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CONSOLIDATED REPORT:

MONITORING OF THE CAPTURE FISHERIES AND MARINE PROTECTED AREAS (REEF HABITATS) IN THE FISH PROJECT'S FOCAL AREAS: CORON BAY, DANAJON BANK, LANUZA BAY, AND TAWI-TAWI

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The FISHERIES IMPROVED FOR SUSTAINABLE HARVEST Project

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LIST OF ABBREVIATIONS AND ACRONYMS

BAP	Baseline Assessment Plan
cm	centimeter
DCA	Dead Coral with Algae
FISH	Fisheries Improved for Sustainable Harvest
FPR	FISH Project Result
GPS	Global Positioning System
h	hour
HP	Horse Power
kg	kilogram
km	kilometer
kph	kilometer per hour
L	Length (usually in centimeters)
Lat.	Latitude
Long.	Longitude
LGU	Local Government Unit
LHC	Live Hard Coral
LSC	Live Soft Coral
m	meter
min	minutes
MPA	Marine Protected Area
PMP	Performance Monitoring Plan
PR	Project Result
QAQC	Quality Control Quality Assurance
t	ton
UPVFI	University of the Philippines in the Visayas Foundation, Inc.
W	Weight (in kilo or gram)

1. INTRODUCTION

The main objective of the FISH Project is to conserve biological diversity in the four selected target areas (Figure 1) through improved management of fish stocks and the fish habitats that support them. For project evaluation purposes an improved management will mean an increase in marine fish stocks by at least 10% by 2010 over a 2004 baseline level. This posed a challenge not only in attaining the projected increase in fish stocks but also in the manner, method and approach of measuring the increment.

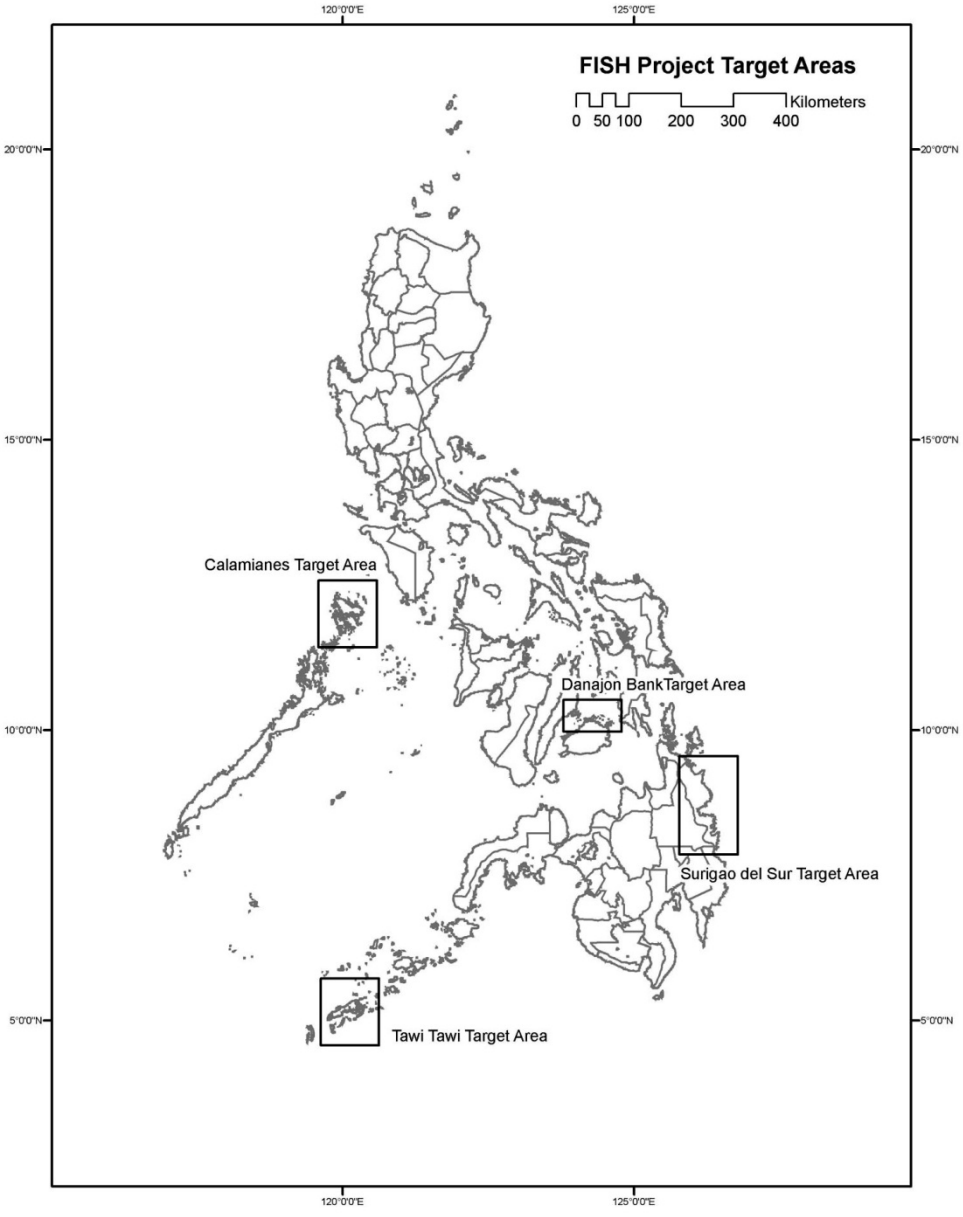


FIGURE 1. LOCATION OF FISH PROJECT TARGET AREAS

The increase marine fish stocks by at least 10% over the period 2004 to 2010 is expressed in project documents as FISH Project Result (FPR):

FPR - Marine fish stocks increased by 10% (over 2004 baseline levels) in focal areas by year 2010.

The FPR is a combination of various measurable biophysical parameters, namely: fish biomass, catch rates of fishing gears, species richness, and condition of coral reefs in established Marine Protected Areas (MPA). Increase or decrease in there parameters were used as indicators to measure specific Project Results (PR), as described in Table 1:

TABLE 1. PROJECT RESULTS MEASURED DURING THE LIFE OF THE PROJECT

Project Result	Description
PR1	Abundance of selected fisheries resources in focal areas (% change in catch per unit effort compared to baseline based on fishery-independent methods)
PR2	Catch rate of selected fisheries in focal areas (% change in catch per unit effort compared to baseline based on fishery-dependent methods)
PR3	Reef fish density and biomass inside and adjacent to selected MPAs in focal areas (% change in biomass/500 m^2 compared to baseline)
PR4	Reef fish density and biomass inside and adjacent to selected MPAs in focal areas (% change in biomass/500 m^2 compared to baseline)
PR5	Benthic condition inside and adjacent to selected MPAs in four focal areas (average % change in living coral cover compared to baseline)

The single measure of 10% increment was primarily based on three of these PRs, namely: abundance of selected resources in focal areas (PR1), catch rate of selected fisheries in focal areas (PR2), and reef fish density and biomass inside and adjacent to selected MPAs in focal areas (PR3).

This document summarizes the data collection activities, sampling procedures employed, and results to measure the various PRs. The methods used in the baseline data collection and analysis during the various surveys conducted in the four FISH Project areas in 2004 were also used in the monitoring in 2006 and served as the standard method for the subsequent monitoring in 2008, and the final measurement in 2010. The procedures and methods were designed in such a way that subsequent monitoring events, including the final measurement, were conducted in the same or at least in a similar manner, replicating sampling stations, sampling procedures, and sampling periods.

Fisheries management interventions are expected to have positive results on capture fisheries. These anticipated outcomes are measurable as increase in fish stocks, which leads to increase in catch rates, and ultimately results in increase in total harvest. In this aspect, the FISH Project was faced with two challenges: first, was how to bring about the increase, and second, was how to measure the increase. This document will focus on the methods and results of the attempt to measure the increase.

For the capture fisheries component, the sampling time intervals for all aspects of the assessment in 2004 were replicated within the same months in 2006, 2008 and 2010 with the phase of the moon as major reference. This was to ensure that more or less the same or at least similar conditions prevail during the baseline and monitoring events. Baseline data collected were used as reference point for determining the impact of FISH Project interventions

on the fish stocks. These baseline information as well as information from the monitoring events also served as input to the fisheries profile of the project sites and to fisheries management interventions in the area. The collection of fisheries baseline and subsequent monitoring event were determined and established using the most practical methods applicable for the exploited multispecies fish stocks in the tropics. All potential practical means to measure changes in marine fish stocks were considered in the choice of methods and parameters to be measured. Both fisheries independent and fisheries dependent methods were considered as measures of two performance indicators, namely, PR1 and PR2. The choice of fisheries independent methods used in each area was based on skills available among the local fishers, practicality of the fishing operation, and sustained use of the fishing gear in the area. During the baseline and monitoring activities, other fisheries related data and information were collected to supplement the evaluation of the primary project result. These included inventory of fishers, fishing boats and fishing gears, collection of farm gate prices of landed fish, and location of fishing grounds. To the extent possible, practical methods were included such that a number of them can be carried out by the stakeholders even after the project life. These were intended to become part of stakeholders monitoring schemes beyond project life.

FISH-supported MPA networks in its focal areas consisted of component MPAs that have been strategically selected to improve attainment of MPA goals, particularly those that contribute to fisheries enhancement and habitat protection. The MPAs have been established through community and multi-stakeholder participation and have functioned as primary strategic initiatives for coastal resource management. Information from various studies commissioned by the FISH Project revealed that the component MPAs of the network interact ecologically, with some MPAs acting as sources of eggs, larvae and/or propagules, while others function as sink areas. In this regard, it was believed that most FISH supported MPAs protect particular species or group of related species, or aggregation sites by conserving critical habitats and processes that perpetuate maturation and recruitment. In view of their pivotal importance in achieving FISH Project goals, the Project's Performance Monitoring Plan (PMP) provides for the periodic monitoring of MPAs established or supported through the FISH Project in four focal areas with reference to three performance indicators, PR3, PR4 and PR5, mentioned above

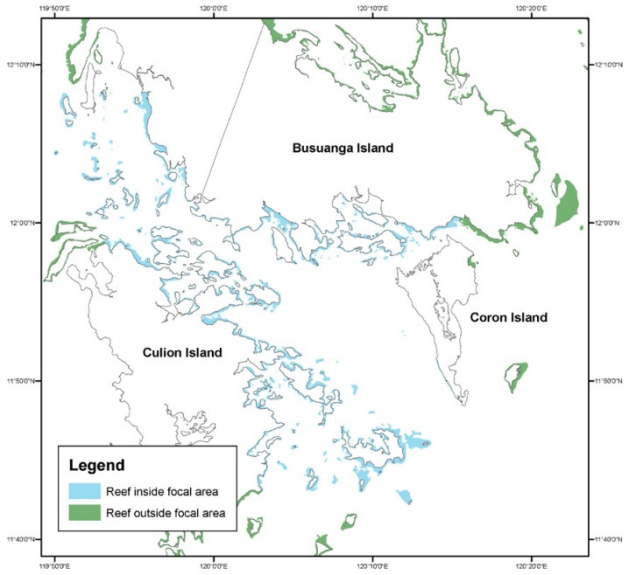
Results of these fish stocks and habitat assessment methods in the 2006, 2008 and 2010 monitoring events were compared with the 2004 baseline data. This document will attempt to make comparison of measurable indicators to determine the effects of coastal resources and fisheries management interventions in the focal areas.

2. METHODS

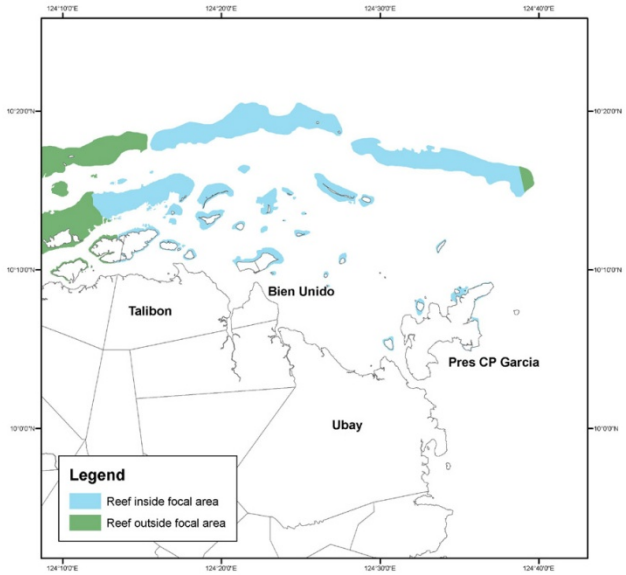
Fisheries baseline data were collected in selected sampling sites of the coastline and coastal waters of the focal areas in Danajon Bank, Calamianes Group of Islands, Surigao del Sur, and Tawi-Tawi (Figure 2). Considered as focal areas were the municipal waters of Coron Bay (Figure 2a) in Calamianes Group of Islands; Talibon, Bien Unido, Ubay and Pres. C.P. Garcia (Figure 2b) in Danajon Bank; Lanuza Bay (Figure 2c) in Surigao del Sur; and Tawi-Tawi Bay (Figure 2d) in Tawi-Tawi.

FIGURE 2. LOCATION OF FISH PROJECT FOCAL AREAS

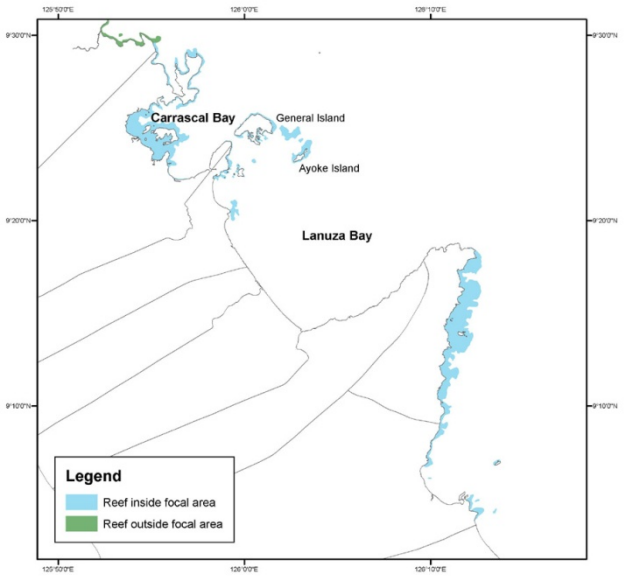
a. Coron Bay focal area



b. Danajon Bank focal area



c. Lanuza Bay focal area



d. Tawi-Tawi Bay focal area

ASSESSMENT OF CAPTURE FISHERIES

Two core teams were formed: one for Danajon Bank and Surigao del Sur and the other for Calamianes Group of Islands and Tawi-Tawi. A senior researcher leads each core team supported by a junior researcher, a catch and effort monitoring coordinator and 10 to 14 enumerators in each focal area. Two major tasks were performed in each focal area: a 3-week to 4-week experimental fishing and a 3-month catch and effort monitoring period. The former task was to serve as basis for estimating PR1 and latter was to serve as input for computing PR2. The junior researcher was primarily tasked to assist the senior researcher in the test fishing experiments while the catch and effort monitoring coordinator was assigned to supervise the enumerators and perform weekly data encoding. The entire process of data collection, consolidation, entry, and retrival passed through a quality control quality assurance (QAQC) process. These included establishment of control survey stations, regular evaluation of enumerators, filtering of questionable data, and investigation and, ultimately, elimination of erroneous data.

The various activities under the capture fisheries baseline assessment and their actual schedule of implementation in the four focal areas are summarized in Table 2. Initial activities included the finalization of sampling design for test fishing, harmonization of catch and effort monitoring procedures, and standardization of forms and templates. Likewise, preliminary test fishing stations for candidate fishing gears were mapped out and possible deployment of enumerators were evaluated and finalized.

Pre-sampling activities in each focal area included a customary courtesy call with the local government executive and a round of inspection of the entire area prior to actual field mobilization focusing on rapid site appraisal and informal interview of randomly-selected local fishers and government authorities, mostly members of the local government units (LGU). The purpose of this activity was to obtain preliminary insights into the nature and extent of the fishing operations in the study and collection areas. The data obtained provided the basis for the subsequent work scoping and scaling of field manpower to execute the sampling plan. This was followed by the recruitment and organization of the test fishing and field monitoring teams to implement the pre-designed scope of work within the specified time frame. The latter entailed a preparatory phase for hiring, training, tasking, deployment, and trial runs for data collection.

To provide a more or less complete and unbiased picture of the state of the harvestable fish stocks, both fishery-independent and fishery-dependent survey methods were utilized during the baseline data collection in year 2004. The same methods and specific sampling procedures that went with it were likewise employed during the 2006, 2008 and 2010 monitoring events. The various capture fisheries activities conducted during the monitoring events were exactly the same as those conducted during the fisheries baseline assessment. Their actual schedules of implementation in the four focal areas are summarized in Table 3 and Table 4.

In each focal area, a set of selected fishing gear types were randomly deployed for the conduct of fishery-independent surveys. Catch and effort of all fishing gears were monitored for 3 months for the fishery-dependent survey. The fishery-independent survey was expected to provide unbiased estimates of stock sizes. The general plan was to deploy fishing gears in fishing areas randomly selected for the study. The fishery-dependent survey was aimed to provide estimates of the current level of catch rates by all fishing gears used in the area. Catch and effort information were collected in representative landing sites selected for the study.

TABLE 2. SCHEDULE OF CAPTURE FISHERIES BASELINE DATA COLLECTION ACTIVITIES IN YEAR 2004

	Activities	Month																																			
		Mar				Apr				May				June				July				Aug				Sep				Oct				Nov			
Cebu Office	Recruitment of core team members	■	■	■																																	
	Finalization of sampling design			■	■																																
	Standardization of methods, forms, etc.				■	■	■																														
	Development of encoding template							■	■	■	■	■	■	■	■	■																					
	Database development									■	■	■	■	■	■	■	■	■	■	■	■																
	Data quality control & quality assurance													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Data input into the database																	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Danajon	Coordination with LGU					■	■	■																													
	Hiring of assistants and enumerators						■	■																													
	Training of assistants and enumerators							■	■																												
	Catch and effort monitoring									■	■	■	■	■	■	■	■	■	■	■	■																
	Experimental fishing											■		■	■	■																					
	Data encoding and quality control										■	■	■	■	■	■	■	■	■	■	■	■	■	■													
	Report writing																						■	■	■												
Lanuza Bay	Coordination with LGU																	■	■																		
	Hiring of assistants and enumerators																	■	■																		
	Training of assistants and enumerators																		■	■																	
	Catch and effort monitoring																				■	■	■	■	■	■	■	■	■	■	■	■	■				
	Experimental fishing																						■	■						■	■						
	Data encoding and quality control																					■	■	■	■	■	■	■	■	■	■	■	■	■	■		
	Report writing																																	■	■	■	
Coron Bay	Coordination with LGU							■	■	■	■																										
	Hiring of assistants and enumerators							■	■																												
	Training of assistants and enumerators								■	■																											
	Catch and effort monitoring										■	■	■	■	■	■	■	■	■	■	■	■															
	Experimental fishing												■																								
	Data encoding and quality control											■	■	■	■	■	■	■	■	■	■	■	■	■	■												
	Report writing																							■	■	■											
Tawi-tawi Bay	Coordination with LGU																■	■	■	■																	
	Hiring of assistants and enumerators															■	■																				
	Training of assistants and enumerators																■	■																			
	Catch and effort monitoring																		■	■	■	■	■	■	■	■	■	■	■	■	■						
	Experimental fishing																		■				■	■	■												
	Data encoding and quality control																			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Report writing																																		■	■	■

TABLE 3. SCHEDULE OF CAPTURE FISHERIES MONITORING ACTIVITIES IN YEAR 2006

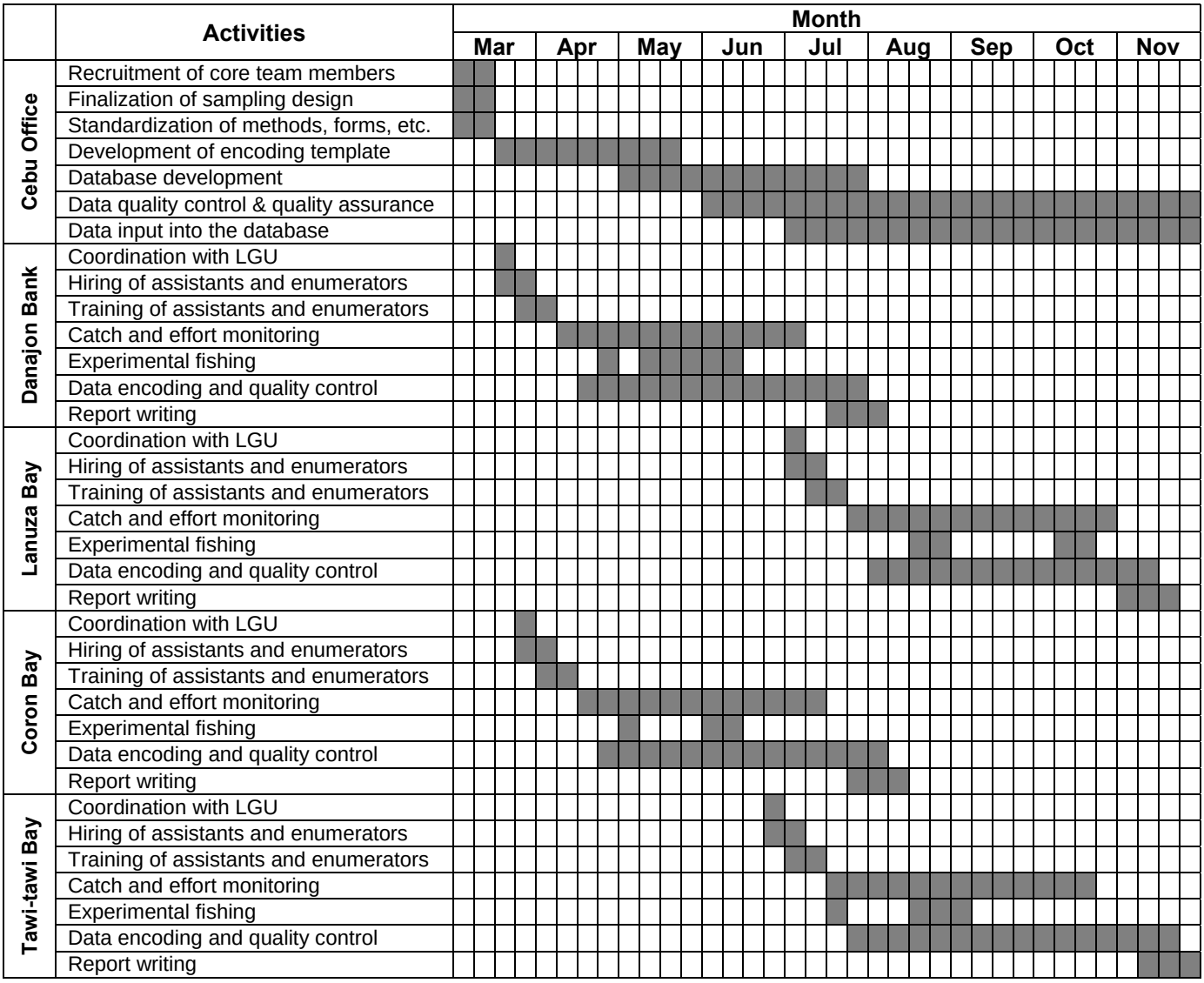


TABLE 4. SCHEDULE OF CAPTURE FISHERIES MONITORING ACTIVITIES IN YEAR 2008

	Activities	Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov			
Cebu Office	Recruitment of core team members	■	■																																		
	Finalization of sampling design	■	■																																		
	Standardization of methods, forms, etc.	■	■																																		
	Development of encoding template			■	■	■	■	■	■	■	■	■																									
	Database development									■	■	■	■	■	■	■	■	■	■	■	■																
	Data quality control & quality assurance													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Data input into the database																	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Danajon Bank	Coordination with LGU				■																																
	Hiring of assistants and enumerators				■	■																															
	Training of assistants and enumerators					■	■																														
	Catch and effort monitoring							■	■	■	■	■	■	■	■	■	■	■	■																		
	Experimental fishing									■		■	■	■	■	■																					
	Data encoding and quality control								■	■	■	■	■	■	■	■	■	■	■	■	■	■															
	Report writing																				■	■	■														
Lanuza Bay	Coordination with LGU																		■																		
	Hiring of assistants and enumerators																		■	■																	
	Training of assistants and enumerators																			■	■																
	Catch and effort monitoring																					■	■	■	■	■	■	■	■	■	■	■	■	■			
	Experimental fishing																								■	■						■	■				
	Data encoding and quality control																						■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Report writing																																		■	■	■
Coron Bay	Coordination with LGU					■																															
	Hiring of assistants and enumerators					■	■																														
	Training of assistants and enumerators						■	■																													
	Catch and effort monitoring								■	■	■	■	■	■	■	■	■	■	■	■																	
	Experimental fishing										■				■	■																					
	Data encoding and quality control									■	■	■	■	■	■	■	■	■	■	■	■	■	■														
	Report writing																					■	■	■													
Tawi-tawi Bay	Coordination with LGU																	■																			
	Hiring of assistants and enumerators																	■	■																		
	Training of assistants and enumerators																		■	■																	
	Catch and effort monitoring																				■	■	■	■	■	■	■	■	■	■	■	■	■				
	Experimental fishing																				■				■	■	■										
	Data encoding and quality control																					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Report writing																																		■	■	■

TABLE 5. SCHEDULE OF CAPTURE FISHERIES MONITORING ACTIVITIES IN YEAR 2010

	Activities	Month																																			
		Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov			
Cebu Office	Recruitment of core team members	■	■																																		
	Finalization of sampling design	■	■																																		
	Standardization of methods, forms, etc.	■	■																																		
	Development of encoding template	■	■																																		
	Database development			■	■	■	■	■	■	■	■	■																									
	Data quality control & quality assurance									■	■	■	■	■	■	■	■	■	■	■	■																
	Data input into the database													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Danajon Bank	Coordination with LGU	■																																			
	Hiring of assistants and enumerators	■	■																																		
	Training of assistants and enumerators		■	■																																	
	Catch and effort monitoring				■	■	■	■	■	■	■	■	■	■	■	■																					
	Experimental fishing						■		■	■	■	■	■																								
	Data encoding and quality control					■	■	■	■	■	■	■	■	■	■	■	■	■	■																		
	Report writing																	■	■																		
Lanuza Bay	Coordination with LGU															■																					
	Hiring of assistants and enumerators															■	■																				
	Training of assistants and enumerators																■	■																			
	Catch and effort monitoring																		■	■	■	■	■	■	■	■	■	■	■	■	■						
	Experimental fishing																					■	■						■	■							
	Data encoding and quality control																			■	■	■	■	■	■	■	■	■	■	■	■	■	■				
	Report writing																															■	■	■			
Coron Bay	Coordination with LGU		■																																		
	Hiring of assistants and enumerators		■	■																																	
	Training of assistants and enumerators			■	■																																
	Catch and effort monitoring					■	■	■	■	■	■	■	■	■	■	■	■																				
	Experimental fishing							■				■	■																								
	Data encoding and quality control						■	■	■	■	■	■	■	■	■	■	■	■	■	■																	
	Report writing																		■	■	■																
Tawi-tawi Bay	Coordination with LGU														■																						
	Hiring of assistants and enumerators														■	■																					
	Training of assistants and enumerators															■	■																				
	Catch and effort monitoring																	■	■	■	■	■	■	■	■	■	■	■	■	■							
	Experimental fishing																	■				■	■	■													
	Data encoding and quality control																		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
	Report writing																															■	■	■			

2.1. FISHERIES INDEPENDENT METHODS

Independent of the fishing activities in each focal area, the project team conducted exploratory or test fishing operations using fishing gears regularly used in the area and expected to be still in use during the entire life of the project. The selection of sampling stations, where test fishing runs were conducted, considered the locations of traditional or regular fishing grounds in the focal area. To ensure a random selection of the sampling stations, all possible fishing grounds for a gear were identified and plotted in consultations with local fishers. Each fishing ground or sampling station was assigned a number. The selection of fishing stations and sequence of test fishing runs were then determined through drawing of lots. This spatial distribution of stations and sequence of test fishing runs in each of the focal areas were strictly followed for fisheries assessments throughout the entire life of the project.

Among the fishing gears considered for the survey across the four focal areas were the trawl, bottom-set longline, bottom-set gillnet, fish trap, crab pot, and beach seine. Although the trawl survey is considered as one of the more accurate methods in determining fish biomass, especially the demersal stocks, conducting this survey was possible only in Danajon Bank where the gear was still being tolerated at the start of the project. Trawl fishing was no longer allowed in Coron Bay, Lanuza Bay, and Tawi-Tawi Bay. Other fishing gears in the focal areas that were ultimately used in the fishery-independent surveys were the bottom-set longline, fish trap, and bottom-set gillnet (Table 6). Bottom-set longline and bottom-set gillnet were used in all the four focal areas while fish traps were used only in Danajon Bank and Tawi-Tawi Bay. Fish traps were not as commonly used in Coron Bay and Lanuza Bay as compared to Danajon Bank and Tawi-Tawi Bay and insisting on their use in those focal areas would mean having them specially constructed for the purpose and entail unreasonably high expenses.

TABLE 6. FISHERIES INDEPENDENT SURVEYS CONDUCTED IN THE FOCAL AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITRING PERIODS

Focal area	Fishing gears	Base year and monitoring events			
		2004	2006	2008	2010
Coron Bay	Trawl				
	Bottom-set longline	✓	✓	✓	✓
	Fish Trap				
	Bottom-set gillnet	*✓	✓	✓	✓
Danajon Bank	Trawl	✓	✓	✓	✓
	Bottom-set longline	✓	✓	✓	✓
	Fish Trap	✓	✓	✓	✓
	Bottom-set gillnet	*✓	✓	✓	✓
Lanuza Bay	Trawl				
	Bottom-set longline	✓	✓	✓	✓
	Fish Trap				
	Bottom-set gillnet	✓	✓	✓	✓
Tawi-Tawi Bay	Trawl				
	Bottom-set longline	✓	✓	✓	✓
	Fish Trap	✓	✓	✓	✓
	Bottom-set gillnet	✓	✓	✓	✓

** baseline data collection conducted in year 2005*

Trawl Survey

Municipal permits from all concerned municipalities in Danajon Bank were obtained a month before conducting the survey. The trawl survey was scheduled for 5 days, and local government units and law enforcers were informed prior to the conduct of the activity. Twenty trawl stations were distributed throughout the focal area following a stratified sampling scheme. In addition, four control stations were assigned outside the focal area. Trawl stations were distributed along various water depth strata and relative to the area covered by each stratum. A polyethyelene net trawl fishing gear commonly used in Danajon Bank was utilized for the survey. An external fine mesh net was added to cover the codend to collect smaller-sized fishes. The cover was made chiefly of fine mesh multifilament knotless net used to compensate for the selectivity inherent to the trawl fishing gear. Test fishing was conducted for 4 days and survey in additional fishing stations serving as control was conducted for one day. A one-hour night trawling operation was included during the 2006, 2008, and 2010 monitoring events to find out the difference in day and night catches.

An outrigger fishing boat powered by a diesel engine was used for the trawling operation. A standard 30-minute dragging time was observed and a dragging speed of two knots was more or less maintained in every run. Catches were sorted, weighed and recorded per sampling station. Species caught were identified to species level with their corresponding common name in the area. Lengths of important and abundant species were measured and recorded to determine their frequency distributions. Specifications of fishing gears and boats used for the surveys during the base period and subsequent monitoring event are given in Table 7. Important values like duration of trawling, length of head rope and mesh size of codend were used as basis to standardize catch rates and estimates of demersal biomass densities. Figure 3 shows the actual trawl fishing stations covered during the base year survey and subsequent monitoring events.

The trawl survey conducted during the baseline assessment in 2004 served as the guide for the surveys conducted during the rest of the monitoring events. This included replicating the precise coordinates of the starting points, end points and dragging directions as well as the nearest time of the start of dragging operation for each station.

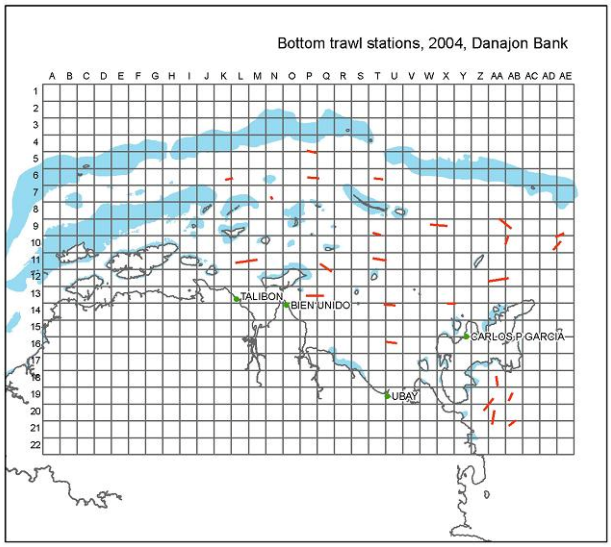
TABLE 7. SPECIFICATIONS AND OPERATION OF BOTTOM TRAWL USED FOR TEST FISHING IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

Focal area	Specifications and operation	Base year and monitoring events			
		2004	**2006**	**2008**	**2010**
Danajon Bank	Date of survey	19-22 May 04 and 5 Jul 04	27-30 Apr 06 and 14 Jun 06	05-08 May 08 and 28 June 08	14-17 Apr 10 and 02 June 08
	Length of trawl	8.67 m	7.50 m	7.50 m	7.60 m
	Headrope	8.90 m	7.60 m	7.60 m	8.50 m
	Footrope	11.08 m	10.40 m	10.40 m	11.60
	Mesh size of codend	2 cm	2 cm	2 cm	2 cm
	Trawling duration	30 min	* 30 min	* 30 min	* 30 min
	Engine type	Fuso 4DR5	Fuso 4DR5	Fuso 4DR5	Fuso 4DR5
	Horse power	65 HP	80 HP	80 HP	80 HP

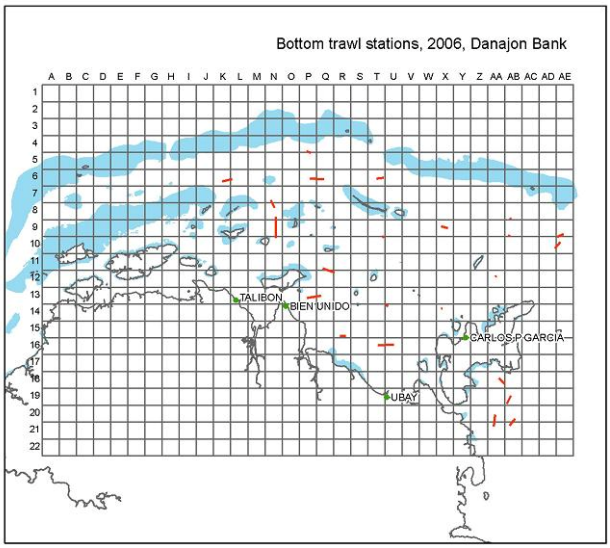
** A one-hour trawling was also conducted at night to determine the differences in the type of fish caught during day and night.*

FIGURE 3. BOTTOM TRAWL TEST FISHING STATIONS IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

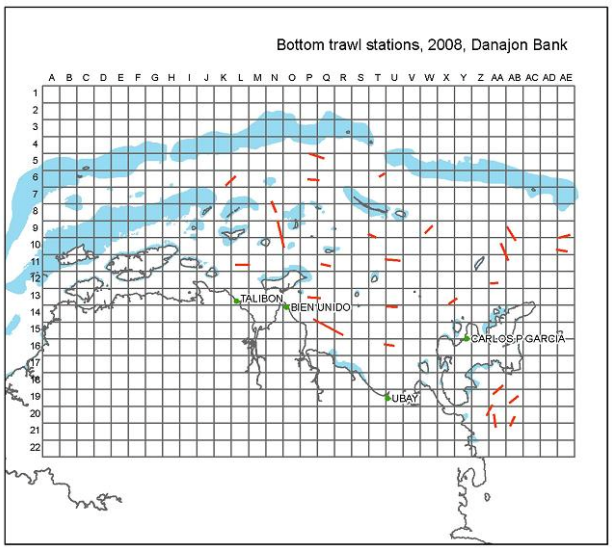
2004



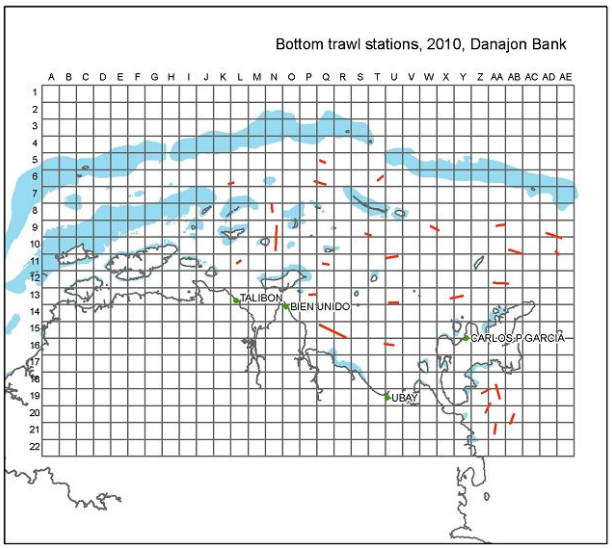
2006



2008



2010



Bottom-set Longline Survey

Six to nine units of bottom-set longlines were rented in each focal area to perform this particular test fishing activity. A standard number of hooks and hook sizes were adhered to in each focal area following what is commonly used and peculiar to each area (Table 8). Whenever possible, only one type of bait was used. However, this became dependent upon what was actually available in the area during the survey period.

A focus group discussion with bottom-set longliners in each focal area was conducted primarily to identify their traditional fishing grounds and also to find out probable difficulties and problems that may be encountered in the course of the survey. Using the interview results, fishing stations were selected within the focal area and a few control sites outside the focal area. For

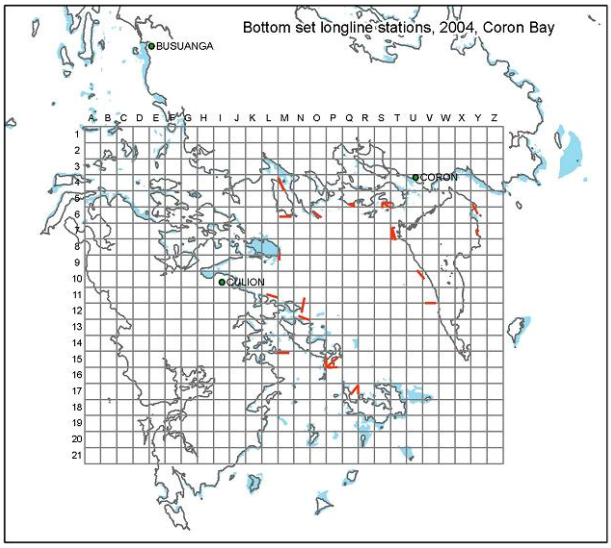
each day of test fishing run between six to nine sampling stations out of the entire identified fishing stations were selected at random. During the actual operation, the coordinates of the start and end of the mainline were determined and recorded. Soak times ranged from 1 to 2 hours and operations were carried out usually between 3:00 a.m. to 6:00 a.m. in Danajon Bank, Coron Bay, and Lanuza Bay, and from 7:00 p.m. to 12:00 p.m. in Tawi-Tawi Bay. Information gathered included total weight of the catch, species composition, weight and number per species, and length-frequency distribution of abundant species. The actual bottom-set longline fishing stations during the base year and subsequent monitoring periods are shown in Figures 4, 5, 6, and 7 for Coron Bay, Danajon Bank, Lanuza Bay, and Tawi-Tawi Bay, respectively.

TABLE 8. SPECIFICATIONS AND OPERATION OF BOTTOM-SET LONGLINE USED FOR TEST FISHING IN THE FOUR FOCAL AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

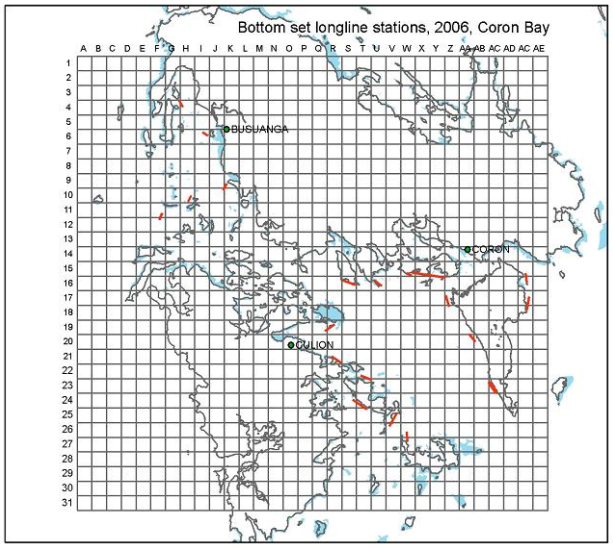
Focal area	Specifications and operation	Base year and monitoring events			
		2004	2006	2008	2010
Coron Bay	Date of survey	23-28 May 04	1-6 May 06	9-14 May 08	08-23 Apr 10
	Number of units	6	9	9	9
	Number of hooks/unit	800	500 & 800	500 & 800	500 & 800
	Hook size	#563 and #565	#563 and #565	#563 and #565	#563 and #565
	Bait	anchovy/scad	anchovy/scad	anchovy/scad	anchovy/sardine
	Typical time of setting	2:00–5:00 a.m.	3:30–5:00 a.m.	4:00–5:00 a.m.	4:00–5:00 a.m.
	Typical soak time	1-2 hours	1 hour	1 hour	1 hour
	Number of settings	1	1	1	
Danajon Bank	Date of survey	15-23 Jun 04	29 May–3 Jun 06	02-07 Jun 08	13-18 May 10
	Number of units	7	7	7	7
	Number of hooks/unit	1,000	1,000	1,000	1,000
	Hook size	#566	#566	#566	#566
	Bait	squid	squid	squid	squid
	Typical time of setting	3:00-5:00 a.m.	3:00-5:00 a.m.	3:00-5:00 a.m.	3:00-5:00 a.m.
	Typical soak time	1 hour	1 hour	1 hour	1 hour
	Number of settings	1	1	1	1
Lanuza Bay	Date of survey	8-17 Aug 04	18-27 Aug 06	24-28 Aug 08	05-10 Aug 10
	Number of units	6	6	7	7
	Number of hooks/unit	800	300 &800	800	800
	Hook size	#562	#562	#562	#562
	Bait	anchovy	anchovy	anchovy	anchovy
	Typical time of setting	3:00–6:00 a.m.	3:00–6:00 a.m.	3:00–6:00 a.m.	3:00–6:00 a.m.
	Typical soak time	1-2 hours	1-2 hours	1-2 hours	1-2 hours
	Number of settings	1	1	1	1
Tawi-Tawi Bay	Date of survey	10-15 Jul 04	18-29 Jul 06	26-31 Jul 08	05-09 July 10
	Number of units	6	6	6	6
	Number of hooks/unit	200	200	200	200
	Hook size	#17 & #18	#17 & #18	#17 & #18	#17 & #18
	Bait	sardine/scad	sardine/scad	sardine/scad	sardine/scad
	Typical time of setting	7:00-12:00 p.m.	7:00-12:00 p.m.	7:00-12:00 p.m.	7:00-12:00 p.m.
	Typical soak time	1-2 hours	1-2 hours	1-2 hours	1-2 hours
	Number of settings	2-3	2-3	2-3	2-3

FIGURE 4. BOTTOM-SET LONGLINE TEST FISHING STATIONS IN CORON BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

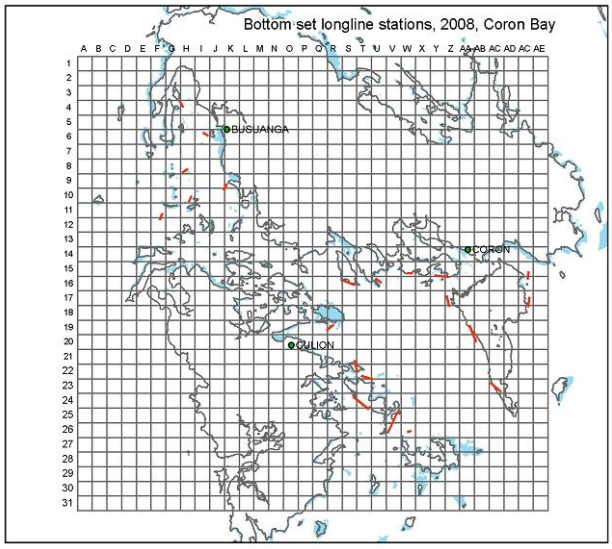
2004



2006



2008



2010

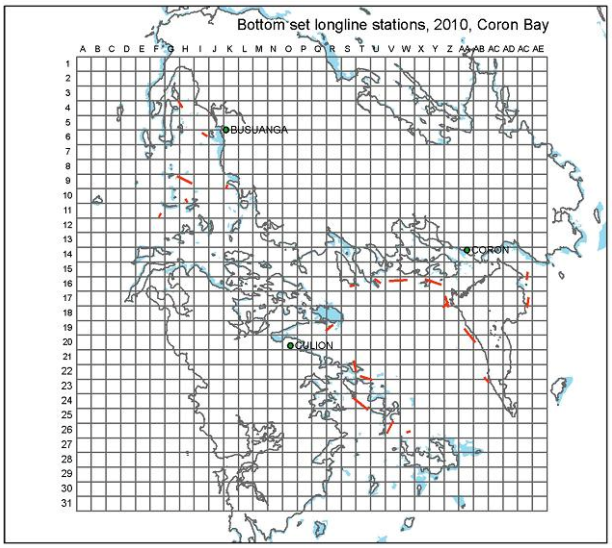
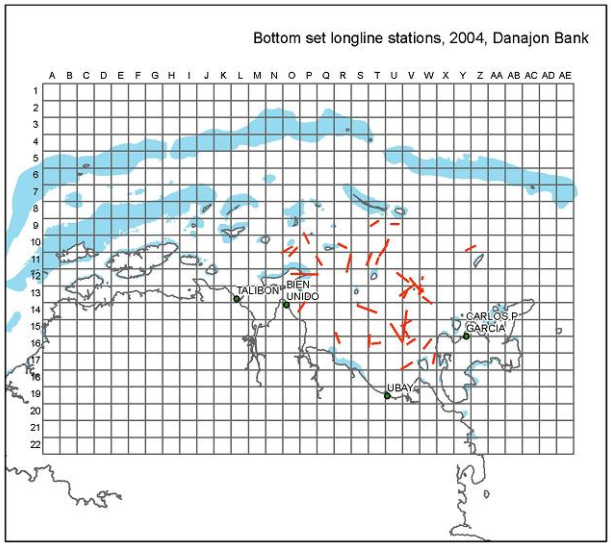
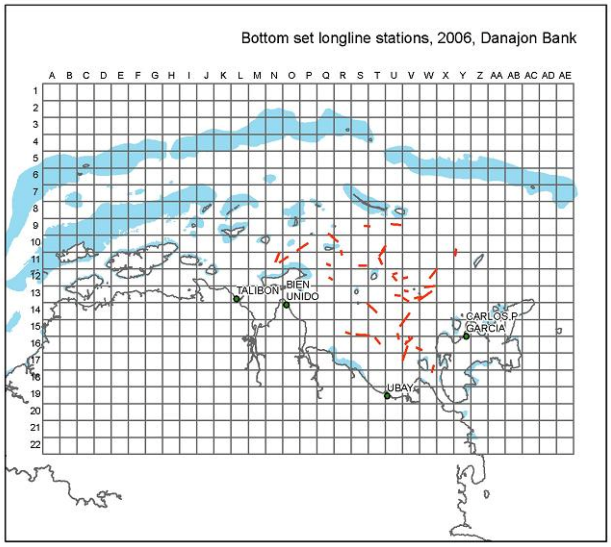


FIGURE 5. BOTTOM-SET LONGLINE TEST FISHING STATIONS IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

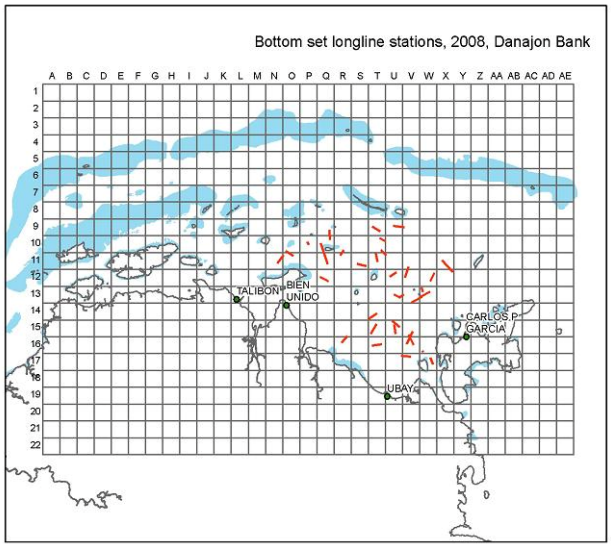
2004



2006



2008



2010

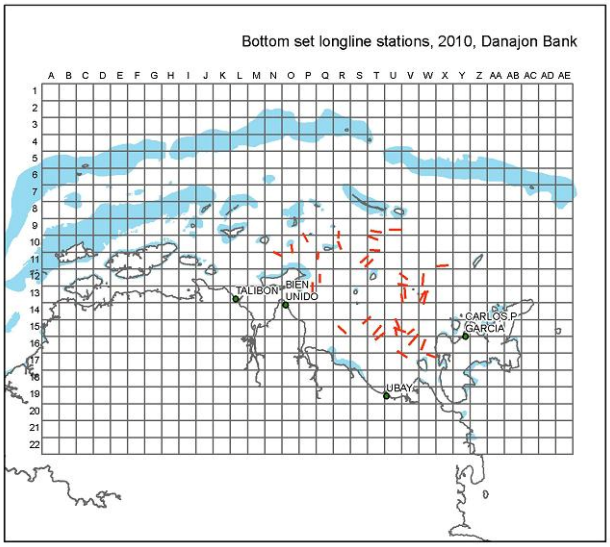
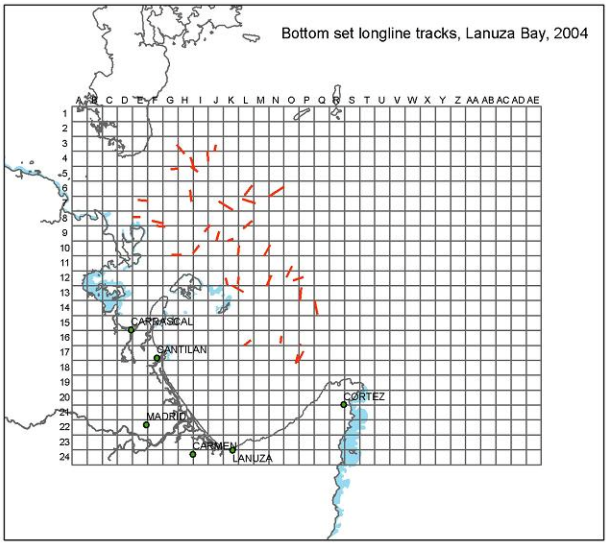
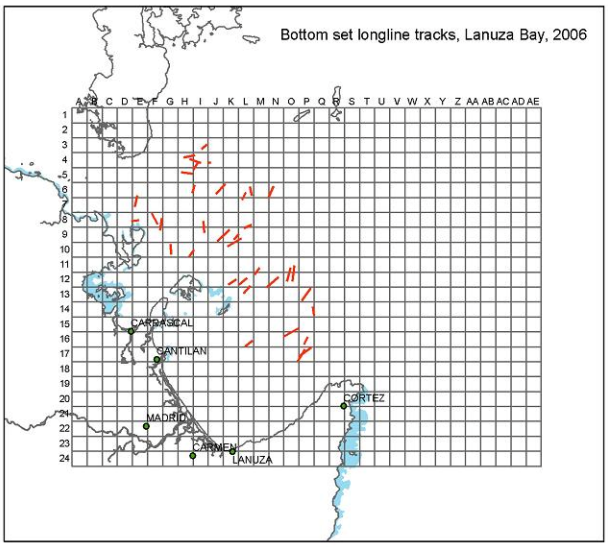


FIGURE 6. BOTTOM-SET LONGLINE TEST FISHING STATIONS IN LANUZA BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

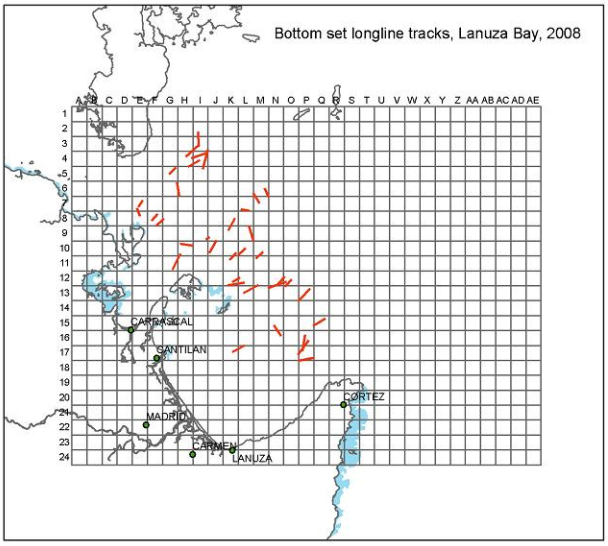
2004



2006



2008



2010

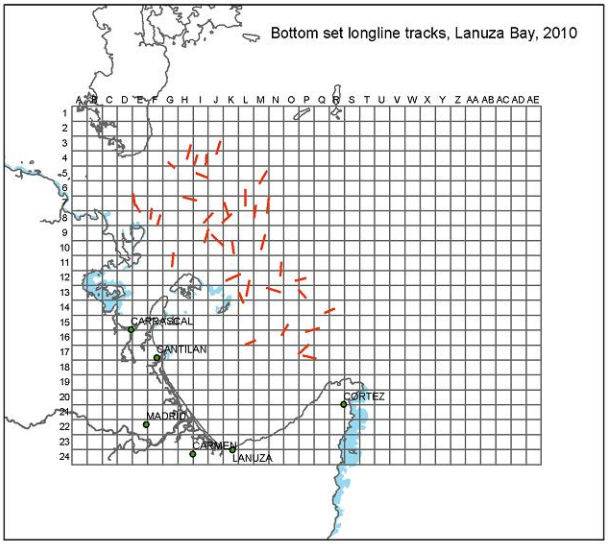
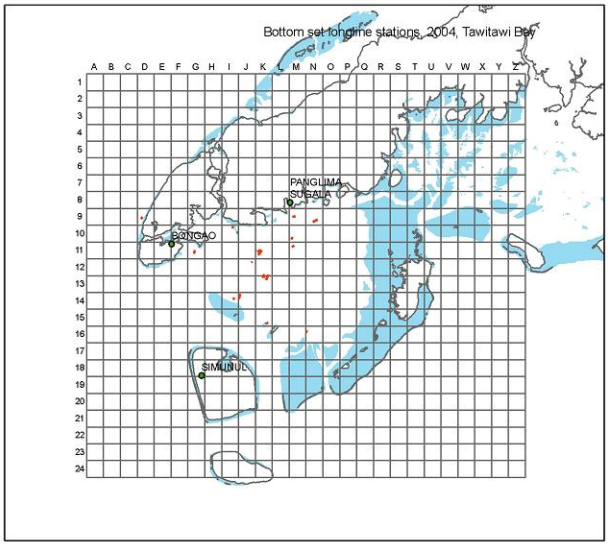


FIGURE 7. BOTTOM-SET LONGLINE TEST FISHING STATIONS IN TAWI-TAWI BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004



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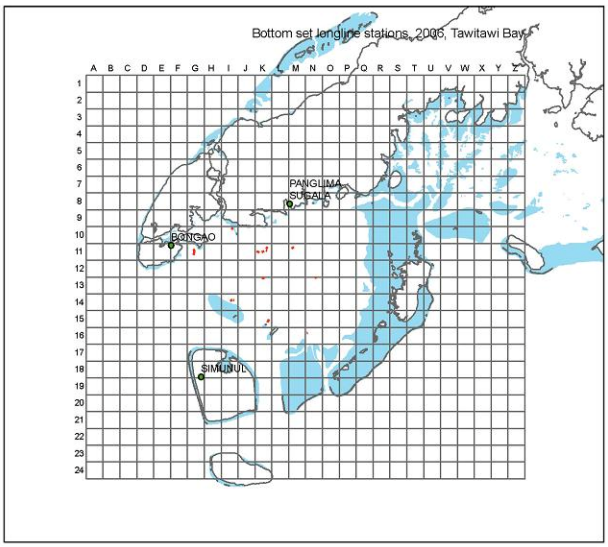
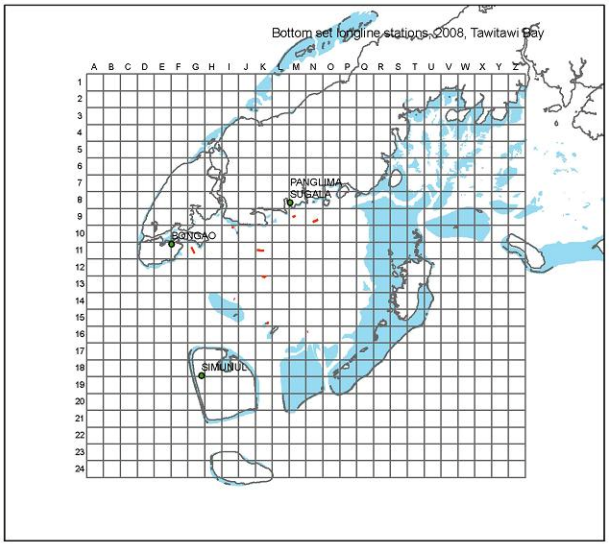
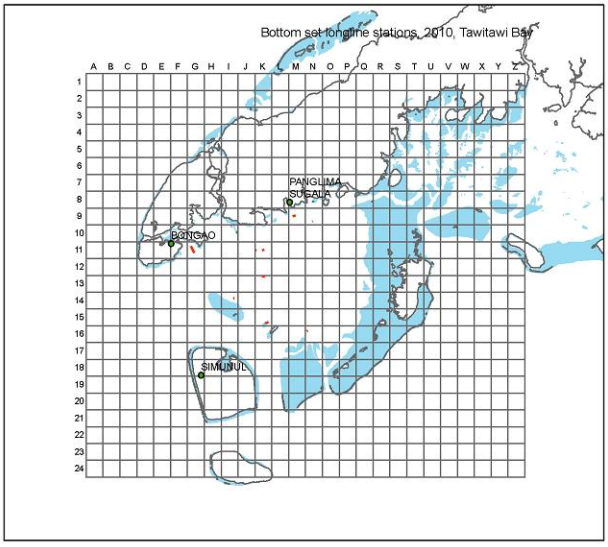


2008



2010



Fish Trap Survey

Fisheries independent survey using fish trap was only conducted in the focal areas of Danajon Bank and Tawi-Tawi Bay where this type of fishing activity was still common. This was also initially intended to be conducted as well in Coron Bay and Lanuza Bay but was later on the plan was abandoned due to unavailability of fishers operating this gear on a regular basis. As initial step, a focus group discussion with the local fish trap operators was conducted prior to the actual exploratory fishing survey to identify traditional fishing grounds for fish traps in the area and also to find out probable difficulties that may be encountered in the course of the fish trap surveys. A cluster of fish traps constitute a fish trap unit. Seven clusters were used in Danajon Bank and six in Tawi-Tawi Bay (Table 7). In Danajon Bank, a cluster consisted of ten pots, while in Tawi-Tawi Bay it only consisted of six pots. Only fish traps commonly operated in the areas were used.

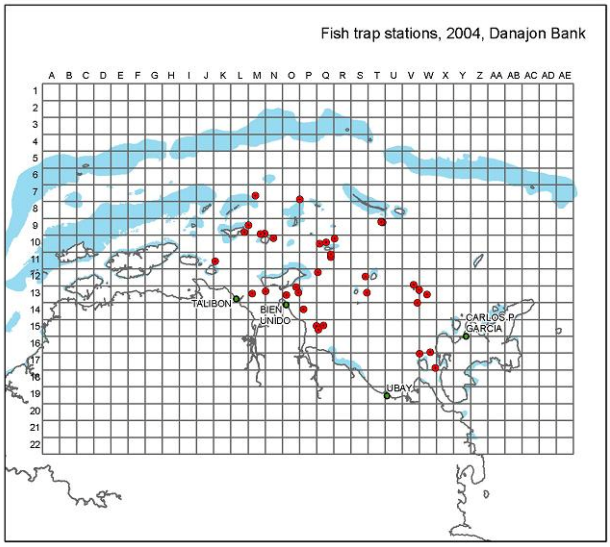
For each day of test fishing run, seven sampling stations in Danajon Bank and five in Tawi-Tawi Bay out of the entire identified fishing stations were selected at random. However, out of the ten sites identified in Tawi-Tawi only five were found accessible due to poor weather condition during the baseline survey period. Coordinates of the fish pots during setting and hauling were recorded using the global positioning system (GPS). Soak time was 2 days in Danajon Bank and 3 days in Tawi-Tawi Bay. The traps were hauled after the soaking period and then reset for the next operation after retrieval of the catch. Pot catches were segregated in labeled plastic bags for analysis back at the base port. Information gathered included total weight of the catch, species composition, weight and number per species, and length-frequency distribution of abundant species. Figures 8 and 9 show the actual fish trap fishing stations established in Danajon Bank and Tawi-Tawi Bay, respectively, during the base year survey and subsequent monitoring periods.

TABLE 9. SPECIFICATIONS AND OPERATION OF FISH TRAPS USED FOR TEST FISHING IN DANAJON BANK AND TAWI-TAWI BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

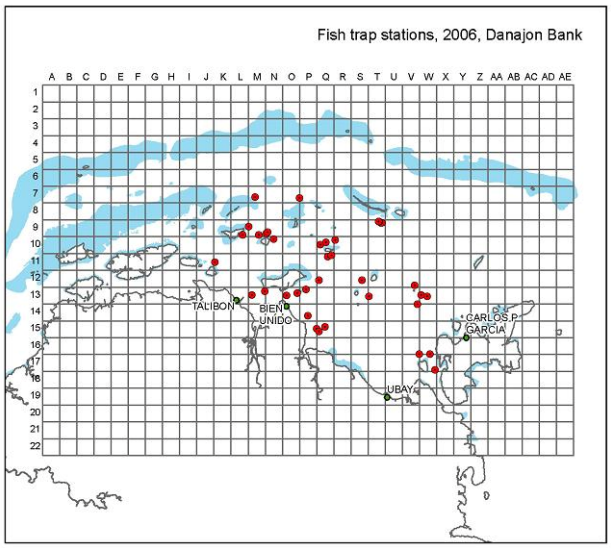
Focal area	Specifications and operation	Base year and monitoring event			
		2004	2006	2008	2010
Danajon Bank	Date of survey	30 May-12 Jun 04	09-21 May 06	16-25 May 08	24 Apr-03 May 10
	Number of clusters	7	7-8	7-8	7-8
	Number of pots/cluster	10	10	10	10
	Trap dimension	60x45x15 cm	60x45x15 cm	60x45x15 cm	60x45x15 cm
	Material	Bamboo	Bamboo	Bamboo	Bamboo
	Soaking period	2 days	2 days	2 days	2 days
Tawi-Tawi Bay	Date of survey	13-25 Aug 04	20 Aug-02 Sep 06	27 Aug-11 Sep 08	07-22 Aug 10
	Number of clusters	5	6	5	5
	Number of pots/cluster	6	6	6	6
	Trap dimension	150x122x30 cm	150x122x30 cm	150x122x30 cm	150x122x30 cm
	Material	Bamboo	Bamboo	Bamboo	Bamboo
	Soaking period	3 days	3 days	3 days	3 days

FIGURE 8. FISH TRAP TEST FISHING STATIONS IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

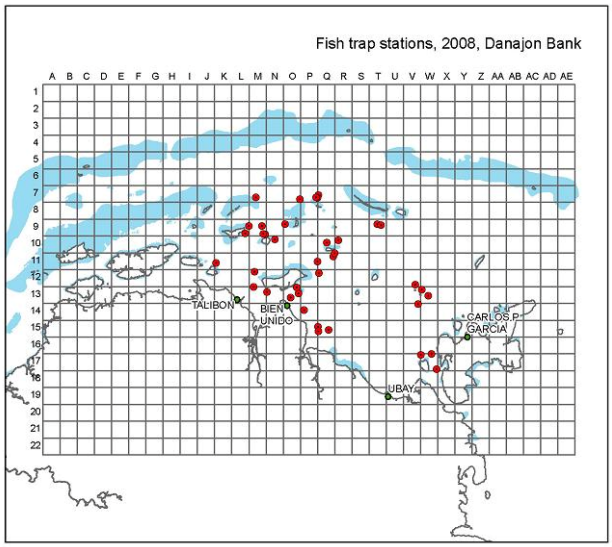
2004



2006



2008



2010

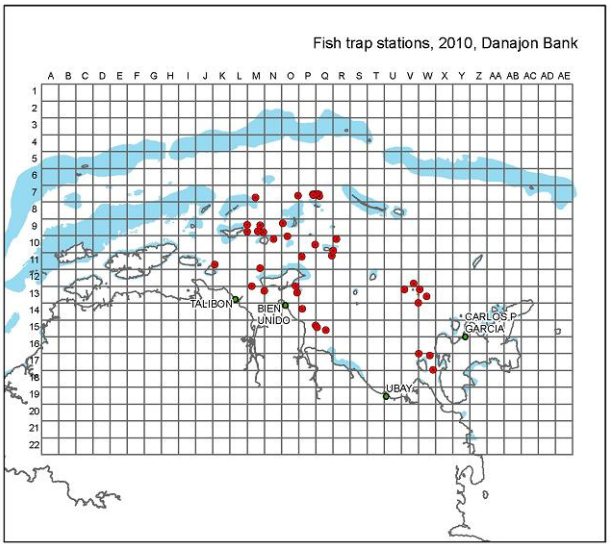
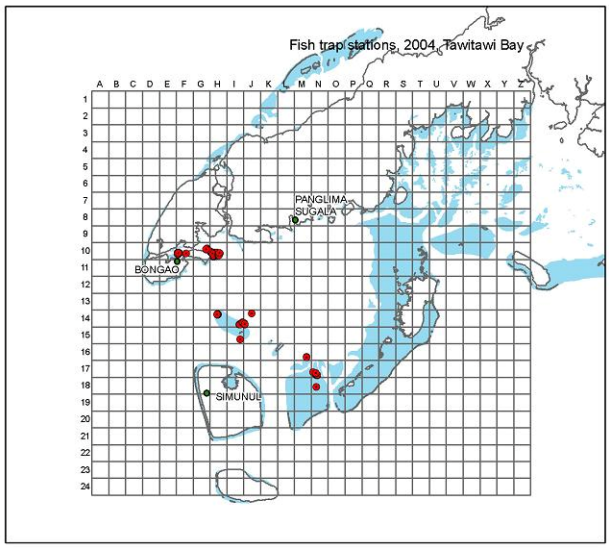
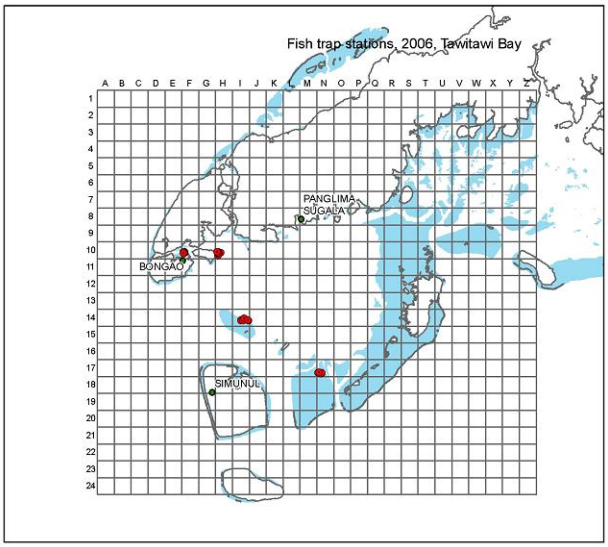


FIGURE 9. FISH TRAP TEST FISHING STATIONS IN TAWI-TAWI BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

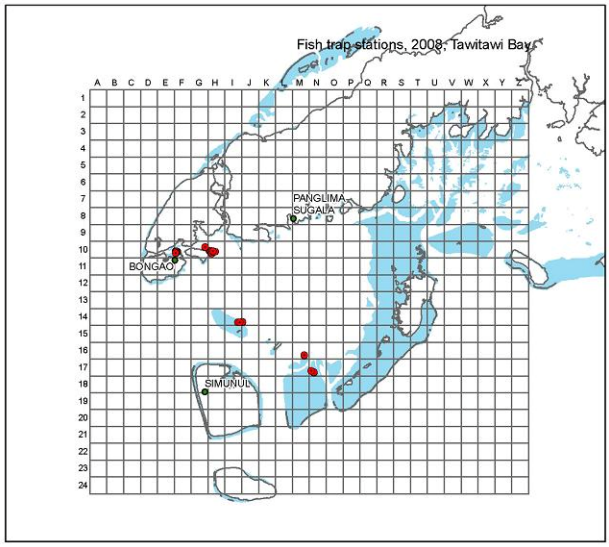
2004



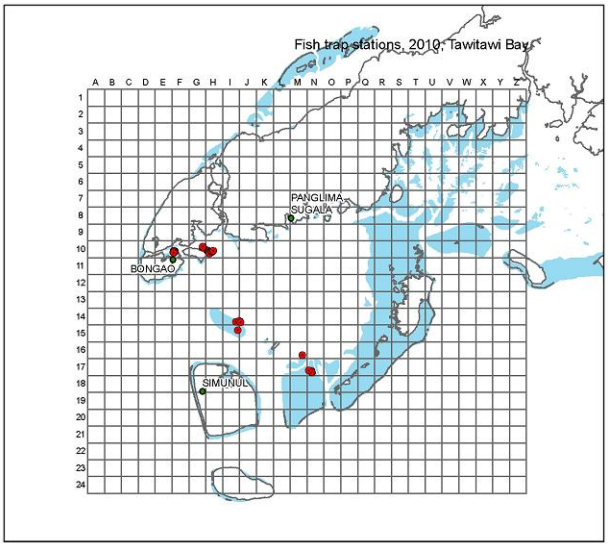
2006



2008



2010



Bottom-set Gillnet Survey

During the 2004 base year period bottom-set gillnet test fishing were conducted only in Lanuza Bay and Tawi-Tawi Bay. Danajon Bank and Coron Bay were only added in 2005. Table 8 shows the specifications of the bottom-set gillnet survey in the focal areas. Four bottom-set gillnet units in Danajon Bank and Lanuza Bay, three in Tawi-Tawi Bay six in Coron Bay were used for the survey. The gill net units operated in Danajon Bank consist of 5 panels each of both 7 and 10 knot mesh size. A gillnet unit in Coron Bay consisted of 5 panels while usually 10 panels make up the gillnets in Busuanga Bay composed of 6 and 6.5 knot mesh. Each gillnet unit used in Lanuza Bay consisted of three pairs of panels made of 6, 7, and 8 knot mesh. Each panel had a standard length of 66 meters and a standard height of 50 meshes. Each gillnet unit used in Tawi-Tawi Bay consisted of 12 gillnet panels of different mesh sizes (7 and 8 knot

mesh). The sequence of the various mesh size panels constituting each unit was determined at random before each fishing run.

