1. GENERAL INTRODUCTION

Securing Andaman and Nicobar Islands

India's forward presence in the eastern Indian Ocean is enabled by the Andamanand Nicobar Islands. The island chain is therefore of immense strategic significance andits security is of India's vital interest.The geographical configuration and the location of the island chain in the Bay of Bengal safeguards India's eastern seaboard as well the approaches to the Indian Ocean from the east. Its proximity to the Southeast Asian region enables India to forge friendly relations with its Association of South East Asian Nations neighbours. The physical isolation and remoteness of the archipelago, however, make it vulnerable to conventional and non-conventional threats. At present, any possibility of a conventional threat to the Andaman and Nicobar Islands appears remote given India's friendly ties with its Southeast and East Asian neighbours. Nevertheless, military intervention in the Indian Ocean by extra-regional powers remains a potential cause of concern. Meanwhile, non-conventional threats such as poaching of marine and forest resources, illegal migration, arms smuggling and natural disasters have been posing serious challenges to the internal security of the island chain. Steps to address these problems have been undertaken by the government, but the issues of remoteness, inadequate infrastructure, poor coordination among security agencies and pervasive underdevelopment create hurdles. Boosting the coastal security is therefore, important for securing the Andaman and Nicobar Islands.

Establishing Marine Police Operational Centre (hereafter MPOC) would augment the efforts of state marine police to boost the coastal security. Accordingly, MHA has sanctioned 10 MPOC under the coastal security scheme Phase – II for the UT of A&N Islands for strengthening the infrastructure and ensuring effective coastal security in the territorial waters. The coastal security at Hut Bay has to be improved systematically, appreciating its strategic location and importance. Hence, it is proposed to establish MPOC at Hut Bay, Little Andaman.

Little Andaman

Little Andamanis the southernmost island of the South Andaman District. It is separated by the Duncan Passage from the Andaman Island Group in the North and by the Ten Degree Channel from the Nicobar Island Group in the South. Situated approximately 120 km away from

Port Blair, Little Andaman one of the three tehshils of South Andaman with 5 Gram Panchayats and 1 Panchayat Samiti.The geographical area of Little Andaman is 48 km long and 27 km wide and its land area is about 731.60 km^2, of which the revenue area is 34.34 km^2.It lies at the southern end of the Andaman archipelago. According to the Census 2011, Little Andaman has a population of 18823, comprising of 9964 Males and 8859 Females. The sex ratio (number of females/1000 males) is 889. Two aboriginal tribes, the *Onges* and *Nicobarese* are known to inhabit the Little Andaman Island. Hut Bay is the largest village in Little Andaman, with a total 2081 families. It has a population of 7075 comprising of 3757 Males and 3318 Females.

2. RATIONALE

India's coasts have always been vulnerable to anti-national activities.The physical proximity of India's coasts to Sri Lanka, Bangladesh, Pakistan and Gulf countries adds to its vulnerability. India has been facing cross-border terrorism for decades. However, over the years, with the increased deployment of security forces and surveillance equipment as well as the construction of fences, security along the land borders has been sufficiently tightened. On the other hand, security over the ocean domain with the sea routes remaining poorly guarded.A three tier coastal security ring all along our coast is provided by Marine Police, Indian CoastGuard and Indian Navy. The Government has initiated several measures to strengthen Coastal Security, which include improving surveillance mechanism and enhanced patrolling by following an integrated approach. Joint operational exercises are conducted on regular basis among Navy, Coast Guard, Coastal Police, Customs and others for security of the island territories.

In view of these, the Deputy Superintendent of Police (PMF) on behalf of the Superintendent of Police has approached Zoological Survey of India, Port Blair by vide letter**(199/PMF/HB/2017-18/156 dated 1st Feb 2018)**to undertake REIA studies for the construction of MPOC at Hut Bay. Based on the submitted REIA proposal, Deputy Superindentent of Police (PMF) has accorded the administrative approval by vide letter **199/PMF/PHASE-II/HB/2017-18/858 dated 18th July 2018**to conduct the REIA studies.

3. OBJECTIVES OF THE STUDY

The primary objectives of thepresent study are:

- *To determine the ecological and environmental feasibility of the proposed area for Construction of Marine Police Operational Centre at Hut Bay, Little Andaman*
- *To assess the faunal species composition of the proposed project area*
- *To predict the impactsof the construction on the faunal components in the proposed project area*

4. SIGNIFICANCE OF THE STUDY

- *The study will provide baseline information of the faunal components of the proposed project area.*
- *Data obtained from the present study will be useful to assess the impacts of the proposed Construction of Marine Police Operational Centre at Hut Bay, Little Andaman*
- *The proposed survey will be a useful tool in devising effective and adaption-centric conservation and management of faunal communities in Hut Bay,Little Andaman.*

5. STUDY AREA

Project Site

The proposed site encompasses an area of 0.50 ha situated at Hut Bay, Little Andaman Tehsil. The Google Earth imagery (4800 × 2295) is given in **Figure 1.**

Figure 1. Google Earth Imagery of Hut Bay. Encircled area denotes the proposed project site

6. DESCRIPTION OF PROJECT

Project overview

Strengthening of the coastal security apparatus in the country is a continuous process. A three-tier coastal security ring all along the coast is provided by Marine Police, Indian CoastGuard and Indian Navy. The Government has initiated several measures to strengthen Coastal Security, which include improving surveillance mechanism and enhanced patrolling by following an integrated approach. Joint operational exercises are conducted on regular basis among Navy, Coast Guard, Coastal Police, Customs and others for security of coastal areas including island territories.

MHA has sanctioned 10 MPOC under the coastal security scheme Phase – II for the UT of A&N Islands for strengthening the infrastructure and ensuring effective coastal security in the territorial waters. The coastal security at Hut Bay has to be improved systematically, appreciating its strategic location and importance. Hence, it is proposed to establish MPOC at Hut Bay, Little Andaman.

Proposed facilities

The proposed construction of MPOC at Hut Bay is envisaged to augment the infrastructure for the Police Marine Force.

Necessity of the Project

Security at Hut Bay has to be improved systematically, appreciating its strategic location and importance. Despite several initiatives of the Government, intricate issues associated with remoteness, inadequate infrastructure and pervasive underdevelopment create hurdles in enhancing security. Establishing MPOC would help enhance security at Hut Bay.

Types of the materials to be used

Details of the materials required for the construction of MPOC at Hut Bayare summarized in **Table 1.**It is highly recommended that only the approved qualitybe used for the construction.

