,061	1,706		20,261
2012	17,430	862	1,893	1,500		21,685
2013	13,141	1,196	1,913	1,335		17,585
<b>Total</b>	<b>228,158</b>	<b>57,272</b>	<b>68,743</b>	<b>52,501</b>	<b>7,668</b>	<b>414,342</b>

Note: Bakkungan is now thickly populated with inhabitants; there has been no reported turtle nesting in the island since 2008.

**Table 3. Annual data on complete nests of hawksbill turtles in the TIWS from 2003 to 2013**

Year	Baguan	Taganak	Lihiman	Langaan	Total
2003	1		5	7	13
2004	7		1	1	9
2005	5		5	11	21
2006	3		6	9	18
2007	3	1	10	3	17
2008	1	1	8	8	18
2009	2	2	6	11	21
2010	1		14	16	31
2011			7	6	13
2012		3	6	9	18
2013	1		1	6	8
<b>Total</b>	<b>24</b>	<b>7</b>	<b>69</b>	<b>87</b>	<b>187</b>

Baguan Island has consistently accounted for about 50% of all clutches laid in the Philippine Turtle Islands from 1984 to 2013. Tagging studies show that green turtles nesting in other Philippine Turtle Islands also nest in Baguan Island while genetic studies confirm that these green turtles comprise a single management unit.

Of all the marine surveys included in the nationwide Integrated Protected Areas System project, the Turtle Islands had the highest diversity of marine communities (Romero 2002).

- As the north-easternmost island, Baguan Island is the farthest and most isolated from the Borneo landmass, thus Baguan has the clearest waters and the most intact reef communities (Romero 2002)
- 155 fish species belonging to 25 families in Baguan Island were recorded on October 1996.
- Mean hard coral cover in Baguan Island is 28% to 46%.

Studies in 2003 show that there have been declines in coral reef cover in the westernmost islands (Langaan and Bakkungan Shoal) although marine biological communities in Baguan Island (Palma et al. 2003) remain intact. As a whole, the marine communities of the Turtle Islands have been quantified as:

- 75 to 155 fish species throughout the Turtle Islands
- Fair coral cover belonging to 24 - 27 genera dominated by *Acropora*

TIWS is also home to other diverse species of flora and fauna:

- 34 avian species including Tabon scrubfowl (*Megapodius cumingii*)
- 200 terrestrial plant species, including 12 mangrove species and 19 species of ferns
- Mammal species - large fruit bat
- Reptiles - monitor lizard (*Varanus salvator*), banded sea snake (*Laticauda sp.*) hawksbill turtles (*Eretmochelys imbricata*) and green turtles (*Chelonia mydas*)

## 10. Cultural importance [S1]

Describe the cultural / religious / spiritual importance of the site (e.g. in terms of historical associations, spiritual traditions, religious significance etc.), as well as non-consumptive traditional beliefs/practices, in relation to sea turtles. If possible, provide references to published/unpublished historical or other accounts, which may give an indication of relative importance in a national context.

The Baguan Island remains free from any human inhabitants. However, the five other islands of TIWS are a home to several ethnic groups of the Sulu Archipelago, namely: (1) the Jama Mapun of Cagayan de Tawi-Tawi; (2) the Tausug of the mainland Sulu; and (3) the Samal from mainland Tawi-Tawi. They are all Muslims. Other residents comprising 18% of the total population originated from Luzon and Visayas. These TIWS residents have no documented non-consumptive traditional

beliefs in relation to sea turtles.

A Jama Mapun narrative tells that the fourth of seven “alim” (holy men who propagated Islam in the Philippines and are also known as the “Pitu Alim” or the Seven Brothers) lies buried on Lihiman Island (p.117, Casiño E (1976). The Jama Mapun: A changing Samal society in the southern Philippines).

In several cases, daytime access to Baguan Island (a strict conservation zone with no residential inhabitants) is allowed to community members living in other islands of the TIWS to pay their respects to a grave site of a prominent community elder which is marked by a large, spherical, white coral rock.

## 11. Jurisdiction [G1]

*The name of the government authority with: (a) territorial jurisdiction over the site, e.g. state/province, region or municipality etc.; and the name/description of the authority with (b) functional jurisdiction for conservation purposes, e.g., Department of Environment, Department of Fisheries, traditional owners, etc.*

The TIWS is within the Municipality of Turtle Islands and is part of the province of Tawi-Tawi under the Autonomous Region in Muslim Mindanao (ARMM). The elected official exercising executive jurisdiction over the Municipality is the Municipal Mayor; legislative power is vested in the Sangguniang Bayan composed of elected municipal councilors. At the provincial level, government authority in Tawi-Tawi is exercised by the governor (executive) and the provincial councillors in the Sangguniang Panlalawigan (legislative), all of whom are elected.

On the other hand, the functional jurisdiction for conservation is directly under the management and supervision of the national government through the Department of Environment and Natural Resources, Region IX (DENR-IX). Policy guidance as well as technical and administrative support is provided by the Biodiversity Management Bureau (BMB), a staff bureau of the DENR.

## 12. Management authority [G1]

*Name, address and contact details of the body responsible for the direct local conservation and management of the site.*

In terms of day-to-day management, TIWS is directly administered by a Protected Area Superintendent (PASu) who holds office in Taganak Island. The PASu reports to the Protected Area Management Board (PAMB).

**Name of the PASu:** Ms. Minda Bairulla

**Address:** Taganak Island, Municipality of Turtle Islands, Province of Tawi-Tawi, Autonomous Region in Muslim Mindanao (ARMM), Philippines.

**Contact details:** cellphone number +6011-36558510

In compliance with Sec 11 of the NIPAS Law, the TIWS is managed by a Protected Area Management Board (PAMB) which meets at least twice in one year. At present, the TIWS-PAMB has the following members:

- (1) the Regional Executive Director of DENR Region IX – chairman;
- (2) a representative from the Autonomous Regional government;
- (3) a representative from each of the two barangays in TIWS, namely;
  - (a) Barangay Dambilah
  - (b) Barangay Likod
- (4) a representative from each of the two tribal communities in TIWS, namely;
  - (a) Jama Mapun tribe
  - (b) Tausug tribe
- (5) a representative from each of the four (4) non-government organizations/local community organizations in the TIWS, namely;
  - (a) Kabang Kalikasan ng Pilipinas;
  - (b) Conservation International - Philippines;

- (c) Women's Community
- (d) Christian Community

(6) as necessary, a representative each from other departments or national government agencies involved in protected area management, namely:

- (a) Provincial Government
- (b) Tawi-Tawi Provincial Planning and Development Coordinator
- (c) Turtle Islands Municipal Government

As mandated under Sec 11 of the NIPAS Law, the PAMB, by a majority vote, decides on the allocations for budget, approves proposals for funding, decides on matters relating to planning, peripheral protection and general administration of the TIWS in accordance with the general management strategy.