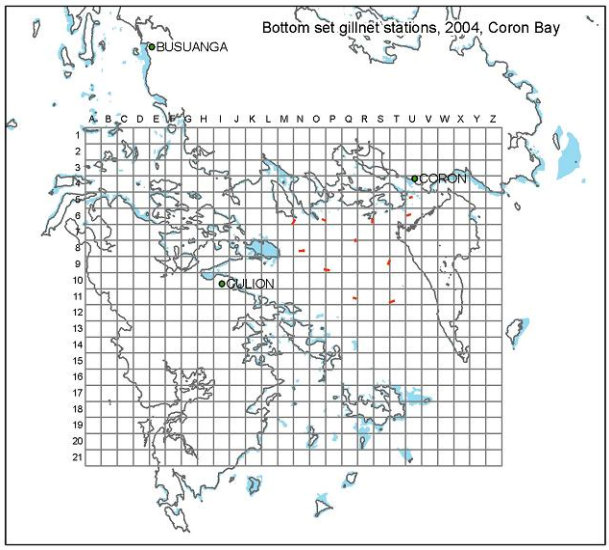
The fishing operations were designed following the common practice in the area. All possible bottom-set gillnet areas were identified through a focus group discussion with the bottom-set gillnet fishers. Sampling stations for each day of operation were selected randomly from the identified bottom-set gillnet areas. Soak time per operation was two hours in Danajon Bank and Lanuza Bay and one hour in Coron Bay and Tawi-Tawi Bay. The exact coordinates of the locations where the gears were set were recorded with a GPS. The catch from one gillnet unit was treated as one aggregate catch. However, upon hauling, the catch from panels with different mesh sizes were segregated and recorded separately. Information gathered included total weight of the catch, species composition, weight and number per species, and length-frequency distribution of abundant species. The actual bottom-set gillnet fishing stations during the base year and subsequent monitoring periods are shown in Figures 10, 11, 12, and 13 for Coron Bay, Danajon Bank, Lanuza Bay, and Tawi-Tawi Bay, respectively

TABLE 10. SPECIFICATIONS AND OPERATION OF BOTTOM-SET GILLNET USED FOR TEST FISHING IN THE FOUR FOCAL AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

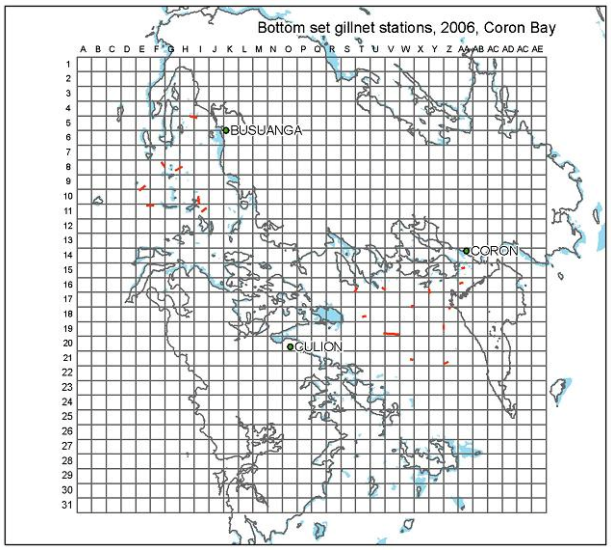
Focal area	Specifications and operation	Base year and monitoring event			
		2004/2005	2006	2008	2010
Coron Bay	Date of survey	12-21 Jun 05	31 May-9 Jun 06	7-16 Jun 08	17-26 May 10
	Number of units	3	6	6	6
	Number of panels/unit	5	5 &10	5 & 10	5 & 10
	Length of panel	200 m	200 m	200 m	200 m
	Height of panel	2 m	2 m	2 m	2 m
	Mesh sizes used	# 6	# 6 & # 6.5	# 6 & # 6.5	# 6 & # 6.5
	Typical time of setting	4:30-6:00 a.m.	4:30-6:00 a.m.	4:30-5:00 a.m.	4:30-5:00 a.m.
	Typical soak time	1 hour	1 hour	1 hour	1 hour
	Number of settings	1	1	1	1
Danajon Bank	Date of survey	20-27 Jun 05	9-16 Jun 06	16-24 Jun 08	26 Jun-01 Jul 10
	Number of units	4	4	4	4
	Number of panels/unit	4	4	4	4
	Length per panel	107 m	107 m	107 m	107 m
	Height of panel	50 meshes	50 meshes	50 meshes	50 meshes
	Mesh sizes used	#7 and # 10	#7 and # 10	#7 and # 10	#7 and # 10
	Typical time of setting	4:00-6:00 a.m.	4:00-6:00 a.m.	4:00-6:00 a.m.	4:00-6:00 a.m.
	Typical soak time	1-2 hours	1-2 hours	1-2 hours	1-2 hours
	Number of settings	1	1	1	1
Lanuza Bay	Date of survey	01-10 Oct 2004	09-22 Oct 2006	18-29 Oct 08	26 Sep-02 Oct 10
	Number of units	4	4	4	4
	Number of panels/unit	6	6	8	8
	Length per panel	66 m	66 m	66 m	66 m
	Height of panel	50 meshes	50 meshes	50 meshes	50 meshes
	Mesh sizes used	#6, #7, and #8	#6, #7, and #8	#6, #7,#8 and #9	#6, #7,#8 and #9
	Typical time of setting	2:00–6:00 a.m.	2:00–6:00 a.m.	2:00–6:00 a.m.	2:00–6:00 a.m.
	Typical soak time	2 hours	2 hours	2 hours	2 hours
	Number of settings	1	1	1	1
Tawi-Tawi Bay	Date of survey	11-15 Aug 2004	18-22 Aug 2006	25-29 Aug 2008	05-09 Aug 10
	Number of units	3	3	3	3
	Number of panels/unit	12	12	12	12
	Length per panel	200 m	200 m	200 m	200 m
	Height of panel	1 m	1 m	1 m	1 m
	Mesh sizes used	#7 and #8	#7 and #8	#7 and #8	#7 and #8
	Typical time of setting	a.m. and p.m.	a.m. and p.m.	a.m. and p.m.	a.m. and p.m.
	Typical soak time	1 hour	1 hour	1 hour	1 hour
	Number of settings	2	2	2	2

FIGURE 10. BOTTOM-SET GILLNET TEST FISHING STATIONS IN CORON BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

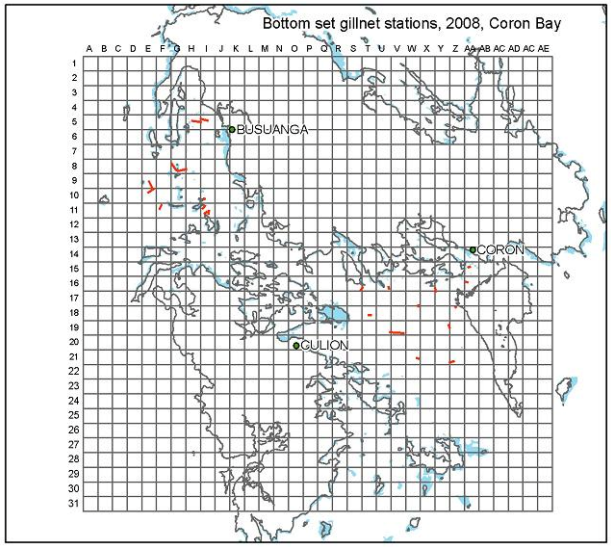
2005



2006



2008



2010

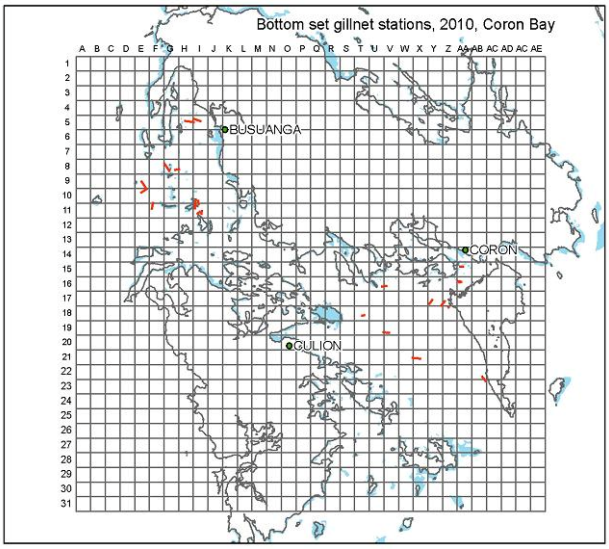
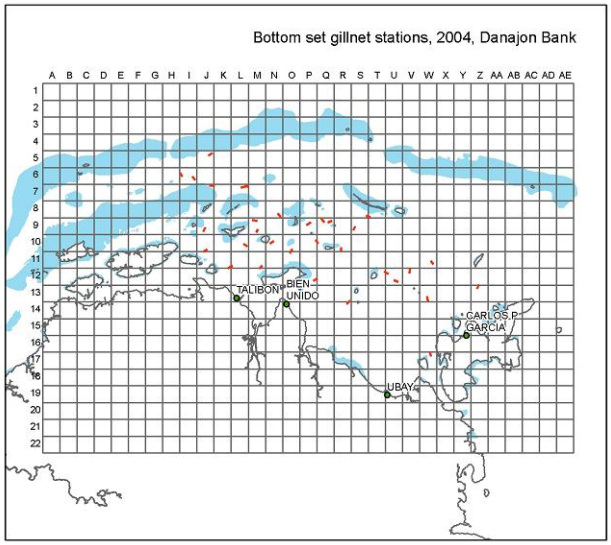
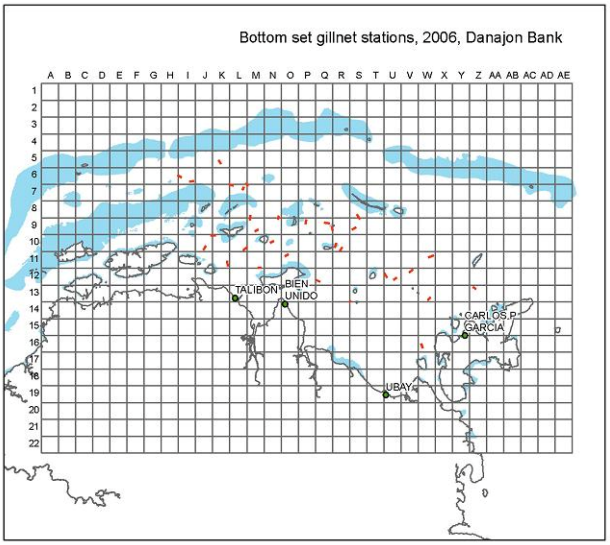


FIGURE 11. BOTTOM-SET GILNET TEST FISHING STATIONS IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

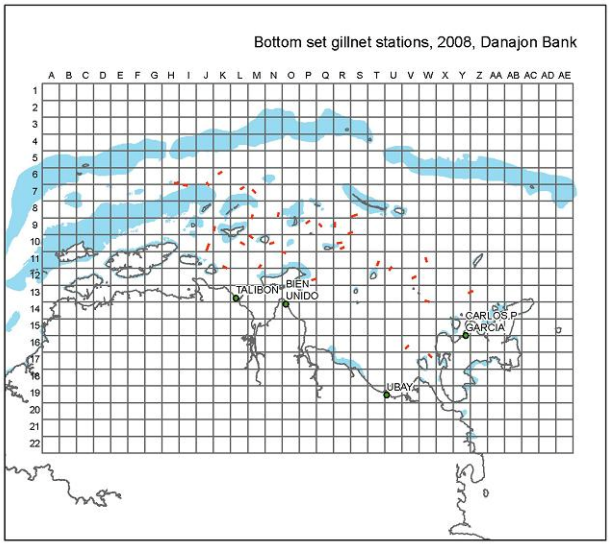
2005



2006



2008



2010

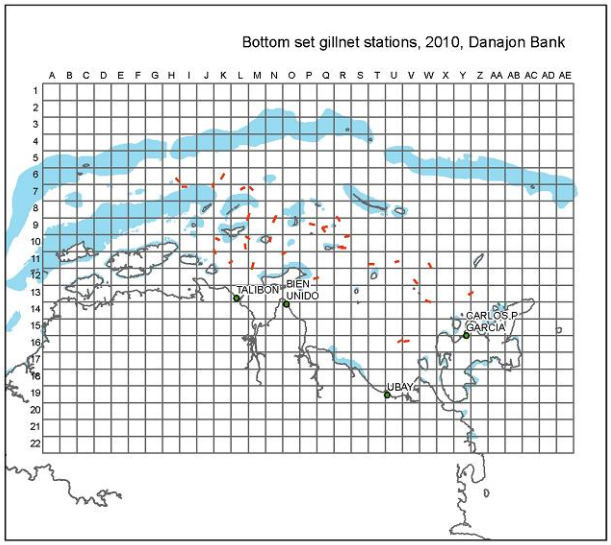
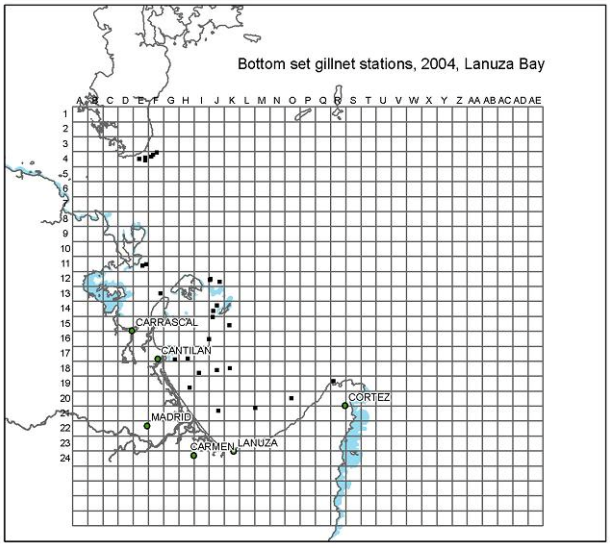
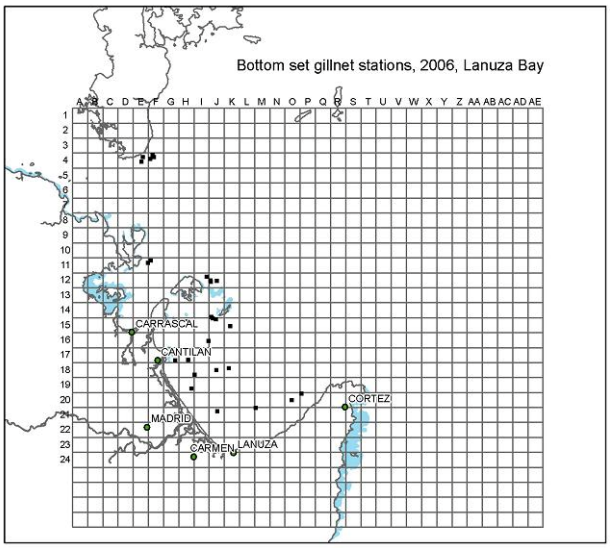


FIGURE 12. BOTTOM-SET GILNET TEST FISHING STATIONS IN LANUZA BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

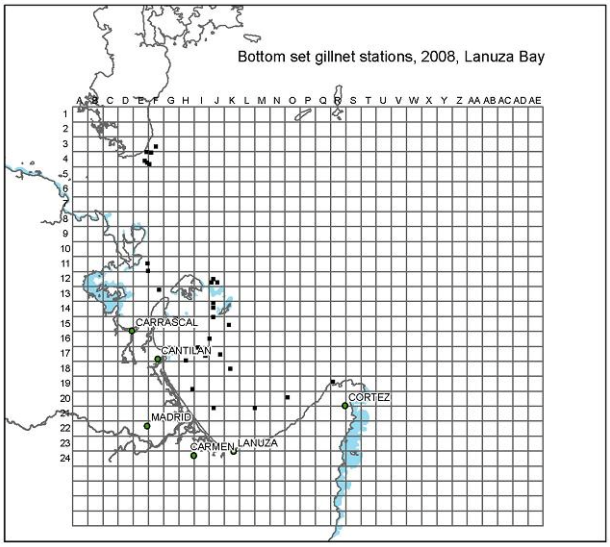
2004



2006



2008



2010

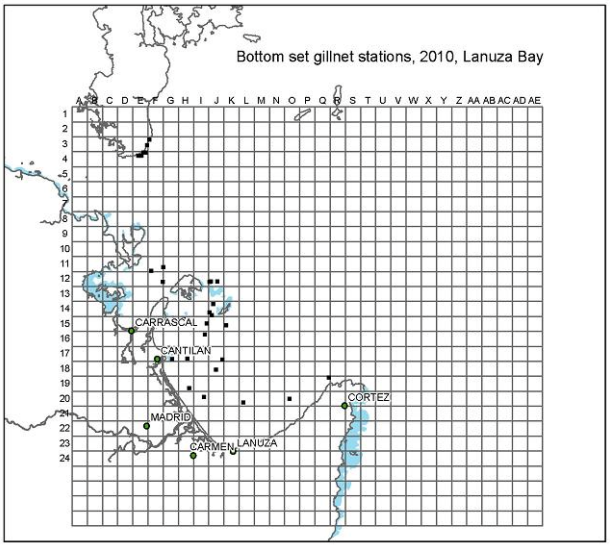
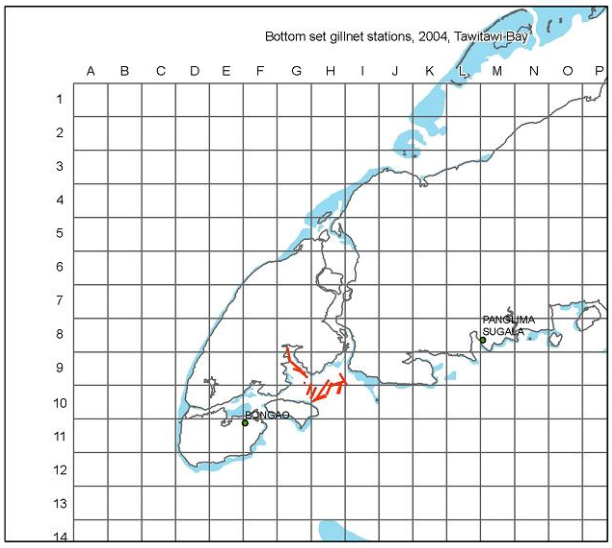
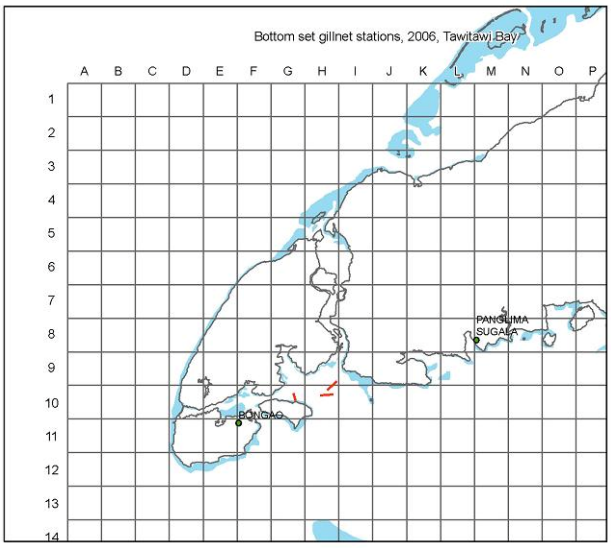


FIGURE 13. BOTTOM-SET GILLNET TEST FISHING STATIONS IN TAWI-TAWI BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

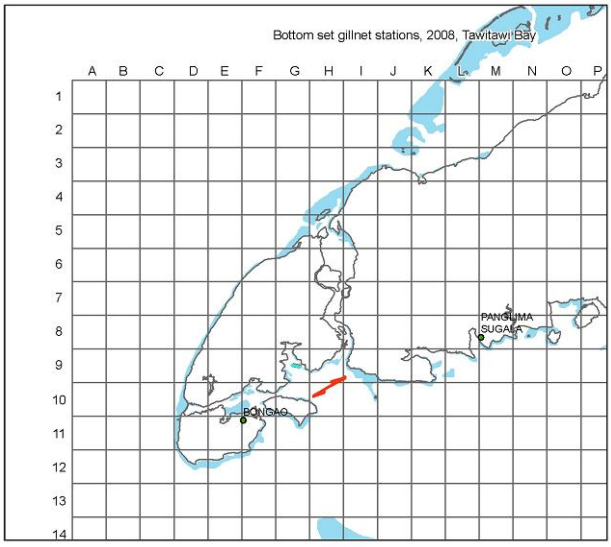
2004



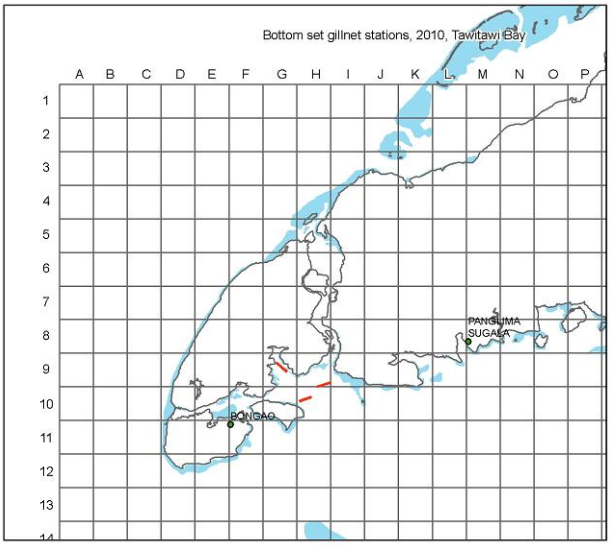
2006



2008



2010



2.2. FISHERIES DEPENDENT METHODS

Fisheries dependent survey consisted mainly of catch and effort monitoring of all fishing activities during a specific period of time, in this case, 3 months. The idea was to collect the same set of information during establishment of baseline in year 2004 and during subsequent project monitoring that was also to be conducted during the same 3-month period in years 2006, 2008, and 2010.

To get accurate results from the catch and effort monitoring activities, a field training of enumerators was conducted before the actual monitoring. This consisted of discussion of the purpose of catch and effort monitoring, introduction to the basic principles of sampling, elaboration of the project sampling design, catch sampling strategies, and proper behavior

during the catch sampling process. Actual catch monitoring practice runs were conducted for several days for the enumerators to practice and develop their skills following the proper sampling procedure.

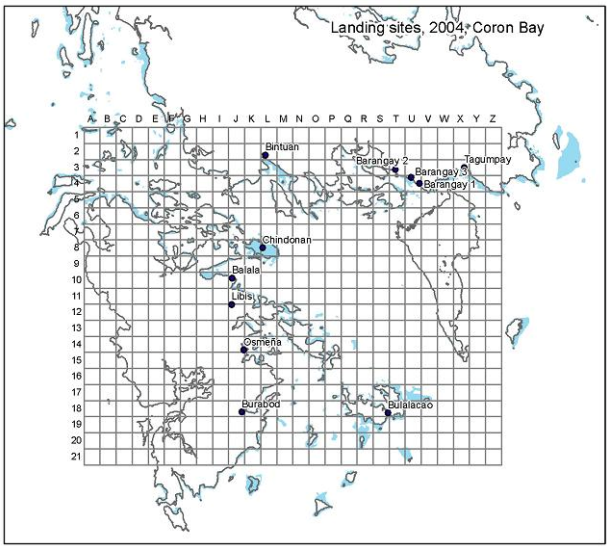
To facilitate field activity, major and minor disembarkation areas for fishing boats were identified as strategic landing sites to improve visit schedule of enumerators. A preliminary record of the time and place of landings by landing site was acquired to organize the sampling plan in line with transportation schedules. Local residents were hired as enumerators through the assistance of local officials. The enumerator's assignment depended upon proximity, volume of catch landed, and frequency of landings. After some minor adjustments, catch and effort monitoring was regularly conducted in selected landing sites in each focal areas.

The catch monitoring schedule followed a 3-day cluster scheme, designating the first 2 successive days for field work and the third day as rest day. The scheme always starts on the first day of each month. This provided a higher likelihood of sampling both lean and peak days of fishing, covering holidays, weekends, and "must" fishing days, such as the eve of market days.

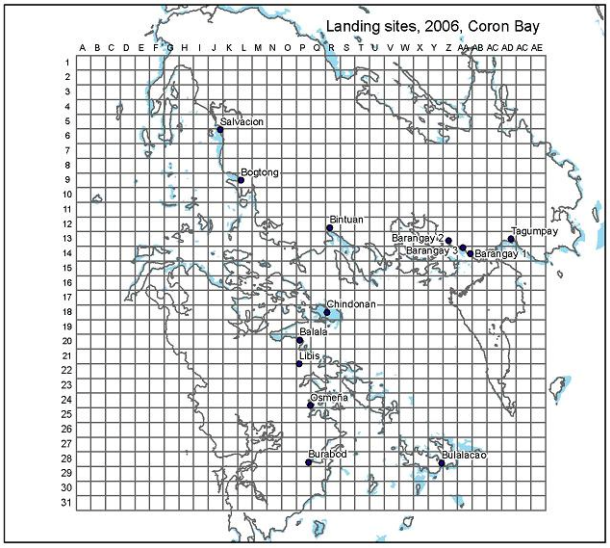
The data collected include volume of catch landed per gear sampled, species composition of landed catch per gear with corresponding weight (kilograms), count (number) and length (centimeters, measured as fork length) measurements, and effort measurement (boat dimension, mode of propulsion, engine power, and gear specifications). Species landed were recorded using either the scientific names (as identified) or their local names. Identification of their scientific names was undertaken using the taxonomic guides provided in Rau and Rau (1980) and Masuda *et al.* (1984). The specific fishing areas for each of the monitored landed catch were also recorded with reference to a grid map of the waters of the focal area (Figures 14, 15, 16, and 17). Aside from rare cases of inclusion of new landing sites, the current landing sites and the configuration of the grid map were retained throughout the life of the project.

FIGURE 14. GRID MAP AND CATCH AND EFFORT DATA COLLECTION POINTS IN CORON BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

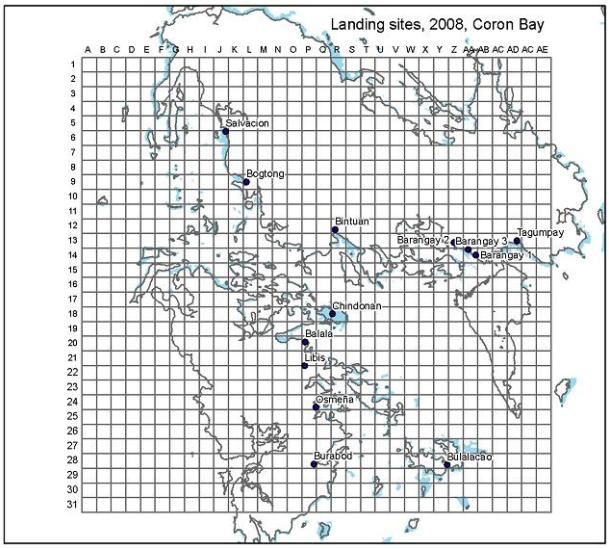
2004



2006



2004



2006

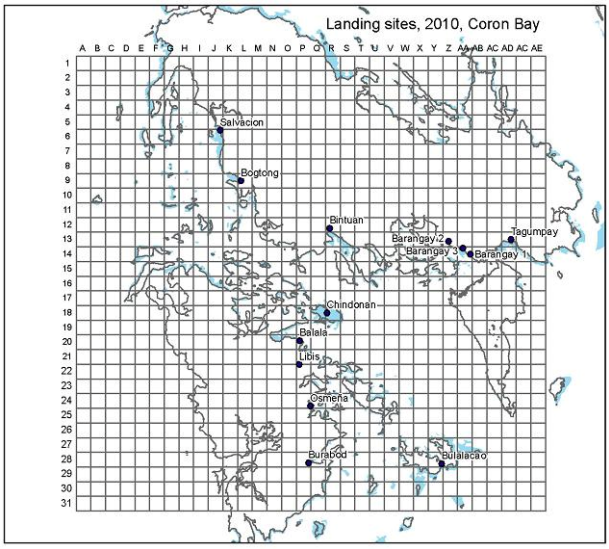
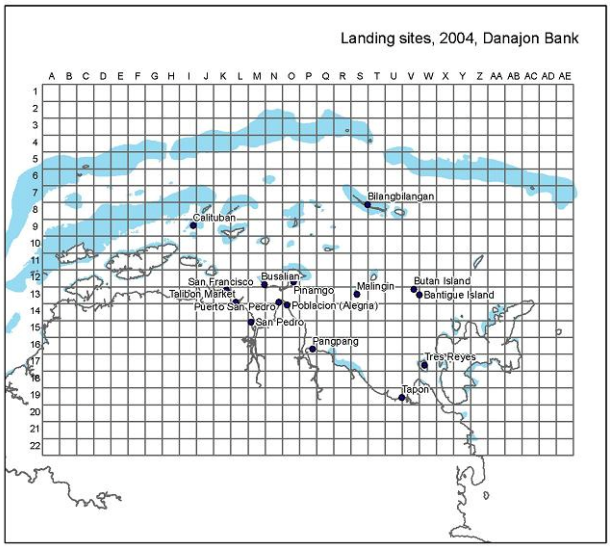
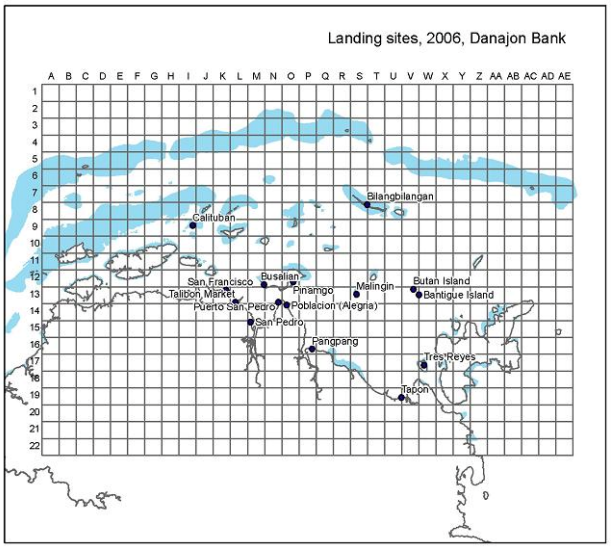


FIGURE 15. GRID MAP AND CATCH AND EFFORT DATA COLLECTION POINTS IN DANAJON BANK DURING BASE YEAR AND SUBSEQUENT MONITORING PERIODS

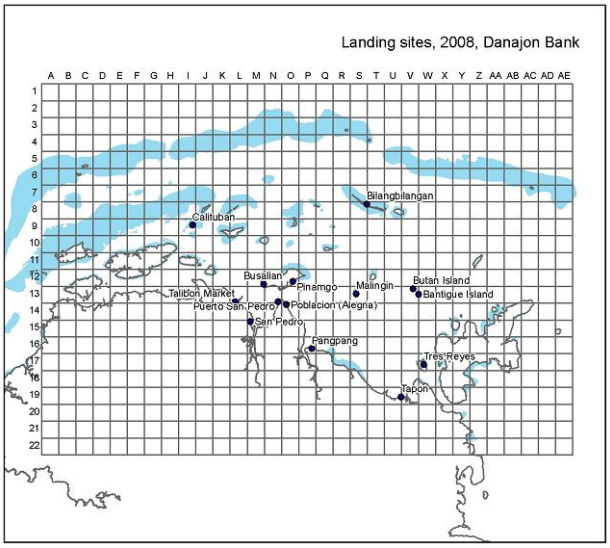
2004



2006



2008



2010

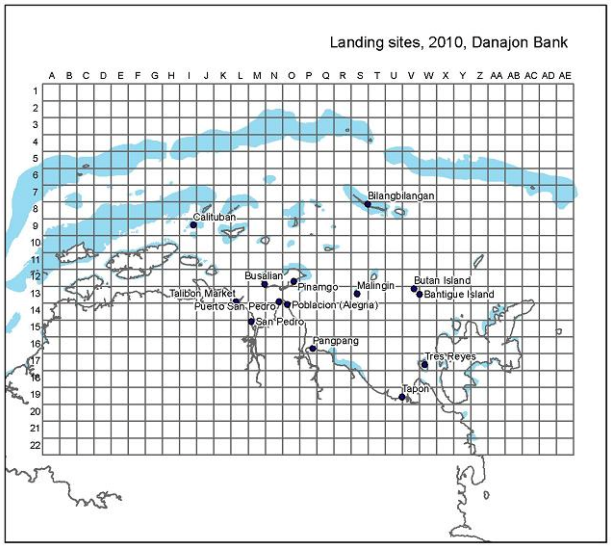
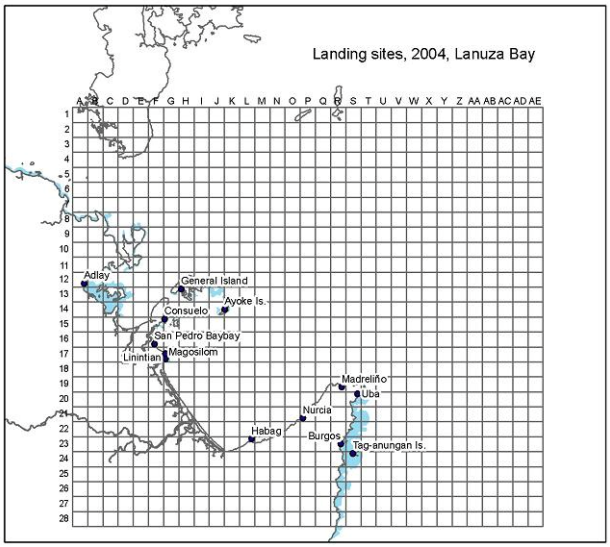
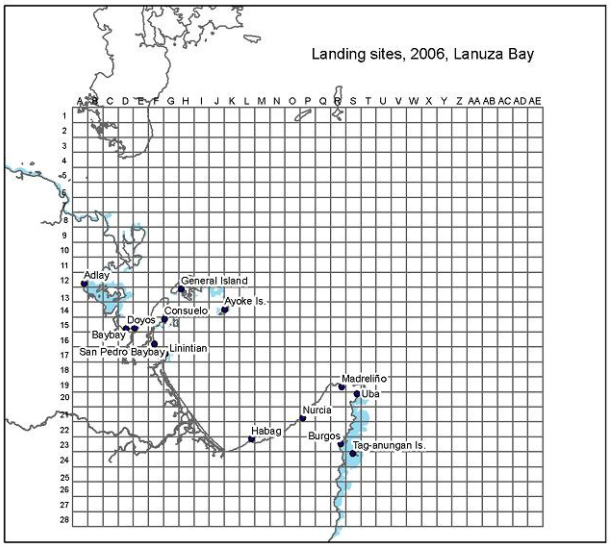


FIGURE 16. GRID MAP AND CATCH AND EFFORT DATA COLLECTION POINTS IN LANUZA BAY DURING BASE YEAR AND SUBSEQUENT MONITORING PERIODS

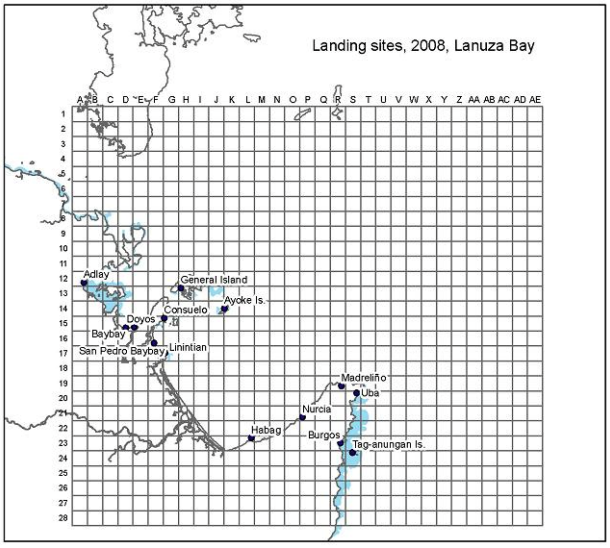
2004



2006



2008



2010

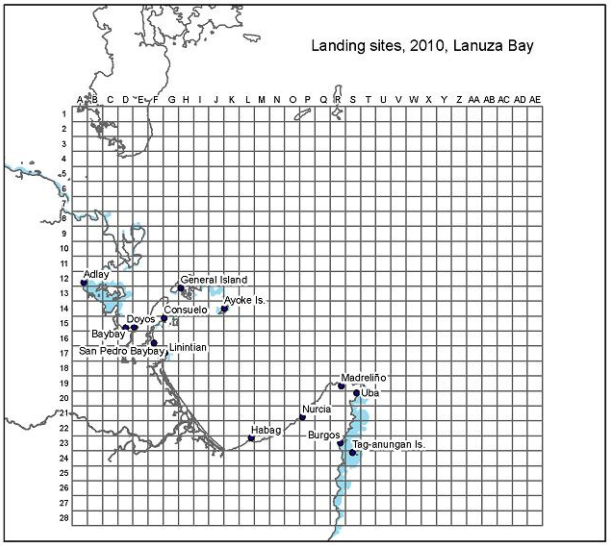
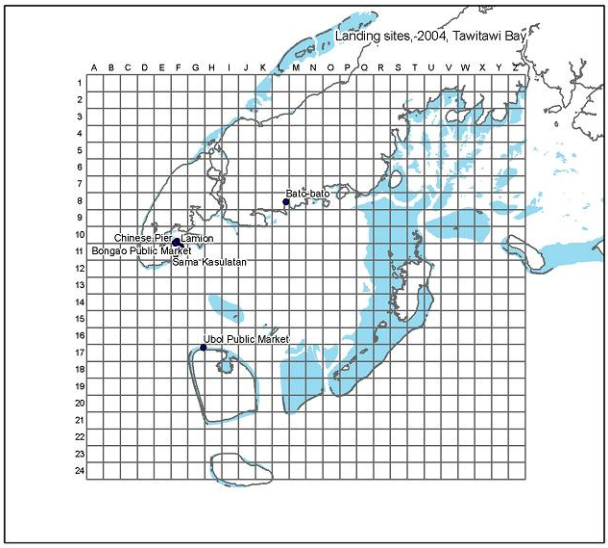
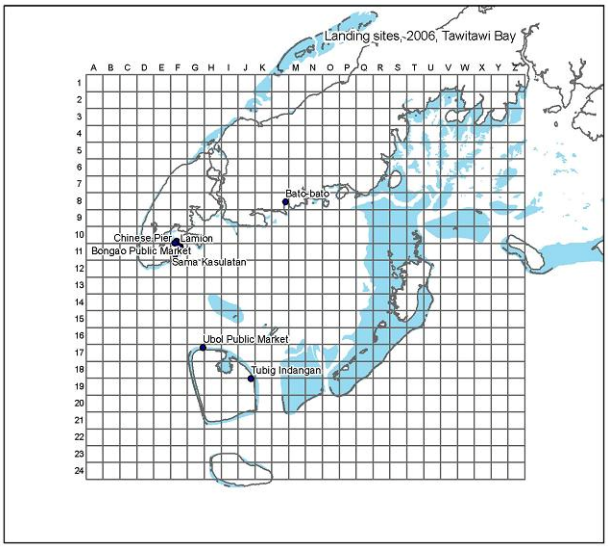


FIGURE 17. GRID MAP AND CATCH AND EFFORT DATA COLLECTION POINTS IN TAWI-TAWI BAY DURING BASE YEAR AND SUBSEQUENT MONITORING PERIODS

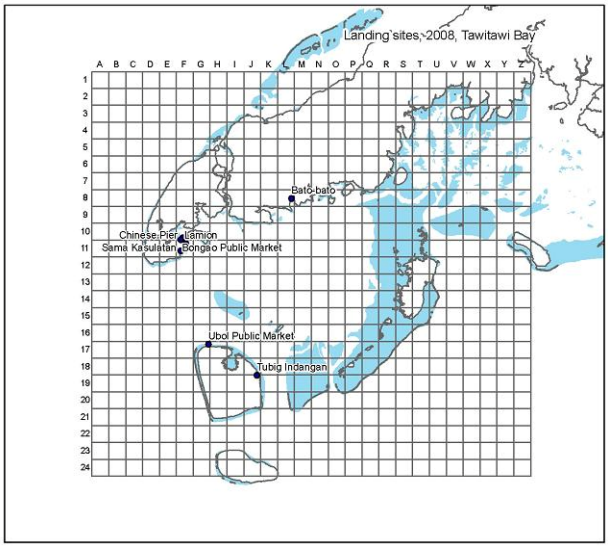
2004



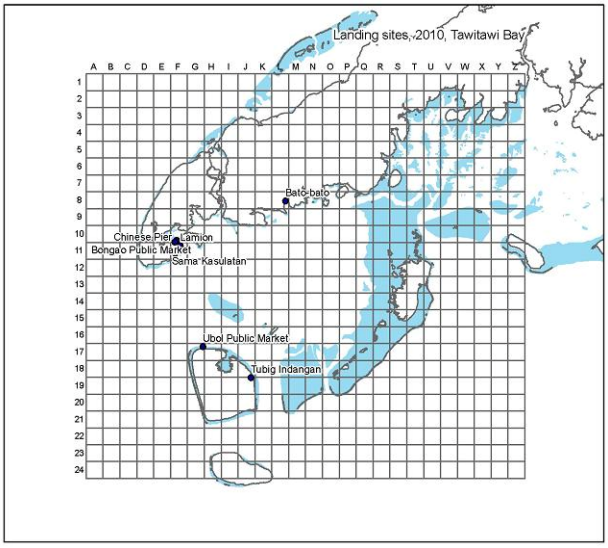
2006



2008



2010



ASSESSMENT OF MARINE PROTECTED AREAS

The FISH Project contracted the University of the Philippines in the Visayas Foundation, Inc. (UPVFI) to conduct the 2004 MPA baseline assessment in the Calamianes, Surigao del Sur and Tawi-Tawi focal areas, and Silliman University to do the same assessment in Danajon Bank. For the 2006, 2008 and 2010 monitoring events, the FISH Project engaged the full services of the UPVFI for the entire MPA monitoring in four focal areas, comprising of 3 MPAs previously surveyed in 2004, and an additional of 3 new MPAs that were subsequently established in each focal area. Covering 24 MPAs in all, the 2006 monitoring event was conducted to collect information necessary for deriving comparative indicators in the 12 reef MPAs surveyed in 2004 and to establish baseline information for the 12 new MPAs in the FISH Project's four focal areas. The same set of information was collected in the 2008 and 2010 monitoring events.

During the 2004 base year period, assessment teams conducted reconnaissance surveys to select MPAs to be included in the baseline assessment in each focal area. Similar reconnaissance surveys were also conducted in locating and establishing additional MPAs in 2006. The set of criteria listed in the Baseline Assessment Plan (BAP) guided the selection process (Table 11).

TABLE 11. CRITERIA FOR SELECTING MPAS FOR INCLUSION IN THE BASELINE ASSESSMENT IN YEAR 2004

Criterion	Rationale
1. Recently established or not functioning well	Benefits (or lack thereof) from the MPA should be traceable to the initiatives under the FISH Project
2. Minimum size of 10 ha; preferred size greater than 20 ha	More likely to be effective and thus more likely to exhibit detectable signs of improvement
3. No-take zone is present and likely to be enforced	Strong community support or interest in establishing or managing an MPA
4. Habitat has ecological value and potential for improvement	Live coral cover present, possible source or sink for coral reef, and fisheries recruitment

Except in Danajon Bank where several previously established MPAs were found, there were less than three MPAs in each focal area at the time of baseline assessment. This presented the opportunity to select sites where the FISH Project would facilitate the establishment of MPAs and to obtain "before MPA establishment" measurements of the performance indicators in these sites. In the ultimate selection of potential MPA sites, the following were considered: (i) exposure to waves, (ii) coastline shape/indentation, (iii) proximity to mangroves and linked shallow water habitats, and (iv) coarse estimates of living coral cover and general reef condition as determined by manta tow surveys.

Manta tow surveys covered as many of the reef areas as possible to construct a broad picture of the distribution of live coral cover within the chosen portion of the focal area. In a manta tow, an observer towed by a pumpboat makes a series of 2-minute observations along a path that follows the reef slope as close as possible. The observer used a mask and snorkel and handled a manta board tied by rope to the pumpboat. In this survey, the observer estimated the cover of live hard coral, live soft coral, dead coral, dead coral with algae, abiotics (sand, rocks, or water), and others (algal beds, and other flora and fauna). He then listed these on an underwater slate mounted on the manta board after each 2-minute observation. Geographical coordinates of each observation were obtained using a handheld GPS unit. After transcriptions of the

observations, the results were plotted on a map of the focal area to assist in selection of sites where base levels of performance indicators would be measured.

The site selection activities resulted into the establishment sites to be surveyed in detail using transects as well as identified areas where the FISH Project would encourage MPA establishment and management by local communities. As a rule, 5 transects inside and 5 transects adjacent to an MPA were established for data collection, for a total of 10 transects per MPA. Likewise, the assessment of a potential MPA site generally involved the use of 10 transects evenly distributed through the site. In some instances, however, unforeseen circumstances necessitated deviations from these rules.

MPA site selection during the baseline assessment period in year 2004 was an important activity of the FISH Project. This still became a major activity in the years that followed especially in line with project objective of establishing a "network" of MPAs in each focal area. It also somewhat complicated the measurement process since new MPAs will have to be measured from baselines collected at a later date. For purposes of computation, 2004 was set as the base period for original 12 MPAs and 2006 was the reckoning point for the additional 12 MPAs. This does not mean that FISH Project's intervention was limited only to the establishment of a total of 24 MPAs. In fact, the project provided material and technical support to the establishment of a total of 59 MPAs during the life of the project within the focal areas but only 24 established in 2004 and 2006 were subject to the rigors of measurement. The others were established during much later dates and the effects on the increase of reef fish biomass and coral cover may still have no influence on project results.

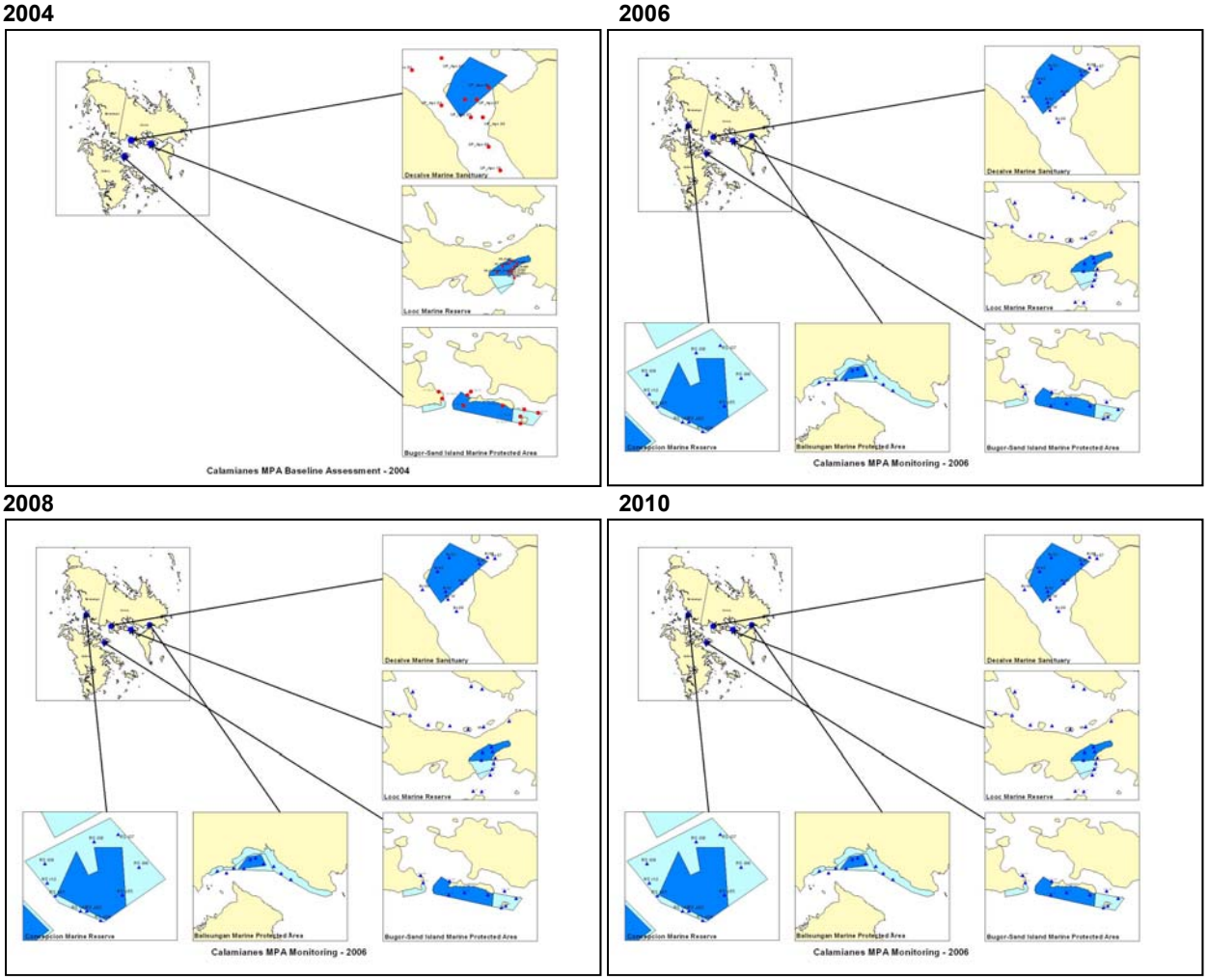
Coron Bay

The MPA monitoring activities in the Coron Bay were conducted in 4 to 20 June 2006, 27 April to 02 May 2008, and 22 to 27 April 2010 in three previous MPAs where baseline monitoring was conducted in May 2004 and in three new proposed MPAs (Figure 18). These MPAs were the Decalve Strict Protection Zone (referred to as "Bintuan" in the survey); Looc Marine Reserve (referred to as "Uson-Lajala" in the survey); Bugor Marine Sanctuary; Concepcion Marine Reserve (referred to as "Tangtangen" in the survey); Balisungan MPA; and the *"Uson Parcel B"* site which was recommended as a new MPA but has not been established as such to date. The Balisungan and Concepcion sites have been declared as MPAs shortly after the surveys. These two new MPA sites included in the project were chosen based on studies conducted in 2004-05 on the distribution of fish eggs and larvae (Campos, 2006; unpublished report) and simulations of their dispersal (Villanoy, 2006; unpublished report). Community consultations were also pivotal considerations. It was in this regard that the "*Uson Parcel B*" area has not been pushed through as an MPA because of some hesitancy on the part of Barangay officials.

In each of the six MPA sites, ten dives were conducted to gather the information to be able to determine the reef fish biomass, species richness and benthic condition. Of these, five were done outside of the MPA boundaries, while the other five were done within the MPA boundaries. In May 2004, MPA boundaries in the original sites, Bintuan-Decalve between Apo and sangat Islands, Lajala (Uson Island) and Bugor, had not yet been defined so dive stations were simply located to characterize conditions in the site rather than to compare conditions "inside" with those "outside". Boundaries were then defined shortly after, and station locations were then adjusted (about 1/3 of the stations were relocated) to allow equal representation of conditions inside and outside the MPA boundaries. Surveys were then conducted in 2005 by a FISH Monitoring Team, covering this new set of stations in the three sites, to establish new baselines.

In contrast, MPA boundaries in the three new sites covered in the present study were already defined before the surveys, so stations were located as desired.

FIGURE 18. LOCATION OF MARINE PROTECTED AREAS AND SURVEY POINTS IN CORON BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS.



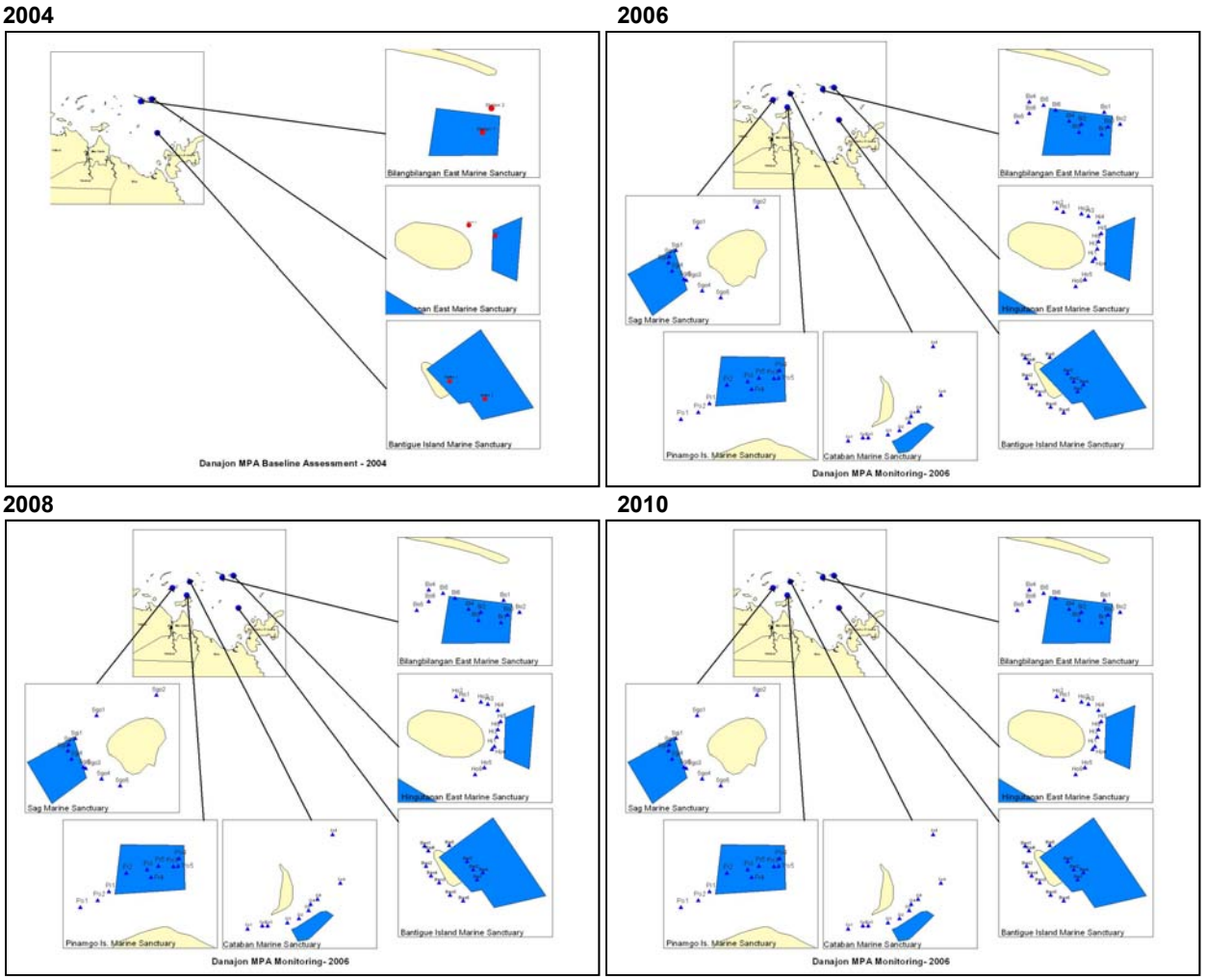
Danajon Bank

The locations of the three MPA sites and jump off point for the survey conducted in July 2004 are shown in Figure 20. These include Bilangbilangan East, Hingutanan East and Bantigue. In each of these sites, twelve dives, six inside and another six outside of the MPA boundaries were conducted to gather data on coral cover and reef fish assemblages. During the monitoring events in 16 to 25 September 2006, 11 to 16 August 2008, and 7 to 12 September 2010, the same sites were revisited and three (3) new MPA sites (Figure 21) were added to include Sag Island, Cataba and Pinamgo. In each of these new sites, ten (10) dives, five within and the other five outside of the MPA boundaries, were conducted to gather baseline data.

Again, the three new MPA sites were selected employing data from hydrodynamic studies and larval dispersal simulations undertaken in the Danajon Bank focal area to pinpoint which MPAs

can be relatively more dynamic fish recruitment areas. Unlike in the Coron Bay, the three new MPAs have been legally established prior to the surveys.

FIGURE 19. LOCATION OF MARINE PROTECTED AREAS AND SURVEY POINTS IN DANAJON BANK DURING THE BASE YEAR AND MONITORING PERIODS



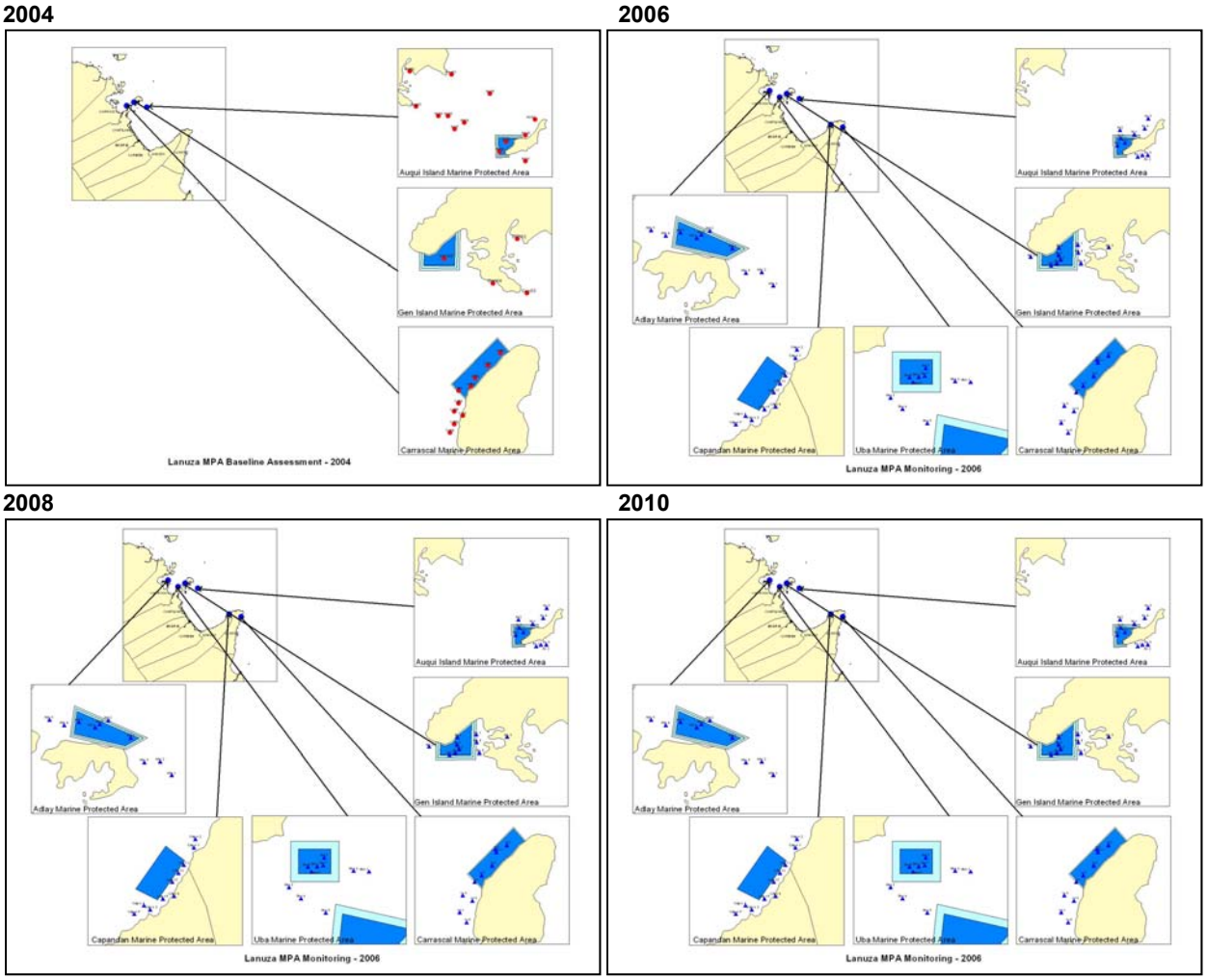
Lanuza Bay

Baseline data for three Lanuza Bay MPA sites were collected in June 2004 (Figure 22). During the monitoring events in 21 to 29 July 2006, 31 May to 04 June 2008, 22 May to 03 June 2010 the same sites were revisited and three new MPAs (Figure 23) were added starting 2006. These included Adlay, Carrascal, General Island, Auqui Island, Capandan, and Uba. In each of these sites, ten (10) dives were conducted; five (5) were done outside of the MPA boundaries, while the other five (5) were done within the MPA boundaries. In 2004, MPA boundaries were already established for two (2) of the surveyed sites, Carrascal and General Island. An assessment of the latter MPA, however, showed that existing boundaries needed adjustments to improve potential impact of the MPA (Campos, 2004). Boundary markers were moved later that year in response to the recommendations. Hence, except for Carrascal, station locations in 2004 were modified so that there would be equal representation of areas inside and outside of the newly established MPA boundaries. About 50% of the original station locations were relocated and a

FISH survey team in 2005 collected data to establish new baselines. The present surveys were conducted in these modified stations.

The three additional sites that were monitored starting July 2006 included existing MPAs that were presumed to be ideal MPAs on basis of the larval dispersal studies conducted previously. Since MPA boundaries in these new sites were already established, stations were located following the standard earlier established with 5 stations inside and also outside the no-take zones.

FIGURE 20. LOCATION OF MARINE PROTECTED AREAS AND SURVEY POINTS IN LANUZA BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

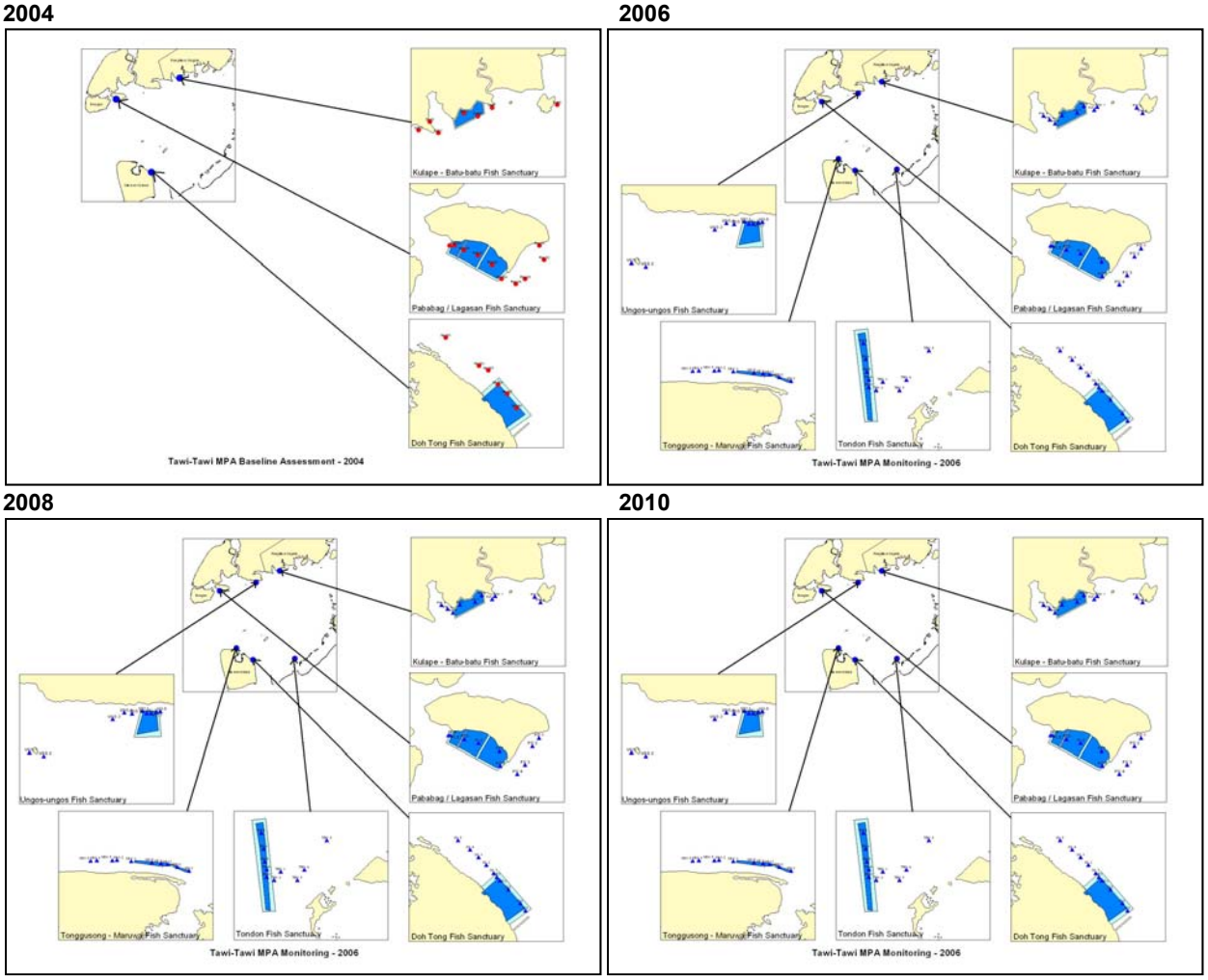


Tawi-Tawi Bay

The location of the three MPAs surveyed in August 2004 and six MPAs surveyed from 17-26 October 2006 are shown in Figure 24 and Figure 25, respectively. These included the three original MPAs in Pababag Island (known as Pababag-Lagasan MPA) in Bongao, Batu-batu Kulape in Panglima Sugala, and Doh-Tong in Simunul. Additional three MPAs in 2006 were Ubol (known at present as Tongusung-Maruwa MPA) in Simunul, Tundon in Panglima Sugala, and Ungos-ungos in Bongao. Monitoring were likewise conducted in 25 to 29 June 2008 and 21

to 26 July 2010. In each of these sites, ten (10) dives were conducted, five (5) were done outside of the MPA boundaries while the other five (5) were done within the MPA boundaries. Of the three surveyed site in 2004, only the boundaries of Pababag were already established during the survey. Reef surveys that year were thus conducted to characterize the reef habitats in the other two (2) sites, Panglima Sugala (Batu-bato-Kulape MPA) and Simunul (Doh-Tong MPA). The results were then used by the FISH MPA monitoring team in 2005 to set MPA boundaries and to collect baseline data from appropriately located dive stations. Hence, except for Pababag, original station locations in 2004 were modified so that there would be equal representation of areas inside and outside of the newly-established MPA boundaries. In addition, three (3) additional sites were surveyed in October 2006. At the time of the monitoring, these three new proposed MPAs have not yet been legally promulgated and MPA boundaries have only been informally established through FISH assistance.