Table 1. Required materials for the construction of MPOC, Hut Bay

Sl. No.	Materials
1	Stone Aggregate of sizes
2	Coarse sand (zone III), Pulverised Sand
3	Portland Cement
4	Twisted steel/ deformed bars
5	Paving Asphalt VG 10 of approved quality
6	Paving Asphalt of grade VG-30 of approved quality
7	Coal (steam)
8	Fine stand(Zone IV)
9	Diesel oil
10	Boulder 50-225

7. PRELIMINARY ASSESSMENT ON LIKELIHOOD IMPACTS

Evaluation of environmental characteristics of the project location

The preliminary evaluation of the environmental characteristic within 10km radius of the proposed project site is summarized as under in **Table 2.**

Table 2. Evaluation of the environmental characteristics in the proposed project site as per MoEF & CC criteria

Sl. No.	***Environmental characters within 10 km radius of the project site***	***Evaluation Criteria***	***Remarks***
1.	*Is there a national park, sanctuary, biosphere reserve or reserved forest in the area?*	**NO**	No Protected Area is located in the proposed project area.
2.	*Are any coral reefs in the area?*	**NO**	No coral reefs are present in the proposed project area.
3.	*Are there mangroves/seagrass beds in the area?*	**NO**	No Mangroves/Seagrass beds are present in the proposed area.
4.	*Are there significant areas of breeding/spawning grounds in the vicinity?*	**NO**	No breeding/spawning activities of wild animals found during the survey.
5.	*Does the area form a part of migratory route or nesting grounds for aquatic and avifauna?*	**NO**	No migratory birds could be noticed in the project area during the surveys.
6.	*Are there endangered species in the area?*	**NO**	No endangered species could be found in the proposed project site during the surveys.
7.	*Does the area have religious, historic places, archaeological monument sites etc.*	**NO**	No areas of religious, historic and archeological importance exist in the proposed area.
8.	*Does the project require land acquisition and resettlement?*	**NO**	The land has been recorded in favour of Superindentent of Police.
9.	*Is there any defence installation in the area?*	**NO**	No defence installations in the area.
10.	*Are there rivers/ streams/ seas/estuary?*	**YES**	Andaman Sea is about 200 m from the proposed project site.
11.	*Does the project satisfy CRZ criteria*	**YES**	The proposed project is

			approximately 200 m away from the CRZ
12.	*Is there a lake, reservoir or dam?*	**NO**	
13.	*Is the project site situated in a seismically active zone?*	**YES**	The project site falls under the seismic zone category–V according to IS: 1893-1998.

Other significant environmental factors

Other significant environmental factors are summarized as under in **Table 3.**

Table 2. Other significant environmental factors

Sl. No.	Description		Remarks
1.	*Wetlands*	:	Nil
2.	*Lagoons*	:	Nil
3.	*Fisheries*	:	Nil
4.	*Agriculture Crops/ Commercial Crops/Plantation*	:	Nil
5.	*Natural vegetation/Forest type*	:	The area is covered by bushes.
6.	*Grasslands*	:	Nil
7.	*Endangered species of flora and fauna*	:	Not observed from the proposed area. However, list of flora and fauna occuring in the adjoining areas is provided.
8.	*Endemic species of flora and fauna*	:	Not observed from the proposed area. However, list of flora and fauna occuring in the adjoining areas is provided.
9.	*Habitat for migratory birds*	:	Nil
10.	*National Park / Wildlife Sanctuary*	:	Nil
11.	*Tiger/Elephant Reserve*	:	Nil
12.	*Core zone of the Biosphere Reserve*	:	Nil

Socio-economic status

The socio-economic status of the proposed project site and its adjoining areas has been evaluated and provided below **(Table 4).**

Table 4. Assessment of socio-economic status in the project site

Sl. No.	Parameter	Aerial distance from the periphery of project site		
		Up to 0.5 km	**Up to 5.0 km**	**Surroundingvillages**
1.	Population	-	4093	Hut Bay Netaji Nagar
2.	No. of Houses	-	415	800
3.	Occupation	Agriculture	Agriculture, Government Service, Business, Fishing and Small-scale household industries.	

Assessment of the project environment

The environment of the proposed area has been assessed based on the preliminary surveys conducted in the project site and its adjoining areas and the details are given in **Table5.**

Table 5. Assessment of the environment in the proposed project site

Sl. No.	Parameters	Remarks
1.	*Air pollutant sources*	Presently no source of air-pollution is noticed.
2.	*Air quality*	Good. The proposed area is totally devoid of industries.
3.	*Receptors of impact (if any)*	Low negative impacts
4.	*Water bodies and sources of water supply*	No water body available.
5.	*General water quality*	No water body available.
6.	*Wastewater/effluent discharge sources, disposal methods/location of disposal*	The proponent must follow the guidelines delinated by the Andaman and Nicobar Administration for wastewater discharge
7.	*General aesthetics*	Good

8.	*Land use at the proposed project site*	Bushy area
9.	*Landscape and terrain*	The proposed project site is flat.
10.	*Critical habitats*	No critical habitat could be found.
11.	*Noise sources*	No source of noise in the project site

Likelihood impacts

The likelihood impacts of the proposed project are elucidated by assessing various factors based on the project activities in construction phase and operational phase **(Tables 6&7).**

Table 6. Overview of likelihood impact due to the proposed project

Activities	**Environmental Parameters**						
	Air	*Noise*	*Land*	*Water*	*Sediment*	*Ecology*	*Socio-economy*
Construction Phase	✓	✓	✓	✓	✓	✓	✓
Operational Phase							✓
LIKELIHOOD IMPACT	**BENEFICIAL**						

As per the preliminary evaluation of the project activities, it is inferred that there will be construction phase and operational phase for the said project. The construction phase would involveoperation of vehicles, transport of construction materials, excavators and laying tarmac.It is envisaged that MPOC at Hut Bay enhances security in Little Andaman and its adjoining areas.

Table 7. Preliminary evaluation of impact characteristics

Activity	Parameter	Component	Cause	Nature and duration of Impact	Level of Significance
CONSTRUCTION PHASE					
Deforestation, transportation of construction material	*Air*	SPM, SOx, NOx	Emission caused by vehicles, construction equipments, air pollution while transporting sand, cement, coarse gravel in trucks	Short-term, Negative and Reversible on completion of the project	Material may be properly covered in order to prevent dust generation while transportation and water may be sprayed for the suppression of dust. *(Low level significance)*
	Noise	Noise Level	Generated through the vehicles, and operation of equipments	Short-term, Negative, Reversible	It may disturb the birds, as they are sensitive for noise pollution. (*Organisms can re-locate to other places*)
	Land Ecology	Land use and forest cover	It is a bare land with patchy bushes		
	Hydrodynamics	Flow pattern	Construction of drainage canal	Long-term positive impact	Regulates the water flow and prevent the landslide.
OPERATION PHASE					
On successful completion of the augmentation of infrastructure and provision of OTM	*Air*				
	Noise				
	Socio-economics	Emhanced security and survelliance in Little Andaman	May affect the biota in the area	Long-term, Irreversible	Positive impact for the local residents
	Ecology	Construction in the forest area	May affect the biota in the area	Long-term, Irreversible	*Impact will be negligible*

Evaluation of alternatives

Based on the reconnaissance surveys and the project requirement evaluation, it is envisaged that there is a **limited negative impact** of the proposed project during operational phase. However, no alternatives could be achieved in view of the following reasons:

1. *The proposed project is aimed at establishing MPOC at Hut Bay appreciating its strategic location and importance.*
2. *Establishing MPOC is indispensable for strengthening the coastal security.*

Outcome of the project

1. *Enhanced maritime security in the Little Andaman Island*
2. *Direct and indirect employment opportunites for the local residents*

8. BASELINE STUDY

An 11-member scientific team had carried out the REIAstudies during 10-20 October 2018at Hut Bay. In addition, data collected from previous surveys by the scientific staff of Zoological Survey of India in this region have also been utilized.

