Sight Information Sheet
Tubbataha Reefs Natural Park

1. Name and contact details of the compiler of this form:

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2. Date this sheet was completed:

17/12/2014

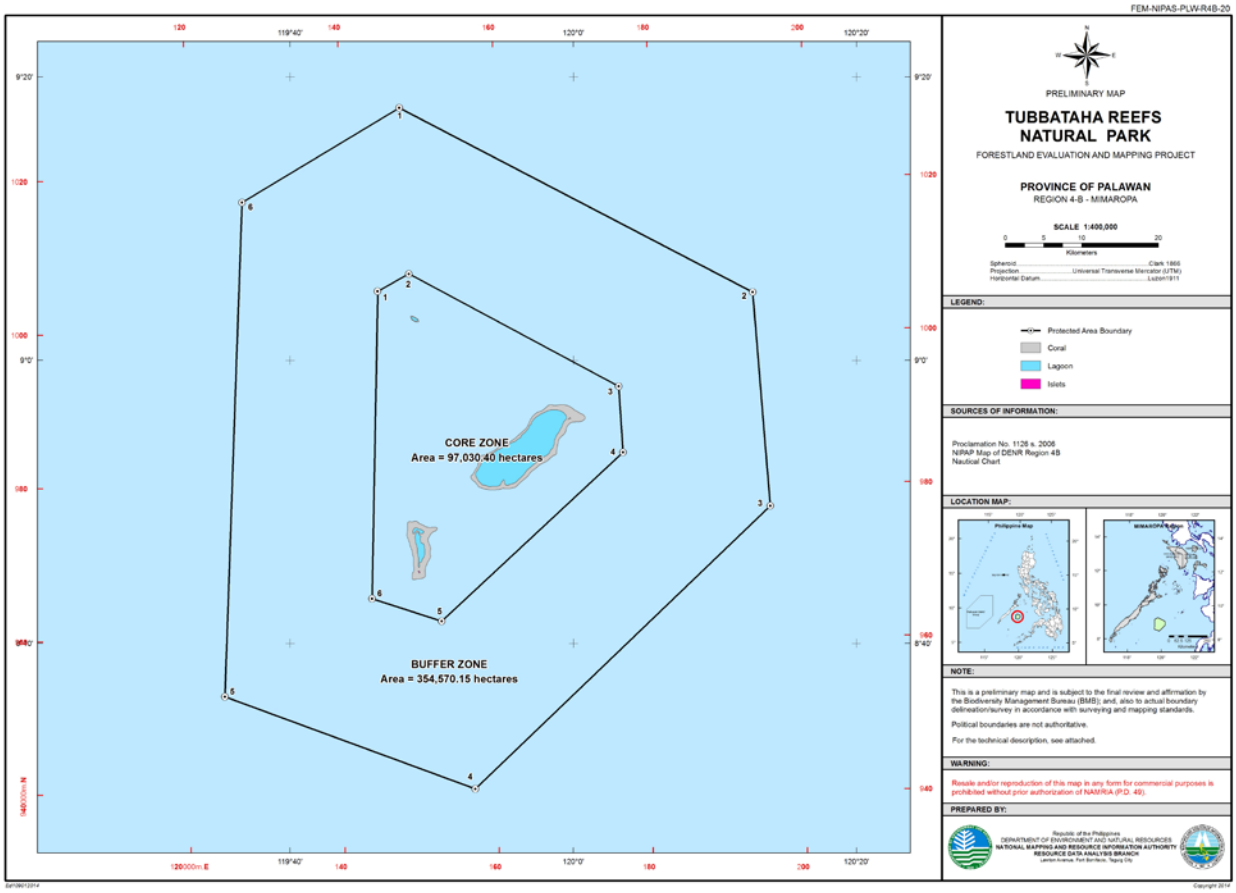
3. Country:

Philippines

4. Name of the Flyway Network site:

Tubbataha Reefs Natural Park (TRNP)

5. Map of site:



6. Geographical coordinates (latitude/longitude, in decimal degrees):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

TRNP boundaries (WGS84):

N9.07995 E119.77092
N9.10022 E119.80760
N8.96802 E120.05483
N8.89025 E120.05983
N8.69137 E119.84622
N8.71803 E119.76428

7. Elevation: (in metres: average and/or maximum & minimum)

Very few areas in the park are above sea level. About ten sand cays emerge in the North Atoll during extreme low tide. The South Atoll has an islet more or less 4 meters above sea level at high tide while the North Atoll is the location of the Bird Islet which is about 3 meters above sea level at high tide. The Jessie Beazley sandbar, on the other hand, is only about 1 and ½ meters above sea level at high tide.

8. Area:

97,030 hectares, plus a 10-nautical mile buffer zone

9. General overview of the site:

The 1.1-hectare Bird Islet is the main rookery and breeding ground of six seabird species, four of which are migratory. In the Southeast Asian context, TRNP represents the only known breeding area of the subspecies of Black Noddy (*Anous minutus worcestri*), one out of about four major remaining breeding areas of Sooty Tern (*Onychoprion fuscatus*) and Brown Noddy (*Anous stolidus*), and it was the last known breeding area of Masked Booby (*Sula dactylatra*) in the Philippines until 1995 (Jensen and Songco 2014), and probably in Southeast Asia. Most of the seabird species breeding at the Tubbataha Reefs can be considered threatened at national or regional levels.

10. Justification of Flyway Site Network criteria:

TRNP satisfies three of the criteria for Flyway Site Network as follows:

Criterion 2: The Critically endangered Christmas Island Frigatebird (*Fregata andrewsi)* is regularly recorded in the TRNP with highest count of 5 individuals in 2008 and four individuals in 2011. Another threatened migratory waterbird found regularly in the site (up to two individuals) is the Chinese Egret (*Egretta eulophotes*). *Near threatened species includes single observations of Swinhoe's Storm Petrel (Oceanodroma monorhis),* Eurasian Curlew (*Numenius arquata*) and Black-tailed Godwit (*Limosa limosa*).