FIGURE 21. LOCATION OF MARINE PROTECTED AREAS AND SURVEY POINTS IN TAWI-TAWI BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIOD



2.3. DETERMINATION OF REEF FISH BIOMASS

Reef fish assemblages were surveyed using a modification of the standard visual census technique described by English *et al.* (1994). A 50 meter transect line was set parallel to depth contours along the reef slope. As standard, all fish encountered within 5m of both sides of the line were identified, counted, and their sizes (fork lengths) estimated to the nearest centimeter. Fish density is recorded as individuals/m^2 and fish abundance is reported as individuals/500 m^2. Fish biomass (expressed both in kg/500 m^2 and tons/km^2) were estimated using fish abundance and weight converted values of individual fork lengths ($W = aL^b$). The species-specific parameters *a* and *b* of such conversions are available from various references, primarily from FishBase 2000 and the regularly updated web-based FishBase.

In addition to total fish biomass, the monitoring reports present information on fish biomass of indicator and target species, in accordance with the Baseline Assessment Plan. Fish families were also grouped into target, indicator and common fish. Target species were those sought by fishers because they generally command the higher prices and follows the description of English et al. (1994) and includes the families *Acanthuridae, Haemulidae, Lethrinidae, Lutjanidae, Serranidae (Epinephelinae* and *Diploprion*) and *Siganidae*. Because of their local commercial importance, information for caesionids, carangids and scarids were also presented separately. Species belonging to the family *Chaetodontidae* are indicators of good reef health because they feed on polyps of corals. In the baseline assessment report, this particular monitoring report as well as subsequent monitoring reports, those considered as target species belong to the following families: *Acanthuridae, Haemulidae, Lethrinidae, Serranidae/Epinephelinae, Lutjanidae* and *Siganidae;* while *pomacentrids* and *labrids* made up the common fish.

2.4. DETERMINATION OF SPECIES RICHNESS

Species richness was derived from the number of species recorded in transects during the fish visual census surveys. The unit for species richness in the sites surveyed in the Calamianes Islands, Surigao del Sur, and Tawi-Tawi is "number of species/250m^2" because 5 meters of the slope side of the 50 meters transect was surveyed (5m x 50m = 250 m^2). On the other hand, the unit for species richness in Danajon Bank is "number of species/500m^2" because both sides of the 50m transect were surveyed. Unlike abundance and biomass estimates, the number of species cannot be raised to obtain a unit with a convenient "per area" component because species richness is a non-proportional function of the area surveyed.

Along the same transect, all motile epibenthic macroinvertebrates (e.g.,crustaceans, echinoderms, mollusks), including sessile tunicates and polychaetes, within 1m of both sides of the transect line were identified and counted. The surface area covered for macroinvertebrates was 100m^2 (50m x 2m = 100m^2)

2.5. DETERMINATION OF BENTHIC CONDITION

Benthic life forms (the percentage cover of living corals as well as other benthic life forms, e.g., soft corals, sponges, etc.) was determined using the line intercept technique (English *et al*. 1994, Uychiaoco *et al.* 2000), wherein all lifeforms intercepted by the transect line are recorded. The data were then summarized in the following categories: Live hard coral (LHC), live soft

coral (LSC), dead coral & coral rubble (Dead), dead coral with algae (DCA), algae on substrate other than dead coral/rubble (Algae), other sessile fauna (Other fauna), and rock/mud/sand/water (Abiotics). Life forms intercepted every 0.25 meter by the 50 meter transect line were recorded, for a total of 200 data points in each transect. The fraction of the 200 points in which a particular life form occurred was used to estimate the percentage cover of the lifeform. The same transect used in fish visual census was utilized in this survey.

OTHER DATA COLLECTED

In addition to the major data collection activities mentioned above the capture fisheries baseline and monitoring teams also conducted inventory of fishers, fishing boats and fishing gears in the focal areas during the base year as well as subsequent monitoring periods. The additional inventory activities were intended to monitor changes in the fishing pressure and exploitation patterns throughout the life of the project. They were also used to estimate for aggregate landings in the four areas and served as input to ecosystem and economic analysis. Information that may be derived from catch data such as length frequency distribution and species composition may be used to determine increase or decrease in sizes of fishes as well as improvement or decline of trophic levels of the ecosystems.

The MPA research and monitoring teams also collected data on physical characteristics of the reef such as depth of transect and reef bottom, visibility, slope and substrate rugosity, which were routinely collected in such surveys. Substrate rugosity was measured by recording the length of the transect line covered by an underlying ~3m segment of chain laid to follow the substrate's (surface) contour. Rugosity measurements were done every 5m, and the rugosity index was computed as the ratio of the length of the chain over the linear distance covered by laying the said chain. In addition, other characteristics such as depth (of transect and of reef bottom), steepness of slope (degrees), water visibility (m), and general reef typology in each dive station were noted down. Slope steepness in degrees was further converted to a scale from 1-6, with a 15m interval between points. A composite factor called "habitat complexity" was computed as the product of rugosity, bottom depth of the reef slope (ft) and slope steepness scale and used to characterize each station.

In addition, the research teams were asked to take advantage of opportunities to collect other data on reef resources apart from those that would be used for calculating the performance indicators. These include data on the abundance of juvenile fish and macro-invertebrates. Likewise, in addition to estimates of percentage of living coral cover, supportive indices were calculated from the life form data, in accordance with the Baseline Assessment Plan. These indices are the Mortality Index (Gomez et al. 1994), the Development Index, the Condition Index and the Succession Indices (Manthachitra 1994).

In this report, these other data are not presented but references to them are made when they illuminate the main findings of the baseline assessment. These data were likewise included in the coastal profiles of the focal areas as well as supported information to other studies and analysis used in various components of the project.

3. RESULTS AND DISCUSSION

CAPTURE FISHERIES

3.1. FISHERIES INDEPENDENT SURVEYS TO DETERMINE ABUNDANCE OF SELECTED FISHERIES RESOURCES IN FOCAL AREAS

Trawl Survey

The trawl monitoring events were conducted in the same period of the month as the baseline surveys with special reference to the phase of the moon. The survey covered 4 to 6 trawl stations per day. Two dragging operations had to be repeated due to gear break down and rough sea condition in 2004 and also two fishing operations were rescheduled to another date due to severe sea condition in 2006. Discounting jellyfishes, sea urchins and star fishes in the catch and standardizing the catch to 30 minutes of dragging time, the average haul was computed at 1.38 kg in 2004, 2.83 kg in 2006, 2.36 kg in 2008 and 2.48 kg in 2010 (Table 12). Further standardizing the catch to the speed of the boat and size of the net, particularly the length of the head rope, the average demersal biomass was estimated at 0.47 tons/km^2 in 2004, 1.05 tons/km^2 in 2006, 0.89 tons/km^{2}in 2008 and 0.99 tons/km^2 in 2010.

Jellyfishes, sea urchins, and starfishes constituted between 50-70 percent of the of the trawl catch during the entire survey. Excluding them, however, the dominant species in the catch was the pony fish, *Leiognathus splendens*, which comprised 41.6, 36.5, 24.7 8.6 percent of the total catch volume in 2004, 2006, 2008, and 2010, respectively (Table 13). The lizard fish (*Saurida tumbil*) came second during the first two surveys, later just became tenth in the 2008 survey, and no longer belong to the top 10 species in 2010. A variety of other bottom dwelling species like various species of pony fishes, puffer fish, flathead and goatfishes followed. Majority of the catch do not belong to the valuable species category. Valuable species appeared only in small numbers and often very small individual sizes. This catch composition, relatively small sized individuals and the very low estimated demersal biomass indicate heavy exploitation of the fish stock that resulted to biological overfishing.

TABLE 12. CATCH PER UNIT EFFORT AND DEMERSAL BIOMASS ESTIMATED FROM TRAWL TEST FISHING TRIALS IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

	2004	2006	2008	2010
Trawl stations				
mean (kg/30min)	1.38	2.83	2.36	2.48
standard deviation	1.54	3.72	1.73	1.65
n	19	19	19	19
Control stations				
mean (kg/30min)	7.09	10.19	9.06	6.48
standard deviation	4.46	2.95	7.3	3.08
n	5	4	5	5
Estimated demersal biomass (t/km^2)	0.47	1.05	0.89	0.99

TABLE 13. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM TRAWL TEST FISHING TRIALS IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004 base year

	Species	%	
		Weight	Number
1	*Leiognathus splendens*	41.60	72.20
2	*Saurida tumbil*	7.13	0.30
3	*Arothron sp.*	7.11	0.54
4	*Platycephalus indicus*	6.20	0.31
5	*Upeneus tragula*	4.09	3.28
6	*Loliginidae*	3.67	1.47
7	*Apogon sp. 1*	3.52	2.93
8	*Scolopsis taeniopterus*	2.77	0.85
9	*Loligo sp.*	2.40	0.61
10	*Pecten sp.*	2.29	0.42
	Others	19.22	17.08

2006 monitoring event

	Species	%	
		Weight	Number
1	*Leiognathus splendens*	36.54	50.37
2	*Saurida tumbil*	6.41	0.58
3	*Leiognathus rivulatus*	3.81	2.98
4	*Platycephalus indicus*	3.57	0.88
5	*Scolopsis taeniopterus*	3.49	1.17
6	*Centriscus cristatus*	2.81	3.45
7	*Plotosus lineatus*	2.55	1.47
8	*Apogon sp. 1*	2.34	3.70
9	*Elates ransonetti*	2.24	1.70
10	*Upeneus sulphureus*	2.17	2.01
	Others	34.06	31.69

2008 monitoring event

	Species	%	
		Weight	Number
1	*Leiognathus splendens*	24.69	18.88
2	*Paramonacanthus choirocephalus*	5.32	14.83
3	*Leiognathus leuciscus*	5.27	3.65
4	*Upeneus tragula*	4.22	4.87
5	*Arothron manilensis*	3.53	0.04
6	*Scolopsis taeniopterus*	3.49	2.51
7	*Upeneus sulphureus*	3.35	3.48
8	*Siphamia sp.*	3.16	6.98
9	*Sepia recurvirostra*	2.99	0.95
10	*Saurida tumbil*	2.97	0.64
	Others	24.69	18.88

2010 monitoring event

	Species	%	
		Weight	Number
1	*Inegocia japonica*	8.61	3.50
2	*Leiognathus splendens*	8.60	6.80
3	*Scolopsis taeniopterus*	5.57	5.47
4	*Metapenaeus ensis*	5.05	7.80
5	*Sepia esculenta*	4.42	2.13
6	*Arothron manilensis*	3.97	0.62
7	*Heteropenaeus longimanus*	3.62	3.09
8	*Platycephalus indicus*	3.56	0.13
9	*Apogon septemstriatus*	3.44	12.60
10	*Upeneus moluccensis*	3.33	6.95
	Others	49.83	50.91

Bottom-set Longline Survey

Table 14 summarizes the catch per operation using the bottom-set longline in the four focal areas showing Coron Bay having the highest and Tawi-Tawi Bay the lowest. However, taking into consideration the typical number of hooks used in each area, Tawi-Tawi Bay became the highest and Danajon Bank the lowest. Catch rates of bottom-set longline have consistenly declined in Danajon Bank, slightly declined in Calamianes, but relatively increased in Lanuza Bay and Tawi-Tawi Bay compared to the baseline data collected in 2004. The catch of the bottom-set longline in Coron Bay (Table 15) were dominated by high valued species like the snappers and emperors. However, more, of less economically valued species like threadfin breams (nemipterids) appeared in the catch in 2006 and 2008. The catches in Danajon Bank (Table 16) were consistently dominated by *Therapon jarbua* followed by *Lethrinus lentjan* in the 2004, 2006, and 2008 surveys but the reverse occurred in 2010. Species with higher economic value, such as the groupers and the snappers, were not present in the catch. Various threadfin breams, emperors, and snappers somewhat dominated the catch composition of bottom-set longline in Lanuza Bay (Table 17) and Tawi-Tawi Bay (Table 18). Rays were also commonly caught by this gear in these two focal areas.

TABLE 14. CATCH PER UNIT EFFORT ESTIMATED FROM BOTTOM-SET LONGLINE TEST FISHING TRIALS IN THE FOUR FOCAL AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

	2004	2006	2008	2010
Coron Bay				
mean (kg/hr)	4.10	5.87	4.26	3.45
standard deviation	3.00	3.98	2.52	2.12
N	35	35	34	34
number of hooks used	800	800	800	800
Busuanga Bay				
mean (kg/haul)		1.74	1.45	2.63
standard deviation		1.09	0.89	1.46
N		18	18	18
number of hooks used		500	500	500
Danajon Bank				
mean (kg/hr)	2.90	1.93	1.17	0.71
standard deviation	1.71	1.31	1.19	0.68
N	30	30	30	30
number of hooks used	1,000	1,000	1,000	1,000
Lanuza Bay				
mean (kg/hr)	2.43	3.16	3.40	3.08
standard deviation	1.68	2.71	2.39	1.78
N	30	30	30	30
number of hooks used	800	800	800	800
Tawi-Tawi Bay				
mean (kg/hr)	1.88	1.92	1.59	2.31
standard deviation	1.46	1.93	0.96	1.40
N	71	78	84	84
number of hooks used	200	200	200	200

TABLE 15. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM BOTTOM-SET LONGLINE TEST FISHING TRIALS IN CORON BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004 base year

	Species	%	
		Weight	Number
1	*Lethrinus mahsena*	35.24	7.92
2	*Apogon spp.*	11.57	9.29
3	*Lutjanus carponotatus*	5.81	6.83
4	*Lutjanus lutjanus*	4.72	2.73
5	*Epinephelus macrospilus*	4.26	6.01
6	*Pentapodus caninus*	4.18	6.28
7	*Lethrinus lentjan*	3.49	1.91
8	*Lates calcalifer*	2.50	3.01
9	*Dasyatis kuhlii*	2.37	1.09
10	*Lethrinus ornatus*	2.18	3.55
	Others	23.69	51.37

2006 monitoring event

	Species	%	
		Weight	Number
1	*Lethrinus mahsena*	14.09	7.35
2	*Lethrinus lentjan*	10.60	5.55
3	*Lutjanus vita*	7.49	8.91
4	*Nemipterus hexodon*	5.17	8.29
5	*Nemipterus peronii*	4.76	8.68
6	*Apogon trimaculatus*	4.69	12.43
7	*Nemipterus bathybius*	4.08	10.87
8	*Muraenesox cinereus*	3.17	1.49
9	*Elops sp.*	3.02	0.16
10	*Lutjanus lutjanus*	2.77	4.30
	Others	40.16	31.98

2008 monitoring event

	Species	%	
		Weight	Number
1	*Lutjanus lutjanus*	14.78	18.62
2	*Lethrinus mahsena*	8.81	4.53
3	*Lethrinus lentjan*	8.61	12.89
4	*Nemipterus peronii*	8.56	4.53
5	*Lutjanus biguttatus*	6.89	12.64
6	*Dasyatis kuhlii*	6.79	0.94
7	*Nemipterus hexodon*	3.63	6.83
8	*Lutjanus lineolatus*	2.47	1.37
9	*Scolopsis dubiosus*	2.21	6.32
10	*Nemipterus bathybius*	1.87	0.17
	Others	35.39	31.17

2010 monitoring event

	Species	%	
		Weight	Number
1	*Megalaspis cordyla*	17.41	4.02
2	*Rastrelliger kanagurta*	9.33	6.25
3	*Euthynnus affinis*	7.28	1.34
4	*Dasyatis kuhlii*	5.39	2.23
5	*Atule mate*	5.13	3.57
6	*Lutjanus lutjanus*	4.98	4.46
7	*Sphyraena barracuda*	3.91	2.23
8	*Nemipterus hexodon*	3.90	4.91
9	*Saurida tumbil*	3.19	4.02
10	*Selar crumenopthalmus*	2.95	2.23
	Others	36.53	64.73

TABLE 16. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM BOTTOM-SET LONGLINE TEST FISHING TRIALS IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004 base year

	Species	%	
		Weight	Number
1	*Terapon jarbua*	50.59	35.71
2	*Lethrinus lentjan*	15.50	13.34
3	*Nemipterus hexodon*	5.77	4.74
4	*Lutjanus chrysotaenia*	3.40	1.90
5	*Gymnothorax sp.*	3.20	6.07
6	*Pentapodus setosus*	2.90	9.23
7	*Epinephelus sexfasciatus*	1.34	0.19
8	*Gymnothorax sp. 3*	1.21	5.12
9	*Aluterus monoceros*	1.14	0.13
10	*Lutjanus fulviflamma*	1.13	1.26
	Others	13.81	22.31

2006 monitoring event

	Species	%	
		Weight	Number
1	*Terapon jarbua*	49.16	38.46
2	*Lethrinus lentjan*	17.82	20.60
3	*Lutjanus carponotatus*	5.12	2.61
4	*Lagocephalus sp.*	3.28	9.06
5	*Nemipterus hexodon*	3.09	3.35
6	*Aetobatus narinari*	2.26	0.12
7	*Gymnothorax sp.*	1.85	1.36
8	*Lutjanus fulviflamma*	1.69	2.61
9	*Dasyatis kuhlii*	1.34	0.12
10	*Pentapodus paradiseus*	1.29	3.47
	Others	13.11	18.24

2008 monitoring event

	Species	%	
		Weight	Number
1	*Terapon jarbua*	39.40	30.73
2	*Lethrinus lentjan*	22.31	19.93
3	*Heteroconger sp.*	6.35	10.99
4	*Lutjanus fulviflamma*	4.59	5.40
5	*Lutjanus carponotatus*	3.79	3.54
6	*Nemipterus hexodon*	3.71	2.98
7	*Lethrinus genivittatus*	3.31	3.54
8	*Pentapodus paradesius*	2.32	5.40
9	*Lagocephalus sp.*	2.03	3.35
10	*Mallus sp.*	1.19	0.74
	Others	11.00	13.41

2010 monitoring event

	Species	%	
		Weight	Number
1	*Lethrinus lentjan*	36.42	28.98
2	*Nemipterus hexodon*	13.21	8.63
3	*Terapon jarbua*	6.25	4.20
4	*Lagocephalus sp.*	5.35	8.19
5	*Gnathanodon speciosus*	4.87	0.22
6	*Lethrinus genivittatus*	3.35	3.32
7	*Ophichthus cephalozona*	3.33	3.98
8	*Ariosoma anago*	3.33	8.63
9	*Pentapodus paradesius*	2.69	5.97
10	*Gerres abbreviatus*	2.57	3.98
	Others	18.63	23.89

TABLE 17. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM BOTTOM-SET LONGLINE TEST FISHING TRIALS IN LANUZA BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004 base year

	Species	%	
		Weight	Number
1	*Nemipterus spp.*	11.40	22.65
2	*Lutjanus lineolatus*	7.46	14.25
3	*Lethrinus lentjan*	7.29	2.29
4	*Plectorhinchus pictus*	6.91	1.10
5	*Nemipterus peronii*	6.66	8.14
6	*Lutjanus vita*	4.69	5.77
7	*Lutjanus malabaricus*	4.42	0.59
8	*Priacanthus tayenus*	3.87	5.77
9	*Etelis coruscan*	3.45	1.53
10	*Priacanthus sp.*	3.29	1.27
	Others	40.56	36.64

2006 monitoring event

	Species	%	
		Weight	Number
1	*Lethrinus genivittatus*	7.18	11.50
2	*Nemipterus thosaporni*	6.86	16.26
3	*Nemipterus tambuloides*	6.27	11.28
4	*Dasyatis kuhlii*	5.82	0.66
5	*Lutjanus vita*	5.75	5.79
6	*Epinephelus areolatus*	5.41	5.35
7	*Nemipterus peronii*	5.41	6.59
8	*Priacanthus hamrur*	4.54	2.12
9	*Lethrinus lentjan*	4.17	1.39
10	*Lutjanus argentimaculatus*	3.73	0.15
	Others	44.85	38.90

2008 monitoring event

	Species	%	
		Weight	Number
1	*Dasyatis kuhlii*	14.15	1.75
2	*Lutjanus dodecacanthoides*	8.98	9.37
3	*Lethrinus microdon*	8.28	14.14
4	*Nemipterus bathybius*	4.77	10.63
5	*Nemipterus zysron*	4.68	8.94
6	*Pristipomoides typus*	4.42	1.39
7	*Diagramma pictum*	4.41	1.09
8	*Nemipterus tambuloides*	4.30	6.77
9	*Lutjanus lineolatus*	4.01	8.76
10	*Nemipterus peronii*	3.93	3.99
	Others	38.07	33.17

2010 monitoring event

	Species	%	
		Weight	Number
1	*Lutjanus dodecacanthoides*	7.52	8.16
2	*Gymnocranius elongatus*	7.22	4.75
3	*Lethrinus rubrioperculatus*	6.73	8.48
4	*Epinephelus chlorostigma*	6.38	6.81
5	*Nemipterus thosaporni*	6.04	11.75
6	*Diagramma pictum*	5.14	1.16
7	*Lethrinus semicinctus*	4.79	6.42
8	*Lethrinus lentjan*	4.66	1.67
9	*Abalistes stellaris*	4.10	0.64
10	*Lethrinus genivittatus*	3.70	5.14
	Others	43.73	45.02

TABLE 18. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM BOTTOM-SET LONGLINE TEST FISHING TRIALS IN TAWI-TAWI BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004 base year

	Species	%	
		Weight	Number
1	*Lethrinus lentjan*	16.63	11.69
2	*Lutjanus lutjanus*	11.28	10.39
3	*Proscyllum venustum*	10.85	8.35
4	*Nemipterus tolu*	9.71	19.85
5	*Gymnothorax flavimarginatus*	4.54	3.90
6	*Dasyatis kuhlii*	4.32	1.86
7	*Aetobatus narinari*	4.13	0.19
8	*Himantura uarnak*	4.01	0.19
9	*Gymnothorax fimbriatus*	3.78	3.90
10	*Ginglymostoma cirratum*	2.52	1.11
	Others	28.23	38.59

2006 monitoring event

	Species	%	
		Weight	Number
1	*Lethrinus lentjan*	16.65	15.79
2	*Dasyatis kuhlii*	13.84	6.07
3	*Atelomycterus marmoratus*	9.10	7.69
4	*Lutjanus lutjanus*	7.08	7.69
5	*Gymnothorax fimbriatus*	5.98	8.50
6	*Caranx ignobilis*	5.72	1.21
7	*Echidna nebulosa*	4.10	3.24
8	*Terapon jarbua*	3.61	8.91
9	*Plectorhinchus pictus*	3.40	1.21
10	*Taeniura lymma*	3.05	0.81
	Others	27.48	38.87

2008 monitoring event

	Species	%	
		Weight	Number
1	*Lethrinus lentjan*	25.47	18.35
2	*Gymnothorax flavimarginatus*	11.05	7.19
3	*Diodon liturosus*	6.84	7.19
4	*Lutjanus lutjanus*	6.46	7.91
5	*Caranx ignobilis*	4.83	1.08
6	*Atelomycterus marmoratus*	4.30	3.60
7	*Rachycentron canadus*	3.44	0.36
8	*Scolopsis dubiosus*	3.26	2.52
9	*Lutjanus fulviflamma*	3.17	5.76
10	*Lethrinus miniatus*	3.03	1.44
	Others	28.15	44.60

2010 monitoring event

	Species	%	
		Weight	Number
1	*Lutjanus boutton*	30.46	0.71
2	*Atelomycterus marmaratus*	12.00	9.88
3	*Lethrinus nebulosus*	9.17	15.17
4	*Gymnothorax leucostigma*	5.81	5.29
5	*Lutjanus casmira*	4.82	19.75
6	*Epinephelus fasciatus*	3.21	6.00
7	*Lethrinus ornatus*	2.48	3.35
8	*Lethrinus ramak*	2.21	3.00
9	*Lethrinus lentjan*	2.11	1.41
10	*Lethrinus semisinctus*	2.04	3.35
	Others	25.69	32.10

Fish Trap Survey

Fish trap surveys were only conducted in Danajon Bank and Tawi-Tawi Bay and both have shown increasing trend from 2004 to 2010. The cluster of 10 traps in Danajon Bank (Table 19) had a catch rate (kg/day) of only 0.51 kg in 2004, 0.58 in 2006, 0.55 in 2008, and 0.63 in 2010 per standard day of fishing operation (2 days soaking time) while the 6 traps per cluster in Tawi-Tawi Bay had a catch rate of 1.70 kg in 2004, 1.18 kg in 2006, 2.17 kg in 2008, and 2.13 in 2010 per standard day fishing operation (3 days soaking time). Catches in Danajon Bank (Tabel 20) were dominated by *Monocanthus chinensis*, *Thalamita* sp., *Pentapodus setosus* and various species of goatfish. *Thalamita* sp., a species of crab, is obviously not a target species of the fish trap. The catches of fish traps in Tawi-Tawi Bay (Table 21) were better and dominated by relatively higher valued species. They included several scolopsis species, goat fishes, and various coral reef species.

TABLE 19. CATCH PER UNIT EFFORT ESTIMATED FROM FISH TRAP TEST FISHING TRIALS IN THE DANAJON BANK AND TAWI-TAWI BAY FOCAL AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

	2004	2006	2008	2010
Danajon Bank				
mean (kg/day)	0.51	0.58	0.55	0.63
standard deviation	0.31	0.38	0.31	0.51
n	30	32	33	33
Tawi-Tawi Bay				
mean (kg/day)	1.70	1.18	2.17	2.13
standard deviation	1.14	0.67	0.82	1.32
n	23	25	23	23

TABLE 20. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM FISH TRAP TEST FISHING TRIALS IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004 base year

	Species	%	
		Weight	Number
1	*Monocanthus chinensis*	20.19	19.47
2	*Thalamita sp.*	14.93	11.30
3	*Pentapodus setosus*	11.25	9.62
4	*Upeneus tragula*	8.13	6.56
5	*Helotes sexlineatus*	5.72	8.17
6	*Scolopsis taeniopterus*	4.66	3.66
7	*Upeneus sp.*	3.64	3.05
8	*Octopus sp.*	3.51	0.69
9	ngisi-ngisi	3.21	4.58
10	*Pentapodus caninus*	3.10	3.51
	Others	21.66	29.39

2006 monitoring event

	Species	%	
		Weight	Number
1	*Pentapodus paradiseus*	12.48	12.65
2	*Monacanthus chinensis*	11.02	12.33
3	*Upeneus tragula*	10.98	10.76
4	*Scolopsis taeniopterus*	10.00	6.85
5	*Centrogenys vaigiensis*	6.84	8.02
6	*Pelates quadrilineatus*	5.45	8.48
7	*Thalamita crenata*	4.63	3.59
8	*Thalamita sp.*	4.13	3.85
9	*Platycephalus indicus*	3.31	1.04
10	*Upeneus moluccensis*	3.28	2.87
	Others	27.88	29.55

2008 monitoring event

	Species	%	
		Weight	Number
1	*Monacanthus chinensis*	20.82	24.59
2	*Scolopsis taeniopterus*	13.37	8.65
3	*Pentapodus paradiseus*	10.47	8.72
4	*Upeneus tragula*	10.45	10.72
5	*Paramonacanthus choirocephalus*	5.64	12.15
6	*Thalamita crenata*	5.58	4.65
7	*Centrogenys vaigensis*	4.63	5.43
8	*Pentapodus bifasciatus*	2.89	3.15
9	*Pelates quadrilineatus*	2.66	3.22
10	*Portunus pelagicus*	1.83	0.71
	Others	21.65	18.01

2010 monitoring event

	Species	%	
		Weight	Number
1	*Monacanthus chinensis*	23.59	23.87
2	*Pentapodus paradesius*	16.23	13.91
3	*Scolopsis taeniopterus*	14.52	10.66
4	*Charybdis natator*	8.97	8.12
5	*Centrogenys vaigensis*	6.71	6.85
6	*Paramonacanthus choirocephalus*	3.94	8.97
7	*Upeneus mollucensis*	3.02	4.10
8	*Upeneus sundaicus*	2.90	3.53
9	*Arothron manilensis*	2.85	1.41
10	*Upeneus tragula*	2.38	2.47
	Others	14.88	16.10

TABLE 21. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM FISH TRAP TEST FISHING TRIALS IN TAWI-TAWI BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004 base year

	Species	%	
		Weight	Number
1	*Scolopsis taenioptera*	19.43	18.11
2	*Scolopsis personatus*	11.73	17.98
3	*Scarus ghobban*	7.52	2.68
4	*Parupeneus barberinus*	4.42	2.30
5	*Diodon liturosus*	3.57	1.53
6	*Arothron mappa*	3.43	2.04
7	*Upeneus tragula*	2.74	4.85
8	*Parupeneus heptacanthus*	2.53	3.70
9	*Lethrinus ornatus*	2.48	1.02
10	*Arothron manilensis*	2.47	1.91
	Others	39.71	43.88

2006 monitoring event

	Species	%	
		Weight	Number
1	*Scolopsis taenioptera*	11.32	9.67
2	*Parupeneus barberinus*	9.05	6.33
3	*Gymnothorax fimbriatus*	5.20	1.23
4	*Scarus rubroviolaceus*	4.16	4.92
5	*Arothron hispidus*	3.33	1.41
6	*Mulloidichthys flavolineatus*	3.29	3.34
7	*Upeneus tragula*	3.07	5.98
8	*Arothron mappa*	2.97	1.05
9	*Cheilinus chlorourus*	2.64	2.46
10	*Balistapus undulatus*	2.24	1.58
	Others	52.75	62.04

2008 monitoring event

	Species	%	
		Weight	Number
1	*Sepia sp.*	91.09	0.15
2	*Chaetodon kleinii*	0.70	7.65
3	*Naso brevirostris*	0.70	9.30
4	*Upeneus tragula*	0.65	7.95
5	*Coradion chrysozonus*	0.38	3.45
6	*Ctenochaetus striatus*	0.33	4.05
7	*Cheilinus chlorurus*	0.31	3.45
8	*Cantherhines dumerilii*	0.30	1.95
9	*Naso annulatus*	0.27	2.70
10	*Acreichthys sp.*	0.25	5.10
	Others	5.02	54.25

2010 monitoring event

	Species	%	
		Weight	Number
1	*Scolopsis dubiosus*	16.66	12.08
2	*Mulloidichthys flavilineatus*	7.13	4.92
3	*Parupeneus heptacanthus*	6.17	4.63
4	*Siganus virgatus*	5.59	8.01
5	*Upeneus tragula*	4.21	5.76
6	*Balistupus undulatus*	3.81	3.23
7	*Diodon holocanthus*	3.61	1.54
8	*Naso annulatus*	2.95	3.51
9	*Naso brevirostres*	2.88	3.09
10	*Scarus sp.*	2.83	3.09
	Others	44.17	50.14

Bottom-set Gillnet Survey

Results of independent surveys using bottom-set gillnets are given in Table 22. Catch per standard fishing operation (kg/hr) were initially relatively higher in Tawi-Tawi Bay and in Coron Bay than in Danajon Bank and Lanuza Bay. Standardized catch rates of bottom-set gillnet have relatively increased in Coron Bay, Danajon Bank and Lanuza Bay from 2004 to 2010 but declined in Tawi-Tawi Bay. Relatively high valued species have been dominant in the catch of bottom-set gillnet in the four focal areas (Tables 23, 24, 25, and 26) with no particular species consistently dominating the catch from 2004 to 2010..

TABLE 22. CATCH PER UNIT EFFORT ESTIMATED FROM BOTTOM-SET GILLNET TEST FISHING TRIALS IN THE FOUR FOCAL AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

	2004	2006	2008	2010
Coron Bay				
mean (kg/hr)	3.67	3.70	2.30	3.26
standard deviation	3.94	2.16	2.55	3.49
n	29	27	29	26
Busuanga Bay				
mean (kg/hr)		1.56	3.47	2.72
standard deviation		1.62	1.61	2.56
n		18	18	18
Danajon Bank				
mean (kg/hr)	1.85	1.71	2.19	2.15
standard deviation	1.92	1.83	3.32	4.66
n	32	32	32	32
Lanuza Bay				
mean (kg/hr)	0.86	0.92	0.58	1.25
standard deviation	1.46	0.69	0.45	2.46
n	22	22	22	22
Tawi-Tawi Bay				
mean (kg/hr)	5.19	1.63	2.44	2.08
standard deviation	2.72	1.11	1.09	1.04
n	24	24	24	24

* conducted in year 2005

TABLE 23. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM BOTTOM-SET GILLNET TEST FISHING TRIALS IN CORON BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2005 base year

	Species	%	
		Weight	Number
1	*Euthynnus affinis*	24.97	4.08
2	*Megalaspis cordyla*	13.96	12.43
3	*Leiognathus splendens*	10.63	33.02
4	*Atule mate*	5.67	4.74
5	*Sphyraena lewini*	4.76	0.76
6	*Saurida tumbil*	4.31	1.52
7	*Nemipterus hexodon*	3.81	3.32
8	*Upeneus sulphureus*	3.25	10.53
9	*Auxis thazard*	3.15	0.66
10	*Gazza minuta*	3.06	7.78
	Others	22.43	21.16

2006 monitoring event

	Species	%	
		Weight	Number
1	*Atule mate*	18.35	12.99
2	*Megalaspis cordyla*	17.85	18.84
3	*Saurida tumbil*	8.33	4.68
4	*Nemipterus hexodon*	6.20	5.33
5	*Rastrelliger kanagurta*	5.84	3.90
6	*Carangoides malabaricus*	4.66	3.77
7	*Carangoides fulvoguttatus*	3.46	1.43
8	*Euthynnus affinis*	3.28	1.04
9	*Nemipterus bathybius*	2.00	10.78
10	*Gazza minuta*	1.96	6.76
	Others	28.07	30.49

2008 monitoring event

	Species	%	
		Weight	Number
1	*Dasyatis kuhlii*	15.27	3.83
2	*Arius maculatus*	13.81	1.53
3	*Saurida tumbil*	7.00	5.75
4	*Rastrelliger kanagurta*	6.47	7.66
5	*Carangoides malabaricus*	6.31	6.90
6	*Dasyatis brevicaudata*	6.08	0.38
7	*Psettodes erumei*	6.08	1.92
8	*Carcharhinus dussumieri*	4.81	2.30
9	*Lutjanus lutjanus*	3.48	5.36
10	*Lethrinus lentjan*	3.41	4.98
	Others	27.28	59.39

2010 monitoring event

	Species	%	
		Weight	Number
1	*Rastrelliger kanagurta*	14.36	5.03
2	*Auxis thazard*	9.68	1.68
3	*Scolopsis taeniopterus*	5.62	5.03
4	*Atule mate*	5.44	6.04
5	*Rastrelliger faughni*	4.94	1.01
6	*Nemipterus peronii*	3.32	5.03
7	*Lutjanus lutjanus*	3.29	2.35
8	*Nemipterus hexodon*	2.50	0.67
9	*Carangoides fulvoguttatus*	2.42	3.36
10	*Pentapodus setosus*	2.29	3.36
	Others	46.14	66.44

TABLE 24. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM BOTTOM-SET GILLNET TEST FISHING TRIALS IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004 base year

	Species	%	
		Weight	Number
1	*Sphyraena jello*	5.79	2.29
2	*Leiognathus rivulatus*	5.55	14.32
3	*Monacanthus chinensis*	4.87	5.18
4	*Rastrelliger kanagurta*	4.81	1.14
5	*Malleus sp.*	4.39	0.94
6	*Pelates quadrilineatus*	4.30	10.69
7	*Pentapodus setosus*	4.24	4.71
8	*Upeneus tragula*	4.19	2.89
9	*Selaroides leptolepis*	4.05	5.78
10	*Sphyraena barracuda*	3.91	1.08
	Others	53.90	50.98

2006 monitoring event

	Species	%	
		Weight	Number
1	*Selaroides leptolepis*	8.01	10.79
2	*Mallus sp.*	7.51	2.04
3	*Rastrelliger faughni*	7.38	7.19
4	*Upeneus moluccensis*	4.34	3.90
5	*Pelates quadrilineatus*	4.23	9.16
6	*Leiognathus rivulatus*	4.05	8.25
7	*Crassostrea sp.*	3.81	0.83
8	*Apogon sp.*	3.41	6.51
9	*Sphyraena jello*	2.99	0.98
10	*Leiognathus splendens*	2.74	6.36
	Others	51.54	43.96

2008 monitoring event

	Species	%	
		Weight	Number
1	*Leiognathus splendens*	14.68	31.53
2	*Sphyraena flavicauda*	13.34	5.70
3	*Selaroides leptolepis*	11.52	15.05
4	*Gerres kapas*	4.75	6.14
5	*Pelates quadrilineatus*	4.58	6.11
6	*Lutjanus lineolatus*	4.06	3.66
7	*Sphyraena putnamiae*	3.53	0.93
8	*Malleus sp.*	3.02	0.50
9	*Leiognathus rivulatus*	2.99	4.81
10	*Upeneus tragula*	2.52	1.26
	Others	35.01	24.31

2010 monitoring event

	Species	%	
		Weight	Number
1	*Pentapodus paradesius*	13.83	13.71
2	*Selaroides leptolepis*	6.40	9.54
3	*Gerres kapas*	6.07	12.81
4	*Sepia esculenta*	5.53	0.18
5	*Lutjanus biguttatus*	5.05	5.45
6	*Malleus sp.*	4.19	1.18
7	*Upeneus sundaicus*	3.50	2.91
8	*Upeneus tragula*	2.95	2.36
9	*Pelates quadrilineatus*	2.74	6.54
10	*Leioganthus rivulatus*	2.67	5.45
	Others	47.09	39.87

TABLE 25. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM BOTTOM-SET GILLNET TEST FISHING TRIALS IN LANUZA BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004 base year

	Species	%	
		Weight	Number
1	*Euthynnus affinis*	18.29	2.42
2	*Dasyatis kuhlii*	9.12	1.21
3	*Myripristis amaena*	6.15	14.09
4	*Gymnothorax* sp1. (hawig)	5.82	0.15
5	*Gymnothorax* sp2 (barong)	2.67	0.15
6	*Seriolina nigrofasciata*	2.60	0.76
7	*Carcharhinus dussumieri*	2.54	0.30
8	*Rastrelliger faughni*	2.44	3.03
9	*Lutjanus vitta*	2.00	1.67
10	*Portunus pelagicus*	1.67	1.06
	Others	46.71	75.15

2006 monitoring event

	Species	%	
		Weight	Number
1	*Dasyatis sp.*	19.77	1.21
2	*Auxis thazard*	12.09	4.76
3	*Dasyatis kuhlii*	5.97	0.53
4	*Scolopsis taeniopterus*	5.94	2.34
5	*Upeneus sulphureus*	4.27	12.84
6	*Saurida tumbil*	4.01	3.63
7	*Saurida undosquamis*	3.41	4.68
8	*Nemipterus thosaporni*	2.67	4.38
9	*Tetraodontidae_sp unident*	2.60	0.15
10	*Nemipterus peronii*	2.55	3.85
	Others	36.72	61.63

2008 monitoring event

	Species	%	
		Weight	Number
1	*Saurida tumbil*	12.18	6.07
2	*Dasyatis kuhlii*	5.73	0.41
3	*Lutjanus lineolatus*	4.89	10.21
4	*Gymnothorax sp.*	4.14	0.14
5	*Psettodes erumei*	3.38	0.41
6	*Lethrinus genivittatus*	3.21	4.00
7	*Saurida undosquamis*	2.98	3.31
8	*Scolopsis taeniopterus*	2.89	2.76
9	*Sphyraena putnamiae*	2.80	0.97
10	*Loxodon macrorhinus*	2.73	0.28
	Others	55.07	71.45

2010 monitoring event

	Species	%	
		Weight	Number
1	*Myripristis murdjan*	13.30	14.41
2	*Upeneus sulphureus*	11.74	20.20
3	*Dasyatis kuhlii*	6.36	0.44
4	*Portunus pelagicus*	2.93	0.83
5	*Saurida tumbil*	2.83	1.02
6	*Portunus sanguinolentus*	2.81	1.75
7	*Scolopsis taeniopterus*	2.19	1.61
8	*Gymnocranius elongatus*	1.77	0.49
9	*Pentaprion longimanus*	1.76	3.21
10	*Charybdis feriata*	1.51	0.24
	Others	52.82	55.79

TABLE 26. RELATIVE ABUNDANCE, BY WEIGHT AND NUMBER, OF TOP 10 SPECIES FROM BOTTOM-SET GILLNET TEST FISHING TRIALS IN TAWI-TAWI BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

2004 base year

	Species	%	
		Weight	Number
1	*Leiognathus leuciscus*	31.74	51.67
2	*Rastrelliger brachysoma*	9.63	3.20
3	*Scolopsis taeniopterus*	8.33	4.69
4	*Sphyraena putnamae*	8.12	2.40
5	*Pelates quadrilineatus*	7.61	7.85
6	*Gerres oblongus*	5.08	5.63
7	*Sphyraena barracuda*	3.49	0.80
8	*Gerres oyena*	2.96	3.16
9	*Gazza minuta*	2.58	4.83
10	*Sphyraena jello*	2.17	0.45
	Others	18.31	15.32

2006 monitoring event

	Species	%	
		Weight	Number
1	*Scolopsis taeniopterus*	24.27	26.53
2	*Rastrelliger kanagurta*	23.86	14.51
3	*Sphyraena putnamae*	12.56	6.58
4	*Echidna nebulosa*	7.61	0.23
5	*Gerres macrosoma*	5.86	10.88
6	*Selar crumenopthalmus*	3.87	5.22
7	*Nemipterus peronii*	3.76	3.85
8	*Leiognathus bindus*	2.73	15.42
9	*Fistularia commersonii*	2.47	0.45
10	*Gazza minuta*	2.14	5.90
	Others	10.87	10.43

2008 monitoring event

	Species	%	
		Weight	Number
1	*Nemipterus peronii*	24.72	24.66
2	*Scolopsis taeniopterus*	20.62	32.88
3	*Selar crumenophthalmus*	12.33	13.01
4	*Gerres oblongus*	6.94	6.16
5	*Upeneus tragula*	6.39	2.05
6	*Lutjanus lineolatus*	4.77	5.82
7	*Nemipterus nemurus*	4.60	1.71
8	*Platycephalus indicus*	2.63	1.37
9	*Upeneus vittatus*	2.56	2.05
10	*Selaroides leptolepis*	2.44	1.71
	Others	12.00	8.58

2010 monitoring event

	Species	%	
		Weight	Number
1	*Gerres oyena*	23.31	30.31
2	*Scolopsis taeniopterus*	8.76	5.93
3	*Gazza minuta*	7.07	17.04
4	*Priacanthus harmur*	6.70	3.02
5	*Selaroides leptolepis*	6.47	4.10
6	*Priacanthus tayenus*	5.80	3.78
7	*Selar crumenopthalmus*	5.53	5.07
8	*Plotosus lineatus*	5.17	4.42
9	*Upeneus vittatus*	4.40	1.73
10	*Gymnothorax albimarginatus*	3.00	0.11
	Others	23.77	24.49

3.2. FISHERIES DEPENDENT SURVEYS TO DETERMINE CATCH RATES OF SELECTED FISHERIES RESOURCES IN FOCAL AREAS

Dominant fishing gears common to all the four focal areas, and most likely also throughout the country were the bottom-set gillnet, drift gillnet, simple hook and line, bottom-set longline, multiple handline and spear fishing. In addition to those, fish corral and bagnet played an important role in Coron Bay while crab catching gears (crabpot, crab gillnet, and crab liftnet), drive-in gillnet, Danish seine, and trammel net were also very frequently used in Danajon Bank. Octopus jigs, and beach seine were still frequently used by fishers in Lanuza Bay while troll fishing and even dynamite fishing were still commonly used in Tawi-Tawi Bay. Tables 27, 28, 29, and 30 list down all fishing gears whose catch were monitored during the baseline period in 2004 and the monitoring events in 2006, 2008, and 2010. The catch rates estimated from catch and effort data together with catch rates estimated through fishery-independent methods collected in 2004, served as the fisheries baseline information. The methods and procedures used in the data gathering activities established during this baseline assessment work served as basis for the subsequent project monitoring activities. Established sampling months and sampling days were adhered to, especially in reference to the moon phase, to replicate similar conditions during monitoring.

TABLE 27. CATCH PER UNIT EFFORT (KG PER DAY) OF VARIOUS FISHING GEARS MONITORED IN SELECTED LANDING SITES IN CORON BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

Fishing gear	2004			2006			2008			2010		
	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n
Bag net	242.72	486.13	26	79.59	122.03	39	212.09	89.69	65	115.93	72.84	15
Bottom set gillnet	8.37	13.73	495	12.01	11.86	739	10.64	14.65	1395	11.36	17.51	1270
Bottom set longline	10.92	17.35	160	6.19	7.42	314	7.58	5.27	576	9.23	4.42	496
Crab pot	3.82	1.49	5							4.38	6.79	24
Drag handline				32.85	13.65	2	1.68	1.77	36	55.19	53.37	27
Drift gillnet	24.40	21.71	165	17.36	25.18	187	13.08	9.77	142	29.06	28.33	375
Drive-in gillnet	15.93	22.24	10	6.36	7.51	14	43.51	40.62	10	11.17	7.69	11
Encircling gillnet	32.64	19.13	5							7.03	4.95	3
Fish corral	65.50	112.25	33	16.18	13.30	84	14.89	19.17	106	72.42	208.51	44
Fish trap	14.95	8.64	9	23.54	21.39	17	3.54	2.11	7	4.49	3.29	49
Handspear							7.04	9.66	6	13.46	13.17	111
Hook and line with float	18.01	21.07	55				3.66	3.69	29			
Multiple handline	10.47	16.63	357	5.32	5.46	284	3.90	4.50	595	4.03	3.59	129
Scoopnet							5.97	3.41	19	13.69	32.37	9
Seine net				30.00	14.14	2	173.25	101.41	16			
Set gillnet with plunger	4.65	2.14	23	3.32	1.13	3	5.95	4.61	4	9.00	5.99	9
Spear	13.00	17.86	43	15.76	16.06	126				14.38	14.41	18
Spear with compressor	18.62	18.34	60	16.59	12.88	4	9.34	11.98	226	12.16	7.88	71
Squid jig	2.93	2.18	7				4.17	6.02	23	1.75	0.35	2
Trammel net	12.74	13.94	24	17.16	20.79	93	21.36	22.60	87	8.22	8.61	176
Troll line	26.71	16.04	32	25.33	34.97	8	3.49	2.13	8	12.29	11.16	177

TABLE 28. CATCH PER UNIT EFFORT (KG PER DAY) OF VARIOUS FISHING GEARS MONITORED IN SELECTED LANDING SITES IN DANAJON BANK DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

Fishing gear	2004			2006			2008			2010		
	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n
Barrier net	6.92	5.59	6	8.71	5.83	12	11.71	11.72	7	8.64	5.25	4
Beach seine	18.60	34.51	50	3.50	1.32	3	5.17	4.05	19	8.45	4.96	23
Bottom set gillnet	15.81	20.54	166	7.71	8.67	423	8.62	8.82	616	9.38	8.56	522
Bottom set longline	4.67	3.32	220	3.51	4.37	306	2.29	1.80	264	2.94	2.46	238
Crab gillnet	3.37	2.14	787	2.08	1.47	630	1.65	1.18	659	2.06	1.33	878
Crab liftnet	3.41	1.68	735	2.40	1.52	787	3.20	1.30	551	2.21	0.95	503
Crab pot	6.71	2.63	354	3.65	1.78	367	2.93	3.46	472	2.21	1.67	580
Danish seine	25.70	17.08	433	78.38	42.67	236	56.80	39.65	268	47.27	39.72	293
Diving	2.68	1.26	20	3.18	0.68	6	3.25	2.17	21	2.63	2.49	10
Drift gillnet	7.31	6.67	458	11.45	14.58	609	24.33	216.12	561	17.00	48.24	391
Drive-in gillnet	14.84	10.00	221	12.31	8.25	508	12.57	10.49	654	14.04	7.93	296
Dynamite	226.04	140.75	12	31.81	20.79	15	272.00	255.55	4	153.28	131.39	9
Encircling gillnet	56.37	87.50	14	45.85	70.57	55	66.90	48.66	57	49.29	26.93	28
Filter net	1.33	0.58	3				2.45	1.15	5	4.00	0.99	2
Fish corral	5.80	10.78	174	4.43	10.55	80	6.29	7.09	168	3.90	2.67	136
Fish trap	9.95	8.31	59	19.83	8.57	72	15.02	9.33	89	12.82	9.74	123
Hook and line with float	3.07	1.35	30	7.73	5.44	7				3.56	1.20	5
Multiple handline	3.79	3.27	91	4.03	3.56	122	3.35	4.03	72	3.92	2.23	139
Push/Scissor net	0.67	0.29	3				0.69	0.40	7			
Round haul seine	96.63	63.61	12	127.69	100.67	34	189.48	213.82	34	102.42	72.39	25
Scoopnet with light	36.58	11.62	59	21.75	14.96	81	9.57	16.81	82	22.58	25.67	86
Seine net	31.36	17.50	11	9.88	3.45	12	19.22	12.77	40	17.84	6.46	12
Set gillnet for rays							3.14	4.75	7	3.83	0.60	3
Set gillnet with plunger	10.73	6.80	290	13.69	7.91	231	11.61	7.74	319	7.68	5.54	134
Simple hook and line	2.38	1.71	382	2.65	3.08	451	2.78	2.79	301	4.91	4.20	134
Spear	2.77	1.65	10	1.84	2.37	167	1.60	0.93	91	5.27	5.09	61
Spear with compressor	28.88	15.12	66	23.75	7.57	71	14.57	6.99	72	26.74	7.54	47
Squid gillnet	8.35	3.38	4	10.32	7.46	42	23.35	32.09	48	4.90	2.85	81
Squid jig	1.58	1.04	93	1.73	1.43	88	1.50	1.08	159	1.79	1.36	132
Squid trap	3.56	2.92	38	3.41	1.73	136						
Stationary liftnet	13.81	9.39	66	17.53	9.97	6	62.10	107.45	87	12.42	15.13	108
Surface set longline	3.80	1.35	9	5.68	1.90	17						
Trammel net	5.90	5.08	83	6.12	3.38	167	4.48	2.72	186	3.62	1.54	150
Trawl	13.65	6.61	174	6.38	4.90	6	13.01	5.54	22	7.14	3.30	42
Troll line	3.50	2.39	4	2.31	1.01	44	7.01	2.62	52	7.49	4.17	86

TABLE 29. CATCH PER UNIT EFFORT (KG PER DAY) OF VARIOUS FISHING GEARS MONITORED IN SELECTED LANDING SITES IN LANUZA BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

Fishing gear	2004			2006			2008			2010		
	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n
Bag net	250.53	216.47	19	347.41	336.22	75	283.39	228.78	131	124.18	134.68	92
Barrier gillnet	3.94	2.21	9	6.21	3.17	25	5.11	2.58	41	7.93	7.73	59
Beach seine	27.98	27.66	65	24.45	30.30	170	17.30	19.57	200	38.74	37.67	151
Bottom set gillnet	4.67	3.24	264	4.05	4.33	554	4.01	3.26	514	4.47	4.78	422
Bottom set longline	8.81	8.56	435	7.84	10.68	312	6.49	4.52	613	7.48	4.09	566
Cast net							1.32	1.28	9	1.92	1.33	5
Crab gillnet	6.73	1.88	6	26.98	143.47	31	1.89	1.01	43	2.43	2.79	49
Crab liftnet				4.97	2.28	3	4.65	0.64	2	2.93	1.77	3
Crab pot	2.67	1.56	71	2.68	2.32	136	2.42	1.90	115	4.90	1.94	42
Danish seine				487.25	226.84	38	348.30	98.86	42			
Drag handline				33.11	29.40	33	22.81	20.31	44	19.46	18.52	97
Drift gillnet	12.99	11.06	181	10.84	10.83	284	8.53	6.48	391	10.70	7.40	321
Drive-in gillnet	14.42	15.21	58	27.43	39.85	78	11.39	11.61	199	12.78	7.69	196
Entrapping device				0.53	0.11	2	0.58	0.04	2			
Fish corral	2.97	3.89	88	4.46	3.54	95	4.93	4.82	40	4.40	4.92	36
Fish trap	5.32	3.61	34	5.11	4.47	88	8.16	11.26	6	3.25	2.54	3
Hook and line with float	8.00	4.24	2	19.69	56.83	12	14.45	6.88	8	10.06	9.05	85
Lobster gillnet	34.03	28.24	4	6.49	8.17	31	4.98	5.07	26	7.32	3.40	24
Multiple handline	5.90	15.00	41	4.59	5.37	216	3.98	8.44	358	3.21	2.77	224
Natural poison				4.92	1.08	2	3.91	2.96	5			
Octopus jig	3.61	1.92	597	3.53	2.44	245	4.04	2.82	353	5.25	3.56	305
Octopus lure	2.70	1.13	2				4.73	1.95	81	4.30	1.44	67
Ring net							46.30	28.18	5	68.67	31.50	14
Scoopnet with light							3.65	1.54	19	2.41	2.19	5
Seine net	163.79	139.41	33	61.66	55.24	18	212.42	290.84	22	12.45	2.62	2
Set gillnet for rays				51.77	23.68	3	13.75	1.77	2			
Set gillnet with plunger	3.26	1.45	17	3.74	2.96	82	5.76	1.02	9	8.33	1.51	4
Simple hook and line	4.47	4.17	169	5.23	7.77	553	5.78	16.02	307	5.23	10.70	218
Spear	6.04	4.11	184	8.45	10.32	354	4.08	3.69	443	5.86	10.77	305
Squid gillnet	11.65	6.58	2	13.94	5.95	12	19.32	7.63	37	14.13	5.48	16
Squid jig	2.60	1.90	24	3.52	6.54	26	1.77	1.29	90	2.41	1.29	67
Squid trap	3.73	2.46	17	4.32	2.94	135	5.90	3.22	81	4.52	10.89	90
Trammel net	6.66	5.68	36	8.39	14.37	53	5.29	3.41	166	8.60	10.10	113
Troll line	10.45	8.06	17	10.00	22.02	41	6.36	8.06	45	9.17	9.21	42

TABLE 30. CATCH PER UNIT EFFORT (KG PER DAY) OF VARIOUS FISHING GEARS MONITORED IN SELECTED LANDING SITES IN TAWI-TAWI BAY DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

Fishing gear	2004			2006			2008			2010		
	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n
Bag net	143.92	136.26	28	184.69	257.72	77						
Beach seine	28.81	22.41	14	22.34	13.24	16	34.58	17.28	22	6.31	1.52	4
Bottom set gillnet	26.84	16.05	591	33.88	19.92	646	21.62	12.08	862	8.33	6.81	778
Bottom set longline	15.37	11.04	210	17.74	13.14	90	21.84	14.25	140	11.16	6.31	377
Drift gillnet	56.32	39.39	182	45.17	20.29	177	37.45	17.45	185	7.02	5.16	77
Drive-in gillnet	39.46	25.89	29	31.91	14.95	104	30.00	10.00	3	16.24	4.86	26
Dynamite	50.60	63.88	299	34.61	17.60	270	41.15	19.27	267	25.66	15.65	72
Encircling gillnet				38.43	13.15	7	27.44	13.15	59			
Fish corral	10.23	10.58	49	17.01	8.55	115	17.00	6.55	4			
Fish trap	12.17	9.74	56	5.49	2.21	22	19.92	16.43	26	11.55	4.45	24
Handspear							27.21	18.80	139	8.29	7.76	200
Hook and line with float	9.40	4.53	2	7.61	1.95	9	18.41	4.94	14			
Multiple handline	18.64	14.33	173	18.56	10.87	174	15.43	9.55	487	20.58	18.07	331
Natural poison	64.84	44.62	9	19.71	8.30	7						
Octopus jig	3.77	2.79	125	3.52	1.90	65	7.34	4.02	85	8.28	3.51	119
Ring net	214.15	252.77	100	264.50	251.55	20	230.56	175.28	58	243.27	164.90	109
Set gillnet for rays	13.29	6.24	52	11.91	10.46	283						
Set gillnet with plunger	18.20	8.75	10	42.75	8.85	4	14.02	3.94	59			
Simple hook and line	14.01	10.87	132	9.86	6.84	350	13.79	11.67	402	6.68	3.86	517
Spear	5.59	6.91	138	16.82	9.65	128						
Spear with compressor	32.74	22.25	124	37.56	18.51	25						
Squid jig	4.65	3.37	30	3.38	2.88	99	4.56	2.88	78	2.80	1.31	34
Troll line	25.43	23.97	123	27.38	14.21	155	24.46	11.90	378	7.86	5.83	34

MARINE PROTECTED AREAS

The UPVFI team surveyed the Calamianes focal area in May 2004. At the time, there were no MPAs with clearly defined boundaries in the area. There were some reports of previous initiatives to establish MPAs, but when these claims were investigated, no documents on such MPAs and their boundaries could be found. Thus, the UPVFI and FISH Project staff jointly selected potential MPA sites based mainly on manta tow data (Campos et al. 2004a). The potential MPA sites selected were located off the islands of Lajala, Decalve and Bugor. The UPVFI team subsequently assessed these potential sites. In 2005, MPAs were established in these sites before they were re-surveyed in May of the same year. The Danajon Bank focal area off Northern Bohol has a history of MPAs established by various projects. In July 2004, three MPAs were selected using the criteria for selecting MPAs as earlier mentioned in Table 11. The Danajon Bank MPAs were surveyed by the Silliman University research team but the subsequent monitoring was conducted by the UPVFI team.

When the UPVFI team surveyed Lanuza Bay in June 2004, there were two recently established MPAs in the area, namely, the Carrascal MPA and an offshore MPA between General and Auqui Islands (Campos 2004b). The UPVFI team surveyed these two MPAs as well as potential MPA sites off General Island and Uyamao Island. The offshore MPA was never fully enforced and was eventually abandoned by local officials. On the other hand, in 2005 the FISH Project supported the Carrascal MPA and assisted the establishment of two new MPAs, one off General Island and the other off Auqui Island.

The Tawi-Tawi focal area was surveyed in July-August 2004. There were reports then of an MPA in Pababag Island. However, officials interviewed could not produce a document with the boundaries of the supposed MPA, although they would point to site where it was supposed to exist. Apparently, the initiative was still at the conceptual stage and was an activity that could be supported by the FISH Project. Thus, the UPVFI research team assessed the Pababag Island "MPA" and other potential MPA sites, which were selected on the basis of manta tow results (Campos 2004c).

As mentioned earlier, sets of data and information were gathered by the MPA monitoring teams during the baseline and monitoring events. Details about the results were discussed in separate reports by the Monitoring teams from UPVFI and Siliman University. The results, aside from being primarily used as one of the the basis for measuring of the project results, were likewise used to communicate with stakeholders the effects management, in general, and the positive impacts of protection, in particular. This document, however, will just focus on three important sets information gathered to determine, reef fish biomass, species richness and benthic condition (represented by the percentage changes in hard coral cover).

3.3. MARINE PROTECTED AREA (MPA) SURVEYS TO DETERMINE REEF FISH BIOMASS, SPECIES RICHNESS, AND BENTHIC CONDITIONS WITHIN AND ADJACENT TO SELECTED MARINE PROTECTED AREAS

Table 31 lists down computed mean reef fish biomass, their respective standard deviations and number of replicates in the of 24 MPAs supported by the project in the the four focal areas from the baseline assessment in 2004 to subsequent monitoring events in 2006, 2008, and 2010. Twelve of these MPAs were established during the base year period of 2004 and served as baseline for the project result estimates for the MPAs. Complimentary to this, Table 32 contains average total number of species per transect to indicate species richness within and adjacent to these marine protected areas. And likewise, one of the results of the line intersect transect survey is the benthic condition, particularly percentage of live coral cover (Table 33).

TABLE 31. MEAN REEF FISH BIOMASS (TONS PER SQUARE KILOMETER) WITHIN AND ADJACENT TO MARINE PROTECED AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

Marine Protec Area	2004			2006			2008			2010		
	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n
Coron Bay												
Lajala (Uson Island)	11.00	9.25	10	19.02	11.81	10	14.94	4.66	10	12.80	4.52	10
Bintuan-Decalve	22.00	11.85	10	10.64	8.09	10	16.47	7.25	10	9.81	6.05	10
Bugor	29.84	7.75	10	25.82	15.03	10	18.67	10.53	10	19.34	8.36	10
Cuaming							20.99	8.65	6	35.34	16.89	10
Tangtangen (Royucan-Sagrada)				23.83	14.53	10	17.97	5.74	10	31.64	34.14	10
Balisungan				21.62	10.72	10	18.50	13.32	10	27.40	22.13	10
Danajon Bank												
Bilang-bilangan	25.88	16.60	12	14.08	9.68	10	13.78	8.06	12	17.51	12.00	12
Bantigue	19.45	12.80	12	11.24	5.39	12	14.73	8.97	12	13.66	13.81	12
Hingutanan	42.92	29.10	12	9.10	6.09	12	24.17	36.35	12	16.61	12.43	12
Cataban				21.00	15.06	10	7.91	5.35	10	11.75	10.41	10
Pinamgo				8.91	4.68	10	7.32	5.89	10	4.15	3.50	10
Sag				9.23	4.13	10	15.57	10.14	10	7.57	3.04	10
Lanuza Bay												
Carrascal	14.50	7.87	10	19.61	17.82	10	14.69	8.84	10	17.08	6.85	10
Auqui	9.56	1.76	5	10.00	5.51	10	13.89	8.34	10	13.70	12.44	10
General Is.	17.90	10.89	2	10.90	6.70	10	17.14	12.12	10	15.68	10.77	10
Adlay				10.96	4.87	10	11.93	13.73	10	8.75	2.70	10
Capandan				16.28	9.47	10	11.20	5.49	10	14.76	10.39	10
Uba				9.32	4.06	10	13.36	13.77	10	7.21	3.23	10
Tawi-Tawi Bay												
Pababag Is. Bongao	9.76	2.88	10	13.86	10.96	10	10.36	6.85	7	23.24	18.88	10
Batu-batu Kulape, P. Sugala	19.63	7.10	7	25.23	18.11	10	25.69	13.13	5	34.63	36.15	10
Doh-Tong, Simunul	26.00	12.80	6	34.30	30.59	10	29.91	21.65	8	27.12	20.76	10
Ungos-ungos, Bongao				20.77	14.38	10	17.15	10.60	9	30.24	32.05	10
Tonggosong -Maruwa, Simunul				35.34	24.42	10	24.31	17.14	9	47.40	37.92	10
Tundon, P. Sugala				33.66	33.63	10	14.74	8.83	7	26.78	21.31	10

TABLE 32. MEAN REEF FISH SPECIES RICHNESS (NUMBER OF SPECIES) WITHIN AND ADJACENT TO MARINE PROTECED AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

Marine Protec Area	2004			2006			2008			2010		
	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n
Coron Bay												
Lajala - Uson Island	30	5.3	10	56	11.6	10	51	8.7	10	51	7.9	10
Decalve - Apo Island - Bintuan	38	10.2	10	44	11.4	10	46	11.2	10	45	7.8	10
Bugor	41	4.1	10	50	5.5	10	53	8.2	10	56	8.4	10
Cuaming							50	4.2	6	56	9.8	10
Tangtangen (Royucan-Sagrada)				58	7.5	10	59	8.5	10	58	6.1	10
Balisungan				57	10.2	10	61	11.9	10	66	13.5	10
Danajon Bank												
Bilang-bilangan	23	12.9	12	49	17.3	10	56	10.4	10	48	10.5	10
Bantigue	20	9.0	12	35	9.5	12	36	9.1	12	28	8.1	12
Hingutanan	27	7.8	12	54	12.1	12	52	10.3	12	47	8.7	12
Cataban				36	9.0	10	34	10.0	10	38	10.1	10
Pinamgo				26	8.1	10	25	9.4	10	19	6.5	10
Sag				35	7.4	10	35	8.7	10	31	8.0	10
Lanuza Bay												
Carrascal	39	10.7	10	61	18.3	10	50	17.8	10	60	15.3	10
Auqui	42	10.4	10	53	6.5	10	58	8.7	10	61	9.6	10
General Is.	50	4.8	5	51	12.6	10	58	14.6	10	67	9.9	10
Adlay				57	12.4	10	47	7.9	10	47	11.2	10
Capandan				70	9.5	10	63	11.6	10	73	15.6	10
Uba				63	12.6	10	53	10.2	10	54	11.5	10
Tawi-Tawi Bay												
Pababag Is. Bongao	50	4.8	10	64	18.1	10	69	8.9	7	65	8.1	10
Batu-batu Kulape, P. Sugala	57	5.8	9	59	11.6	10	68	8.4	5	65	12.2	10
Doh-Tong, Simunul	62	6.1	6	62	11.6	10	70	15.5	8	66	9.0	10
Ungos-ungos, Bongao				67	15.1	10	68	12.6	9	67	14.7	10
Tonggosong -Maruwa, Simunul				71	10.5	10	72	14.6	9	80	10.6	10
Tundon, Simunul				55	18.8	10	58	12.8	7	57	26.5	10

TABLE 33. MEAN BENTHIC CONDITION (HARD CORAL COVER) WITHIN AND ADJACENT TO MARINE PROTECED AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS

Marine Protec Area	2004			2006			2008			2010		
	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n	mean	s.d.	n
Coron Bay												
Lajala - Uson Island	47.9	14.0	10	37.9	13.3	10	42.7	10.7	10	43.8	17.8	10
Decalve - Apo Island - Bintuan	45.5	18.7	10	43.4	17.9	10	47.6	15.2	10	51.9	15.8	10
Bugor	48.9	22.5	10	37.9	12.8	10	47.5	4.2	10	56.7	12.3	10
Cuaming							40.0	5.3	6	49.8	17.3	10
Tangtangen (Royucan-Sagrada)				61.0	8.7	10	44.4	14.7	10	58.8	19.7	10
Balisungan				35.1	17.2	10	23.8	9.5	10	33.8	13.6	10
Danajon Bank												
Bilang-bilangan	17.7	9.7	12	25.9	11.9	10	20.8	11.3	10	24.0	13.2	10
Bantigue	34.6	18.9	12	41.4	14.7	12	44.9	18.6	12	46.9	20.6	12
Hingutanan	22.7	8.2	12	23.4	12.1	12	21.0	13.3	12	29.6	15.5	12
Cataban				25.6	16.9	10	23.0	13.4	10	25.7	17.9	10
Pinamgo				21.4	15.6	10	22.9	19.0	10	20.7	15.4	10
Sag				61.5	10.3	10	53.6	18.1	10	60.4	18.0	10
Lanuza Bay												
Carrascal	23.9	18.9	10	30.3	9.6	10	44.7	11.9	10	52.0	14.1	10
Auqui	55.4	24.6	10	59.1	11.8	10	63.0	14.2	10	56.4	9.36	10
General Is.	75.7	8.9	5	48.6	11.3	10	53.8	14.1	10	57.2	15.5	10
Adlay				51.9	21.5	10	49.9	14.9	10	47.7	9.2	10
Capandan				48.4	7.3	10	46.8	10.4	10	55.3	28.4	10
Uba				40.6	15.4	10	37.2	11.3	10	32.4	9.6	10
Tawi-Tawi Bay												
Pababag Is. Bongao	54.1	28.3	10	36.8	15.3	10	38.9	20.6	7	25.5	13.1	10
Batu-batu Kulape, P. Sugala	53.9	22.6	9	39.3	15.7	10	22.8	14.3	5	19.7	14.5	10
Doh-Tong, Simunul	43.5	27.2	6	29.8	13.1	10	21.9	10.3	8	28.7	12.5	10
Ungos-ungos, Bongao				29.6	13.9	10	31.1	17.4	9	20.5	6.3	10
Tonggosong -Maruwa, Simunul				29.3	10.5	10	20.9	13.2	9	21.8	10.5	10
Tundon, Simunul				12.9	6.7	10	10.2	5.7	7	9.2	6.6	10

4. ESTIMATION PROCEDURE AND SUMMARY OF FISH PROJECT RESULTS

As mentioned earlier, the main objective of the FISH Project was to conserve biological diversity in the four selected focal areas through improved management of the fish stocks and fish habitats that support them and to be measured as increase abundance of marine fish stocks by at least 10 percent from 2004 to 2010. The single measure of the 10 percent increment was based on three Project Results or PRs, namely: abundance of selected resources in focal areas (PR1), catch rate of selected fisheries in focal areas (PR2), and reef fish biomass inside and adjacent to selected MPAs in focal areas (PR3).

FPR: Marine fish stocks increased by 10% (over 2004 baseline levels) in focal areas by year 2010.

PR1: Abundance of selected fisheries resources in focal areas (% change in catch per unit effort compared to baseline based on fishery-independent methods)

PR2: Catch rate of selected fisheries in focal areas (% change in catch per unit effort compared to baseline based on fishery-dependent methods)

PR3: Reef fish and biomass inside and adjacent to selected MPAs in focal areas (% change in biomass/500 m^2 compared to baseline)

This section explains the detailed computational process and steps to pool and average the three PRs. It also shows how the parameters measured in each PR are combined using weighting factors to determine the overall FISH project result or FPR.

It is emphasized at this point that the FISH Project's main objective (increase in marine fish stocks by 10 percent) was to be achieved on top of the current downward national trend in stock densities, catch rates, and fish habitat quality. This means that before the 10 percent increment can be achieved the downward trend needs first to be arrested. It also means that simply maintaining the current stock densities will require a large portion of project investment and can already be considered a positive result of fisheries resource management interventions. Figure 22 depicts the overall trend in demersal biomass decline in the Philippines in contrast to potential increase that the FISH Project is striving to accomplish.

