## Project Scope & Biodiversity Features

<table>
<thead>
<tr>
<th>Country</th>
<th>Philippines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Province</td>
<td>Davao del Norte</td>
</tr>
<tr>
<td>Municipality</td>
<td>Island Garden City of Samal</td>
</tr>
<tr>
<td>Barangays</td>
<td>Sitio Dapia, Barangay Sta. Cruz, Talicud Island</td>
</tr>
</tbody>
</table>

### Site Description

Samal Island: Is a forth class City located in the heart of Davao Gulf, bounded in the north is Davao City, east are municipalities under the Compostela Valley Province and some municipalities in the Province of Davao Oriental and in the south it is bounded by municipalities under the Province of Davao del Sur.

The Island has extensive mountain ranges, a number of isolated hills and uneven distribution of lowlands. Particularly, the eastern part of the Island is mountainous. Swampy patches and stretches of sandy beaches are found in the areas along the west coast. The total land area is 30,130 hectares inclusive of all component islet tidal flat and roads, it has a total of forty six (46) Barangay and thirty one (31) of those is located in the coastal area. The population of the Island is 82,707 with a total of 16,415 household based on National Statistic Office survey on 2006. Among the seventy five (75) ethnic group in the locality, the Bisayan have the most number which accounted to 38,478 or 46.6% of the total population.

The Island has various religious affiliations and Roman Catholics are the most dominant with a total member of 58,031 or 70% of the total population (LGU Samal Revised Comprehensive Land Use plan, 2008).

### Climate

The City belongs to Climatic IV that is characterized by rainfall more or less distributed evenly throughout the year. Average annual rainfall intensify is estimated at 1,928 mm. There is no dry season in a year but a maximum rainfall is pronounced from November to January. The mean annual temperature is estimated at 26.9 degrees Celsius, equal to that registered in Davao city and it is highest in April and coolest in January.

The southwestern portion of the Island is subjected to the effects of the southwest monsoon from January to April. Rainfall at this time averages to 8.7 mm per month.

From the later part of May (or early June) to the month of September, the northeast monsoon takes place and the most unstable air coming from the southeast brings with it considerable rain to the western part of Samal Island. Being strategically hidden at the apex of Davao Gulf, Samal Island is sheltered from typhoons and tropical depression (LGU Samal Revised Comprehensive Land Use plan, 2008).

### Biodiversity Area

- Municipal land area: 30,130 hectares
- Municipal water: Approx. 100,030 hectares
- Coral Reef Area: 717.521 hectares
- Seagrass Area: 506.023 hectares
- Fisheries Area: 85,736.0447 hectares
- Mangrove Area: 64.08 hectares

(LGU Samal Revised Comprehensive Land Use plan, 2008).
Biodiversity Background

Coral reef: Samal has a total of 53 identified coral genera out of 73 coral genera found in the Philippines (IGaCos Comprehensive land Use plan 2008-2017). Based on the 2008 biophysical survey conducted under ECOGOV2 project live coral cover inside the MPA roughly the same in outside the MPA (MPA management plan for Dapia and Dugong Sanctuary, 2009). Fig. 1, Biophysical data in 2008 Dapia MPA

Seagrass: The Philippines has 13 existing seagrass species (Calumpong and Menes, 1997). In the Island Garden City of Samal, a total of nine (9) species were identified. Based on the Rapid Aquatic Resource Appraisal of Samal Island by Hayuma foundation, Cymodocea rotundata dominated in terms of percent cover and areal biomass in Babak and Samal District, while Thalassia hemprichii dominated in Kaputian District and Talicud Island. Among the nine (9) species of seagrass found in Samal Island seven (7) of it found in Talicud Island where Dapia Marine Sanctuary located as identified during the Rapid Aquatic Resource Appraisal of the Island Garden City of Samal by Hayuma Foundation, Inc.