Material and Methods

Floral diversity

Tree species composition and diversity were assessed by laying 20 × 20 m quadrats at different locations. The locations for laying quadrats were selected based on representativeness and importance. The floral communities were identified using standard monographs/literature.

Faunal diversity: Marine fauna

Belt transect method was adopted for fishes. Macroinvertebrates including large mollusks, echinoderms, crustaceans and cryptic fishes were censused along the same transect line set for fish surveys.

Faunal diversity: Terrestrial fauna

Light trap sampling: An electric power generator was operated in different habitats during night hours for moths. The collected insects have been sorted out to species and the number of

individuals for each species was recorded on data sheets for estimating the diversity.As spot identification was made in most of the cases, code numbers were assigned to the all the collected species, which were later, labeled after establishing their correct identity.

Hand net sampling: Direct catching of insects using hand net is often required for collecting butterflies, bees and wasps during the day (Sunrise to 11 am).

Reptiles and Amphibians: Random surveys were conducted to document amphibian and reptile species.The streams and marshy areas were surveyed for amphibians.Hand picking and pitfall traps were employed for the collection of specimens.Dip nets was used for capturing amphibians of the lentic systems.Amphibians and reptiles were identified in the field itself as far as possible.The specimens were photographed for confirmation of identification and voucher specimens were collected and preserved in 10% formaldehyde.The specimens were identified using the field guides (Boulenger, 1890; Smith, 1933, 1935, 1943; Daniel 1963; Tikader et al.,1986).

Avifauna: Avifaunal species composition was estimated by employing Line Transect Method (Burnham et al., 1980).Birds were identified based on physical features with the help of field guides (Ali and Ripley, 1983; Grimmett et al., 1998).

Mammals: The Block Count and Point Count methods (direct and indirect) were used for census of the mammals (Burnham et al., 1980).The indirect evidences like pugmarks, pellets, dung and footprints also recorded following Rodgers (1991).The study area was surveyed on foot randomly for direct sightings. Whenever a mammal is sighted, details in respect of size, sex, group size, activity, time of sighting and the vegetation type were recorded.As an alternative to the block count method, a 10 m × 10 m quadrat was laid and indirect evidences of mammals such as scats, droppings, diggings, feeding signs and scratching marks were identified.In doubtful cases, scats, hair and other materials have been taken to the laboratory and compared with the known samples for identification (Rodgers, 1991).

9. RESULTS

Floral diversiy studies

During the survey, a total of 75 plants species were observed within the proposed site, most of them are common in nature.Totally 25 common trees, 10 seedlings, no pole crops (less than 30

cm girth), mostly herbs and climbers were observed within the proposed site. Proposed infrastructure development is not going to affect any of the trees.No endemic and commercially significant trees were observed within the proposed.Medicinal plants observed within the proposed site are *Chromolaena odorata* (L.) R. M. King & H. Rob.,*Anisomeles indica* (L.) Kuntze, *Cyanthilliumcinereum* (L.) H. Rob., *Sida rhombifolia*Linn.,*Sida acuta* Burm. f., *Cardiospermum halicacabum*Linn.,*Lantana camara* Linn., *Alternanthera sessilis* (L.) R. Br ex DC.,*Acmella paniculata* (Wall. ex DC.) R. K. Jansen, *Desmodium triflorum* (L.) DC., *Euphorbia hirta*Linn.,*Psidium guajava* Linn., *Peperomia pellucida* (L.) Kunth, *Phyla nodiflora* (L.) Greene, *Triumfetta rhomboidea* Jacq., *Urena lobata* Linn., *Urena sinuate* Linn., *Smithia sensitiva* Aiton, *Xanthium strumarium* Linn., *Ocimum tenuiflorum* Linn., *Senna tora* (L.) Roxb.,*Hyptis capitata* Jacq., *Eclipta prostrata* Linn., *Acalypha indica* Linn., *Achyranthes aspera* Linn., *Senna occidentalis* (L.) Link, *Leea indica* (Burm. f.) Merr.,*Breynia vitis-idaea* (Burm. f.) C. E. C. Fisch., *Premna serratifolia*Linn.,*Phyllanthus amarus* Schum. &Thonn.,*Phaulopsis imbricata* (Forssk.) Sweet, *Alysicarpus vaginalis*(L.) DC., *Mimosa pudica*Linn.,*Azadirachta indica* A. Juss., and *Aegle marmelos* (L.) Correa.No true mangrove species were observed towards the coastal vicinity near the proposed site. Two mangrove-associated species were observed such as *Caesalpinia bonduc* (L.) Roxb., and *Clerodendrum inerme* (L.) Gaertn.

Plant species	**Habit**	**Species Count (Nos/%)**	**Status**
Ludwigia prostrata Roxb.	Herb	2 %	Common
Ammannia baccifera Linn.	Herb	1 %	Common
Desmodium heterophyllum (Willd.) DC.	Herb	0.5 %	Common
Dentella repens (L.) J. R. Forst. & G. Forst.	Herb	0.5 %	Common
Lindernia crustacea (L.) F. Muell.	Herb	0.4 %	Common
Physalis minima Linn.	Herb	3 Nos.	Common
Pityrogramma calomelanos (L.) Link	Herb	0.5 %	Common
Axonopus compressus (Sw.) P.Beauv.	Herb	5 %	Common
Mikania cordata(Burm.f.) B.L.Rob.	Climber	2 %	Common
Cyperus esculentus Linn.	Herb	0.5 %	Common
Axonopus compressus (Sw.) P.Beauv.	Herb	5 %	Common
Spermacoce remota Lam.	Herb	0.5 %	Common
Croton bonplandianus Baill.	Herb	1 %	Common
Phyllanthus urinaria Linn.	Herb	0.3 %	Common

Plant species	**Habit**	**Species Count (Nos/%)**	**Status**
Oldenlandia corymbosa Linn.	Herb	0.5 %	Common
Murdannia spirata (L.) Bruckner	Herb	0.3 %	Common
Chrysopogon aciculatus (Retz.) Trin.	Herb	3 %	Common
Corchorus aestuans Linn.	Herb	0.5 %	Common
Hygrophila ringens (L.) R. Br. ex Steud.	Herb	1 %	Common
Marsilea quadrifolia Linn.	Herb	0.3 %	Least concern
Hydrilla verticillata(L.f.) Royle	Aquatic herb	0.5 %	Least concern
Parthenium hysterophorus Linn.	Herb	1 %	Common
Senna hirsuta (L.) H.S.Irwin & Barneby	Under- shrub	5 Nos.	Common
Sporobolus indicus (L.) R.Br.	Herb	1 %	Common
Polytrias indica(Houtt.) Veldkamp	Herb	0.5 %	Common
Paspalum distichum Linn.	Herb	1 %	Common
Kyllinga nemoralis (Forst.) Dan. ex Hut. & Dal.	Herb	0.3 %	Common
Kyllinga brevifolia Rottb.	Herb	0.5 %	Very common
Eleusine indica(L.) Gaertn.	Herb	1 %	Least concern
Cyperus esculentus Linn.	Herb	0.5 %	Common
Cyperus rotundus Linn.	Herb	0.3 %	Common
Cyperus difformis Linn.	Herb	0.5 %	Common
Chloris barbata Swartz	Herb	1 %	Common
Dactyloctenium aegyptium (L.) Willd.	Herb	1 %	Common
Eragrostis tenella(Linn.) P Beauv.	Herb	0.5 %	Common
Oplismenus compositus (L.) P.Beauv.	Herb	1 %	Common
Ipomoea obscura (L.) Ker Gawl.	Climber	2 %	Common
Cucumis melo Linn.	Climber	1 %	Common
Casuarina equisetifolia Linn.	Tree	1 No.	Common
Lindernia microcalyx Pennell & Stehle	Herb	0.5 %	Common
Chromolaena odorata (L.) R. M. King & H. Rob.	Herb	10 %	Common
Anisomeles indica (L.) Kuntze	Herb	40 %	Common
Cyanthilliumcinereum (L.) H. Rob.	Herb	2 %	Common
Sida rhombifolia Linn.	Herb	0.5 %	Common
Sida acuta Burm. f.	Herb	1 %	Common
Cardiospermum halicacabum Linn.	Climber	1 %	Common
Lantana camara Linn.	Shrub	2 %	Common
Alternanthera sessilis (L.) R. Br ex DC.	Herb	0.5 %	Common