Criterion 5. It regularly supports more than 20,000 seabirds (migratory and partial migrant) with the highest count of 30,159 adult individuals in 2012;

Criterion 6: It regularly supports more than 1% of global populations of certain seabird species in the EAAF as follows:

Species	Species	Flyway 1% Threshold	TRNP population
Sula sula	Red-footed Booby	650	3,074 (highest count -2014)
Sterna bergii	Great Crested Tern	1,000	9,794 (highest count-213)
Anous minutus worcesteri	Black Noddy	on a case basis	10,656 (highest count - 2013)

11. Wetland Types:

List the wetland types present (see Annex 2). List the wetland types in order of their area in the Flyway Network site, starting with the wetland type with the largest area.

C – Coral reefs

12. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Ministry of Agriculture/Dept. of Environment, etc.

TRNP is located in the Philippines, under the municipal jurisdiction of Cagayancillo in the Province of Palawan. The Tubbataha Protected Area Management Board (TPAMB) is the sole policy-making body for the TRNP. It is composed of 21 members from national and local government, universities and private sector. The TPAMB is co-chaired by the Philippine Department of Environment and Natural Resources and the Palawan Council for Sustainable Development.

13. Management authority:

Protected Area management Board:

Oscar C. Dominguez
OIC, Regional Director, DENR_Region IV-B
and Chair, Protected Area Management Board
region4br@denr.gov.ph

Nelson P. Devanadera
Executive Director, Palawan Council for Sustainable Development Staff
and Co-chair, Protected Area management Board
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Site Manager:
Angelique M. Songco, Protected Area Superintendent
Tubbataha Managament Office
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14. Bibliographical references:

Aquino, T and VJ Calderon, 2004. Species Inventory of Cetacean Populations in the Waters Surrounding Tubbataha Reefs. TPAMB Report

Campos, W et al. 2007. Investigating Biodiversity Corridors in the Sulu Sea: Distribution and Dispersal of Fish Larvae. CI-Philippines Report. Unpublished.

Dolar, MLL and AC Alcala. 1993. Notes on the ichthyoplankton and marine mammals of the Sulu Sea, Philippines. Silliman Journal (2). pp43-57.

IUCN 2008. 2008 IUCN Red List of Threatened Species. <www.iucnredlist.org>. Downloaded on 16 October 2008.

Jensen, A. 2006. Monitoring And Inventory Of The Seabirds And Their Breeding Areas In Tubbataha Reef Marine National Park, Cagayancillo, Palawan, Philippines. April 27 - May 1, 2006

Jensen, A. E. (2007) Conservation of seabirds and threatened avifauna in the Cagayan Ridge Marine Biodiversity Conservation Corridor, the Sulu Sea, Philippines. With notes on the occurrence of seabirds in the Balabac and the Tri-national Sea-turtle Marine Biodiversity Conservation Corridors. *Conservation International*.

Jensen, A. 2010. Field Report: Monitoring and Inventory of the Seabirds and their Breeding Areas in Tubbataha Reefs Natural Park and World Heritage Site, May 12- 16, 2010.

Jensen, A.E 2012. Field Report: Monitoring and Inventory of the Seabirds and their Breeding Areas in Tubbataha Reefs Natural Park and World Heritage Site, Cagayancillo, Palawan, Philippines May 2012.

Jensen, A.E 2013. Field Report: Monitoring and Inventory of the Seabirds and their Breeding Areas in Tubbataha Reefs Natural Park and World Heritage Site, Cagayancillo, Palawan, Philippines May 2013.

Jensen, A.E 2014. Field Report: Monitoring and Inventory of the Seabirds and their Breeding Areas in Tubbataha Reefs Natural Park and World Heritage Site, Cagayancillo, Palawan, Philippines May 2014.

Jensen, A.E. and Songco, A. 2014. A systematic list of birds and population development of breeding seabirds in Tubbataha Reefs Natural Park and World Heritage Site, Palawan, the Philippines (in print).

Kennedy, R. S. (1982) The last of the Seabirds. *The Filipinas Journal of Science and Culture, Filipinas Foundation* Vol III: 40 - 49.

Palaganas, V.P. and Perez, R.E. (1993) Observations on the Tubbataha Reef Marine National Park (Philippines). *Siliman Journal* 36(2): 5-13.

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UNEP-WCMC. 24 October, 2008. UNEP-WCMC Species Database: CITES-Listed Species

UNEP-WCMC. 25 October, 2008. CMS Information System http://quin.unep-wcmc.org/isdb/cms/2005/index.cfm

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Villanoy C., *et al*. 2004. Tubbataha Reef and Sulu Sea Oceanographic Study. WWF-Philippines Report Tubbataha Management Office Files

Walker, SPW and NE Palomar-Abesamis. 2006. Status report on the abundance of condrycthyian and pelagic teleost top predators at Tubbataha Reefs Natural Park, Philippines. Unpublished.

http://en.wikipedia.org/wiki/Ecozone

Further references:

TRNP Official website: www.tubbatahareef.org

TRNP plans can be accessed through http://tubbatahareef.org/wp/downloads

Scientific reports can be accessed through http://tubbatahareef.org/wp/scientific_research

15. Physical features of the site:

TRNP is composed of two uninhabited atolls separated by a 5-nm channel and Jessie Beazley Reef is located about 14 nm north of South Atoll and about 10 nm northwest of the North Atoll. The oblong-shaped North Atoll is 10 miles long and three miles wide enclosing a lagoon of sand and corals 24 meters deep. The South Atoll is a triangular reef structure about 9 miles long and 2 miles wide. Portions of the atoll's shallow coralline reef platforms are exposed at extreme low tide. The reef systems are composed of continuous reef platforms 200-500 meters wide, completely enclosing sandy and coral substrate lagoons that range from 1-40 meters in depth. The reef platform deepens at the outer reef flat and reef crests. It ends in steep, often vertical, walls on the seaward side. On the inner side of the platform are shallow reef flats and sea grass beds with a deeper lagoon in the center.