Seagrasses found in Talicud Island
1. Round-tipped seagrass (Cymodocea rotundata)
2. Fiber-strand seagrass (Halodule univervis)
3. Fiber-strand seagrass (Halodule pinifolia)
4. Syringe grass (Symgodium isoetifolium)
5. Spoon grass (Hapophila ovalis)
6. Curled-based spoon grass (Halophila spinolusa)
7. Dugong grass (Thalassia hemprichii)

Mangrove area: In coastal sub-system, mangrove forest accounts to 64.08 hectares located at the different coastal barangays. The widest span seaward is about 50 meters and can be found along the shore of Barangay San Isidro, Libuak and Balet of Babak District. Only some portion of the coastline of Samal Island are covered with Mangrove Forests. They are found in the northern tip and the west side facing Davao City. A total of atleast five (5) species were found. The most common species are Rhisophora spp. (Bakhaw) and Sonneratia spp. (Kulasi), Xylocarpus granatum (Tabigi) and Aegiceras spp. Saging saging (LGU Samal Revised Comprehensive Land Use plan, 2008). Focused group discussion show that the average fish catch per day of a fishermen in Barangay Sta. Cruz has declined for the past 37 years. From average of 20 kilogram in 1970’s, it plummeted to 15 kilograms in 1990 and further went down to 5 kilograms in 2007 (MPA management plan for Dapia and Dugong Sanctuary, 2009).
<table>
<thead>
<tr>
<th>Name</th>
<th>Size</th>
<th>Habitat Type</th>
<th>Year Establish</th>
<th>Ordinance number</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPA #2 (Brgy. Camudmud, San Isidro, Libuak, Balet, Tagpopongan)</td>
<td>2,596 hectares</td>
<td>Coral reefs, Tidal flats, Seagrass beds, Mangrove Area</td>
<td>2001</td>
<td>City Ord. no. 2009-150 series of 2009</td>
</tr>
<tr>
<td>MPA #3 (Brgy. Aundanao)</td>
<td>266 hectares</td>
<td>Coral reefs</td>
<td>2001</td>
<td>City Ord. no. 2009-150 series of 2009</td>
</tr>
<tr>
<td>MPA #4 (Brgy. Aumbay, Tagbaobo)</td>
<td>387 hectares</td>
<td>Coral reefs</td>
<td>2001</td>
<td>City Ord. no. 2009-150 series of 2009</td>
</tr>
<tr>
<td>MPA 5 (Brgy. Kanaan)</td>
<td>57 hectares</td>
<td>Coral reefs</td>
<td>2001</td>
<td>City Ord. no. 2009-150 series of 2009</td>
</tr>
<tr>
<td>MPA 6 (Brgy. Pangubatan)</td>
<td>468 hectares</td>
<td>Coral reefs</td>
<td>2001</td>
<td>City Ord. no. 2009-150 series of 2009</td>
</tr>
<tr>
<td>MPA 7 (Brgy. San Remegio)</td>
<td>155 hectares</td>
<td>Coral reefs</td>
<td>2001</td>
<td>City Ord. no. 2009-150 series of 2009</td>
</tr>
<tr>
<td>MPA 8 (Brgy. Poblacion, San Isidro)</td>
<td>62 hectares</td>
<td>Coral reefs, Tidal flat, Seagrass beds</td>
<td>2001</td>
<td>City Ord. no. 2009-150 series of 2009</td>
</tr>
<tr>
<td>MPA 9 (Brgy. Poblacion, Adecor, San Jose)</td>
<td>1,144 hectares</td>
<td>Coral reefs, Tidal flat, Mangrove Area, Seagrass beds</td>
<td>2001</td>
<td>City Ord. no. 2009-150 series of 2009</td>
</tr>
<tr>
<td>MPA 10 (Brgy. Peñaplata)</td>
<td>243 hectares</td>
<td>Coral reefs, Mangrove Area, Tidal Flats</td>
<td>2001</td>
<td>City Ord. no. 2009-150 series of 2009</td>
</tr>
<tr>
<td>MPA 11 (Brgy. San Miguel, Catagman)</td>
<td>76 hectares</td>
<td>Coral reef, Seagrass bed, Mangrove Area</td>
<td>2001</td>
<td>City Ord. no. 2009-150 series of 2009</td>
</tr>
<tr>
<td>SANIPAAN MPA</td>
<td>158 hectares</td>
<td>Coral reefs, Mangroves Area, Tidal flats, Seagrass beds</td>
<td>2010</td>
<td>City Ord. no 2010-160 Series of 2010</td>
</tr>
<tr>
<td>CAMUDDMUD MPA</td>
<td>17.40 hectares</td>
<td>Coral reefs, Tidal Flats, Seagrass beds, Mangrove</td>
<td>2010</td>
<td>City Ord. no 2010-160 Series of 2010</td>
</tr>
<tr>
<td>STA. CRUZ MPA</td>
<td><strong>Dapia Marine Sanctuary</strong></td>
<td><strong>Coral Reefs, Seagrass, Tidal flat</strong></td>
<td>2010</td>
<td>City Ord. no. 2010-160 Series of 2010</td>
</tr>
<tr>
<td></td>
<td>22.45 hectares</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dugong Sanctuary</td>
<td>Coral Reefs, Seagrass beds,</td>
<td>2010</td>
<td>City Ord. no. 2010-160 Series of 2010</td>
</tr>
<tr>
<td></td>
<td>20.93 hectares</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPA</td>
<td>Area</td>
<td>Ecological Zones</td>
<td>Year</td>
<td>Ordinance Number</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------</td>
<td>------------------</td>
<td>------</td>
<td>------------------</td>
</tr>
<tr>
<td>COGON MPA</td>
<td>34.88 hectares</td>
<td>Coral reefs</td>
<td>2010</td>
<td>City Ord. No. 2010-160 Series of 2010</td>
</tr>
<tr>
<td>DADATAN MPA</td>
<td>Mansud, 5 hectares</td>
<td>Coral reefs</td>
<td>2010</td>
<td>MPA Ord. No. 2010-160 Series of 2010</td>
</tr>
<tr>
<td></td>
<td>Dadatan Coral Garden, 26 hectares</td>
<td>Coral reefs, Seagrass beds, Tidal flats</td>
<td>2010</td>
<td>MPA Ord. No. 2010-160 Series of 2010</td>
</tr>
<tr>
<td>LINOSUTAN MPA</td>
<td>35.5 hectares</td>
<td>Coral reefs, Seagrass beds, Tidal flats</td>
<td>2010</td>
<td>MPA Ord. No. 2010-160 Series of 2010</td>
</tr>
</tbody>
</table>