Due to the 540-kilometre distance separating the Office of the Regional Director of DENR Region IX and the Turtle Islands Wildlife Sanctuary, an *on-site* PAMB was formed composed of the following:

- (1) a representative from each barangay covering the protected area, namely:
  - (a) Barangay Dambilah
  - (b) Barangay Likod
- (2) a representative from each tribal community, namely:
  - (a) Jama Mapun tribe
  - (b) Tausug tribe
- (3) a representative each from four non-government organizations/local community organizations, namely:
  - (a) Kabang Kalikasan ng Pilipinas
  - (b) Conservation International - Philippines
  - (c) Women's Community
  - (d) Christian Community
- (4) a representative from the local government unit:
  - (a) Municipal Government
- (5) A representative from the DENR Region IX
  - (a) Park Superintendent
- (6) Representative from the national government
  - (a) Philippine Navy

### 13. Current protected status and governance framework [G1, S4]

*Describe any applicable legislation / regulations (or traditional laws / norms) relevant to the protection / conservation of sea turtles and their habitats at this site, and comment on their effectiveness. Include details of how any incompatible human activities and/or uses of land and sea at the site are prohibited or mitigated.*

*Mention any nationally relevant protected area status, international conservation designations and, in the case of transboundary sites, bilateral or multilateral conservation measures which pertain to all or part of the site. If a protected area or reserve has been established (at a national/regional level), give the date of its establishment and size. If only a part of the site is included within a protected area, the area of marine turtle habitat that is protected should be noted.*

*International designations may include sites listed under the UNESCO/World Heritage Convention, Man and Biosphere Reserve Network, Ramsar Convention, other site conservation networks, etc. Where appropriate, list the IUCN (1994) protected areas management category(ies) that apply to the site.*

#### **Protected Status – AREA**

Presidential Proclamation No. 171 dated 26 August 1999 declared the whole Turtle Islands including its surrounding waters under the Municipality of Turtle Islands in Tawi-Tawi as the Turtle Islands Wildlife Sanctuary (TIWS) pursuant to Republic Act No. 7586, also known as the National Integrated Protected Areas System (NIPAS) Act of 1 June 1992. The main reasons for declaring the site as a Protected Area are its national importance as the major nesting site of green and hawksbill turtles in the Philippines and its international significance as one of the few remaining major nesting areas of green turtles in the Southeast Asian Region. The TIWS is also among the Key Biodiversity Areas (KBAs) in the Philippines.

On 8 June 1982, then Ministry of Natural Resources issued Administrative Order No. 8 declared Baguan Island as a Marine Turtle Sanctuary and withdrawing said island from alienation, disposition and exploitation to bolster the conservation of marine turtle resources in the Philippines.

On 31 May 1996, the Philippines and Malaysia entered into a bilateral agreement entitled “Memorandum of Agreement between the Government of the Republic of the Philippines and the Government of Malaysia on the Establishment of the Turtle Island Heritage Protected Area” (TIHPA) encompassing the six islands of TIWS and the three islands of Turtle Islands, Malaysia. A Joint Management Committee composed of duly constituted Philippine and Malaysian panels meets annually to discuss conservation concerns related to the TIHPA. It is an integrated and collaborative approach towards the conservation of the major nesting population of green turtles in the ASEAN Region, which is shared by the Philippines and Malaysia. The TIHPA is the first trans-boundary protected area for marine turtles in the world.

On 13 February 2004, the Philippines, Indonesia and Malaysia entered into a Trinational Agreement adopting the conservation plan of the Sulu Sulawesi Marine Ecoregion (SSME) with the aim of establishing formal collaboration among the three countries in the conservation of SSME. TIWS is one of the key components of the Tri-national Sea Turtle Network of Protected Areas in the Sulu-Sulawesi Marine Ecoregion.

In 2009, the Philippines, Indonesia, Malaysia, Papua New Guinea, Solomon Islands and Timor Leste signed “The Coral Triangle Initiative (CTI) on Coral Reefs, Fisheries and Food Security” to combat threats to marine and coastal resources in the Coral Triangle. TIWS also forms part of the Coral Triangle – Philippine area.

On 16 December 2014, the DENR entered into a Memorandum of Agreement for the implementation of the ASEAN Marine Protected Area Network (MPAN) for Turtles with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in order to achieve the development of a “Network of Protected Areas to Safeguard Sea Turtles and their Habitats and Design (MPAN Project)”.

On 2 June 2014, the TIWS- Protected Area Management Board (TIWS-PAMB) issued Resolution No. 1, series of 2014 entitled “A resolution for the approval and endorsement of ecotourism development for TIWS, Province of Tawi-Tawi for funding purpose of the Tourism Infrastructure and Enterprise Zone Authority (TIEZA)”. The PAMB in-attendance agreed to designate Pallang in Taganak Island as an ecotourism development site where infrastructure can be constructed and managed for visitors of the TIWS. However, any structural development activities in the area shall still be subject to prior approval by the TIWS-PAMB.

On 2 June 2014, the TIWS-PAMB issued Resolution No. 2, series of 2014 entitled “A resolution approving the projects/programs as presented by the partners of Turtle Islands such as CTI- Asian Development Bank Regional Technical Assistance (ADB RETA), GIZ, Sulu Sulawesi Marine Ecoregion-Marine Protected Area Network (SSME-MPAN), Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR), TCSP and BMB-Autonomous Reef Monitoring Structure Deployment”. These project/programs are intended to assist in the conservation of TIWS while providing livelihood opportunities to the residents of the islands.

### **Protected Status – SPECIES**

All species of sea turtles found in the Philippines are protected under the Wildlife Conservation and Protection Act of 2001 (RA 9147). These species are also included in the National List of Threatened Species (DENR Administrative Order No. 2004-15), which are among the priority species for conservation and protection. RA 9147 renders illegal the harvest of marine turtle eggs in the entire Philippines. In compliance with this law, the DENR had stopped issuing permits to collect marine turtle eggs since 2002.