Plant species	**Habit**	**Species Count (Nos/%)**	**Status**
Acmella paniculata (Wall. ex DC.) R. K. Jansen	Herb	1 %	Common
Desmodium triflorum(L.) DC.	Herb	3 %	Common
Euphorbia hirta Linn.	Herb	1 %	Common
Psidium guajava Linn.	Seedling	10 Nos.	Common
Peperomia pellucida (L.) Kunth	Herb	0.4 %	Common
Phyla nodiflora (L.) Greene	Herb	0.5 %	Common
Triumfetta rhomboidea Jacq.	Herb	10 Nos.	Common
Urena lobata Linn.	Herb	0.5 %	Common
Urena sinuate Linn.	Herb	1 %	Common
Smithia sensitiva Aiton	Herb	0.4 %	Common
Xanthium strumarium Linn.	Herb	4 %	Common
Ocimum tenuiflorum Linn.	Herb	23 Nos.	Common
Senna tora (L.) Roxb.	Herb	1 %	Common
Hyptis capitata Jacq.	Herb	0.5 %	Common
Eclipta prostrata Linn.	Herb	0.5 %	Common
Acalypha indica Linn.	Herb	1 %	Common
Achyranthes aspera Linn.	Herb	0.5 %	Common
Senna occidentalis (L.) Link	Herb	15 Nos.	Common
Leea indica (Burm. f.) Merr.	Shrub	2 Nos.	Common
Breynia vitis-idaea (Burm. f.) C. E. C. Fisch.	Shrub	3 Nos.	Common
Premna serratifolia Linn.	Small plant	2 Nos.	Common
Phyllanthus amarus Schum. & Thonn.	Herb	0.6 %	Common
Phaulopsis imbricata (Forssk.) Sweet	Herb	0.2 %	Common
Alysicarpus vaginalis(L.) DC.	Herb	0.3 %	Common
Mimosa pudica Linn.	Herb	0.5 %	Common
Azadirachta indica A. Juss.	Tree	22 Nos.	Common
Aegle marmelos (L.) Correa	Tree	2 Nos.	Common

Terrestrial Faunal Studies

Insecta

A total of **4 species of insects** (2 odoanata and 2 lepidoptera) have been recorded from the proposed project site.

Class Insecta Linnaeus, 1758
Order Odonata
Family Libellulidae Rambur, 1842
Genus *Crocothemis* Brauer, 1868

1. *Crocothemis servilia* (Drury, 1773)

Genus *Lathrecista* Kirby, 1889

2. *Lathrecista asiatica* (Fabricius, 1798)

Order Lepidoptera
Family PIERIDAE Swainson, 1820
Genus *Eurema* Hubner,1819

3. *Eurema hecabe* Linnaeus, 1758

Family Lycaenidae Leach, 1815

4. *Zizina otis* (Fabricius, 1787)

Amphibians

A total of **10 species of amphibians** belonging to 3 families were recorded from the proposed site and its adjoining area.

Class Amphibians
Order Anura
Family Dicroglossidae

1. *Fejervarya andamanensis* (Stoliczka, 1870)
2. *Fejervarya cancrivora* (Gravenhorst, 1829)
3. *Fejervarya limnochars* (Gravenhorst, 1829)

4. *Limnonecteshas cheanus* (Stoliczka, 1870)
5. *Ingerana charlesdarwini* (Das, 1998)
6. *Hoplobatrachus tigerinus* (Daudin, 1802)

Family Microhylidae

7. *Microhyla chakrapanii* (Pillai, 1977)
8. *Kaloula ghoshi* Cherchi, 1954

Family Bufonidae

9. *Duttaphrynus melanostictus* (Schneider, 1799)
10. *Blythophryne beryet* (Chandramouli et al. 2016)

Reptiles

A total of **17 species of reptiles** distributed among 9 families were recorded from the proposed site and its adjoining area.

Class Reptilia

Order Squamata

Family Gekkonidae

1. *Gekko verreauxi* (Tytler, 1864)
2. *Hemidactylufrenatus*Dumeril and Bibron, 1836
3. *Cyrtodactylus rubidus* (Blyth, 1860)
4. *Phelsuma andamanense* Blyth, 1860

Family Agamidae

5. *Coryphophylasubcristatu*(Blyth, 1860)
6. *Calotes versicolor* (Daudin, 1802)
7. *Coryphophylax brevicaudus* Harikrishnan et al. 2012

Family Scincidae

8. *Eutropis andamanensis* Smith, 1935
9. *Eutropis tytleri* (Theobald, 1868)
10. *Sphenomorphus maculates* Blyth, 1853

Family Varanidae

11. *Varanus salvator andamanensis* Deraniyagala, 1944

Family Natricinae
12. *Xenochrophis tytleri* (Blyth, 1863)
Family Colubridae
13. *Dendrelaphis andamanensis* (Anderson, 1871)
14. *Lycodon hypsirhinoides* (Theobald, 1868)
Family Homalopsidae
15. *Cerberus rynchops* (Schneider, 1799)
Family Elapidae
16. *Bungarus andamanensis* Biswas and Sanyal, 1978
Family Viperidae
17. *Trimeresurus andersoni* (Theobald, 1868)

Avifauna

A total of **62 species of birds** have been recorded from the proposed site and its adjoining area of which, 18were migratory species.