(LGU Samal Revised Comprehensive Land Use Plan, 2008).

Technical Description of MPAs

Dapia MPA has a total of 22.45 hectares of no take zone with fifty (50) meters buffer zone from the no take zone with the following coordinates:

<table>
<thead>
<tr>
<th>Point</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>06.10°55.22’N</td>
<td>125.41°20.73’E</td>
</tr>
<tr>
<td>2</td>
<td>06.10°8.71’N</td>
<td>125.41°21.72’E</td>
</tr>
<tr>
<td>3</td>
<td>06.10°7.86’N</td>
<td>125.41°38.53’E</td>
</tr>
<tr>
<td>4</td>
<td>06.10°54.81’N</td>
<td>125.41°39.76’E</td>
</tr>
</tbody>
</table>

(MPA management plan for Dapia and Dugong Sanctuary, 2009)

Site Map Reference

http://maps.google.com.ph/maps?hl=fil&bav=on.2,or_r_gc.r_pw.r_of.&biw=1366&bih=664&noj=1&q=island+garden+city+of+samal&um=1&ie=UTF-8&hq=&hnear=0x32f9701aad3fe53b:0xebed6a17f6716630f,Island+Garden+City+of+Samal&gl=ph&sa=X&ei=7ItVUO2EE8TImQWvi4HoAw&ved=0CC8Q8gEwAQ

Protected Area Categories

All MPA was declared thru City ordinances:

City Ordinance number 2010-160 s. 2010 (An Ordinance for the establishment and management of the Island Garden City of Samal marine Protected Areas (MPAs) and Providing funds thereof)

City Ordinance number 2009-150 s. 2009 (An Ordinance enacting the Revised Zoning Regulations of the Island Garden City of Samal amending for the purpose City Ordinance No. 2000-30)

City Ordinance number 2008-142 s. 2008 (An ordinance providing for the development, protection, conservation, rehabilitation, utilization and management of the fisheries and aquatic resources in the Island Garden City of Samal).