Tubbataha is exposed to yearly monsoons. The seas are rough during the months of June to October with the prevalence of the southwest monsoon. Monsoon breaks, which bring a week or so of calmness, usually transpire before monsoonal shifts. Rough seas also predominate during the months of November to March when the northeast monsoon occurs. Moderate winds from the northeast between April and June allow for regular visits to the area.

16. Physical features of the catchment area:

Not much is known about the circulation in the Sulu Sea. Wyrtki (1961) gave a very comprehensive account of the physical oceanography of the Southeast Asian Seas but because the Sulu Sea is one of the smaller basins in the region, the description was limited. A net cyclonic (counterclockwise) circulation for most of the Sulu Sea characterizes the surface circulation in the Sulu Sea as

suggested by Wyrtki (1961). The relatively shallow connection of the Sulu Sea with the neighbouring basins makes the deep layers isolated and very different from the deep waters of the South China Sea and the Pacific. For instance, the temperature of Sulu Sea waters at 1000m depth is about 10˚C warmer than South China Sea water at the same depth (Udarbe-Walker et al., 2002). In the upper layer, the residence time is in the order of about a year (Metzger and Hurlburt, 1996). The semi-enclosed nature of the Sulu Sea and the dominant monsoonal forcing also suggests that a large component of the flow just moves around the basin.

The observed sea level variations show that the tides in Tubbataha are of the mixed, diurnal-dominant type, which is typical for the Sulu Sea (NAMRIA, 2002). The highest tidal range of about 2m was observed on 18 May 2003 while the minimum range of 1m was observed during semidiurnal neap tides (Villanoy et al, 2004).

17. Hydrological values:

18. General ecological features:

TRNP is composed of 10,045 ha of coral reef and surrounding waters. The study on connectivity conducted by Campos et al. (2007) proved that Tubbataha and Jessie Beazley are sources and sink of fish and decapod larvae to the eastern coast of Palawan, enriching fisheries in the area. These include commercial fish species such as tunas, jacks and groupers. The study done by Villanoy *et al* (2004) describes the Sulu Sea as a type of transition area between the South China and Sulawesi Seas. Strong horizontal wind variations from the Mindoro Strait, Balabac Strait and Sulu archipelago, at times, create upwelling and downwelling events that influence primary productivity and thus has a large effect on the concentration and distribution of fishes and other marine life including cetaceans inside the TRNP.

19. Noteworthy flora:

North and South Islets have undergone a progressive development from barren to fully- vegetated habitats, influencing the structure of breeding bird species. The vegetation is composed of tropical almond *Terminalia catappa,* but more dominantly of lettuce tree *Pisonia alba* and of octopus bush *Argusia argentea* with a few stands of coconut palm *Cocos nucifera.* Four species of other plants are known including butter daisy *Melapodium divaricatum,* purslane *Portulaca oleracea,* purple-top chloris *Chloris inflata,* and *Setagaria geniculata* (Kennedy 1982, Palaganas & Perez 1993, Jensen 2007, UNEP-WCMC 2009).

20. Noteworthy fauna:

Other notable waterbirds recorded in the TRNP are the Near Threatened Eurasian Curlew *Numenius arquata and* Black-tailed Godwit *Limosa limosa melanuroides.* Seabird species which occur in

substantial numbers include the following: 1) Red-footed Bobby *Sula sula sula* with highest population count of 3,074 adults in 2014, 2) Brown Booby *Sula leucogaster plotus* with highest population count of 1,879 adults recorded in 2012, 3) Great Crested Tern *Sterna bergii cristata* – with latest 5-year average at 6,835 adult breeding individuals and highest count of 9,794 recorded in May 2013, 4) Sooty Tern *Sterna fuscata nubilosa* – latest 5-year average count at 5,477 adult breeding individuals with the highest count at 10,866 adult breeding individuals recorded in 2010, 5) Brown Noddy *Anous stolidus pileatus* – with latest 5-year average count at 1,731 adult individual with highest count at 2,042 breeding individuals recorded in 2011; and 6) Black Noddy *Anous minutus worcesteri* with 10,656 adults in May 2013. Migratory shorebirds occur in relative low and declining numbers,.e.g transmigrant and overwintering populations of Ruddy Turnstone *Arenaria interpres* (174 individuals in October 1991 and 94 in October 2006) and of Grey-tailed Tattler *Heteroscelus brevipes* with 237 birds in October 1991 and 43 birds during northwards migration in March 1991 and in May 2004.

The fish biomass of a healthy Philippine coral reef is estimated to be 5-37 mt/km^2 (Alcala and Gomez 1985). The latest 5-year average of fish biomass in Tubbataha is at 220 mt/km^2. This year's biomass estimate comprised mostly of parrotfishes (Scaridae), unicornfishes (Subfamily Nasinae), surgeonfishes (Acanthuridae, excluding *Naso* sp.) and jacks and trevallies (Carangidae). In recent years, tiger sharks and whalesharks have become a regular sight in the Park further attesting to the stability and richness of its marine biodiversity.

Aside from the 65 threatened coral species, the 2008 coral assessment of IUCN has placed 85 additional coral species in the TRNP under the near threatened (NT) classification. Data from the 2014 fish census in Tubbataha is still undergoing review. Due to some discrepancies in nomenclature brought about by using several references, the total number of fish species could not be accurately determined and was just tentatively placed around 600.

The study conducted by Walker and Palomar-Abesamis (2006) noted that TRNP has the highest population density of white-tipped reef sharks (*Triaenodon obesus*) in the world. Comparing the results of their study with that of Robbins (unpublished) on Cocus Keeling Island and Great Barrier Reef, they found out that TRNP harbors more than double the population density of *T. obesus* given the same area, reaching as high as 13 individuals per ha in some of their study sites in the Park.

Because of the rich marine biodiversity in TRNP, it was no surprise that it proved to be a popular feeding area for small cetaceans in the Sulu Sea. A total of 13 cetacean species have been observed in TRNP since the first study conducted by Dolar and Alcala (1993). Large pods of dolphins have been observed to feed around the reefs of the North and South Atolls (Aquino and Calderon, 2004). Almost all of these pods had more than one calf in its group.