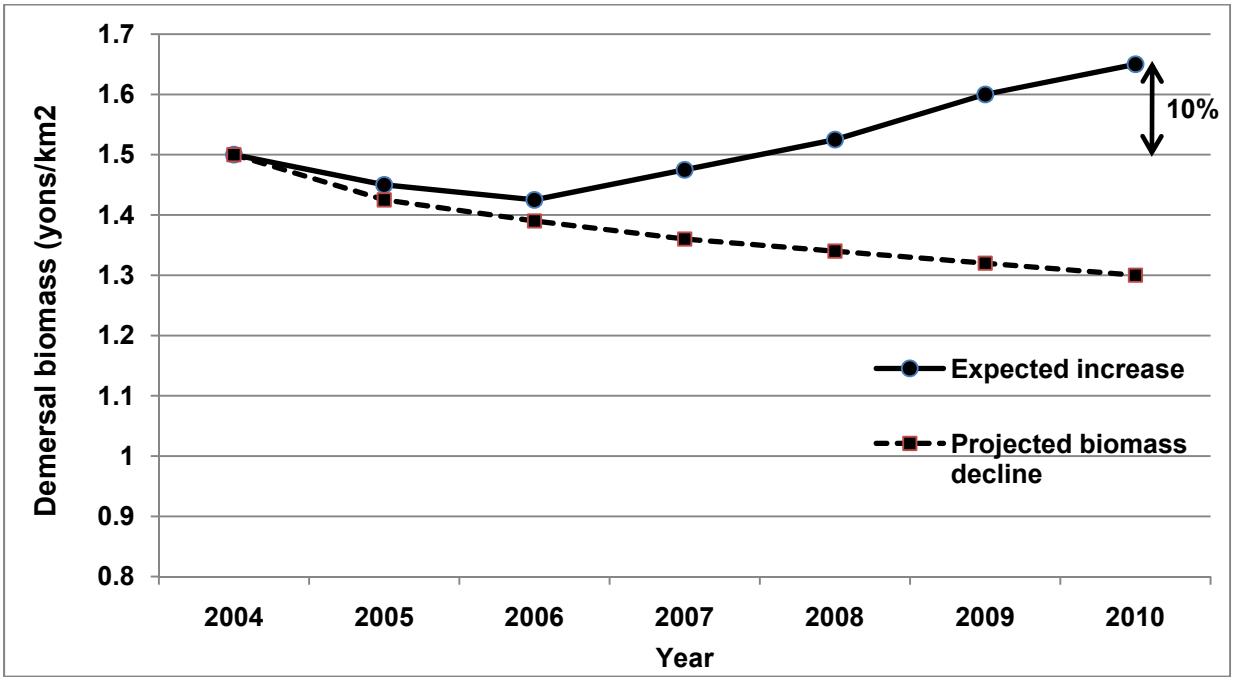


FIGURE 22. TREND IN PHILIPPINE DEMERSAL STOCK DECLOINE AND FISH PROJECT'S EXPECTED RESULT.

4.1. ESTIMATION PROCEDURE

The principles and assumptions that guided the overall estimation of the FISH Project Results were documented in the Baseline Assessment Plan and the Estimation Procedure of FISH Project Results. They are likewise listed and explained below. They are based on the best knowledge and research to date concerning fisheries management in general, the base line assessments conducted for FISH, as well as the available and relevant information from the focal areas of FISH. The approach effectively grounds the determination of the FPR directly to the realities of geographical size of the focal areas, the relative area of different habitat types in the focal areas that directly affect potential fish yields, the potential fish yields based on empirical data from various studies in the Philippines as well as the relative quality (variance) of the data sets collected for the measurement of PRs 1, 2, and 3. The approach also maximizes

the value of the relative efforts of the FISH Project to influence the management of fisheries through a variety of interventions including marine protected areas in the shallower coral reef and sea-grass areas.

1. **The overall FPR will be measured as percent change from the 2004 baseline**. It is the difference between Project Results (PR1, PR2, and PR3) measured in year 2004 and year 2010 expressed as percentage change compared to baseline assessment conducted in year 2004.

2. **The FPR will be a pooled value of Project Results from each focal area (APR_C, APR_D, APR_L and APR_T) using the estimated surface area of the focal area as a weighting factor (C = Coron Bay, D = Danajon Bank, L = Lanuza Bay, T = Tawi-Tawi Bay).** Thus, the total surface area of each focal area will determine the relative importance of the measured results from each of the four focal areas. The logic is that the area covered represents the relative effort or difficulty by the project to accomplish a result, as well as the relative contribution to improved fisheries management from a total project perspective.

3. **The focal area Project Result (APR_C, APR_D, APR_L or APR_T) will be measured to represent progress made in each target area**. This is the most practical way to effect and measure changes in fish stock given the relatively large size of the entire target areas and the resources available to the FISH Project.

4. **Each focal area Project Result (APR_C, APR_D, APR_L or APR_T) will be a pooled value consisting of independent estimates of PR1, PR2, and PR3 in every focal area using various weighting factors**. Thus each PR within each focal area will be determined based on independent data collected during the baseline assessment (2004) and repeated monitoring of the fishery determinants of the PR (2006, 2008, and 2010). The three PRs will then be pooled to determine the focal area PR. The pooling will be accomplished as further explained below using a weighting factor for each PR to determine its contribution to the focal area APR. Once the three PRs for a given focal area are pooled, the four focal area APRs will be pooled according to the area coverage of the focal area of concern.

5. **PR1 will be measured through test fishing methods using selected fishing gears used in the focal area, PR2 will be measured through catch and effort monitoring of commonly used gears in the focal area, and PR3 will be measured through fish visual census inside and adjacent to selected marine protected areas (MPAs) in the focal area.**

6. **Potential yield[1] estimates from the various components of the resource system will be used as the main basis for determining and establishing the weighting factor for PR1, PR2, and PR3 in the focal area**. In this manner, the relative importance of the three PRs within a given focal area will be determined by the area of the bottom habitat type expanded by the potential yield of that particular bottom habitat type. The two habitat types considered are “soft/hard bottom” (affecting PR1 and PR2 for demersal and pelagic fisheries) and “coral reefs” (affecting PR3 for reef fisheries) in which the coral reefs include all common reef associated communities such as sea

[1] Standing stock estimates may be used in lieu of potential yield in this weighting process. Potential yield is used here given that it is more readily available in the literature.

grasses, shallow sand and others commonly present in reef areas and occur at depths of less than 20 meters.

7. **Number of samples will be the basis for determining the weighting factor for each component PR1 and PR2 and the area of project established MPAs for PR3 in the focal area**. Thus each component will be weighted according to the number of runs, number of transects, number of catch sampled, and area of MPA. The idea is to give proportional emphasis or weight to components in relation to the number of replicates made and project investment.

The overall FPR is computed as the difference between Project Results (PR1, PR2, and PR3) measured in year 2010 and year 2004 expressed as percentage change compared to baseline assessment conducted in year 2004. The overall FPR will be the weighted average of the focal area Project Results (APR_C, APR_D, APR_L or APR_T) using the estimated surface area of the respective focal area (Table 1) as the weighting factor:

$$FPR = \frac{(APR_C \cdot w_C) + (APR_D \cdot w_D) + (APR_L \cdot w_L) + (APR_T \cdot w_T)}{w_C + w_D + w_L + w_T}$$

where: FPR = Overall FISH Project Result
APR_C = Area Project Result for Coron Bay
APR_D = Area Project Result for Danajon Bank
APR_L = Area Project Result for Lanuza Bay
APR_T = Area Project Result for Tawi-Tawi Bay
w_C = weighting factor for Coron Bay (estimated surface area of the focal area)
w_D = weighting factor for Danajon Bank (estimated surface area of the focal area)
w_L = weighting factor for Lanuza Bay (estimated surface area of the focal area)
w_T = weighting factor for Tawi-Tawi Bay (estimated surface area of the focal area)

TABLE 34. ESTIMATES OF SURFACE AREAS OF SOFT BOTTOM, HARD BOTTOM, AND CORAL REEFS (AND ASSOCIATED COMMUNITIES) IN THE FOUR FOCAL AREAS.

Focal area	Surface area (km^2)		
	Soft/hard bottom	Coral reefs	Total
Coron Bay	760	100	860
Danajon Bank	1,030	198	1,227
Lanuza Bay	1,249	81	1,330
Tawi-Tawi Bay	265	177	442

The focal area Project Result (APR_{fa}) will be represented by measurements from the focal area. Each focal area Project Result (APR_C, APR_D, APR_L or APR_T) will be a pooled value consisting of independent estimates of PR1, PR2, and PR3 in every focal area using various weighting factors:

$$APR_{fa} = \frac{(PR1 \cdot w_{PR1}) + ((PR2 \cdot w_{PR2}) + (PR3 \cdot w_{PR3})}{w_{PR1} + w_{PR2} + w_{PR3}}$$

where: APR_{fa} = Project Result for the focal area
fa = focal area

$PR1$ = Project Result estimated using fishery-independent survey methods
$PR2$ = Project Result estimated using fishery-dependent survey methods
$PR3$ = Project Result estimated using fish visual census inside and outside MPAs
w_{PR1} = weighting factor for PR1
w_{PR2} = weighting factor for PR2
w_{PR3} = weighting factor for PR3

PR1 is measured as the change in the catch per unit of effort (CPUE) of surveys using fisheries-independent methods:

$$PR1 = \frac{\overline{CPUE}_{PR1,2010} - \overline{CPUE}_{PR1,2004}}{\overline{CPUE}_{PR1,2004}} \times 100$$

where: $PR1$ = Project Result estimated using fishery-independent survey methods in a particular focal area
$\overline{CPUE}_{PR1,2004}$ = Weighted average catch per unit effort of gears used in the fisheries-independent survey in the baseline year 2004
$\overline{CPUE}_{PR1,2010}$ = Weighted average catch per unit effort of gears used in the fisheries-independent survey in reckoning year 2010
100 = multiplier to express the result as percent change

The parameters used to measure PR1 are the weighted average of catch per unit effort of various fishing gears used during the test fishing with the number of replicates as the weighting factor:

$$\overline{CPUE}_{Year} = \frac{(CPUE_1 \cdot n_1) + (CPUE_2 \cdot n_2) + ... + (CPUE_n \cdot n_n)}{n_1 + n_2 + ... + n_n}$$

where: $\overline{CPUE}_{PR1,Year}$ = Weighted average catch per unit effort estimated using fishery-independent survey methods
$CPUE_1$ = Average catch per operation of 1st fishing gear type used in the survey
$CPUE_2$ = Average catch per operation of 2nd fishing gear type used in the survey
$CPUE_n$ = Average catch per operation of nth fishing gear type used in the survey
n_1 = number of replicates of the 1st fishing gear type used in the survey
n_2 = number of replicates of the 2nd fishing gear type used in the survey
n_n = number of replicates of the nth fishing gear type used in the survey

PR2 is measured as the change in the catch per unit of effort of surveys using fisheries-dependent methods:

$$PR2 = \frac{\overline{CPUE}_{PR2,2010} - \overline{CPUE}_{PR2,2004}}{\overline{CPUE}_{PR2,2004}} \times 100$$

where: $PR2$ = Project Result estimated using fishery-independent survey methods
$\overline{CPUE}_{PR2,2004}$ = Weighted average catch per unit effort of gears used in the fisheries-dependent survey in the baseline year 2004

$\overline{CPUE}_{PR2,2010}$ = Weighted average catch per unit effort of gears used in the fisheries-dependent survey in reckoning year 2010
100 = multiplier to express the result as percent change

The parameters used to measure PR2 are the weighted average of catch per unit effort of various fishing gears used during the 3-month catch and effort monitoring using the number of samples as weighing factor:

$$\overline{CPUE}_{PR2,Year} = \frac{(CPUE_1 \cdot n_1) + (CPUE_2 \cdot n_2) + ... + (CPUE_n \cdot n_n)}{n_1 + n_2 + ... + n_n}$$

where: $\overline{CPUE}_{PR2,Year}$ = Weighted average catch per unit effort estimated using fishery-dependent survey methods
$CPUE_1$ = Average catch per operation of 1st fishing gear type monitored
$CPUE_2$ = Average catch per operation of 2nd fishing gear type monitored
$CPUE_n$ = Average catch per operation of nth fishing gear type monitored
n_1 = number of samples of the 1st fishing gear type monitored
n_2 = number of samples of the 2nd fishing gear type monitored
n_n = number of samples of the nth fishing gear type monitored

PR3 is measured as the change in the biomass (in tons/km^2) through fish visual census inside and adjacent to selected MPAs in focal the areas:

$$PR3 = \frac{\overline{B}_{PR3,2010} - \overline{B}_{PR3,2004}}{\overline{B}_{PR3,2004}} \times 100$$

where: $PR3$ = Project Result estimated using fish visual census methods
$\overline{B}_{PR3,2004}$ = Weighted average of fish biomass inside and adjacent to MPAs estimated through fish visual census in the baseline year 2004
$\overline{B}_{PR3,2010}$ = Weighted average of fish biomass inside and adjacent to MPAs estimated through fish visual census in reckoning year 2010
100 = multiplier to express the result as percent change

The parameters used to measure PR3 are the weighted average of biomass (in tons/km^2) determined through fish visual census inside and adjacent to selected MPAs in the focal areas using the area of the MPAs as weighting factor:

$$\overline{B}_{Year} = \frac{(B_1 \cdot a_1) + (B_2 \cdot a_2) + ... + (B_n \cdot a_n)}{a_1 + a_2 + ... + a_n}$$

where: $\overline{B}_{Year}$ = Weighted average of fish biomass estimated using fish visual census inside and adjacent to MPAs
B_1 = Average biomass estimated inside and adjacent to the 1st MPA
B_2 = Average biomass estimated inside and adjacent to the 2nd MPA
B_n = Average biomass estimated inside and adjacent to the nth MPA
a_1 = area of the 1st MPA
a_2 = area of the 2nd MPA
a_n = area of the nth MPA

The weighting factor for PR1 is the product of the potential yield of a demersal habitat (Table 2) and the area covered by both the hard and soft bottom (Table 1). Only the potential yield of the demersal habitat was used since the fisheries-independent surveys conducted were limited only to demersal fisheries. This is based on the assumption that demersal fish stocks are less subject to annual fluctuation compared to their pelagic counterpart. Hard and soft bottoms were not segregated because there are no reliable geological and hydrographic data to serve as reference.

$$w_{PR1} = \frac{(PY_{dem}) \cdot (A_{hs})}{2}$$

where: w_{PR1} = weighing factor for PR1
PY_{dem} = Potential yield (t/km^2/yr) for the demersal stock
A_{hs} = Area (km^2) of hard and soft bottom
2 = This divisor is needed, since both weighting factors cover the same area, to avoid double counting.

The weighting factor for PR2, on the other hand, is defined as the product of collective potential yields of demersal and pelagic stocks (Table 2) and the area covered by the hard and soft bottom substrates (Table 1). The potential yields of both the demersal and pelagic stocks were used since catch and effort of both demersal and pelagic fisheries were monitored. And similarly, hard and soft bottoms were not segregated because there are no reliable geological and hydrographic data to serve as reference.

$$w_{PR2} = \frac{(PY_{dem} + PY_{pel}) \cdot (A_{hs})}{2}$$

where: w_{PR2} = weighting factor for PR2
PY_{dem} = Potential yield (t/km^2/yr) for the demersal stock
PY_{pel} = Potential yield (t/km^2/yr) for the pelagic stock
A_{hs} = Area (km^2) of hard and soft bottom
2 = This divisor is needed, since both weighting factors cover the same area, to avoid double counting.

The weighting factor for PR3 is the product of the potential yield of coral reef ecosystem (Table 2) and the extent of the coral reef in each focal area (Table 1). Only the area of the coral reef was used as basis since all MPA initiatives of the FISH Project are focused on coral reef ecosystems and their associated communities such as sea grass beds. The value may increase once habitat protection initiatives are likewise initiated in other fish habitat systems like mangrove forests. Increasing this area and value will mean decreasing the hard and soft bottom areas and values. The approach is rational and captures the initiatives the FISH Project is investing in its efforts to establish and make MPAs effective in the target areas.

$$w_{PR3} = PY_{cor} \cdot A_{cor}$$

where: w_{PR3} = weighting factor for PR3
PY_{cor} = Potential yield (t/km^2/yr) for the coral reef
A_{cor} = Area (km^2) of coral reef

TABLE 35. ESTIMATES OF ANNUAL POTENTIAL HARVEST (tons/km^2) OF VARIOUS MARINE HABITATS IN THE PHILIPPINES.

Bottom type and depth	Estimated annual average harvest	Source
0-200 meters	3.50 t/km^2 (demersal species)	Kvaran, 1971
0-200 meters	3.25 t/km^2 (in-shore pelagic species)	Kvaran, 1971
200 meters and deeper	0.20 t/km^2 (off-shore pelagic species	Kvaran, 1971
Reef area	15.6 t/km^2 (all fishes)	White & Trinidad 1998; Russ 1991. Alcala & Gomez 1985.
Estuary	17.0 t/km^2 (all fishes)	Pauly, 1982

4.2. FISH PROJECT RESULT

Fishing gears used for the fisheries independent surveys included bottom-set longline, bottom-set gillnet, bottom trawl, and fish trap. Bottom-set longline and bottom-set gillnet were used in all four focal areas. Fish traps, however, were only used in Danajon Bank and Tawi-Tawi where thay are still regularly used by fishers. In Coron Bay and Lanuza Bay fish traps were no longer commonly used by fishers. Fisheries independent survey using trawl can only be conducted in Danajon Bank since this fishing gear are no longer used in other focal areas. Catch rates of bottom-set longline, bottom-set gillnet, and fish traps were expressed as kg/hour to take into account unavaoidable occurrences of differences in soaking time. Although soaking periods were already eastablished as early as the baseline assessment (2004) period, uncontrolled factors, such as loss of gear, benthic obstructions, and sudden change in weather conditions, have brought about delays and caused variations in the soaking time. Also to take into consideration variation in trawling speed, effects of current, and even slight differences in sizes of the net used in various surveys, results of trawl survey were standardized to tons per area swept by the trawl.

Weighted averages of catch rates and biomass, weighted averages of percent change relative to the base year period for each project result, weighted averages for each focal area, and the end resulting weighted average of the FISH Project Result (FPR) were estimated following the computation procedure mentioned above and established at the onset of the project. Before the estimation procedure was conducted, the data went through a process of quality control and quality assurance (QAQC) and during the estimation itself, the consolidated data went through filters to remove extreme outliers that tend to cause high variances.

Table 36 summarizes the catch rates of various fishing gears used in the fisheries independent survey in the four focal areas and the percent change relative to the 2004 base year. Table 37, on the other hand, shows the computed weighted average of percent change per gear, weighted average of percent change by focal area, and the weighted average percent change per survey period for the estimation of Project Result 1 (PR1). The overall PR1 average showed a relatively high increase of about 16% in 2006, a decline to -1% in 2008, and another big jump to about 20% in 2010.

TABLE 36. ESTIMATES OF PERCENT CHANGE RELATIVE TO BASE YEAR OF STANDARDIZED CATCH RATES OF VARIOUS FISHING GEARS USED FOR THE FISHERIES INDEPENDENT SURVEYS IN THE FOUR FOCAL AREAS

Focal area and fishing gear	Standardized average catch rates during survey period								Percent change relative to base year		
	2004		2006		2008		2010		2004 2006	2004 2008	2004 2010
	mean	n	mean	n	mean	n	mean	n			
Calamianes: Bottom-set longline (Coron Bay)	4.10	35	5.87	35	4.26	34	3.45	34	42.94	3.70	-15.92
Calamianes: Bottom-set longline (Busuanga Bay)			1.74	18	1.45	18	2.63	18		-16.90	51.28
Calamianes: Bottom-set longline (combined)									42.94	-3.36	7.12
Calamianes: Bottom-set gillnet (Coron Bay)	3.67	29	3.70	27	2.30	29	3.26	26	0.76	-37.37	-11.22
Calamianes: Bttom-set gillnet (Busuanga Bay)			1.56	18	3.47	18	2.72	18		122.25	74.05
Calamianes: Bottom-set gillnet (combined)									0.76	23.76	22.51
Danajon Bank: Trawl	0.47	19	1.05	19	0.89	19	0.99	19	123.89	90.14	109.90
Danajon Bank: Bottom-set longline	2.90	30	1.93	30	1.17	30	0.71	30	-33.54	-59.73	-75.68
Danajon Bank: Bottom-set gillnet	1.85	32	1.71	32	2.19	32	2.15	32	-7.74	18.25	15.89
Danajon Bank: Fish trap	0.51	30	0.58	32	0.55	33	0.63	33	13.19	7.11	23.07
Lanuza Bay: Bottom-set longline	2.43	30	3.16	30	3.40	30	3.08	30	29.92	40.00	26.79
Lanuza Bay: Bottom-set gillnet	0.86	22	0.92	22	0.58	22	1.25	22	6.80	-33.17	45.34
Tawi-Tawi Bay: Bottom-set longline	1.88	71	1.92	78	1.59	84	2.31	84	1.97	-15.40	22.44
Tawi-Tawi Bay: Bottom-set gillnet	5.19	24	1.63	24	2.44	24	2.08	24	-68.52	-52.87	-59.91
Tawi-Tawi Bay: Fish trap	1.70	23	1.18	25	2.17	23	2.13	23	-30.61	27.60	25.31

TABLE 37. ESTIMATES OF WEIGHTED AVERAGE OF PERCENT CHANGE IN CATCH RATES FOR THE FISHERIES INDEPENDENT SURVEYS TO MEASURE PR1

Focal Area/Gear	Weighted average of percent change by gear per survey period						Weighted average of percent change by focal area			Focal area weighing factor	Weighted average of percent change per survey period for PR1		
	2004-2006		2004-2008		2004-2010		2004 2006	2004 2008	2004 2010		2004 2006	2004 2008	2004 2010
	mean	n	mean	n	mean	n							
Calamianes													
Bottom-set gillnet	0.76	28.0	23.76	47.0	22.51	45.5	24.19	11.72	14.27	1,330.00	**15.91**	**-1.26**	**19.88**
Bottom-set longline	42.94	35.0	-3.36	52.5	7.12	52.5							
Danajon													
Bottom-set gillnet	-7.74	32.0	18.25	32.0	15.89	32.0	13.47	6.48	9.42	1,802.50			
Bottom-set longline	-33.54	30.0	-59.73	30.0	-75.68	30.0							
Fsh trap	13.19	32.0	7.11	32.0	23.07	32.0							
Trawl	123.89	19.0	90.14	19.0	109.90	19.0							
Lanuza													
Bottom-set gillnet	6.80	22.0	-33.17	22.0	45.34	22.0	20.14	-12.69	34.64	2,185.75			
Bottom-set longline	29.92	30.0	40.00	30.0	26.79	30.0							
Tawi-Tawi													
Bottom-set gillnet	-68.52	24.0	-52.87	24.0	-59.91	24.0	-18.22	-14.68	7.09	463.75			
Bottom-set longline	1.97	74.5	-15.40	77.5	22.44	77.5							
Fish trap	-30.61	24.0	27.60	23.0	25.31	23.0							

For the fisheries dependent surveys (PR2), all possible fishing gears in the landing sites were monitored and sampled. Catch rates were standardized to kg per day of fishing. Tables 38, 39,

40, and 41 summarize the catch rates of various fishing gears encountered in the fisheries dependent survey in the four focal areas and the percent change relative to the 2004 base year. Table 42, on the other hand, shows the computed weighted average of percent change per gear, weighted average of percent change by focal area, and the weighted average percent change per survey period for the estimation of PR1. The overall PR2 average showed a relatively small increase of about 2.8% in 2006, a decline to -2.2% in 2008, and a slight improvement to about -0.4% in 2010.

TABLE 38. ESTIMATES OFPERCENT CHANGE RELATIVE TO BASE YEAR 2004 OF CATCH RATES (KG PER DAY) OF VARIOUS FISHING GEARS MONITORED IN SELECTED LANDING SITES IN CORON BAY

Fishing gear	Catch rates during each survey periods								Percent change relative to base year		
	2004		2006		2008		2010		2004 2006	2004 2008	2004 2010
	mean	n	mean	n	mean	n	mean	n			
Bag net	242.72	26	79.59	39	212.09	65	115.93	15	-67.21	-12.62	-52.24
Bottom set gillnet	8.37	495	12.01	739	10.64	1395	11.36	1270	43.61	27.15	35.78
Bottom set longline	10.92	160	6.19	314	7.58	576	9.23	496	-43.33	-30.52	-15.41
Crab pot	3.82	5					4.38	24			14.72
Drag handline			32.85	2	1.68	36	55.19	27		-94.88	68.00
Drift gillnet	24.40	165	17.36	187	13.08	142	29.06	375	-28.83	-46.38	19.13
Drive-in gillnet	15.93	10	6.36	14	43.51	10	11.17	11	-60.10	173.10	-29.88
Encircling gillnet	32.64	5					7.03	3			-78.45
Fish corral	65.50	33	16.18	84	14.89	106	72.42	44	-75.30	-77.26	10.56
Fish trap	14.95	9	23.54	17	3.54	7	4.49	49	57.44	-76.35	-69.99
Handspear					7.04	6	13.46	111			91.08
Hook and line with float	18.01	55			3.66	29				-79.66	
Multiple handline	10.47	357	5.32	284	3.90	595	4.03	129	-49.20	-62.78	-61.47
Scoopnet					5.97	19	13.69	9			129.46
Seine net			30.00	2	173.25	16				477.50	
Set gillnet with plunger	4.65	23	3.32	3	5.95	4	9.00	9	-28.57	28.08	93.68
Spear	13.00	43	15.76	126			14.38	18	21.31		10.68
Spear with compressor	18.62	60	16.59	4	9.34	226	12.16	71	-10.94	-49.87	-34.70
Squid jig	2.93	7			4.17	23	1.75	2		42.52	-40.24
Trammel net	12.74	24	17.16	93	21.36	87	8.22	176	34.75	67.66	-35.48
Troll line	26.71	32	25.33	8	3.49	8	12.29	177	-5.18	-86.92	-53.99

TABLE 39. ESTIMATES OFPERCENT CHANGE RELATIVE TO BASE YEAR 2004 OF CATCH RATES (KG PER DAY) OF VARIOUS FISHING GEARS MONITORED IN SELECTED LANDING SITES IN DANAJON BANK

Fishing gear	Catch rates during each survey periods								Percent change relative to base year		
	2004		2006		2008		2010				
	mean	n	mean	n	mean	n	mean	n	2004 2006	2004 2008	2004 2010
Barrier net	6.92	6	8.71	12	11.71	7	8.64	4	25.90	69.36	24.88
Beach seine	18.60	50	3.50	3	5.17	19	8.45	23	-81.19	-72.19	-54.57
Bottom set gillnet	15.81	166	7.71	423	8.62	616	9.38	522	-51.26	-45.51	-40.70
Bottom set longline	4.67	220	3.51	306	2.29	264	2.94	238	-24.90	-50.99	-37.07
Crab gillnet	3.37	787	2.08	630	1.65	659	2.06	878	-38.23	-51.11	-38.82
Crab liftnet	3.41	735	2.40	787	3.20	551	2.21	503	-29.65	-6.20	-35.15
Crab pot	6.71	354	3.65	367	2.93	472	2.21	580	-45.57	-56.28	-67.07
Danish seine	25.70	433	78.38	236	56.80	268	47.27	293	204.94	120.95	83.91
Diving	2.68	20	3.18	6	3.25	21	2.63	10	18.89	21.38	-1.77
Drift gillnet	7.31	458	11.45	609	24.33	561	17.00	391	56.56	232.68	132.50
Drive-in gillnet	14.84	221	12.31	508	12.57	654	14.04	296	-17.01	-15.30	-5.36
Dynamite	226.04	12	31.81	15	272.00	4	153.28	9	-85.93	20.33	-32.19
Encircling gillnet	56.37	14	45.85	55	66.90	57	49.29	28	-18.67	18.68	-12.56
Filter net	1.33	3			2.45	5	4.00	2		83.75	200.00
Fish corral	5.80	174	4.43	80	6.29	168	3.90	136	-23.65	8.46	-32.70
Fish trap	9.95	59	19.83	72	15.02	89	12.82	123	99.19	50.87	28.78
Hook and line with float	3.07	30	7.73	7			3.56	5	151.47		15.84
Multiple handline	3.79	91	4.03	122	3.35	72	3.92	139	6.50	-11.66	3.55
Push/Scissor net	0.67	3			0.69	7				3.93	
Round haul seine	96.63	12	127.69	34	189.48	34	102.42	25	32.15	96.09	5.99
Scoopnet with light	36.58	59	21.75	81	9.57	82	22.58	86	-40.54	-73.83	-38.27
Seine net	31.36	11	9.88	12	19.22	40	17.84	12	-68.49	-38.73	-43.11
Set gillnet for rays					3.14	7	3.83	3			21.76
Set gillnet with plunger	10.73	290	13.69	231	11.61	319	7.68	134	27.67	8.23	-28.36
Simple hook and line	2.38	382	2.65	451	2.78	301	4.91	134	11.10	16.58	105.95
Spear	2.77	10	1.84	167	1.60	91	5.27	61	-33.61	-42.39	90.30
Spear with compressor	28.88	66	23.75	71	14.57	72	26.74	47	-17.75	-49.54	-7.42
Squid gillnet	8.35	4	10.32	42	23.35	48	4.90	81	23.57	179.65	-41.27
Squid jig	1.58	93	1.73	88	1.50	159	1.79	132	9.63	-4.94	13.83
Squid trap	3.56	38	3.41	136					-4.29		
Stationary liftnet	13.81	66	17.53	6	62.10	87	12.42	108	26.96	349.69	-10.07
Surface set longline	3.80	9	5.68	17					49.54		
Trammel net	5.90	83	6.12	167	4.48	186	3.62	150	3.74	-24.05	-38.71
Trawl	13.65	174	6.38	6	13.01	22	7.14	42	-53.28	-4.64	-47.69
Troll line	3.50	4	2.31	44	7.01	52	7.49	86	-34.06	100.27	114.10

TABLE 40. ESTIMATES OFPERCENT CHANGE RELATIVE TO BASE YEAR 2004 OF CATCH RATES (KG PER DAY) OF VARIOUS FISHING GEARS MONITORED IN SELECTED LANDING SITES IN LANUZA BAY

Fishing gear	Catch rates during each survey periods								Percent change relative to base year		
	2004		2006		2008		2010		2004 2006	2004 2008	2004 2010
	mean	n	mean	n	mean	n	mean	n			
Bag net	250.53	19	347.41	75	283.39	131	124.18	92	38.67	13.12	-50.43
Barrier gillnet	3.94	9	6.21	25	5.11	41	7.93	59	57.63	29.68	101.13
Beach seine	27.98	65	24.45	170	17.30	200	38.74	151	-12.61	-38.16	38.47
Bottom set gillnet	4.67	264	4.05	554	4.01	514	4.47	422	-13.35	-14.05	-4.17
Bottom set longline	8.81	435	7.84	312	6.49	613	7.48	566	-11.03	-26.32	-15.09
Cast net					1.32	9	1.92	5			45.82
Crab gillnet	6.73	6	26.98	31	1.89	43	2.43	49	300.70	-71.95	-63.86
Crab liftnet			4.97	3	4.65	2	2.93	3		-6.81	-40.94
Crab pot	2.67	71	2.68	136	2.42	115	4.90	42	0.30	-9.46	83.77
Danish seine			487.25	38	348.30	42				-28.52	
Drag handline			33.11	33	22.81	44	19.46	97		-45.17	-41.23
Drift gillnet	12.99	181	10.84	284	8.53	391	10.70	321	-16.52	-34.34	-17.57
Drive-in gillnet	14.42	58	27.43	78	11.39	199	12.78	196	90.22	-21.03	-11.38
Entrapping device			0.53	2	0.58	2				9.52	
Fish corral	2.97	88	4.46	95	4.93	40	4.40	36	50.05	65.92	48.06
Fish trap	5.32	34	5.11	88	8.16	6	3.25	3	-3.86	53.38	-38.90
Hook and line with float	8.00	2	19.69	12	14.45	8	10.06	85	146.09	80.63	25.79
Lobster gillnet	34.03	4	6.49	31	4.98	26	7.32	24	-80.93	-85.36	-78.48
Multiple handline	5.90	41	4.59	216	3.98	358	3.21	224	-22.15	-32.65	-45.62
Natural poison			4.92	2	3.91	5				-20.45	
Octopus jig	3.61	597	3.53	245	4.04	353	5.25	305	-2.03	12.10	45.48
Octopus lure	2.70	2			4.73	81	4.30	67		75.35	59.15
Ring net					46.30	5	68.67	14			48.31
Scoopnet with light					3.65	19	2.41	5			-33.97
Seine net	163.79	33	61.66	18	212.42	22	12.45	2	-62.35	29.69	
Set gillnet for rays			51.77	3	13.75	2				-73.44	
Set gillnet with plunger	3.26	17	3.74	82	5.76	9	8.33	4	14.64	76.30	155.00
Simple hook and line	4.47	169	5.23	553	5.78	307	5.23	218	17.04	29.20	16.94
Spear	6.04	184	8.45	354	4.08	443	5.86	305	39.82	-32.45	-3.10
Squid gillnet	11.65	2	13.94	12	19.32	37	14.13	16	19.67	65.80	21.24
Squid jig	2.60	24	3.52	26	1.77	90	2.41	67	35.57	-32.01	-7.14
Squid trap	3.73	17	4.32	135	5.90	81	4.52	90	15.64	58.16	20.97
Trammel net	6.66	36	8.39	53	5.29	166	8.60	113	25.95	-20.55	29.17
Troll line	10.45	17	10.00	41	6.36	45	9.17	42	-4.33	-39.16	-12.31

TABLE 41. ESTIMATES OFPERCENT CHANGE RELATIVE TO BASE YEAR 2004 OF CATCH RATES (KG PER DAY) OF VARIOUS FISHING GEARS MONITORED IN SELECTED LANDING SITES IN TAWI-TAWI BAY

Fishing gear	Catch rates during each survey periods								Percent change relative to base year		
	2004		2006		2008		2010				
	mean	n	mean	n	mean	n	mean	n	2004 2006	2004 2008	2004 2010
Bag net	143.92	28	184.69	77					28.33		
Beach seine	28.81	14	22.34	16	34.58	22	6.31	4	-22.45	20.01	-78.09
Bottom set gillnet	26.84	591	33.88	646	21.62	862	8.33	778	26.25	-19.45	-68.95
Bottom set longline	15.37	210	17.74	90	21.84	140	11.16	377	15.42	42.14	-27.40
Drift gillnet	56.32	182	45.17	177	37.45	185	7.02	77	-19.79	-33.50	-87.54
Drive-in gillnet	39.46	29	31.91	104	30.00	3	16.24	26	-19.14	-23.97	-58.85
Dynamite	50.60	299	34.61	270	41.15	267	25.66	72	-31.60	-18.68	-49.28
Encircling gillnet			38.43	7	27.44	59				-28.59	
Fish corral	10.23	49	17.01	115	17.00	4			66.28	66.12	
Fish trap	12.17	56	5.49	22	19.92	26	11.55	24	-54.87	63.74	-5.08
Handspear					27.21	139	8.29	200			-69.54
Hook and line with float	9.40	2	7.61	9	18.41	14			-19.00	95.87	-100.00
Multiple handline	18.64	173	18.56	174	15.43	487	20.58	331	-0.42	-17.25	10.39
Natural poison	64.84	9	19.71	7					-69.60		
Octopus jig	3.77	125	3.52	65	7.34	85	8.28	119	-6.62	94.83	119.58
Ring net	214.15	100	264.50	20	230.56	58	243.27	109	23.51	7.66	13.60
Set gillnet for rays	13.29	52	11.91	283					-10.34		
Set gillnet with plunger	18.20	10	42.75	4	14.02	59			134.94	-22.96	
Simple hook and line	14.01	132	9.86	350	13.79	402	6.68	517	-29.64	-1.60	-52.32
Spear	5.59	138	16.82	128					200.92		
Spear with compressor	32.74	124	37.56	25					14.71		
Squid jig	4.65	30	3.38	99	4.56	78	2.80	34	-27.27	-2.01	-39.88
Troll line	25.43	123	27.38	155	24.46	378	7.86	34	7.68	-3.82	-69.10

TABLE 42. ESTIMATES OF WEIGHTED AVERAGE OF PERCENT CHANGE IN CATCH RATES FOR THE FISHERIES DEPENDENT SURVEYS TO MEASURE PR2

Focal area	Average percentage change by focal area per survey period			Focal area weighing factor	Weighted average of percent change per survey period for PR2		
	2004 2006	2004 2008	2004 2010		2004 2006	2004 2008	2004 2010
Coron Bay	-4.64	-13.52	5.31	2565.00	**2.77**	**-2.20**	**-0.40**
Danajon	1.94	16.71	-2.10	3476.25			
Lanuza	6.37	-10.46	5.66	4215.38			
Tawi-Tawi	10.35	-4.35	-38.79	894.38			

Baseline assessments were conducted in 3 MPAs per focal area in 2004 and this was followed up by monitoring events in 2006, 2008, and final assessment in 2010. Reef fish biomass was

estimated to provide measurement for Project Result 3 (PR3). Tables 43 summarizes estimates of reef fish biomass in the four focal areas, the weighted average percent change relative to the 2004 base year, and the computed weighted average percent change per survey period for the estimation of PR3. The overall PR3 average showed a relatively high increase of about 14% in 2006, a further increment of about 15% in 2008, and further improvement to about 29% in 2010

TABLE 43. ESTIMATES OF WEIGHTED AVERAGE OF PERCENT CHANGE OF REEF FISH BIOMASS FROM MPA SURVEYS TO MEASURE PR3

Focal area MPA	Mean reef fish biomass (tons/km^2) inside and outside MPA				Area of MPA (ha)	Average percentage change per focal area per survey period			Weighing factor (total area of coral reef)	Weighted average of percent change per survey period for PR1		
	2004	2006	2008	2010		2004 2006	2004 2008	2004 2010		2004 2006	2004 2008	2004 2020
Calamianes												
Lajala - Uson Island	11.00	19.02	14.94	12.80	56.0	72.88	35.79	16.40				
Decalve - Apo Island - Bintuan	22.00	10.64	16.47	9.81	62.6	-51.66	-25.12	-55.42	1,560.00			
Bugor	29.84	25.82	18.67	19.34	96.6	-13.48	-37.44	-35.19				
Focal Area Average						-2.11	-14.80	-27.65				
Danajon Bank												
Bilang-bilangan	14.08	14.08	13.78	17.51	45.0	0.00	-2.15	24.29				
Bantigue	11.24	11.24	14.73	13.66	19.0	0.00	31.02	21.57	3,088.80			
Hingutanan	21.00	21.00	36.66	16.61	22.0	0.00	74.56	-20.89				
Focal Area Average						0.00	24.80	12.13		**13.85**	**14.70**	**29.20**
Surigao del Sur												
Carrascal	14.50	19.61	14.69	17.08	70.0	35.23	1.33	17.78				
Auqui	9.56	10.00	13.89	13.70	23.0	4.57	45.34	43.33	1,263.60			
General Is.	10.90	10.90	17.14	15.68	28.0	0.00	57.29	43.87				
Focal Area Average						21.25	22.64	28.67				
Tawi-Tawi												
Pababag Is. Bongao	9.76	13.86	10.36	23.24	62.0	42.04	6.19	138.13				
Batu-batu Kulape, P. Sugala	19.63	25.23	25.69	34.63	48.0	28.53	30.90	76.45	2,761.20			
Doh-Tong, Simunul	26.00	34.33	29.91	27.12	44.0	32.02	15.05	4.29				
Focal Area Average						34.97	16.42	80.66				

All in all, the overall agreed measure of change in fish stocks (FPR), combining fisheries independent, fisheries dependent, and MPA surveys, show a relatively high increase of 9.7% in 2006, a big dip to just about 2.9% in 2008 but a recovery to about 12.8% in 2010 (Table 44).

TABLE 44. ESTIMATES OF WEIGHTED AVERAGE OF PERCENT CHANGES TO MEASURE FPR

Focal area	PR	Percent change			Weighing factor	APR			Weighing factor (km^2)	FPR		
		2004 2006	2004 2008	2004 2010		2004 2006	2004 2008	2004 2010		2004 2006	2004 2008	2004 2010
Coron Bay	PR1	24.19	11.72	14.27	1,330.00	3.12	-7.73	-1.93	860	**9.66**	**2.86**	**12.79**
	PR2	-4.64	-13.52	5.31	2,565.00							
	PR3	-2.11	-14.80	-27.65	1,560.00							
Danajon Bank	PR1	13.47	6.48	9.42	1,802.50	5.88	17.49	5.64	1227			
	PR2	1.94	16.71	-2.10	3,476.25							
	PR3	0.00	24.80	12.13	3,088.80							
Lanuza Bay	PR1	20.14	-12.69	34.64	2,185.75	12.75	-5.29	17.72	1330			
	PR2	6.37	-8.73	5.66	4,215.38							
	PR3	21.25	19.00	28.67	1,263.60							
Tawi-Tawi Bay	PR1	-18.22	-14.68	7.09	463.75	23.63	8.41	46.44	442			
	PR2	10.35	-4.35	-38.79	894.38							
	PR3	34.97	16.42	80.66	2,761.20							

These values are relatively lower than those reported during the interim bi-annual monitoring events and the difference lies on the fact that the final values were a product of rigid quality control and quality assurance (QAQC) as well as elimination of very extreme high values that distorted the averages and produced high variances. First, there was the exclusion of information gathered by unreliable enumerators. During each monitoring event, enumerators hired for fisheries-dependent surveys were subjected to a regular evaluation process to determine their aptitude, skill, and work ethics to more or less assess the reliability of their collected information. During the interim monitoring events in 2004, 2006 and 2008, no attempt was made to eliminate data collected by any enumerator but in the final process of computation in 2010, the doubtful data collected by questionable enumerators were ultimately not included in the computation. Extreme examples of these are the data collected by enumerators assigned Ubol, Simunul and in Bulalakaw, Coron that were, after filtering of data and investigation, determine unreliable.

Second, the appearance and disappearance of fishing gears in some monitoring event years also contributed to the change in the final computation. For example, some gears present in 2006 were no longer used in computing for the changes in catch rates in 2008 when these gears were absent in 2008 but were used in 2010 when they became present again in 2010. A third contributing factor was the elimination of extreme values that increased the variance by as much as ten-fold or more. An extreme case was the reef fish biomass in the Hingutanan MPA in Danajon Bank wherein a school of barracuda had caused the biomass to register at 1,612 tons/km^2 when normally the averages only range between 9 to 37 tons/km^2. There were also extreme values recorded for the fisheries monitoring that were likewise eliminated. The fourth contributing factor was the refinement of fishing effort values. Quality control of the data revealed that at the onset of the project, some enumerators used to conduct fisheries independent surveys failed to follow exact soaking time established for gears used in the survey. To correct this discrepancy, all fishing efforts were expressed as kg/hour to harmonize fishing effort units in computing for changes.

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APPENDIX

APPENDIX 1. CATCH AND EFFORT SAMPLING SITES IN THE FOCAL AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS.

	Focal Area			
	Danajon Bank	**Coron Bay**	**Lanuza Bay**	**Tawi-Tawi Bay**
2004	San Pedro, Talibon	Maquinit, Coron	Adlay, Carrascal	Public Market, Bongao
	Talibon Market, Talibon	Tagumpay, Coron	Ayoke Is., Cantilan	Chinese Pier, Bongao
	San Francisco, Talibon	Barangay 1, Coron	Linintian, Cantilan	Lamion, Bongao
	Busalian, Talibon	Barangay 2, Coron	San Pedro, Cantilan	Sama Kasulatan, Bongao
	Calituban, Talibon	Barangay 3, Coron	Consuelo, Cantilan	Bato-bato, P. Sugala
	Malingin, Bien Unido	Bintuan, Coron	Magosilom, Cantilan	Ubol Market, Simunul
	San Pedro, Bien Unido	Bulalacao, Coron	General Is., Cantilan	
	Poblacion, Bien Unido	Libis, Culion	Habag, Lanuza	
	Bilangbilangan, Bien Unido	Balala, Culion	Nurcia, Lanuza	
	Pinamgo, Bien Unido	Burabod, Culion	Uba, Cortes	
	Pangpang, Ubay	Osmena, Culion	Madrileno, Cortes	
	Tapon, Ubay	Chindonan, Culion	Burgos Is., Cortes	
	Tres Reyes, Ubay		Tag-anongan Is., Cortes	
	Bantigue, C.P. Garcia			
	Butan, C.P. Garcia			
2006	San Pedro, Talibon	Maquinit, Coron	Adlay, Carrascal	Public Market, Bongao
	Talibon Market, Talibon	Tagumpay, Coron	Baybay, Carrascal	Chinese Pier, Bongao
	San Francisco, Talibon	Barangay 1, Coron	Doyos, Carrascal	Lamion, Bongao
	Busalian, Talibon	Barangay 2, Coron	Ayoke Is., Cantilan	Sama Kasulatan, Bongao
	Calituban, Talibon	Barangay 3, Coron	Linintian, Cantilan	Bato-bato, P. Sugala
	Malingin, Bien Unido	Bintuan, Coron	San Pedro, Cantilan	Ubol Market, Simunul
	San Pedro, Bien Unido	Bulalacao, Coron	Consuelo, Cantilan	Tubig Indangan, Simunul
	Poblacion, Bien Unido	Libis, Culion	General Is., Cantilan	
	Bilangbilangan, Bien Unido	Balala, Culion	Habag, Lanuza	
	Pinamgo, Bien Unido	Burabod, Culion	Nurcia, Lanuza	
	Pangpang, Ubay	Osmena, Culion	Uba, Cortes	
	Tapon, Ubay	Chindonan, Culion	Madrileno, Cortes	
	Tres Reyes, Ubay	Bogtong, Busuanga	Burgos Is., Cortes	
	Bantigue, C.P. Garcia	Salvacion, Busuanga	Tag-anongan Is., Cortes	
	Butan, C.P. Garcia		Bungtod, Tandag	
2008	San Pedro, Talibon	Maquinit, Coron	Adlay, Carrascal	Public Market, Bongao
	Talibon Market, Talibon	Tagumpay, Coron	Baybay, Carrascal	Chinese Pier, Bongao
	Busalian, Talibon	Barangay 1, Coron	Doyos, Carrascal	Lamion, Bongao
	Calituban, Talibon	Barangay 2, Coron	Ayoke Is., Cantilan	Sama Kasulatan, Bongao
	Malingin, Bien Unido	Barangay 3, Coron	Linintian, Cantilan	Bato-bato, P. Sugala
	San Pedro, Bien Unido	Bintuan, Coron	San Pedro, Cantilan	Ubol Market, Simunul
	Poblacion, Bien Unido	Bulalacao, Coron	Consuelo, Cantilan	Tubig Indangan, Simunul
	Bilangbilangan, Bien Unido	Libis, Culion	General Is., Cantilan	
	Pinamgo, Bien Unido	Balala, Culion	Habag, Lanuza	
	Pangpang, Ubay	Burabod, Culion	Nurcia, Lanuza	
	Tapon, Ubay	Osmena, Culion	Uba, Cortes	
	Tres Reyes, Ubay	Chindonan, Culion	Madrileno, Cortes	
	Bantigue, C.P. Garcia	Bogtong, Busuanga	Burgos Is., Cortes	
	Butan, C.P. Garcia	Salvacion, Busuanga	Tag-anongan Is., Cortes	
			Bungtod, Tandag	
2010	San Pedro, Talibon	Maquinit, Coron	Adlay, Carrascal	Public Market, Bongao
	Talibon Market, Talibon	Tagumpay, Coron	Baybay, Carrascal	Chinese Pier, Bongao
	Busalian, Talibon	Barangay 1, Coron	Doyos, Carrascal	Lamion, Bongao
	Calituban, Talibon	Barangay 2, Coron	Ayoke Is., Cantilan	Sama Kasulatan, Bongao
	Malingin, Bien Unido	Barangay 3, Coron	Linintian, Cantilan	Bato-bato, P. Sugala
	San Pedro, Bien Unido	Bintuan, Coron	San Pedro, Cantilan	Ubol Market, Simunul
	Poblacion, Bien Unido	Bulalacao, Coron	Consuelo, Cantilan	Tubig Indangan, Simunul
	Bilangbilangan, Bien Unido	Libis, Culion	General Is., Cantilan	
	Pinamgo, Bien Unido	Balala, Culion	Habag, Lanuza	
	Pangpang, Ubay	Burabod, Culion	Nurcia, Lanuza	
	Tapon, Ubay	Osmena, Culion	Uba, Cortes	
	Tres Reyes, Ubay	Chindonan, Culion	Madrileno, Cortes	
	Bantigue, C.P. Garcia	Bogtong, Busuanga	Burgos Is., Cortes	
	Butan, C.P. Garcia	Salvacion, Busuanga	Tag-anongan Is., Cortes	

APPENDIX 2. FISHING GEARS (AND THEIR LOCAL NAMES) MONITORED IN THE FOCAL AREAS DURING THE BASE YEAR AND SUBSEQUENT MONITORING PERIODS.

English Name	Coron Bay	Danajon Bank	Lanuza Bay	Tawi-Tawi Bay
GILLNETS				
Barrier gillnet	*pahibas, sarada*		*pukot pahubas, pukot honasan*	
Bottom-set gillnet	*palubog, lambat*	*palunod, pataan, panayming, panganduhaw, panglabayan*	*palagod, pukot taan, palunod, pamo baho baho, patuyoy*	*pahantak, pukut taun, linggih taun*
Bottom-set gillnet (B)		*pamagi*	*palagod sa higad, pukot pamasig, pukot sa bato*	
Crab gillnet		*pukot panglambay*	*pukot panglambay*	
Drift gillnet	*pamo, palutang, lagarite*	*pamo, palutaw, paanod*	*palutaw, paawong, palaran*	*pikit-pikit, paanud, pukut lantup*
Drift gillnet (B)			*pamo, pukot pamo*	
Drift gillnet (flying fish)			*pukot pamangsi, pangbangsi*	
Drive-in gillnet	*lambat pambaritus, pang-boging*	*ariba-ariba, panasa/pansasa, pamanban, pambawo*	*pukot panayos, pukot pamawo*	*pukut sapsay, pukut tambilawang*
Drive-in gillnet (B)			*pangabog kapa-kapa*	
Encircling gillnet	*pangkulong, likos*	*likos, paninsin*		*pukut likus, pukut likus honasan*
Lobster gillnet			*palagod pamanagan*	*pukut pahantak*
Set gillnet (w/ plunger)	*timbog*	*dombol, panumbol*	*lamba, single dagpas*	*pukut/linggih tubbah*
Set gillnet (ray)			*pukot lampornas*	*pukut kyampaw, linggih kyampao*
Shark gillnet			*pukot pamating*	
Squid gillnet		*pangnokos*	*pukot pangnokus*	
Trammel net	*3-ply*	*triple net, triple 7*	*triple net, double net*	
(To be identified)				*Lakud*
IMPOUNDING GEARS				
Bag net	*basnig*		*surit-surit, basnig*	*basing*
Bag net (2-boats)			*paypag*	
Barrier net		*pahubas, pabhas, lukob*	*pinahunsan*	
Filter net		*sanggab*		
Fish corral	*baklad*	*bungsod, paugmad, tower*	*bungsod, layos*	*bungsud*
Stationary liftnet		*bintol, newlook, fereswel*	*oyapa*	
LINES AND JIGS				
Fish jig				*sab-it*
Octopus jig		*subid sa kugita*	*kayongkong, kate, undak*	*kagang-kagang, kuri-kuri*
Octopus luring device			*kate, pamilog sa kugita*	*kure-kure, kuri-kuri*
Squid jig	*saranggat*	*bira-bira, undak sa nokos*	*Rison*	
Squid jig (B)			*undak*	
Squid jig (troll)	*subid-subid pangpusit*	*subid sa nokos, uwang-uwang*	*subid, padlas sa nokus, ulang-ulang, oyang-oyang*	*ullang-ullang (guyod), ullang-ullang (hantuk), sapung(pangtabullah)*
Bottom-set longline	*kitang*	*kitang, palangri*	*palangri, palangre, kagorkor*	*laway-laway*
Bottom-set longline (B)			*palangre bira-bira*	
Bottom-set longline			*palangre pangdagku*	
Bottom-set longline				*bingit pahantak, gunting-gunting*
Drag handline	*bahan*		*bahan, margati*	
Simple hook & line	*kawil, bira-bira, pakaway, latak, pitpit pambisugo, pauntog*	*pasol, bira-bira*	*bingwit, pasol, bira-bira, tayonton, lampara, labjog, pamataw, padlas*	*bingit, hantuk, manaktak, tun-tun*

Hook & line (fleet)	kawil			
Hook & line w/float	*buya-buya*	*pataw, palagdas*	*pamataw, pataw-pataw, bingwit*	*untang-untang*
Multiple handline	*bundac, bira-bira, pakaskas, rentex, pitpit*	*bira-bira, undak, cha-cha, pasol pangmangsi*	*bundak, bingwit pamataw, bingwit*	*bira-bira*
Multiple handline (B)				
Surface-set longline	*kitang*	*kitang pansasa*(Hemiramphus)	*pamataw, pangbawo*	
Troll	*subid, subid-subid, subid sa tulingan*		*subid, wakay, lambo, rentek*	*tundah, tundah-kutsara, tundah mangku*
Troll (for hemiramphus)		*subid sa bawo*	*pataw, pamataw*	
Troll for garfish				*tundah tambilawang*
POTS AND TRAPS				
Crab liftnet	*bintol-bintol*	*sapyaw panglambay*	*pintol, sapyaw*	
Crab pot	*bubo/panggal pang-alimasag*	*panggal sa lambay*	*panggal, panggal panglambay*	
Eel pot		*bantak*		
Fish pot	*bubo, tangkal*	*bubo, panggal sa isda*	*bubo sa isda, panggal sa isda*	*bubuh, tugung*
Squid pot	*bubo pangpusit*	*bubo sa nokos*	*bubo sa nokus*	
				sahat, litag kamun
SEINES AND DRAGNETS				
Beach seine		*baling, guyod-guyod*	*Baling*	*sinsuru*
Danish seine		*liba-liba*	*liba-liba, liba-liba*	*hulbut-hulbut*
Drive-in net		*tapsay*		
Otter trawl		*palakaya, trawl*		
Ring-net (small)			*pamo argolya, pamarongoy*	*Kulibu*
Round-haul seine		*lawag*		
Scissor net/push net	*sudsud*	*sudsud*		
Seine nets	*baling sa dilis*		*sarap*	
OTHERS				
Abalone fishing				*Sangit*
Diving				*lima-lima*
Diving for crabs		*panarap*		
Diving/theft of fish		*mangabatay*		
Cast net			cast net	
Dynamite		*tiro*		*timbak istah, bung-bung*
Gleaning			*Sabot*	*managat*
Miracle hole		*amatong*		
Scoopnet	*sapyaw, sigpaw*	*sapyaw, takyan*	*sapyaw*	
Spear gun, harpoon	*pana, salapang*	*pana, pamana*	*pana, mano-mano, pinusil, saranggat, binakoy, sinogong*	*panah,sapang*
Spear gun, harpoon (B)				*sapang*
Spear w/compressor	*pana de compressor*	*pana-compressor*	*pana boso*	*panah compressor*
Stick			*lit-ag*	
Toxic substances			*lagtang, tuble*	*lagtang, tubli, lanit,*

APPENDIX 3. DETAILS OF THE TRAWL TEST FISHING IN DANAJON BANK DURING THE BASELINE DATA COLLECTION IN YEAR 2004

Station No.	Date	Time of trawling		Towing speed (kph) recordings			Coordinates				Catch (kg)	
							Start		End			
		Start	End	1	2	3	Lat.	Long.	Lat.	Long.	Codend	Cover
1	19-May-04	13:58	14:28	2.35	2.53	2.35	10° 16.442'	124° 19.335'	10° 16.326'	124° 18.789'	0.000	0.000
2	22-May-04	15:00	15:30	3.59	3.62	3.76	10° 11.575'	124° 20.706'	10° 11.379'	124° 19.379'	3.379	0.304
3	22-May-04	13:07	13:18	3.15	3.04	2.93	10° 15.152'	124° 21.580'	10° 15.348'	124° 21.484'	0.212	0.086
4	19-May-04	15:27	15:57	2.73	2.35	2.45	10° 18.061'	124° 23.598'	10° 17.926'	124° 24.230'	1.083	0.117
5	19-May-04	16:34	17:04	2.31	2.21	2.01	10° 16.472'	124° 23.656'	10° 16.396'	124° 24.474'	1.332	0.094
6	20-May-04	11:22	11:52	2.79	2.68	2.78	10° 11.355'	124° 24.398'	10° 10.889'	124° 25.114'	0.518	0.230
7	20-May-04	10:14	10:44	3.50	3.63		10° 09.438'	124° 23.569'	10° 09.459'	124° 24.648'	2.559	0.795
8	22-May-04	8:47	9:17	3.00	3.17	3.09	10° 16.419'	124° 27.592'	10° 16.356'	124° 28.158'	1.430	0.302
9	22-May-04	10:15	10:45	2.52	2.52	2.44	10° 13.176'	124° 27.534'	10° 13.032'	124° 28.015'	0.915	0.521
10	20-May-04	12:21	12:51	2.72	2.58	2.50	10° 11.659'	124° 27.533'	10° 11.540'	124° 28.351'	0.220	0.005
11	22-May-04	12:33	12:53	2.78	2.78	2.64	10° 08.905'	124° 29.008'	10° 08.925'	124° 28.170'	0.970	0.225
12	20-May-04	15:56	16:26	2.68	2.57	2.68	10° 06.624'	124° 28.979'	10° 06.698'	124° 28.308'	1.090	0.120
13	20-May-04	13:35	14:05	3.37	3.20	3.08	10° 13.668'	124° 30.935'	10° 13.591'	124° 31.977'	6.005	0.147
14	22-May-04	11:36	11:55	2.29	2.10	2.19	10° 08.978'	124° 32.452'	10° 08.974'	124° 31.951'	0.355	0.030
15	21-May-04	14:45	15:20	1.70	1.77	1.97	10° 14.021'	124° 35.005'	10° 13.436'	124° 35.751'	0.945	0.128
16	21-May-04	15:57	16:27	2.98	2.30	2.30	10° 13.003'	124° 35.566'	10° 12.506'	124° 35.392'	0.377	0.100
17	21-May-04	17:00	17:30	2.19	2.21	2.19	10° 10.304'	124° 34.383'	10° 10.498'	124° 35.589'	0.025	0.000
18	21-May-04	13:29	13:59	2.75	2.66	2.49	10° 13.165'	124° 38.888'	10° 12.935'	124° 38.346'	0.368	0.025
19	21-May-04	12:33	13:03	2.14	2.05	2.32	10° 12.169'	124° 38.230'	10° 12.673'	124° 38.670'	0.000	0.000
Control 0	21-May-04	10:15	10:45	2.55	2.60	2.31	10° 02.635'	124° 34.108'	10° 03.359'	124° 34.679'	10.827	3.775
Control 1	5-Jul-04	10:26	10:57	3.17	3.07	3.28	10° 04.685'	124° 34.832'	10° 04.083'	124° 34.934'	6.390	1.503
Control 2	5-Jul-04	11:26	11:56	3.51	3.50	3.37	10° 03.704'	124° 35.809'	10° 03.163'	124° 35.503'	3.061	0.122
Control 3	5-Jul-04	13:04	13:34	2.07	1.98	2.05	10° 02.059'	124° 35.998'	10° 01.706'	124° 35.590'	4.495	0.070
Control 4	5-Jul-04	13:58	14:28	2.94	3.21	3.08	10° 02.662'	124° 34.741'	10° 01.792'	124° 34.602'	5.742	0.080

APPENDIX 4. DETAILS OF THE TRAWL TEST FISHING OPERATION IN DANAJON BANK DURING THE MONITORING EVENT IN YEAR 2006

Station No.	Date	Time Start	Time End	Towing speed (kph) recording			Position during trawling				Catch (kg)	
							Start		End			
				1	2	3	Lat.	Long.	Lat.	Long.	Codend	Cover
1	27-Apr-06	14:05	14:35	2.10	2.40	2.70	10° 16.403'	124° 19.254'	10° 16.273'	124° 18.632'	9.221	0.000
2	30-Apr-06	17:39	18:09	3.20	3.30	3.40	10° 11.253'	124° 19.074'	10° 11.254'	124° 19.089'	5.380	0.235
3	30-Apr-06	15:08	15:38	2.90	2.10	2.50	10° 14.722'	124° 21.747'	10° 15.134'	124° 21.455'	0.518	0.000
4	27-Apr-06	9:45	10:15	2.40	2.60	2.60	10° 18.062'	124° 23.621'	10° 17.978'	124° 23.904'	0.430	0.088
5	27-Apr-06	16:25	16:55	3.40	3.40	3.20	10° 16.443'	124° 23.812'	10° 16.415'	124° 24.672'	0.615	0.100
6	28-Apr-06	11:56	12:21	3.40	3.50	3.60	10° 11.119'	124° 24.585'	10° 10.862'	124° 25.293'	1.853	0.282
7	28-Apr-06	10:38	11:08	3.20	3.40	3.40	10° 09.359'	124° 23.668'	10° 09.500'	124° 24.506'	3.835	5.012
8	30-Apr-06	9:00	9:30	2.30	1.80	2.00	10° 16.454'	124° 27.761'	10° 16.504'	124° 28.204'	0.775	0.005
9	30-Apr-06	11:00	11:30	1.80	2.20	2.20	10° 12.961'	124° 28.224'	10° 13.001'	124° 28.118'	0.308	0.090
10	28-Apr-06	13:19	13:49	4.30	3.60	4.20	10° 11.470'	124° 29.232'	10° 11.452'	124° 29.215'	2.195	0.045
11	30-Apr-06	13:30	14:00	2.80	2.20	2.20	10° 08.919'	124° 28.308'	10° 08.899'	124° 28.490'	2.455	0.126
12	28-Apr-06	16:29	17:01	3.20	3.70	3.30	10° 06.598'	124° 28.808'	10° 06.582'	124° 27.842'	13.731	0.465
13	28-Apr-06	15:01	15:29	3.20	3.30	4.30	10° 13.628'	124° 31.604'	10° 13.513'	124° 32.028'	0.649	0.056
14	30-Apr-06	12:23	12:52	3.50	3.00	2.70	10° 08.736'	124° 31.608'	10° 08.753'	124° 31.699'	1.830	0.160
15	29-Apr-06	16:28	16:58	2.00	2.20	1.90	10° 14.110'	124° 35.693'	10° 14.032'	124° 35.754'	0.453	0.075
16	29-Apr-06	15:36	16:06	2.10	2.40	2.30	10° 13.099'	124° 35.584'	10° 13.021'	124° 35.708'	0.215	0.053
17	29-Apr-06	17:50	18:20	2.40	2.40	2.60	10° 10.636'	124° 34.816'	10° 10.681'	124° 34.908'	1.200	0.179
18	14-Jun-06	10:19	10:49	3.00	2.90	2.80	10° 12.987'	124° 38.481'	10° 13.072'	124° 38.896'	1.285	0.146
19	14-Jun-06	9:33	10:03	2.90	2.60	2.40	10° 12.293'	124° 38.356'	10° 12.686'	124° 38.688'	0.055	0.005
Control 1	14-Jun-06	11:38	12:08	2.80	2.50	2.40	10° 04.610'	124° 35.030'	10° 04.278'	124° 35.385'	6.685	0.647
Control 2	14-Jun-06	12:31	13:01	2.60	3.00	3.10	10° 03.585'	124° 35.742'	10° 03.088'	124° 35.499'	10.730	0.210
Control 3	14-Jun-06	14:35	15:05	2.10	2.20	2.30	10° 01.793'	124° 35.669'	10° 02.220'	124° 35.992'	13.420	0.578
Control 4	14-Jun-06	13:31	13:45	3.50	3.80	2.70	10° 02.468'	124° 34.824'	10° 01.748'	124° 34.748'	8.204	0.290
Control 4		13:48	14:04	Added time due to refueling								
Night 1	27-Apr-06	19:01	20:01	2.30	2.50	2.30	10° 14.171'	124° 21.824'	10° 12.917'	124° 21.827'	7.455	0.000
Night 2	28-Apr-06	18:51	19:51	3.30	3.50	4.20	10° 07.127'	124° 25.969'	10° 07.127'	124° 25.613'	9.899	0.000

APPENDIX 5. DETAILS OF THE TRAWL TEST FISHING OPERATION IN DANAJON BANK DURING THE MONITORING EVENT IN YEAR 2008

Station No.	Date	Time Start	Time End	Towing speed (kph) recording			Position during trawling				Catch (kg)	
							Start		End			
				1	2	3	Lat.	Long.	Lat.	Long.	Codend	Cover
1	5-May-08	10:29	10:59	2.80	3.10	3.20	10° 16.084'	124° 18.793'	10° 16.671'	124° 19.412'	4.050	0.375
2	5-May-08	9:14	9:44	2.70	3.50	3.40	10° 11.407'	124° 19.371'	10° 11.396'	124° 20.264'	3.655	0.115
3	5-May-08	15:47	16:17	3.80	2.50	3.70	10° 15.184'	124° 21.509'	10° 14.497'	124° 21.784'	4.011	0.032
4	5-May-08	11:45	12:15	2.70	3.60	3.50	10° 18.009'	124° 23.738'	10° 17.690'	124° 24.642'	0.097	0.020
5	5-May-08	13:29	13:59	2.10	2.60	2.70	10° 16.422'	124° 24.359'	10° 16.471'	124° 23.617'	2.884	0.932
6	6-May-08	10:26	10:57	2.40	2.70		10° 11.454'	124° 24.428'	10° 11.320'	124° 25.039'	1.887	0.147
7	6-May-08	9:31	10:01	2.70	2.90	3.00	10° 09.476'	124° 23.650'	10° 09.431'	124° 24.451'	3.400	0.550
8	8-May-08	10:05	10:26	2.10	2.50	1.90	10° 16.600'	124° 27.879'	10° 16.830'	124° 28.228'	0.750	0.000
9	8-May-08	13:19	13:49	1.90	2.80	2.10	10° 13.010'	124° 27.718'	10° 13.244'	124° 27.211'	2.732	0.342
10	6-May-08	12:35	13:05	3.10	3.40	3.30	10° 11.721'	124° 28.240'	10° 11.636'	124° 29.167'	3.500	0.650
11	6-May-08	13:43	14:13	2.30	2.10	2.20	10° 08.872'	124° 28.888'	10° 08.967'	124° 28.284'	1.902	0.065
12	6-May-08	14:46	15:18	2.80	2.90		10° 06.642'	124° 28.846'	10° 06.664'	124° 28.054'	4.857	0.015
13	8-May-08	12:14	12:44	3.10	2.50	2.30	10° 13.735'	124° 31.056'	10° 13.266'	124° 30.591'	1.314	0.187
14	7-May-08	9:49	10:19	2.20	2.10	2.40	10° 09.057'	124° 31.997'	10° 09.420'	124° 32.504'	3.895	0.299
15	7-May-08	16:26	16:56	4.50	3.80	3.50	10° 13.677'	124° 35.459'	10° 12.820'	124° 35.962'	0.035	0.005
16	7-May-08	15:25	15:55	4.10	4.20	4.10	10° 12.679'	124° 35.094'	10° 11.636'	124° 35.523'	0.000	0.000
17	7-May-08	10:53	11:23	1.60	2.00	2.20	10° 10.289'	124° 34.473'	10° 10.333'	124° 34.967'	0.040	0.000
18	7-May-08	13:52	14:22	1.70	2.20	2.40	10° 13.175'	124° 39.215'	10° 12.997'	124° 38.558'	1.297	0.514
19	7-May-08	12:02	12:32	2.00	2.40	2.80	10° 12.190'	124° 38.333'	10° 12.185'	124° 39.037'	0.392	0.007
Control 0	28-Jun-08	9:52	10:22	2.60	2.60	3.00	10° 02.466'	124° 34.229'	10° 03.127'	124° 34.595'	2.663	0.075
Control 1	28-Jun-08	13:07	13:37	2.90	2.90	3.10	10° 04.256'	124° 35.221'	10° 03.732'	124° 34.634'	18.905	0.240
Control 2	28-Jun-08	12:14	12:44	2.90	2.90	2.90	10° 03.200'	124° 35.577'	10° 03.891'	124° 25.952'	13.480	1.467
Control 3	28-Jun-08	11:26	11:56	2.00	3.00	2.80	10° 01.819'	124° 35.649'	10° 02.422'	124° 35.910'	2.743	0.020
Control 4	28-Jun-08	10:36	11:06	3.00	3.30	3.30	10° 02.573'	124° 34.680'	10° 01.735'	124° 34.779'	5.647	0.040
Night 1	5-May-08	18:54	19:54	3.00	3.20	3.50	10° 14.030'	124° 21.870'	10° 12.398'	124° 22.253'	18.224	0.000
Night 2	6-May-08	18:53	19:53	3.60	3.60	3.20	10° 07.225'	124° 25.770'	10° 08.186'	124° 23.973'	11.750	0.000