Red-List Species

IUCN Threat Classification can be accessed here, or in Appendix A:


**Giant Clam** – *Tridacna squamosa* (IUCN least concerned)
## Primary Threats

<table>
<thead>
<tr>
<th>Threats</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.4 Fishing &amp; harvesting aquatic resources</td>
<td>5.4.1 Intentional mortality (human use - subsistence/small scale)</td>
</tr>
<tr>
<td></td>
<td>5.4.3 Incidental or accidental mortality (bycatch - subsistence/small scale)</td>
</tr>
<tr>
<td>6 Human intrusions &amp; disturbance</td>
<td>6.1 Recreational activities</td>
</tr>
</tbody>
</table>

## Secondary Threats

<table>
<thead>
<tr>
<th>Threats</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3 Tourism &amp; recreation areas</td>
<td></td>
</tr>
<tr>
<td>5.4.3 Incidental or accidental mortality (bycatch - subsistence/small scale)</td>
<td></td>
</tr>
<tr>
<td>9.4 Garbage &amp; solid waste</td>
<td></td>
</tr>
</tbody>
</table>

## History of the MPA

- **Year 1998**: The Hayuma Foundation, commissioned by the city of Samal, conducted Rapid Aquatic Resource Appraisal to gather information on the status of its coastal and fisheries resources. After almost two (2) years of drafting the management plan basing on the result of the appraisal, the city approved city ordinance number 2000-30 series of 2000, an ordinance zonifying the municipal waters of the City. One of the major zones of that plan was the fifteen (15) Marine Protected Area. In 2007, the need for some ground truthing came out after many issues identified like the boundaries of some MPA encompassing the entire coastline of the three (3) barangay with no specific rules and regulation, the same year the City hired DENR RO-XI personnel to conduct habitat assessment for validation, the major output of the assessment was the Habitat distribution map that became the basis for the amendments of the zoning ordinance and the adjustment on the sizes of the MPA vis-à-vis the capacity of the LGU to manage its one hundred thousand plus municipal waters. In 2008, the LGU signed a memorandum of agreement (MOA) with the ECOGOV2. The project aims to strengthen the management of selected MPAs by putting in-place the guidelines in every MPA. On the same year the Department of Environment and Natural Resources awarded Samal as level 2 Coastal Resource Management Certificate, the highest certification level so far given by the Department to City category. The ECOGOV2 Project ended in 2011 was able to facilitate the approval of the MPA management plan and the MPA ordinance.

## Previous and existing Management Strategies

- **In the early year of being a City**: The Local Government of Samal started to strategize on how to effectively manage its huge municipal water. In 2005 by virtue of an ordinance, the city created an Office to focus on the coastal and fisheries aquatic resources management called the City Fisheries Aquatic Resources Management Office (CFARMO). Making the City Fisheries Development Plan (CFDP) as the bases of Office implementation and with the technical support coming from the Davao del Norte State College for the project MPA strengthening in 2005, we have a memorandum of agreement sign by both parties in 2010 for continuous partnership. Aside from the lobbying as the lead office for the Fisheries ordinance approval, and due to the augmented budget, the office able to implement conduct 24/7 seaborne patrol that leads to the apprehension of six (6) commercial fishing operation and many other illegal fishing operating in area of responsibility. In 2008, the ECOGOV2 project offer technical assistance to Samal Island selected MPA, it led to the approval of six MPA management plan and conducted series of capacity building among Barangay officials and some members of the management body, their intervention ended last 2011. Other strategies implemented in Samal was the strict implementation of fisherfolk and fishing boat registration, and fishing gear permitting and licensing. The approval of the ring fencing ordinance gives the assurance that the collected fees from the coastal and fisheries used will be use solely for environmental related project. The
participation of the different stake holder in coastal and fisheries management were also apparent in Samal like the mangrove planting done by many different organizations, the collection of garbage (coastal clean-up almost 5 time a year) and crown of torn is some MPA was also participated by the private sector.

### Previous and Existing Environmental Educational works

The existing way of giving environmental education was done during barangay/fisherfolk assembly, meetings, orientation, seminars, letters to specific target audience and putting up some tarpaulin in the strategic places. School symposium was also conducted during the celebration of the Fish Conservation week every month of October.