Nineteen years prior to the Philippine Wildlife Conservation and Protection Act of 2001, harvest of

sea turtle eggs was already illegal in the Baguan Island Marine Turtle Sanctuary under the Ministry of Natural Resources Administrative Order No. 8.

**Governance framework.** Since the 1930s, the Philippine Government has regulated the gathering of sea turtles and their eggs. Then in 1979, the Task Force *Pawikan* was created to manage marine turtle sanctuaries (Pawikan, 1979). In 1982, Ministry of Natural Resources Administrative Order No. 8 (MAO 8) declared Baguan Island as a marine turtle sanctuary where egg collection is prohibited.

In the same year, Ministry of Natural Resources Administrative Order No. 33 (MAO 33) was issued to regulate the collection of sea turtle eggs. It allowed the residents to collect 60 per cent of the total turtle eggs produced in four islands (Taganak, Lihiman, Langaan and Bakkungan). Other sections of MAO 33 provided that 30 per cent of the total eggs produced in these islands should be used for conservation, while 10 per cent will go to the Tawi-Tawi Marine Turtle Foundation. In 2000, the Tawi-tawi Marine Turtle Foundation ceased to exist and their 10% share of turtle eggs were reverted to conservation. This regulation was not perfect but it was recognized and respected by the stakeholders and resulted to the conservation of a significant number of turtle eggs in the area. Data in Table 2 indicates that the number of nests recorded in Baguan has been on an increasing trend from 1984 to 2013.

Data on clutches laid from 1984 to 2000 segregated according to island indicates that this “allowed take” averaged about 34% (range”: 30% to 48%) of the annual average number of clutches recorded for the TIWS. Genetically, a single green turtle management unit comprises the TIHPA which covers all the six TIWS islands and Pulau Selingaan, Pulau Bakkungan Kechil and Pulau Gulisaan. Considering this single management unit and based on data collated by TIHPA’s Joint Management Committee from 1997 to 2001, the reported annual “take” would average about 15%. In passing, some authorities have considered harvests conserving 70% of the clutches each year as sustainable.

Nevertheless, by 2001, harvesting of marine turtle eggs became a criminal offense in the Philippines under the Philippine Wildlife Conservation and Protection Act of 2001.

Part of the management strategy is to develop alternative livelihood. During the TIWS-PAMB meeting in June 2014 held in Pagadian City, a representative of the Asian Development Bank (ADB) presented the activities to be undertaken such as training on law enforcement, coastal resource management (CRM) and livelihood. As of September 2014, a team composed of representatives from the Department of Environment and Natural Resources – Biodiversity Management Bureau (DENR-BMB), Asian Development Bank Regional Technical Assistance (ADB RETA) and the National Museum has conducted island-by-island interviews as a preparatory step towards identification and development of suitable livelihood for TIWS communities.

The Biodiversity Management Bureau, through its Coastal and Marine Division is also making necessary representation with the TIWS for the issuance of a PAMB Resolution authorizing the deployment of 60 Autonomous Reef Monitoring Structure (ARMS) among the islands of TIWS. These ARMS will function like corals and habitats for reef fishes, thus, contribute in fishery resource productivity in TIWS.

**Additional administrative arrangements for area and species protection.** Since the early 1980s, the Government had already introduced some conservation measures in order to protect, and conserve the only major nesting rookery of green sea turtles in ASEAN region. On 26 June 1979, the Task Force Pawikan (TFP) was created by an Executive Order No. 542 signed by the Philippine President. As a national level special project, the TFP established its presence in the Turtle Islands in 1982 and has since then been undertaking various activities on conservation, research and monitoring.

On 10 June 1987, Executive Order No. 192 reorganized the TFP into the Pawikan Conservation Project (PCP) and transferred administrative jurisdiction to the Department of Environment and

Natural Resources (DENR) under the Protected Areas and Wildlife Bureau (PAWB).

On 04 October 2004, Executive Order No. 366 strategically reorganized, “rationalized” the Philippine Government. Through Department Administrative Order No. 2014-01 dated 14 January 2014, the DENR’s “rationalized” organizational structure created the Biodiversity Management Bureau (BMB), which replaced PAWB. The PCP functions are now integrated into the BMB-Wildlife Resources Division.

#### 14. Land/sea tenure/ownership [G1]

*Provide details of ownership of the site and ownership of immediate surrounding areas (e.g., state, provincial, private, etc.) which may have a bearing on the conservation of the site. Describe any local or customary law relevant to the land / sea tenure, and explain any terms that have a special meaning in the country or region concerned.*

All of the six (6) islands within the TIWS are classified as timberland under Philippines laws. As such, any parcel of land cannot be disposed of for private titling. In 08 June 1982, Baguan Island was declared as a Marine Turtle Sanctuary through Ministry Administrative Order No. 8.

As one of the ten priority sites funded by the National Integrated Protected Areas Program (NIPAP), Baguan Island Marine Turtle Sanctuary and the five other islands of Turtle Islands were eventually established as a Wildlife Sanctuary pursuant to the provisions of the NIPAS Act (RA7586).

Six families are claiming most of the islands, including Baguan Island which is uninhabited. There is no form of tenurial instrument in the area.

#### 15. Socio-economic values and land/ocean uses and activities within the vicinity of the site [EB4, G5, S2, S5, S6]

*Describe, in general terms, the principal social and economic values of the site, including human activities and land uses (past, current and planned) within the vicinity of the site (e.g., agriculture, fishing, resource extraction, grazing, water supply, urban/industrial development, tourism, outdoor recreation, education and scientific research), irrespective of whether or not they are considered to directly impact the conservation of sea turtles. Some indication of the relative importance of each form of land use should be given, whenever possible.*

In TIWS, marine living resources provide the greatest contribution to household incomes. (Cola Report, 1998). Households engaged in marine extraction activities earn an average of PhP3,544.00 a month. Among the marine extraction activities, fishing predominates; fishing contributes 62 percent to total income. More households derive income from fishing than from any other source with about 90% of the population depending on fishing for their livelihood. Gleaning contributes only 1%.

During the September 2014 TIWS-PAMB meeting, Dr. Romero reported that income in Taganak Island had increased by 12% to 13% between 2012 and 2014.