21. Social, economic and cultural values:

a) General social, economic and/or cultural values:

TRNP is a source and sink of fish and coral larvae which seeds the Sulu Sea (Campos et al, 2007), thus protecting it has a great contribution to fisheries in areas surrounding Sulu Sea.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? (Double-click the checkbox to check and choose "Checked" under "Default Value" from "Check Box Form Field Options" window)

No

If yes, tick the box ❑ and describe this importance under one or more of the following categories:

I. Sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland: ☐
II. Sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland: ☐
III. Sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples: ☐
IV. Sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland: ☐

TRNP is uninhabited and is managed under a no-take policy. No direct uses are allowed within the Park.

22. Land tenure/ownership:

a) Within the Flyway Network site:

State-owned

b) In the surrounding area:

State-owned

23. Current land (including water) use:

a) Within the Flyway Network site:

TRNP is managed under a no-take policy. The only uses allowed are tourism, for revenue generation, and research.

b) In the surroundings/catchment:

A 10-nautical mile buffer zone around the park boundaries was established through Republic Act 10067 (TRNP Act of 2009). In March 2014, a consultative workshop was conducted to arrive at a Buffer Zone Management Plan. Activities to be allowed inside the buffer zone includes non-extractive surveys and research, subject to approval of PSCD and TMO; fishing using simple hand line by municipal fishers and; recreational and educational activities subject to approval of permits from TMO. The areas outside of TRNP buffer zone are open to fishing.

24. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

a) Within the Flyway Network site:

Bird Islet has undergone major land area changes: from an estimated 60,000 square meters in 1911, it appears to have decreased to 18,760 square meters in 1981, 17,000 square meters in 2004, and about 10,930 square meters in 2013 (Jensen 2013). The decline in the land area has occurred unevenly with the largest percentage decrease occurring in the most recent years. From 1981 to 2004, the islet had shrunk 9%. But from 2004 to 2013 the land area has decreased by 36 percent. Several large blocks of sandstone with surface soil up to one square meter in size are eroded by the waves during high tide or during inclement weather. The severe erosion has caused the islet to shrink substantially along the southern and northwestern shores reducing the breeding area of the ground-breeding Brown Booby in particular (Kennedy 1982, Jensen and Songco 2014).

Planned exploration for oil in the Sulu Sea may have adverse impacts on cetaceans and other marine life. The Department of Energy (DOE) which has jurisdiction on oil explorations in the country, has already settled the overlap with the Service Contract they had previously issued to a private exploration company in favour of TRNP. The additional 10 nm buffer zone the TPAMB had requested for the perimeter of the Park, however, is still under negotiations. The buffer zone was requested as a mitigating measure for the possible negative impacts of oil exploration and extraction in the future.

A few studies have been done of the population of the topshell *(Trochus niloticus)* in the Park. These studies are important in the context of the present illegal exploitation of the species by fishers from Palawan. The topshell is protected in the Philippines under Fisheries Administrative Order # 208 series of 2001. It is collected, exported and used for button-making and other decorative purposes. The exploitation of topshells in TRNP by indiscriminate fishers may lead to an imbalance in the population structure of the species within the Park.

Wild tamarinds *Leucaena luecocephala* were introduced to the North and South Islets to provide shade and as a navigational aid in the 1980s by residents of the Municipality of Cagayancillo. This invasive tree species has proven very challenging to eradicate. Nevertheless, this has been successfully eradicated as of 2008.

Recently, it was also noted that several proposed archipelagic sealanes run right smack into the park. Discussions with relevant authorities have been held during which TMO pointed out the potential problems related to this and further suggested that the Philippine Department of Foreign Affairs propose the park to be declared as a Particularly Sensitive Sea Area (PSSA) to the International Maritime Organization (IMO). An information paper was submitted by TMO to the IMO though the Philippine Coast Guard. TMO and TPAMB, with the assistance of relevant Philippine agencies, are now preparing documents to be submitted to the IMO before the deadline of application for PSSA in 2017, in London.

b) In the surrounding area:

Apart from oil explorations in the Sulu Sea and the garbage emanating from outside of the Park, the proliferation of fish aggregating devices outside of and around the Park boundaries is a matter of increasing concern for the TPAMB. Based on the study conducted by CI-Philippines (Tagarino *et al*, 2007), several of these FADs are found just outside of Park boundaries. The sheer number of these FADs causes alarm for migratory species coming from inside the Park, including cetaceans, marine turtles and sharks and rays. In addition, there have been instances over the past years where a few of these devices (metal tanks about 2 meters long attached by a chain to a sinker) were dislodged from their sites and had found their way into the TRNP. The damage caused by the dragging of their chains and the devices itself could not be accurately assessed since the path of the devices could not be determined. The only damages that could be recorded were those found in the immediate area where these devices finally hit the islets in TRNP.

Marine debris from outside Park boundaries is also increasingly becoming a concern for park management because of its impacts on marine life and the avian populations. Garbage collected inside the Park are mostly plastic food wraps, light bulbs, disposable lighters, etc. Seabirds' nests are now largely composed of plastics and other non-biodegradable trash from the sea.

25. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Flyway Network site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

The whole of TRNP has been designated as World Heritage Site as decided upon during the 33rd session of the World Heritage Committee held in Seville, Spain on 22-30 June 2009. The boundary of the Ramsar Site and the World Heritage Site is one and the same. In October 2014, TRNP was also declared as an ASEAN Heritage Park. TRNP is under the jurisdiction of the Province of Palawan, which is a Man and Biosphere Reserve, and is located at the center of the Sulu Sea which is at the apex of the Coral Triangle. On the national level the TRNP Act of 2009 or Republic Act 10067 has

been passed into law on 6 April 2010. It specifically recognizes the outstanding universal value of the park by upholding the no-take policy and providing stiffer penalties for violators.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate, see Annex 3):

Ia ☐; Ib ☐; II ☒; III ☐; IV ☐; V ☐; VI ☐; N/A ☐

c) Does an officially approved management plan exist; and is it being implemented? If yes, is it being implemented? If no, is one being planned?