APPENDIX 6. DETAILS OF THE TRAWL TEST FISHING OPERATION IN DANAJON BANK DURING THE MONITORING EVENT IN YEAR 2010

Station No.	Date	Time Start	Time End	Towing speed (kph) recording			Position during trawling				Catch (kg)	
							Start		End			
				1	2	3	Lat.	Long.	Lat.	Long.	Codend	Cover
1	14-Apr-10	9:41	10:11	1.90	1.50	2.10	10° 16.146”	124° 18.978”	10° 16.254”	124° 19.362”	1.775	0.515
2	14-Apr-10	8:06	8:29	2.30	1.80		10° 11.436”	124° 19.464”	10° 11.652”	124° 19.770”	5.495	0.195
2		8:38	8:45	Added time due to obstruction								
3	14-Apr-10	15:30	16:00	2.60	2.20	1.40	10° 15.066"	124° 21.534"	10° 14.466"	124° 21.594"	3.843	0.099
4	14-Apr-10	14:22	14:52	1.80	1.50	1.90	10° 17.394"	124° 24.750"	10° 17.562"	124° 24.360"	3.210	0.755
5	14-Apr-10	13:26	13:56	2.60	2.90	3.00	10° 16.344"	124° 24.048"	10° 16.116"	124° 24.792"	1.620	0.235
6	15-Apr-10	9:33	10:04	1.60	1.80	1.70	10° 11.448"	124° 24.528"	10° 11.370"	124° 24.978"	1.925	0.214
7	15-Apr-10	8:24	8:55	2.30	1.70	2.10	10° 09.588"	124° 23.718"	10° 9.606"	124° 24.240"	3.411	0.369
8	15-Apr-10	14:15	14:46	1.90	2.10	1.70	10° 16.656"	124° 28.194"	10° 16.320"	124° 27.798"	0.180	0.000
9	15-Apr-10	15:15	15:45	1.20	2.20	1.60	10° 13.086"	124° 27.480"	10° 13.236"	124° 27.054"	1.165	0.170
10	15-Apr-10	10:44	11:15	2.50	2.70	2.90	10° 11.754"	124° 28.296"	10° 11.892"	124° 29.058"	0.560	0.425
11	16-Apr-10	10:56	11:26	2.30	2.00	2.60	10° 9.120"	124° 28.434"	10° 9.126"	124° 29.076"	2.932	0.393
12	16-Apr-10	9:40	10:01	2.30	2.10	1.80	10° 6.684"	124° 28.170"	10° 6.600"	124° 28.686"	0.955	0.000
12		10:08	10:17	Added time due to obstruction								
13	15-Apr-10	13:01	13:31	1.50	2.20	2.50	10° 13.386"	124° 31.482"	10° 13.698"	124° 30.942"	1.888	0.335
14	16-Apr-10	13:16	13:46	3.90	3.20	3.00	10° 9.360"	124° 32.094"	10° 9.528"	124° 32.928"	5.800	0.510
15	17-Apr-10	13:48	14:18	1.70	2.40	1.80	10° 13.746"	124° 35.406"	10° 13.686"	124° 34.818"	2.025	0.420
16	16-Apr-10	15:11	15:41	4.00	2.60	3.50	10° 12.276"	124° 35.544"	10° 11.988"	124° 36.444"	1.940	0.225
17	16-Apr-10	14:12	14:42	3.50	3.60		10° 10.290"	124° 34.614"	10° 10.236"	124° 35.574"	0.492	0.075
18	17-Apr-10	10:19	10:22	3.00	3.60	3.40	10° 12.924"	124° 38.730"	10° 13.266"	124° 37.788"	1.315	0.048
18		10:39	11:06	Added time due to towing rope adjustment								
19	17-Apr-10	11:32	12:02	3.00	2.90	2.30	10° 11.946"	124° 38.586"	10° 12.192"	124° 38.334"	1.640	0.222
Night 1	14-Apr-10	19:44	20:09	2.30	1.90	2.10	10° 13.722"	124° 21.840"	10° 12.198"	124° 21.786"	18.830	0.305
		20:16	20:51	Added time due to obstruction								
Night 2	16-Apr-10	19:12	20:13	2.80	2.90	3.20	10° 7.050”	124° 25.974”	10° 7.836”	124° 24.330”	19.550	0.600
Control 0	2-Jun-10	9:56	10:26	3.00	2.90	2.90	10° 2.568”	124° 34.188”	10° 3.192”	124° 34.506”	10.280	0.180
Control 1	2-Jun-10	13:09	13:14	2.50	2.90	3.00	10° 4.014”	124° 34.476”	10° 3.714”	124° 33.948”	5.795	0.295
Control 1		13:32	13:57	Added time due to obstruction								
Control 2	2-Jun-10	12:12	12:42	3.10	4.40	3.20	10° 3.390"	124° 35.076"	10° 4.296"	124° 34.806"	3.043	0.100
Control 3	2-Jun-10	9:06	9:36	2.60	2.50	2.70	10° 1.908"	124° 35.664"	10° 2.580"	124° 35.904"	3.775	0.253
Control 4	2-Jun-10	8:20	8:50	2.70	2.80	2.90	10° 1.974"	124° 34.812"	10° 1.308"	124° 34.740"	8.595	0.085

APPENDIX 7. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE BASELINE DATA COLLECTION IN CORON BAY IN YEAR 2004

Day	Grid No.	Station No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	3	12	23-May-04	2:40	5:10	11° 50.930'	120° 06.000'	11° 51.201'	120° 05.301'	9.280
1	3	9	23-May-04	3:05	5:30	11° 46.881'	120° 09.020'	11° 46.300'	120° 08.560'	8.650
1	3	10	23-May-04	3:00	5:00	11° 48.000'	120° 07.010'	11° 48.620'	120° 07.330'	9.450
1	2	6	23-May-04	3:00	5:00	11° 56.690'	120° 11.100'	11° 55.920'	120° 11.331'	4.740
1	2	5	23-May-04	3:00	5:30	11° 58.250'	120° 10.500'	11° 57.900'	120° 11.100'	8.550
1	2	7	23-May-04	3:05	5:00	11° 54.050'	120° 12.670'	11° 53.500'	120° 13.091'	8.900
2	2	10	24-May-04	3:00	5:30	11° 48.000'	120° 07.010'	11° 48.620'	120° 07.730'	5.620
2	2	12	24-May-04	3:30	5:00	11° 50.930'	120° 06.000'	11° 51.201'	120° 05.301'	12.680
2	3	9	24-May-04	3:15	5:00	11° 46.881'	120° 09.020'	11° 46.300'	120° 08.560'	5.480
2	3	4	24-May-04	2:55	5:00	11° 59.000'	120° 04.400'	11° 59.800'	120° 04.050'	4.100
2	3	6	24-May-04	2:45	5:05	11° 56.690'	120° 11.100'	11° 55.920'	120° 11.301'	11.480
3	2	4	25-May-04	2:00	3:00	11° 58.171'	120° 08.390'	11° 58.171'	120° 08.800'	2.450
3	3	10	25-May-04	3:30	5:00	11° 48.000'	120° 07.010'	11° 48.000'	120° 07.730'	8.330
3	2	6	25-May-04	4:00	5:00	11° 56.690'	120° 11.100'	11° 56.690'	120° 11.301'	7.540
3	3	8	25-May-04	4:00	5:00	11° 52.000'	120° 13.851'	11° 52.000'	120° 13.181'	4.900
3	3	14	25-May-04	3:00	5:20	11° 55.071'	120° 04.100'	11° 55.071'	120° 35.020'	2.730
3	2	5	25-May-04	3:30	5:00	11° 58.250'	120° 10.500'	11° 58.250'	120° 11.100'	9.660
3	1	5	25-May-04	3:20	5:25	11° 58.250'	120° 10.500'	11° 57.900'	120° 10.500'	6.600
4	3	9	26-May-04	4:00	5:00	11° 46.881'	120° 09.020'	11° 46.300'	120° 09.020'	8.940
4	1	2	26-May-04	3:05	5:00	11° 57.401'	120° 04.900'	11° 57.401'	120° 04.900'	5.350
4	1	6	26-May-04	2:30	4:30	11° 56.690'	120° 11.100'	11° 55.920'	120° 11.100'	12.530
4	3	8	26-May-04	2:00	4:00	11° 55.071'	120° 04.100'	11° 54.651'	120° 04.100'	8.100
4	3	10	26-May-04	3:00	5:00	11° 48.000'	120° 07.010'	11° 48.620'	120° 07.010'	8.440
5	1	8	27-May-04	4:35	5:30	11° 52.000'	120° 13.851'	11° 52.000'	120° 13.801'	15.730
5	1	4	27-May-04	2:55	5:00	11° 58.170'	120° 08.390'	11° 58.170'	120° 08.800'	5.330
5	1	2	27-May-04	3:00	5:00	11° 57.401'	120° 04.900'	11° 57.401'	120° 04.100'	5.000
5	3	11	27-May-04	3:00	6:00	11° 48.900'	120° 04.000'	11° 48.900'	120° 04.751'	6.250
5	3	10	27-May-04	3:00	5:00	11° 48.000'	120° 07.010'	11° 48.000'	120° 07.730'	2.630
5	3	13	27-May-04	3:00	6:00	11° 52.350'	120° 05.681'	11° 49.570'	120° 04.751'	6.930
6	2	13	28-May-04	3:00	5:00	11° 52.350'	120° 04.000'	11° 52.551'	120° 03.301'	4.530
6	2	4	28-May-04	2:22	4:00	11° 58.170'	120° 08.390'	11° 58.050'	120° 08.800'	5.950
6	2	10	28-May-04	3:05	3:36	11° 48.000'	120° 07.010'	11° 48.620'	120° 07.730'	1.730
6	2	3	28-May-04	3:10	5:00	11° 57.330'	120° 06.720'	11° 57.701'	120° 06.200'	4.480
6	2	Control A	28-May-04	2:55	5:00	11° 58.200'	120° 16.120'	11° 57.541'	120° 16.421'	5.100
6	2	Control B	28-May-04	3:05	5:05	11° 56.231'	120° 16.411'	11° 56.580'	120° 16.352'	1.850

APPENDIX 8. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN CORON BAY AND BASELINE COLLECTION DATA IN BUSUANGA BAY IN YEAR 2006

Day	Grid No.	Station No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1		7	1-May-06	4:00	5:00	11° 54.050'	120° 12.670'	11° 53.500'	120° 13.090'	8.900
1		12	1-May-06	4:22	5:00	11° 50.930'	120° 06.000'	11° 51.200'	120° 05.300'	6.050
1		9	1-May-06	4:30	5:00	11° 47.368'	120° 08.453'	11° 46.658'	120° 08.472'	7.325
1		5	1-May-06	4:00	5:00	11° 58.250'	120° 08.800'	11° 57.900'	120° 11.100'	3.225
1		10	1-May-06	3:45	5:00	11° 48.000'	120° 07.010'	11° 48.620'	120° 07.730'	5.800
1		6	1-May-06	4:30	5:00	11° 56.690'	120° 11.100'	11° 55.920'	120° 11.300'	2.350
2		12	2-May-06	4:00	5:00	11° 50.930'	120° 06.000'	11° 51.200'	120° 05.300'	5.925
2		9	2-May-06	4:30	5:30	11° 47.368'	120° 08.453'	11° 46.658'	120° 08.472'	2.475
2		10	2-May-06	4:00	5:00	11° 47.740'	120° 07.250'	11° 48.620'	120° 07.730'	8.880
2		4	2-May-06	4:00	5:00	11° 58.170'	120° 08.390'	11° 58.050'	120° 08.800'	2.375
2		6	2-May-06	4:00	5:00	11° 56.690'	120° 11.100'	11° 55.920'	120° 11.300'	4.850
3		14	3-May-06	4:20	5:05	11° 54.700'	120° 03.520'	11° 54.242'	120° 02.850'	7.620
3		10	3-May-06	4:35	5:00	11° 47.740'	120° 07.250'	11° 48.620'	120° 07.730'	4.983
3		8	3-May-06	4:15	5:13	11° 50.800'	120° 14.003'	11° 50.100'	120° 14.600'	6.932
3		6	3-May-06	4:50	5:05	11° 56.690'	120° 11.100'	11° 55.920'	120° 11.300'	3.950
3		4	3-May-06	4:00	5:00	11° 58.170'	120° 08.390'	11° 58.050'	120° 08.800'	0.920
3		5	3-May-06	4:00	5:00	11° 58.250'	120° 08.800'	11° 57.900'	120° 11.100'	2.200
4		10	4-May-06	4:00	5:00	11° 47.740'	120° 07.250'	11° 48.620'	120° 07.730'	9.750
4		9	4-May-06	4:00	5:00	11° 47.368'	120° 08.453'	11° 46.658'	120° 08.472'	6.100
4		8	4-May-06	4:40	5:00	11° 50.740'	120° 14.000'	11° 50.033'	120° 14.500'	1.950
4		5	4-May-06	4:05	5:00	11° 58.250'	120° 08.800'	11° 57.900'	120° 11.100'	8.035
4		6	4-May-06	4:00	5:00	11° 56.690'	120° 11.100'	11° 55.920'	120° 11.300'	1.775
4		2	4-May-06	4:05	5:00	11° 57.400'	120° 04.900'	11° 57.700'	120° 04.100'	1.725
5		10	5-May-06	4:50	5:10	11° 47.740'	120° 07.250'	11° 48.620'	120° 07.730'	2.900
5		11	5-May-06	4:30	5:00	11° 48.900'	120° 05.680'	11° 49.570'	120° 04.750'	4.775
5		13	5-May-06	4:18	4:58	11° 52.070'	120° 04.000'	11° 52.550'	120° 03.300'	3.475
5		8	5-May-06	4:00	5:00	11° 50.742'	120° 14.002'	11° 50.010'	120° 14.500'	0.950
5		2	5-May-06	4:00	5:00	11° 51.400'	120° 04.900'	11° 57.700'	120° 04.100'	2.250
5		4	5-May-06	4:00	5:00	11° 58.170'	120° 08.390'	11° 58.050'	120° 08.800'	2.600
6		Control A	6-May-06	4:30	5:00	11° 58.200'	120° 16.500'	11° 57.540'	120° 16.600'	4.700
6		3	6-May-06	4:00	5:00	11° 57.330'	120° 06.720'	11° 57.700'	120° 06.200'	1.100
6		Control B	6-May-06	4:20	5:05	11° 55.700'	120° 16.600'	11° 56.580'	120° 16.700'	2.760
6		4	6-May-06	4:30	5:00	11° 58.170'	120° 08.390'	11° 58.050'	120° 08.800'	1.475
6		10	6-May-06	4:00	5:20	11° 47.740'	120° 07.250'	11° 48.620'	120° 07.730'	1.055
6		13	6-May-06	4:00	5:00	11° 52.070'	120° 04.000'	11° 52.550'	120° 03.300'	5.650
1		3	1-May-06	4:05	5:00	12° 09.985'	119° 52.938'	12° 09.512'	119° 53.227'	1.000
1		5	1-May-06	3:45	4:45	12° 03.498'	119° 53.770'	12° 03.058'	119° 53.558'	1.250
1		2	1-May-06	3:30	4:30	12° 07.558'	119° 54.912'	12° 07.830'	119° 54.537'	3.600
2		4	2-May-06	4:02	5:24	12° 05.347'	120° 53.523'	12° 05.053'	120° 53.127'	4.560
2		3	2-May-06	3:45	4:45	12° 09.985'	119° 52.938'	12° 09.512'	119° 53.227'	0.800
2		5	2-May-06	4:00	5:05	12° 03.498'	119° 53.770'	12° 03.058'	119° 53.558'	0.450
3		1	3-May-06	3:30	4:30	12° 04.312'	119° 56.182'	12° 03.865'	119° 55.947'	2.800
3		2	3-May-06	3:45	4:40	12° 07.558'	119° 54.912'	12° 07.830'	119° 54.537'	0.450
3		6	3-May-06	4:05	5:15	12° 02.295'	119° 51.798'	12° 01.830'	119° 51.598'	1.800
4		3	4-May-06	4:05	5:00	12° 09.985'	119° 52.938'	12° 09.512'	119° 53.227'	1.250
4		1	4-May-06	3:35	4:30	12° 04.312'	119° 56.182'	12° 03.865'	119° 55.947'	2.150
4		2	4-May-06	3:45	4:30	12° 07.558'	119° 54.912'	12° 07.830'	119° 54.537'	2.375
5		5	5-May-06	3:45	4:30	12° 03.498'	119° 53.770'	12° 03.058'	119° 53.558'	0.700
5		4	5-May-06	4:00	5:00	12° 05.347'	120° 53.523'	12° 05.053'	120° 53.127'	1.125
5		6	5-May-06	3:30	4:30	12° 02.295'	119° 51.798'	12° 01.830'	119° 51.598'	0.550
6		1	6-May-06	3:30	4:30	12° 04.312'	119° 56.182'	12° 03.865'	119° 55.947'	3.200
6		4	6-May-06	3:45	4:30	12° 05.347'	120° 53.523'	12° 05.053'	120° 53.127'	1.800
6		6	6-May-06	4:00	4:30	12° 02.295'	119° 51.798'	12° 01.830'	119° 51.598'	0.450

APPENDIX 9. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN CORON BAY AND BUSUANGA BAY IN YEAR 2008

Day	Grid No.	Station No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1		7	9-May-08	4:05	5:05	11°54.668'	120°12.668'	11°53.503'	120°13.123'	5.932
1		12	9-May-08	4:00	5:00	11°50.943'	120°06.137'	11°51.200'	120°05.318'	3.540
1		9	9-May-08	4:00	5:00	11°47.357'	120°08.452'	11°47.457'	120°08.723'	1.260
1		5	9-May-08	4:00	5:00	11°58.323'	120°08.952'	11°57.948'	120°11.262'	8.140
1		10	9-May-08	4:15	5:15	11°47.295'	120°07.112'	11°48.857'	120°07.838'	5.380
1		6	9-May-08	4:00	5:00	11°56.687'	120°11.103'	11°55.922'	120°11.302'	2.370
2		12	10-May-08	4:15	5:15	11°50.943'	120°06.137'	11°51.200'	120°05.318'	6.150
2		9	10-May-08	4:00	5:00	11°47.357'	120°08.452'	11°47.457'	120°08.723'	2.850
2		10	10-May-08	4:15	5:15	11°47.295'	120°07.112'	11°48.857'	120°07.838'	1.830
2		4	10-May-08	4:00	5:00	11°58.218'	120°08.438'	11°58.223'	120°08.833'	2.560
2		6	10-May-08	4:20	5:20	11°56.687'	120°11.103'	11°55.922'	120°11.302'	3.150
3		14	11-May-08	4:00	5:00	11°54.713'	120°03.463'	11°54.293'	120°02.968'	1.110
3		10	11-May-08	4:00	5:00	11°47.295'	120°07.112'	11°48.857'	120°07.838'	5.470
3		8	11-May-08	4:05	5:05	11°50.793'	120°14.032'	11°50.100'	120°14.842'	7.910
3		6	11-May-08	4:20	5:20	11°56.687'	120°11.103'	11°55.922'	120°11.302'	2.490
3		4	11-May-08	4:00	5:00	11°58.218'	120°08.438'	11°58.223'	120°08.833'	6.000
3		5	11-May-08	4:00	5:00	11°58.323'	120°08.952'	11°57.948'	120°11.262'	3.400
4		9	12-May-08	4:00	5:00	11°47.357'	120°08.452'	11°47.457'	120°08.723'	5.710
4		8	12-May-08	4:00	5:00	11°50.793'	120°14.032'	11°50.100'	120°14.842'	3.000
4		5	12-May-08	4:05	5:05	11°58.323'	120°08.952'	11°57.948'	120°11.262'	4.520
4		6	12-May-08	4:15	5:15	11°56.687'	120°11.103'	11°55.922'	120°11.302'	5.800
4		2	12-May-08	4:00	5:00	11°57.402'	120°04.928'	11°57.717'	120°04.112'	5.340
5		10	13-May-08	4:00	5:00	11°47.295'	120°07.112'	11°48.857'	120°07.838'	7.290
5		11	13-May-08	4:10	5:10	11°48.912'	120°05.847'	11°49.772'	120°04.785'	1.630
5		13	13-May-08	4:00	5:00	11°51.480'	120°05.037'	11°52.297'	120°04.855'	4.060
5		8	13-May-08	4:00	5:00	11°50.793'	120°14.032'	11°50.100'	120°14.842'	5.930
5		2	13-May-08	4:05	5:05	11°57.402'	120°04.928'	11°57.717'	120°04.112'	1.230
5		4	13-May-08	4:00	5:00	11°58.218'	120°08.438'	11°58.223'	120°08.833'	12.420
6		Control A	14-May-08	4:15	5:15	11°58.345'	120°16.687'	11°57.758'	120°16.622'	6.470
6		3	14-May-08	4:30	5:30	11°57.562'	120°06.708'	11°57.855'	120°06.257'	2.150
6		Control B	14-May-08	4:30	5:30	11°55.863'	120°16.658'	11°56.613'	120°16.760'	1.230
6		4	14-May-08	4:00	5:00	11°58.218'	120°08.438'	11°58.223'	120°08.833'	4.050
6		10	14-May-08	4:00	5:00	11°47.295'	120°07.112'	11°48.857'	120°07.838'	2.490
6		13	14-May-08	4:40	5:40	11°51.480'	120°05.037'	11°52.297'	120°04.855'	1.860
1		3	9-May-08	4:10	5:10	12°09.985'	119°52.938'	12°09.512'	119°53.227'	1.06
1		5	9-May-08	4:00	5:00	12°03.498'	119°53.770	12°03.058'	119°53.558'	0.45
1		2	9-May-08	4:10	5:20	12°07.558'	119°54.912'	12°07.837'	119°54.537'	1.58
2		4	10-May-08	4:00	5:00	12°05.347'	119°53.523'	12°05.053'	119°53.127”	3.96
2		3	10-May-08	4:10	5:35	12°09.985'	119°52.938'	12°09.512'	119°53.227'	1.55
2		5	10-May-08	4:00	5:00	12°03.498'	119°53.770	12°03.058'	119°53.558'	2.06
3		1	11-May-08	4:00	5:00	12°04.312'	119°56.182'	12°03.858'	119°55.950'	2.43
3		2	11-May-08	4:00	5:00	12°07.558'	119°54.912'	12°07.837'	119°54.537'	1.78
3		6	11-May-08	4:00	5:00	12°02.295'	119°51.798'	12°01.830'	119°51.598'	1.50
4		3	12-May-08	4:00	5:00	12°09.985'	119°52.938'	12°09.512'	119°53.227'	1.32
4		1	12-May-08	3:45	5:00	12°04.312'	119°56.182'	12°03.858'	119°55.950'	3.09
4		2	12-May-08	4:00	5:00	12°07.558'	119°54.912'	12°07.837'	119°54.537'	0.23
5		5	13-May-08	4:30	5:45	12°03.498'	119°53.770	12°03.058'	119°53.558'	2.17
5		4	13-May-08	4:00	5:00	12°05.347'	119°53.523'	12°05.053'	119°53.127”	1.32
5		6	13-May-08	4:00	5:00	12°02.295'	119°51.798'	12°01.830'	119°51.598'	0.77
6		1	14-May-08	4:00	5:00	12°04.312'	119°56.182'	12°03.858'	119°55.950'	1.23
6		4	14-May-08	4:00	5:00	12°05.347'	119°53.523'	12°05.053'	119°53.127”	0.58
6		6	14-May-08	4:15	5:30	12°02.295'	119°51.798'	12°01.830'	119°51.598'	0.84

APPENDIX 10. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN CORON BAY AND BUSUANGA BAY IN YEAR 2010

Day	Grid No.	Station No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1		7	18-Apr-10	4:00	5:00	11°54.463'	120°12.390'	11°53.503'	120°13.123'	5.000
1		12	18-Apr-10	4:00	5:00	11°50.943'	120°06.137'	11°51.200'	120°05.318'	11.225
1		9	18-Apr-10	4:00	5:00	11°47.357'	120°08.452'	11°47.457'	120°08.723'	4.460
1		5	18-Apr-10	4:00	5:00	11°58.323'	120°08.952'	11°57.447'	120°10.826'	3.160
1		10	18-Apr-10	4:00	5:00	11°47.295'	120°07.112'	11°48.857'	120°07.838'	4.340
1		6	18-Apr-10	4:00	5:00	11°55.887'	120°10.935'	11°56.294'	120°11.308'	3.780
2		12	19-Apr-10	4:00	5:00	11°50.943'	120°06.137'	11°51.200'	120°05.318'	3.310
2		9	19-Apr-10	4:00	5:00	11°47.357'	120°08.452'	11°47.457'	120°08.723'	1.800
2		10	19-Apr-10	4:00	5:00	11°47.295'	120°07.112'	11°48.857'	120°07.838'	3.350
2		4	19-Apr-10	4:00	5:00	11°57.783'	120°08.512'	11°57.391'	120°04.651'	0.100
2		6	19-Apr-10	4:00	5:00	11°55.887'	120°10.935'	11°56.294'	120°11.308'	2.480
3		14	20-Apr-10	4:00	5:00	11°54.713'	120°03.463'	11°54.293'	120°02.968'	3.375
3		10	20-Apr-10	4:00	5:00	11°47.295'	120°07.112'	11°48.857'	120°07.838'	3.000
3		8	20-Apr-10	4:00	5:00	11°50.750'	120°14.068'	11°51.160'	120°13.745'	2.085
3		6	20-Apr-10	4:00	5:00	11°56.687'	120°11.103'	11°55.922'	120°11.302'	2.120
3		4	20-Apr-10	4:00	5:00	11°57.783'	120°08.512'	11°57.391'	120°04.651'	3.365
3		5	20-Apr-10	4:00	5:00	11°58.323'	120°08.952'	11°57.447'	120°10.826'	8.350
4		9	21-Apr-10	4:00	5:00	11°47.357'	120°08.452'	11°47.457'	120°08.723'	1.855
4		8	21-Apr-10	4:00	5:00	11°50.750'	120°14.068'	11°51.160'	120°13.745'	2.830
4		5	21-Apr-10	4:00	5:00	11°58.323'	120°08.952'	11°57.447'	120°10.826'	6.135
4		6	21-Apr-10	4:00	5:00	11°55.887'	120°10.935'	11°56.294'	120°11.308'	1.135
4		2	21-Apr-10	4:00	5:00	11°57.402'	120°04.920'	11°57.373'	120°04.565'	1.125
5		10	22-Apr-10	4:00	5:00	11°47.295'	120°07.112'	11°48.857'	120°07.838'	3.000
5		11	22-Apr-10	4:00	5:00	11°48.912'	120°05.847'	11°49.772'	120°04.785'	6.090
5		13	22-Apr-10	4:00	5:00	11°51.480'	120°05.037'	11°52.297'	120°04.855'	3.125
5		8	22-Apr-10	4:00	5:00	11°50.750'	120°14.068'	11°51.160'	120°13.745'	3.705
5		2	22-Apr-10	4:00	5:00	11°57.402'	120°04.920'	11°57.373'	120°04.565'	2.295
5		4	22-Apr-10	4:00	5:00	11°57.783'	120°08.512'	11°57.391'	120°04.651'	2.650
6		Control A	23-Apr-10	4:00	5:00	11°58.345'	120°16.687'	11°57.758'	120°16.622'	2.550
6		3	23-Apr-10	4:00	5:00	11°57.562'	120°06.708'	11°57.855'	120°06.257'	2.540
6		Control B	23-Apr-10	4:00	5:00	11°55.863'	120°16.658'	11°56.613'	120°16.760'	5.015
6		4	23-Apr-10	4:00	5:00	11°57.783'	120°08.512'	11°57.391'	120°04.651'	0.945
6		10	23-Apr-10	4:00	5:00	11°47.295'	120°07.112'	11°48.857'	120°07.838'	3.450
6		13	23-Apr-10	4:00	5:00	11°51.480'	120°05.037'	11°52.297'	120°04.855'	3.595
1		3	18-Apr-10	4:00	5:00	12°09.985'	119°52.938'	12°09.512'	119°53.227'	2.450
1		5	18-Apr-10	4:15	5:00	12°03.328'	119°53.400	12°03.058'	119°53.558'	0.700
1		2	18-Apr-10	4:15	5:00	12°07.558'	119°54.912'	12°07.837'	119°54.537'	1.100
2		4	19-Apr-10	4:15	5:00	12°04.347'	119°53.877'	12°04.856'	119°52.830”	0.900
2		3	19-Apr-10	4:10	5:00	12°09.985'	119°52.938'	12°09.512'	119°53.227'	3.350
2		5	19-Apr-10	4:10	5:00	12°03.328'	119°53.400	12°03.058'	119°53.558'	1.200
3		1	20-Apr-10	4:00	5:00	12°04.297'	119°56.255'	12°03.964'	119°56.182'	1.150
3		2	20-Apr-10	4:00	5:00	12°07.558'	119°54.912'	12°07.837'	119°54.537'	3.050
3		6	20-Apr-10	4:00	5:00	12°02.345'	119°51.754'	12°02.043'	119°51.596'	5.290
4		3	21-Apr-10	4:00	4:50	12°09.985'	119°52.938'	12°09.512'	119°53.227'	2.380
4		1	21-Apr-10	4:00	5:00	12°04.297'	119°56.255'	12°03.964'	119°56.182'	2.460
4		2	21-Apr-10	4:00	5:00	12°07.558'	119°54.912'	12°07.837'	119°54.537'	1.850
5		5	22-Apr-10	4:00	5:00	12°03.328'	119°53.400	12°03.058'	119°53.558'	1.600
5		4	22-Apr-10	4:15	5:00	12°04.347'	119°53.877'	12°04.856'	119°52.830”	4.210
5		6	22-Apr-10	4:15	5:00	12°02.345'	119°51.754'	12°02.043'	119°51.596'	3.710
6		1	23-Apr-10	4:00	5:00	12°04.297'	119°56.255'	12°03.964'	119°56.182'	2.650
6		4	23-Apr-10	4:00	5:00	12°04.347'	119°53.877'	12°04.856'	119°52.830”	2.830
6		6	23-Apr-10	4:00	5:00	12°02.345'	119°51.754'	12°02.043'	119°51.596'	1.560

APPENDIX 11. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE BASELINE DATA COLLECTION IN DANAJON BANK IN YEAR 2004

Day	Station No.	Grid No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	1	16	15-Jun-04	3:03	4:33	10° 11.212'	124° 27.177'	10° 11.977'	124° 27.480'	3.980
1	2	9	15-Jun-04	3:29	5:10	10° 12.511'	124° 25.475'	10° 12.252'	124° 26.025'	9.970
1	3	10	15-Jun-04	3:45	5:36	10° 13.543'	124° 27.373'	10° 13.893'	124° 27.931'	6.180
1	4	11	15-Jun-04	3:52	5:44	10° 13.662'	124° 28.604'	10° 13.660'	124° 29.154'	2.480
1	5	17	15-Jun-04	2:35	4:35	10° 10.797'	124° 28.955'	10° 10.223'	124° 29.694'	14.000
1	6	Control	15-Jun-04	3:12	4:56	10° 07.613'	124° 29.189'	10° 07.972'	124° 29.866'	4.760
1	7	20	15-Jun-04	3:58	7:26	10° 12.074'	124° 33.036'	10° 12.409'	124° 33.663'	6.220
2	8	24	16-Jun-04	3:30	4:56	10° 09.262'	124° 29.357'	10° 09.662'	124° 29.557'	3.410
2	9	25	16-Jun-04	3:30	4:32	10° 09.436'	124° 30.301'	10° 10.098'	124° 30.384'	2.810
2	10	18	16-Jun-04	3:30	4:45	10° 10.568'	124° 30.505'	10° 10.365'	124° 30.448'	5.270
2	11	23	16-Jun-04	4:03		10° 08.396'	124° 27.787'	10° 08.851'	124° 26.601'	3.590
2	12	28	16-Jun-04	4:25		10° 07.112'	124° 27.358'	10° 06.333'	124° 27.293'	11.120
2	13	Control	16-Jun-04	4:56		10° 06.521'	124° 29.544'	10° 07.771'	124° 28.598'	9.590
3	14	29	17-Jun-04	1:57	4:00	10° 06.244'	124° 30.537'	10° 06.880'	124° 31.024'	4.690
3	15	31	17-Jun-04	2:10	4:18	10° 05.377'	124° 31.113'	10° 05.981'	124° 31.216'	2.290
3	16	30	17-Jun-04	2:29	4:37	10° 05.036'	124° 29.206'	10° 05.483'	124° 29.921'	3.330
3	17	Control	17-Jun-04	2:07	3:46	10° 06.508'	124° 29.545'	10° 06.864'	124° 30.072'	4.240
3	18	28	17-Jun-04	2:41	4:10	10° 06.578'	124° 27.481'	10° 06.627'	124° 28.039'	4.120
3	27	27	17-Jun-04	3:02	4:40	10° 06.583'	124° 25.566'	10° 07.267'	124° 25.331'	3.330
3	20	25	17-Jun-04	3:30	5:00	10° 09.364'	124° 30.479'	10° 08.934'	124° 31.055'	2.070
4	21	9	21-Jun-04	2:46	3:56	10° 11.787'	124° 24.186'	10° 11.194'	124° 24.532'	3.000
4	22	8	21-Jun-04	2:56	4:35	10° 12.481'	124° 23.772'	10° 13.191'	124° 23.443'	3.680
4	23	14	21-Jun-04	3:12	4:30	10° 11.746'	124° 22.569'	10° 12.295'	124° 23.082'	1.710
4	24	7	21-Jun-04	3:18	4:57	10° 11.940'	124° 22.095'	10° 12.363'	124° 22.817'	2.780
4	25	16	21-Jun-04	3:23	4:42	10° 10.806'	124° 25.977'	10° 11.890'	124° 26.228'	3.900
4	26	15	21-Jun-04	3:02	5:16	10° 10.670'	124° 24.355'	10° 10.708'	124° 22.662'	8.060
4	19	22	21-Jun-04	3:55	5:37	10° 09.550'	124° 23.857'	10° 08.440'	124° 23.110'	9.990
5	28	16	22-Jun-04	4:15	5:10	10° 11.260'	124° 27.743'	10° 11.703'	124° 27.889'	5.280
5	29	10	22-Jun-04	4:20	5:20	10° 11.763'	124° 27.909'	10° 12.468'	124° 28.388'	1.090
5	30	11	22-Jun-04	4:30	5:27	10° 12.380'	124° 28.315'	10° 12.800'	124° 28.488'	2.490
5	31	18	22-Jun-04	2:31	5:05	10° 09.624'	124° 30.501'	10° 09.858'	124° 30.498'	4.420
5	32	17	22-Jun-04	2:49	4:59	10° 10.483'	124° 29.707'	10° 09.574'	124° 30.458'	4.960
5	33	24	22-Jun-04	3:34	5:09	10° 09.408'	124° 29.102'	10° 10.146'	124° 30.077'	2.970
5	34	Control	22-Jun-04	4:27	5:36	10° 06.880'	124° 29.713'	10° 07.335'	124° 29.481'	6.140
6	35	Control	23-Jun-04	4:09	4:49	10° 06.641'	124° 29.313'	10° 08.565'	124° 29.550'	3.580

APPENDIX 12. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN DANAJON BANK IN YEAR 2006

Day	Station No.	Grid No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	1	16	29-May-06	3:41	5:10	10° 11.215'	124° 26.660'	10° 11.180'	124° 27.171'	3.330
1	2	9	29-May-06	2:34	4:06	10° 12.603'	124° 25.480'	10° 13.113'	124° 24.880'	1.500
1	3	10	29-May-06	2:58	4:29	10° 13.538'	124° 27.392'	10° 13.561'	124° 27.010'	1.735
1	4	11	29-May-06	3:14	5:20	10° 13.662'	124° 28.604'	10° 13.617'	124° 29.210'	3.915
1	5*	17	29-May-06	3:18	5:34	10° 10.590'	124° 28.704'	10° 10.289'	124° 28.975'	3.300
1	6	Control	29-May-06	4:09	5:13	10° 07.591'	124° 29.150'	10° 08.421'	124° 29.738'	3.130
2	8*	24	30-May-06	3:54	5:10	10° 09.317’	124° 29.315’	10° 09.079’	124° 29.676’	0.000
2	9	25	30-May-06	2:45	5:30	10° 09.120’	124° 30.226’	10° 09.687’	124° 31.055’	10.525
2	10	18	30-May-06	4:00	5:30	10° 10.436’	124° 30.894’	10° 10.999’	124° 31.371’	2.410
2	11	23	30-May-06	2:19	4:12	10° 08.387’	124° 27.777’	10° 08.993’	124° 27.186’	1.920
2	12	28	30-May-06	2:44	4:28	10° 07.051’	124° 27.349’	10° 07.117’	124° 26.505’	1.275
2	13	Control	30-May-06	3:25	4:45	10° 06.528’	124° 29.439’	10° 06.966’	124° 29.905’	1.330
1	7	20	30-May-06	3:40	5:30	10° 12.212’	124° 32.487’	10° 11.760’	124° 32.444’	3.300
3	14	29	31-May-06	4:19	5:00	10° 06.197’	124° 30.485’	10° 06.341’	124° 30.101’	0.620
3	15	31	31-May-06	4:33	5:45	10° 05.318’	124° 31.178’	10° 04.830’	124° 31.021’	0.690
3	16	30	31-May-06	3:47	4:56	10° 05.558’	124° 29.298’	10° 06.473’	124° 29.598’	1.440
3	17	Control	31-May-06	3:35	5:00	10° 06.612’	124° 29.495’	10° 06.722’	124° 29.573’	0.700
3	18	28	31-May-06	3:12	5:30	10° 06.968’	124° 27.672’	10° 06.543’	124° 27.984’	1.890
3	20	25	31-May-06	3:48	5:00	10° 09.366’	124° 30.447’	10° 09.250’	124° 29.995’	0.320
4	21	9	01-Jun-06	2:45	4:30	10° 11.312’	124° 24.768’	10° 11.196’	124° 25.059’	1.205
4	22	8	01-Jun-06	2:43	3:36	10° 12.547’	124° 23.717’	10° 12.070’	124° 23.020’	2.930
4	23	14	01-Jun-06	2:59	4:05	10° 11.759’	124° 22.519’	10° 11.372’	124° 21.987’	2.490
4	24	7	01-Jun-06	3:08	4:31	10° 12.002’	124° 22.024’	10° 11.408’	124° 21.775’	2.615
4	25	16	01-Jun-06	2:56	5:00	10° 11.820’	124° 25.715’	10° 12.136’	124° 25.653’	4.490
4	26	15	01-Jun-06	2:31	4:30	10° 10.519’	124° 24.927’	10° 10.364’	124° 25.162’	2.790
5	28	16	02-Jun-06	2:59	4:35	10° 11.690’	124° 27.914’	10° 11.254’	124° 28.102’	6.325
5	30	11	02-Jun-06	3:36	4:49	10° 12.423’	124° 28.309’	10° 12.052’	124° 28.075’	1.305
5	31	18	02-Jun-06	3:42	5:21	10° 09.906’	124° 30.575’	10° 09.988’	124° 31.258’	3.615
5	32	17	02-Jun-06	3:28	4:45	10° 10.522’	124° 29.629’	10° 10.450’	124° 29.301’	5.325
5	33	24	02-Jun-06	3:11	4:30	10° 09.418’	124° 29.196’	10° 09.437’	124° 28.820’	3.030
5	34	Control	02-Jun-06	4:17	5:50	10° 06.814’	124° 29.737’	10° 06.989’	124° 29.665’	1.065
6	5	5	03-Jun-06	4:24	5:00	10° 10.760’	124° 29.013’	10° 10.685’	124° 28.696’	2.075
6	8	8	03-Jun-06	4:38	5:35	10° 09.721’	124° 29.395’	10° 09.666’	124° 29.655’	2.265
6	27	27	03-Jun-06	3:56	5:00	10° 07.268’	124° 25.897’	10° 07.155’	124° 26.239’	0.615
6	29	10	03-Jun-06	4:47	5:43	10° 11.763’	124° 27.909’	10° 12.156’	124° 28.240’	0.970
6	19	22	03-Jun-06	3:23	4:30	10° 09.486’	124° 23.940’	10° 09.510’	124° 23.670’	6.645
6	35	Control	03-Jun-06	4:26	5:00	10° 06.814’	124° 29.096’	10° 07.193’	124° 29.004’	1.100

Note: * line damaged and stations repeated

APPENDIX 13. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN DANAJON BANK IN YEAR 2008

Day	Station No.	Grid No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	2	9	02-Jun-08	2:34	5:00	10° 12.761'	124° 25.010'	10° 13.366'	124° 24.971'	2.295
1	3	10	02-Jun-08	4:05	5:15	10° 13.272'	124° 27.987'	10° 13.572'	124° 27.487'	5.260
1	1	16	02-Jun-08	3:00		10° 11.201'	124° 27.184'	10° 11.331'	124° 26.590'	2.130
1	5	17	02-Jun-08	3:25	4:30	10° 10.850'	124° 28.948'	10° 10.570'	124° 28.541'	1.055
1	11	23	02-Jun-08	3:57	5:20	10° 08.421'	124° 27.800'	10° 08.057'	124° 27.280'	0.720
1	6	Control	02-Jun-08	4:19	5:54	10° 07.593'	124° 29.158'	10° 07.975'	124° 28.663'	0.825
2	12	28	03-Jun-08	3:25	5:10	10° 07.176'	124° 27.400'	10° 07.778'	124° 27.756'	1.750
2	13	Control	03-Jun-08	3:50	5:06	10° 06.579'	124° 29.557'	10° 07.326'	124° 29.895'	1.350
2	35	Control	03-Jun-08	4:03	5:08	10° 06.525'	124° 29.972'	10° 07.139'	124° 29.662'	0.985
2	10	18	03-Jun-08	4:30		10° 10.306'	124° 30.958'	10° 10.83'	124° 31.211'	0.080
2	8	24	03-Jun-08	3:50		10° 09.320'	124° 29.090'	10° 09.540'	124° 29.390'	0.925
2	9	25	03-Jun-08	4:15		10° 09.687'	124° 30.961'	10° 09.370'	124° 30.340'	0.430
2	7	20	03-Jun-08	4:50	5:20	10° 10.860'	124° 32.307'	10° 11.57'	124° 31.648'	0.560
3	27	27	04-Jun-08	2:30	5:10	10° 06.657'	124° 25.696'	10° 07.070'	124° 26.053'	3.005
3	18	28	04-Jun-08	2:56	5:20	10° 06.483'	124° 27.508'	10° 06.568'	124° 28.103'	4.165
3	20	25	04-Jun-08	3:45	4:55	10° 09.408'	124° 30.495'	10° 09.050'	124° 29.837'	1.280
3	17	Control	04-Jun-08	3:40		10° 07.084'	124° 29.904'	10° 07.084'	124° 29.904'	0.585
3	14	29	04-Jun-08	4:10	4:40	10° 06.199'	124° 30.474'	10° 06.092'	124° 30.545'	0.250
3	16	30	04-Jun-08	4:20	5:00	10° 05.822'	124° 29.834'	10° 05.882'	124° 29.219'	0.450
3	15	31	04-Jun-08	4:32	4:50	10° 05.376'	124° 31.114'	10° 05.781'	124° 30.954'	0.830
4	23	14	05-Jun-08	3:08	5:10	10° 11.814'	124° 22.827'	10° 12.118'	124° 22.365'	0.555
4	24	7	05-Jun-08	3:21	5:00	10° 11.872'	124° 22.246'	10° 11.372'	124° 21.871'	0.870
4	22	8	05-Jun-08	3:45	5:10	10° 12.458'	124° 23.743'	10° 12.661'	124° 23.659'	1.455
4	19	22	05-Jun-08	2:36		10° 09.525'	124° 23.826'	10° 09.430'	124° 23.349'	0.820
4	25	9	05-Jun-08	3:30		10° 12.167'	124° 25.826'	10° 11.838'	124° 25.595'	1.120
5	32	17	06-Jun-08	4:13		10° 11.173'	124° 29.650'	10° 10.517'	124° 29.430'	0.500
5	29	11	06-Jun-08	3:55		10° 12.177'	124° 28.012'	10° 11.840'	124° 28.334'	1.045
5	28	16	06-Jun-08	3:40		10° 11.971'	124° 27.717'	10° 11.450'	124° 27.823'	1.905
5	33	24	06-Jun-08	3:59	4:40	10° 09.535'	124° 28.788'	10° 09.335'	124° 29.151'	3.700
5	34	Control	06-Jun-08	3:34	4:55	10° 07.163'	124° 28.883'	10° 07.751'	124° 28.812'	1.985
5	31	18	06-Jun-08	4:20	5:05	10° 09.660'	124° 30.509'	10° 09.935'	124° 30.436'	1.055
6	4	11	07-Jun-08	3:18	4:30	10° 13.510'	124° 29.434'	10° 13.580'	124° 28.770'	2.490
6	21	16	07-Jun-08	1:35	4:45	10° 12.568'	124° 24.448'	10° 11.328'	124° 24.856'	1.510
6	26	15	07-Jun-08	1:20	4:55	10° 10.584'	124° 24.410'	10° 10.296'	124° 24.910'	1.510
6	30	10	07-Jun-08	3:00	5:00	10° 12.873'	124° 27.923'	10° 12.659'	124° 28.320'	1.095

Note: (C) Control stations; *Stations repeated

APPENDIX 14. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN DANAJON BANK IN YEAR 2010

Day	Station No.	Grid No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	1	16	13-May-10	3:11	4:30	10° 11.812"	124° 27.327"	10° 11.378"	124° 26.827"	0.130
1	2	9	13-May-10	2:47	4:32	10° 12.825"	124° 25.553"	10° 13.292"	124° 25.580"	0.710
1	3	10	13-May-10	3:31	5:13	10° 13.187"	124° 28.130"	10° 13.302"	124° 27.433"	2.230
1	4	11	13-May-10	3:45	5:20	10° 13.355"	124° 29.292"	10° 13.357"	124° 28.538"	2.827
1	5	17	13-May-10	4:26	6:11	10° 10.138"	124° 29.067"	10° 10.033"	124° 29.658"	0.415
1	6	Control	13-May-10	3:26	4:16	10° 07.007"	124° 29.002"	10° 07.585"	124° 28.908"	0.560
1	7	20	13-May-10	4:56	6:47	10° 11.182"	124° 31.358"	10° 11.222"	124° 32.075"	0.785
2	8	24	14-May-10	4:18	5:56	10° 09.260"	124° 29.525"	10° 09.930"	124° 29.457"	0.050
2	9	25	14-May-10	4:40	5:15	10° 09.053"	124° 30.342"	10° 09.713"	124° 30.708"	0.815
2	10	18	14-May-10	3:46	4:53	10° 10.055"	124° 30.538"	10° 10.770"	124° 30.588"	0.715
2	11	23	14-May-10	2:44	5:10	10° 08.202"	124° 27.465"	10° 07.752"	124° 26.987"	0.845
2	13	Control	14-May-10	3:14	4:50	10° 07.245"	124° 29.548"	10° 07.530"	124° 28.825"	0.475
2	19	22	14-May-10	3:30	4:50	10° 09.427"	124° 24.013"	10° 10.292"	124° 24.022"	3.710
3	12	28	15-May-10	2:56	5:00	10° 07.680"	124° 28.107"	10° 07.105"	124° 27.607"	0.165
3	14	29	15-May-10	4:31	5:00	10° 06.180"	124° 30.470"	10° 06.847"	124° 30.703"	0.660
3	15	31	15-May-10	4:36	5:00	10° 05.962"	124° 30.765"	10° 05.757"	124° 31.353"	0.720
3	16	30	15-May-10	4:24	5:00	10° 05.750"	124° 29.643"	10° 06.150"	124° 29.027"	0.405
3	18	28	15-May-10	4:25	5:58	10° 07.245"	124° 28.330"	10° 06.802"	124° 27.728"	0.300
3	27	27	15-May-10	3:58	4:50	10° 07.162"	124° 26.020"	10° 07.643"	124° 25.520"	0.205
3	35	Control	15-May-10	4:21	6:46	10° 06.498"	124° 29.725"	10° 07.142"	124° 30.302"	0.100
4	21	16	16-May-10	2:51	4:40	10° 12.052"	124° 24.378"	10° 11.552"	124° 24.327"	0.455
4	22	8	16-May-10	3:03	5:00	10° 12.600"	124° 23.738"	10° 13.163"	124° 23.430"	1.845
4	23	14	16-May-10	2:50	5:00	10° 11.958"	124° 22.825"	10° 12.480"	124° 22.763"	0.630
4	24	7	16-May-10	2:42	5:10	10° 11.782"	124° 22.195"	10° 12.020"	124° 21.675"	1.410
4	25	9	16-May-10	3:10	5:20	10° 12.648"	124° 25.517"	10° 12.172"	124° 25.717"	1.705
4	26	15	16-May-10	2:36	4:45	10° 10.728"	124° 24.453"	10° 10.202"	124° 24.453"	0.960
4	34	Control	16-May-10	3:30	5:16	10° 08.083"	124° 28.920"	10° 07.480"	124° 29.168"	1.775
5	17	Control	17-May-10	3:55	4:45	10° 07.123"	124° 29.638"	10° 07.435"	124° 30.040"	1.710
5	29	11	17-May-10	2:42	4:50	10° 12.110"	124° 28.022"	10° 12.137"	124° 27.382"	0.340
5	30	10	17-May-10	2:52	4:55	10° 12.750"	124° 27.897"	10° 12.955"	124° 27.297"	0.495
5	31	18	17-May-10	2:31	4:40	10° 09.480"	124° 30.458"	10° 09.697"	124° 30.885"	0.740
5	33	24	17-May-10	3:15	4:40	10° 09.572"	124° 29.285"	10° 09.042"	124° 29.353"	0.880
6	20	25	18-May-10	4:38	5:31	10° 09.550"	124° 30.768"	10° 08.890"	124° 30.595"	1.815
6	28	16	18-May-10	2:40	4:45	10° 11.128"	124° 27.110"	10° 11.582"	124° 27.593"	1.065
6	32	17	18-May-10	3:26	5:10	10° 10.770"	124° 29.178"	10° 10.385"	124° 29.668"	0.235

APPENDIX 15. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE BASELINE DATA COLLECTION IN LANUZA BAY IN YEAR 2004

Day	Station No.	Grid No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	1	20	08-Aug-04	2:06	4:30	9° 24.544'	126° 04.368'	9° 25.046'	126° 03.573'	5.810
1	2	16	08-Aug-04	1:55	4:40	9° 25.041'	126° 03.321'	9° 25.538'	126° 03.199'	10.800
1	3	4	08-Aug-04	2:40	5:30	9° 31.057'	126° 04.447'	9° 31.738'	126° 04.966'	17.300
1	4	26	08-Aug-04	2:56	5:30	9° 20.402'	126° 08.042'	9° 19.803'	126° 07.877'	4.430
1	5	22	08-Aug-04	2:39	4:50	9° 21.640'	126° 06.895'	9° 21.158'	126° 06.865'	7.900
1	6	5	08-Aug-04	3:00	5:55	9° 30.958'	126° 06.044'	9° 31.637'	126° 07.118'	2.550
2	7	17	09-Aug-04	2:31	4:46	9° 25.081'	126° 04.007'	9° 25.593'	126° 04.049'	2.660
2	8	22	09-Aug-04	4:07	6:17	9° 20.989'	126° 04.422'	9° 21.357'	126° 04.888'	2.150
2	9	26	09-Aug-04	3:37	5:52	9° 20.989'	126° 08.204'	9° 21.129'	126° 08.157'	7.020
2	10	21	09-Aug-04	3:02	5:19	9° 23.996'	126° 08.138'	9° 24.867'	126° 08.243'	4.050
2	11	Control 1	09-Aug-04	3:51	5:00	9° 33.838'	126° 00.439'	9° 34.433'	125° 59.928'	3.750
2	12	Control 2	09-Aug-04	3:41	5:20	9° 32.835'	126° 00.034'	9° 32.793'	125° 59.508'	4.350
3	13	15	12-Aug-04	2:47	4:43	9° 26.989'	126° 05.739'	9° 27.757'	126° 06.194'	0.800
3	14	12	12-Aug-04	3:12	5:10	9° 27.079'	125° 59.588'	9° 27.061'	126° 00.243'	1.520
3	15	18	12-Aug-04	2:26	4:25	9° 24.986'	126° 05.941'	9° 25.704'	126° 06.256'	8.330
3	16	19	12-Aug-04	3:17	5:06	9° 25.354'	126° 07.697'	9° 25.599'	126° 08.410'	8.230
3	17	6	12-Aug-04	3:59	5:24	9° 30.731'	125° 57.341'	9° 30.682'	125° 58.023'	2.900
3	18	12	12-Aug-04	3:35	5:30	9° 29.003'	125° 58.565'	9° 28.962'	125° 59.164'	0.610
4	19	Control 3	13-Aug-04	4:03	5:14	9° 33.611'	126° 00.856'	9° 32.817'	126° 01.099'	5.440
4	20	2	13-Aug-04	3:39	5:33	9° 31.408'	126° 00.817'	9° 30.624'	126° 00.910'	6.500
4	21	9	13-Aug-04	4:21	5:26	9° 30.798'	126° 04.311'	9° 30.536'	126° 05.181'	6.160
4	22	14	13-Aug-04	3:26	4:46	9° 28.840'	126° 04.351'	9° 29.337'	126° 04.970'	4.240
4	23	8	13-Aug-04	3:58	5:10	9° 30.634'	126° 02.734'	9° 30.068'	126° 03.671'	4.170
4	24	Control 4	13-Aug-04	3:56	5:30	9° 32.958'	126° 00.887'	9° 32.621'	126° 01.335'	3.880
5	25	6	14-Aug-04	3:59	5:15	9° 29.595'	125° 57.009'	9° 29.586'	125° 57.498'	1.720
5	26	12	14-Aug-04	3:18	4:45	9° 27.174'	126° 00.993'	9° 27.710'	126° 01.443'	4.640
5	27	13	14-Aug-04	2:56	5:34	9° 27.981'	126° 02.560'	9° 28.638'	126° 02.753'	6.830
5	28	8	14-Aug-04	3:02	5:39	9° 28.586'	126° 01.760'	9° 29.068'	126° 02.160'	2.410
5	29	14	14-Aug-04	2:48	5:28	9° 28.149'	126° 03.707'	9° 28.009'	126° 03.320'	4.640
5	30	6	14-Aug-04	3:39	5:23	9° 29.347'	125° 58.238'	9° 29.178'	125° 59.050'	8.020
6	31	26	17-Aug-04	4:28	5:42	9° 19.861'	126° 08.010'	9° 20.628'	126° 08.401'	0
6	32	Control 5	17-Aug-04	4:10	5:30	9° 33.981'	126° 02.457'	9° 34.434'	126° 02.524'	3.670
6	33	24	17-Aug-04	3:05	5:15	9° 25.551'	126° 07.255'	9° 26.316'	126° 07.644'	0.170
6	34	14	17-Aug-04	2:50	6:15	9° 27.053'	126° 04.032'	9° 27.684'	126° 04.086'	3.170
6	35	21	17-Aug-04	3:38	5:25	9° 23.053'	126° 09.318'	9° 24.028'	126° 09.141'	6.540
6	36	Control 6	17-Aug-04	4:04	5:10	9° 33.293'	126° 02.021'	9° 34.012'	126° 01.975'	3.550

APPENDIX 16. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN LANUZA BAY IN YEAR 2006

Day	Station No.	Grid No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	1	20	18-Aug-06	2:40	5:00	9° 24.558'	126° 04.381'	9° 25.103'	126° 04.854'	9.570
1	2	16	18-Aug-06	2:30	6:00	9° 25.163'	126° 03.381'	9° 25.518'	126° 03.940'	2.830
1	3	4	18-Aug-06	3:15	5:01	9° 31.115'	126° 04.954'	9° 31.741'	126° 04.824'	10.000
1	4	26	18-Aug-06	3:45	5:35	9° 20.376'	126° 08.123'	9° 20.971'	126° 08.912'	8.470
1	5	22	18-Aug-06	3:20	5:50	9° 21.664'	126° 07.040'	9° 22.269'	126° 08.102'	3.810
1	6	5	18-Aug-06	3:01	5:00	9° 30.996'	126° 06.041'	9° 31.755'	126° 06.387'	9.650
2	7	17	19-Aug-06	3:00	5:55	9° 25.156'	126° 04.078'	9° 25.617'	126° 04.647'	4.410
2	8	22	19-Aug-06	3:30	5:30	9° 21.010'	126° 04.476'	9° 21.416'	126° 05.019'	9.335
2	9	26	19-Aug-06	3:45	5:09	9° 21.155'	126° 08.436'	9° 21.668'	126° 08.692'	0.100
2	10	21	19-Aug-06	4:03	5:10	9° 24.068'	126° 08.280'	9° 24.945'	126° 08.909'	15.795
2	11	Control 1	19-Aug-06	3:50	5:16	9° 33.656'	126° 00.391'	9° 33.813'	126° 01.158'	3.595
2	12	Control 2	19-Aug-06	3:38	5:10	9° 32.690'	126° 00.215'	9° 32.591'	126° 01.004'	4.010
3	14	12	21-Aug-06	3:15	5:56	9° 27.147'	125° 59.547'	9° 27.871'	125° 59.512'	4.550
3	16	19	21-Aug-06	3:25	5:10	9° 25.369'	126° 07.669'	9° 26.456'	126° 07.771'	5.950
3	15	18	21-Aug-06	3:00	5:25	9° 24.964'	126° 05.949'	9° 25.692'	126° 06.722'	5.530
3	18	12	21-Aug-06	3:40	5:50	9° 29.200'	125° 58.648'	9° 29.940'	125° 58.260'	3.130
3	17	6	21-Aug-06	4:10	5:35	9° 30.360'	125° 57.120'	9° 31.140'	125° 57.300'	2.550
4	13	15	22-Aug-06	3:45	5:10	9° 26.286'	126° 05.469'	9° 25.850'	126° 05.116'	4.720
4	20	2	22-Aug-06	3:29	5:18	9° 31.283'	126° 00.965'	9° 31.846'	126° 01.123'	1.710
4	21	9	22-Aug-06	3:30	5:19	9° 30.831'	126° 04.284'	9° 31.344'	126° 04.536'	2.110
4	22	14	22-Aug-06	3:30	5:33	9° 28.952'	126° 04.422'	9° 29.171'	126° 04.947'	5.060
4	23	8	22-Aug-06	3:45	5:04	9° 31.230'	126° 02.531'	9° 31.901'	126° 03.202'	2.570
4	24	Control 4	22-Aug-06	3:54	5:10	9° 32.831'	126° 01.019'	9° 33.388'	126° 01.365'	6.640
5	27	13	23-Aug-06	4:22	5:37	9° 28.050'	126° 02.639'	9° 28.863'	126° 03.479'	3.090
5	26	12	23-Aug-06	3:54	5:38	9° 27.046'	126° 00.759'	9° 27.490'	126° 01.104'	1.950
5	28	8	23-Aug-06	4:14	5:57	9° 28.607'	126° 01.776'	9° 29.415'	126° 01.709'	3.220
5	29	14	23-Aug-06	4:33	5:40	9° 28.169'	126° 03.749'	9° 28.556'	126° 04.087'	3.210
5	25	6	23-Aug-06	4:30	5:23	9° 28.799'	125° 58.793'	9° 29.636'	125° 58.938'	3.400
5	30	6	23-Aug-06	4:00	5:35	9° 29.400'	125° 56.880'	9° 29.460'	125° 57.420'	4.620
6	19	Control 3	26-Aug-06	4:24	5:45	9° 33.589'	126° 00.792'	9° 33.306'	126° 01.539'	6.530
6	31	26	26-Aug-06	4:03	5:02	9° 20.011'	126° 07.984'	9° 20.844'	126° 08.497'	2.970
6	33	24	26-Aug-06	3:08	5:30	9° 25.385'	126° 07.291'	9° 26.300'	126° 07.539'	5.310
6	35	21	26-Aug-06	3:39	5:38	9° 23.104'	126° 09.123'	9° 23.702'	126° 09.030'	6.250
6	36	Control 6	26-Aug-06	4:04	5:50	9° 34.227'	126° 01.586'	9° 34.574'	126° 01.944'	5.350
6	32	Control 5	26-Aug-06	3:54	6:04	9° 33.317'	126° 01.975'	9° 33.319'	126° 02.226'	6.630
7	34	14	27-Aug-06	3:50	5:11	9° 27.720'	126° 03.300'	9° 28.260'	126° 04.260'	11.770

APPENDIX 17. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN LANUZA BAY IN YEAR 2008

Day	Station No.	Grid No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	3	4	24-Aug-08	3:58	6:00	9° 30.512'	126° 05.463'	9° 31.232'	126° 05.044'	3.380
1	4	26	24-Aug-08	3:33	5:01	9° 20.390'	126° 08.019'	9° 21.368'	126° 08.770'	2.250
1	5	22	24-Aug-08	3:14	5:00	9° 21.655'	126° 06.912'	9° 22.373'	126° 06.438'	6.720
1	6	5	24-Aug-08	4:06	5:00	9° 30.932'	126° 06.091'	9° 31.532'	126° 05.820'	5.340
1	8	22	24-Aug-08	2:54	5:00	9° 21.026'	126° 04.488'	9° 20.545'	126° 03.648'	2.840
1	21	9	24-Aug-08	3:50	5:00	9° 30.016'	126° 04.790'	9° 30.136'	126° 04.190'	5.020
1	23	8	24-Aug-08	3:42	5:00	9° 29.522'	126° 03.842'	9° 28.717'	126° 03.383'	4.660
2	17	6	25-Aug-08	4:22	5:00	9° 30.288'	125° 57.357'	9° 30.752'	125° 57.657'	5.170
2	18	12	25-Aug-08	3:55	5:00	9° 28.997'	125° 58.583'	9° 29.503'	125° 59.070'	2.550
2	25	6	25-Aug-08	4:00	5:00	9° 29.340'	125° 58.253'	9° 29.823'	125° 58.665'	4.400
2	30	6	25-Aug-08	4:10	5:00	9° 29.657'	125° 57.490'	9° 30.208'	125° 57.270'	7.840
2	11	Control 1	25-Aug-08	3:33	5:00	9° 33.625'	126° 00.530'	9° 34.468'	126° 01.445'	8.700
2	12	Control 2	25-Aug-08	3:18	5:00	9° 32.940'	125° 59.898'	9° 32.460'	125° 59.418'	8.380
2	19	Control 3	25-Aug-08	3:43	4:48	9° 33.545'	126° 00.890'	9° 33.880'	126° 01.922'	14.140
3	1	20	26-Aug-08	3:05	4:45	9° 24.513'	126° 04.375'	9° 25.061'	126° 05.403'	9.160
3	2	16	26-Aug-08	4:01	5:10	9° 25.035'	126° 03.350'	9° 25.208'	126° 04.487'	7.730
3	13	15	26-Aug-08	3:00	5:00	9° 27.287'	126° 05.712'	9° 26.807'	126° 05.232'	1.740
3	15	18	26-Aug-08	3:32	4:55	9° 24.863'	126° 06.015'	9° 25.280'	126° 07.292'	2.410
3	22	14	26-Aug-08	3:00	5:00	9° 29.002'	126° 04.775'	9° 28.004'	126° 05.062'	7.080
3	29	14	26-Aug-08	3:00	5:00	9° 27.528'	126° 04.533'	9° 27.050'	126° 04.053'	5.930
3	34	14	26-Aug-08	3:12	5:00	9° 27.210'	126° 03.932'	9° 26.730'	126° 03.452'	3.960
4	9	26	27-Aug-08	2:59	5:20	9° 20.637'	126° 08.337'	9° 21.747'	126° 08.525'	3.870
4	20	2	27-Aug-08	3:00	5:00	9° 31.952'	125° 59.958'	9° 30.993'	126° 00.093'	4.160
4	31	26	27-Aug-08	3:10	4:15	9° 19.962'	126° 08.027'	9° 20.200'	126° 09.127'	3.080
4	35	21	27-Aug-08	3:02	5:00	9° 22.817'	126° 09.868'	9° 22.330'	126° 09.045'	11.540
4	24	Control 4	27-Aug-08	3:00	5:00	9° 33.437'	126° 01.485'	9° 32.957'	126° 00.678'	6.240
4	32	Control 5	27-Aug-08	3:00	5:00	9° 35.330'	126° 01.370'	9° 34.323'	126° 01.407'	9.035
4	36	Control 6	27-Aug-08	3:00	5:00	9° 34.128'	126° 02.020'	9° 32.805'	126° 01.662'	11.480
5	10	21	28-Aug-08	3:29	5:03	9° 23.982'	126° 08.073'	9° 24.805'	126° 08.873'	12.660
5	14	12	28-Aug-08	3:00	5:00	9° 27.149'	126° 00.210'	9° 26.069'	125° 59.628'	1.630
5	16	19	28-Aug-08	3:14	5:00	9° 25.427'	126° 07.632'	9° 24.947'	126° 07.153'	3.870
5	26	12	28-Aug-08	3:00	5:00	9° 27.695'	126° 01.065'	9° 27.815'	126° 00.165'	2.040
5	27	13	28-Aug-08	3:00	5:00	9° 28.063'	126° 02.593'	9° 27.178'	126° 02.115'	5.350
5	28	8	28-Aug-08	3:00	5:00	9° 28.090'	126° 01.880'	9° 28.263'	126° 02.125'	2.920
5	33	24	28-Aug-08	3:06	5:00	9° 25.608'	126° 07.178'	9° 25.129'	126° 06.698'	0.790
6	7	17	31-Aug-08	3:00	5:00	9° 25.250'	126° 03.650'	9° 25.543'	126° 04.160'	5.860

APPENDIX 18. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN LANUZA BAY IN YEAR 2010

Day	Station No.	Grid No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	3	4	5-Aug-10	3:12	5:00	9° 31.795'	126° 5.450'	9° 32.697'	126° 5.950'	2.495
1	4	26	5-Aug-10	3:25	5:02	9° 20.390'	126° 8.017'	9° 21.055'	126° 8.767'	11.575
1	5	22	5-Aug-10	3:15	5:17	9° 21.655'	126° 6.900'	9° 22.413'	126° 7.367'	1.555
1	6	5	5-Aug-10	3:19	5:10	9° 30.932'	126° 6.083'	9° 29.822'	126° 5.950'	3.830
1	8	22	5-Aug-10	2:45	5:29	9° 21.338'	126° 5.217'	9° 21.027'	126° 4.483'	4.250
1	21	9	5-Aug-10	3:09	5:00	9° 30.295'	126° 4.500'	9° 31.485'	126° 4.500'	8.760
1	23	8	5-Aug-10	3:02	5:00	9° 29.590'	126° 3.400'	9° 30.590'	126° 3.100'	4.065
2	11	Control	6-Aug-10	3:28	5:13	9° 33.418'	126° 0.583'	9° 34.450'	126° 0.883'	4.595
2	12	Control	6-Aug-10	3:19	5:00	9° 32.828'	125° 59.800'	9° 33.277'	125° 59.317'	10.745
2	17	6	6-Aug-10	3:00	5:10	9° 30.298'	125° 57.150'	9° 31.185'	125° 57.000'	4.575
2	18	12	6-Aug-10	3:10	5:00	9° 29.012'	125° 58.617'	9° 29.757'	125° 58.850'	3.405
2	19	Control	6-Aug-10	3:35	5:24	9° 33.038'	126° 1.083'	9° 33.748'	126° 1.300'	8.390
2	25	6	6-Aug-10	3:00	5:00	9° 29.407'	125° 58.150'	9° 30.195'	125° 58.250'	3.710
2	30	6	6-Aug-10	3:10	5:00	9° 29.885'	125° 57.467'	9° 30.437'	125° 57.167'	5.900
3	1	20	7-Aug-10	2:51	4:45	9° 24.253'	126° 4.567'	9° 25.382'	126° 4.783'	8.160
3	2	16	7-Aug-10	3:00	5:00	9° 25.300'	126° 3.200'	9° 25.787'	126° 4.200'	3.995
3	13	15	7-Aug-10	3:00	5:10	9° 27.363'	126° 5.567'	9° 28.427'	126° 5.833'	2.940
3	15	18	7-Aug-10	3:04	5:00	9° 24.842'	126° 5.900'	9° 24.527'	126° 6.900'	6.380
3	22	14	7-Aug-10	2:50	5:00	9° 29.518'	126° 5.100'	9° 30.387'	126° 5.233'	1.020
3	29	14	7-Aug-10	2:35	4:50	9° 27.615'	126° 3.067'	9° 28.428'	126° 2.233'	3.975
3	34	14	7-Aug-10	2:29	5:00	9° 27.102'	126° 3.733'	9° 27.985'	126° 3.617'	3.130
4	9	26	8-Aug-10	3:19	5:00	9° 21.890'	126° 8.533'	9° 22.158'	126° 9.467'	10.635
4	20	2	8-Aug-10	3:00	5:00	9° 30.938'	126° 0.333'	9° 30.672'	126° 1.283'	5.065
4	24	Control	8-Aug-10	3:12	5:00	9° 32.518'	126° 1.167'	9° 32.175'	126° 2.050'	4.160
4	31	26	8-Aug-10	3:12	5:00	9° 20.327'	126° 8.350'	9° 20.088'	126° 9.267'	10.930
4	32	Control	8-Aug-10	3:29	5:20	9° 33.757'	126° 2.583'	9° 34.693'	126° 2.833'	6.030
4	35	21	8-Aug-10	3:03	5:00	9° 23.142'	126° 9.800'	9° 23.462'	126° 10.483'	7.260
4	36	Control	8-Aug-10	3:20	5:00	9° 32.992'	126° 1.867'	9° 33.818'	126° 1.917'	2.915
5	10	21	9-Aug-10	3:30	5:00	9° 24.712'	126° 8.067'	9° 24.140'	126° 8.583'	4.615
5	14	12	9-Aug-10	2:57	5:00	9° 26.238'	125° 59.600'	9° 27.238'	125° 59.700'	7.125
5	16	19	9-Aug-10	3:15	5:00	9° 25.315'	126° 7.817'	9° 25.498'	126° 8.583'	9.270
5	26	12	9-Aug-10	3:12	5:30	9° 27.835'	126° 1.783'	9° 28.790'	126° 2.050'	5.650
5	27	13	9-Aug-10	3:38	5:30	9° 29.168'	126° 2.950'	9° 29.818'	126° 3.633'	4.345
5	28	8	9-Aug-10	3:23	5:30	9° 29.170'	126° 1.717'	9° 29.870'	126° 2.367'	6.840
5	33	24	9-Aug-10	3:00	4:45	9° 25.617'	126° 6.850'	9° 26.617'	126° 6.933'	8.065
6	7	17	10-Aug-10	3:00	5:10	9° 24.545'	126° 4.067'	9° 23.812'	126° 4.400'	7.750