Avifauna	**Residential Status**	**Abundance**
Pelecaniformes		
Pelecanidae		
Egretta garzetta (Linnaeus, 1766)	R/LM	C
Egretta sacra (Gmelin, 1766)	R	C
Egretta alba (Linnaeus,1758)	R/LM	C
Ixobrychus sinensis (Gmelin,1789)	WM	C
Ixobrychus cinnamomeus (Gmelin,1789)	R	C
Butoridesstriatus spodiogaster Sharpe, 1894	R	FC
Gruiformes		
Rallidae		
Amaurornis phoenicurus insularis Sharpe, 1894	R	FC
Gallinula chloropus (Linnaeus,1758)	R	FC

Gallirallus striatus obscurior (Hume, 1874)	R	U
Falconiformes		
Accipitridae		
Spilornis elgini (Blyth, 1863)	R	U
Spilornis cheeladavisoni Hume, 1873	R	U
Nisaetus limnaeetus andamanensis Tytler, 1865	R	U
Haliaeetus leucogaster (Gmelin,1788)	R	FC
Charadriiformes		
Scolopacidae		
Pluvialis fulva (Gmelin,1789)	WM	C
Charadrius mongolus Pallas,1776	WM	A
Charadrius leschenaultii Lesson,1826	WM	C
Scolopacidae		
Actitis hypoleucos Linnaeus,1758	WM	FC
Tringa totanus (Linnaeus,1758)	WM	C
Numenius phaeopus (Linnaeus,1758)	WM	C
Xenus cinereus (Guldenstadt,1775)	WM	C
Arenaria interpres (Linnaeus,1758)	WM	C
Erolia ferruginea (Pontoppidan,1813)	WM	U
Laridae		
Thalasseus bengalensis Lesson, 1831	WM	C
Sternula albifrons Pallas, 1764	WM	C
Columbiformes		
Columbidae		
Streptopelia tranquebarica (Hermann,1804)	R	A
Chalcophaps indica maxima Hartert, 1931	R	C
Treron chloropterus (Blyth, 1840)	R	FC
Ducula aenea andamanica (Abdualali, 19 64)	R	FC
Psittaciformes		
Psittacidae		
Loriculus vernalis (Sparrman,1787)	R	FC

Psittacula eupatria magnirostris (Ball, 1872)	R	FC
Psittacula alexandri abbotti (Oberholser, 1919)	R	C
Cuculiformes		
Cuculidae		
Chrysococcyx xanthorhynchus (Horsfield,1821)	SM/R	U
Eudynamys scolopacea dolosus Ripley, 1946	WM	FC
Centropus andamanensis (Beavan,1867)	R	C
Cuculus micropterus Gould, 1837	R	FC
Strigiformes		
Strigidae		
Otus sunia modestus (Walden, 1874)	R	U
Otus balli (Hume, 1873)	R	FC
Ninox affinis Beavan, 1867	R	R
Ninox obscura Hume, 1872	R	C
Strigiformes		
Tytonidae		
Tyto deroepstorffi (Hume, 1875)	R	U
Caprimulgiformes		
Caprimulgidae		
Caprimulgus andamanicus Hume, 1873	R	R
Apodiformes		
Apodidae		
Collocalia esculenta affinis Beavan 1867	R	A
Hirundapus giganteus indicus (Hume, 1873)	R/LM	FC
Àerodramus fuciphaga inexpectatus Hume, 1873	R	C
Coraciformes		
Alcedinidae		
Pelargopsis capensis osmastoni (Baker, 1934)	R	C
Alcedo atthis (Linnaeus, 1758)	WM	U
Halcyon smyrnensis saturatior Hume, 1874	R	FC
Todiramphus chloris davisoni Sharpe, 1892	R	FC

Meropidae		
Merops leschenaultia andamanensis Marien, 1950	R	U
Piciformes		
Picidae		
Dendrocopos analis andamanensis (Blyth, 1859)	R	FC
Dryocopus hodgei (Blyth, 1860)	R	U
Passeriformes		
Campephagidae		
Pericrocotus cinnamomeus (Linnaeus, 1776)	R	C
Pericrocotus speciosus andamanensis Beavan, 1867	R	FC
Hirundinidae		
Hirundo rustica Linnaeus,1758	WM	C
Hirundo tahitica Gmelin,1789	R	C
Cecropis daurica Linnaeus, 1771	WM	C
Pycnonotidae		
Microtarsus fuscoflavescens (Hume, 1875)	R	FC
Pycnonotus jocosus whistleri Deignan, 1948	R	A
Campephagidae		
Coracina macei andamanensis Whistler, 1940	R	C
Irenidae		
Irena puella andamanica Abdulali, 1964	R	FC
Lanidae		
Lanius cristatus (Linnaeus, 1758)	WM	C
Turdinae		
Copsychus albiventris (Blyth, 1858)	R	FC
Monarchinae		
Hypothymisazureatytleri (Beavan, 1867)	R	C
Dicaeidae		
*Dicaeum virescens*Hume, 1873	R	FC
Nectariniidae		
Cinnyris jugularis andamanicus (Hume, 1873)	R	FC

Estrildidae		
Lonchurastriata fumigata (Waldeen, 1873)	R	C
Passeridae		
Passer domesticus (Linnaeus,1758)	R	C
Sturnidae		
Sturnia erythropygia (Blyth,1846)	R	A
Gracularegiosa andamanensis (Beavan, 1867)	R	FC
Acridotheres tristis (Linnaeus,1766)	R	C
Oriolidae		
Oriolus chinensis andamansis (Tytler, 1867)	R	C
Dicruridae		
Dicrurus andamanensis Beavan, 1867	R	C
Dicrurus paradiseus otiosus (Richmond, 1903)	R	FC
Artamidae		
Artamus leucorynchus (Linnaeus,1771)	R	C
Corvidae		
Dendrocitta bayleyi Blyth, 1863	R	C
Corvus levaillantii Lesson, 1831	R	FC

Abbreviations for all are: A-Abundance; C-Common; FC-fairy common; U-uncommon.Residential Status: R - Resident; R/LM - Resident with local movements; R/WM - Resident with winter Migrant; WM - Winter Migrant; SM - Summer migrant.

Spiders

This checklist is a partial documentation of the spider fauna at the proposed site for the construction of MPOC, Hut Bay. A **total of 5** species of spiders distributed among 2 families were recorded.

Class Arachnida Lamarck, 1801

Order Araneae Clerck,1757

Family ARAENIDAE Clerck,1757

Genus *Cyclosa* Menge, 1866

1. *Cyclosas pirifera* Simon, 1889

Family OXYOPODIDAE Thorell, 1870

Genus *Oxyopes* Latreille, 1804
2. *Oxyopes sitae* Tikader,1970
3. *Oxyopes gemellus* Thorell, 1891
4. *Oxyopes javanus nicobaricus* Strand, 1907
5. *Oxyopes longinquus* Thorell, 1891

Marine Faunal Studies

Sea anemones

A **single species of sea anemone**,*Megalactis sp.* was recorded from the proposed project area.

Class ANTHOZOA Ehrenberg, 1884
Order ACTINIARIA Hertwig, 1882
Suborder ENTHEMONAE
Family ACTINODENDRIDAE Haddon, 1898
Genus *Megalactis* Hemprich & Ehrenberg in Ehrenberg, 1834
Megalactis sp.

Soft corals

A total of**14 species of soft corals** distributed among 2 families and 6 genera were recorded from the proposed project site.

Class ANTHOZOA Ehrenberg, 1834
Order ALCYONACEA Lamouroux, 1812
Family ALCYONIIDAE Lamouroux, 1812
Genus *Sinularia* May, 1898
Sinularia sp.
Sinularia densa (Whitelegge, 1897)
Sinularia flexibilis Quoy & Gaimard, 1833
Genus *Sarcophyton* Lesson, 1834

Sarcophyton sp.
Sarcophyton trocheliophorum von Marenzellar, 1886
Sarcophyton crassocaule Moser, 1919
Sarcophyton ehrenbergi Von Marenzellar, 1886
Sarcophyton latum (Dana, 1846)
Genus *Lobophytum* Marenzeller, 1886
Lobophytum sp.
Lobophytum pauciflorum (Ehrenberg, 1834)
Lobophytum sarcophytoides Moser, 1919
Genus *Cladiella* Gray, 1869
Cladiella pachyclados (Kluninger, 1877)
Family NEPHTHEIDAE
Genus *Nephthea* Audouin, 1826
Nepthea sp.
Genus *Dendronephthya* Kuekenthal, 1905
Dendronephthya sp.