Yes and yes. The first management plan was first developed in 1995 and has completed the cycle three times. The plan was last updated in 2011 and will be implemented until 2021. This year is the third year of its implementation where it was reviewed.

d) Describe any other current management practices:

Park funds are generally sufficient only for law enforcement. Management planning for the Park was initiated by DENR in 1992. In 1995, when the Presidential Task Force of TRNP was established by then President Fidel Ramos, the plan was reviewed and modified in a participatory manner during several fora organized by the various players involved in TRNP, e.g., DENR, WWF-Philippines, Sulu Fund, Marine Parks Center of Japan, etc. The present Management Plan identifies the following major programs are paramount in the achievement of the goals of the TPAMB.

- CONSERVATION MANAGEMENT. The raison d'etre for the management of TRNP is to effectively conserve and protect the marine and terrestrial resources of the park into the future. This will require prudent use of human and other resources to maximize scarce financial assets. A competent organization that harnesses the contributions of its partners and practices the principles of adaptive management is vital towards this end.
- CONSERVATION AWARENESS. This program aims to promote awareness, generate support and achieve voluntary compliance with regulations. It seeks to foster a holistic view of the Park ecosystem as an interrelated and interdependent system, and thus engender a sense of stewardship towards the marine environment. Conservation awareness activities will cater to the general public, with special focus on children and the youth.
- ECOSYSTEM RESEARCH AND MONITORING. A regular, uninterrupted monitoring regime is required to provide understanding of biological resources and ecological processes and their interrelationships. Dependable scientific assessments provide inputs for anticipating potential problems and serve as a basis for decision-making. Monitoring reports also help the TPAMB to measure management effectiveness and to adapt management approaches.

- SUSTAINABLE RESOURCE MANAGEMENT. Resource management strategies will be implemented in the island municipality of Cagayancillo in order to conserve biodiversity and maintain marine resource productivity to enhance living standards in the locality and serve as a disincentive to fishing within TRNP. If deemed necessary, similar activities will be initiated in other localities where fishers have impacts on the conservation of TRNP.

A management effectiveness evaluation (MEE) tool following the IUCN framework is also used by TPAMB to monitor the effectiveness of its management programs and strategies.
(A pdf copy of the Management Plan of the TRNP is provided with this information sheet.)

26. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

The management plan being implemented was reviewed and updated this year, to ensure that targets are attained and strategies are still adaptive to the challenges the park is facing. The TPAMB is coordinating with the Philippine Coast Guard in the application of TRNP as a Particularly Sensitive Sea Area at the International Maritime Organization.

27. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

The window of opportunity for the conduct of research activities in the Park is slightly wider than the tourism season. Most research activities are undertaken in April to June, with a few brief research activities possibly being carried out up till October, before the onset of the northeast monsoon.

Annual Ecosystem Research and Monitoring, which includes fish, benthos and seabirds, has been conducted in the park since 1997. This was spearheaded by WWF-Philippines and now being continued by TMO. TMO researchers and marine park rangers are constantly being trained to be able to carry out the monitoring activities in the park, with the help of other volunteer scientists. Researchers are boat-based and the only field station in the Park is used to house the marine park rangers stationed in the area year-round.

A quarterly seabird census is also conducted by marine park rangers who have been trained by Mr. Arne Jensen, seabird consultant. A total of 4,705 individuals (1,860 Sooty Terns; 492 Brown Booby; and 2,353 Black Noddy) have been banded with steel rings and colour bands for identification.

In view of the significance of the Park as a marine turtle habitat, the marine park rangers were trained to conduct turtle tagging and take measurements and tissue samples for DNA analysis. An international expert on marine turtles has visited TRNP twice to conduct laparoscopy to determine the population structure of turtles in TRNP. A monthly and quarterly survey scheme was also

designed to monitor turtles. The marine park rangers have been likewise briefed on marine turtle hatchery management in the event of nesting occurrences at the sand bar in front of the ranger station. Marine turtle nests in the islets are only recorded but left practically untouched.

Sightings of large predators such as sharks and cetaceans are likewise noted in the rangers' quarterly report to the TMO but these are mostly opportunistic, i.e., sightings are often made during their regular patrols.

28. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

CEPA has been focused primarily on visitors over the last few years. Park funds are generally sufficient only for law enforcement. However, official reports and periodic publications are provided to the academe, relevant government agencies, the media and other sectors of society. The TPAMB has put up a website, www.tubbatahareef.org , which contains extensive information about TRNP.

In 2008, TRNP was nominated in the search for the New 7 Wonders of Nature, an online search for the world's most unique and beautiful natural sites, which initiated the information campaigns for TRNP. Even after TRNP was removed from the list of candidates for the New 7 Wonders campaign, TMO continued its efforts in increasing awareness of the park within the country. In 2009, an extensive CEPA program was carried out for students (elementary, secondary and tertiary levels) and fishermen in selected coastal villages in the Province of Palawan. In 2011, the team extended the campaign to include the Municipality of Buenavista in the Province of Antique, where a number of apprehended fishermen resides. These campaigns were made possible with the help of dedicated volunteers. In 2013, TMO progressed to another level of CEPA through the Tubbataha Youth Ambassadors program. Three students were brought to TRNP to experience conservation work first hand. In 2014, five youths were involved in the program, representing a marine protected area in their municipality. Part of the program is to conduct awareness campaigns in their respective coastal villages to make the students and fishermen aware of their own marine protected area and its importance.