APPENDIX 19. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE BASELINE DATA COLLECTION IN TAWI-TAWI BAY IN YEAR 2004

Day	Station No.	Haul No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	10	1	10-Jul-04	21:30	23:30	4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	8.400
1	10	2	10-Jul-04	23:50		4° 58.425'	119° 50.145'	4° 58.720'	119° 50.212'	9.900
1	12	1	10-Jul-04	22:56		4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	3.650
1	12	2				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	2.600
1	12	3				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	1.700
1	3	1	10-Jul-04	19:50	21:30	5° 02.697'	119° 49.702'	5° 02.668'	119° 49.835'	2.900
1	3	2				5° 02.697'	119° 49.702'	5° 02.668'	119° 49.837'	7.100
1	3	3				5° 02.697'	119° 49.702'	5° 02.668'	119° 49.837'	4.100
1	4	1	10-Jul-04	19:34	20:55	5° 01.290'	119° 51.513'	5° 01.302'	119° 51.650'	2.400
1	4	2	10-Jul-04	21:30	00:35	5° 01.290'	119° 51.513'	5° 00.588'	119° 50.878'	1.850
1	4	3	11-Jul-04	00:52		5° 00.640'	119° 50.927'	5° 01.302'	119° 51.302'	2.580
1	6	1	10-Jul-04	20:00	21:15	5° 03.002'	119° 54.522'	5° 03.137'	119° 54.837'	4.350
1	6	2	10-Jul-04	23:30	00:42	5° 03.002'	119° 54.522'	5° 03.137'	119° 54.837'	3.050
1	6	3				5° 03.002'	119° 54.522'	5° 03.137'	119° 54.837'	1.100
1	8	1	10-Jul-04	19:53	23:10	5° 01.292'	119° 51.183'	5° 01.315'	119° 51.217'	3.000
1	8	2				5° 01.498'	119° 53.302'	5° 01.605'	119° 53.437'	6.050
2	control 1	1	11-Jul-04	22:02	23:10	5° 03.290'	119° 44.398'	5° 03.160'	119° 44.337'	0.500
2	control 1	2	12-Jul-04	00:30	01:30	5° 03.290'	119° 44.398'	5° 03.160'	119° 44.337'	1.400
2	10	1	11-Jul-04	19:59	21:30	4° 58.433'	119° 49.928'	4° 58.452'	119° 49.795'	4.700
2	10	2				4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	1.900
2	10	3				4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	1.300
2	11	1	12-Jul-04	00:00	01:35	4° 57.005'	119° 51.903'	4° 56.977'	119° 51.790'	2.800
2	11	2				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	0.500
2	11	3				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	1.800
2	5	2	12-Jul-04	01:49	03:00	5° 03.300'	119° 53.308'	5° 03.317'	119° 53.502'	1.850
2	5	1	12-Jul-04	00:26	01:45	5° 01.958'	119° 53.248'	5° 02.088'	119° 53.358'	0.600
3	10	1	12-Jul-04	21:25		4° 58.463'	119° 49.815'	4° 58.427'	119° 49.885'	3.900
3	10	2				4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	2.350
3	10	3				4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	4.370
3	11	1				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	1.400
3	11	2				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	2.800
3	2	1	12-Jul-04	19:40	00:26	5° 01.310'	119° 47.512'	5° 01.107'	119° 47.488'	1.050
3	2	2				5° 01.310'	119° 47.512'	5° 01.107'	119° 47.488'	1.100
3	4	1	12-Jul-04	19:40	21:20	5° 01.015'	119° 51.298'	5° 01.302'	119° 51.302'	3.130
3	4	2				5° 01.290'	119° 51.513'	5° 01.302'	119° 51.302'	3.350
3	4	3				5° 01.290'	119° 51.513'	5° 01.302'	119° 51.302'	3.300
3	7	1	12-Jul-04	20:47	00:07	4° 59.802'	119° 51.703'	4° 49.587'	119° 51.700'	1.750
3	7	2	13-Jul-04	00:30		4° 59.802'	119° 54.703'	4° 49.587'	119° 54.700'	2.150
3	7	3				4° 59.802'	119° 54.703'	4° 49.587'	119° 54.700'	0.300
3	8	1	12-Jul-04	20:27		5° 01.495'	119° 53.285'	5° 01.605'	119° 53.437'	4.400
3	8	2				5° 01.498'	119° 53.302'	5° 01.605'	119° 53.437'	8.050
4	11	1	13-Jul-04			4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	2.400
4	11	2				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	2.500
4	11	3				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	8.000
4	12	1	13-Jul-04	21:56		4° 56.452'	119° 54.125'	4° 56.483'	119° 54.232'	1.600
4	12	2				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	1.850
4	12	3				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	5.700
4	2	1	13-Jul-04	19:16		5° 01.305'	119° 51.500'	5° 01.107'	119° 47.488'	4.050
4	2	2				5° 01.310'	119° 47.512'	5° 01.107'	119° 47.488'	2.700
4	4	1	13-Jul-04	20:09		5° 01.300'	119° 51.500'	5° 01.302'	119° 51.302'	4.900
4	4	2			02:53	5° 01.127'	119° 51.348'	5° 01.302'	119° 51.302'	6.800
4	7	1	13-Jul-04	20:57		4° 59.783'	119° 54.678'	4° 49.587'	119° 54.700'	5.000

APPENDIX 19. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE BASELINE DATA COLLECTION IN TAWI-TAWI BAY IN YEAR 2004

Day	Station No.	Haul No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
4	7	2				4° 59.802'	119° 54.703'	4° 49.587'	119° 54.700'	4.400
4	9	1	13-Jul-04		22:20	4° 59.743'	119° 51.502'	4° 59.722'	119° 51.670'	1.620
4	9	2	13-Jul-04			4° 59.875'	119° 51.663'	4° 59.722'	119° 51.670'	1.700
4	9	3				4° 59.743'	119° 51.502'	4° 59.722'	119° 51.670'	1.850
4	9	4				4° 59.743'	119° 51.502'	4° 59.722'	119° 51.670'	1.950
5	10	1	14-Jul-04			4° 58.407'	119° 49.812'	4° 58.427'	119° 49.885'	4.600
5	10	2				4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	5.550
5	10	3				4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	18.800
5	12	1	14-Jul-04			4° 56.520'	119° 54.188'	4° 56.483'	119° 54.232'	3.650
5	12	2				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	3.950
5	12	3				4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	2.750
5	4	1	14-Jul-04		22:30	5° 01.297'	119° 56.303'	5° 01.302'	119° 51.302'	1.250
5	4	2	15-Jul-04		01:00	5° 01.290'	119° 51.513'	5° 01.302'	119° 51.302'	4.900
5	4	3	15-Jul-04		05:00	5° 01.290'	119° 51.513'	5° 01.302'	119° 51.302'	5.850
5	5	1	14-Jul-04		23:11	5° 01.653'	119° 46.483'	5° 03.257'	119° 46.497'	0.900
5	5	2				5° 03.300'	119° 53.308'	5° 03.317'	119° 53.502'	4.290
5	8	1	14-Jul-04			5° 01.498'	119° 53.312'	5° 01.605'	119° 53.437'	11.300
5	9	1	14-Jul-04			4° 59.533'	119° 51.745'	4° 59.722'	119° 51.670'	3.850
5	9	2	14-Jul-04		23:51	4° 59.697'	119° 51.712'	4° 59.868'	119° 51.897'	3.850

APPENDIX 20. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2006

Day	Station No.	Haul No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	4	1	18-Jul-06	18:45	20:30	5° 01.290'	119° 51.513'	5° 01.302'	119° 51.657'	2.085
1	4	2	18-Jul-06	22:45	23:30	5° 01.370'	119° 51.760'	5° 01.360'	119° 51.852'	1.550
1	4	3	19-Jul-06	03:45	05:30	5° 01.465'	119° 51.785'	5° 01.595'	119° 51.868'	11.920
1	6	1	18-Jul-06	20:37	21:30	5° 03.002'	119° 54.522'	5° 03.137'	119° 54.837'	1.990
1	6	2	18-Jul-06	22:16	23:30	5° 03.002'	119° 54.522'	5° 03.137'	119° 54.837'	2.160
1	6	3	19-Jul-06	01:15	02:15	5° 03.002'	119° 54.522'	5° 03.137'	119° 54.837'	0.460
1	3	1	18-Jul-06	18:45	20:45	5° 02.697'	119° 49.702'	5° 02.668'	119° 49.837'	3.330
1	3	2	18-Jul-06	22:15	23:00	5° 02.697'	119° 49.702'	5° 02.668'	119° 49.837'	1.490
1	3	3	19-Jul-06	00:43	01:15	5° 02.697'	119° 49.702'	5° 02.668'	119° 49.837'	3.110
1	10	1	18-Jul-06	21:15	22:00	4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	0.415
1	10	2	18-Jul-06	22:15	23:00	4° 58.433'	119° 49.770'	4° 58.402'	119° 49.650'	1.880
1	10	3	19-Jul-06	00:15	01:00	4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	1.150
2	8	1	25-Jul-06	19:55	20:00	5° 01.498'	119° 53.302'	5° 01.605'	119° 53.437'	0.980
2	8	2	25-Jul-06	21:40	22:30	5° 01.498'	119° 53.302'	5° 01.605'	119° 53.437'	0.740
2	8	3	26-Jul-06	02:10	03:00	5° 01.498'	119° 53.302'	5° 01.605'	119° 53.437'	0
2	10	1	25-Jul-06	21:20	22:00	4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	0.620
2	10	2	25-Jul-06	23:30	01:25	4° 58.433'	119° 49.770'	4° 58.402'	119° 49.650'	0.860
2	10	3	26-Jul-06	03:10	03:15	4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	4.010
2	5	1	25-Jul-06	19:40	20:20	5° 03.300'	119° 53.308'	5° 03.317'	119° 53.502'	0.060
2	5	2	25-Jul-06	23:12	00:15	5° 03.300'	119° 53.308'	5° 03.317'	119° 53.502'	0
2	5	3	26-Jul-06	02:40	03:45	5° 03.300'	119° 53.308'	5° 03.317'	119° 53.502'	0
2	11	1	25-Jul-06	04:10	04:18	4° 57.005'	119° 51.903'	4° 56.483'	119° 54.232'	1.270
2	11	2	25-Jul-06	05:10	05:15	4° 57.005'	119° 51.903'	4° 56.483'	119° 54.232'	1.100
2	11	3	26-Jul-06	06:10	06:15	4° 57.005'	119° 51.903'	4° 56.483'	119° 54.232'	0.670
3	7	1	26-Jul-06	20:40	21:00	4° 59.802'	119° 54.703'	4° 49.587'	119° 54.700'	1.910
3	7	2	26-Jul-06	22:40	23:00	4° 59.802'	119° 54.703'	4° 49.587'	119° 54.700'	1.190
3	7	3	27-Jul-06	05:16	06:00	4° 59.802'	119° 54.703'	4° 49.587'	119° 54.700'	1.380
3	11	1	26-Jul-06	20:00	21:00	4° 57.005'	119° 51.903'	4° 56.483'	119° 54.232'	2.680
3	11	2	26-Jul-06	00:15	01:30	4° 57.005'	119° 51.903'	4° 56.483'	119° 54.232'	3.450
3	11	3	27-Jul-06	02:45	04:00	4° 57.005'	119° 51.903'	4° 56.483'	119° 54.232'	2.540
3	8	1	27-Jul-06	02:10	03:00	4° 57.005'	119° 51.903'	4° 56.483'	119° 54.232'	0
3	8	2	27-Jul-06	03:10	04:00	4° 57.005'	119° 51.903'	4° 56.483'	119° 54.232'	0
3	8	3	27-Jul-06	04:10	05:00	5° 01.498'	119° 53.302'	5° 01.605'	119° 53.437'	1.810
3	2	1	26-Jul-06	19:00	21:00	5° 01.310'	119° 47.512'	5° 01.107'	119° 47.488'	2.140
3	2	2	26-Jul-06	22:15	00:50	5° 01.310'	119° 47.512'	5° 01.107'	119° 47.488'	1.230
3	2	3	27-Jul-06	03:00	04:00	5° 01.328'	119° 47.573'	5° 01.458'	119° 47.445'	1.980
3	4	1	26-Jul-06	22:05	23:05	5° 01.272'	119° 51.412'	5° 01.308'	119° 51.208'	1.800
3	4	2	27-Jul-06	00:05	01:00	5° 01.370'	119° 51.760'	5° 01.360'	119° 51.852'	1.240
3	4	3	27-Jul-06	04:45	05:45	5° 01.465'	119° 51.785'	5° 01.595'	119° 51.868'	0.550
3	10	1	26-Jul-06	20:15	21:00	4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	2.100
3	10	2	26-Jul-06	22:15	23:00	4° 58.433'	119° 49.770'	4° 58.402'	119° 49.650'	2.030
3	10	3	27-Jul-06	03:15	04:30	4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	1.860
4	2	1	27-Jul-06	18:45	19:15	5° 01.310'	119° 47.512'	5° 01.107'	119° 47.488'	2.970
4	2	2	27-Jul-06	20:40	22:00	5° 01.310'	119° 47.512'	5° 01.107'	119° 47.488'	1.980
4	2	3	28-Jul-06	05:15	06:30	5° 01.310'	119° 47.512'	5° 01.107'	119° 47.488'	3.020
4	12	1	27-Jul-06	22:15	23:30	4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	1.030
4	12	2	28-Jul-06	00:10	01:30	4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	0
4	12	3	28-Jul-06	03:15	04:10	4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	6.210
4	7	1	27-Jul-06	21:15	22:30	4° 59.802'	119° 54.703'	4° 49.587'	119° 54.700'	5.950
4	7	2	28-Jul-06	00:30	01:40	4° 59.802'	119° 54.703'	4° 49.587'	119° 54.700'	5.000
4	7	3	28-Jul-06	04:10	05:00	4° 59.802'	119° 54.703'	4° 49.587'	119° 54.700'	5.880
4	11	1	28-Jul-06							2.650

APPENDIX 20. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2006

Day	Station No.	Haul No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
4	11	2	28-Jul-06	24:00	01:00	4° 57.023'	119° 51.868'	4° 56.848'	119° 51.730'	3.840
4	11	3	28-Jul-06	04:15	04:00	4° 57.088'	119° 51.865'	4° 57.298'	119° 51.945'	1.140
4	9	1	27-Jul-06	10:35	20:35	4° 59.743'	119° 51.502'	4° 59.722'	119° 51.670'	0.450
4	9	2	27-Jul-06	21:40	23:50	4° 59.743'	119° 51.502'	4° 59.722'	119° 51.670'	1.140
4	9	3	28-Jul-06	04:10	05:10	4° 59.743'	119° 51.502'	4° 59.722'	119° 51.670'	2.760
4	4	1	27-Jul-06	20:15	21:00	5° 01.290'	119° 51.513'	5° 01.302'	119° 51.657'	2.990
4	4	2	27-Jul-06	22:15	23:00	5° 01.370'	119° 51.760'	5° 01.360'	119° 51.852'	2.130
4	4	3	28-Jul-06	01:20	02:00	5° 01.465'	119° 51.785'	5° 01.595'	119° 51.868'	1.530
5	5	1	28-Jul-06	19:40	20:30	5° 03.300'	119° 53.308'	5° 03.317'	119° 53.502'	0.625
5	5	2	28-Jul-06	21:10	22:30	5° 03.300'	119° 53.308'	5° 03.317'	119° 53.502'	0.330
5	5	3	29-Jul-06	02:12	03:00	5° 03.300'	119° 53.308'	5° 03.317'	119° 53.502'	0
5	12	1	28-Jul-06	23:40	00:40	4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	0
5	12	2	29-Jul-06	03:30	02:45	4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	1.650
5	12	3	29-Jul-06	04:15	05:00	4° 56.458'	119° 54.197'	4° 56.483'	119° 54.232'	1.950
5	9	1	28-Jul-06	21:00	21:10	4° 59.743'	119° 51.502'	4° 59.722'	119° 51.670'	2.275
5	9	2	29-Jul-06	00:30	01:15	4° 59.743'	119° 51.502'	4° 59.722'	119° 51.670'	6.125
5	9	3	29-Jul-06	04:10	04:20	4° 59.743'	119° 51.502'	4° 59.722'	119° 51.670'	0.650
5	10	1	28-Jul-06	21:22	22:12	4° 58.433'	119° 49.770'	4° 58.402'	119° 49.650'	0
5	10	2	29-Jul-06	00:15	00:20	4° 58.433'	119° 49.770'	4° 58.402'	119° 49.650'	0.750
5	10	3	29-Jul-06	02:10	02:15	4° 58.443'	119° 49.840'	4° 58.427'	119° 49.885'	0.700
5	8	1	28-Jul-06	20:10	21:00	5° 01.498'	119° 53.302'	5° 01.605'	119° 53.437'	0
5	8	2	28-Jul-06	21:45	22:30	5° 01.498'	119° 53.302'	5° 01.605'	119° 53.437'	0
5	8	3	29-Jul-06	02:30	03:00	5° 01.498'	119° 53.302'	5° 01.605'	119° 53.437'	0.950
5	4	1	28-Jul-06	18:45	18:55	5° 01.290'	119° 51.513'	5° 01.302'	119° 51.657'	2.100
5	4	2	28-Jul-06	21:15	21:20	5° 01.370'	119° 51.760'	5° 01.360'	119° 51.852'	5.150
5	4	3	29-Jul-06	00:30	01:00	5° 01.465'	119° 51.785'	5° 01.595'	119° 51.868'	4.150

APPENDIX 21. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2008

Day	Station No.	Haul No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	3	1	26-Jul-08	1:17	2:17	5° 02.700'	119° 49.705'	5° 02.671'	119° 49.840'	1.835
1	3	2	26-Jul-08	2:48	3:48	5° 02.703'	119° 49.693'	5° 02.666'	119° 49.833'	0.985
1	3	3	26-Jul-08	4:11	5:11	5° 02.683'	119° 49.700'	5° 02.678'	119° 49.851'	2.15
1	4	1	26-Jul-08	1:23	2:23	5° 01.293'	119° 51.535'	5° 01.306'	119° 51.655'	2.3
1	4	2	26-Jul-08	2:51	3:51	5° 01.280'	119° 51.521'	5° 01.293'	119° 51.658'	1.615
1	4	3	26-Jul-08	4:21	5:21	5° 01.296'	119° 51.538'	5° 01.300'	119° 51.641'	1.37
1	6	1	26-Jul-08	1:15	2:15	5° 03.006'	119° 54.525'	5° 03.140'	119° 54.845'	1.05
1	6	2	26-Jul-08	2:45	3:45	5° 03.000'	119° 54.508'	5° 03.146'	119° 54.861'	0.90
1	6	3	26-Jul-08	4:10	5:10	5° 03.000'	119° 54.536'	5° 03.123'	119° 54.868'	1.43
1	8	1	26-Jul-08	1:27	2:27	5° 01.288'	119° 51.181'	5° 01.318'	119° 51.221'	2.04
1	8	2	26-Jul-08	2:59	3:59	5° 01.283'	119° 51.168'	5° 01.331'	119° 51.238'	1.59
1	8	3	26-Jul-08	4:17	5:17	5° 01.298'	119° 51.183'	5° 01.316'	119° 51.233'	0.00
1	10	1	26-Jul-08	1:21	2:21	4° 58.446'	119° 49.836'	4° 58.430'	119° 49.888'	1.79
1	10	2	26-Jul-08	2:53	3:53	4° 58.446'	119° 49.836'	4° 58.416'	119° 49.888'	1.83
1	10	3	26-Jul-08	4:09	5:09	4° 58.446'	119° 49.836'	4° 58.420'	119° 49.888'	1.85
1	12	1	26-Jul-08	1:19	2:19	4° 56.463'	119° 54.201'	4° 56.491'	119° 54.236'	0.95
1	12	2	26-Jul-08	2:49	3:49	4° 56.480'	119° 54.185'	4° 56.485'	119° 54.246'	1.59
1	12	3	26-Jul-08	4:15	5:15	4° 56.466'	119° 54.208'	4° 56.475'	119° 54.233'	1.31
2	10	1	27-Jul-08	1:28	2:28	4° 58.446'	119° 49.836'	4° 58.430'	119° 49.888'	1.84
2	10	2	27-Jul-08	3:01	4:01	4° 58.433'	119° 49.870'	4° 58.430'	119° 49.888'	3.19
2	10	3	27-Jul-08	4:31	5:31	4° 58.450'	119° 49.833'	4° 58.430'	119° 49.888'	0.00
2	11	1	27-Jul-08	1:13	2:13	4° 57.011'	119° 51.908'	4° 56.981'	119° 51.793'	5.12
2	11	2	27-Jul-08	2:45	3:45	4° 57.000'	119° 51.900'	4° 56.983'	119° 51.783'	1.07
2	11	3	27-Jul-08	4:17	5:17	4° 57.028'	119° 51.908'	4° 56.975'	119° 51.791'	2.27
2	8	1	27-Jul-08	1:16	2:16	5° 01.288'	119° 51.181'	5° 01.318'	119° 51.221'	4.36
2	8	2	27-Jul-08	2:49	3:49	5° 01.288'	119° 51.183'	5° 01.316'	119° 51.216'	0.00
2	8	3	27-Jul-08	4:22	5:22	5° 01.283'	119° 51.175'	5° 01.308'	119° 51.225'	1.83
2	5	1	27-Jul-08	1:20	2:20	5° 03.306'	119° 53.311'	5° 03.323'	119° 53.505'	1.46
2	5	2	27-Jul-08	2:53	3:53	5° 03.300'	119° 53.308'	5° 03.316'	119° 53.500'	3.10
2	5	3	27-Jul-08	4:24	5:24	5° 03.308'	119° 53.300'	5° 03.318'	119° 53.508'	0.00
3	2	1	28-Jul-08	1:21	2:21	5° 01.520'	119° 47.315'	5° 01.121'	119° 47.498'	2.32
3	2	2	28-Jul-08	2:57	3:57	5° 01.516'	119° 47.300'	5° 01.125'	119° 47.491'	2.68
3	2	3	28-Jul-08	4:13	5:13	5° 01.516'	119° 47.308'	5° 01.116'	119° 47.491'	1.59
3	10	1	28-Jul-08	1:17	2:17	4° 58.446'	119° 49.836'	4° 58.430'	119° 49.888'	1.55
3	10	2	28-Jul-08	2:49	3:49	4° 58.455'	119° 49.845'	4° 58.408'	119° 49.898'	1.60
3	10	3	28-Jul-08	4:07	5:07	4° 58.450'	119° 49.573'	4° 58.415'	119° 49.893'	3.64
3	11	1	28-Jul-08	1:25	2:25	4° 57.011'	119° 51.908'	4° 56.981'	119° 51.793'	1.08
3	11	2	28-Jul-08	2:58	3:58	4° 57.023'	119° 51.918'	4° 56.963'	119° 51.798'	1.03
3	11	3	28-Jul-08	4:21	5:21	4° 57.031'	119° 51.928'	4° 56.988'	119° 51.808'	1.21
3	7	1	28-Jul-08	1:27	2:27	4° 59.815'	119° 51.718'	4° 49.603'	119° 51.715'	3.60
3	7	2	28-Jul-08	3:03	4:03	4° 59.821'	119° 51.726'	4° 49.608'	119° 51.720'	1.89
3	7	3	28-Jul-08	4:27	5:27	4° 59.828'	119° 51.735'	4° 49.618'	119° 51.730'	0.00
3	8	1	28-Jul-08	1:18	2:18	5° 01.288'	119° 51.181'	5° 01.318'	119° 51.221'	3.05
3	8	2	28-Jul-08	2:51	3:51	5° 01.298'	119° 51.188'	5° 01.325'	119° 51.230'	2.35
3	8	3	28-Jul-08	4:11	5:11	5° 01.310'	119° 51.198'	5° 01.335'	119° 51.240'	1.05
3	4	1	28-Jul-08	1:09	2:09	5° 01.293'	119° 51.535'	5° 01.306'	119° 51.655'	1.59
3	4	2	28-Jul-08	2:42	3:42	5° 01.298'	119° 51.541'	5° 01.315'	119° 51.663'	1.12
3	4	3	28-Jul-08	4:13	5:13	5° 01.305'	119° 51.555'	5° 01.325'	119° 51.670'	1.53
4	2	1	29-Jul-08	1:17	2:17	5° 01.520'	119° 47.315'	5° 01.121'	119° 47.498'	1.96
4	2	2	29-Jul-08	2:48	3:48	5° 01.525'	119° 47.318'	5° 01.130'	119° 47.506'	1.61
4	2	3	29-Jul-08	4:19	5:19	5° 01.535'	119° 47.328'	5° 01.141'	119° 47.515'	1.00
4	4	1	29-Jul-08	1:22	2:22	5° 01.293'	119° 51.535'	5° 01.306'	119° 51.655'	2.92

APPENDIX 21. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2008

Day	Station No.	Haul No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
4	4	2	29-Jul-08	2:53	3:53	5° 01.298'	119° 51.543'	5° 01.311'	119° 51.668'	1.90
4	4	3	29-Jul-08	4:23	5:23	5° 01.305'	119° 51.551'	5° 01.321'	119° 51.678'	1.40
4	9	1	29-Jul-08	1:13	2:13	4° 59.755'	119° 51.515'	4° 59.731'	119° 51.685'	3.31
4	9	2	29-Jul-08	2:42	3:42	4° 59.763'	119° 51.518'	4° 59.738'	119° 51.695'	1.48
4	9	3	29-Jul-08	4:17	5:17	4° 59.770'	119° 51.528'	4° 59.746'	119° 51.705'	1.85
4	11	1	29-Jul-08	1:21	2:21	4° 57.011'	119° 51.908'	4° 56.981'	119° 51.793'	1.69
4	11	2	29-Jul-08	2:54	3:54	4° 57.021'	119° 51.915'	4° 56.988'	119° 51.798'	1.67
4	11	3	29-Jul-08	4:27	5:27	4° 57.028'	119° 51.918'	4° 56.996'	119° 51.808'	1.23
4	12	1	29-Jul-08	1:19	2:19	4° 56.463'	119° 54.201'	4° 56.491'	119° 54.236'	2.02
4	12	2	29-Jul-08	2:52	3:52	4° 56.471'	119° 54.211'	4° 56.498'	119° 54.245'	2.17
4	12	3	29-Jul-08	4:24	5:24	4° 56.481'	119° 54.220'	4° 56.506'	119° 54.255'	1.13
4	7	1	29-Jul-08	1:24	2:24	4° 59.815'	119° 51.718'	4° 49.603'	119° 51.715'	2.60
4	7	2	29-Jul-08	2:53	3:53	4° 59.821'	119° 51.726'	4° 49.611'	119° 51.723'	3.41
4	7	3	29-Jul-08	4:27	5:27	4° 59.835'	119° 51.738'	4° 49.620'	119° 51.730'	1.41
5	4	1	30-Jul-08	1:12	2:12	5° 01.293'	119° 51.535'	5° 01.306'	119° 51.655'	1.61
5	4	2	30-Jul-08	2:43	3:43	5° 01.298'	119° 51.501'	5° 01.311'	119° 51.670'	0.58
5	4	3	30-Jul-08	4:16	5:16	5° 01.308'	119° 51.511'	5° 01.321'	119° 51.676'	0.68
5	9	1	30-Jul-08	1:20	2:20	4° 59.755'	119° 51.515'	4° 59.731'	119° 51.685'	0.72
5	9	2	30-Jul-08	2:51	3:51	4° 59.761'	119° 51.521'	4° 59.736'	119° 51.691'	1.24
5	9	3	30-Jul-08	4:22	5:22	4° 59.770'	119° 51.528'	4° 59.746'	119° 51.698'	0.63
5	10	1	30-Jul-08	1:09	2:09	4° 58.446'	119° 49.836'	4° 58.430'	119° 49.888'	1.45
5	10	2	30-Jul-08	2:41	3:41	4° 58.451'	119° 49.845'	4° 58.438'	119° 49.896'	0.61
5	10	3	30-Jul-08	4:11	5:11	4° 58.460'	119° 49.856'	4° 58.445'	119° 49.905'	0.79
5	12	1	30-Jul-08	1:21	2:21	4° 56.463'	119° 54.201'	4° 56.491'	119° 54.236'	1.06
5	12	2	30-Jul-08	2:57	3:57	4° 56.470'	119° 54.208'	4° 56.501'	119° 54.245'	0.71
5	12	3	30-Jul-08	4:28	5:28	4° 56.478'	119° 54.215'	4° 56.510'	119° 54.255'	0.80
5	8	1	30-Jul-08	1:18	2:18	5° 01.288'	119° 51.181'	5° 01.318'	119° 51.221'	0.79
5	8	2	30-Jul-08	2:51	3:51	5° 01.293'	119° 51.188'	5° 01.325'	119° 51.228'	0.82
5	8	3	30-Jul-08	4:22	5:22	5° 01.303'	119° 51.196'	5° 01.343'	119° 51.241'	0.73
5	5	1	30-Jul-08	1:23	2:23	5° 03.306'	119° 53.311'	5° 03.323'	119° 53.505'	0.81
5	5	2	30-Jul-08	2:54	3:54	5° 03.311'	119° 53.320'	5° 03.338'	119° 53.515'	0.60
5	5	3	30-Jul-08	4:26	5:26	5° 03.318'	119° 53.326'	5° 03.341'	119° 53.523'	0.76

APPENDIX 22. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2010

Day	Station No.	Haul No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
1	3	1	5-Jul-10	1:10	2:10	5° 02.700'	119° 49.705'	5° 02.713'	119° 49.720'	5.915
1	3	2	5-Jul-10	2:40	3:40	5° 02.703'	119° 49.693'	5° 02.705'	119° 49.723'	6.730
1	3	3	5-Jul-10	4:10	5:10	5° 02.683'	119° 49.700'	5° 02.679'	119° 49.696'	2.000
1	4	1	5-Jul-10	1:05	2:05	5° 01.293'	119° 51.535'	5° 01.310'	119° 51.549'	2.425
1	4	2	5-Jul-10	2:35	3:35	5° 01.280'	119° 51.521'	5° 01.275'	119° 51.516'	0.950
1	4	3	5-Jul-10	4:05	5:05	5° 01.296'	119° 51.538'	5° 01.299'	119° 51.541'	0.550
1	6	1	5-Jul-10	1:03	2:03	5° 03.006'	119° 54.525'	5° 03.011'	119° 54.531'	1.730
1	6	2	5-Jul-10	2:33	3:33	5° 03.009'	119° 54.530'	5° 03.016'	119° 54.557'	4.340
1	6	3	5-Jul-10	4:03	5:03	5° 03.014'	119° 54.533'	5° 03.021'	119° 54.542'	4.390
1	8	1	5-Jul-10	1:07	2:07	5° 01.288'	119° 51.181'	5° 01.305'	119° 51.196'	0.900
1	8	2	5-Jul-10	2:37	3:37	5° 01.292'	119° 51.185'	5° 01.309'	119° 51.199'	0.480
1	8	3	5-Jul-10	4:07	5:07	5° 01.283'	119° 51.176'	5° 01.287'	119° 51.194'	0.340
1	10	1	5-Jul-10	1:11	2:11	4° 58.446'	119° 49.836'	4° 58.434'	119° 49.821'	1.700
1	10	2	5-Jul-10	2:41	3:41	4° 58.446'	119° 49.836'	4° 58.439'	119° 49.826'	0.350
1	10	3	5-Jul-10	4:11	5:11	4° 58.451'	119° 49.843'	4° 58.445'	119° 49.831'	0.850
1	12	1	5-Jul-10	1:07	2:07	4° 56.463'	119° 54.201'	4° 56.479'	119° 54.219'	3.650
1	12	2	5-Jul-10	2:37	3:37	4° 56.480'	119° 54.185'	4° 56.483'	119° 54.224'	5.780
1	12	3	5-Jul-10	4:07	5:07	4° 56.466'	119° 54.208'	4° 56.487'	119° 54.229'	2.800
2	10	1	6-Jul-10	1:05	2:05	4° 58.434'	119° 49.821'	4° 58.447'	119° 49.903'	4.620
2	10	2	6-Jul-10	2:35	3:35	4° 58.438'	119° 49.825'	4° 58.452'	119° 49.906'	3.120
2	10	3	6-Jul-10	4:05	5:05	4° 58.441'	119° 49.829'	4° 58.457'	119° 49.913'	3.600
2	11	1	6-Jul-10	1:09	2:09	4° 57.031'	119° 51.926'	4° 56.962'	119° 51.771'	4.550
2	11	2	6-Jul-10	2:39	3:39	4° 57.036'	119° 51.931'	4° 56.967'	119° 51.776'	3.660
2	11	3	6-Jul-10	4:07	5:07	4° 57.026'	119° 51.920'	4° 56.958'	119° 51.765'	4.970
2	8	1	6-Jul-10	1:07	2:07	5° 01.305'	119° 51.196'	5° 01.305'	119° 51.210'	1.710
2	8	2	6-Jul-10	2:37	3:37	5° 01.309'	119° 51.201'	5° 01.311'	119° 51.219'	1.150
2	8	3	6-Jul-10	4:07	5:07	5° 01.299'	119° 51.191'	5° 01.316'	119° 51.224'	1.710
2	5	1	6-Jul-10	1:12	2:12	5° 03.327'	119° 53.336'	5° 03.338'	119° 53.524'	1.020
2	5	2	6-Jul-10	2:42	3:42	5° 03.331'	119° 53.339'	5° 03.345'	119° 53.531'	1.490
2	5	3	6-Jul-10	4:12	5:12	5° 03.335'	119° 53.342'	5° 03.349'	119° 53.536'	2.900
3	2	1	7-Jul-10	1:10	2:10	5° 01.526'	119° 47.321'	5° 01.126'	119° 47.503'	0.840
3	2	2	7-Jul-10	2:40	3:40	5° 01.521'	119° 47.318'	5° 01.129'	119° 47.508'	2.070
3	2	3	7-Jul-10	4:10	5:10	5° 01.529'	119° 47.325'	5° 01.132'	119° 47.514'	2.450
3	10	1	7-Jul-10	1:15	2:15	4° 58.434'	119° 49.821'	4° 58.447'	119° 49.903'	4.260
3	10	2	7-Jul-10	2:45	3:45	4° 58.430'	119° 49.818'	4° 58.451'	119° 49.908'	3.800
3	10	3	7-Jul-10	4:15	5:15	4° 58.437'	119° 49.825'	4° 58.457'	119° 49.913'	4.100
3	11	1	7-Jul-10	1:05	2:05	4° 57.031'	119° 51.926'	4° 56.962'	119° 51.771'	4.500
3	11	2	7-Jul-10	2:35	3:35	4° 57.035'	119° 51.931'	4° 56.965'	119° 51.775'	4.730
3	11	3	7-Jul-10	4:05	5:05	4° 57.040'	119° 51.926'	4° 56.971'	119° 51.779'	2.630
3	7	1	7-Jul-10	1:04	2:04	4° 59.808'	119° 51.712'	4° 49.598'	119° 51.711'	2.580
3	7	2	7-Jul-10	2:34	3:34	4° 59.813'	119° 51.716'	4° 49.593'	119° 51.706'	2.380
3	7	3	7-Jul-10	4:04	5:04	4° 59.821'	119° 51.722'	4° 49.588'	119° 51.701'	3.530
3	8	1	7-Jul-10	1:12	2:12	5° 01.305'	119° 51.196'	5° 01.305'	119° 51.210'	3.660
3	8	2	7-Jul-10	2:42	3:42	5° 01.311'	119° 51.201'	5° 01.309'	119° 51.214'	3.810
3	8	3	7-Jul-10	4:12	5:12	5° 01.316'	119° 51.205'	5° 01.314'	119° 51.219'	2.680
3	4	1	7-Jul-10	1:11	2:11	5° 01.310'	119° 51.549'	5° 01.317'	119° 51.670'	2.330
3	4	2	7-Jul-10	2:41	3:41	5° 01.315'	119° 51.553'	5° 01.321'	119° 51.674'	2.810
3	4	3	7-Jul-10	4:11	5:11	5° 01.319'	119° 51.559'	5° 01.325'	119° 51.679'	2.000
4	2	1	8-Jul-10	1:13	2:13	5° 01.526'	119° 47.321'	5° 01.126'	119° 47.503'	1.760
4	2	2	8-Jul-10	2:43	3:43	5° 01.531'	119° 47.325'	5° 01.131'	119° 47.508'	1.270
4	2	3	8-Jul-10	4:13	5:13	5° 01.537'	119° 47.329'	5° 01.136'	119° 47.512'	1.710
4	4	1	8-Jul-10	1:15	2:15	5° 01.310'	119° 51.549'	5° 01.317'	119° 51.670'	2.700

APPENDIX 22. DETAILS OF BOTTOM-SET LONGLINE FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2010

Day	Station No.	Haul No.	Date	Time		Start Position		End Position		Catch (kg)
				Set	Haul	Lat.	Long.	Lat.	Long.	
4	4	2	8-Jul-10	2:45	3:45	5° 01.313'	119° 51.552'	5° 01.321'	119° 51.673'	0.880
4	4	3	8-Jul-10	4:15	5:15	5° 01.317'	119° 51.556'	5° 01.326'	119° 51.689'	2.220
4	9	1	8-Jul-10	1:09	2:09	4° 59.749'	119° 51.511'	4° 59.736'	119° 51.689'	1.200
4	9	2	8-Jul-10	2:39	3:39	4° 59.745'	119° 51.506'	4° 59.741'	119° 51.693'	0.930
4	9	3	8-Jul-10	4:09	5:09	4° 59.741'	119° 51.501'	4° 59.745'	119° 51.697'	0.950
4	11	1	8-Jul-10	1:13	2:13	4° 57.031'	119° 51.926'	4° 56.962'	119° 51.771'	1.580
4	11	2	8-Jul-10	2:43	3:43	4° 57.035'	119° 51.929'	4° 56.966'	119° 51.775'	1.600
4	11	3	8-Jul-10	4:13	5:13	4° 57.039'	119° 51.932'	4° 56.969'	119° 51.778'	1.410
4	12	1	8-Jul-10	1:15	2:15	4° 56.479'	119° 54.219'	4° 56.509'	119° 54.251'	3.360
4	12	2	8-Jul-10	2:45	3:45	4° 56.475'	119° 54.215'	4° 56.511'	119° 54.253'	1.810
4	12	3	8-Jul-10	4:15	5:15	4° 56.472'	119° 54.211'	4° 56.514'	119° 54.256'	2.780
4	7	1	8-Jul-10	1:05	2:05	4° 59.808'	119° 51.712'	4° 49.598'	119° 51.711'	2.570
4	7	2	8-Jul-10	2:35	3:35	4° 59.805'	119° 51.709'	4° 49.596'	119° 51.709'	1.370
4	7	3	8-Jul-10	4:05	5:05	4° 59.802'	119° 51.706'	4° 49.593'	119° 51.706'	1.260
5	4	1	9-Jul-10	1:10	2:10	5° 01.310'	119° 51.549'	5° 01.317'	119° 51.670'	1.160
5	4	2	9-Jul-10	2:40	3:40	5° 01.315'	119° 51.553'	5° 01.321'	119° 51.674'	1.170
5	4	3	9-Jul-10	4:10	5:10	5° 01.319'	119° 51.559'	5° 01.325'	119° 51.679'	0.670
5	9	1	9-Jul-10	1:05	2:05	4° 59.749'	119° 51.511'	4° 59.736'	119° 51.689'	1.610
5	9	2	9-Jul-10	2:35	3:35	4° 59.745'	119° 51.506'	4° 59.741'	119° 51.693'	1.520
5	9	3	9-Jul-10	4:05	5:05	4° 59.741'	119° 51.501'	4° 59.745'	119° 51.697'	3.010
5	10	1	9-Jul-10	1:15	2:15	4° 58.434'	119° 49.821'	4° 58.447'	119° 49.903'	0.950
5	10	2	9-Jul-10	2:45	3:45	4° 58.430'	119° 49.818'	4° 58.451'	119° 49.908'	1.410
5	10	3	9-Jul-10	4:15	5:15	4° 58.437'	119° 49.825'	4° 58.457'	119° 49.913'	1.540
5	12	1	9-Jul-10	1:07	2:07	4° 56.479'	119° 54.219'	4° 56.509'	119° 54.251'	2.330
5	12	2	9-Jul-10	2:37	3:37	4° 56.475'	119° 54.215'	4° 56.511'	119° 54.253'	2.040
5	12	3	9-Jul-10	4:07	5:07	4° 56.472'	119° 54.211'	4° 56.514'	119° 54.256'	2.030
5	8	1	9-Jul-10	1:15	2:15	5° 01.305'	119° 51.196'	5° 01.305'	119° 51.210'	1.360
5	8	2	9-Jul-10	2:45	3:45	5° 01.311'	119° 51.201'	5° 01.309'	119° 51.214'	1.710
5	8	3	9-Jul-10	4:15	5:15	5° 01.316'	119° 51.205'	5° 01.314'	119° 51.219'	1.260
5	5	1	9-Jul-10	1:15	2:15	5° 03.327'	119° 53.336'	5° 03.338'	119° 53.524'	0.960
5	5	2	9-Jul-10	2:45	3:45	5° 03.331'	119° 53.339'	5° 03.345'	119° 53.531'	0.960
5	5	3	9-Jul-10	4:15	5:15	5° 03.335'	119° 53.342'	5° 03.349'	119° 53.536'	1.130

APPENDIX 23. DETAILS OF FISH TRAP FISHING OPERATION DURING THE BASE LINE DATA COLLECTION IN DANAJON BANK IN YEAR 2004

Day	Cluster No.	Grid No.	Date Set	Time Set	Date Hauled	Time Hauled	Start		End		Catch (kg)
							Lat.	Long.	Lat.	Long.	
1	1	261	31-May-04	11:53	02-Jun-04	15:21	10° 13.092'	124° 21.148'	10° 13.101'	124° 21.187'	1.291
1	2	265	31-May-04	12:32	02-Jun-04	13:00	10° 12.790'	124° 25.296'	10° 12.770'	124° 25.328'	1.550
1	3	386	31-May-04	15:18	02-Jun-04	11:40	10° 09.449'	124° 22.450'	10° 09.450'	124° 22.421'	0.005
1	4	419	31-May-04	14:53	02-Jun-04	10:58	10° 07.615'	124° 24.238'	10° 07.632'	124° 24.202'	0.958
1	5	390	30-May-04	13:30	01-Jun-04	11:20	10° 09.592'	124° 27.210'	10° 09.550'	124° 27.190'	1.975
1	6	363	30-May-04	15:19	01-Jun-04	13:06	10° 09.756'	124° 30.315'	10° 09.715'	124° 30.317'	0.915
1	7	Control	30-May-04	14:46	01-Jun-04	12:18	10° 13.807'	124° 28.067'	10° 13.774'	124° 28.082'	1.740
2	8	229	02-Jun-04	15:20	04-Jun-04	11:30	10° 13.094'	124° 21.150'	10° 13.105'	124° 21.178'	1.830
2	9	261	02-Jun-04	15:55	04-Jun-04	13:20	10° 13.598'	124° 20.188'	10° 13.572'	124° 20.172'	0.740
2	10	212	02-Jun-04	14:25	05-Jun-04	09:23	10° 15.113'	124° 23.233'	10° 15.110'	124° 23.225'	0.493
2	11	419	02-Jun-04	11:00	04-Jun-04	09:55	10° 07.630'	124° 24.630'	10° 07.605'	124° 24.235'	0.610
2	12	450	01-Jun-04	15:19	03-Jun-04	09:32	10° 07.391'	124° 24.352'	10° 07.366'	124° 24.342'	0.395
2	13	395	01-Jun-04	13:22	03-Jun-04	15:21	10° 09.471'	124° 30.790'	10° 09.446'	124° 30.807'	1.145
2	14	Control	01-Jun-04	12:20	03-Jun-04	11:15	10° 13.791'	124° 28.092'	10° 13.743'	124° 28.169'	2.760
3	15	260	04-Jun-04	13:03	06-Jun-04	12:50	10° 13.185'	124° 19.951'	10° 13.204'	124° 19.982'	2.091
3	16	320	04-Jun-04	15:10	06-Jun-04	11:27	10° 11.447'	124° 18.236'	10° 11.435'	124° 18.262'	0.595
3	17	363	11-Jun-04	13:05	14-Jun-04	14:34	10° 10.062'	124° 30.003'	10° 10.056'	124° 29.968'	1.322
3	18	418	04-Jun-04	10:07	06-Jun-04	09:09	10° 08.589'	124° 23.469'	10° 08.620'	124° 23.444'	0.750
3	19	394	03-Jun-04	15:37	05-Jun-04	11:33	10° 08.994'	124° 30.221'	10° 08.966'	124° 30.247'	1.205
3	20	488	03-Jun-04	14:46	05-Jun-04	14:24	10° 06.053'	124° 30.985'	10° 06.072'	124° 30.959'	0.518
3	21	Control	03-Jun-04	11:31	05-Jun-04	10:12	10° 13.761'	124° 28.151'	10° 13.735'	124° 28.151'	1.550
4	22	356	06-Jun-04	13:10	08-Jun-04		10° 13.064'	124° 20.904'	10° 13.054'	124° 20.884'	
4	23	356	08-Jun-04	14:49	10-Jun-04	17:19	10° 09.594'	124° 23.152'	10° 09.567'	124° 23.207'	0.780
4	24	262	06-Jun-04	13:22	08-Jun-04	10:32	10° 12.816'	124° 21.689'	10° 12.796'	124° 21.666'	0.290
4	25	326	05-Jun-04	15:48	07-Jun-04	10:11	10° 10.785'	124° 24.319'	10° 10.805'	124° 24.344'	1.790
4	26	296	06-Jun-04	09:51	08-Jun-04	09:47	10° 11.705'	124° 25.078'	10° 11.712'	124° 25.010'	1.610
4	27	487	05-Jun-04	14:40	07-Jun-04	15:02	10° 05.968'	124° 30.337'	10° 05.960'	124° 30.306'	1.080
4	28	519	05-Jun-04	14:11	07-Jun-04	14:37	10° 05.118'	124° 31.289'	10° 05.102'	124° 31.260'	0.095
4	29	Control	05-Jun-04	10:20	07-Jun-04	10:24	10° 13.748'	124° 28.125'	10° 13.773'	124° 28.089'	1.495
5	30	199	08-Jun-04	12:24	11-Jun-04	09:31	10° 15.338'	124° 20.604'	10° 15.309'	124° 20.633'	3.050
5	31	385	10-Jun-04	17:56	12-Jun-04	10:06	10° 09.537'	124° 20.426'	10° 09.540'	124° 20.383'	0.305
5	32	295	08-Jun-04	10:37	10-Jun-04	16:23	10° 12.500'	124° 24.432'	10° 12.504'	124° 24.394'	1.455
5	33	265	10-Jun-04	16:46	12-Jun-04	11:57	10° 12.586'	124° 24.815'	10° 12.585'	124° 24.782'	1.055
5	34		07-Jun-04	10:45	10-Jun-04		10° 10.533'	124° 27.133'	10° 10.547'	124° 27.095'	
5	35	356	07-Jun-04	16:10	10-Jun-04	10:09	10° 09.929'	124° 23.029'	10° 09.971'	124° 23.058'	0.360
5	36	296	10-Jun-04	10:27	12-Jun-04	11:34	10° 11.875'	124° 25.089'	10° 11.844'	124° 25.073'	1.400
5	37		07-Jun-04	15:46	10-Jun-04		10° 09.671'	124° 21.215'	10° 09.705'	124° 21.240'	
5	38	Control	07-Jun-04	10:26	11-Jun-04	12:18	10° 13.782'	124° 28.081'	10° 13.791'	124° 28.052'	2.125

APPENDIX 24. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN DANAJON BANK IN YEAR 2006

Day	Cluster No.	Grid No	Date Set	Time Set	Date Hauled	Time Hauled	Start		End		Catch (kg)
							Lat.	Long.	Lat.	Long.	
1	1	261	10-May-06	11:48	12-May-06	13:20	10° 13.182'	124° 21.232'	10° 13.207'	124° 21.283'	1.800
1	2	265	10-May-06	12:23	12-May-06	14:29	10° 12.783'	124° 25.329'	10° 12.763'	124° 25.397'	1.660
1	3	386	10-May-06	15:13	*lost*		10° 09.494'	124° 22.457'	10° 09.468'	124° 22.420'	
1	4	419	10-May-06	14:41	12-May-06	17:35	10° 07.538'	124° 24.222'	10° 07.503'	124° 24.264'	0.090
1	5	390	09-May-06	13:12	11-May-06	11:50	10° 09.459'	124° 27.323'	10° 09.452'	124° 27.301'	1.100
1	6	363	09-May-06	15:22	13-May-06	13:25	10° 09.545'	124° 30.437'	10° 09.501'	124° 30.467'	2.180
1	7/Control	Control	09-May-06	14:41	12-May-06	16:08	10° 13.822'	124° 28.057'	10° 13.793'	124° 28.115'	3.080
2	8	229	12-May-06	13:32	14-May-06	10:59	10° 13.252'	124° 21.324'	10° 13.259'	124° 21.374'	1.550
2	9	261	12-May-06	12:14	14-May-06	10:15	10° 13.580'	124° 20.211'	10° 13.628'	124° 20.237'	1.520
2	10	212	12-May-06	15:14	14-May-06	12:17	10° 15.302'	124° 23.212'	10° 15.345'	124° 23.269'	1.820
2	11	419	12-May-06	17:54	14-May-06	15:53	10° 07.632'	124° 24.724'	10° 07.664'	124° 24.685'	1.090
2	12	450	11-May-06	13:56	13-May-06	14:10	10° 07.362'	124° 24.379'	10° 07.375'	124° 24.460'	0.050
2	13	395	13-May-06	17:10	15-May-06	15:16	10° 09.449'	124° 30.778'	10° 09.488'	124° 30.750'	2.290
2	14/Control	Control	12-May-06	16:25	14-May-06	14:34	10° 13.797'	124° 28.089'	10° 13.801'	124° 28.144'	2.110
3	15	260	14-May-06	10:35	16-May-06	11:10	10° 13.103'	124° 19.835'	10° 13.121'	124° 19.837'	1.580
3	16	320	14-May-06	17:14	16-May-06	10:40	10° 11.474'	124° 18.196'	10° 11.520'	124° 18.210'	0.680
3	18	418	14-May-06	16:19	16-May-06	17:22	10° 08.299'	124° 23.717'	10° 08.270'	124° 23.755'	1.750
3	19	394	13-May-06	15:37	15-May-06	11:33	10° 08.994'	124° 30.221'	10° 08.966'	124° 30.247'	0.000
3	20	488	13-May-06	15:21	15-May-06	16:14	10° 06.013'	124° 30.956'	10° 06.036'	124° 30.916'	1.330
3	21/Control	Control	14-May-06	14:15	16-May-06	15:50	10° 13.880'	124° 27.943'	10° 13.944'	124° 27.924'	1.690
4	22	356	16-May-06	11:46	18-May-06	11:06	10° 13.103'	124° 20.796'	10° 13.105'	124° 20.776'	2.860
4	24	262	16-May-06	12:02	18-May-06	11:43	10° 12.858'	124° 21.683'	10° 12.879'	124° 21.666'	2.520
4	25	326	15-May-06	17:47	17-May-06	15:12	10° 10.416'	124° 24.374'	10° 10.436'	124° 24.391'	0.510
4	26	296	16-May-06	14:57	18-May-06	14:49	10° 11.816'	124° 24.900'	10° 11.808'	124° 24.882'	1.310
4	27	487	15-May-06	16:03	17-May-06	11:52	10° 06.016'	124° 30.307'	10° 06.038'	124° 30.274'	0.350
4	28	519	15-May-06	16:43	17-May-06	12:16	10° 05.089'	124° 31.243'	10° 05.129'	124° 31.204'	0.950
4	29/Control	Control	16-May-06	16:10	18-May-06	15:25	10° 13.899'	124° 27.922'	10° 13.896'	124° 27.978'	2.680
5	23	356	18-May-06	16:16	20-May-06	15:40	10° 09.874'	124° 23.597'	10° 09.926'	124° 23.596'	0.310
5	30	199	18-May-06	12:14	21-May-06	11:36	10° 15.347'	124° 20.587'	10° 15.329'	124° 20.565'	1.880
5	32	295	18-May-06	13:58	20-May-06	14:20	10° 12.523'	124° 24.459'	10° 12.544'	124° 24.413'	0.660
5	34	265	17-May-06	14:37	20-May-06	12:46	10° 10.416'	124° 26.923'	10° 10.397'	124° 26.923'	3.490
5	35	356	17-May-06	15:41	20-May-06	10:56	10° 09.646'	124° 23.091'	10° 09.650'	124° 23.148'	1.080
5	37		17-May-06	16:06	20-May-06	17:26	10° 09.753'	124° 21.152'	10° 09.745'	124° 21.201'	0.380
5	38/Control	Control	18-May-06	15:41	21-May-06	13:03	10° 13.891'	124° 27.914'	10° 13.896'	124° 27.895'	3.290
6	17	363	21-May-06	15:23	24-May-06	16:34	10° 10.116'	124° 30.036'	10° 10.162'	124° 29.997'	1.720
6	31	385	20-May-06	17:44	22-May-06	14:01	10° 09.522'	124° 20.398'	10° 09.557'	124° 20.370'	0.450
6	33	295	20-May-06	14:34	22-May-06	15:25	10° 12.652'	124° 24.782'	10° 12.639'	124° 24.743'	0.850
6	36	296	20-May-06	11:34	22-May-06	13:26	10° 11.883'	124° 25.109'	10° 11.857'	124° 25.080'	0.590

APPENDIX 25. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN DANAJON BANK IN YEAR 2008

Day	Cluster No.	Grid No	Date Set	Time Set	Date Hauled	Time Hauled	Start		End		Catch (kg)
							Lat.	Long.	Lat.	Long.	
1	1	261	17-May-08	11:35	19-May-08	15:36	10° 12.761'	124° 25.010'	10° 13.366'	124° 24.971'	1.245
1	2	265	17-May-08	10:48	19-May-08	11:50	10° 13.272'	124° 27.987'	10° 13.572'	124° 27.487'	1.495
1	3	386	17-May-08	09:20	19-May-08	09:40	10° 11.201'	124° 27.184'	10° 11.331'	124° 26.590'	0.355
1	4	419	17-May-08	09:59	19-May-08	09:20	10° 10.850'	124° 28.948'	10° 10.570'	124° 28.541'	0.150
1	5		16-May-08	10:20	*Lost*		10° 08.421'	124° 27.800'	10° 08.057'	124° 27.280'	
1	6	363	16-May-08	10:37	18-May-08	12:08	10° 07.593'	124° 29.158'	10° 07.975'	124° 28.663'	1.210
1	7	Control	16-May-08	13:45	18-May-08	11:05	10° 07.176'	124° 27.400'	10° 07.778'	124° 27.756'	1.245
2	8	229	19-May-08	15:17	21-May-08	14:52	10° 06.579'	124° 29.557'	10° 07.326'	124° 29.895'	1.635
2	9	261	19-May-08	14:54	21-May-08	14:15	10° 06.525'	124° 29.972'	10° 07.139'	124° 29.662'	1.555
2	10	212	19-May-08	14:14	21-May-08	11:30	10° 10.306'	124° 30.958'	10° 10.830'	124° 31.211'	0.865
2	11	419	19-May-08	10:25	22-May-08	16:36	10° 09.320'	124° 29.090'	10° 09.540'	124° 29.390'	1.560
2	12	450	18-May-08	17:36	20-May-08	09:32	10° 09.687'	124° 30.961'	10° 09.370'	124° 30.340'	0.805
2	13	395	18-May-08	12:19	20-May-08	11:00	10° 10.860'	124° 32.307'	10° 11.570'	124° 31.648'	0.490
2	14	Control	18-May-08	11:11	21-May-08	10:30	10° 06.657'	124° 25.696'	10° 07.070'	124° 26.053'	3.165
2	5	390	19-May-08	17:35	21-May-08	16:11	10° 06.483'	124° 27.508'	10° 06.568'	124° 28.103'	2.260
3	15	260	21-May-08	15:05	23-May-08	11:24	10° 09.408'	124° 30.495'	10° 09.050'	124° 29.837'	2.225
3	16	320	21-May-08	03:30	23-May-08	18:27	10° 07.084'	124° 29.904'	10° 07.084'	124° 29.904'	0.280
3	17	363	20-May-08	10:30	22-May-08	11:16	10° 06.199'	124° 30.474'	10° 06.092'	124° 30.545'	1.605
3	19	394	20-May-08	13:00	22-May-08	12:30	10° 05.822'	124° 29.834'	10° 05.882'	124° 29.219'	1.120
3	20	488	20-May-08	13:45	22-May-08	14:45	10° 05.376'	124° 31.114'	10° 05.781'	124° 30.954'	1.325
3	21	Control	21-May-08	11:00	23-May-08	15:46	10° 11.814'	124° 22.827'	10° 12.118'	124° 22.365'	1.725
3	30	199	21-May-08	12:00	23-May-08	14:05	10° 11.872'	124° 22.246'	10° 11.372'	124° 21.871'	1.730
3	31	385	21-May-08	16:42	23-May-08	09:21	10° 12.458'	124° 23.743'	10° 12.661'	124° 23.659'	0.450
4	18	418	22-May-08	17:00	24-May-08	13:33	10° 09.525'	124° 23.826'	10° 09.430'	124° 23.349'	0.275
4	22	356	23-May-08	11:40	25-May-08	09:42	10° 12.167'	124° 25.826'	10° 11.838'	124° 25.595'	0.885
4	23	356	22-May-08	17:15	24-May-08	14:05	10° 11.173'	124° 29.650'	10° 10.517'	124° 29.430'	0.610
4	24	262	23-May-08	11:56	25-May-08	10:10	10° 12.177'	124° 28.012'	10° 11.840'	124° 28.334'	0.925
4	26	296	23-May-08	16:47	25-May-08	14:11	10° 11.971'	124° 27.717'	10° 11.450'	124° 27.823'	0.535
4	27	487	22-May-08	14:26	24-May-08	10:26	10° 09.535'	124° 28.788'	10° 09.335'	124° 29.151'	0.955
4	28	519	22-May-08	15:16	24-May-08	10:47	10° 07.163'	124° 28.883'	10° 07.751'	124° 28.812'	0.605
4	37		23-May-08	18:30	25-May-08	15:04	10° 09.660'	124° 30.509'	10° 09.935'	124° 30.436'	0.225
4	29	Control	23-May-08	15:58	25-May-08	11:15	10° 13.510'	124° 29.434'	10° 13.580'	124° 28.770'	1.365
5	25	326	24-May-08	14:25	26-May-08	10:55	10° 12.568'	124° 24.448'	10° 11.328'	124° 24.856'	1.910
5	32		24-May-08	14:45	26-May-08	11:16	10° 10.584'	124° 24.410'	10° 10.296'	124° 24.910'	1.540
5	33	295	25-May-08	13:50	27-May-08	11:15	10° 12.873'	124° 27.923'	10° 12.659'	124° 28.320'	0.470
5	34	265	25-May-08	10:25	27-May-08	10:25	10° 12.761'	124° 25.010'	10° 13.366'	124° 24.971'	2.125
5	35	356	24-May-08	13:52	26-May-08	09:30	10° 13.272'	124° 27.987'	10° 13.572'	124° 27.487'	0.880
5	36	296	24-May-08	14:35	26-May-08	10:22	10° 11.201'	124° 27.184'	10° 11.331'	124° 26.590'	1.435
5	38	Control	25-May-08	11:24	27-May-08	10:37	10° 10.850'	124° 28.948'	10° 10.570'	124° 28.541'	1.240

*Note: * New site;* (C) Control Station

APPENDIX 26. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN DANAJON BANK IN YEAR 2010

Day	Cluster No.	Grid No	Date Set	Time Set	Date Hauled	Time Hauled	Start		End		Catch (kg)
							Lat.	Long.	Lat.	Long.	
Day 1	5	390	24-Apr-10	08:51	26-Apr-10	08:45	10° 11.055"	124° 20.930"	10° 11.060"	124° 20.877"	0.772
Day 1	7C	Control	24-Apr-10	09:51	26-Apr-10	09:54	10° 15.447"	124° 24.437"	10° 15.462"	124° 24.400"	1.175
Day 1	6	363	24-Apr-10	13:18	26-Apr-10	11:27	10° 09.815"	124° 30.415"	10° 09.837"	124° 30.437"	0.275
Day 1	2	265	25-Apr-10	09:13	27-Apr-10	11:11	10° 12.800"	124° 25.473"	10° 12.775"	124° 25.430"	0.765
Day 1	4	419	25-Apr-10	10:51	27-Apr-10	10:08	10° 07.675"	124° 24.245"	10° 07.630"	124° 24.247"	0.005
Day 1	1	261	25-Apr-10	13:50	27-Apr-10	15:07	10° 13.218"	124° 21.143"	10° 13.177"	124° 21.120"	2.130
Day 1	3	386	25-Apr-10	10:00	28-Apr-10	11:36	10° 09.818"	124° 29.488"	10° 09.782"	124° 29.520"	0.738
Day 2	14C	Control	26-Apr-10	10:21	28-Apr-10	09:55	10° 15.345"	124° 24.448"	10° 15.313"	124° 24.422"	1.385
Day 2	13	395	26-Apr-10	13:27	28-Apr-10	13:53	10° 09.392"	124° 30.808"	10° 09.393"	124° 30.860"	1.385
Day 2	12	450	26-Apr-10	14:27	28-Apr-10	15:48	10° 07.560"	124° 24.313"	10° 07.523"	124° 24.285"	0.100
Day 2	10	212	27-Apr-10	14:36	29-Apr-10	11:33	10° 15.372"	124° 23.180"	10° 15.418"	124° 23.190"	1.705
Day 2	8	229	27-Apr-10	15:35	29-Apr-10	12:34	10° 13.248"	124° 20.792"	10° 13.293"	124° 20.777"	2.725
Day 2	9	261	27-Apr-10	15:44	29-Apr-10	15:00	10° 13.638"	124° 20.183"	10° 13.677"	124° 20.158"	1.615
Day 2	11	419	28-Apr-10	16:05	30-Apr-10	09:26	10° 07.403"	124° 24.828"	10° 07.400"	124° 24.782"	0.777
Day 3	21C	Control	28-Apr-10	10:20	30-Apr-10	16:11	10° 15.493"	124° 24.283"	10° 15.533"	124° 24.240"	2.955
Day 3	19	394	28-Apr-10	11:57	30-Apr-10	12:04	10° 09.015"	124° 30.317"	10° 09.062"	124° 30.312"	0.715
Day 3	20	488	28-Apr-10	14:48	30-Apr-10	11:22	10° 05.877"	124° 30.995"	10° 05.920"	124° 30.973"	1.230
Day 3	18	418	29-Apr-10	10:30	1-May-10	14:05	10° 08.655"	124° 23.448"	10° 08.683"	124° 23.420"	0.600
Day 3	15	260	29-Apr-10	14:45	1-May-10	09:57	10° 13.225"	124° 20.173"	10° 13.285"	124° 20.168"	1.565
Day 3	25	326	29-Apr-10	15:55	1-May-10	11:05	10° 11.745"	124° 23.398"	10° 11.780"	124° 23.365"	1.295
Day 3	16	320	29-Apr-10	16:39	1-May-10	09:11	10° 11.278"	124° 18.268"	10° 11.325"	124° 18.253"	0.452
Day 4	27	487	30-Apr-10	10:44	2-May-10	11:11	10° 05.983"	124° 30.340"	10° 05.987"	124° 30.280"	1.100
Day 4	28	519	30-Apr-10	11:26	2-May-10	11:44	10° 05.032"	124° 31.188"	10° 05.063"	124° 31.210"	1.350
Day 4	17	363	30-Apr-10	14:44	2-May-10	14:16	10° 10.170"	124° 30.048"	10° 10.180"	124° 30.105"	1.175
Day 4	29C	Control	30-Apr-10	16:45	2-May-10	16:19	10° 15.463"	124° 24.058"	10° 15.442"	124° 24.108"	2.100
Day 4	22	356	1-May-10	10:25	3-May-10	15:00	10° 13.625"	124° 20.953"	10° 13.605"	124° 20.907"	1.610
Day 4	24	262	1-May-10	10:40	3-May-10	12:11	10° 12.797"	124° 21.743"	10° 12.783"	124° 21.697"	2.157
Day 4	26	296	1-May-10	13:27	3-May-10	11:20	10° 11.798"	124° 25.18"	10° 11.845"	124° 25.170"	0.000
Day 4	23	356	1-May-10	14:33	3-May-10	09:52	10° 09.615"	124° 23.128"	10° 09.573"	124° 23.138"	0.910
Day 5	36	296	2-May-10	15:18	4-May-10	11:25	10° 12.115"	124° 25.272"	10° 12.097"	124° 25.312"	0.245
Day 5	35	356	2-May-10	09:49	4-May-10	09:33	10° 09.985"	124° 23.048"	10° 09.997"	124° 22.995"	2.362
Day 5	32	295	2-May-10	15:35	4-May-10	10:35	10° 12.462"	124° 24.200"	10° 12.410"	124° 24.223"	1.460
Day 5	38C	Control	2-May-10	17:05	4-May-10	11:25	10° 15.412"	124° 24.083"	10° 15.397"	124° 24.145"	1.218
Day 5	37		2-May-10	18:04	4-May-10	14:38	10° 09.725"	124° 21.180"	10° 09.747"	124° 21.130"	0.370
Day 5	33	295	3-May-10	14:34	5-May-10	10:12	10° 12.972"	124° 22.553"	10° 13.022"	124° 22.547"	3.115
Day 5	34	265	3-May-10	14:43	5-May-10	11:25	10° 13.732"	124° 22.280"	10° 13.715"	124° 22.238"	4.320
Day 5	30	199	3-May-10	15:29	5-May-10	12:18	10° 15.257"	124° 20.675"	10° 15.293"	124° 20.685"	1.125
Day 5	31	385	3-May-10	16:16	5-May-10	16:02	10° 09.987"	124° 20.452"	10° 10.043"	124° 20.447"	0.115