Aside from living resources, TIWS was also reported to have oil and gas deposit labelled by the Department of Energy as “Area 6” (DOE, 2007 as cited in Alava *et al.* 2012). Very near the vicinity of the TIWS, an oil-and-gas exploration and development contract, Service Contract 56 (SC 56) was awarded by the Department of Energy in 2007 (DOE, 2007 as cited in Alava *et al.* 2012). SC 56 covers 8,200 square kilometres including the gas-rich Sandakan Basin. After drilling four wells in SC 56 from 2010 to 2011, ExxonMobil declared that only “non-commercial quantities of gas” were present.

#### 16. Factors adversely affecting the site’s overall ecological character, as well as threats to sea turtles and their habitat at the site [EB4, S2]

*Describe the human and natural factors negatively affecting the ecological character of the site, both within and in the vicinity of the site. These may include existing, new or changing activities/uses, major development projects etc., which have had, are having, or may have a detrimental effect on the natural ecological character of the site. For all adverse and change factors reported, supply measurable/quantifiable information (if such data exist), as well as information on the scale, extent and trend of the change factor and its impact. For example, describe in terms of the percentage of coastline (or other area) modified/affected by a particular threat; for egg collection, describe in terms of number of nests, per species, per year. Mention also data-deficient threats, where a threat is known to be present but is not quantified.*

Based on the TIWS-Management Plan, the threats include:

1. illegal harvesting of turtle eggs.
2. uncontrolled human population increase.
3. commercial fishing and illegal fishing of unauthorized foreign vessels.

**Illegal harvesting of turtle eggs.** An 88% decline in number of eggs laid was shown comparing baseline data from 1951 and the record for 1990. This significant decline is attributed to an almost 100% and long-term harvest of eggs. After 2001, harvesting of marine turtle eggs became a criminal offense in the Philippines under the Philippine Wildlife Conservation and Protection Act of 2001.

However, the local residents continue to poach and trade approximately 30% of the eggs laid within the TIWS, except Baguan Island where illegal egg collection is prevented through the deployment of full time wardens. Marine turtle egg collection provides income to approximately 11% of the households in Turtle Islands (Cola Report, 1998). The ethnic groups harvest turtle eggs primarily for food, which are considered as one of their native delicacies.

**Uncontrolled human population increase.** Another major issue is the continuously increasing human population, including **in-migration** of people to TIWS from different parts of the country since 2005. This is considered a major social problem in terms of potential overpopulation and its concomitant impacts, e.g., depletion of marine resources and disturbance of sea turtle population. Nevertheless, the Baguan Island remains closed to human habitation as a measure to sustain marine turtle protection and production

**Commercial fishing.** The Turtle Islands is a magnet for commercial fishermen both coming from within the Philippines and Malaysia. Philippine-owned commercial fishing fleets (e.g., purse seiners) from Luzon and the Visayas also operate occasionally within the TIWS and its immediate vicinities using powerful lighting systems.

Meanwhile, there are reports of incursions of foreign vessels which engage in illegal fishing and collection of sea turtles. Non-Filipino shrimp trawlers have been observed and reported to encroach and operate within the protected area during night time. The TIWS Management Plan mentions that as many as 200 non-Filipino shrimp trawlers regularly encroach and operate within the Philippine territory inside the TIWS.

Both Philippine and foreign commercial fishers are reported to use nets, some with very small mesh size which catch even the small juvenile fish. Some commercial fishing boats sometimes operate so close to the shore that nesting sea turtle also get entangled in their nets. These commercial fishing operations not only cause damage to the reefs and other marine ecosystems but are also seen to compete with the TIWS resident fishermen whose boats and equipment are not as big and as effective in catching fish.

**Destructive fishing.** In general, dynamite and cyanide fishing still remain unchecked in the islands far from the centre of the municipality where no enforcement agencies are present. Many reefs have been damaged due to these activities and threaten the sea turtles in the area as well as the wider marine environment. Aside from some local residents practicing destructive fishing, other perpetrators also come from as far as the Visayas and Palawan. Some local residents argue that this fishing method is a way to compete with commercial fishing operators such as trawlers.

**Administrative capacity-building among the management bodies.** The OPASu is saddled with administrative challenges such as lack of operational funds and professionally trained personnel as well as absence of transportation and communication equipment/facilities. At the same time, TIWS-

PAMB is still trying to obtain resources and build capacity to implement the Initial Protected Area Plan (IPAP). The IPAP is a requirement for a Congressional enactment of TIWS as the final step in the process of inclusion in the National Integrated Protected Area System under R.A. 7586.

In addition to inadequate resources, confusion in terms of jurisdiction and lack of political support continue to plague the management body. Although the Turtle Islands has been one of the priority sites for conservation in the country, support from the mandated government agencies is limited by geographic constraints and complex political dynamics in the area.

#### 17. Conservation and management interventions taken [G2, G3]

*Describe conservation and management interventions already taken at the site to address threats. Note that some of this information may have been recorded in abbreviated form in the IOSEA Site Data Sheets, available online ([www.ioseaturtles.org/reporting](http://www.ioseaturtles.org/reporting)). Any application of coastal and marine spatial planning, or integrated coastal/marine zone management planning, involving or affecting the site should be noted.*

*Describe the management planning process for the site, including the state of implementation of any management plan that has been developed and approved for the site. Describe any other conservation measures taken at the site, such as restrictions on development, management practices beneficial to wildlife, closures of hunting, etc. (Note that information on any monitoring schemes and survey methods should be given under point 19, below.)*

*Where applicable, describe the involvement of local communities and indigenous people in the participatory management of the site, including co-management activities, surveillance and enforcement, and performance evaluation.*

#### The management planning process for the TIWS

In 1997, biological and physico-chemical of the Turtle Islands' terrestrial and marine environment were characterized. Between 2000 and 2007, several drafts of the Turtle Islands Wildlife Sanctuary Management Plan (TIWS-MP) were prepared. On 20–21 May 2008, the TIWS-MP was presented to stakeholders in the Turtle Islands during a public consultation. On 21 May 2008, the TIWS–PAMB sitting *en banc* as the lawful management body issued Resolution No. 01 adopting the management plan. On 3 June 2008, the National Integrated Protected Areas System Regional Review Committee (NRRC) deliberated the plan together with technical staff from DENR IX's sectoral services (*i.e.*, Forest Management Service, Land Management Service, Protected Areas and Wildlife Service, Ecosystems Research and Development Service and Environment Management Service). The review and updating of the TIWS-MP is an activity scheduled for 2015 under the SSME-MPAN.

