ACTIVITY REPORT: SCOPING STUDY AT MOROTAI ISLANDS IN NORTH MALUKU

February 19-26, 2017

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ACRONYMS AND ABBREVIATIONS

Bappeda  
*Badan Perencanaan Pembangunan Daerah* (Provincial Development Planning Agency)

CTC  
Coral Triangle Center

ECMWF  
European Center for Medium Range Weather Forecasts

FADs  
Fish Aggregation Devices

FMA  
Fisheries Management Area

KEK  
*Kawasan Ekonomi Khusus* (Special Economic Region)

MPA  
Marine Protected Area

PKSPL  
*Pusat Kajian Sumberdaya Pesisir dan Laut* (Research Center of Coastal and Marine Resources)

P2K2PT  
*Percepatan Pengembangan Kawasan Kelautan dan Perikanan Terintegrasi* (Acceleration of the Development of Integrated Marine and Fisheries Area)

RIPPARDA  
*Rencana Induk Pengembangan Kepariwisataan Daerah* (Tourism Development Master Plan)

RTRW  
*Rencana Tata Ruang Wilayah* (Provincial Spatial Plan)

RZWP3K  
*Rencana Zonasi Wilayah Pesisir dan Pulau – Pulau Kecil* (Zonation Plan of Coastal Areas and Small Islands)

SKPT  
*Sentra Kelautan dan Perikanan Terpadu* (Center for Integrated Marine and Fisheries

WCS  
Wildlife Conservation Society
INTRODUCTION

The Morotai Islands District formed in November 2008 covers 33 islands which include seven inhabited and 26 deserted or uninhabited islands. North Maluku Province is the largest island and is geographically bordered by the Pacific Ocean on the North, Sulawesi Sea on the West, Halmahera Sea on the East, and the Morotai Strait on the South. The Morotai Island District is located between 02°00′N – 2°40′N and 128°15′E – 129°08′E. The District covers about a 4,301.53 km² area that consists of 2,330.60 km² of mainland and 1,970.93 km² of sea area with 311,217 km of coastline.

As an Island District, Morotai has abundant fisheries and marine resources. Such resources are set as one of the national priorities to accelerate economic growth from the fisheries sector in order to fulfill local and national requirements. Based on fish-production estimations, Morotai contributes about 61,167 tons of fish per year. This Island District has been declared as a Fisheries Management Area (Wilayah Pengelolaan Perikanan – WPP) for 715, 716, and 717 by the Ministry of Marine Affairs and Fisheries.

Furthermore, the Morotai Islands District has been assigned as a Special Economic Area (Kawasan Ekonomi Khusus – KEK) by the Government Regulation No. 50/2014. Recently, the District was also declared as an Integrated Center for Marine and Fisheries (Sentra Kelautan dan Perikanan Terpadu – SKPT) by the Ministry of Marine Affairs and Fisheries.

The USAID-SEA Project supports the Indonesian Government (GOI) to improve fisheries and Marine Protected Area (MPA) management at FMA-715 that covers three provinces including Maluku, North Maluku, and West Papua. Based on inputs from North Maluku Provincial Government and stakeholders’ consultation, the Morotai Islands District was selected as one of the priority sites for MPA establishment under USAID SEA Project.

The Coral Triangle Center (CTC) is one of the project implementing partners and has agreed to work in this area to support Morotai MPA establishment for fisheries, tourism, and marine biodiversity in order to bring benefits for the local communities as well as enhance food security.

As part of the activities to collect baseline data on biophysics and socio-economic, CTC conducted a scoping study at Morotai Islands on March 16 – 28, 2017.

OBJECTIVES

The objectives of this scoping study are as follows:

1. Gather reliable data/reports/information from stakeholders including local government and/or other related institutions that have similar goals and objectives to be implemented in the Morotai Islands District, North Maluku.

2. Assess the availability of public infrastructures such as transportation, accommodation, and logistics and support the preparation of incoming survey activities related to the project goals.
3. Identify local institutions and/or organizations with potential to become partners in accordance to the incoming Morotai Island surveys.