APPENDIX 27. DETAILS OF FISH TRAP FISHING OPERATION DURING THE BASE LINE DATA COLLECTION IN TAWI-TAWI BAY IN YEAR 2004

Day	Station No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
1	2	1	13-Aug-04	6:00 AM	16-Aug-04	8:50 AM	05°02.232'	119°48.193'	3.100
1	2	2	13-Aug-04		16-Aug-04		05°02.213'	119°48.262'	
1	2	3	13-Aug-04		16-Aug-04		05°02.408'	119°47.952'	
1	2	4	13-Aug-04		16-Aug-04		05°02.443'	119°47.948'	
1	2	5	13-Aug-04		16-Aug-04		05°02.143'	119°48.285'	
1	2	6	13-Aug-04		16-Aug-04		(pot lost)		
1	3	1	13-Aug-04	6:30 AM	16-Aug-04	7:45 AM	05°02.073'	119°48.328'	5.150
1	3	2	13-Aug-04		16-Aug-04		05°02.043'	119°48.347'	
1	3	3	13-Aug-04		16-Aug-04		05°02.148'	119°48.447'	
1	3	4	13-Aug-04		16-Aug-04		05°02.128'	119°48.477'	
1	3	5	13-Aug-04		16-Aug-04		05°02.175'	119°48.538'	
1	3	6	13-Aug-04		16-Aug-04		05°02.202'	119°48.405'	
1	1	1	13-Aug-04	6:30 AM	16-Aug-04	10:30 AM	05°02.167'	119°46.293'	2.170
1	1	2	13-Aug-04		16-Aug-04		05°02.172'	119°46.243'	
1	1	3	13-Aug-04		16-Aug-04		05°02.190'	119°46.208'	
1	1	4	13-Aug-04		16-Aug-04		05°02.110'	119°46.218'	
1	1	5	13-Aug-04		16-Aug-04		05°02.132'	119°46.188'	
1	1	6	13-Aug-04		16-Aug-04		05°02.093'	119°46.197'	
2	5	1	16-Aug-04	6:30 AM	19-Aug-04	8:20 AM	04°56.008'	119°53.850'	5.400
2	5	2	16-Aug-04		19-Aug-04		04°55.100'	119°54.245'	
2	5	3	16-Aug-04		19-Aug-04		04°54.967'	119°54.427'	
2	5	4	16-Aug-04		19-Aug-04		04°55.008'	119°54.413'	
2	5	5	16-Aug-04		19-Aug-04		04°55.010'	119°54.400'	
2	5	6	16-Aug-04		19-Aug-04		04°55.095'	119°54.235'	
2	2	1	16-Aug-04	8:50 AM	19-Aug-04	9:15 AM	05°02.207'	119°48.240'	2.540
2	2	2	16-Aug-04		19-Aug-04		05°02.242'	119°48.165'	
2	2	3	16-Aug-04		19-Aug-04		05°02.235'	119°48.187'	
2	2	4	16-Aug-04		19-Aug-04		05°02.253'	119°48.150'	
2	2	5	16-Aug-04		19-Aug-04		05°02.370'	119°47.945'	
2	2	6	16-Aug-04		19-Aug-04		05°02.378'	119°47.953'	
2	4	1	16-Aug-04	10:30 AM	19-Aug-04	7:20 AM	04°57.963'	119°49.887'	11.100
2	4	2	16-Aug-04		19-Aug-04		04°57.970	119°50.012'	
2	4	3	16-Aug-04		19-Aug-04		04°58.010'	119°50.147'	
2	4	4	16-Aug-04		19-Aug-04		04°57.973'	119°50.168'	
2	4	5	16-Aug-04		19-Aug-04		04°57.993'	119°50.157'	
2	4	6	16-Aug-04		19-Aug-04		04°57.982'	119°49.998'	
2	1	1	16-Aug-04	6:00 AM	19-Aug-04	11:00 AM	05°02.172'	119°46.242'	4.500
2	1	2	16-Aug-04		19-Aug-04		05°02.175'	119°46.250'	
2	1	3	16-Aug-04		19-Aug-04		05°02.188'	119°46.230'	
2	1	4	16-Aug-04		19-Aug-04		05°02.113'	119°46.227'	
2	1	5	16-Aug-04		19-Aug-04		05°02.135'	119°46.205'	
2	1	6	16-Aug-04		19-Aug-04		05°02.097'	119°46.217'	
2	3	1	16-Aug-04	7:45 AM	19-Aug-04	9:00 AM	05°02.080'	119°48.357'	8.180
2	3	2	16-Aug-04		19-Aug-04		05°02.043'	119°48.367'	
2	3	3	16-Aug-04		19-Aug-04		05°02.122'	119°48.437'	
2	3	4	16-Aug-04		19-Aug-04		05°02.108'	119°48.465'	
2	3	5	16-Aug-04		19-Aug-04		05°02.173'	119°48.510'	
2	3	6	16-Aug-04		19-Aug-04		05°02.167'	119°48.523'	
3	2	1	19-Aug-04	9:15 AM	22-Aug-04	9:10 AM	05°02.160'	119°48.252'	1.170
3	2	2	19-Aug-04		22-Aug-04		05°02.143'	119°48.247'	
3	2	3	19-Aug-04		22-Aug-04		05°02.375'	119°47.962'	
3	2	4	19-Aug-04		22-Aug-04		05°02.375'	119°47.923'	

APPENDIX 27. DETAILS OF FISH TRAP FISHING OPERATION DURING THE BASE LINE DATA COLLECTION IN TAWI-TAWI BAY IN YEAR 2004

Day	Station No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
3	2	5	19-Aug-04		22-Aug-04		05°02.378'	119°47.920'	
3	2	6	19-Aug-04		22-Aug-04		05°01.945'	119°48.325'	
3	5	1	19-Aug-04	8:20 AM	22-Aug-04	8:10 AM	04°55.975'	119°53.868'	1.870
3	5	2	19-Aug-04		22-Aug-04		04°55.093'	119°54.232'	
3	5	3	19-Aug-04		22-Aug-04		04°54.232'	119°54.430'	
3	5	4	19-Aug-04		22-Aug-04		04°54.983'	119°54.415'	
3	5	5	19-Aug-04		22-Aug-04		04°55.013'	119°54.420'	
3	5	6	19-Aug-04		22-Aug-04		04°54.988'	119°54.378'	
3	1	1	19-Aug-04	11:00 AM	22-Aug-04	11:30 AM	05°02.182'	119°46.213'	2.530
3	1	2	19-Aug-04		22-Aug-04		05°02.185'	119°46.193'	
3	1	3	19-Aug-04		22-Aug-04		05°02.162'	119°46.270'	
3	1	4	19-Aug-04		22-Aug-04		05°02.113'	119°46.218'	
3	1	5	19-Aug-04		22-Aug-04		05°02.143'	119°46.193'	
3	1	6	19-Aug-04		22-Aug-04		05°02.097'	119°46.208'	
3	3	1	19-Aug-04	9:00 AM	22-Aug-04	8:50 AM	05°02.015'	119°48.482'	8.080
3	3	2	19-Aug-04		22-Aug-04		05°01.990'	119°48.453'	
3	3	3	19-Aug-04		22-Aug-04		05°02.177'	119°48.560'	
3	3	4	19-Aug-04		22-Aug-04		05°02.192'	119°48.525'	
3	3	5	19-Aug-04		22-Aug-04		05°02.067'	119°48.478'	
3	3	6	19-Aug-04		22-Aug-04		05°02.103'	119°48.442'	
3	4	1	19-Aug-04	7:20 AM	22-Aug-04	8:50 AM	04°58.530'	119°48.583'	10.950
3	4	2	19-Aug-04		22-Aug-04		04°58.530'	119°48.555'	
3	4	3	19-Aug-04		22-Aug-04		04°57.933'	119°49.862'	
3	4	4	19-Aug-04		22-Aug-04		04°57.985'	119°49.935'	
3	4	5	19-Aug-04		22-Aug-04		04°57.987'	119°50.115'	
3	4	6	19-Aug-04		22-Aug-04		04°57.933'	119°50.185'	
4	3	1	22-Aug-04	8:50 AM	25-Aug-04	9:30 AM	05°02.027'	119°48.482'	9.390
4	3	2	22-Aug-04		25-Aug-04		05°02.047'	119°48.457'	
4	3	3	22-Aug-04		25-Aug-04		05°02.098'	119°48.490'	
4	3	4	22-Aug-04		25-Aug-04		05°02.120'	119°48.462'	
4	3	5	22-Aug-04		25-Aug-04		05°02.183'	119°48.565'	
4	3	6	22-Aug-04		25-Aug-04		05°02.205'	119°48.535'	
4	4	1	22-Aug-04	7:00 AM	25-Aug-04	7:20 AM	04°57.922'	119°50.183'	9.430
4	4	2	22-Aug-04		25-Aug-04		04°58.015'	119°50.117'	
4	4	3	22-Aug-04		25-Aug-04		04°57.932'	119°49.918'	
4	4	4	22-Aug-04		25-Aug-04		04°58.005'	119°50.105'	
4	4	5	22-Aug-04		25-Aug-04		04°58.512'	119°48.573'	
4	4	6	22-Aug-04		25-Aug-04		04°58.577'	119°50.590'	
4	1	1	22-Aug-04	11:30 AM	25-Aug-04	11:45 AM	05°02.203'	119°46.220'	3.260
4	1	2	22-Aug-04		25-Aug-04		05°02.148'	119°46.270'	
4	1	3	22-Aug-04		25-Aug-04		05°02.198'	119°46.197'	
4	1	4	22-Aug-04		25-Aug-04		05°02.147'	119°46.207'	
4	1	5	22-Aug-04		25-Aug-04		05°02.145'	119°46.185'	
4	1	6	22-Aug-04		25-Aug-04		05°02.165'	119°46.215'	
4	2	1	22-Aug-04	9:10 AM	25-Aug-04	9:35 AM	05°01.985'	119°48.322'	3.580
4	2	2	22-Aug-04		25-Aug-04		05°02.015'	119°48.298'	
4	2	3	22-Aug-04		25-Aug-04		05°02.157'	119°48.257'	
4	2	4	22-Aug-04		25-Aug-04		05°02.157'	119°48.245'	
4	2	5	22-Aug-04		25-Aug-04		05°02.377'	119°47.975'	
4	2	6	22-Aug-04		25-Aug-04		05°02.367'	119°47.925'	
4	5	1	22-Aug-04	8:10 AM	25-Aug-04	8:35 AM	04°54.907'	119°54.480'	1.610
4	5	2	22-Aug-04		25-Aug-04		04°54.948'	119°54.490'	

APPENDIX 27. DETAILS OF FISH TRAP FISHING OPERATION DURING THE BASE LINE DATA COLLECTION IN TAWI-TAWI BAY IN YEAR 2004

Day	Station No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
4	5	3	22-Aug-04		25-Aug-04		04°55.010'	119°54.415'	
4	5	4	22-Aug-04		25-Aug-04		04°55.035'	119°54.408'	
4	5	5	22-Aug-04		25-Aug-04		04°55.055'	119°54.378'	
4	5	6	22-Aug-04		25-Aug-04		04°55.013'	119°54.377'	
5	5	1	25-Aug-04	8:35 AM	28-Aug-04	8:15 AM	04°55.983'	119°53.870'	10.990
5	5	2	25-Aug-04		28-Aug-04		04°55.087'	119°54.233'	
5	5	3	25-Aug-04		28-Aug-04		04°54.903'	119°54.473'	
5	5	4	25-Aug-04		28-Aug-04		04°54.932'	119°54.480'	
5	5	5	25-Aug-04		28-Aug-04		04°55.007'	119°54.413'	
5	5	6	25-Aug-04		28-Aug-04		04°55.040'	119°54.407'	
5	2	1	25-Aug-04	9:35 AM	28-Aug-04	9:40 AM	05°02.002'	119°48.310'	2.830
5	2	2	25-Aug-04		28-Aug-04		05°02.003'	119°48.307'	
5	2	3	25-Aug-04		28-Aug-04		05°02.153'	119°48.253'	
5	2	4	25-Aug-04		28-Aug-04		05°02.153'	119°48.252'	
5	2	5	25-Aug-04		28-Aug-04		05°02.373'	119°47.980'	
5	2	6	25-Aug-04		28-Aug-04		05°02.405'	119°47.895'	
5	1	1	25-Aug-04	11:45 AM	28-Aug-04	11:30 AM	05°02.198'	119°46.237'	1.450
5	1	2	25-Aug-04		28-Aug-04		05°02.208'	119°46.198'	
5	1	3	25-Aug-04		28-Aug-04		05°02.150'	119°46.205'	
5	1	4	25-Aug-04		28-Aug-04		05°02.148'	119°46.183'	
5	1	5	25-Aug-04		28-Aug-04		05°02.177'	119°46.225'	
5	1	6	25-Aug-04		28-Aug-04		05°02.138'	119°46.698'	
5	3	1	25-Aug-04	9:30 AM	28-Aug-04	9:40 AM	05°02.138'	119°48.698'	5.950
5	3	2	25-Aug-04		28-Aug-04		05°02.045'	119°48.565'	
5	3	3	25-Aug-04		28-Aug-04		05°02.030'	119°48.612'	
5	3	4	25-Aug-04		28-Aug-04		05°02.062'	119°48.615'	
5	3	5	25-Aug-04		28-Aug-04		05°02.047'	119°48.647'	
5	3	6	25-Aug-04		28-Aug-04		05°02.163'	119°48.668'	
5	4	1	25-Aug-04	7:20 AM	28-Aug-04	7:30 AM	04°58.568'	119°48.557'	10.990
5	4	2	25-Aug-04		28-Aug-04		04°58.520'	119°48.553'	
5	4	3	25-Aug-04		28-Aug-04		04°57.053'	119°49.915'	
5	4	4	25-Aug-04		28-Aug-04		04°58.055'	119°50.057'	
5	4	5	25-Aug-04		28-Aug-04		04°58.042'	119°50.093'	
5	4	6	25-Aug-04		28-Aug-04		04°57.942'	119°50.187'	

APPENDIX 28. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2006

Day	Cluster No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
1	1	1	20-Aug-06	11:48 AM	23-Aug-06	10:30 AM	05° 02.168'	119°46.270'	2.284
1	1	2	20-Aug-06	11:58 AM	23-Aug-06	10:38 AM	05° 02.172”	119°46.215'	
1	1	3	20-Aug-06	12:01 PM	23-Aug-06	10:40 AM	05°02.193	119°46.247'	
1	1	4	20-Aug-06	12:13 PM	23-Aug-06	10:43 AM	05°02.113'	119°46.213'	
1	1	5	20-Aug-06	12:22 PM	23-Aug-06	10:44 AM	05°02.127'	119°46.210'	
1	1	6	20-Aug-06	12:28 PM	23-Aug-06	10:47 AM	05°02.113'	119°46.203	
1	2	1	20-Aug-06	11:15 AM	23-Aug-06	10:06 AM	05°02.150'	119°48.258'	2.993
1	2	2	20-Aug-06	11:16 AM	23-Aug-06	10:08 AM	05°02.138'	119°48.283'	
1	2	3	20-Aug-06	11:18 AM	23-Aug-06	10:04 AM	05°02.070'	119°48.257'	
1	2	4	20-Aug-06	11:19 AM	23-Aug-06	10:05 AM	05°02.052'	119°48.262'	
1	2	5	20-Aug-06	11:22 AM	23-Aug-06	10:06 AM	05°02.202'	119°48.258'	
1	2	6	20-Aug-06	11:24 AM	23-Aug-06	10:10 AM	05°01.982'	119°48.253'	
1	3	1	20-Aug-06	10:57 AM	23-Aug-06	9:45 AM	05°02.078'	119°48.313'	1.092
1	3	2	20-Aug-06	10:58 AM	23-Aug-06	9:48 AM	05°02.035'	119°48.318'	
1	3	3	20-Aug-06	11:02 AM	23-Aug-06	9:51 AM	05°02.135'	119°48.288'	
1	3	4	20-Aug-06	11:06 AM	23-Aug-06	9:55 AM	05°02.120'	119°48.262'	
1	3	5	20-Aug-06	11:10 AM	23-Aug-06	9:58 AM	05°02.150'	119°48.257'	
1	3	6	20-Aug-06	11:12 AM	23-Aug-06	10:05 AM	05°02.203'	119°48.218'	
1	4	1	20-Aug-06	9:10 AM	23-Aug-06	6:40 AM	04°58.133'	119°49.630'	2.877
1	4	2	20-Aug-06	9:15 AM	23-Aug-06	6:48 AM	04°58.127'	119°49.637'	
1	4	3	20-Aug-06	9:20 AM	23-Aug-06	6:56 AM	04°58.188'	119°49.747'	
1	4	4	20-Aug-06	9:24 AM	23-Aug-06	7:05 AM	04°58.248'	119°49.812'	
1	4	5	20-Aug-06	9:32 AM	23-Aug-06	7:12 AM	04°58.247'	119°49.812'	
1	4	6	20-Aug-06	9:40 AM	23-Aug-06	7:16 AM	04°58.137'	119°50.043'	
1	5	1	20-Aug-06	7:21 AM	23-Aug-06	7:52 AM	04°55.013'	119°54.417'	5.762
1	5	2	20-Aug-06	7:29 AM	23-Aug-06	7:58 AM	04°54.962'	119°54.363'	
1	5	3	20-Aug-06	7:44 AM	23-Aug-06	8:02 AM	04°54.972'	119°54.367'	
1	5	4	20-Aug-06	8:03 AM	23-Aug-06	8:12 AM	04°55.002'	119°54.420'	
1	5	5	20-Aug-06	8:25 AM	23-Aug-06	8:15 AM	04°55.012'	119°54.415'	
1	5	6	20-Aug-06	8:30 AM	23-Aug-06	8:23 AM	04°55.018'	119°54.265'	
2	1	1	23-Aug-06	10:33 AM	26-Aug-06	10:10 AM	05°02.167'	119°46.218'	3.353
2	1	2	23-Aug-06	10:40 AM	26-Aug-06	10:12 AM	05°02.172'	119°46.265'	
2	1	3	23-Aug-06	10:42 AM	26-Aug-06	10:15 AM	05°02.195'	119°46.267'	
2	1	4	23-Aug-06	10:46 AM	26-Aug-06	10:18 AM	05°02.113'	119°46.213'	
2	1	5	23-Aug-06	10:46 AM	26-Aug-06	10:20 AM	05°02.143'	119°46.288'	
2	1	6	23-Aug-06	10:50 AM	26-Aug-06	10:22 AM	05°02.113'	119°46.203'	
2	2	1	23-Aug-06	10:08 AM	26-Aug-06	9:39 AM	05°02.150'	119°48.258'	7.491
2	2	2	23-Aug-06	10:04 AM	26-Aug-06	9:41 AM	05°02.135'	119°48.282'	
2	2	3	23-Aug-06	10:05 AM	26-Aug-06	9:43 AM	05°02.070'	119°48.257'	
2	2	4	23-Aug-06	10:06 AM	26-Aug-06	9:46 AM	05°02.052'	119°48.262'	
2	2	5	23-Aug-06	10:10 AM	26-Aug-06	9:49 AM	05°02.202'	119°48.258'	
2	2	6	23-Aug-06	10:12 AM	26-Aug-06	9:51 AM	05°01.982'	119°48.253'	
2	3	1	23-Aug-06	9:47 AM	26-Aug-06	9:20 AM	05°02.078'	119°48.313'	3.790
2	3	2	23-Aug-06	9:49 AM	26-Aug-06	9:22 AM	05°02.035'	119°48.318'	
2	3	3	23-Aug-06	9:52 AM	26-Aug-06	9:25 AM	05°02.135'	119°48.288'	
2	3	4	23-Aug-06	9:57 AM	26-Aug-06	9:28 AM	05°02.120'	119°48.262'	
2	3	5	23-Aug-06	9:59 AM	26-Aug-06	9:31 AM	05°02.150'	119°48.257'	
2	3	6	23-Aug-06	10:07 AM	26-Aug-06	9:34 AM	05°02.203	119°48.218'	
2	4	1	23-Aug-06	6:43 AM	26-Aug-06	7:15 AM	04°58.133'	119°49.630'	3.844
2	4	2	23-Aug-06	6:49 AM	26-Aug-06	7:19 AM	04°58.127'	119°49.637'	
2	4	3	23-Aug-06	6:59 AM	26-Aug-06	7:22 AM	04°58.118'	119°49.747	
2	4	4	23-Aug-06	7:06 AM	26-Aug-06	7:25 AM	04°58.248'	119°49.812'	

APPENDIX 28. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2006

Day	Cluster No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
2	4	5	23-Aug-06	7:13 AM	26-Aug-06	7:28 AM	04°58.247'	119°49.812'	
2	4	6	23-Aug-06	7:18 AM	26-Aug-06	7:31 AM	04°58.137'	119°50.043'	
2	5	1	23-Aug-06	7:54 AM	26-Aug-06	8:02 AM	04°55.013'	119°54.417'	6.212
2	5	2	23-Aug-06	7:59 AM	26-Aug-06	8:06 AM	04°54.962'	119°54.363'	
2	5	3	23-Aug-06	8:04 AM	26-Aug-06	8:10 AM	04°54.972'	119°54.367'	
2	5	4	23-Aug-06	8:14 AM	26-Aug-06	8:13 AM	04°55.002'	119°54.420'	
2	5	5	23-Aug-06	8:16 AM	26-Aug-06	8:16 AM	04°55.012'	119°54.415'	
2	5	6	23-Aug-06	8:25 AM	26-Aug-06	8:19 AM	04°55.018'	119°54.265'	
3	1	1	26-Aug-06	10:11 AM	29-Aug-06	10:52 AM	05°02.163'	119°46.232'	2.573
3	1	2	26-Aug-06	10:13 AM	29-Aug-06	10:54 AM	05°02.172'	119°46.265'	
3	1	3	26-Aug-06	10:17 AM	29-Aug-06	10:58 AM	05°02.193'	119°46.247'	
3	1	4	26-Aug-06	10:19 AM	29-Aug-06	11:03 AM	05°02.138'	119°46.205'	
3	1	5	26-Aug-06	10:21 AM	29-Aug-06	11:08 AM	05°02.145'	119°46.285'	
3	1	6	26-Aug-06	10:23 AM	29-Aug-06	11:12 AM	05°02.178'	119°46.292'	
3	2	1	26-Aug-06	9:40 AM	29-Aug-06	10:21 AM	05°02.150'	119°48.258'	0.963
3	2	2	26-Aug-06	9:42 AM	29-Aug-06	10:24 AM	05°02.138'	119°48.283'	
3	2	3	26-Aug-06	9:44 AM	29-Aug-06	10:26 AM	05°02.078'	119°48.253'	
3	2	4	26-Aug-06	9:47 AM	29-Aug-06	10:29 AM	05°02.062'	119°48.257'	
3	2	5	26-Aug-06	9:50 AM	29-Aug-06	10:31 AM	05°02.202'	119°48.258'	
3	2	6	26-Aug-06	9:53 AM	29-Aug-06	10:40 AM	05°01.982'	119°48.253'	
3	3	1	26-Aug-06	9:21 AM	29-Aug-06	10:00 AM	05°02.078'	119°48.313'	2.124
3	3	2	26-Aug-06	9:24 AM	29-Aug-06	10:05 AM	05°02.035'	119°48.318'	
3	3	3	26-Aug-06	9:27 AM	29-Aug-06	10:08 AM	05°02.135'	119°48.288'	
3	3	4	26-Aug-06	9:29 AM	29-Aug-06	10:11 AM	05°02.138'	119°48.435'	
3	3	5	26-Aug-06	9:32 AM	29-Aug-06	10:15 AM	05°02.150'	119°48.257'	
3	3	6	26-Aug-06	9:36 AM	29-Aug-06	10:19 AM	05°02.213'	119°48.208'	
3	4	1	26-Aug-06	7:16 AM	29-Aug-06	7:08 AM	04°58.133'	119°50.037'	4.897
3	4	2	26-Aug-06	7:20 AM	29-Aug-06	7:12 AM	04°58.112	119°50.060'	
3	4	3	26-Aug-06	7:24 AM	29-Aug-06	7:15 AM	04°58.158'	119°49.707'	
3	4	4	26-Aug-06	7:26 AM	29-Aug-06	7:19 AM	04°58.182'	119°49.705'	
3	4	5	26-Aug-06	7:29 AM	29-Aug-06	7:24 AM	04°58.197'	119°49.882'	
3	4	6	26-Aug-06	7:33 AM	29-Aug-06	7:28 AM	04°58.137'	119°50.043'	
3	5	1	26-Aug-06	8:04 AM	29-Aug-06	8:05 AM	04°55.013'	119°54.417'	4.688
3	5	2	26-Aug-06	8:08 AM	29-Aug-06	8:09 AM	04°54.962'	119°54.363'	
3	5	3	26-Aug-06	8:11 AM	29-Aug-06	8:13 AM	04°54.972'	119°54.367'	
3	5	4	26-Aug-06	8:14 AM	29-Aug-06	8:17 AM	04°55.002'	119°54.420'	
3	5	5	26-Aug-06	8:18 AM	29-Aug-06	8:20 AM	04°55.012'	119°54.415'	
3	5	6	26-Aug-06	8:21 AM	29-Aug-06	8:22 AM	04°55.018'	119°54.265'	
4	1	1	29-Aug-06	10:52 AM	01-Sep-06	11:38 AM	05°02.168'	119°46.270'	1.818
4	1	2	29-Aug-06	10:55 AM	01-Sep-06	11:41 AM	05°02.172'	119°46.215'	
4	1	3	29-Aug-06	10:59 AM	01-Sep-06	11:45 AM	05°02.193'	119°46.247'	
4	1	4	29-Aug-06	11:05 AM	01-Sep-06	11:48 AM	05°02.113'	119°46.213'	
4	1	5	29-Aug-06	11:09 AM	01-Sep-06	11:51 AM	05°02.127'	119°46.210'	
4	1	6	29-Aug-06	11:13 AM	01-Sep-06	11:57 AM	05°02.113'	119°46.203'	
4	2	1	29-Aug-06	10:22 AM	01-Sep-06	11:09 AM	05°02.150'	119°48.258'	2.850
4	2	2	29-Aug-06	10:25 AM	01-Sep-06	11:12 AM	05°02.138'	119°48.283'	
4	2	3	29-Aug-06	10:27 AM	01-Sep-06	11:15 AM	05°02.070'	119°48.257'	
4	2	4	29-Aug-06	10:30 AM	01-Sep-06	11:19 AM	05°02.052'	119°48.262'	
4	2	5	29-Aug-06	10:34 AM	01-Sep-06	11:21 AM	05°02.202'	119°48.258'	
4	2	6	29-Aug-06	10:46 AM	01-Sep-06	11:24 AM	05°01.982'	119°48.253'	
4	3	1	29-Aug-06	10:02 AM	01-Sep-06	10:52 AM	05°02.078'	119°48.313'	1.497
4	3	2	29-Aug-06	10:06 AM	01-Sep-06	10:55 AM	05°02.035'	119°48.318'	

APPENDIX 28. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2006

Day	Cluster No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
4	3	3	29-Aug-06	10:09 AM	01-Sep-06	10:59 AM	05°02.135'	119°48.288'	
4	3	4	29-Aug-06	10:13 AM	01-Sep-06	11:04 AM	05°02.120'	119°48.262	
4	3	5	29-Aug-06	10:16 AM	01-Sep-06	11:09 AM	05°02.150'	119°48.257'	
4	3	6	29-Aug-06	10:21 AM	01-Sep-06	11:14 AM	05°02.203'	119°48.218'	
4	4	1	29-Aug-06	7:10 AM	01-Sep-06	8:00 AM	04°58.133'	119°49.630'	1.368
4	4	2	29-Aug-06	7:13 AM	01-Sep-06	8:10 AM	04°58.127'	119°49.637'	
4	4	3	29-Aug-06	7:17 AM	01-Sep-06	8:13 AM	04°58.118'	119°49.747'	
4	4	4	29-Aug-06	7:21 AM	01-Sep-06	8:17 AM	04°58.248'	119°49.812'	
4	4	5	29-Aug-06	7:26 AM	01-Sep-06	8:20 AM	04°58.247'	119°49.812'	
4	4	6	29-Aug-06	7:29 AM	01-Sep-06	8:25 AM	04°58.137'	119°50.043'	
4	5	1	29-Aug-06	8:07 AM	01-Sep-06	9:10 AM	04°55.013'	119°54.417'	6.640
4	5	2	29-Aug-06	8:10 AM	01-Sep-06	9:13 AM	04°54.962'	119°54.363'	
4	5	3	29-Aug-06	8:15 AM	01-Sep-06	9:16 AM	04°54.972'	119°54.367'	
4	5	4	29-Aug-06	8:18 AM	01-Sep-06	9:20 AM	04°55.002'	119°54.420'	
4	5	5	29-Aug-06	8:21 AM	01-Sep-06	9:23 AM	04°55.012'	119°54.415'	
4	5	6	29-Aug-06	8:24 AM	01-Sep-06	9:26 AM	04°55.018'	119°54.265'	
5	1	1	01-Sep-06	11:39 AM	04-Sep-06	10:35 AM	05°02.168'	119°46.235'	3.055
5	1	2	01-Sep-06	11:43 AM	04-Sep-06	10:39 AM	05°02.173'	119°46.253'	
5	1	3	01-Sep-06	11:46 AM	04-Sep-06	10:40 AM	05°02.180'	119°46.210'	
5	1	4	01-Sep-06	11:50 AM	04-Sep-06	10:43 AM	05°02.113'	119°46.213'	
5	1	5	01-Sep-06	11:52 AM	04-Sep-06	10:45 AM	05°02.127'	119°46.210'	
5	1	6	01-Sep-06	11:59 AM	04-Sep-06	10:47 AM	05°02.113'	119°46.203'	
5	2	1	01-Sep-06	11:10 AM	04-Sep-06	10:06 AM	05°02.150'	119°48.258'	0.259
5	2	2	01-Sep-06	11:13 AM	04-Sep-06	10:09 AM	05°02.138'	119°48.283'	
5	2	3	01-Sep-06	11:17 AM	04-Sep-06	10:04 AM	05°02.070'	119°48.257'	
5	2	4	01-Sep-06	11:20 AM	04-Sep-06	10:05 AM	05°02.052'	119°48.262'	
5	2	5	01-Sep-06	11:22 AM	04-Sep-06	10:08 AM	05°02.202'	119°48.258'	
5	2	6	01-Sep-06	11:26 AM	04-Sep-06	10:10 AM	05°01.982'	119°48.253'	
5	3	1	01-Sep-06	10:54 AM	04-Sep-06	9:44 AM	05°02.078'	119°48.313'	3.098
5	3	2	01-Sep-06	10:56 AM	04-Sep-06	9:48 AM	05°02.035'	119°48.318'	
5	3	3	01-Sep-06	11:00 AM	04-Sep-06	9:52 AM	05°02.135'	119°48.288'	
5	3	4	01-Sep-06	11:06 AM	04-Sep-06	9:56 AM	05°02.120'	119°48.262	
5	3	5	01-Sep-06	11:10 AM	04-Sep-06	9:59 AM	05°02.150'	119°48.257'	
5	3	6	01-Sep-06	11:15 AM	04-Sep-06	10:05 AM	05°02.203'	119°48.218'	
5	4	1	01-Sep-06	8:02 AM	04-Sep-06	6:40 AM	04°58.133'	119°49.630'	6.540
5	4	2	01-Sep-06	8:11 AM	04-Sep-06	6:50 AM	04°58.127'	119°49.637'	
5	4	3	01-Sep-06	8:14 AM	04-Sep-06	6:56 AM	04°58.118'	119°49.747'	
5	4	4	01-Sep-06	8:18 AM	04-Sep-06	7:08 AM	04°58.248'	119°49.812'	
5	4	5	01-Sep-06	8:22 AM	04-Sep-06	7:15 AM	04°58.247'	119°49.812'	
5	4	6	01-Sep-06	8:26 AM	04-Sep-06	7:19 AM	04°58.137'	119°50.043'	
5	5	1	01-Sep-06	9:11 AM	04-Sep-06	7:52 AM	04°55.013'	119°54.417'	5.976
5	5	2	01-Sep-06	9:14 AM	04-Sep-06	7:58 AM	04°54.962'	119°54.363'	
5	5	3	01-Sep-06	9:18 AM	04-Sep-06	8:04 AM	04°54.972'	119°54.367'	
5	5	4	01-Sep-06	9:21 AM	04-Sep-06	8:13 AM	04°55.005'	119°54.438'	
5	5	5	01-Sep-06	9:24 AM	04-Sep-06	8:17 AM	04°55.032'	119°54.198'	
5	5	6	01-Sep-06	9:27 AM	04-Sep-06	8:25 AM	04°55.048'	119°54.265'	

APPENDIX 29. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2008

Day	Cluster No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
1	1	1	27-Aug-08	10:14 AM	30-Aug-08	5:00 AM	05° 02.171'	119°46.298'	8.330
1	1	2	27-Aug-08	10:24 AM	30-Aug-08	5:23 AM	05° 02.175'	119°46.246'	
1	1	3	27-Aug-08	10:33 AM	30-Aug-08	5:38 AM	05° 02.193'	119°46.203'	
1	1	4	27-Aug-08	10:43 AM	30-Aug-08	5:52 AM	05° 02.113'	119°46.221'	
1	1	5	27-Aug-08	10:51 AM	30-Aug-08	6:11 AM	05° 02.136'	119°46.193'	
1	1	6	27-Aug-08	10:59 AM	30-Aug-08	6:27 AM	05° 02.096'	119°46.200'	
1	2	1	27-Aug-08	11:27 AM	30-Aug-08	7:02 AM	05° 02.236'	119°48.198'	9.000
1	2	2	27-Aug-08	11:35 AM	30-Aug-08	7:16 AM	05° 02.216'	119°48.265'	
1	2	3	27-Aug-08	11:44 AM	30-Aug-08	7:27 AM	05° 02.411'	119°47.955'	
1	2	4	27-Aug-08	11:51 AM	30-Aug-08	7:39 AM	05° 02.446'	119°47.951'	
1	2	5	27-Aug-08	11:58 AM	30-Aug-08	7:52 AM	05° 02.146'	119°48.288'	
1	2	6	27-Aug-08	12:06 PM	30-Aug-08	8:07 AM	05° 02.170'	119°48.311'	
1	3	1	27-Aug-08	12:37 PM	30-Aug-08	8:39 AM	05° 02.076'	119°48.331'	2.940
1	3	2	27-Aug-08	12:45 PM	30-Aug-08	8:52 AM	05° 02.046'	119°48.350'	
1	3	3	27-Aug-08	12:53 PM	30-Aug-08	9:06 AM	05° 02.151'	119°48.450'	
1	3	4	27-Aug-08	1:02 PM	30-Aug-08	9:19 AM	05° 02.131'	119°48.480'	
1	3	5	27-Aug-08	1:13 PM	30-Aug-08	9:32 AM	05° 02.180'	119°48.543'	
1	3	6	27-Aug-08	1:21 PM	30-Aug-08	9:46 AM	05° 02.206'	119°48.410'	
2	1	1	30-Aug-08	5:30 AM	2-Sep-08	5:17 AM	05° 02.171'	119°46.298'	6.470
2	1	2	30-Aug-08	5:38 AM	2-Sep-08	5:29 AM	05° 02.175'	119°46.246'	
2	1	3	30-Aug-08	5:47 AM	2-Sep-08	5:42 AM	05° 02.193'	119°46.211'	
2	1	4	30-Aug-08	5:54 AM	2-Sep-08	5:56 AM	05° 02.113'	119°46.221'	
2	1	5	30-Aug-08	6:02 AM	2-Sep-08	6:09 AM	05° 02.136'	119°46.193'	
2	1	6	30-Aug-08	6:11 AM	2-Sep-08	6:23 AM	05° 02.096'	119°46.200'	
2	2	1	30-Aug-08	6:42 AM	2-Sep-08	6:54 AM	05° 02.236'	119°48.198'	5.300
2	2	2	30-Aug-08	6:49 AM	2-Sep-08	7:07 AM	05° 02.216'	119°48.265'	
2	2	3	30-Aug-08	6:58 AM	2-Sep-08	7:21 AM	05° 02.411'	119°47.955'	
2	2	4	30-Aug-08	7:06 AM	2-Sep-08	7:34 AM	05° 02.446'	119°47.951'	
2	2	5	30-Aug-08	7:15 AM	2-Sep-08	7:48 AM	05° 02.146'	119°48.288'	
2	2	6	30-Aug-08	7:23 AM	2-Sep-08	8:02 AM	05° 02.170'	119°48.311'	
2	3	1	30-Aug-08	7:55 AM	2-Sep-08	8:34 AM	05° 02.076'	119°48.331'	5.830
2	3	2	30-Aug-08	8:04 AM	2-Sep-08	8:47 AM	05° 02.046'	119°48.350'	
2	3	3	30-Aug-08	8:12 AM	2-Sep-08	8:59 AM	05° 02.151'	119°48.450'	
2	3	4	30-Aug-08	8:21 AM	2-Sep-08	9:17 AM	05° 02.131'	119°48.480'	
2	3	5	30-Aug-08	8:29 AM	2-Sep-08	9:31 AM	05° 02.180'	119°48.543'	
2	3	6	30-Aug-08	8:38 AM	2-Sep-08	9:44 AM	05° 02.206'	119°48.410'	
2	4	1	30-Aug-08	9:23 AM	2-Sep-08	10:29 AM	04° 57.960'	119°49.890'	9.330
2	4	2	30-Aug-08	9:32 AM	2-Sep-08	10:43 AM	04° 57.970'	119°50.016'	
2	4	3	30-Aug-08	9:41 AM	2-Sep-08	10:57 AM	04° 58.013'	119°50.150'	
2	4	4	30-Aug-08	9:52 AM	2-Sep-08	11:11 AM	04° 57.978'	119°50.173'	
2	4	5	30-Aug-08	10:03 AM	2-Sep-08	11:24	04° 57.998'	119°50.161'	
2	4	6	30-Aug-08	10:12 AM	2-Sep-08	11:36 AM	04° 57.986'	119°50.003'	
2	5	1	30-Aug-08	10:47 AM	2-Sep-08	12:09 PM	04° 56.015'	119°53.856'	8.930
2	5	2	30-Aug-08	10:55 AM	2-Sep-08	12:22 PM	04° 55.105'	119°54.250'	
2	5	3	30-Aug-08	11:03 AM	2-Sep-08	12:36 PM	04° 54.971'	119°54.431'	
2	5	4	30-Aug-08	11:12 AM	2-Sep-08	12:49 PM	04° 55.013'	119°54.418'	
2	5	5	30-Aug-08	11:19 AM	2-Sep-08	1:03 PM	04° 55.015'	119°54.405'	
2	5	6	30-Aug-08	11:27 AM	2-Sep-08	1:17 PM	04° 55.101'	119°54.241'	
3	1	1	2-Sep-08	6:15 AM	5-Sep-08	5:49 AM	05° 02.171'	119°46.298'	11.300
3	1	2	2-Sep-08	6:23 AM	5-Sep-08	6:01 AM	05° 02.175'	119°46.246'	
3	1	3	2-Sep-08	6:31 AM	5-Sep-08	6:13 AM	05° 02.193'	119°46.211'	
3	1	4	2-Sep-08	6:39 AM	5-Sep-08	6:25 AM	05° 02.113'	119°46.221'	
3	1	5	2-Sep-08	6:48 AM	5-Sep-08	6:38 AM	05° 02.136'	119°46.193'	
3	1	6	2-Sep-08	6:56 AM	5-Sep-08	6:51 AM	05° 02.096'	119°46.200'	
3	2	1	2-Sep-08	7:29 AM	5-Sep-08	7:23 AM	05° 02.236'	119°48.198'	9.250
3	2	2	2-Sep-08	7:37 AM	5-Sep-08	7:36 AM	05° 02.216'	119°48.265'	
3	2	3	2-Sep-08	7:45 AM	5-Sep-08	7:48 AM	05° 02.411'	119°47.955'	

APPENDIX 29. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2008

Day	Cluster No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
3	2	4	2-Sep-08	7:52 AM	5-Sep-08	8:03 AM	05° 02.446'	119°47.951'	
3	2	5	2-Sep-08	8:01 AM	5-Sep-08	8:15 AM	05° 02.146'	119°48.288'	
3	2	6	2-Sep-08	8:09 AM	5-Sep-08	8:27 AM	05° 02.170'	119°48.311'	
3	3	1	2-Sep-08	8:37 AM	5-Sep-08	8:58 AM	05° 02.076'	119°48.331'	4.050
3	3	2	2-Sep-08	8:46 AM	5-Sep-08	9:11 AM	05° 02.046'	119°48.350'	
3	3	3	2-Sep-08	8:54 AM	5-Sep-08	9:24 AM	05° 02.151'	119°48.450'	
3	3	4	2-Sep-08	9:02 AM	5-Sep-08	9:37 AM	05° 02.131'	119°48.480'	
3	3	5	2-Sep-08	9:10 AM	5-Sep-08	9:49 AM	05° 02.180'	119°48.543'	
3	3	6	2-Sep-08	9:18 AM	5-Sep-08	10:02 AM	05° 02.206'	119°48.410'	
3	4	1	2-Sep-08	10:05 AM	5-Sep-08	10:49 AM	04° 057.96'	119°49.890'	8.330
3	4	2	2-Sep-08	10:13 AM	5-Sep-08	11:01 AM	04° 057.97'	119°50.016'	
3	4	3	2-Sep-08	10:22 AM	5-Sep-08	11:14 AM	04° 058.01'	119°50.150'	
3	4	4	2-Sep-08	10:29 AM	5-Sep-08	11:26 AM	04° 057.97'	119°50.173'	
3	4	5	2-Sep-08	10:37 AM	5-Sep-08	11:39	04° 057.99'	119°50.161'	
3	4	6	2-Sep-08	10:44 AM	5-Sep-08	11:52	04° 057.98'	119°50.003'	
3	5	1	2-Sep-08	11:17 AM	5-Sep-08	12:27 PM	04° 056.01'	119°53.856'	3.140
3	5	2	2-Sep-08	11:25 AM	5-Sep-08	12:38 PM	04° 055.10'	119°54.250'	
3	5	3	2-Sep-08	11:32 AM	5-Sep-08	12:49 PM	04° 054.97'	119°54.431'	
3	5	4	2-Sep-08	11:41 AM	5-Sep-08	1:02 PM	04° 055.01'	119°54.418'	
3	5	5	2-Sep-08	11:48 AM	5-Sep-08	1:14 PM	04° 055.01'	119°54.405'	
3	5	6	2-Sep-08	11:57 AM	5-Sep-08	1:27 PM	04° 055.10'	119°54.241'	
4	1	1	5-Sep-08	5:49 AM	8-Sep-08	6:15 AM	05° 02.171'	119°46.298'	6.880
4	1	2	5-Sep-08	6:02 AM	8-Sep-08	6:27 AM	05° 02.175'	119°46.246'	
4	1	3	5-Sep-08	6:14 AM	8-Sep-08	6:38 AM	05° 02.193'	119°46.211'	
4	1	4	5-Sep-08	6:27 AM	8-Sep-08	6:51 AM	05° 02.113'	119°46.221'	
4	1	5	5-Sep-08	6:39 AM	8-Sep-08	7:01 AM	05° 02.136'	119°46.193'	
4	1	6	5-Sep-08	6:52 AM	8-Sep-08	7:13 AM	05° 02.096'	119°46.200'	
4	2	1	5-Sep-08	7:27 AM	8-Sep-08	7:45 AM	05° 02.236'	119°48.198'	4.460
4	2	2	5-Sep-08	7:39 AM	8-Sep-08	7:57 AM	05° 02.216'	119°48.265'	
4	2	3	5-Sep-08	7:51 AM	8-Sep-08	8:09 AM	05° 02.411'	119°47.955'	
4	2	4	5-Sep-08	8:04 AM	8-Sep-08	8:21 AM	05° 02.446'	119°47.951'	
4	2	5	5-Sep-08	8:16 AM	8-Sep-08	8:33 AM	05° 02.146'	119°48.288'	
4	2	6	5-Sep-08	8:28 AM	8-Sep-08	8:45 AM	05° 02.170'	119°48.311'	
4	3	1	5-Sep-08	9:07 AM	8-Sep-08	9:17 AM	05° 02.076'	119°48.331'	4.450
4	3	2	5-Sep-08	9:21 AM	8-Sep-08	9:29 AM	05° 02.046'	119°48.350'	
4	3	3	5-Sep-08	9:34 AM	8-Sep-08	9:42 AM	05° 02.151'	119°48.450'	
4	3	4	5-Sep-08	9:46 AM	8-Sep-08	9:55 AM	05° 02.131'	119°48.480'	
4	3	5	5-Sep-08	9:58 AM	8-Sep-08	10:08 AM	05° 02.180'	119°48.543'	
4	3	6	5-Sep-08	10:11 AM	8-Sep-08	10:21 AM	05° 02.206'	119°48.410'	
4	4	1	5-Sep-08	10:43 AM	8-Sep-08	10:53 AM	04° 57.966'	119°49.890'	5.830
4	4	2	5-Sep-08	10:56 AM	8-Sep-08	11:06 AM	04° 57.975'	119°50.016'	
4	4	3	5-Sep-08	11:09 AM	8-Sep-08	11:19 AM	04° 58.013'	119°50.150'	
4	4	4	5-Sep-08	11:22 AM	8-Sep-08	11:32 AM	04° 57.978'	119°50.173'	
4	4	5	5-Sep-08	11:35 AM	8-Sep-08	11:45 AM	04° 57.998'	119°50.161'	
4	4	6	5-Sep-08	11:48 AM	8-Sep-08	11:58 AM	04° 57.986'	119°50.003'	
4	5	1	5-Sep-08	12:19 PM	8-Sep-08	12:39 PM	04° 56.015'	119°53.856'	10.070
4	5	2	5-Sep-08	12:32 PM	8-Sep-08	12:51 PM	04° 55.105'	119°54.250'	
4	5	3	5-Sep-08	12:44 PM	8-Sep-08	1:04 PM	04° 54.971'	119°54.431'	
4	5	4	5-Sep-08	12:57 PM	8-Sep-08	1:17 PM	04° 55.013'	119°54.418'	
4	5	5	5-Sep-08	1:09 PM	8-Sep-08	1:29 PM	04° 55.015'	119°54.405'	
4	5	6	5-Sep-08	1:22 PM	8-Sep-08	1:42 PM	04° 55.101'	119°54.241'	
5	1	1	8-Sep-08	5:49 AM	11-Sep-08	6:17 AM	05° 02.171'	119°46.298'	6.310
5	1	2	8-Sep-08	6:02 AM	11-Sep-08	6:29 AM	05° 02.175'	119°46.246'	
5	1	3	8-Sep-08	6:13 AM	11-Sep-08	6:41 AM	05° 02.193'	119°46.211'	
5	1	4	8-Sep-08	6:25 AM	11-Sep-08	6:53 AM	05° 02.113'	119°46.221'	
5	1	5	8-Sep-08	6:37 AM	11-Sep-08	7:05 AM	05° 02.136'	119°46.193'	
5	1	6	8-Sep-08	6:50 AM	11-Sep-08	7:17 AM	05° 02.096'	119°46.200'	

APPENDIX 29. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2008

Day	Cluster No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
5	2	1	8-Sep-08	7:23 AM	11-Sep-08	7:49 AM	05° 02.236'	119°48.198'	5.750
5	2	2	8-Sep-08	7:36 AM	11-Sep-08	8:02 AM	05° 02.216'	119°48.265'	
5	2	3	8-Sep-08	7:48 AM	11-Sep-08	8:15 AM	05° 02.411'	119°47.955'	
5	2	4	8-Sep-08	8:01 AM	11-Sep-08	8:27 AM	05° 02.446'	119°47.951'	
5	2	5	8-Sep-08	8:14 AM	11-Sep-08	8:39 AM	05° 02.146'	119°48.288'	
5	2	6	8-Sep-08	8:27 AM	11-Sep-08	8:52 AM	05° 02.170'	119°48.311'	
5	3	1	8-Sep-08	8:59 AM	11-Sep-08	9:23 AM	05° 02.076'	119°48.331'	2.650
5	3	2	8-Sep-08	9:12 AM	11-Sep-08	9:35 AM	05° 02.046'	119°48.350'	
5	3	3	8-Sep-08	9:25 AM	11-Sep-08	9:48 AM	05° 02.151'	119°48.450'	
5	3	4	8-Sep-08	9:27 AM	11-Sep-08	10:03 AM	05° 02.131'	119°48.480'	
5	3	5	8-Sep-08	9:49 AM	11-Sep-08	10:16 AM	05° 02.180'	119°48.543'	
5	3	6	8-Sep-08	10:02 AM	11-Sep-08	10:29 AM	05° 02.206'	119°48.410'	
5	4	1	8-Sep-08	10:45 AM	11-Sep-08	11:14 AM	04° 57.966'	119°49.890'	4.540
5	4	2	8-Sep-08	10:57 AM	11-Sep-08	11:25 AM	04° 57.975'	119°50.016'	
5	4	3	8-Sep-08	11:09 AM	11-Sep-08	11:37 AM	04° 58.013'	119°50.150'	
5	4	4	8-Sep-08	11:22 AM	11-Sep-08	11:49 AM	04° 57.978'	119°50.173'	
5	4	5	8-Sep-08	11:34 AM	11-Sep-08	12:02 PM	04° 57.998'	119°50.161'	
5	4	6	8-Sep-08	11:46 AM	11-Sep-08	12:15 PM	04° 57.986'	119°50.003'	
5	5	1	8-Sep-08	12:21 PM	11-Sep-08	1:01 PM	04° 56.015'	119°53.856'	6.260
5	5	2	8-Sep-08	12:33 PM	11-Sep-08	1:14 PM	04° 55.105'	119°54.250'	
5	5	3	8-Sep-08	12:45 PM	11-Sep-08	1:27 PM	04° 54.971'	119°54.431'	
5	5	4	8-Sep-08	12:57 PM	11-Sep-08	1:39 PM	04° 55.013'	119°54.418'	
5	5	5	8-Sep-08	1:09 PM	11-Sep-08	1:51 PM	04° 55.015'	119°54.405'	
5	5	6	8-Sep-08	1:22 PM	11-Sep-08	2:03 PM	04° 55.101'	119°54.241'	

APPENDIX 30. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2010

Day	Cluster No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
1	1	1	7-Aug-10	12:20 PM	10-Aug-10	5:35 AM	05° 02.171'	119°46.297'	1.230
1	1	2	7-Aug-10	12:31 PM	10-Aug-10	5:49 AM	05° 02.175'	119°46.246'	
1	1	3	7-Aug-10	12:42 PM	10-Aug-10	6:05 AM	05° 02.187'	119°46.205'	
1	1	4	7-Aug-10	12:51 PM	10-Aug-10	6:19 AM	05° 02.113'	119°46.221'	
1	1	5	7-Aug-10	1:11 AM	10-Aug-10	6:25 AM	05° 02.130'	119°46.186'	
1	1	6	7-Aug-10	1:21 AM	10-Aug-10	6:41 AM	05° 02.097'	119°46.201'	
1	2	1	7-Aug-10	2:05 AM	10-Aug-10	7:15 AM	05° 02.236'	119°48.197'	5.800
1	2	2	7-Aug-10	2:14 AM	10-Aug-10	7:34 AM	05° 02.209'	119°48.258'	
1	2	3	7-Aug-10	2:25 AM	10-Aug-10	7:49 AM	05° 02.411'	119°47.955'	
1	2	4	7-Aug-10	2:34 AM	10-Aug-10	8:05 AM	05° 02.374'	119°47.949'	
1	2	5	7-Aug-10	2:45 AM	10-Aug-10	8:19 AM	05° 02.440'	119°47.945'	
1	2	6	7-Aug-10	2:56 AM	10-Aug-10	8:26 AM	05° 02.146'	119°48.288'	
1	3	1	7-Aug-10	3:25 AM	10-Aug-10	8:50 AM	05° 02.077'	119°48.332'	6.510
1	3	2	7-Aug-10	3:36 AM	10-Aug-10	9:04 AM	05° 02.048'	119°48.352'	
1	3	3	7-Aug-10	3:47 AM	10-Aug-10	9:18 AM	05° 02.144'	119°48.443'	
1	3	4	7-Aug-10	3:56 AM	10-Aug-10	9:29 AM	05° 02.123'	119°48.472'	
1	3	5	7-Aug-10	4:07 AM	10-Aug-10	9:43 AM	05° 02.179'	119°48.542'	
1	3	6	7-Aug-10	4:18 AM	10-Aug-10	9:57 AM	05° 02.199'	119°48.569'	
2	1	1	10-Aug-10	5:41 AM	13-Aug-10	5:15 AM	05° 02.171'	119°46.298'	2.935
2	1	2	10-Aug-10	5:50 AM	13-Aug-10	5:29 AM	05° 02.175'	119°46.246'	
2	1	3	10-Aug-10	6:01 AM	13-Aug-10	5:42 AM	05° 02.187'	119°46.205'	
2	1	4	10-Aug-10	6:12 AM	13-Aug-10	5:56 AM	05° 02.113'	119°46.221'	
2	1	5	10-Aug-10	6:20 AM	13-Aug-10	6:09 AM	05° 02.130'	119°46.186'	
2	1	6	10-Aug-10	6:31 AM	13-Aug-10	6:23 AM	05° 02.097'	119°46.201'	
2	2	1	10-Aug-10	7:01 AM	13-Aug-10	6:51 AM	05° 02.236'	119°48.197'	2.975
2	2	2	10-Aug-10	7:10 AM	13-Aug-10	7:05 AM	05° 02.209'	119°48.258'	
2	2	3	10-Aug-10	7:21 AM	13-Aug-10	7:28 AM	05° 02.411'	119°47.955'	
2	2	4	10-Aug-10	7:32 AM	13-Aug-10	7:42 AM	05° 02.374'	119°47.949'	
2	2	5	10-Aug-10	7:41 AM	13-Aug-10	7:55 AM	05° 02.440'	119°47.945'	
2	2	6	10-Aug-10	7:50 AM	13-Aug-10	8:09 AM	05° 02.146'	119°48.288'	
2	3	1	10-Aug-10	8:11 AM	13-Aug-10	8:31 AM	05° 02.077'	119°48.332'	3.540
2	3	2	10-Aug-10	8:20 AM	13-Aug-10	8:44 AM	05° 02.048'	119°48.352'	
2	3	3	10-Aug-10	8:31 AM	13-Aug-10	8:58 AM	05° 02.144'	119°48.443'	
2	3	4	10-Aug-10	8:42 AM	13-Aug-10	9:11 AM	05° 02.123'	119°48.472'	
2	3	5	10-Aug-10	8:51 AM	13-Aug-10	9:25 AM	05° 02.179'	119°48.542'	
2	3	6	10-Aug-10	9:02 AM	13-Aug-10	9:38 AM	05° 02.199'	119°48.569'	
2	4	1	10-Aug-10	10:05 AM	13-Aug-10	10:44 AM	04° 57.965'	119°49.899'	4.635
2	4	2	10-Aug-10	10:14 AM	13-Aug-10	10:59 AM	04° 57.973'	119°50.015'	
2	4	3	10-Aug-10	10:25 AM	13-Aug-10	11:14 AM	04° 58.014'	119°50.151'	
2	4	4	10-Aug-10	10:34 AM	13-Aug-10	11:28 AM	04° 57.970'	119°50.165'	
2	4	5	10-Aug-10	10:46 AM	13-Aug-10	11:43 AM	04° 58.039'	119°50.090'	
2	4	6	10-Aug-10	10:55 AM	13-Aug-10	11:58 AM	04° 57.944'	119°50.189'	
2	5	1	10-Aug-10	12:02 PM	13-Aug-10	1:05 AM	04° 56.011'	119°53.853'	6.000
2	5	2	10-Aug-10	12:11 PM	13-Aug-10	1:19 AM	04° 55.103'	119°54.248'	
2	5	3	10-Aug-10	12:22 PM	13-Aug-10	1:25 AM	04° 54.965'	119°54.425'	
2	5	4	10-Aug-10	12:31 PM	13-Aug-10	1:38 AM	04° 55.006'	119°54.411'	
2	5	5	10-Aug-10	12:42 PM	13-Aug-10	1:53 AM	04° 55.013'	119°54.403'	
2	5	6	10-Aug-10	12:53 PM	13-Aug-10	2:07 AM	04° 55.093'	119°54.233'	
3	1	1	13-Aug-10	5:46 AM	16-Aug-10	5:21 AM	05° 02.171'	119°46.297'	3.570
3	1	2	13-Aug-10	5:55 AM	16-Aug-10	5:36 AM	05° 02.175'	119°46.246'	
3	1	3	13-Aug-10	6:06 AM	16-Aug-10	5:50 AM	05° 02.187'	119°46.205'	

APPENDIX 30. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2010

Day	Cluster No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
3	1	4	13-Aug-10	6:15 AM	16-Aug-10	6:03 AM	05° 02.113'	119°46.221'	
3	1	5	13-Aug-10	6:23 AM	16-Aug-10	6:16 AM	05° 02.130'	119°46.186'	
3	1	6	13-Aug-10	6:35 AM	16-Aug-10	6:30 AM	05° 02.097'	119°46.201'	
3	2	1	13-Aug-10	7:03 AM	16-Aug-10	7:01 AM	05° 02.236'	119°48.197'	3.835
3	2	2	13-Aug-10	7:16 AM	16-Aug-10	7:18 AM	05° 02.209'	119°48.258'	
3	2	3	13-Aug-10	7:28 AM	16-Aug-10	7:31 AM	05° 02.411'	119°47.955'	
3	2	4	13-Aug-10	7:36 AM	16-Aug-10	7:44 AM	05° 02.374'	119°47.949'	
3	2	5	13-Aug-10	7:45 AM	16-Aug-10	7:58 AM	05° 02.440'	119°47.945'	
3	2	6	13-Aug-10	7:57 AM	16-Aug-10	8:12 AM	05° 02.146'	119°48.288'	
3	3	1	13-Aug-10	8:22 AM	16-Aug-10	8:37 AM	05° 02.077'	119°48.333'	4.340
3	3	2	13-Aug-10	8:31 AM	16-Aug-10	8:51 AM	05° 02.048'	119°48.354'	
3	3	3	13-Aug-10	8:42 AM	16-Aug-10	9:05 AM	05° 02.148'	119°48.445'	
3	3	4	13-Aug-10	8:51 AM	16-Aug-10	9:18 AM	05° 02.125'	119°48.472'	
3	3	5	13-Aug-10	9:02 AM	16-Aug-10	9:33 AM	05° 02.179'	119°48.542'	
3	3	6	13-Aug-10	9:11 AM	16-Aug-10	9:47 AM	05° 02.198'	119°48.569'	
3	4	1	13-Aug-10	10:13 AM	16-Aug-10	10:50 AM	04° 57.965'	119°49.898'	6.180
3	4	2	13-Aug-10	10:22 AM	16-Aug-10	11:04 AM	04° 57.975'	119°50.015'	
3	4	3	13-Aug-10	10:31 AM	16-Aug-10	11:17 AM	04° 58.014'	119°50.151'	
3	4	4	13-Aug-10	10:40 AM	16-Aug-10	11:31 AM	04° 57.970'	119°50.165'	
3	4	5	13-Aug-10	10:51 AM	16-Aug-10	11:46 AM	04° 58.039'	119°50.090'	
3	4	6	13-Aug-10	11:02 AM	16-Aug-10	12:01 PM	04° 57.944'	119°50.189'	
3	5	1	13-Aug-10	12:05 PM	16-Aug-10	1:04 AM	04° 56.011'	119°53.858'	13.265
3	5	2	13-Aug-10	12:14 PM	16-Aug-10	1:18 AM	04° 55.103'	119°54.248'	
3	5	3	13-Aug-10	12:22 PM	16-Aug-10	1:32 AM	04° 54.965'	119°54.425'	
3	5	4	13-Aug-10	12:31 PM	16-Aug-10	1:46 AM	04° 55.066'	119°54.411'	
3	5	5	13-Aug-10	12:42 PM	16-Aug-10	2:01 AM	04° 55.013'	119°54.403'	
3	5	6	13-Aug-10	12:51 PM	16-Aug-10	2:15 AM	04° 55.093'	119°54.233'	
4	1	1	16-Aug-10	5:51 AM	19-Aug-10	5:15 AM	05° 02.171'	119°46.297'	2.810
4	1	2	16-Aug-10	6:01 AM	19-Aug-10	5:29 AM	05° 02.175'	119°46.246'	
4	1	3	16-Aug-10	6:10 AM	19-Aug-10	5:43 AM	05° 02.187'	119°46.205'	
4	1	4	16-Aug-10	6:19 AM	19-Aug-10	5:56 AM	05° 02.113'	119°46.221'	
4	1	5	16-Aug-10	6:28 AM	19-Aug-10	6:10 AM	05° 02.130'	119°46.186'	
4	1	6	16-Aug-10	6:37 AM	19-Aug-10	6:14 AM	05° 02.097'	119°46.201'	
4	2	1	16-Aug-10	7:05 AM	19-Aug-10	6:41 AM	05° 02.236'	119°48.197'	5.460
4	2	2	16-Aug-10	7:14 AM	19-Aug-10	6:54 AM	05° 02.209'	119°48.258'	
4	2	3	16-Aug-10	7:24 AM	19-Aug-10	7:08 AM	05° 02.411'	119°47.955'	
4	2	4	16-Aug-10	7:33 AM	19-Aug-10	7:21 AM	05° 02.374'	119°47.949'	
4	2	5	16-Aug-10	7:42 AM	19-Aug-10	7:35 AM	05° 02.440'	119°47.945'	
4	2	6	16-Aug-10	7:51 AM	19-Aug-10	7:48 AM	05° 02.146'	119°48.288'	
4	3	1	16-Aug-10	8:16 AM	19-Aug-10	8:12 AM	05° 02.077'	119°48.352'	3.490
4	3	2	16-Aug-10	8:25 AM	19-Aug-10	8:26 AM	05° 02.048'	119°48.352'	
4	3	3	16-Aug-10	8:36 AM	19-Aug-10	8:40 AM	05° 02.144'	119°48.443'	
4	3	4	16-Aug-10	8:45 AM	19-Aug-10	8:53 AM	05° 02.123'	119°48.472'	
4	3	5	16-Aug-10	8:55 AM	19-Aug-10	9:07 AM	05° 02.179'	119°48.542'	
4	3	6	16-Aug-10	9:04 AM	19-Aug-10	9:21 AM	05° 02.198'	119°48.569'	
4	4	1	16-Aug-10	10:07 AM	19-Aug-10	10:24 AM	04° 57.965'	119°49.899'	13.090
4	4	2	16-Aug-10	10:18 AM	19-Aug-10	10:38 AM	04° 57.975'	119°50.015'	
4	4	3	16-Aug-10	10:29 AM	19-Aug-10	10:55 AM	04° 58.014'	119°50.151'	
4	4	4	16-Aug-10	10:39 AM	19-Aug-10	11:08 AM	04° 57.970'	119°50.165'	
4	4	5	16-Aug-10	10:50 AM	19-Aug-10	11:24 AM	04° 58.039'	119°50.090'	
4	4	6	16-Aug-10	11:01 AM	19-Aug-10	11:39 AM	04° 57.944'	119°50.189'	

APPENDIX 30. DETAILS OF FISH TRAP FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2010

Day	Cluster No.	Trap No.	Date Set	Time Set	Date Hauled	Time Hauled	Cluster location		Catch (kg)
							Lat.	Long.	
4	5	1	16-Aug-10	12:04 PM	19-Aug-10	12:42 PM	04° 56.011'	119°53.853'	10.340
4	5	2	16-Aug-10	12:14 PM	19-Aug-10	12:56 PM	04° 55.103'	119°54.248'	
4	5	3	16-Aug-10	12:23 PM	19-Aug-10	1:11 AM	04° 54.965'	119°54.425'	
4	5	4	16-Aug-10	12:34 PM	19-Aug-10	1:25 AM	04° 55.006'	119°54.411'	
4	5	5	16-Aug-10	12:45 PM	19-Aug-10	1:40 AM	04° 55.013'	119°54.403'	
4	5	6	16-Aug-10	12:54 PM	19-Aug-10	1:54 AM	04° 55.093'	119°54.233'	
5	1	1	19-Aug-10	5:57 AM	22-Aug-10	5:25 AM	05° 02.171'	119°46.297'	3.290
5	1	2	19-Aug-10	6:07 AM	22-Aug-10	5:38 AM	05° 02.175'	119°46.246'	
5	1	3	19-Aug-10	6:16 AM	22-Aug-10	5:52 AM	05° 02.187'	119°46.205'	
5	1	4	19-Aug-10	6:25 AM	22-Aug-10	6:06 AM	05° 02.113'	119°46.221'	
5	1	5	19-Aug-10	6:35 AM	22-Aug-10	6:21 AM	05° 02.130'	119°46.186'	
5	1	6	19-Aug-10	6:43 AM	22-Aug-10	6:35 AM	05° 02.097'	119°46.201'	
5	2	1	19-Aug-10	7:15 AM	22-Aug-10	7:07 AM	05° 02.236'	119°48.197'	7.810
5	2	2	19-Aug-10	7:25 AM	22-Aug-10	7:21 AM	05° 02.209'	119°48.258'	
5	2	3	19-Aug-10	7:34 AM	22-Aug-10	7:36 AM	05° 02.411'	119°47.955'	
5	2	4	19-Aug-10	7:43 AM	22-Aug-10	7:50 AM	05° 02.374'	119°47.949'	
5	2	5	19-Aug-10	7:52 AM	22-Aug-10	8:04 AM	05° 02.440'	119°47.945'	
5	2	6	19-Aug-10	8:01 AM	22-Aug-10	8:19 AM	05° 02.146'	119°48.288'	
5	3	1	19-Aug-10	8:26 AM	22-Aug-10	8:42 AM	05° 02.077'	119°48.332'	8.140
5	3	2	19-Aug-10	8:35 AM	22-Aug-10	8:56 AM	05° 02.048'	119°48.352'	
5	3	3	19-Aug-10	8:44 AM	22-Aug-10	9:11 AM	05° 02.144'	119°48.443'	
5	3	4	19-Aug-10	8:54 AM	22-Aug-10	9:25 AM	05° 02.123'	119°48.472'	
5	3	5	19-Aug-10	9:03 AM	22-Aug-10	9:40 AM	05° 02.179'	119°48.542'	
5	3	6	19-Aug-10	9:12 AM	22-Aug-10	9:54 AM	05° 02.189'	119°48.569'	
5	4	1	19-Aug-10	10:15 AM	22-Aug-10	10:57 AM	04° 57.965'	119°49.899'	10.390
5	4	2	19-Aug-10	10:25 AM	22-Aug-10	11:12 AM	04° 57.473'	119°50.015'	
5	4	3	19-Aug-10	10:36 AM	22-Aug-10	11:26 AM	04° 58.014'	119°50.151'	
5	4	4	19-Aug-10	10:47 AM	22-Aug-10	11:41 AM	04° 57.970'	119°50.165'	
5	4	5	19-Aug-10	10:58 AM	22-Aug-10	11:55 AM	04° 58.039'	119°50.090'	
5	4	6	19-Aug-10	11:09 AM	22-Aug-10	12:11 PM	04° 57.944'	119°50.189'	
5	5	1	19-Aug-10	12:12 PM	22-Aug-10	1:14 AM	04° 56.011'	119°53.853'	12.460
5	5	2	19-Aug-10	12:21 PM	22-Aug-10	1:28 AM	04° 55.103'	119°54.248'	
5	5	3	19-Aug-10	12:30 PM	22-Aug-10	1:43 AM	04° 54.965'	119°54.425'	
5	5	4	19-Aug-10	12:39 PM	22-Aug-10	1:57 AM	04° 55.006'	119°54.411'	
5	5	5	19-Aug-10	12:48 PM	22-Aug-10	2:12 AM	04° 55.013'	119°54.403'	
5	5	6	19-Aug-10	12:58 PM	22-Aug-10	2:27 AM	04° 55.093'	119°54.233'	

APPENDIX 31. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE BASE LINE DATA COLLECTION IN CORON BAY IN YEAR 2005

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	6◊	6.5◊	Total
1	2	12-Jun-05	4:35	5:42	11° 57.625'	120° 12.068'	11° 57.628'	120° 12.337'	3.860		3.860
1	4	12-Jun-05	4:45	5:50	11° 55.830'	120° 11.460'	11° 55.830'	120° 11.460'	1.965		1.965
1	04A	12-Jun-05	5:30	6:45	11° 54.780'	120° 11.015'	11° 54.495'	120° 10.913'	2.620		2.620
2	7	13-Jun-05	5:15	6:15	11° 55.360'	120° 05.727'	11° 55.352'	120° 05.450'	3.330		3.330
2	8	13-Jun-05	5:20	6:25	11° 56.120'	120° 08.875'	11° 55.900'	120° 08.880'	2.810		2.810
2	12	13-Jun-05	4:45	5:50	11° 52.282'	120° 11.337'	11° 52.117'	120° 10.970'	5.670		5.670
3	3	14-Jun-05	4:40	5:45	11° 57.247'	120° 10.003'	11° 56.917'	120° 10.083'	2.525		2.525
3	5	14-Jun-05	5:00	6:05	11° 57.338'	120° 06.802'	11° 57.177'	120° 07.047'	1.830		1.830
4	2	15-Jun-05	5:40	6:48	11° 57.592'	120° 12.058'	11° 57.618'	120° 12.317'	0.000		0.000
4	5	15-Jun-05	6:30	7:35	11° 57.347'	120° 06.812'	11° 57.168'	120° 07.050'	0.000		0.000
4	6	15-Jun-05	6:45	7:50	11° 57.317'	120° 05.128'	11° 56.993'	120° 04.917'	0.000		0.000
5	1	16-Jun-05	4:40	5:50	11° 58.617'	120° 12.218'	11° 58.685'	120° 12.468'	7.675		7.675
5	3	16-Jun-05	4:35	5:45	11° 57.250'	120° 10.000'	11° 56.950'	120° 10.017'	9.670		9.670
5	12	16-Jun-05	5:18	6:18	11° 52.248'	120° 11.367'	11° 52.085'	120° 11.002'	17.448		17.448
6	8	17-Jun-05	4:45	5:50	11° 56.087'	120° 08.875'	11° 55.907'	120° 08.877'	2.210		2.210
6	9	17-Jun-05	4:45	5:53	11° 54.213'	120° 06.900'	11° 54.133'	120° 07.283'	1.305		1.305
6	10	17-Jun-05	5:12	6:20	11° 52.397'	120° 08.957'	11° 52.440'	120° 08.703'	3.130		3.130
7	3	18-Jun-05	4:45	5:50	11° 57.327'	120° 09.937'	11° 56.950'	120° 09.940'	1.555		1.555
7	8	18-Jun-05	4:40	5:52	11° 56.097'	120° 08.872'	11° 55.905'	120° 08.882'	14.475		14.475
7	9	18-Jun-05	4:54	5:57	11° 54.200'	120° 06.900'	11° 54.132'	120° 07.175'	2.045		2.045
8	1	19-Jun-05	4:40	5:46	11° 58.617'	120° 12.218'	11° 58.680'	120° 12.463'	1.465		1.465
8	2	19-Jun-05	4:45	5:51	11° 57.527'	120° 12.052'	11° 57.600'	120° 12.325'	2.990		2.990
8	6	19-Jun-05	4:50	5:55	11° 57.327'	120° 05.118'	11° 56.997'	120° 04.925'	7.480		7.480
9	1	20-Jun-05	4:40	5:46	11° 58.650'	120° 12.233'	11° 58.635'	120° 12.420'	0.640		0.640
9	3	20-Jun-05	4:38	5:40	11° 57.330'	120° 09.933'	11° 57.033'	120° 09.935'	1.235		1.235
9	10	20-Jun-05	4:47	5:52	11° 52.437'	120° 08.708'	11° 52.398'	120° 09.003'	10.370		10.370
10	1	21-Jun-05	4:45	5:50	11° 58.668'	120° 12.238'	11° 58.645'	120° 12.430'	1.950		1.950
10	7	21-Jun-05	4:45	5:51	11° 55.363'	120° 05.728'	11° 55.350'	120° 05.350'	2.960		2.960
10	12	21-Jun-05	5:30	5:37	11° 52.290'	120° 11.328'	11° 52.158'	120° 11.017'	3.730		3.730