Hydrozoa

A total of 10 species of hydrozoans (6 species belonging to 6 genera and 5 families were identified to the species level, 2 hydrozoans were identified to the genera level and 2 hydrozoans were identified to the family level) were recorded from the proposed project area. Species such as *Pennaria disticha* Golfuss, 1820 and *Thyroscyphus fruticosus* (Esper, 1793) were observed to be the most abundant and were observed to be growing up to lengths of 30cm. Hydrozoans are opportunistic feeders and their growth is usually indeterminate limited only by the energy input indicative of nutrient rich waters.*Eudendrium* sp. was encountered on just one coralline rock during the survey.

Phylum CNIDARIA
Class HYDROZOA Owen, 1843
Subclass HYDROIDOLINA Collins, 2000
Order ANTHOATHECATA Cornelius, 1992
Family PENNARIIDAE Goldfuss, 1820
Genus *Pennaria* Goldfuss, 1820

1. *Pennaria disticha* Goldfuss, 1820

Family Eudendriidae L. Agassiz, 1862

Genus *Eudendrium* Ehrenberg, 1834

2. *Eudendrium* sp.

Family CLAVIIDAE

3. Claviid Hydrozoa

Order LEPTOTHECATA Cornelius, 1992
Family HALOPTERIDIDAE Millard, 1962
Genus *Halopteris* Allman, 1877

4. *Halopteris alternata* (Nutting, 1900)

Genus *Antennella* Allman, 1877

5. *Antennella secundaria* (Gmelin, 1791)

Family AGLAOPHENIIDAE Marktanner-

6. Aglaopheniid Hydrozoa

Genus *Macrorhynchia* Kirchenpauer, 1872

7. *Macrorhynchia philippina* Kirchenpauer, 1872

Genus *Lytocarpia*

8. *Lytocarpia* sp.

Family SERTULARIIDAE Lamouroux, 1812
Genus *Sertularella*

9. *Sertularella diaphana* (Allman, 1885)

Family Thyroscyphiidae

Genus *Thyroscyphus* Allman, 1877

10. *Thyroscyphus fruticosus* (Esper, 1793)

Echinodermata

A total of **8 species of echinoderms** belonging to 8 genera, 4 families, 4 orders and 4 classes were identified. Among them a maximum number of 4 species belongs to class Crinoidea had the maximum of 4 species and Echinoidea was the least represented (1 species).

Phylum Echinodermata
Class Crinoidea
Order Comatulida
Family Comatulidae Fleming, 1828
Genus *Anneissia* Summers, Messing & Rouse, 2014
1. *Anneissia bennetti* (Müller, 1841)

Genus *Capillaster* AH Clark, 1909
2. *Capillaster multiradiatus* (Linnaeus, 1758)

Genus *Comanthus* AH Clark, 1908
3. *Comanthus* sp.

Genus *Comaster* L. Agassiz, 1836
4. *Comaster schlegelii* (Carpenter, 1881)

Class Asteroidea
Order Valvatida
Family Ophidiasteridae Verrill, 1870
Genus *Linckia* nardo, 1834
5. *Linckia laevigata* (Linnaeus, 1758)

Class Ophiuroidea
Order Ophiacanthida
Family Ophiocomidae Ljungman, 1867
Genus *Ophiocoma* L. Agassiz, 1836
6. *Ophiocoma erinaceus* Müller & Troschel, 1842

Genus *Ophiomastix*Müller & Troschel, 1842
7. *Ophiomastix annulosa* (Lamarck, 1816)

Class Echinoidea
Order Camarodonta
Family EchinometridaeGray, 1855
Genus*Echinostrephus*A. Agassiz, 1863
8. Echinostrephus molaris (Blainville, 1825)

Ichthyofauna

A total of **128 fishes** distributed among 30 families and 69 genera have been recorded from the proposed project site and adjoining area.

	Class CHONDRICHTHYES
	Order RAJIFORMES Berg, 1940
	Family Dasyatidae Jordon 1988
	Genus *Neotrygon* Castelnau, 1873
1.	*Neotrygon kuhlii* (Muller and Henle, 1841)
	Class OSTEICHTHYES
	Order BERYCIFORMES Regan, 1909
	Family Holocentridae J. Richardson, 1846
	Genus *Myripristis* Cuvier, 1829
2.	*Myripristis berndti* Jordan and Evermann, 1903
	Genus *Sargocentron* Fowler, 1904
3.	*Sargocentron rubrum* (Forsskal, 1775)
	Order AULOPIFORMES Rosen, 1973
	Family Synodontidae Gill, 1862
	Genus *Synodus* Scopoli, 1777
4.	*Synodus variegatus* (Lacepede,1803)
5.	*Synodus dermatogenys* Fowler, 1912
	Order SYNGANATHIFORMES
	Family Syngnathidae Rafinesque, 1810
	Genus *Corythoichthys* Kaup, 1853
6.	*Corythoichthys ocellatus* Herald, 1953
7.	*Corythoichthys schultzi* Harald, 1953
	Order SCORPAENIFORMES Greenwood et al., 1966
	Family Scorpaenidae Risso, 1826
	Genus *Pterois* Oken, 1817
8.	*Pterois radiata* Cuvier,1829
	Order PERCIFORMES Bleeker, 1859

Family Serranidae Innamura and Yabe, 2002

Genus *Anyperodon* Guenther, 1859

9. *Anyperodon leucogrammicus* (Valenciennes,1828)

Genus *Cephalopholis* Bloch and Schneider, 1801

10. *Cephalopholis argus* Bloch and Schneider,1801)
11. *Cephalopholis miniata* (Forsskal,1775)

Genus *Epinephelus* Bloch, 1793

12. *Epinephelus caeruleopunctatus* (Bloch,1790)
13. *Epinephelus fasciatus* (Forsskal,1775)
14. *Epinephelus merra* Bloch,1793

Genus *Pseudanthias* Bleeker, 1871

15. *Pseudanthias squamipinnis* (Peters, 1855)

Genus *Variola* Swainson, 1839

16. *Variola louti* (Forsskal,1775)
17. *Variola albimarginata* Baissac, 1953

Family Apogonidae Günther, 1859

Genus *Apogon* Lacepède, 1801

18. *Apogon cyanosoma* Bleeker,1853
19. *Apogon moluccensis* Valenciennes, 1832
20. *Apogon properupta* (Whitley, 1964)

Family Haemulidae Gill, 1885

Genus *Plectorhinchus* Lacépède, 1801

21. *Plectorhinchus albovittatus* (Ruppell, 1838)
22. *Plectorhinchus orientalis* (Bloch,1793)

Family Lutjanidae Gill, 1861

Genus *Lutjanus* Bloch, 1790

23. *Lutjanus argentimaculatus* (Forsskal,1775)
24. *Lutjanus gibbus* (Forsskal,1775)
25. *Lutjanus kasmira* (Forsskal,1775)
26. *Lutjanus monostigma* (Cuvier,1828)
27. *Lutjanus russelli* (Bleeker,1849)