### SUMMARY OF PARTICIPANTS

This scoping study involved USAID – SEA Core Team (Asril Djunaidi), CTC (Marthen Welly, Mad Korebima, Wira Sanjaya, Elinsawaty), Wildlife Conservation Society (WCS) (Samar Ishak), and a CTC volunteer (Lita Hutapea).

### RESULTS

#### Demography
The Morotai Islands District has five sub-districts that are South Morotai, Southwest Morotai, East Morotai, North Morotai, and Morotai Jaya Sub-District. The largest Sub-District is Southwest Morotai, and the smallest Sub-District is East Morotai. There are 88 villages in the District including 79 coastal villages.

The Morotai Island population includes 72,789 people who live in the District, consisting of 37,860 men and 34,929 women. However, the inexistence of indigenous people in the Morotai Islands has implications on the variety of ethnicities that live in the District. Tobelo and Galela ethnicities are the majority of people in the District. Other ethnicities mixed in with the native Morotai include Buginese (people from South Sulawesi), Butonese (Southeast Sulawesi), Minahasan (North Sulawesi), Java, Sumatran, and Moluccas Chinese. Historically, people living in the Morotai Islands are highly influenced by the culture of Ternate Sultanate. During the 15th and 16th centuries, the region was governed by the Sultanate.

#### Climate
The Morotai Islands District experiences a rainy and dry season, and is highly influenced by tropical monsoon seasons. Rainy season commonly occurs from November to February, while dry season occurs from April to September. The level of rainfall in the region is between 1,500 – 2,000 mm per year.

Wind velocity in the District was measured in 2015 using the European Center for Medium Range Weather Forecasts (ECMWF) and was recorded between 2.2 – 8.8 m/s heading west. The maximum wind velocity occurs in January. In that month, the wind affects the surface current of Morotai waters heading to the Western part of Morotai Island. The weak wind velocity occurs in May, where the transition of season influences the wind velocity. In February, the wind direction was mostly heading to the eastern part of Morotai Island.

#### Wave
According to the Research Center of Coastal and Marine Resources – Bogor Agriculture Institute (Pusat Kajian Sumberdaya Pesisir dan Laut – ‘PKSPL – IPB’), waves in the coastal area of the Morotai Islands at some observatory offices were categorized as small waves with heights of 0.5 – 0.6 m and periods between 4.7 – 8.3 seconds.
Water Temperature
On the average, the highest temperature recorded in the sea of Morotai Islands is about 29 °C and the lowest is 26°C. The highest water temperature was recorded on the Southwest side of the Island. This may be due to the meeting of Pacific Ocean waters at this point even though water temperatures in Morotai are quite stable with no significant change during the year.

Sea Current
The velocity of sea current in the Morotai Islands is between 1.02 m/s – 1.28 m/s. On the West side of the island (between Halmahera and West of Morotai island), the recorded current moves to the Northwest and Northeast of the sea.

METHODS
In terms of assessing information, there are five methods used in this scoping study:

- Gather secondary data through internet based data collection as well as any relevant references regarding Morotai Island District.
- Obtain documents and information relating to coastal and marine resources management and planning through interactions (i.e., visits and interviews) with respective government agencies and officers.
- Visit and interview fishermen from villages in the mainland and surrounding Morotai District islands to gather information related fisheries activity such as quantity of fishermen, fishing gear, types of fish caught, fishing ground locations, and other challenges or threats.
- Record field observations to observe islands that may be tourist destinations, potential future dive sites, as well as identify the availability of transportation and accommodation.

Observe key marine ecosystem through field visits checking underwater condition with SCUBA Diving and record GPS coordinates.