Addressing illegal harvesting of marine turtle eggs. The Philippine Government has been implementing two main categories of intervention against illegal harvesting of marine turtle eggs, namely: (1) Area protection; and (2) Species protection.

**Area protection.** On 26 August 1999, Presidential Proclamation No. 171 declared the whole Turtle Island Municipality and surrounding waters up to 15 kilometres from the shoreline of each island as the Turtle Islands Wildlife Sanctuary (TIWS). In further compliance with the NIPAS Act (RA 7586), a Protected Area Management Board (PAMB) was created as the managing body of the TIWS. The PAMB is chaired by the Regional Executive Director of the Department of Environment and Natural Resources (DENR) Region IX.

Also in compliance with the NIPAS Act (RA 7586), day-to-day management of the TIWS had been entrusted to the Office of the Protected Area Superintendent (OPASu), who implements all protected area-related laws, rules and regulations.

The NIPAS Act also encourages the participation of the different stakeholders especially the community through representation in the Protected Area Management Board (PAMB). All activities including development projects in the area pass through the PAMB which has been meeting at least twice a year. Based on this increased community participation, conservation efforts were strengthened with the establishment of the area as TIWS under the NIPAS Act.

Contingent from the Philippine Maritime Group-Special Boat Unit (PMG-SBU) has also been

deployed to TIWS to protect the sanctuary and marine resources thereat.

**Species protection.** Since 2001, killing or otherwise harming any species of marine turtle including their eggs in the Philippines has been considered a **criminal offense** under the Philippine Wildlife Conservation and Protection Act of 2001 (RA 9147). Penalties range up to PhP 1,000,000 in fines while imprisonment can reach up to 12 years, or even both, at the discretion of the competent court. The Wildlife Resources Division of the Biodiversity Management Bureau conducts training and certification courses of Wildlife Enforcement Officers (WEOs) throughout the Philippines. Certified WEOs implement wildlife protection laws including arrests of persons engaged in illegal wildlife trade. Law enforcement agencies in the TIWS will be trained once funding is available.

**Addressing uncontrolled human population increase.** During a 11<sup>th</sup> TIHPA-Joint Management Committee meeting on 17 August 2010, Dr. Filemon G. Romero, a technical project consultant of the Coral Triangle support partnership of the World Wildlife Fund-Philippines presented results of “Integrating Population, Reproductive Health and Coastal Resources Management Actions in Tawi-Tawi, Mindanao, Philippines.” Delegates of the Philippine and Malaysian panels agreed with the need to control the growth of human population in the Turtle Islands. This effort initiates a reproductive health approach to curb human population growth in the Turtle Islands.

During the TIWS-PAMB meeting of 8 September 2014, Dr. Romero informed the board members in attendance that the European Commission had selected the Province of Tawi-Tawi, including the Municipality of Turtle Islands, as a target area for integrating Population, Reproductive Health and Coastal Resource Management. However, Mr. Romero also specified that the population increase in the Turtle Islands is due mostly to in-migration and not reproduction.

The proposed development of alternative livelihood programmes for TIWS communities is envisioned to encourage the communities on the island to support and participate in sea turtle management and protection activities to recover the sea turtle nesting population especially in Bakkungan island and attract tourists to the island that would generate significant income for the local communities. The TIWS Management Plan designates Great Bakkungan Island as well as portions of Taganak and Boan as Recreation Zone thus allowing for “a range of activities with low impacts on the environment and on marine turtles.” The allowable infrastructure in such recreation zones includes restaurants, single-level cottages, souvenir shops, comfort stations/rest rooms, visitor information center, sewage treatment facilities and observation decks.

**Addressing commercial fishing and illegal fishing of unauthorized foreign vessels.** Illegal fishing is being addressed through the establishment and continuing development of the Coastwatch South where a chain of bases, watchtowers and seaborne assets are being set-up from Balabac in Palawan to Bonggao in Tawi-Tawi through the funding support of the United States of America-Department of the Interior (US-DOI). This includes the construction of a Law Enforcement Center (LEC) in Taganak, TIWS, Tawi-Tawi. The centre is meant to serve as operations base of all law enforcers in Tawi-tawi. The construction of the LEC has been finished but it is not yet operational. The existing pier in Taganak is too shallow to accommodate the Philippine Navy boat, hence it will be extended to a deeper portion. The LEC, including four gunboats, will be turned over to the Philippine National Police Maritime Group (PNPMG) by the last quarter of 2015 at the earliest or by February 2016 at the latest. This will address the issue on encroachment within Philippine waters and ultimately the turtle/egg trade in the TIWS. The presence of law enforcers will hopefully minimize, if not totally stop, illegal activities in TIWS.

#### **Other conservation measures.**

During the 2 June 2014 TIWS-PAMB meeting, the PAMB Chair reiterated the ecotourism-relevant statement in the TIWS Management Plan that “Baguan Island is only for island hopping and no construction of any facilities.” In 1999, the DENR issued Administrative Order No. 99-31 on the

Ecological Destination Development Guidelines for Turtle Islands, Tawi-Tawi” as attached to the TIWS Management Plan. Baguan Island is designated as a Strict Protection Zone not subject to any commercial development. Meanwhile, the islands of Lihiman, Langaan and portions of Taganak as well as the mangroves of Boan are designated as Habitat Protection Zones where infrastructure development will be restricted.

The TIWS Management Plan requires all ecological destination developers to undergo full-blown Environmental Impact Assessments as prescribed in DENR Administrative Order No. 96-37 and evaluated by the Environmental Management Bureau. The said plan emphasizes that “no activity shall be allowed without an Environmental Compliance Certificate (ECC). The plan further specifies that such ECC shall be issued only by the DENR Secretary.

#### **18. Conservation interventions proposed, but not yet implemented [G2, G3]**

*Provide details of any concrete conservation measures that have been proposed, or are in preparation, for the site, including any proposals for legislation, protection and management. Summarize the history of any longstanding proposals that have not yet been implemented, and differentiate between those proposals that have already been officially submitted to the appropriate government authorities and those which have not as yet received formal endorsement, e.g., recommendations in published reports and resolutions from specialist meetings. Also mention any management plan that is in preparation but has not yet been completed, approved or implemented.*

1. The specific legislation (Omnibus Bill) that intends to reaffirm the TIWS as a protected area through a Republic Act is already in the committee level of the Congress of the Philippines;
2. Majority of the components of the Management Plan for the TIWS has not yet been implemented due to lack of funds. The budget allocated for the TIWS is not enough to manage and protect the area;
3. The TIWS Management Plan has been proposed for revision into a climate smart protected area management plan;
4. CTI-ADB RETA support for training and coastal resource management (CRM) livelihood.