Family Caesionidae Bonaparte, 1831

Genus *Caesio* Lacepède, 1801

28. *Caesio teres* Seale,1906
29. *Caesio xanthonota* (Bleeker,1853)

Genus *Pterocaesio* Bleeker, 1876

30. *Pterocaesio chrysozona* (Cuvier,1830)
31. *Pterocaesio tile* (Cuvier,1830)

Family Lethrinidae Bonaparte, 1831

Genus *Gnathodentex* Bleeker, 1873

32. *Gnathodentex aurolinaetus* Lacepede,1802)

Genus *Lethrinus* Cuvier, 1829

33. *Lethrinus harak* (Forsskal,1775)

Genus *Monotaxis* Anonymous [Bennett], 1830

34. *Monotaxis grandoculis* (Forsskal,1775)

Family Nemipteridae

Genus *Scolopsis* Cuvier, 1814

35. *Scolopsis bilineata* (Bloch,1793)
36. *Scolopsis frenatus* (Cuvier, 1830)
37. *Scolopsis ciliata* (Cuvier, 1830)

Family Kyphosidae Gill, 1893

Genus *Kyphosus* Lacépède, 1801

38. *Kyphosus cinerascens* (Forsskal,1775)

Family Ephippidae Bleeker, 1859

Genus *Platax* Cuvier, 1816

39. *Platax orbicularius* (Forsskal,1775)
40. *Platax pinnatus* (Linnaeus,1758)

Family Mullidae Rafinesque, 1815

Genus *Parupeneus* Bleeker 1863

41. *Parupeneus bifasciatus* (Lacepede,1801)
42. *Parupeneus indicus* (Shaw,1803)

Genus *Upeneus* Cuvier, 1829

43. *Upeneus tragula* Richardson,1846

Family Pomacanthidae Jordan & Evermann, 1898

Genus *Centropyge* Kaup, 1860

44. *Centropyge eibli* Klausewitz,1963
45. *Centropyge multispinis* (Playfair, 1867)

Genus *Pomacanthus* Lacépède, 1802

46. *Pomacanthus annularis* (Bloch,1787)
47. *Pomacanthus imperator* (Bloch,1787)

Genus *Pygoplites* Fraser-Brunner, 1933

48. *Pygoplites diacanthus* (Boddaert,1772)

Family Chaetodontidae Rafinesque, 1810

Genus *Chaetodon* Linnaeus, 1758

49. *Chaetodon auriga* Forsskal,1775
50. *Chaetodon collare* Bloch,1787
51. *Chaetodon decussatus* Cuvier,1829
52. *Chaetodon falcula* Bloch,1793
53. *Chaetodon lunula* (Lacepede,1802)
54. *Chaetodon meyeri* Bloch andSchneider,1801
55. *Chaetodon rafflesii* Bennett,1830
56. *Chaetodon trifasciatus* Park,1797
57. *Chaetodon vagabundus* Linnaeus,1758

Genus *Heniochus* Cuvier, 1816

58. *Heniochus acuminatus* (Linnaeus,1758)
59. *Heniochus diphreutes* Jordan,1903
60. *Heniochus singularius* Smith and Radcliffe,1911

Family Carangidae Rafinesque, 1815

Genus *Caranx* Lacépède, 1801

61. *Caranx sexfasciatus* Quoy and Gaimard,1825

Genus *Cirrhitichthys* Bleeker, 1857

62. *Cirrhitichthys oxycephalus* (Bleeker, 1855)
63. *Cirrhitichthys falco* Randall, 1963

Family Pempheridae

Genus *Pempheris* Cuvier, 1829

64. *Pempheris vanicolensis* Cuvier,1831

Family Pomacentridae Bonaparte, 1831

Genus *Abudefduf* Forsskål, 1775

65. *Abudefduf saxatilis* (Linnaeus,1758)
66. *Abudefduf vaigiensis* (Quoy and Gaimard,1825)

Genus *Amblyglyphidodon* Bleeker, 1877

67. *Amblyglyphidodon aureus* (Cuvier,1830)
68. *Amblyglyphidodon indicus* Allen and Randall, 2002

Genus *Amphiprion* Bloch and Schneider, 1801

69. *Amphiprion akallopisos* Bleeker, 1853.
70. *Amphiprion ephippium* (Bloch,1790)
71. *Amphiprion percula* (Lacpede,1802*)*

Genus *Chromis* Cuvier, 1814

72. *Chromis flavicauda* (Gunther, 1880)
73. *Chromis viridis* (Cuvier,1830)

Genus *Chrysiptera* Swainson, 1839

74. *Chrysiptera browniriggi* (Bennett, 1828)
75. *Chrysiptera glauca* (Cuvier,1830)
76. *Chrysiptera talboti* (Allen, 1975)
77. *Chrysiptera unimaculata* (Cuvier,1830)

Genus *Dascyllus* Cuvier, 1829

78. *Dascyllus carneus* Fischer,1885
79. *Dascyllus trimaculatus* (Ruppell,1829)

Genus *Dischistodus* Gill, 1863

80. *Dischistodus perspicillatus* (Cuvier,1830)

Genus *Pomacentrus* Lacépède, 1802

81. *Pomacentrus chrysurus* Cuvier, 1830
82. *Pomacentrus moluccensis* Bleeker,1853

Family Labridae Cuvier, 1816

Genus *Bodianus* Bloch, 1790

83. *Bodianus mesothorax* (Bloch and Schneider,1801)

Genus *Coris* Lacépède, 1801

84. *Coris aurilineata* Randall and Kuiter, 1982
85. *Coris batuensis* (Bleeker, 1857)

Genus *Epibulus* Cuvier, 1815

86. *Epibulus insidiator* (Pallas,1770)

Genus *Gomphosus* Lacépède, 1801

87. *Gomphosus caeruleus* Lacepede,1801

Genus *Halichoeres* Rüppell, 1835

88. *Halichoeres melanurus* (Bleeker,1851)
89. *Halichoeres vroliki* (Bleeker, 1855)
90. *Halichoeres hortulans* (Lacépède, 1801)

Genus *Hemigymnus* Lacépède, 1801

91. *Hemigymnus fasciatus* (Bloch,1792)
92. *Hemigymnus melapterus* (Bloch,1791)

Genus *Labroides* Bleeker, 1851

93. *Labroides bicolour* Fowler and Bean,1928
94. *Labroides dimidiatus* (Valenciennes,1839)

Genus *Thalassoma* Swainson, 1839

95. *Thalassoma hardwicke* (Bennett,1830)
96. *Thalassoma lunare* (Linnaeus,1758)

Family Scaridae Rafinesque, 1810

Genus *Bolbomatopon* Smith, 1956

97. *Bolbomatopon muricatum* Valenciennes,1840

Genus *Cetoscarus* Smith, 1956

98. *Cetoscarus bicolour* (Ruppell,1829)

Genus *Chlorurus* Swainson, 1839

99. *Chlorurus sordidus* (Forsskal,1775)