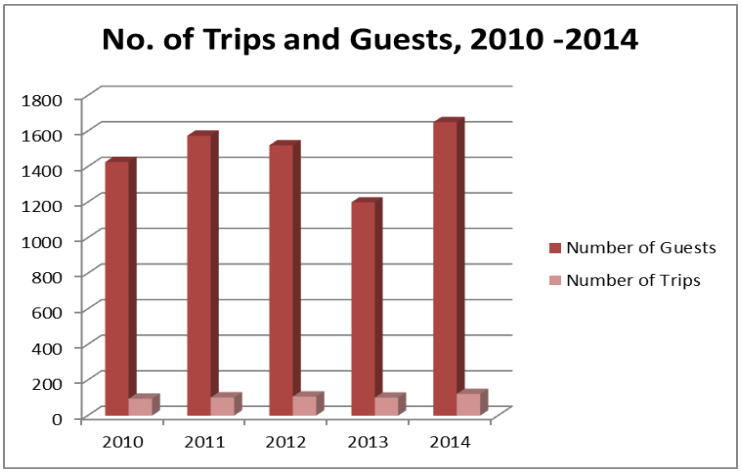
TMO has also produced a number of collaterals (i.e. notebooks, brochures and primers), videos for tourists, radio plugs, and billboards. Several documentaries about TRNP were also produced and shown in national and international television stations.

TRNP is a living laboratory of marine life and its potential for education is extensive. However, the isolation of the reefs and the seasonal access to it limit the capability of the TPAMB to provide experiential learning opportunities for Palawan residents. Nevertheless, the TPAMB through its TMO targets at least one trip a year to conduct a familiarization tour for locals.

Given the amount of information handled by the TMO, a database has been developed in the latter part of 2009. The information system was conceptualized to facilitate access to information both within and outside of the TMO. For security reasons, however, only a limited part of the database is uploaded to the website.

29. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.



Tourism and research are the only directs uses allowed in TRNP. No seasonal closure is prescribed by the Board. However, due to weather conditions, tourism operations are conducted only from March to June. The beginning and the end of the diving season is determined by the arrival and departure of the scuba diving vessels that visit the Park each year. During the 2014 dive season, there was a 37.6% increase in the number of visitors compared to 2013. This was attributed to the increase in the number of dive boats which operated this year.

In 2011, TMO has intensified the conduct of pre-departure briefings. In order to increase compliance, boat crew and dive masters of all the dive boats participated in a 3-hour briefing on the importance of TRNP and the park rules and regulations, in 2011. In March 2014, TMO conducted its first dive masters orientation, which it plans to continue in the succeeding years; while a dive operators' consultation is also conducted annually, before the start of the dive season.

Using the Halas system of embedment, TMO has started to install embedded moorings in 2010. To date, 19 embedded moorings for dive boats and 10 moorings for service boats are available for use.

30. Threats

Which of the following threats is present historically – when the threat stopped but the effects are still there (H), currently (C) or potentially (P)?

	Historically	Currently	Potentially
Residential and commercial development			
housing and urban areas	☐	☐	☐
commercial and industrial areas	☐	☐	☐

tourism and recreation areas	☐	☐	☒
Agriculture and aquaculture			
annual and perennial non-timber crops	☐	☐	☐
wood and pulp plantations	☐	☐	☐
livestock farming and ranching	☐	☐	☐
marine and freshwater aquaculture	☐	☐	☐
Energy production and mining			
oil and gas drilling	☐	☐	☒
mining and quarrying	☐	☐	☐
renewable energy	☐	☐	☐
Transportation and service corridors			
roads and railroads	☐	☐	☐
utility and service lines	☐	☐	☐
shipping lanes	☐	☒	☐
flight paths	☐	☐	☐
Biological resource use			
hunting and collecting terrestrial animals	☐	☐	☐
gathering terrestrial plants	☐	☐	☐
logging and wood harvesting	☐	☐	☐
fishing and harvesting aquatic resources	☒	☐	☒
Human intrusions and disturbance			
recreational activities	☐	☐	☐
war, civil unrest and military exercises	☐	☐	☐
work and other activities	☐	☐	☐
Natural system modifications			
fire and fire suppression	☐	☐	☐
dams and water management/use	☐	☐	☐
other ecosystem modifications	☐	☐	☐
Invasive and other problematic species and genes			
invasive non-native/alien species	☒	☐	☐

problematic native species	☐	☐	☐
introduced genetic material	☐	☐	☐
Pollution			
household sewage and urban waste water	☐	☐	☐
industrial and military effluents	☐	☐	☐
agricultural and forestry effluents	☐	☐	☐
garbage and solid waste	☐	☒	☐
air-borne pollutants	☐	☐	☐
excess energy	☐	☐	☐
Geological events			
Volcanoes	☐	☐	☐
earthquakes/tsunamis	☐	☐	☐
avalanches/landslides	☐	☐	☐
Climate change and severe weather			
habitat shifting and alteration	☐	☐	☒
Droughts	☐	☐	☐
temperature extremes	☐	☐	☒
storms and flooding	☐	☐	☒

Please write here any additional threats and comments/queries you have on the threats.

Appendix 1. List of threatened and near threatened species found in Tubbataha Reefs Natural Park as of 2014.