#### **19. Current / proposed scientific research and monitoring [G4]**

*Describe any current and/or proposed scientific research on sea turtles and their habitats, as well as information on any special facilities for research. In particular, describe past and current marine turtle monitoring activities at the site (e.g., tagging, satellite tracking, genetic sampling, nesting and foraging ground surveys, ongoing beach monitoring, etc.). Describe the survey methodology in sufficient detail to allow for an assessment of its efficacy. Indicate the number of years of continuous monitoring, and whether data have been used to estimate trends in the size of the management unit. Cite relevant published papers in support of the submission.*

Past conservation projects introduced in the Turtle Islands include government-initiated projects like the Task Force Pawikan, now known as the Pawikan Conservation Project and the Integrated Protected Area System (IPAS) Project, as well as an NGO-project designed and implemented by the WWF-Philippines and Conservation International-Philippines. The WWF-Philippines’ Integrated Conservation and Development Project (ICDP) in the Philippine Turtle Islands had a three-year duration (2001-2003). Below are the major joint conservation projects so far covering the Philippine-Malaysia Turtle Island Heritage Protected Area.

1. McArthur Foundation Project in 1997 covering: a) physical characterization of the Turtle Islands; b) status of the coral reef benthic and fish communities of the Philippine Turtle Islands; c) terrestrial ecosystem; d) flora of the Philippine Turtle Islands; e) terrestrial fauna of the Philippine Turtle Islands.

2. Conservation International-Philippines - augmented habitat protection efforts in the TIHPA by training TIWS personnel on marine law enforcement, provided patrol boats to the Sugud Islands Marine Conservation Area (SIMCA) and coordinated with partners and law enforcement agencies in the Philippines and Malaysia. This resulted in increased patrolling effort in SIMCA, where boats crossing the protected area were immediately checked.

### 3. Satellite Telemetry

A total of 12 satellite transmitters were tagged to green turtle and hawksbill turtle nesters in the Turtle Islands Heritage Protected Area from 1998 to 2002.

In 1998, two green turtle nesters were tagged in Baguan Island, Turtle Islands. In 1999, two green turtle nesters were tagged, one from Baguan Island and one from Selingaon Island in Sabah Parks, Malaysia. Telonics ST 14 transmitters were used. In 2001, four green turtle nesters were tagged, two from Baguan Island and two from Selingaon, Sabah Parks. Telonics ST 18 transmitters, cheaper than Telonics ST 14 were used. Also from 2001-2002, four hawksbill turtle nesters were tagged, two in Lihiman Island and two in Sabah Parks, Malaysia. Telonics ST 14 transmitters were used.

The first four Telonics ST 14 transmitters were provided by the Coastal Resources Management Program, a USAID funded programme of the DENR. The Telonics ST 18 transmitters were donated by the WWF-Philippines and the Telonics ST 14 transmitters which were attached to hawksbill turtles were provided by the National Oceanic and Atmospheric Administration (NOAA) of the US Department of Commerce.

The satellite tracking results showed that the probable feeding areas for green turtles are within the waters of Balabac, Palawan and the provinces of Sulu and Basilan, Philippines. The feeding areas for hawksbill turtles are in Balabac, Palawan, northern part of Sabah, and in the south beyond East Kalimantan, Indonesia (Cruz and Torres, 2004).

On 2 June 2014, the TIWS-PAMB in-attendance discussed the proposal of Dr. Nicholas Pilcher to install ten (10) satellite transmitters on nesting females on the Third Quarter of 2014. This activity has been re-scheduled to be implemented in June of this year. This research is being funded under the GIZ-SSME Project

### 4. Nesting Beach and Coral Reef Monitoring and Management of Turtle Islands Wildlife Sanctuary, Tawi-Tawi, Philippines.

The project was conducted from June 2009 to June 2010. It was funded by the ASEAN Center for Biodiversity (ACB). Activities included collection of crown of thorns, beach clearing and cutting of drifted logs along the nesting beach, rat eradication, and fish and coral survey.

### 5. Climate Change Vulnerability Assessment of the TIWS

The TIWS-PAMB has approved the conduct of Climate Change Vulnerability Assessment of TIWS under the CTI-ADB RETA assistance.

### 6. Laparoscopy

From 14 to 20 May 2014, a TIWS warden was trained on laparoscopy of sea turtles at the Tubbataha Reef Marine Park as part of the exercise "Enabling Capacity of PA Manager and Practitioners in Sea Turtle Research". The GIZ-SSME Project will also be supporting some laparoscopy work in Baguan Island in conjunction with the satellite telemetry work of Dr. Nick Pilcher.

### 7. Database integrating tagging, nesting incidence monitoring and hatchery data

The development of a Marine Turtle Database Management System (MTDS) integrating tagging, nesting incidence monitoring and hatchery data, the conduct of vulnerability assessment, laparoscopy and DNA analysis including the development of an enforcement strategy and action plan and establishment of the enforcement network are some of the activities for the Philippines' Sea Turtle-Marine Protected Area Network (ST-MPAN). The ST-MPAN is composed of the TIWS in the Province of Tawi-Tawi; Tubbataha Reefs Natural Park (TRNP), El Nido and Balabac in the Province of Palawan.

These activities will address some of the outputs for the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH - funded Project "Development of a Network of Protected Areas to Safeguard Marine Turtles and their Habitats in the Sulu-Sulawesi Marine Ecoregion (SSME)

Focusing on Connectivity and Climate Change”, the implementation of which is being facilitated by the DENR through the Biodiversity Management Bureau (BMB).

A total of 11,289 marine turtle nesters have been tagged in the TWS from 1982 to 2007. Since 7 July 2014, a database system called “Turtle Database Management System Software” had undergone development under the GIZ-SSME-MPAN.

The encoding (and scanning) of tagging data on marine turtles (estimated 75,000 records country-wide including TIWS) from 1982 to the present is expected to be finished by the end of September 2015.