KEY OUTPUTS, OUTCOMES, AND ACHIEVEMENTS
The scoping study in Morotai was conducted on February 19–26, 2017. The key outputs of the scoping study are as follows:

A. Documents
- Profile Book of Accelerating the Development of Integrated Fisheries and Marine Area (Buku Profil Percepatan Pengembangan Kawasan Kelautan dan Perikanan Terintegrasi (P2K2PT))
- Master and Business Plan for Center of Marine and Integrated Fisheries Development (Pembangunan Sentra Kelautan dan Perikanan Terpadu –SKPT)
- Draft of Marine Spatial Plan Document for Morotai Islands District
- Master Plan of Morotai Islands Tourism (Rencana Induk Pariwisata Daerah – RIPPARDA)
- Morotai Islands District in Numbers 2016 (Morotai Dalam Angka 2016)
- Morotai Islands District Spatial Plan Document (Rencana Tata Ruang Wilayah – RTRW)
- Data on marine tourism

B. Fisheries
Capture Fisheries
Based on CTC’s team observations, the existing types of fisheries practices in the Morotai Islands District include big and small pelagic, reef, and demersal fish. The common fishing grounds are situated on the edge of western Pacific Ocean, Sulawesi Sea, and Halmahera Sea. Yellow Fin Tuna
and Skipjack are the highest number of fish caught by fishermen. The small-pelagic target fish in Morotai are yellowfin, threadfin bream, and mackerel. These fishes are usually caught around Fish Aggregation Devices (FADs). Demersal fish caught in Morotai Islands include groupers and snappers. Hand-line is the most common fishing gear for big-pelagic, reef, and demersal fishes. Other fishing gear used by Morotai fishermen includes gill-nets, pole and line, purse seines, kites, and FADs. Outsider fishermen from Halmahera, North and South Sulawesi also make the Morotai Islands their fishing ground.

In 2014, based on data provided by the Fisheries agency of Morotai Islands District, the total fisheries production was up to 12,979.4 tons. From 2012 – 2014, there was no significant change of household fishers recorded in the District. However, the production volume increased dramatically. The increase was influenced by the development of vessel and fish-capture methods. According to the fisheries agency officer, the main reason for the change in fishing activities is due to the implementation of Kite fishing method. These methods of fishing activities were adopted from Talawaan Bajo - North Sulawesi fishers and the Morotai Islands District government has been facilitating these groups of fishers with shelters in the Sangowo village.

**Mariculture**

Mariculture contributes to the Morotai District fish-production. In several areas including the small islands of Western Morotai, a number of floating net-cages have been observed in shallow waters. Fish species that were cultured in the floating net-cages include groupers, snappers, pomfrets, as well as other hard-skinned marine creatures such as shrimps and lobsters.

During the interview process with fishermen by the CTC team, it was discovered that the floating net-cages and fingerlings were supplied by the local government. The fingerlings are imported from outside Morotai Islands District. Local fishermen believe that based on their experiences, the fingerlings from other regions are better compared to Morotai Islands’ fingerlings life-survive. Mariculture activities were also found in Kokoya, as well as the Kolorai dan Ngele-Ngele Islands (also part of the Morotai Islands).

Seaweed farming is also found around the small islands in the Morotai. For example, a community in Galo Galo Island has been practicing seaweed farming as one of their main sources of income since 1998 when the farming gave significant contribution to their family economic growth. The island farmers mentioned during their interview process with the CTC team that seaweed farming was more profitable compared to fishing. Their children could obtain higher-education due to the income generated from seaweed farming.

Nevertheless, according to seaweed farmers and village leaders, there are challenges that have to be dealt with such as uncertain seasons, lack of seed stock, maintenance, and the marketing processes. It is recommended that the seaweed seeds are purchased from Tobelo, Tidore, and/or Bacan due to its higher quality. Based on the interviews, one kilogram of seaweed (wet) produced about 1 – 2 ounces dried seaweed and was proven to be resistant to diseases. The farmers had experience with uncertainty of seasons as well as the condition of the sea. Usually, the best time to plant seaweed is between November and June during North Season, while the worst months to plant are between July and October where the seaweed gets covered by diseases from the South Season.
C. Marine Ecosystem

Coral Reefs
Based on the team’s observations with SCUBA on the selected sites, the coral reef conditions varied from worse to good in several islands of Morotai. In some places, the team found lots of coral rubble, possibly from coral destroyed by boat anchor or dynamite fishing. On the other side of the island, around Mitita Island, Kokoya, Dodola, and Samiamau Islands, the team found some spots with good healthy corals. In Mitita Island, the team encountered more than 15 blacktip reef sharks and in Rao Island the team found a potential turtle nesting beach.