	Fullname	English Name	IUCN Status		CMS	CITES
Cetaceans						
1	*Physeter microcephalus*	Sperm whale	VU	A1d	I, II	I
Fishes						
2	*Balistes vetula*	Queen triggerfish	VU	A2d		
3	*Cheilinus undulatus*	Humphead wrasse	EN	A2bd+3bd		II
4	*Bolbometopon muricatum*	Green humphead parrotfish	VU	A2d		
5	*Cromileptes altivelis*	Humpback grouper	VU	A4cd		
6	*Epinephelus lanceolatus*	Giant grouper	VU	A2d		
7	*Epinephelus malabaricus*	Malabar grouper	NT			
8	*Epinephelus polyphekadion*	Camouflage grouper	NT			
9	*Plectropomus areolatus*	Squaretail coralgrouper	VU	A4d		
10	*Plectropomus laevis*	Blacksaddled coralgrouper	VU	A2d+4d		
11	*Plectropomus leopardus*	Leopard coralgrouper	NT			
Corals						
12	*Acanthastrea brevis*	Closed brain coral	VU	A4ce		II
13	*Acanthastrea hemprichii*	Closed brain coral	VU	A4c		II
14	*Acanthastrea hillae*	Starry cup coral	NT			II
15	*Acropora abrolhosensis*	Staghorn coral	VU	A4cde		II
16	*Acropora aculeus*	Dana staghorn coral	VU	A4ce		II
17	*Acropora acuminata*	None known	VU	A4ce		II
18	*Acropora anthocercis*	Red coral	VU	A4ce		II
19	*Acropora aspera*	Chuuk Shaggy Blue Stag'	VU	A4ce		II
20	*Acropora austera*	Staghorn coral	NT			II
21	*Acropora carduus*	Bottlebrush coral	NT			II
22	*Acropora digitifera*	Plate acropora	NT			II
23	*Acropora divaricata*	Stony coral	NT			II
24	*Acropora donei*	Staghorn coral	VU	A4ce		II
25	*Acropora echinata*	Bottlebrush coral	VU	A4cde		II
26	*Acropora florida*	Staghorn coral	NT			II
27	*Acropora formosa*	Staghorn coral	NT			II
28	*Acropora granulosa*	None known	NT			II
29	*Acropora horrida*	None known	VU	A4cde		II
30	*Acropora humilis*	Finger staghorn coral	NT			II
31	*Acropora hyacinthus*	Blue mesa acropora coral	NT			II
32	*Acropora indonesia*	None known	VU	A4ce		II
33	*Acropora loripes*	None known	NT			II
34	*Acropora lovelli*	Staghorn coral	VU	A4ce		II
35	*Acropora lutkeni*	None known	NT			II
36	*Acropora millepora*	Blue coral	NT			II
37	*Acropora monticulosa*	Staghorn coral	NT			II

38	*Acropora nana*	Tri color staghorn	NT		II
39	*Acropora nasuta*	Staghorn coral	NT		II
40	*Acropora paniculata*	None known	VU	A4ce	II
41	*Acropora polystoma*	Bushy acropora	VU	A4ce	II
42	*Acropora secale*	Tri color coral	NT		II
43	*Acropora selago*	None known	NT		II
44	*Acropora solitaryensis*	None known	VU	A4ce	II
45	*Acropora speciosa*	Staghorn coral	VU	A4ce	II
46	*Acropora striata*	None known	VU	A4ce	II
47	*Acropora tenuis*	None known	NT		II
48	*Acropora vaughani*	None known	VU	A4ce	II
49	*Acropora verweyi*		VU	A4ce	II
50	*Acropora willisae*	Staghorn coral	VU	A4ce	II
51	*Alveopora allingi*	Daisy coral	VU	A4cd	II
52	*Alveopora excelsa*	Net coral	EN	A4c	II
53	*Alveopora fenestrata*	Club coral	VU	A4c	II
54	*Alveopora verrilliana*	None known	VU	A4cd	II
55	*Australomussa rowleyensis*	None known	NT		II
56	*Caulastrea echinulata*	Finger coral	VU	A4cd	
57	*Caulastrea tumida*	None known	NT		
58	*Cyphastrea agassizi*	Lesser knot coral	VU	A4c	II
59	*Cyphastrea ocellina*	Lesser knot coral	VU	A4c	II
60	*Diploastrea heliopora*	None known	NT		II
61	*Echinopora ashmorensis*	Hedgehog coral	VU	A4c	II
62	*Echinopora horrida*	None known	NT		II
63	*Echinopora pacificus*	None known	NT		II
64	*Euphyllia ancora*	None known	VU	A4cd	II
65	*Euphyllia cristata*	Hammer or anchor coral	VU	A4cd	II
66	*Euphyllia divisa*	Frogspawn coral	NT		II
67	*Euphyllia glabrescens*	Torch coral	NT		II
68	*Favia helianthoides*	Knob coral	NT		II
69	*Favia laxa*	Knob coral	NT		II
70	*Favia maxima*	Knob coral	NT		II
71	*Favia rotundata*	Knob coral	NT		II
72	*Favia stelligera*	Knob coral	NT		II
73	*Favites abdita*	Larger star coral	NT		II
74	*Favites chinensis*	Brain coral favites	NT		II
75	*Favites complanata*	Larger star coral	NT		II
76	*Favites halicora*	Brain coral	NT		II
77	*Favites paraflexuosa*	green crater coral	NT		II
78	*Favites russelli*	None known	NT		II
79	*Fungia fungites*	Common mushroom coral	NT		II
80	*Galaxea astreata*		VU	A4cd	II
81	*Galaxea fascicularis*	Galaxy coral	NT		II
82	*Galaxea paucisepta*	Galaxy coral	NT		II
83	*Goniastrea deformis*	Lesser star coral	VU	A4c	II
84	*Goniastrea favulus*	Lesser star coral	NT		II
85	*Goniastrea minuta*	Lesser star coral	NT		II