#### 8. Genetic Studies

In 2006, 30 samples of green turtle tissues were collected for genetic analysis under the Southeast Asian Fisheries Development Center – Marine Fishery Resources Development and Management Department (SEAFDEC/MFRDMD) supported by the Japanese Trust Fund IV. Results indicated that the green turtles nesting in the Pulau Selinggaan and Baguan Island are from a genetically distinct breeding stock as published in Arshaad & Kadir (2009). This genetic evidence fully supports the concept that green turtles of the TIHPA form a single management unit.

### **20. Current / proposed communication, education, and public awareness activities [S3]**

*Give details of any existing and/or planned site-based programmes, activities and facilities for communication, education and public awareness, including training. Comment on potential opportunities for future educational and outreach activities at the site.*

The PCP initiated the conduct of IEC through lectures on marine turtle conservation in Taganak Elementary School. Teachers and students from the said school were also once invited for an overnight stay in Baguan wherein the PCP oriented the visitors and involved them in the monitoring of nests, transfer of eggs into the hatchery, tagging and monitoring of recaptured turtles. This IEC strategy was greatly appreciated by the students and the teachers.

The plan to duplicate the same activity for PAMB members, local government officials, law enforcement agencies and residents will be carried out as soon as resources are available.

The BMB will be proposing to the school principal and local government of Turtle Islands the declaration of a certain day, week or month of the year as Marine Turtle Day, Week or Month or Marine Turtle Festival to further promote local consciousness on the conservation and protection of the sea turtles and its habitat in the TIWS.

### **21. Financial resources available for management of the site and other activities [G5]**

*Identify human and financial resources (including in-kind contributions) available to support immediate and near-term activities, as well as resources available to sustain site-based activities in the longer-term (e.g. in relation to monitoring, management interventions, surveillance and enforcement, and performance evaluation).*

The Biodiversity Management Bureau (BMB) of the Department of Environment and Natural Resources (DENR) ensures that the wages of nine (9) Forest Rangers assigned to the TIWS are included in the annual Government Appropriations Act (GAA). Starting in 2013, with the implementation of the Government's Rationalization Plan, the budget item for the Turtle Islands Wildlife Sanctuary was subsumed under the “Threatened species and other wildlife conservation and management programs”. The Department of Budget Management (DBM) releases the funds for TIWS management directly to DENR IX.

Monitoring activities in the TIWS are conducted by the BMB through funds allotted in a separate budget item, the “Protected area establishment and management”.

Office supplies and materials of the OPASu (e.g., bond paper, letterheads, writing materials) are intermittently provided in-kind by the BMB and the DENR IX. However, the OPASu has experienced periods of lack of office supplies and materials. Additionally, photocopying expenses are high in Taganak Island; a constraint when voluminous documents are needed, especially for

financial and technical reports.

Equipment (e.g., computers and printers) are not included in government appropriations. Sources of equipment include various organizations and individuals. For example, on 2014, GIZ-SSME-MPAN donated communication equipment to the TIWS including an IC-2300H (144MHz) VHF FM mobile transceiver, 17 units of hand-held two-way radios (ICOM IC-V8) and diamond antenna F23H monoband base station antenna. Based on previous rates of use, these pieces of equipment are expected to last for two to three years.

In a previous project, the Conservation International-Philippines (CI-P) allowed the use of CI-P owned SCUBA tanks and related underwater survey equipment. However, these have been pulled out with the completion of the project several years ago.

## **22. Additional resource needs at the site [G5]**

*Where specific needs are identified (e.g. skilled personnel, specialised training, facilities, field equipment etc.) indicate how marine turtle conservation activities are presently impaired on account of their unavailability (e.g. inability to carry out regular surveys, to conduct certain types of research, to monitor certain parts of the range etc.) This information may be useful for compiling a general picture of deficiencies and resource needs that could be presented to potential programme sponsors*

As evidenced by the previous items, the Protected Area Management Board (PAMB) and the Office of the Protected Areas Superintendent (OPASu) are central to the management of the TIWS. Training programs and support are needed to capacitate the existing field personnel as well as the Protected Area Management Board in the techniques of protecting, conserving and managing of the TIWS. Cross-visit to other operational site protected areas would increase actual experience in management. Training on wildlife law enforcement of enforcement agencies in the TIWS. This training is essential for curtailing illegal wildlife trade.

Additionally, resources are needed to establish networking especially with identified/reported foraging areas of the green turtles and hawksbill turtles from the TIWS. For green turtles, the locations would include Balabac in Palawan as well as Jolo in Tawi-Tawi and Basilan (Cruz and Torres 2003). For hawksbills, the locations include Balabac in Palawan; Berawan Islands in East Kalimantan Indonesia and maybe even beyond East Kalimantan; and the northern part of Sabah (Cruz 2009).

In as much as there has been no systematic survey of sea turtle foraging areas in the TIWS, a resource survey dedicated to foraging areas, such as seagrass/algal beds (for green turtles) and reef areas (for hawksbills) would be essential to quantify the importance of TIWS as foraging habitat. Satellite telemetry studies indicate that one foraging ground of hawksbill turtles nesting in the TIWS is the northern part of Sabah, including a portion of the TIHPA (Cruz and Torres 2003).

In order to fulfill the OPASu's mandate to enforce protected areas laws, rules and regulations, boats for patrols and manpower and logistical requirements have to be provided. Funding is also needed in law enforcement.

Equipment, such as computers, printers and electrical sources (e.g., solar and gen set) are also needed by the OPASu.

### 23. References [e.g. S1, G2, G4]

List key references relevant to marine turtle records and to the site, including management plans, major scientific reports, and bibliographies. When a large body of published material on the site is available, only the most important references need be cited, with priority being given to recent literature containing extensive bibliographies. Reprints or copies of the most important literature should be appended whenever possible. Provide website addresses of references where available.