In secondary data from Morotai Marine and Fisheries Office (DKP), it was reported that about 13 families of corals can be found in the waters. Species include *Sinularia sp.*, *Sarcophytton sp*, *Porites lutea*, *Favites sp.*, *Acropora palifera*, *Acropora digitifera*, *Porites lutea*, *Porites nigrecens*, *Favites sp.*, *Goniastrea sp.*, *Acropora hyacinthus*, *Acropora clathrata*, *Montipora sp.*, *Pocillophora verrucosa*, *Porites nigrecens*, and *Millepora sp.*

Mangrove
Based on CTC team observations, mangrove habitats were generally found throughout the entire island chain of Morotai. The most common mangrove genus was found in the western part of Morotai and included *Rhizopora sp*, *Bruguiera sp.*, and *Ceriops sp.*

Seagrass Bed
Based on team observation, the common genus of seagrasses found in Morotai (west part) are *Enhalus sp.*, *Thalassia sp.*, *Syringodium sp.*, *Halodule sp.*, *Cymodocea sp.*, and *Halophila sp.* In some area the seagrass condition is healthy, but others were found threatened by rubbish or sedimentation from the mainland.

Reef Fish
The fish size found indicates that reef fish is under threat in the Morotai islands. Larger fish (above 35 cm) were not often encountered by the team members during SCUBA observations. Based on secondary data from DKP Morotai Islands District (2015), the common genus found in the area includes *Chaetodon*, *Heniochus*, *Forcipiger*, *Hemitaurichthys*, *Centropyge*, *Pomacanthus*, *Platax*, *Acanthurus*, *Paraacanthurus*, *Ctenochaetus*, *Zebrasoma*, *Naso*, *Zanclus*, *Cephalopolis*, *Lutjanus*, and *Lethrinus*.

D. Infrastructures
The development of infrastructure and other supporting facilities in the Morotai Island District has increased significantly and gained full support from the central government (beginning with the Sail morotai event in 2012). Until today, the development of public infrastructures is on progress and Morotai has been declared as one of the Special Economic Areas (*Kawasan Ekonomi Khusus - KEK*). Marine and fisheries are the leading sectors to accelerate both local and national economic growth. The development of local infrastructures supports production and marketing of fisheries product in the region. A comprehensive assessment on infrastructure development is still highly needed. In fact, due to the absence of feasibility studies on supporting fisheries infrastructure, several public facilities have not been properly operated (Marine Affairs and Fisheries Agency of Morotai Island District, 2015).
E. Accessibility
Transportation and its accessibility, including land and sea transportations, are frequently operated in the Morotai Islands District. However, due to bad road conditions, accessibility to the Northwest Morotai regions (Wayabula) heading to Morotai Jaya (Sopi) has been an issue. Roads are often closed due to the hills condition. For example, if heading to Morotai Jaya (Sopi) from the capital city of Morotai by land transportation, one should go around to the South and then to the North through the East side of Morotai before arriving in Morotai Jaya. With this route, it takes approximately six hours to reach the destination. It could be reached by only two hours if the road in the West side of Morotai could be accessed. As an alternative, people use sea transportation.

However, it should be noted that Southwest Morotai is categorized as open waters with high waves in certain seasons.

The only well maintained sea-port in Morotai Islands is the Port of Daruba, which is situated at the Central Business District (CBD) of the Morotai. The Port is not only used for logistics/containers, but also as an entry port for passengers from Tobelo, Ternate, and other surrounding cities and regencies. There are small, accessible ports surrounding such as Port of Wayabula, Port of Sangowo, Port of Beri-beri and Port of Sopi. Some ports in the Morotai Islands are small and inappropriate to serve a landing vessel. Vessels up to 50 GT have to use anchor out at sea, due to lack of supporting facilities on the small ports.

In the Sangowo village, East Morotai District, the tuna collecting vessel has to anchor about 700 meters from the drop-off (wall) due to the fragility of the port and the timber bridge. This presents a high risk for vessels of getting stuck when anchoring close to the port. All of which depends on the tides and sea current conditions.