86	*Goniopora lobata*	Stony coral	NT		II
87	*Heliofungia actiniformis*	Plate coral	VU	A4cd	II
88	*Heliopora coerulea*	Blue coral	VU	A4cde	II
89	*Hydnophora exesa*	Spine coral	NT		II
90	*Hydnophora microconos*	Velvet horn coral	NT		II
91	*Leptastrea bewickensis*	Bewick coral, crust coral	NT		II
92	*Leptoria phrygia*	Least valley coral	NT		II
93	*Leptoseris incrustans*	Swelling coral	VU	A4ce	II
94	*Leptoseris striata*	Porcelain coral	NT		II
95	*Leptoseris yabei*	Vase coral	VU	A4ce	II
96	*Lithophyllon undulatum*	Stone leaf coral	NT		II
97	*Lobophyllia flabelliformis*	Lobe cactus coral	VU	A4ce	II
98	*Lobophyllia pachysepta*	Orange carpet lobo brain coral	NT		II
99	*Montastrea annuligera*	Pineapple coral	NT		
100	*Montastrea colemani*	None known	NT		
101	*Montastrea magnistellata*	False knob coral	NT		
102	*Montastrea multipunctata*		VU	A4c	
103	*Montastrea salebrosa*		VU	A4c	
104	*Montastrea valenciennesi*	Brain coral	NT		
105	*Montipora altasepta*	None known	VU	A4cde	II
106	*Montipora caliculata*	None known	VU	A4ce	II
107	*Montipora capitata*	None known	NT		II
108	*Montipora cebuensis*	Boody mary	VU	A4ce	II
109	*Montipora vietnamensis*	Pineapple coral	VU	A4c	II
110	*Montipora confusa*	None known	NT		II
111	*Montipora crassituberculata*	Pore coral	VU	A4c	II
112	*Montipora efflorescens*	Pore coral	NT		II
113	*Montipora foliosa*	Pore coral	NT		II
114	*Montipora foveolata*	Pore coral	NT		II
115	*Montipora gaimardi*	Pore coral	VU	A4c	II
116	*Montipora incrassata*	Pitted rice coral	NT		II
117	*Montipora mactanensis*	Pore coral	VU	A4c	II
118	*Montipora palawanensis*	Disc coral	NT		II
119	*Montipora peltiformis*	Pore coral	NT		II
120	*Montipora samarensis*	None known	VU	A4c	II
121	*Montipora undata*	Indaho grape	NT		II
122	*Montipora venosa*	Sandollar coral	NT		II
123	*Oulophyllia bennettae*	Moonstone coral	NT		II
124	*Oulophyllia crispa*	Intermediate valleycoral	NT		II
125	*Pachyseris gemmae*	Disc coral	NT		II
126	*Pachyseris rugosa*	Disc coral	VU	A4cd	II
127	*Pavona bipartita*	None known	VU	A4c	II
128	*Pavona cactus*	Potato chip coral	VU	A4cd	II
129	*Pavona decussata*	Cactus coral	VU	A4c	II
130	*Pavona minuta*	Leaf coral	NT		II
131	*Pavona venosa*	None known	VU	A4c	II
132	*Pectinia alcicornis*	Antler coral	VU	A4c	II

133	*Pectinia lactuca*	Lettuce coral	VU	A4cd		II
134	*Pectinia paeonia*	Lettuce coral	NT			II
135	*Platygyra lamellina*	Closed brain coral	NT			II
136	*Platygyra ryukyuensis*	Llesser valley coral	NT			II
137	*Plerogyra sinuosa*	Grape coral	NT			II
138	*Pocillopora elegans*	Antler coral	VU	A4ce		II
139	*Pocillopora eydouxi*	Antler coral	NT			II
140	*Podabacia motuporensis*	Bracket coral	NT			II
141	*Porites annae*	Boulder coral	NT			II
142	*Porites attenuata*	Stony coral	VU	A4cde		II
143	*Porites rugosa*	None known	VU	A4cde		II
144	*Porites cylindrica*	Hump coral	NT			II
145	*Porites deformis*	None known	NT			II
146	*Porites densa*	Finger coral	NT			II
147	*Porites horizontalata*	Boulder coral	VU	A4cde		II
148	*Porites lobata*	Lobe coral	NT			II
149	*Porites negrosensis*	Brown lobe coral	NT			II
150	*Porites nigrescens*	Boulder coral	VU	A4cde		II
151	*Porites ornata*	Stony coral	EN	A4cde		II
152	*Psammocora digitata*	Pitted petaloid coral	NT			II
153	*Seriatopora aculeata*	Challenger coral	VU	A4c		II
154	*Seriatopora caliendrum*	Birdsnest coral	NT			II
155	*Stylophora pistillata*	Smooth cauliflower coral	NT			II
156	*Symphyllia hassi*	Sinuous cup coral	VU	A4c		II
157	*Trachyphyllia geoffroyi*	Open brain coral	NT			II
158	*Tubipora musica*	Organ pipe coral	NT			II
159	*Turbinaria peltata*	Cup coral	VU	A4cd		II
160	*Turbinaria reniformis*	Plate coral	VU	A4c		II
161	*Turbinaria stellulata*	Stony coral	VU	A4c		II
Gastropods						
162	*Tridacna gigas*	Giant clam	VU	A2cd		II r
Birds						
163	*Oceanodroma monorhis*	Swinhoe's Storm Petrel	NT			
164	*Fregata andrewsi*	Christmas Island Frigatebird	CR	B2ab(ii,iii,v)		I
165	*Egretta eulophotes*	Chinese Egret	VU	C2a(i)	I	
166	*Gorsachius goisagi*	Japanese Night-Heron	EN	C2a(i)	I	
167	*Numenius arquata*	Eurasian Curlew	NT		II	
168	*Limosa limosa*	Black-tailed Godwit	NT		II	
Elasmobranchs						
169	*Rhincodon typus*	Whale shark	VU	A1bd+2d	II	II r
170	*Triaenodon obesus*	Whitetip reef shark	NT			
171	*Carcharhinus albimarginatus*	silvertip shark	NT			
172	*Carcharhinus amblyrhynchos*	Grey reef shark	NT			

173	*Carcharhinus longimanus*	Oceanic whitetip shark	VU	A2ad+3d+4ad		
174	*Carcharhinus melanopterus*	Blacktip reef shark	NT			
175	*Galeocerdo cuvier*	Tiger shark	NT			
176	*Stegostoma fasciatum*	leopard (zebra) shark	VU	A2abcd+3cd+4abcd		
177	*Sphyrna mokarran*	squat-headed hammerhead shark	EN	A2bd+4bd		
178	*Taeniura lymma*	Bluespotted ribbontail ray	NT			
179	*Nebrius ferrugineus*	tawny nurse shark	VU	A2abcd+3cd+4abcd		
180	*Manta birostris*	Giant manta ray	VU	A2abd+3bd+4abd	I/II	II
181	*Manta alfredi*	Reef manta ray	VU	A2abd+3bd+4abd		II
Testudines						
182	*Chelonia mydas*	Green turtle	EN	A2bd	I/II	I r
183	*Eretmochelys imbricata*	Hawksbill turtle	CR	A2bd	I/II	I r