#### Table 3. Humans Stakeholder

| Human Stakeholder Population Size | Total population of the City: 82,707  
|                                 | Total number of household: 16,415  
|                                 | Total population Adjacent the MPA Dapia: 4,782  
|                                 | Total number of household adjacent to Dapia MPA: 1048  
| (National Statistic Office, 2006) | |

#### Historical Description

In early years, Samal Island was settled by indigenous people coming from the northern and eastern coast of the undivided Davao Province. A large mixed population of Mansakas, Mandayas and Muslims composed the identification of the now so called Sama Tribe.

As these primeval settlers were organized into communities and were dynastically ruled by a Datu up to the early part of the American Regime.

In the early part of the 18th century, governance shifted when Christianization came in. The first mass was celebrated in Barangay San Jose of Samal District in 1928.

As an archipelago, Samal became a District Municipality of Davao on June 8, 1948 under Executive order # 151, which was signed by then President Elpidio Quirino. Later, on May 28, 1953 Babak municipality was created under Executive Order #590 which was signed by then President E. Marcos. Each Municipal name was derived from each different historical tracing.

The second district which is the government center of the city got its district name Samal, from the early indigenous settlers forming into one tribe called “SAMA” and its Barangay name Penaaplata from the Sama term “MALIBASA” which means a place where honorable people who love peace live in perfect harmony. First district deriveds its name Babak from an abundant shrubs called “TAGBAK” drown in the people’s trade center. White sand in the local dialect “PUTTING BALAS” is significantly true to the shoreline of the third district from which its name Kaputian was derived.

In 1997 Congressman Rodolfo P. Del Rosario passed the bill that resulted to the passage of Republic Act #8471, which paved the way for the integration of the three municipalities into one local government unit that is now called the Island Garden City of Samal. This was signed on January 30, 1998 by his Excellency, President Fidel V. Ramos and was overwhelmingly approved by the people of the locality during the plebiscite held on March 7, 1998. Almost four months later, on June 30, 1998, the new city began exercising its corporate powers. At present Samal Island has ninety thousand approximate inhabitants (LGU Samal Revised Comprehensive Land Use plan, 2008).

#### Campaign’s Social Context

Barangay Sta. Cruz located in Talicud Island. It is a small Island composing of four Barangays with a total land area of two thousand two hundred six point nine (2,226.9) hectares. Being the largest of the four barangays of Talicud, Sta. Cruz has a total land area of 749.40 or 33.7% with a total population of three thousand six hundred twenty (3,620) and 769 household based on the National statistics office survey in 2006. The island can be reach in one (1) hour boat ride from Davao City and 20 minute ride by charter boat from Kaputian Poblacion. It comprises five (5) sitios and 16 puroks.
The Island is mostly plain having a slope of 0-8% with little sloping areas. The soil is of Bolinao Clay type suitable for coconut and corn (major product of the Island). This type of soil is also suitable for cotton farming. Owing to its thick and rocky strata, potable water source is scarce. There is no pronounced erosion and flooding occurrences in the area (MPA management plan for Dapia and Dugong Sanctuary, 2009)

Legislative Context

RA 7160 – section 3 (i) Local Government Units shall share with the national government in the management and maintenance of ecological balance within their territorial jurisdiction.

RA 7160 – section 17 – Basic Services and Facilities.

RA 8550 – section 16 municipal/city governments have jurisdiction over municipal waters. This jurisdiction includes responsibilities over the protection, management and conservation of municipal waters, coastal and riparian areas, and the enforcement of all fishery laws, rules and regulations and valid fishery ordinances.

City Ordinance No. 2009-150, series of 2009- An ordinance enacting the Revised Zoning Regulations of the Island Garden City of Samal amending for the purpose City No. 2000-30 and (2) Resolution No. 852, s. 2009- Resolution adopting and approving the revised 10-year Comprehensive Development Plan of the Island Garden City of Samal

City Ordinance # 2008-142- An ordinance providing for the development, protection, conservation, rehabilitation, utilization and management of the fisheries and aquatic resources in the Island Garden City of Samal.