Regarding air transportation, the Morotai islands District has an airport that is 2.8 kilometers long and 50 meters wide. The runway was previously used for military occupancy in World War II (WWII). At that time, the name of the airport was Pitu (meaning seven), but later on, the Indonesia government changed the name of airport to Leo Wattimena Airport. This airport is fully managed by the Indonesian Air Force and has the ability to serve CN130-Hercules, Cassa, and Twin Otters. Furthermore, the airport can be landed by civilian airplanes such as Susi Air with its passengers’ capacity of about 10 people. By taking into consideration the length of the runway (about 2.800 meters), the airport can serve a long-body airline with passenger capacity up to 200 passengers per trip.

F. Accommodation
As a Special Economic Area of Tourism, the Morotai Islands District has accelerated the development of accommodation that meet hospitality standards. In the region, there are 15 hotels/accommodations with a total of 216 rooms. Three recommended hotels/resorts/accommodations that can be found on the mainland of Morotai are D’Aloha Resort (25 bungalows), Pacific Inn, and Ria Hotel. In the surrounding islands, accommodations include Dodola Island Cottage, and Koloray Island Homestay (12 homestays with 21 rooms) (Tourism Agency, 2016).

G. Tourism
The wonderful Morotai combines nature, local culture, and tourism. In the long term, the local government and the ministry of tourism have agreed to attract about 500,000 tourists visiting Morotai per year (Tourism Agency 2016).
In terms of achieving the tourism target, the local government has improved accessibility to the region. This includes daily basic roundtrip flights to Morotai as well as sea transportation available five times per week operated by state-owned shipping company (*Pelayaran Nasional Indonesia* – PELNI) with routes from Tobelo – Morotai (*Tourism Agency 2016*).

**Marine Tourism**

Based on the 2015 surveys focusing on the marine utilization map of Morotai District, it was found that several spots can be explored and promoted for marine tourism in the Southwest part of the Morotai Islands. In this region, several small islands provide beautiful landscapes and amazing views of the islands scattered around the main island of Morotai. Morotai’s geographic location results in relatively calm waters with weak current. Additionally, the distance between the islands is quite close. Therefore, accessing the other islands takes relatively short time.

There are at least 18 marine tourist destinations that can potentially be visited in the Morotai Islands. Such destinations include Korago Beach, Mitita Beach, Dodola Island, Zum-zum Island, Galo-galo Island, Kokoya Island, Kapa-Kapa, Kolorai Island, Dehegila Cape Beach, Morotai Wreck, Tabailenge Island, Pinang Cape Island, Gorango Cape Beach, Rorasa Cape Beach, Sagolo Beach, Surfing Point in Buho-Buho Village, Surfing point in Sopi Majiko village, and Batu Kopi beach (*Tourism Agency, 2016*).

Based on CTC team observations, several islands have been promoted as the prime marine tourism destinations in Morotai. See the Tourism Map of Morotai Island District Islands in the Annex II to recognize the uniqueness of each site in more detail.

**Mitita Island**

Mitita Island is a small island located in the Southwest region of the Morotai Islands. It can be reached about 30 minutes by longboat from the mainland. Mitita Island has quite good coral reef condition as well as an area known for schooling blacktip reef-shark. Manta rays and sea turtles are sometimes encountered by divers here based on information from the local dive operators.

**Sand Island (lies between Mitita Island and Kokoya Island)**

It was unique to observe the exposed sand beach, situated between Mitita Island and Kokoya Island. This place has been the magnet for photographers looking for magnificent views to be captured.

**Kokoya Island**

In Kokoya Island, a diverse coral reef and diversity of reef fishes can be observed here. This island is one of the uninhabited islands of the Morotai District. During certain times of the year, Dugongs appear around this island according to local dive operators.

**Kolorai Island**

Most people living in the island are fishers. The underwater of Kolorai Island offers beautiful healthy coral reefs and a variety of fish species all of which are easy to find. Furthermore, the local community has developed and managed their own homestay as accommodation for tourists who visit the island.
Dodola Island
Dodola Island can be reached approximately 30 minutes from the mainland of Morotai by longboat. Dodola Island is one of the main tourist destination in Morotai Island District. The island is surrounded by soft white sand, and it connects two beautiful islands of Dodola besar and Dodola kecil. Similar to the infamous blue hole in the Caribbean, Dodola’s long fringing reef is accompanied by small atolls that stretch from Kolorai Island to Dodola besar Island. The local government has developed cottages on this island with water sports facilities.