Genus *Scarus* Forsskål, 1775

100. *Scarus ghobban* Forsskal,1775

101. *Scarus globiceps* Valenciennes,1840
102. *Scarus niger* Forsskal,1775

Family Pinguipedidae Günther, 1860

Genus *Parapercis* Bleeker, 1863

103. *Parapercis clathrata* (Ogilby,1911)
104. *Parapercis millepunctata* (Gunther, 1860)
105. *Parapercis hexophtalma* (Cuvier, 1829)

Family Bleniidae Rafinesque, 1810

Genus *Aspidontus* Cuvier, 1834

106. *Aspidontus taeniatustaeniatus* (Quoy and Gaimard,1834)

Genus *Ecsenius* McCulloch, 1923

107. *Ecsenius lineatus* Klausewitz,1962

Genus *Meiacanthus* Norman, 1944

108. *Meiacanthus smithi* Klausewitz,1962

Genus *Plagiotremus* Gill, 1865

109. *Plagiotremus phenax* Smith-Vaniz, 1976
110. *Plagiotremus rhinorhynchos* (Bleeker,1852)

Family Tripterygiidae Whitley, 1931

Genus *Helcogramma* McCulloch & Waite, 1918

111. *Helcogramma striatum* Hansen, 1986

Family Gobiidae Cuvier, 1816

Genus *Amblygobius* Bleeker, 1874

112. *Amblygobius nocturnes* (Herre, 1945)
113. *Amblygobius semicinctus* (Bennett, 1833)

Family Acanthuridae Bonaparte, 1832

Genus *Acanthurus* Forsskål, 1775

114. *Acanthurus leucosternon* Bennett,1833
115. *Acanthurus nigricauda* Dunker and Mohr,1929
116. *Acanthurus linneatus* (Linneaus, 1758)

Genus *Ctenochaetus* Gill, 1884

117. *Ctenochaetus striatus* (Quoy and Gaimard,1825)

Genus *Naso* Lacépède, 1801

118. *Naso brevirostris* (Valenciennes,1835)

Genus *Zebrasoma* Swainson, 1839

119. *Zebrasoma scopas* (Cuvier,1835)

Family Siganidae Richardson, 1837

Genus *Siganus* Forsskål, 1775

120. *Siganus guttatus* (Bloch,1787)
121. *Siganus javus* (Linnaeus,1766)
122. *Siganus virgatus* (Valenciennes,1835)
123. *Siganus luridus* (Rupell, 1829)

Order TETRADONTIFORMES Berg, 1940

Family Balistidae Risso, 1810

Genus *Balistapus* Tilesius, 1820

124. *Balistapus undulates* (Park,1797)

Genus *Melichthys* Swainson, 1839

125. *Melichthys indicus* Randall and Klausewitz,1973

Genus *Odonus* Gistel, 1848

126. *Odonus niger* (Ruppell,1836)

Genus *Sufflamen* Jordan, 1916

127. *Sufflamen chrysopterus* (Bloch and Schneider,1801)

Family Tertraodontidae Bonaparte, 1832

Genus *Arothron* Müller, 1841

128. *Arothron nigropunctatus* (Bloch and Schneider,1801)

10. SIGNIFICANT OBSERVATIONS

The following significant observations were made during the REIA surveys at the proposed construction of MPOC, Hut Bay:

1. *There are no national parks/sanctuaries/biosphere reserves or reserved forest in the proposed area.*

2. *There are no coral reefs at the proposed project adjoining areas*

3. *There is no mangrove at proposed area.*

4. *There is no turtle-nesting site at vicinity of the project site.*

5. *No migratory birds could be noticed in the project area during the surveys.*

6. *No endangered species could be found in the proposed project site during the surveys.*

7. *There were no nesting/breeding grounds for endemic of migratory birds in and around the proposed project area.*

8. *No critical habitats could be found in the proposed area.*

11. PREDICTION OF ENVIRONMENTAL IMPACTS

The likelihood environmental impacts of the proposed project area at Little Andaman have been predicted for the operational phases based on the assessment of present survey/study and are given below.

1. *Gaseous emissions from the vehicles and machineries used for the construction will generate a considerable amount of air and noise pollution.*

2. *Apart from gaseous emissions, it is expected that there is a high possibility for dust generation while transporting the construction material by trucks which may have an impact on the quality of air. However, this can be minimized by covering the material while transportation.*

3. *During the construction phase, leveling of the project sitemay alter the flow pattern of rain water/streams which may leads to land erosion. However, this will be of short-term impact and reversible, and the flow pattern could be regulated by constructing suitable barriers.*

4. *Considerable diversity of organisms such as butterflies, dragonflies, reptiles and birds were reported in the vicinity of proposed project site. However, the proposed project may not have direct impact on the habitats of these faunal communities as they are adapted to habitat dislocation.*

5. *The proposed project would not have any impact on the coral reefs as well marine faunal communities.*

12. ENVISAGED BENEFIT OF THE PROJECT

- *Enhanced coastal and maritime security in the territorial waters of Hut Bay.*

- *Enhanced survelliance and patrolling in Little Andaman*

13. ENVIRONMENTAL MANAGEMENT PLAN

The following management plans are suggested to mitigate the adverse environmental impacts predicted and identified as a result of the proposed project.

Operational Phase

1. *Vehicles used for the transportation of the construction material should be adhered with the emission norms prescribed by Central Pollution Control Board. Tarpaulin sheets shall be used while transportation in order to minimize the pollution.*

2. *Temporary shelters/camps for labourers should be kept away from the forest area in order to avoid anthropogenic source of pollution in to terrestrial environments.*

3. *Littering of non-degradable polythene and plastic materials shall be completely avoided in the environment.*

4. *Solid wastes generated through the operational activities should be cleared on daily basis in order to maintain the pristine environment.*

5. *Rainwater flow pattern should be regulated by construction of suitable barriers to prevent land erosion.*

6. *Proper sanitary facilities and dustbins shall be provided for the labourers during the construction of MPOC.*

7. *Constructionworks should be avoided during night hours as the light and illumination in the forest attract several insects including moths and beetles which leads to mortality of these organisms.*

14. RECOMMENDATIONS

On the thorough scrutiny of the project facilities, baseline data collected on biological parameters in the proposed project and its adjoining areas, and also, positively considering the envisaged benefits of the proposed project for the establishment of MPOC at Hut Bayis **RECOMMENDED**for environmental/forest clearance in view of the following reasons.

1. *The proposed project site is the only suitable place for the construction MPOC, Hut Bay.*
2. *No Protected Area is located in the proposed project area.*
3. *No coral reefs exist in the vicinity of proposed project site.*
4. *The significant nesting/breeding grounds and roosting ground for the endemic or migratory birds are not reportedfromthe proposed project site.*
5. *The proposed site does not fall under the migratory route of the birds.*
6. *No endangered and endemic faunal communities such as Andaman Wild Pig and Swiftlet were distributed in the vicinity of proposed project area.*
7. *No mangrove patches found near the proposed project site.*
8. *The proposed project site does not fall under any tribal reserve of Andaman.*
9. *The assessment of the present study revealed out the environmental impact through the proposed project will be negligible.*
10. *The suggested environmental management plans may be strictly followed.*
11. *Since the land for proposed constructionMPOCbelongs to Andaman and Nicobar Administration, the question of land acquisition does not arise.*
12. *It is suggested that second year of operational phase of the project, data on the status of faunal and floral communities may be collected which will be helpful to assess the impact of the project on ecology of the area.*

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