City Ordinance # 156, series of 2010 - An Ordinance for the Establishment and Management of the Island Garden City of Samal Marine Protected Areas and Providing Funds thereof


Table 4. Campaign Project Team

<table>
<thead>
<tr>
<th>Name</th>
<th>Role in Campaign</th>
<th>Organization</th>
<th>Title/Position in Organization</th>
<th>Responsibility or function this person might have in the pride campaign</th>
<th>% of time allocated of Pride campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jemelita Q. Camaso</td>
<td>Supervisor</td>
<td>LGU-Samal</td>
<td>City Budget Office</td>
<td>Take the lead in the monitoring of the social marketing campaign in the local level. Responsible in the lobbying for approval of the budget requirements for the campaign. Take the lead in the feed</td>
<td>10%</td>
</tr>
</tbody>
</table>
backing to the Local Chief Executive and to RARE. The the lead in the liquidation of expense fund of RARE

Juniemar D. Montera  CF  LGU-Samal  Aqua-culturist I

Take the lead in the implementation of all the activities related to the campaign. Take the lead in the preparation of budget expense item and take the lead in the conduct of regular feed backing to the LAP supervisor as to the status of the campaign. Take the lead in the liquidation of all fund disbursed during the campaign. Attend and deliver all assignments for the university phase.

Amado C. Asoy  Alternative CF  LGU-Samal  Planning officer IV  Fisheries Division Head

Assist the CF in all activities. Provide CF access to office logistic such as motorcycle, fuel and internet connection, office supplies

Table 5. Key Partners Support

<table>
<thead>
<tr>
<th>Name of Partners/Group</th>
<th>Role (s)</th>
<th>Contact Name</th>
<th>Phone/email contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barangay Local Government of Brgy. Sta. Cruz</td>
<td>Role that this organization might play in the Pride campaign</td>
<td>Primary contact’s name</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Take the lead in the management of the MPA in local level. Responsible for the budget allocation (barangay funds)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Take the lead as over-all MPA coordinator. Team leader of the bantay dagat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| |  | Hon. Fidencio B. Matro  
Brgy. Captain  
Brgy. Sta. Cruz, Talicud, Kaputian District, Island Garden City of Samal | 09152300837 |
| |  | Hon. Jovel Parilla  
Brgy. Kagawad | | 
| Department of Agriculture-Bureau of | Technical support, Provision of alternative livelihood, Provision of | Fatma Idris, DR.RDEV  
Regional Director | |
<table>
<thead>
<tr>
<th>Organization</th>
<th>Role Description</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisheries and Aquatic Resources</td>
<td>MPA logistics.</td>
<td>DA-BFAR ROXI Magsaysay Avenue, Davao City</td>
</tr>
<tr>
<td>(DA-BFAR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provincial Agriculture Office Fisheries Division</td>
<td>Technical support, Provision of alternative livelihood, Provision of MPA logistic.</td>
<td>Alfredo Avenido Provincial Fishery Officer Provincial Agriculture Office, Capitol Drive, Mankilam, Tagum City</td>
</tr>
<tr>
<td>Department of Education</td>
<td>Member of the management committee. Focal person in the campaign inside the school campus</td>
<td>Mrs. Lea Muquiros Head Teacher-High School</td>
</tr>
<tr>
<td>Fisherfolk Association</td>
<td>Member of the management committee.</td>
<td>Arnel Cutamora Fisherfolk Organization Chairman Sitio Dapia, Sta. Cruz, Talicud Island</td>
</tr>
<tr>
<td>BFARMC</td>
<td>Take the lead in the Policy advisory and consultative body of any possible management option specially that needs legislation</td>
<td>Nicholas Tandug BFARMC Chairman Sta. Cruz, Talicud Island</td>
</tr>
</tbody>
</table>