Zum Zum Island
Zum Zum Island is unique with its healthy mangrove and seagrass ecosystems. The island is known for their critical Dugong habitat. Zum Zum Island is also known as McArthur Island. Historically, this island was used for hiding, resting, and discussing war strategy by General Douglas McArthur during WWII (Marine Affairs and Fisheries Agency of Morotai Island Regency 2015).

Rao Island
The unique point of Rao island is its coffee stone. The smell of coffee around the stone is the main reason people call it a coffee stone. The coffee stone is situated in Tanjung Desa Pasi Pasi Rao. This island is an important area for sea turtle nesting on the beach.

Diving Spots
Based on the dive directory in Indonesia, at least 28 dive sites are found in the Morotai Islands. The key attractions for the divers in Morotai Island are the sharks at Mitita Island and the wreck dive at Wamama village.

Morotai underwater is like a museum of ship and aircraft wrecks. One of the famous aircraft wrecks in the water of Morotai is Bristol Beuford. This aircraft was sunk during WW II operation. The location of the historic wreck dive site is at Wamama village which can be reached in about 15 minutes from the downtown area. Another dive site, called Lapangan Pante, allows visitors to experience a former military runway that was covered by bushes and trees. Divers can enjoy diving with heavily damaged military tanks, military trucks, Willis jeeps, aircrafts, and warships. The two dive centers in Morotai Island are Shark Diving and Dive Morotai.

CONCLUSIONS AND RECOMMENDATIONS
By taking into account the goal and purposes of this scoping study in the Morotai Islands District on February 19 – 26, 2017, points of conclusion have been summed as follows:

- This scoping study was welcomed and supported by stakeholders in the Morotai Islands District. Stakeholders include various representatives of Local Planning Agency (BAPPEDA), Local Marine Affairs and Fisheries of Morotai and North Maluku Agencies, Local Tourism Agency, Dive Operators, and other targeted community members as resource persons. Valuable data related to planning (RZWP3K and RIPPARDA), fisheries (DKP Morotai Report and SKPT), and demography-infrastructures (BPS, Morotai in Numbers) was collected during the study.

- The following stakeholders are potential future collaborations for incoming surveys such as DKP Morotai Islands District, Local Agency of Tourism, Khairun University (Ternate),
Patimura University (Ambon), Dive Morotai (Dive Center) and community member volunteers.

- Accommodations and logistical support for socio-economic surveys are available from hotel/cottages (as basecamp for the team), dive boat and equipment, rental cars, small restaurant, hospital, and rescue teams. There are daily flights from Ternate to Morotai as well as transportation via the ferry-boat from Morotai to Tobelo-Halmahera.

- The initiative for Morotai MPA establishment received great support from the representatives of local government agencies and community members during the study. On the other side, there is still lack of data regarding coastal and marine resources as well as limitations on human resources capacity. The information gathered from this comprehensive survey is needed to provide inputs for supporting MPA establishment process in Morotai. MPA management can be integrated with marine tourism and fisheries planning in the islands.
PHOTOS AND CAPTIONS

Caption 1: Yellow Fin Tuna in Morotai Fish Market

Caption 2: Floating cage-net
Caption 3: Coral reef of Morotai

Caption 4: Mangrove Forest of Morotai Islands
Caption 5: Reef Fish of Morotai Islands

Caption 6: D’Aloha Resort on Morotai Island
Caption 7: Blacktip reef shark at Mitita Island

Caption 8: Kokoya Island at Morotai, North Maluku

Caption 9: Dodola Besar Island at Morotai, North Maluku
Annex I
Map of Morotai Islands District (MMAF, 2015)
Annex II
Tourism Map of Morotai Island District (Local Tourism Agency, 2016)
Annex III
Map of Dive Sites in Morotai Islands District (Local Tourism Agency, 2016)