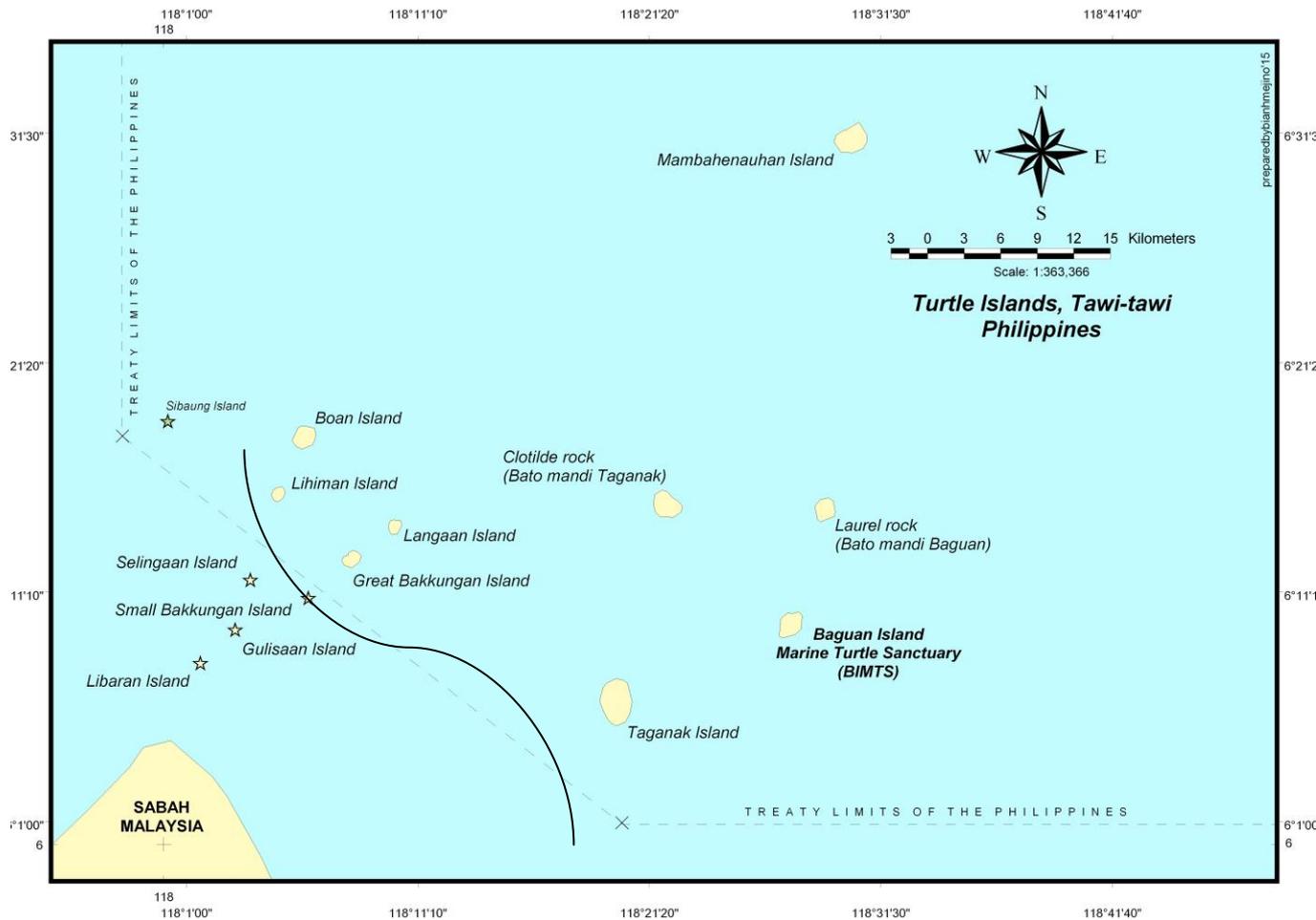
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2. [http://www.chm.ph/index.php?option=com\\_content&view=article&id=278:r9-tiws&catid=47:protected-areas](http://www.chm.ph/index.php?option=com_content&view=article&id=278:r9-tiws&catid=47:protected-areas)
3. <http://ctatlas.reefbase.org/pdf/monitoring/CTMPAS%20TIWS%20July%202014.pdf>
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6. Cruz RD, Torres DS (2004) Annex 12. Conservation and management activities on sea turtles in the Philippines. Pp 71 – 83. In Ku-Kassim KY, T Zulkifli, A Ahmad (eds) Report of the ASEAN-SEAFDEC Regional Technical Consultation on Management and Conservation of Sea Turtles in Southeast Asia, Kuala Lumpur, Malaysia, 16-18 September 2003.
7. Arshaad WM, Kadir SASA (2009) Identification of the stock/population of green and hawksbill turtles in the Southeast Asian Region. Pp 125 – 135. In Syed Abdullah bin Syed Abdul Kadir and Osamu Abe (editors) Report on the Third Regional Technical Consultation on Research for Stock Enhancement of Sea Turtles (Japanese Trust Fund IV Program) held on 15-17 October 2008 in Kuala Lumpur, Malaysia. Marine Fishery Resources Development and Management Department, Southeast Asian Fisheries Development Center. 203 p.
8. Anonymous (2008) Turtle Islands Wildlife Sanctuary Management Plan. 72 p+ annexes 13 p, covering memoranda 5 p.
9. <http://www.philstar.com/business/2013/08/23/1120342/total-mitra-energy-start-sc-56-oil-drilling-next-year#ixzz3TSwyPBQp>

### 24. Site map [N2, N3]

The most detailed and up-to-date map of the site available should be appended to the Site Information Sheet in digital and/or hardcopy format. The ideal site map will clearly show the area boundaries of the site, scale, latitude, longitude and compass bearing, administrative boundaries (e.g., province, district, etc.), and display basic topographical information, the distribution of the main site habitat types and notable hydrological features. It will also show major landmarks (towns, roads, etc.). Indications of land use activities are especially useful.

If applicable (and available), provide a zoning scheme to indicate areas where certain activities that might be incompatible with turtle conservation are permitted, buffer zones, and areas where such activities are not permitted (i.e. sanctuary areas).

The optimum scale for a map depends on the actual area of the site depicted. Generally the map should have a 1:25,000 or 1:50,000 scale for areas up to 10,000 ha; 1:100,000 scale for larger areas up to 100,000 ha; 1:250,000 for areas exceeding 100,000 ha. In simplest terms, the site should be depicted in some detail. For moderate to larger sites, it is often difficult to show detail on an A4 sheet at the desired scale, so generally a sheet larger than this is more appropriate. While an original map is not absolutely necessary, a very clear image is desirable. A map exhibiting the above attributes will be more suitable for scanning.



**Compilers and contributors:**

- Ms. Josefina L. de Leon
- Mr. Romeo B. Trono
- Mr. Daniel S. Torres
- Mr. Renato D. Cruz
- Ms. Angelita T. Vilorio
- Mr. Nilo B. Ramoso, Jr.
- Mr. Renato U. Borja
- Mr. Cidur Julsadjiri
- Ms. Elsy Melana