APPENDIX A: IUCN Threat Classification

1 Residential & commercial development
   1.1 Housing & urban areas
   1.2 Commercial & industrial areas
   1.3 Tourism & recreation areas
2 Agriculture & aquaculture
   2.1 Annual & perennial non-timber crops
     2.1.1 Shifting agriculture
       2.1.2 Small-holder farming
       2.1.3 Agro-industry farming
     2.1.4 Scale Unknown/Unrecorded
     2.2 Wood & pulp plantations
       2.2.1 Small-holder plantations
       2.2.2 Agro-industry plantations
     2.2.3 Scale Unknown/Unrecorded
     2.3 Livestock farming & ranching
       2.3.1 Nomadic grazing
       2.3.2 Small-holder grazing, ranching or farming
       2.3.3 Agro-industry grazing, ranching or farming
     2.3.4 Scale Unknown/Unrecorded
   2.4 Marine & freshwater aquaculture
     2.4.1 Subsistence/artisinal aquaculture
     2.4.2 Industrial aquaculture
     2.4.3 Scale Unknown/Unrecorded
3 Energy production & mining
   3.1 Oil & gas drilling
   3.2 Mining & quarrying
   3.3 Renewable energy
4 Transportation & service corridors
   4.1 Roads & railroads
   4.2 Utility & service lines
   4.3 Shipping lanes
   4.4 Flight paths
5 Biological resource use
5.1 Hunting & trapping terrestrial animals
   5.1.1 Intentional mortality (human use)
   5.1.2 Incidental or accidental mortality (bycatch)
   5.1.3 Persecution/control
   5.1.4 Motivation Unknown/Unrecorded
5.2 Gathering terrestrial plants
   5.2.1 Intentional mortality (human use)
   5.2.2 Incidental or accidental mortality (bycatch)
   5.2.3 Persecution/control
   5.2.4 Motivation Unknown/Unrecorded
5.3 Logging & wood harvesting
   5.3.1 Intentional mortality (human use - subsistence/small scale)
   5.3.2 Intentional mortality (human use - large scale)
   5.3.3 Incidental or accidental mortality (bycatch - subsistence/small scale)
   5.3.4 Incidental or accidental mortality (bycatch - large scale)
   5.3.5 Motivation Unknown/Unrecorded
5.4 Fishing & harvesting aquatic resources
   5.4.1 Intentional mortality (human use - subsistence/small scale)
   5.4.2 Intentional mortality (human use - large scale)
   5.4.3 Incidental or accidental mortality (bycatch - subsistence/small scale)
   5.4.4 Incidental or accidental mortality (bycatch - large scale)
   5.4.5 Persecution/control
   5.4.6 Motivation Unknown/Unrecorded
6 Human intrusions & disturbance
   6.1 Recreational activities
   6.2 War, civil unrest & military exercises
   6.3 Work & other activities
7 Natural system modifications
   7.1 Fire & fire suppression
      7.1.1 Increase in fire frequency/intensity
      7.1.2 Supression in fire frequency/intensity
      7.1.3 Trend Unknown/Unrecorded
   7.2 Dams & water management/use
      7.2.1 Abstraction of surface water (domestic use)
      7.2.2 Abstraction of surface water (commercial use)
      7.2.3 Abstraction of surface water (agricultural use)
      7.2.4 Abstraction of surface water (unknown use)
      7.2.5 Abstraction of ground water (domestic use)
      7.2.6 Abstraction of ground water (commercial use)
      7.2.7 Abstraction of ground water (agricultural use)
      7.2.8 Abstraction of ground water (unknown use)
      7.2.9 Small dams
      7.2.10 Large dams
      7.2.11 Dams (size unknown)
      7.3 Other ecosystem modifications
8 Invasive & other problematic species & genes
   8.1 Invasive non-native/alien species
      8.1.1 Unspecified species
      8.1.2 Named species
   8.2 Problematic native species
   8.3 Introduced genetic material
9 Pollution
   9.1 Domestic & urban waste water
      9.1.1 Sewage
      9.1.2 Run-off
      9.1.3 Type Unknown/Unrecorded
   9.2 Industrial & military effluents
      9.2.1 Oil spills
      9.2.2 Seepage from mining
      9.2.3 Type Unknown/Unrecorded
   9.3 Agricultural & forestry effluents
9.3.1 Nutrient loads
9.3.2 Soil erosion, sedimentation
9.3.3 Herbicides and pesticides
9.3.4 Type Unknown/Unrecorded

9.4 Garbage & solid waste

9.5 Air-borne pollutants
  9.5.1 Acid rain
  9.5.2 Smog
  9.5.3 Ozone
  9.5.4 Type Unknown/Unrecorded

9.6 Excess energy
  9.6.1 Light pollution
  9.6.2 Thermal pollution
  9.6.3 Noise pollution
  9.6.4 Type Unknown/Unrecorded

10 Geological events
  10.1 Volcanoes
  10.2 Earthquakes/tsunamis
  10.3 Avalanches/landslides

11 Climate change & severe weather
  11.1 Habitat shifting & alteration
  11.2 Droughts
  11.3 Temperature extremes
  11.4 Storms & flooding
  11.5 Other impacts