APPENDIX 32. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN CORON BAY AND BASELINE DATA COLLECTION IN BUSUANGA BAY IN YEAR 2006

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	6◊	6.5◊	Total
1	4	31-May-06	5:02	6:02	11° 56.010'	120° 11.370'	11° 55.830'	120° 11.460'	2.275		2.275
1	2	31-May-06	5:10	6:10	11° 57.625'	120° 12.068'	11° 57.628'	120° 12.337'	2.562		2.562
1	11	31-May-06	5:15	6:15	11° 54.465'	120° 11.015'	11° 54.778'	120° 10.913'	6.731		6.731
2	5	01-Jun-06	5:12	6:12	11° 57.338'	120° 06.802'	11° 57.177'	120° 07.047'	3.264		3.264
2	7	01-Jun-06	5:00	6:00	11° 55.360'	120° 05.727'	11° 55.352'	120° 05.450'	5.358		5.358
2	12	01-Jun-06	5:07	6:07	11° 52.282'	120° 11.337'	11° 52.117'	120° 10.970'	7.686		7.686
3	5	02-Jun-06	5:03	6:03	11° 57.338'	120° 06.802'	11° 57.177'	120° 07.047'	3.480		3.480
3	3	02-Jun-06	4:30	5:30	11° 57.247'	120° 10.003'	11° 56.917'	120° 10.083'	2.276		2.276
4	6	03-Jun-06	5:05	6:05	11° 57.317'	120° 05.128'	11° 56.993'	120° 04.917'	1.875		1.875
4	5	03-Jun-06	5:05	6:05	11° 57.338'	120° 06.802'	11° 57.177'	120° 07.047'	4.286		4.286
4	2	03-Jun-06	4:58	5:58	11° 57.625'	120° 12.068'	11° 57.628'	120° 12.337'	1.408		1.408
5	1	04-Jun-06	5:25	6:25	11° 58.617'	120° 12.218'	11° 58.685'	120° 12.468'	3.219		3.219
6	10	05-Jun-06	5:20	6:20	11° 52.397'	120° 08.957'	11° 52.440'	120° 08.703'	2.798		2.798
6	8	05-Jun-06	5:15	6:15	11° 56.120'	120° 08.875'	11° 55.900'	120° 08.880'	5.340		5.340
6	9	05-Jun-06	4:55	5:55	11° 54.213'	120° 06.900'	11° 54.133'	120° 07.950'	0.675		0.675
7	8	06-Jun-06	4:52	5:52	11° 56.120'	120° 08.875'	11° 55.900'	120° 08.880'	6.325		6.325
7	9	06-Jun-06	4:58	5:58	11° 54.213'	120° 06.900'	11° 54.133'	120° 07.950'	4.200		4.200
7	3	06-Jun-06	5:15	6:15	11° 57.247'	120° 10.003'	11° 56.917'	120° 10.083'	6.075		6.075
8	2	07-Jun-06	5:02	6:02	11° 57.625'	120° 12.068'	11° 57.628'	120° 12.337'	1.820		1.820
8	6	07-Jun-06	4:50	5:50	11° 57.317'	120° 05.128'	11° 56.993'	120° 04.917'	1.865		1.865
8	7	07-Jun-06	5:09	6:09	11° 58.617'	120° 12.218'	11° 58.685'	120° 12.468'	0.940		0.940
9	10	08-Jun-06	4:59	5:59	11° 52.397'	120° 08.957'	11° 52.440'	120° 08.703'	7.557		7.557
9	3	08-Jun-06	5:12	6:12	11° 57.247'	120° 10.003'	11° 56.917'	120° 10.083'	2.460		2.460
9	1	08-Jun-06	4:48	5:48	11° 58.617'	120° 12.218'	11° 58.685'	120° 12.468'	4.310		4.310
10	12	09-Jun-06	4:57	5:57	11° 52.282'	120° 11.337'	11° 52.117'	120° 10.970'	7.450		7.450
10	7	09-Jun-06	5:05	6:05	11° 55.360'	120° 05.727'	11° 55.352'	120° 05.450'	1.625		1.625
10	1	09-Jun-06	5:10	6:10	11° 58.617'	120° 12.218'	11° 58.685'	120° 12.468'	1.950		1.950
1	5	31-May-06	4:10	5:10	12° 02.908'	119° 51.297'	12° 02.920'	119° 50.755'	0.850	8.530	9.380
1	3	31-May-06	4:20	5:20	12° 02.972'	119° 54.332'	12° 03.535'	119° 54.295'	0.780	9.000	9.780
1	1	31-May-06	4:40	5:40	12° 08.997'	119° 53.682'	12° 08.867'	119° 54.223'	1.000	21.770	22.770
2	2	01-Jun-06	4:29	5:29	12° 05.542'	119° 53.198'	12° 05.262'	119° 52.700'	1.200	15.430	16.630
2	4	01-Jun-06	4:43	5:43	12° 02.757'	119° 54.838'	12° 02.413'	119° 54.538'	1.000	8.600	9.600
2	6	01-Jun-06	4:55	5:55	12° 03.902'	119° 50.257'	12° 04.253'	119° 50.697'	6.150	18.330	24.480
3	5	02-Jun-06	4:25	5:25	12° 02.908'	119° 51.297'	12° 02.920'	119° 50.755'	0.850	26.830	27.680
3	7	02-Jun-06	4:35	5:35	12° 05.880'	119° 51.753'	12° 05.520'	119° 52.017'	3.900	6.330	10.230
3	1	02-Jun-06	4:40	5:40	12° 08.997'	119° 53.682'	12° 08.867'	119° 54.223'	2.180	9.480	11.660
4	2	03-Jun-06	4:24	5:24	12° 05.542'	119° 53.198'	12° 05.262'	119° 52.700'		5.400	5.400
4	3	03-Jun-06	4:35	5:35	12° 02.972'	119° 54.332'	12° 03.535'	119° 54.295'		5.810	5.810
4	6	03-Jun-06	4:55	5:55	12° 03.902'	119° 50.257'	12° 04.253'	119° 50.697'		7.830	7.830
5	2	04-Jun-06	4:18	5:18	12° 05.542'	119° 53.198'	12° 05.262'	119° 52.700'	1.050	6.140	7.190
5	4	04-Jun-06	4:29	5:30	12° 02.757'	119° 54.838'	12° 02.413'	119° 54.538'	3.640	17.240	20.880
5	6	04-Jun-06	4:53	5:53	12° 03.902'	119° 50.257'	12° 04.253'	119° 50.697'		10.200	10.200
6	5	05-Jun-06	4:24	5:25	12° 02.908'	119° 51.297'	12° 02.920'	119° 50.755'	2.550	7.580	10.130
6	7	05-Jun-06	4:35	5:35	12° 05.880'	119° 51.753'	12° 05.520'	119° 52.017'	2.080	12.030	14.110
6	1	05-Jun-06	4:48	5:40	12° 08.997'	119° 53.682'	12° 08.867'	119° 54.223'	0.850	4.480	5.320

APPENDIX 33. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN CORON BAY AND BUSUANGA BAY IN YEAR 2008

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	6◊	6.5◊	Total
1	4	07-Jun-08	4:45	5:45	11°56.010'	120°11.370'	11°55.830'	120°11.460'	0.675		0.675
1	11	07-Jun-08	5:15	6:00	11°54.465'	120°11.015'	11°54.778'	120°10.913'	4.240		4.240
1	2	07-Jun-08	5:10	6:00	11°57.625'	120°12.068'	11°57.628'	120°12.337'	0.980		0.980
2	7	08-Jun-08	5:00	6:00	11°55.360'	120°05.727'	11°55.352'	120°05.450'	0.150		0.150
2	8	08-Jun-08	5:15	6:15	11°56.120'	120°08.875'	11°55.900'	120°08.880'	4.700		4.700
2	12	08-Jun-08	5:00	6:00	11°52.282'	120°11.337'	11°52.117'	120°10.970'	2.250		2.250
3	3	09-Jun-08	4:35	5:35	11°57.247'	120°10.003'	11°56.083'	120°10.083'	2.255		2.255
3	5	09-Jun-08	4:58	5:50	11°57.338'	120°06.802'	11°52.117'	120°07.047'	1.160		1.160
4	6	10-Jun-08	5:07	6:00	11°57.317'	120°05.128'	11°56.993'	120°04.917'	5.460		5.460
4	5	10-Jun-08	5:05	6:00	11°57.338'	120°06.802'	11°52.117'	120°07.047'	0.960		0.960
4	2	10-Jun-08	4:58	5:50	11°57.625'	120°12.068'	11°57.628'	120°12.337'	0.030		0.030
5	1	11-Jun-08	5:10	6:00	11°58.617'	120°12.218'	11°58.685'	120°12.468'	0.110		0.110
5	3	11-Jun-08	4:35	5:35	11°57.247'	120°10.003'	11°56.917'	120°10.083'	0.980		0.980
5	12	11-Jun-08	5:00	6:00	11°52.282'	120°11.337'	11°52.117'	120°10.970'	0.715		0.715
6	9	12-Jun-08	4:55	5:55	11°54.213'	120°06.900'	11°54.133'	120°07.950'	7.990		7.990
6	8	12-Jun-08	4:42	5:45	11°56.120'	120°08.875'	11°55.900'	120°08.880'	6.380		6.380
6	10	12-Jun-08	5:08	5:50	11°52.397'	120°08.957'	11°52.442'	120°08.703'	6.920		6.920
7	9	13-Jun-08	4:55	5:55	11°54.213'	120°06.900'	11°54.133'	120°07.950'	1.670		1.670
7	8	13-Jun-08	4:48	5:45	11°56.120'	120°08.875'	11°55.900'	120°08.880'	0.190		0.190
7	3	13-Jun-08	4:29	5:30	11°57.247'	120°10.003'	11°56.917'	120°10.083'	1.630		1.630
8	2	14-Jun-08	4:53	5:50	11°57.625'	120°12.068'	11°57.628'	120°12.337'	1.100		1.100
8	1	14-Jun-08	5:10	6:00	11°58.617'	120°12.218'	11°58.685'	120°12.468'	0.060		0.060
8	6	14-Jun-08	5:10	6:00	11°57.317'	120°05.128'	11°56.993'	120°04.917'	2.475		2.475
9	3	15-Jun-08	4:55	5:45	11°57.247'	120°10.003'	11°56.917'	120°10.083'	1.430		1.430
9	1	15-Jun-08	5:20	6:10	11°58.617'	120°12.218'	11°58.685'	120°12.468'	0.650		0.650
9	10	15-Jun-08	5:15	6:20	11°52.397'	120°08.957'	11°52.440'	120°08.703'	1.430		1.430
10	7	16-Jun-08	5:00	6:00	11°55.360'	120°05.727'	11°55.352'	120°05.450'	0.100		0.100
10	12	16-Jun-08	5:00	6:00	11°52.282'	120°11.337'	11°52.117'	120°10.970'	2.310		2.310
10	1	16-Jun-08	5:10	6:00	11°58.617'	120°12.218'	11°58.685'	120°12.468'	1.250		1.250
1	5	07-Jun-08	5:05	5:30	12°03.093'	119°51.297'	12°02.941'	119°51.388'	2.190	8.400	10.590
1	3	07-Jun-08	5:00	5:35	12°02.583'	119°54.119'	12°03.321'	119°54.177'	0.950	3.310	4.260
1	1	07-Jun-08	5:00	5:40	12°08.598'	119°53.409'	12°08.520'	119°54.134'	2.790	5.200	7.990
2	2	08-Jun-08	5:00	5:35	12°05.325'	119°53.119'	12°05.157'	119°52.420'	1.600	2.200	3.800
2	4	08-Jun-08	4:58	5:40	12°02.454'	119°54.503'	12°02.248'	119°54.248'	3.150	6.140	9.290
2	6	08-Jun-08	5:01	5:31	12°03.702'	119°50.396'	12°04.002'	119°50.887'	3.150	18.030	21.180
3	5	09-Jun-08	4:55	5:35	12°02.545'	119°51.178'	12°04.552'	119°50.453'	2.830	4.770	7.600
3	7	09-Jun-08	4:55	5:30	12°05.749'	119°52.002'	12°05.155'	119°52.467'	0.500	3.380	3.880
3	1	09-Jun-08	4:40	5:10	12°08.598'	119°53.409'	12°08.520'	119°54.134'	1.020	2.740	3.760
4	2	10-Jun-08	5:00	5:45	12°05.325'	119°53.119'	12°05.157'	119°52.420'	2.740	13.040	15.780
4	3	10-Jun-08	4:52	5:35	12°02.872'	119°54.385'	12°03.266'	119°54.360'	1.240	4.210	5.450
4	6	10-Jun-08	4:58	5:40	12°08.598'	119°53.409'	12°08.520'	119°54.134'	2.340	11.290	13.630
5	2	11-Jun-08	5:00	5:30	12°05.325'	119°53.119'	12°05.157'	119°52.420'	1.320	1.590	2.910
5	4	11-Jun-08	5:05	5:36	12°02.563'	119°54.597'	12°02.210'	119°54.574'	2.690	3.990	6.680
5	6	11-Jun-08	4:50	5:40	12°08.598'	119°53.409'	12°08.520'	119°54.134'	1.380	1.690	3.070
6	5	12-Jun-08	4:50	5:30	12°02.545'	119°51.178'	12°05.157'	119°52.420'	2.440	6.545	8.985
6	7	12-Jun-08	4:55	5:30	12°05.749'	119°52.002'	12°05.155'	119°52.467'	1.580	1.710	3.290
6	1	12-Jun-08	5:00	5:30	12°08.771'	119°53.959'	12°08.591'	119°54.566'	3.060	5.800	8.860

APPENDIX 34. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN CORON BAY AND BUSUANGA BAY IN YEAR 2010

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	6◊	6.5◊	Total
1	4	17-May-10	4:45	5:45	11°56.010'	120°11.370'	11°55.830'	120°11.460'	11.750		11.750
1	2	17-May-10	4:30	5:30	11°57.625'	120°12.068'	11°57.628'	120°12.337'	0.400		0.400
2	8	18-May-10	4:47	6:00	11°50.829'	120°13.983'	11°51.239'	120°13.660'	0.480		0.480
3	10	19-May-10	4:45	5:45	11°52.397'	120°08.957'	11°52.442'	120°08.703'	1.380		1.380
3	3	19-May-10	4:40	5:45	11°57.319'	120°10.926'	11°56.083'	120°10.083'	0.265		0.265
3	5	19-May-10	4:45	5:45	11°57.338'	120°06.802'	11°57.526'	120°10.741'	3.030		3.030
4	6	20-May-10	5;00	6:00	11°55.966'	120°10.850'	11°56.373'	120°11.223'	2.350		2.350
4	5	20-May-10	4:30	5:30	11°57.338'	120°06.802'	11°57.526'	120°10.741'	2.095		2.095
5	1	21-May-10	4:25	5:25	11°58.706'	120°12.150'	11°58.685'	120°12.468'	1.926		1.926
5	3	21-May-10	4:30	5:30	11°57.319'	120°10.926'	11°56.083'	120°10.083'	4.670		4.670
5	12	21-May-10	4:35	5:40	11°52.334'	120°11.255'	11°52.580'	120°11.185'	5.805		5.805
6	9	22-May-10	4:15	5:15	11°54.213'	120°06.900'	11°54.133'	120°07.950'	5.320		5.320
6	8	22-May-10	4:00	5:00	11°50.829'	120°13.983'	11°51.239'	120°13.660'	0.710		0.710
6	10	22-May-10	4:34	5:35	11°52.397'	120°08.957'	11°52.442'	120°08.703'	5.870		5.870
7	9	23-May-10	4:36	5:52	11°54.213'	120°06.900'	11°54.133'	120°07.950'	6.375		6.375
7	8	23-May-10	4:30	5:35	11°50.829'	120°13.983'	11°51.239'	120°13.660'	16.150		16.150
7	3	23-May-10	4:00	5:00	11°57.319'	120°10.926'	11°56.083'	120°10.083'	5.270		5.270
8	6	24-May-10	4:20	5:25	11°57.710'	120°11.976'	11°57.628'	120°12.337'	2.840		2.840
8	1	24-May-10	4:00	5:00	11°58.676'	120°12.129'	11°58.685'	120°12.468'	1.185		1.185
8	2	24-May-10	4:00	5:00	11°55.966'	120°10.850'	11°56.373'	120°11.223'	2.430		2.430
9	3	25-May-10	4:00	5:00	11°57.319'	120°10.926'	11°56.083'	120°10.083'	1.675		1.675
9	1	25-May-10	4:00	5:00	11°58.649'	120°12.188'	11°58.685'	120°12.468'	0.320		0.320
9	10	25-May-10	4:38	5:42	11°52.476'	120°08.876'	11°52.362'	120°08.873'	1.410		1.410
10	7	26-May-10	4:25	5:25	11°55.360'	120°05.727'	11°55.352'	120°05.450'	2.570		2.570
10	12	26-May-10	4:47	5:47	11°52.349'	120°11.259'	11°52.365'	120°11.329'	1.870		1.870
10	1	26-May-10	4:00	5:00	11°58.697'	120°12.129'	11°58.685'	120°12.468'	0.080		0.080
1	5	17-May-10	4:30	5:30	12˚03.093'	119˚51.297'	12˚02.941'	119˚51.388'	8.725	3.520	12.245
1	3	17-May-10	4:45	5:45	12˚02.583'	119˚54.119'	12˚03.321'	119˚54.177'	1.025	0.810	1.835
1	1	17-May-10	4:45	5:45	12˚08.598'	119˚53.409'	12˚08.520'	119˚54.134'	0.460	3.105	3.565
2	2	18-May-10	4:20	5:29	12˚05.325'	119˚53.119'	12˚05.157'	119˚52.420'	5.800	2.700	8.500
2	4	18-May-10	4:35	5:43	12˚02.454'	119˚54.503'	12˚02.248'	119˚54.248'	4.650	6.750	11.400
2	6	18-May-10	4:45	5:45	12˚03.702'	119˚50.396'	12˚04.002'	119˚50.887'	8.535	4.400	12.935
3	5	19-May-10	4:15	5:25	12˚02.545'	119˚51.178'	12˚04.552'	119˚50.453'	3.800	5.030	8.830
3	7	19-May-10	4:40	5:45	12˚05.749'	119˚52.002'	12˚05.155'	119˚52.467'	2.075	6.425	8.500
3	1	19-May-10	4:30	5:40	12˚08.598'	119˚53.409'	12˚08.520'	119˚54.134'	1.470	4.550	6.020
4	2	20-May-10	400	5:11	12˚05.325'	119˚53.119'	12˚05.157'	119˚52.420'	0.235	0.900	1.135
4	3	20-May-10	4:25	5:35	12˚02.872'	119˚54.385'	12˚03.266'	119˚54.360'	2.195	3.565	5.760
4	6	20-May-10	4:45	5:55	12˚08.598'	119˚53.409'	12˚08.520'	119˚54.134'	3.055	0.850	3.905
5	2	21-May-10	4:10	5:18	12˚05.325'	119˚53.119'	12˚05.261'	119˚52.700'	0.590	1.575	2.165
5	4	21-May-10	4:45	5:55	12˚02.563'	119˚54.597'	12˚02.210'	119˚54.574'	4.610	9.600	14.210
5	6	21-May-10	4:45	5:53	12˚08.598'	119˚53.409'	12˚08.520'	119˚54.134'	2.425	0.475	2.900
6	5	22-May-10	4:25	5:25	12˚02.545'	119˚51.178'	12˚05.157'	119˚52.420'	0.450	0.525	0.975
6	7	22-May-10	4:45	5:45	12˚05.749'	119˚52.002'	12˚05.155'	119˚52.467'	2.100	3.895	5.995
6	1	22-May-10	4:20	5:20	12˚08.771'	119˚53.959'	12˚08.591'	119˚54.566'	0.740	3.830	4.570

APPENDIX 35. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE BASE LINE DATA COLLECTION IN DANAJON BANK IN YEAR 2005

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	7◊	10◊	Total
1	1	20-Jun-05	3:03	6:29	10° 15.860'	124° 19.998'	10° 15.820'	124° 19.706'	0.315	1.900	2.215
1	2	20-Jun-05	4:38	5:21	10° 17.871'	124° 18.027'	10° 17.691'	124° 17.791'	0.735	0.970	1.705
1	3	20-Jun-05	4:35	6:26	10° 10.683'	124° 29.722'	10° 10.951'	124° 29.745'	0.150	1.130	1.280
1	4	20-Jun-05	4:59	5:38	10° 11.462'	124° 30.980'	10° 11.238'	124° 31.152'	0.600	4.415	5.015
2	5	21-Jun-05	3:16	6:25	10° 10.972'	124° 20.810'	10° 11.182'	124° 20.993'	0.860	0.815	1.675
2	6	21-Jun-05	4:47	5:32	10° 14.028'	124° 22.104'	10° 14.266'	124° 21.907'	0.045	0.455	0.500
2	7	21-Jun-05	4:07	5:50	10° 12.458'	124° 24.317'	10° 12.720'	124° 24.163'	0.465	0.760	1.225
2	8	21-Jun-05	5:04	5:31	10° 13.740'	124° 24.670'	10° 13.976'	124° 24.477'	0.725	0.440	1.165
3	9	22-Jun-05	3:37	6:34	10° 13.864'	124° 20.405'	10° 13.831'	124° 20.715'	0.378	0.072	0.450
3	10	22-Jun-05	4:30	5:25	10° 15.953'	124° 17.853'	10° 15.902'	124° 18.171'	0.445	1.270	1.715
3	11	22-Jun-05	3:30	6:05	10° 11.989'	124° 25.653'	10° 12.244'	124° 25.655'	0.165	1.545	1.710
3	12	22-Jun-05	3:47	5:30	10° 13.262'	124° 26.378'	10° 13.517'	124° 26.495'	0.240	0.270	0.510
4	13	23-Jun-05	4:04	6:31	10° 11.005'	124° 18.956'	10° 11.157'	124° 19.231'	0.845	0.175	1.020
4	14	23-Jun-05	4:43	5:38	10° 13.192'	124° 17.478'	10° 13.448'	124° 17.617'	0.825	2.535	3.360
4	15	23-Jun-05	4:06	6:32	10° 13.112'	124° 20.633'	10° 13.354'	124° 20.732'	0.205	0.905	1.110
4	16	23-Jun-05	4:49	5:40	10° 15.846'	124° 20.206'	10° 15.941'	124° 19.962'	0.975	4.183	5.158
5	17	24-Jun-05	3:24	6:46	10° 09.101'	124° 26.219'	10° 08.875'	124° 25.996'	0.185	0.485	0.670
5	18	24-Jun-05	4:47	5:42	10° 05.737'	124° 30.983'	10° 06.039'	124° 30.929'	0.185	0.930	1.115
5	19	24-Jun-05	4:51	6:32	10° 10.808'	124° 28.218'	10° 10.668'	124° 28.484'	0.100	0.915	1.015
5	20	24-Jun-05	5:01	5:55	10° 10.303'	124° 28.791'	10° 10.180'	124° 29.049'	0.490	1.315	1.805
6	21	25-Jun-05	3:40	6:59	10° 10.233'	124° 24.004'	10° 10.412'	124° 24.267'	0.550	1.630	2.180
6	22	25-Jun-05	4:53	6:02	10° 11.897'	124° 22.612'	10° 12.172'	124° 22.768'	1.530	2.265	3.795
6	23	25-Jun-05	3:38	6:30	10° 12.295'	124° 20.113'	10° 12.460'	124° 19.865'	0.305	0.325	0.630
6	24	25-Jun-05	5:00	5:48	10° 12.129'	124° 17.732'	10° 11.982'	124° 17.480'	0.290	1.055	1.345
7	25	26-Jun-05	3:42	6:45	10° 12.467'	124° 21.435'	10° 12.626'	124° 21.694'	0.965	1.660	2.625
7	26	26-Jun-05	4:53	6:01	10° 13.575'	124° 23.601'	10° 13.758'	124° 23.873'	1.455	0.715	2.170
7	27	26-Jun-05	4:52	6:26	10° 16.252'	124° 17.024'	10° 16.474'	124° 16.829'	0.035	4.485	4.520
7	28	26-Jun-05	5:03	5:48	10° 16.445'	124° 16.254'	10° 16.689'	124° 16.121'	0.595	3.210	3.805
8	29	27-Jun-05	4:22	7:09	10° 09.044'	124° 30.802'	10° 09.343'	124° 30.770'	2.363	0.115	2.478
8	30	27-Jun-05	5:01	6:00	10° 09.767'	124° 33.727'	10° 10.059'	124° 33.852'	2.390	3.120	5.510
8	31	27-Jun-05	4:40	6:30	10° 13.714'	124° 24.860'	10° 13.834'	124° 25.147'	0.420	0.585	1.005
8	32	27-Jun-05	5:05	5:45	10° 14.149'	124° 27.130'	10° 14.033'	124° 27.417'	0.495	0.930	1.425

APPENDIX 36. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN DANAJON BANK IN YEAR 2006

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	7◊	10◊	Total
1	1	09-Jun-06	4:29	5:35	10° 15.878'	124° 19.975'	10° 15.656'	124° 19.909'	0.195	2.675	2.870
1	2	09-Jun-06	4:05	6:10	10° 17.446'	124° 18.475'	10° 17.214'	124° 18.650'	0.000	1.121	1.121
1	3	09-Jun-06	3:06	5:59	10° 10.736'	124° 29.761'	10° 10.965'	124° 30.007'	0.130	1.225	1.355
1	4	09-Jun-06	3:25	5:07	10° 11.657'	124° 30.899'	10° 11.776'	124° 31.239'	0.005	1.931	1.936
2	5	10-Jun-06	5:00	6:44	10° 11.038'	124° 20.815'	10° 11.038'	124° 21.033'	0.110	0.850	0.960
2	6	10-Jun-06	5:25	5:57	10° 13.879'	124° 22.024'	10° 14.148'	124° 22.034'	0.070	1.990	2.060
2	7	10-Jun-06	6:40	7:05	10° 12.220'	124° 25.356'	10° 12.440'	124° 25.503'	0.235	3.355	3.590
2	8	10-Jun-06	5:34	7:17	10° 13.236'	124° 25.242'	10° 13.526'	124° 25.197'	0.285	2.180	2.465
3	11	11-Jun-06	4:10	6:18	10° 11.999'	124° 25.717'	10° 12.269'	124° 25.833'	0.000	0.680	0.680
3	12	11-Jun-06	4:25	5:34	10° 13.302'	124° 26.382'	10° 13.445'	124° 26.645'	0.075	1.820	1.895
3	9	11-Jun-06	5:07	6:56	10° 13.825'	124° 20.341'	10° 14.157'	124° 20.353'	0.120	1.413	1.533
3	10	11-Jun-06	5:25	6:20	10° 15.929'	124° 19.385'	10° 15.990'	124° 19.071'	0.160	1.940	2.100
4	15	12-Jun-06	4:24	6:43	10° 13.215'	124° 20.614'	10° 13.313'	124° 20.859'	0.095	0.615	0.710
4	16	12-Jun-06	4:49	5:55	10° 15.875'	124° 20.233'	10° 16.072'	124° 20.088'	0.000	0.770	0.770
4	13	12-Jun-06	4:37	5:20	10° 11.090'	124° 19.027'	10° 11.457'	124° 18.996'	0.015	0.665	0.680
4	14	12-Jun-06	4:46	6:01	10° 12.952'	124° 18.329'	10° 12.973'	124° 17.998'	1.190	1.950	3.140
5	20	13-Jun-06	3:55	6:19	10° 10.312'	124° 28.832'	10° 10.474'	124° 29.048'	0.055	0.450	0.505
5	17	13-Jun-06	4:25	5:30	10° 09.043'	124° 26.218'	10° 09.043'	124° 26.351'	0.000	0.120	0.120
5	19	13-Jun-06	4:50	6:22	10° 10.746'	124° 28.283'	10° 10.430'	124° 28.477'	0.020	1.070	1.090
5	18	13-Jun-06	4:14	5:32	10° 06.251'	124° 30.600'	10° 06.550'	124° 30.479'	0.180	1.230	1.410
6	21	14-Jun-06	3:45	6:03	10° 10.322'	124° 24.250'	10° 10.193'	124° 24.504'	0.000	0.000	0.000
6	22	14-Jun-06	4:18	5:23	10° 11.846'	124° 22.635'	10° 11.715'	124° 22.403'	0.225	1.430	1.655
6	23	14-Jun-06	4:55	6:28	10° 12.288'	124° 20.205'	10° 12.044'	124° 19.940'	1.080	0.240	1.320
6	24	14-Jun-06	4:24	5:16	10° 12.071'	124° 17.576'	10° 12.365'	124° 17.721'	0.380	0.823	1.203
7	25	15-Jun-06	4:03	6:10	10° 12.522'	124° 21.527'	10° 12.637'	124° 21.773'	0.125	0.310	0.435
7	26	15-Jun-06	4:25	5:29	10° 13.616'	124° 23.618'	10° 13.924'	124° 23.675'	0.165	1.065	1.230
7	28	15-Jun-06	4:30	6:22	10° 16.424'	124° 16.300'	10° 16.553'	124° 16.021'	0.805	8.177	8.982
7	27	15-Jun-06	4:57	5:34	10° 16.195'	124° 17.059'	10° 16.163'	124° 16.733'	0.210	1.870	2.080
8	29	16-Jun-06	3:58	6:30	10° 09.097'	124° 30.860'	10° 09.298'	124° 31.064'	0.000	1.015	1.015
8	30	16-Jun-06	4:27	5:32	10° 09.761'	124° 33.738'	10° 09.904'	124° 33.555'	0.168	2.290	2.458
8	31	16-Jun-06	4:45	5:14	10° 13.727'	124° 24.719'	10° 13.661'	124° 25.087'	0.350	2.055	2.405
8	32	16-Jun-06	4:21	6:02	10° 14.220'	124° 26.680'	10° 13.912'	124° 26.869'	2.630	2.185	4.815

APPENDIX 37. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN DANAJON BANK IN YEAR 2008

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	7◊	10◊	Total
1	1	16-Jun-08	4:14	6:45	10° 15.870'	124° 19.954'	10° 15.708'	124° 19.718'	2.260	4.550	6.810
1	2	16-Jun-08	4:32	5:32	10° 16.782'	124° 18.640'	10° 16.607'	124° 18.380'	0.385	17.740	18.125
1	3	16-Jun-08	3:26	5:33	10° 10.412'	124° 29.894'	10° 10.556'	124° 30.169'	2.110	13.985	16.095
1	4	16-Jun-08	3:42	5:12	10° 11.378'	124° 30.783'	10° 11.660'	124° 30.717'	0.060	1.560	1.620
2	5	17-Jun-08	3:39	5:08	10° 11.009'	124° 20.821'	10° 11.242'	124° 20.958'	0.355	0.780	1.135
2	6	17-Jun-08	4:04	6:00	10° 14.074'	124° 21.955'	10° 14.368'	124° 21.984'	0.000	0.700	0.700
2	7	17-Jun-08	3:55	6:45	10° 12.480'	124° 25.446'	10° 12.549'	124° 25.770'	1.800	1.205	3.005
2	8	17-Jun-08	4:14	5:15	10° 13.482'	124° 24.562'	10° 13.669'	124° 24.370'	0.215	5.335	5.550
3	9	18-Jun-08	3:37	6:00	10° 13.936'	124° 20.404'	10° 14.233'	124° 20.449'	0.485	3.045	3.530
3	10	18-Jun-08	4:14	5:14	10° 15.929'	124° 17.877'	10° 16.147'	124° 17.710'	0.350	1.540	1.890
3	11	18-Jun-08	3:45	6:00	10° 12.171'	124° 25.620'	10° 12.273'	124° 25.912'	0.190	0.415	0.605
3	12	18-Jun-08	4:02	5:05	10° 13.187'	124° 26.409'	10° 13.076'	124° 26.087'	0.030	0.285	0.315
4	13	19-Jun-08	3:25	5:58	10° 11.014'	124° 18.942'	10° 11.155'	124° 18.665'	1.830	5.095	6.925
4	14	19-Jun-08	3:48	5:14	10° 13.246'	124° 18.164'	10° 13.522'	124° 18.188'	0.235	0.955	1.190
4	15	19-Jun-08	3:33	6:15	10° 12.798'	124° 20.488'	10° 12.984'	124° 20.235'	0.865	2.178	3.043
4	16	19-Jun-08	4:12	5:12	10° 15.692'	124° 20.421'	10° 15.487'	124° 20.646'	0.315	0.665	0.980
5	17	20-Jun-08	3:21	6:00	10° 06.220'	124° 29.492'	10° 06.438'	124° 29.723'	0.275	3.280	3.555
5	18	20-Jun-08	3:42	5:15	10° 05.922'	124° 30.873'	10° 05.696'	124° 31.087'	0.165	0.430	0.595
5	19	20-Jun-08	3:05	6:00	10° 11.141'	124° 27.811'	10° 11.452'	124° 27.932'	0.255	1.575	1.830
5	20	20-Jun-08	3:12	6:20	10° 10.866'	124° 28.537'	10° 11.112'	124° 28.696'	0.220	5.050	5.270
6	21	22-Jun-08	3:20	6:06	10° 10.297'	124° 23.940'	10° 10.362'	124° 24.259'	0.440	1.245	1.685
6	22	22-Jun-08	3:58	5:08	10° 11.884'	124° 22.413'	10° 12.031'	124° 22.166'	0.860	0.260	1.120
6	23	22-Jun-08	3:29	6:30	10° 12.418'	124° 19.990'	10° 12.579'	124° 19.708'	2.445	6.825	9.270
6	24	22-Jun-08	3:58	5:21	10° 12.067'	124° 17.705'	10° 12.480'	124° 17.880'	0.835	4.195	5.030
7	25	23-Jun-08	3:20	6:14	10° 12.460'	124° 21.429'	10° 12.540'	124° 21.740'	1.805	5.730	7.535
7	26	23-Jun-08	3:50	5:15	10° 13.667'	124° 23.595'	10° 13.856'	124° 23.842'	0.400	0.885	1.285
7	27	23-Jun-08	4:03	6:20	10° 15.909'	124° 16.611'	10° 15.965'	124° 16.298'	1.715	6.025	7.740
7	28	23-Jun-08	4:11	5:20	10° 16.109'	124° 16.102'	10° 16.083'	124° 15.780'	0.785	0.655	1.440
8	29	24-Jun-08	3:30	5:55	10° 09.081'	124° 30.642'	10° 09.005'	124° 30.948'	0.375	2.620	2.995
8	30	24-Jun-08	3:50	5:05	10° 09.540'	124° 33.240'	10° 09.660'	124° 33.540'	0.070	0.775	0.845
8	31	24-Jun-08	3:07	6:30	10° 13.461'	124° 25.327'	10° 13.787'	124° 25.316'	0.295	1.490	1.785
8	32	24-Jun-08	3:22	5:45	10° 14.096'	124° 26.280'	10° 14.229'	124° 26.700'	0.325	0.835	1.160

APPENDIX 38. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN DANAJON BANK IN YEAR 2010

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	7◊	10◊	Total
1	1	26-Jun-10	3:55	5:45	10° 15.840"	124° 19.972"	10° 15.712"	124° 19.678"	0.275	0.850	1.125
1	2	26-Jun-10	4:25	6:46	10° 16.672"	124° 18.740"	10° 16.292"	124° 18.518"	0.045	0.330	0.375
4	3	29-Jun-10	3:49	6:32	10° 10.367"	124° 29.967"	10° 10.070"	124° 30.202"	0.100	0.395	0.495
4	4	29-Jun-10	4:43	5:57	10° 11.335"	124° 30.828"	10° 11.023"	124° 31.045"	0.315	2.475	2.790
1	5	26-Jun-10	4:01	6:45	10° 10.930"	124° 20.367"	10° 11.365"	124° 20.483"	0.050	1.975	2.025
1	6	26-Jun-10	4:25	5:30	10° 13.740"	124° 21.622"	10° 14.142"	124° 21.788"	0.255	27.960	28.215
2	7	27-Jun-10	4:25	5:42	10° 12.283"	124° 25.430"	10° 12.312"	124° 25.788"	0.270	1.275	1.545
2	8	27-Jun-10	4:44	6:45	10° 13.453"	124° 24.525"	10° 13.468"	124° 24.865"	0.205	1.895	2.100
2	9	27-Jun-10	5:01	5:35	10° 13.843"	124° 20.092"	10° 14.293"	124° 20.225"	1.010	4.380	5.390
2	10	27-Jun-10	4:21	5:29	10° 15.818"	124° 18.072"	10° 16.117"	124° 18.085"	0.270	0.685	0.955
3	11	28-Jun-10	4:18	5:05	10° 12.217"	124° 25.637"	10° 12.210"	124° 25.973"	0.660	1.045	1.705
3	12	28-Jun-10	4:30	5:37	10° 12.927"	124° 26.183"	10° 12.870"	124° 25.863"	0.425	0.537	0.962
3	13	28-Jun-10	4:14	6:08	10° 11.310"	124° 18.992"	10° 11.453"	124° 19.240"	0.310	0.600	0.910
3	14	28-Jun-10	4:53	5:22	10° 12.698"	124° 18.465"	10° 12.832"	124° 18.187"	0.410	1.055	1.465
2	15	27-Jun-10	4:17	6:24	10° 12.738"	124° 20.258"	10° 12.920"	124° 19.995"	0.565	1.265	1.830
2	16	27-Jun-10	3:59	6:19	10° 15.638"	124° 20.452"	10° 15.848"	124° 20.248"	0.665	2.820	3.485
6	17	1-Jul-10	4:42	6:00	10° 6.593"	124° 29.003"	10° 6.773"	124° 29.307"	0.090	1.370	1.460
6	18	1-Jul-10	4:49	5:20	10° 6.658"	124° 29.372"	10° 6.707"	124° 29.703"	0.245	1.260	1.505
4	19	29-Jun-10	3:50	5:15	10° 11.267"	124° 27.288"	10° 11.253"	124° 27.635"	0.365	0.730	1.095
4	20	29-Jun-10	3:59	5:55	10° 11.362"	124° 28.830"	10° 11.463"	124° 29.118"	0.090	0.755	0.845
3	21	28-Jun-10	4:11	6:36	10° 10.377"	124° 24.002"	10° 10.477"	124° 24.350"	0.105	2.060	2.165
3	22	28-Jun-10	4:45	5:47	10° 12.008"	124° 22.392"	10° 11.810"	124° 22.142"	0.175	0.700	0.875
5	23	30-Jun-10	4:26	5:43	10° 12.485"	124° 19.945"	10° 12.142"	124° 20.013"	0.000	0.475	0.475
5	24	30-Jun-10	4:46	6:32	10° 12.167"	124° 18.080"	10° 11.872"	124° 18.253"	1.005	0.955	1.960
5	25	30-Jun-10	3:49	6:25	10° 12.588"	124° 21.462"	10° 12.898"	124° 21.503"	0.075	0.755	0.830
5	26	30-Jun-10	4:14	5:21	10° 13.672"	124° 23.770"	10° 13.577"	124° 24.117"	0.545	0.485	1.030
1	27	26-Jun-10	3:57	6:15	10° 15.877"	124° 16.548"	10° 15.870"	124° 16.227"	0.315	1.650	1.965
1	28	26-Jun-10	4:16	5:21	10° 16.143"	124° 16.095"	10° 16.375"	124° 15.848"	0.175	2.655	2.830
4	29	29-Jun-10	4:22	6:03	10° 9.132"	124° 30.653"	10° 8.992"	124° 31.007"	0.205	1.615	1.820
4	30	29-Jun-10	4:52	5:22	10° 9.422"	124° 33.210"	10° 9.623"	124° 33.498"	0.095	0.260	0.355
5	31	30-Jun-10	4:26	6:02	10° 13.158"	124° 24.728"	10° 13.440"	124° 24.542"	0.435	1.535	1.970
5	32	30-Jun-10	4:48	5:22	10° 14.108"	124° 25.393"	10° 13.817"	124° 25.617"	0.205	0.380	0.585

APPENDIX 39. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE BASELINE DATA COLLECTION IN LANUZA BAY IN YEAR 2004

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)				
			Set	Haul	Lat.	Long.	Lat.	Long.	6◊	7◊	8◊	9◊	Total
1	3	1-Oct-04	3:10	5:20	9° 17.521'	126° 07.541'	9° 17.586'	126° 07.682'	0.030	2.320	2.610		4.960
1	4	1-Oct-04	3:50	7:10	9° 18.644'	126° 10.339'	9° 18.796'	126° 10.285'			0.100		0.100
1	2	1-Oct-04	3:59	5:36	9° 22.708'	126° 00.506'	9° 22.787'	126° 00.632'	0.350	0.090	0.050		0.490
1	1	1-Oct-04	4:35	6:19	9° 20.107'	125° 59.752'	9° 20.277'	125° 59.771'	0.050	0.510	0.550		1.110
2	5 (C)	2-Oct-04	2:20	5:05	9° 33.488'	125° 57.393'	9° 33.353'	125° 57.387'	0.060	0.200			0.260
2	6 (C)	2-Oct-04	2:50	6:15	9° 33.563'	125° 57.795'	9° 33.475'	125° 57.913'		0.750	0.200		0.950
2	7	2-Oct-04	3:05	6:40	9° 23.697'	126° 02.555'	9° 23.846'	126° 02.683'		0.600	0.160		0.760
2	8	2-Oct-04	3:39	5:41	9° 22.368'	126° 03.410'	9° 22.508'	126° 03.528'	2.800	0.050	1.270		4.110
3	10	4-Oct-04	3:05	5:05	9° 25.391'	126° 02.111'	9° 25.612'	126° 02.053'	0.050	0.700	2.200		2.950
3	9	4-Oct-04	3:40	6:15	9° 22.944'	126° 02.292'	9° 23.165'	126° 02.275'	0.260		0.710		0.970
3	12	4-Oct-04	3:30	5:48	9° 20.171'	126° 00.624'	9° 20.314'	126° 00.720'	0.510	1.820	0.620		2.950
3	11	4-Oct-04	3:56	6:43	9° 19.397'	126° 02.556'	9° 19.572'	126° 02.581'		0.250	0.140		0.390
4	13	5-Oct-04	3:25	6:15	9° 21.454'	126° 02.031'	9° 21.645'	126° 02.054'	0.090	0.260	0.130		0.480
4	14	5-Oct-04	4:00	5:10	9° 19.188'	126° 01.379'	9° 19.362'	126° 01.407'	0.150	0.280	0.040		0.470
4	15	5-Oct-04	3:57	6:53	9° 18.226'	126° 00.765'	9° 18.365'	126° 00.847'	0.350	0.150	0.010		0.500
4	16	5-Oct-04	4:28	6:08	9° 16.670'	126° 02.651'	9° 16.803'	126° 02.724'	0.450	0.160	0.760		1.370
5	21 (C)	8-Oct-04	2:30	6:50	9° 33.388'	125° 57.792'	9° 33.547'	125° 57.941'	1.480				1.480
5	22 (C)	8-Oct-04	3:00	5:00	9° 33.653'	125° 58.194'	9° 33.831'	125° 58.280'	0.400	0.260	1.760		2.420
5	25	8-Oct-04	2:32	6:40	9° 25.476'	126° 02.124'	9° 25.635'	126° 02.205'	0.430	0.020	0.010		0.460
5	26	8-Oct-04	3:12	5:35	9° 26.443'	125° 57.853'	9° 26.590'	125° 57.985'	2.090	0.470	0.710		3.260
6	17	9-Oct-04	3:20	5:30	9° 25.279'	126° 02.760'	9° 25.517'	126° 02.326'	0.650	0.350	0.880		1.880
6	18	9-Oct-04	3:55	6:25	9° 23.345'	126° 02.308'	9° 23.556'	126° 02.314'	0.020	0.320	0.030		0.370
6	27	9-Oct-04	3:47	6:58	9° 24.502'	125° 58.803'	9° 24.754'	125° 58.794'	0.750	0.500	0.510		1.760
6	28	9-Oct-04	4:17	5:57	9° 26.368'	125° 57.598'	9° 26.466'	125° 57.743'	3.550	6.250	4.630		14.420
7	23 (C)	10-Oct-04	2:30	6:15	9° 33.762'	125° 58.328'	9° 33.803'	125° 58.474'	4.600	2.890	3.070		10.550
7	24 (C)	10-Oct-04	2:50	5:00	9° 33.922'	125° 58.558'	9° 33.896'	125° 58.711'	3.390	3.250	7.850		14.490
7	19	10-Oct-04	3:04	6:48	9° 19.505'	126° 03.419'	9° 19.660'	126° 03.480'	1.620	0.550	0.620		2.790
7	20	10-Oct-04	3:39	5:45	9° 16.872'	126° 05.128'	9° 16.965'	126° 05.206'	0.070	5.430	0.410		5.910

APPENDIX 40. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN LANUZA BAY IN YEAR 2006

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)				
			Set	Haul	Lat.	Long.	Lat.	Long.	6◊	7◊	8◊	9◊	Total
1	1	9-Oct-06	4:03	4:58	9° 20.116'	125° 59.780'	9° 20.201'	126° 00.006'		0.130	0.000	0.280	0.410
1	2	9-Oct-06	3:15	5:52	9° 22.715'	126° 00.502'	9° 22.656'	126° 00.708'		0.440	0.920	4.150	5.510
1	3	9-Oct-06	3:45	6:50	9° 17.465'	126° 07.564'	9° 17.436'	126° 07.389'		0.090	0.090	0.180	0.360
1	4	9-Oct-06	6:20	7:45	9° 17.918'	126° 08.211'	9° 17.754'	126° 08.213'		0.650	1.620	1.300	3.570
2	5 (C)	10-Oct-06	2:25	7:06	9° 33.380'	125° 57.533'	9° 33.211'	125° 57.702'		0.000	0.570	0.320	0.890
2	6 (C)	10-Oct-06	2:57	5:12	9° 33.715'	125° 57.638'	9° 33.709'	125° 57.845'		0.220	0.770	2.140	3.130
2	7	10-Oct-06	3:20	6:42	9° 22.881'	126° 02.498'	9° 23.090'	126° 02.334'		0.190	8.130	1.520	9.830
2	8	10-Oct-06	3:49	5:24	9° 22.411'	126° 03.459'	9° 22.681'	126° 03.471'		0.390	2.640	2.970	5.990
3	9	12-Oct-06	3:05	6:26	9° 22.929'	126° 02.306'	9° 23.171'	126° 02.216'		0.410	1.730	0.580	2.720
3	10	12-Oct-06	3:33	5:30	9° 25.454'	126° 02.136'	9° 25.448'	126° 02.371'		0.310	0.730	0.790	1.830
3	11	12-Oct-06	3:59	5:20	9° 19.482'	126° 02.530'	9° 19.678'	126° 02.663'		0.140	0.270	0.730	1.130
3	12	12-Oct-06	3:27	6:28	9° 20.158'	126° 00.655'	9° 20.250'	126° 00.906'		0.660	0.530	2.030	3.210
4	13	14-Oct-06	2:46	6:17	9° 21.421'	126° 02.000'	9° 21.678'	126° 02.082'		0.970	1.070	3.400	5.440
4	14	14-Oct-06	3:32	5:01	9° 19.171'	126° 01.075'	9° 19.366'	126° 01.263'		0.660	1.250	2.350	4.250
4	15	14-Oct-06	3:17	6:52	9° 18.247'	126° 00.887'	9° 18.370'	126° 01.094'		0.350	1.280	0.510	2.130
4	16	14-Oct-06	3:45	5:28	9° 16.730'	126° 02.592'	9° 16.948'	126° 02.729'		0.660	2.090	1.320	4.060
5	17	17-Oct-06	3:16	5:33	9° 25.425'	126° 02.574'	9° 25.353'	126° 02.759'		0.930	1.590	1.290	3.810
5	18	17-Oct-06	3:47	6:48	9° 23.043'	126° 02.209'	9° 23.329'	126° 02.127'		0.210	0.800	0.620	1.620
5	19	17-Oct-06	3:31	6:56	9° 19.603'	126° 03.373'	9° 19.817'	126° 03.519'		0.280	1.060	1.270	2.600
5	20	17-Oct-06	4:07	5:30	9° 16.944'	126° 05.159'	9° 17.197'	126° 05.390'		0.320	0.880	1.540	2.730
6	21 (C)	18-Oct-06	3:15	5:11	9° 33.593'	125° 58.117'	9° 33.587'	125° 58.260'		21.210	7.320	3.430	31.950
6	22 (C)	18-Oct-06	3:49	7:28	9° 33.853'	125° 58.268'	9° 33.764'	125° 58.480'		0.540	2.720	0.760	4.010
6	23 (C)	18-Oct-06	4:01	5:13	9° 33.689'	125° 58.390'	9° 33.595'	125° 58.566'		2.620	16.630	4.120	23.370
6	24 (C)	18-Oct-06	3:38	6:50	9° 33.751'	125° 58.267'	9° 33.637'	125° 58.332'		1.050	1.820	5.130	8.000
7	25	19-Oct-06	3:10	6:40	9° 25.370'	126° 02.184'	9° 25.258'	126° 02.450'		0.370	1.020	0.900	2.290
7	26	19-Oct-06	4:11	5:06	9° 26.794'	125° 58.150'	9° 26.849'	125° 58.328'		0.110	1.270	1.820	3.200
7	27	19-Oct-06	3:16	6:24	9° 25.726'	126° 01.881'	9° 25.749'	126° 02.163'		2.290	4.420	5.400	12.110
7	28	19-Oct-06	4:09	5:13	9° 26.632'	125° 57.978'	9° 26.640'	125° 58.183'		0.290	0.780	0.640	1.710

APPENDIX 41. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN LANUZA BAY IN YEAR 2008

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)				
			Set	Haul	Lat.	Long.	Lat.	Long.	6◊	7◊	8◊	9◊	Total
1	19	18-Oct-08	2:51	7:00	9° 19.467'	126° 03.467'	9° 19.698'	126° 03.580'	0.160	0.630	0.360	0.365	1.515
1	20	18-Oct-08	3:38	5:45	9° 16.870'	126° 05.103'	9° 17.025'	126° 05.247'	0.660	1.980	0.870	1.090	4.600
1	3	18-Oct-08	3:59	5:10	9° 17.567'	126° 07.278'	9° 17.710'	126° 07.395'	0.130	0.000	0.350	0.295	0.775
1	4	18-Oct-08	3:20	6:36	9° 18.632'	126° 10.303'	9° 18.783'	126° 10.220'	0.980	0.410	0.090	0.260	1.740
2	6 (C)	19-Oct-08	3:12	7:06	9° 33.152'	125° 58.055'	9° 33.350'	125° 57.985'	0.000	0.120	0.825	0.000	0.945
2	5 (C)	19-Oct-08	3:45	5:27	9° 33.355'	125° 57.755'	9° 33.577'	125° 57.750'	0.120	0.533	1.167	0.135	1.955
2	23 (C)	19-Oct-08	3:02	7:15	9° 33.913'	125° 58.200'	9° 34.098'	125° 58.433'	0.265	2.070	0.817	0.120	3.272
2	24 (C)	19-Oct-08	3:26	6:38	9° 34.333'	125° 58.500'	9° 34.527'	125° 58.697'	0.340	0.225	0.090	0.085	0.740
3	25	21-Oct-08	3:45	5:10	9° 25.460'	126° 02.325'	9° 25.612'	126° 02.488'	0.150	0.180	0.390	0.445	1.165
3	26	21-Oct-08	3:11	5:50	9° 26.508'	125° 57.952'	9° 26.522'	125° 58.167'	0.000	0.345	0.910	0.330	1.585
3	21 (C)	21-Oct-08	3:58	5:06	9° 33.248'	125° 57.927'	9° 33.408'	125° 58.125'	0.440	0.030	0.000	0.220	0.690
3	22 (C)	21-Oct-08	4:08	7:54	9° 33.942'	125° 57.870'	9° 33.937'	125° 58.093'	0.360	1.220	0.410	0.080	2.070
4	1	22-Oct-08	3:55	5:05	9° 20.040'	126° 00.515'	9° 19.872'	126° 00.708'	0.100	0.385	1.180	0.345	2.010
4	2	22-Oct-08	3:02	6:02	9° 22.827'	125° 59.827'	9° 22.718'	125° 59.757'	0.030	0.450	0.605	0.400	1.485
4	8	22-Oct-08	3:06	4:34	9° 22.405'	126° 03.365'	9° 22.597'	126° 03.435'	0.980	0.880	0.260	0.075	2.195
4	7	22-Oct-08	5:42	7:20	9° 23.537'	126° 02.338'	9° 23.743'	126° 02.338'	0.480	0.510	0.120	0.140	1.250
5	13	23-Oct-08	3:08	6:02	9° 21.497'	126° 02.062'	9° 21.638'	126° 02.190'	2.560	0.270	0.930	0.150	3.910
5	14	23-Oct-08	3:38	5:08	9° 20.358'	126° 01.810'	9° 20.310'	126° 01.357'	0.025	0.770	0.405	0.945	2.145
5	9	23-Oct-08	3:41	7:18	9° 22.945'	126° 02.320'	9° 23.062'	126° 02.315'	0.000	0.080	0.000	0.070	0.150
5	10	23-Oct-08	3:23	4:46	9° 25.257'	126° 02.192'	9° 25.452'	126° 02.265'	0.140	0.380	0.910	0.190	1.620
6	27	24-Oct-08	2:54	7:18	9° 24.762'	125° 58.728'	9° 24.983'	125° 58.675'	0.810	0.280	0.805	0.400	2.295
6	28	24-Oct-08	4:50	6:00	9° 26.032'	125° 57.967'	9° 25.968'	125° 58.097'	0.720	0.040	1.830	0.755	3.345
6	15	24-Oct-08	5:28	6:36	9° 18.113'	126° 00.932'	9° 18.267'	126° 01.018	0.050	0.190	0.130	0.290	0.660
6	16	24-Oct-08	3:03	4:20	9° 16.853'	126° 02.357'	9° 17.022'	126° 02.450'	0.910	1.005	0.380	0.275	2.570
7	17	25-Oct-08	3:38	6:00	9° 25.240'	126° 02.597'	9° 25.407'	126° 02.610'	0.440	1.650	0.655	0.970	3.715
7	18	25-Oct-08	4:00	7:05	9° 23.872'	126° 02.322'	9° 23.985'	126° 02.465'	0.005	0.180	0.200	0.680	1.065
7	11	25-Oct-08	4:58	5:51	9° 20.422'	126° 02.772'	9° 20.345'	126° 02.818'	0.050	0.050	0.070	0.000	0.170
7	12	25-Oct-08	3:28	4:10	9° 20.885'	126° 01.298'	9° 21.025'	126° 01.417'	0.000	0.070	0.070	0.095	0.235

APPENDIX 42. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN LANUZA BAY IN YEAR 2010

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)			
			Set	Haul	Lat.	Long.	Lat.	Long.	6◊	7◊	8◊	Total
1	1	26-Sep-10	2:53	5:04	9° 20.137'	125° 59.605'	9° 20.303'	125° 59.713'	0.295	0.350	0.800	0.470
1	2	26-Sep-10	3:20	6:16	9° 22.781'	126° 00.371'	9° 22.913'	126° 00.536'	0.000	0.215	0.330	0.275
1	3	26-Sep-10	3:58	6:45	9° 17.486'	126° 07.441'	9° 17.605'	126° 07.618'	0.210	1.025	1.310	0.630
1	4	26-Sep-10	4:37	5:40	9° 18.900'	126° 10.060'	9° 19.063'	126° 10.170'	0.065	0.080	0.250	0.000
2	5	27-Sep-10	3:08	6:40	9° 33.693'	125° 57.368'	9° 33.710'	125° 57.561'	0.085	0.215	1.120	0.335
2	6 (C)	27-Sep-10	3:29	5:45	9° 33.905'	125° 57.682'	9° 33.891'	125° 57.894'	3.710	1.490	2.325	0.170
2	7 (C)	27-Sep-10	3:00	5:35	9° 23.795'	126° 02.366'	9° 23.892'	126° 02.452'	0.240	0.000	0.115	0.250
2	8	27-Sep-10	3:29	6:15	9° 22.369'	126° 03.224'	9° 22.527'	126° 03.212'	0.815	0.000	0.705	0.290
3	9	28-Sep-10	3:36	7:08	9° 23.069'	126° 02.247'	9° 23.261'	126° 02.251'	0.585	0.300	0.655	0.555
3	10	28-Sep-10	3:08	5:45	9° 25.311'	126° 02.185'	9° 25.474'	126° 02.266'	0.420	0.570	2.590	0.060
3	11	28-Sep-10	3:51	6:40	9° 19.433'	126° 02.541'	9° 19.567'	126° 02.622'	1.140	0.685	1.045	2.785
3	12	28-Sep-10	3:24	5:30	9° 20.168'	126° 00.618'	9° 20.364'	126° 00.714'	2.685	0.710	2.375	2.620
4	13	29-Sep-10	2:43	5:45	9° 22.492'	126° 01.934'	9° 22.656'	126° 01.931'	0.125	0.275	0.625	0.425
4	14	29-Sep-10	3:13	6:49	9° 21.748'	126° 01.790'	9° 21.918'	126° 01.801'	0.560	0.100	0.955	0.592
4	15	29-Sep-10	3:13	7:35	9° 18.193'	126° 00.745'	9° 18.374'	126° 00.828'	1.345	3.105	1.910	1.670
4	16	29-Sep-10	3:31	5:30	9° 17.604'	126° 01.733'	9° 17.824'	126° 01.792'	2.105	2.970	2.025	2.320
5	21 (C)	30-Sep-10	3:51	6:40	9° 33.694'	125° 57.573'	9° 33.817'	125° 57.769'	0.730	0.140	0.130	0.245
5	22 (C)	30-Sep-10	4:05	5:30	9° 33.912'	125° 57.842'	9° 34.021'	125° 58.071'	1.295	0.000	0.075	0.505
5	23 (C)	30-Sep-10	3:43	6:26	9° 34.400'	125° 57.932'	9° 34.469'	125° 58.134'	2.250	3.260	1.125	0.990
5	24 (C)	30-Sep-10	4:01	5:35	9° 34.773'	125° 58.104'	9° 34.830'	125° 58.331'	0.630	0.000	0.220	0.975
6	25	1-Oct-10	4:08	5:42	9° 25.282'	126° 02.095'	9° 25.415'	126° 02.203'	1.915	10.805	7.395	0.745
6	26	1-Oct-10	3:35	5:37	9° 26.264'	125° 59.026'	9° 26.454'	125° 59.013'	0.310	0.230	0.535	0.810
6	27	1-Oct-10	3:37	5:26	9° 25.277'	125° 59.005'	9° 25.470'	125° 58.949'	1.435	3.490	2.485	1.505
6	28	1-Oct-10	3:57	6:30	9° 26.027'	125° 58.209'	9° 26.228'	125° 58.192'	0.000	0.250	0.480	2.455
7	17	2-Oct-10	3:02	6:15	9° 25.313'	126° 02.635'	9° 25.502'	126° 02.668'	0.135	1.695	2.115	0.805
7	18	2-Oct-10	3:32	7:32	9° 23.253'	126° 02.110'	9° 23.448'	126° 02.126'	1.320	0.815	0.665	1.140
7	19	2-Oct-10	3:13	6:10	9° 20.104'	126° 02.956'	9° 20.297'	126° 03.061'	1.010	0.755	0.815	0.450
7	20	2-Oct-10	3:40	5:26	9° 17.232'	126° 04.353'	9° 17.429'	126° 04.478'	0.045	0.265	0.435	0.405

APPENDIX 43. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE BASE LINE DATA COLLECTION IN TAWI-TAWI BAY IN YEAR 2004

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	7◊	8◊	Total
1	2	11-Aug-04	17:30	19:06	5° 02.490'	119° 48.538'	5° 02.365'	119° 48.177'	2.100	8.850	10.950
1	2	12-Aug-04	04:37	05:38	5° 02.507'	119° 48.512'	5° 02.365'	119° 48.177'	1.950	4.050	6.000
1	1	11-Aug-04	18:30	19:23	5° 02.517'	119° 48.563'	5° 03.245'	119° 47.817'	2.150	3.080	5.230
1	1	12-Aug-04	04:52	06:06	5° 03.298'	119° 47.572'	5° 03.167'	119° 47.948'	2.700	3.650	6.350
1	3	11-Aug-04	17:30	18:42	5° 02.933'	119° 49.125'	5° 02.798'	119° 48.708'	1.750	10.910	12.660
1	3	12-Aug-04	04:46	05:51	5° 02.933'	119° 49.132'	5° 02.798'	119° 48.708'	1.250	2.300	3.550
2	3	12-Aug-04	17:56	18:51	5° 02.805'	119° 49.167'	5° 03.162'	119° 48.948'	3.200	1.900	5.100
2	3	13-Aug-04	04:50	05:58	5° 02.748'	119° 48.247'	5° 02.405'	119° 48.103'	1.530	0.800	2.330
2	1	12-Aug-04	18:11	19:13	5° 03.530'	119° 47.487'	5° 03.245'	119° 47.817'	1.020	1.900	2.920
2	1	13-Aug-04	04:57	06:04	5° 03.530'	119° 47.487'	5° 03.245'	119° 47.817'	1.650	2.000	3.650
2	2	12-Aug-04	17:52	18:46	5° 02.490'	119° 48.538'	5° 02.365'	119° 48.177'	1.050	2.700	3.750
2	2	13-Aug-04	05:00	06:10	5° 02.472'	119° 48.562'	5° 02.372'	119° 48.240'	2.000	2.800	4.800
3	2	13-Aug-04	17:41	18:39	5° 02.522'	119° 48.515'	5° 02.912'	119° 48.735'	1.930	8.880	10.810
3	2	14-Aug-04	05:28	06:35	5° 02.522'	119° 48.510'	5° 02.317'	119° 48.147'	0.830	8.030	8.850
3	1	13-Aug-04	18:03	19:12	5° 03.482'	119° 47.532'	5° 03.240'	119° 47.802'	0.460	0.980	1.440
3	1	14-Aug-04	05:46	06:53	5° 03.247'	119° 47.768'	5° 03.022'	119° 47.998'	2.060	7.130	9.190
3	3	13-Aug-04	17:44	18:43	5° 02.553'	119° 48.937'	5° 02.932'	119° 49.012'	3.130	1.920	5.050
3	3	14-Aug-04	05:21	06:39	5° 02.877'	119° 47.950'	5° 02.877'	119° 47.900'	6.980	2.360	9.340
4	1	14-Aug-04	16:03	18:54	5° 03.513'	119° 47.487'	5° 03.912'	119° 47.415'	0.630	1.410	2.040
4	1	15-Aug-04	05:42	06:50	5° 03.500'	119° 49.510'	5° 03.202'	119° 47.798'	1.830	3.330	5.160
4	2	14-Aug-04	17:42	19:00	5° 02.502'	119° 48.538'	5° 02.893'	119° 48.713'	1.060	8.080	9.140
4	2	14-Aug-04	21:39	22:43	5° 02.970'	119° 48.638'	5° 02.365'	119° 48.177'	0.750	6.260	7.010
4	3	14-Aug-04	17:39	18:38	5° 02.550'	119° 48.883'	5° 02.917'	119° 49.005'	1.640	1.310	2.950
4	3	15-Aug-04	05:19	06:27	5° 02.510'	119° 47.988'	5° 02.858'	119° 48.107'	1.540	0.770	2.310

APPENDIX 44. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2006

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	7◊	8◊	Total
1	1	18-Aug-06	18:01	18:50	5° 02.573'	119° 47.770'	5° 02.343'	119° 47.835'	0.741	0.488	1.229
1	1	19-Aug-06	04:49	05:40	5° 02.573'	119° 47.770'	5° 02.343'	119° 47.835'	0.945	2.150	3.095
1	2	18-Aug-06	18:06	19:00	5° 02.503'	119° 48.553'	5° 02.532'	119° 48.942'	0.755	0.420	1.175
1	2	19-Aug-06	04:46	05:45	5° 02.503'	119° 48.553'	5° 02.532'	119° 48.942'	2.812	0.497	3.309
1	3	18-Aug-06	18:16	19:00	5° 02.923'	119° 49.047'	5° 02.660'	119° 48.770'	1.530	1.148	2.678
1	3	19-Aug-06	04:55	05:45	5° 02.923'	119° 49.047'	5° 02.660'	119° 48.770'	1.281	1.161	2.442
2	1	19-Aug-06	18:27	19:10	5° 02.573'	119° 47.770'	5° 02.343'	119° 47.835'	0.300	0.215	0.515
2	1	20-Aug-06	03:55	04:40	5° 02.573'	119° 47.770'	5° 02.343'	119° 47.835'	0.554	0.000	0.554
2	2	19-Aug-06	18:11	19:00	5° 02.503'	119° 48.553'	5° 02.532'	119° 48.942'	0.410	0.795	1.205
2	2	20-Aug-06	04:10	05:10	5° 02.503'	119° 48.553'	5° 02.532'	119° 48.942'	0.365	0.172	0.537
2	3	19-Aug-06	17:55	18:50	5° 02.923'	119° 49.047'	5° 02.660'	119° 48.770'	1.334	1.324	2.658
2	3	20-Aug-06	04:25	05:20	5° 02.923'	119° 49.047'	5° 02.660'	119° 48.770'	0.320	0.181	0.501
3	1	20-Aug-06	18:19	19:10	5° 02.573'	119° 47.770'	5° 02.343'	119° 47.835'	0.255	0.521	0.776
3	1	21-Aug-06	04:40	05:35	5° 02.573'	119° 47.770'	5° 02.343'	119° 47.835'	0.710	0.869	1.579
3	2	20-Aug-06	17:38	18:35	5° 02.503'	119° 48.553'	5° 02.532'	119° 48.942'	0.372	0.153	0.525
3	2	21-Aug-06	04:18	05:15	5° 02.503'	119° 48.553'	5° 02.532'	119° 48.942'	0.566	0.300	0.866
3	3	20-Aug-06	17:30	18:20	5° 02.923'	119° 49.047'	5° 02.660'	119° 48.770'	0.342	0.379	0.721
3	3	21-Aug-06	04:45	05:45	5° 02.923'	119° 49.047'	5° 02.660'	119° 48.770'	1.080	2.207	3.287
4	1	21-Aug-06	17:48	18:45	5° 02.573'	119° 47.770'	5° 02.343'	119° 47.835'	0.179	0.192	0.371
4	1	22-Aug-06	04:58	05:58	5° 02.573'	119° 47.770'	5° 02.343'	119° 47.835'	0.285	0.352	0.637
4	2	21-Aug-06	18:08	19:10	5° 02.503'	119° 48.553'	5° 02.532'	119° 48.942'	1.150	0.685	1.835
4	2	22-Aug-06	05:00	06:00	5° 02.503'	119° 48.553'	5° 02.532'	119° 48.942'	1.070	0.954	2.024
4	3	21-Aug-06	18:10	19:00	5° 02.923'	119° 49.047'	5° 02.660'	119° 48.770'	0.179	0.333	0.512
4	3	22-Aug-06	05:10	06:00	5° 02.923'	119° 49.047'	5° 02.660'	119° 48.770'	0.549	1.259	1.808

APPENDIX 45. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2008

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	7◊	8◊	Total
1	1	25-Aug-08	18:05	19:43	5° 03.303'	119° 47.576'	5° 03.250'	119° 47.821'	1.700	0.750	2.450
	1	26-Aug-08	04:10	05:51	5° 03.311'	119° 47.581'	5° 03.261'	119° 47.83'	1.200	0.470	1.620
	2	25-Aug-08	18:15	19:57	5° 02.496'	119° 48.545'	5° 02.371'	119° 48.183'	2.500	0.990	3.530
	2	26-Aug-08	04:17	06:03	5° 02.503'	119° 48.551'	5° 02.378'	119° 48.191'	2.300	0.410	2.700
	3	25-Aug-08	18:19	19:55	5° 02.941'	119° 49.133'	5° 02.805'	119° 48.715'	1.000	0.600	1.550
	3	26-Aug-08	04:21	06:15	5° 02.948'	119° 49.141'	5° 02.820'	119° 48.721'	0.900	0.600	1.490
2	1	26-Aug-08	18:17	19:58	5° 03.315'	119° 47.585'	5° 03.265'	119° 47.836'	2.700	1.080	3.800
	1	27-Aug-08	04:05	05:49	5° 03.320'	119° 47.595'	5° 03.270'	119° 47.843'	0.700	0.660	1.310
	2	26-Aug-08	18:11	19:47	5° 02.501'	119° 48.548'	5° 02.375'	119° 48.191'	0.600	0.570	1.120
	2	27-Aug-08	04:13	05:58	5° 02.511'	119° 48.558'	5° 02.381	119° 48.198'	2.100	1.550	3.600
	3	26-Aug-08	18:07	19:51	5° 02.955'	119° 49.153'	5° 02.390'	119° 48.203'	0.500	0.750	1.290
	3	27-Aug-08	04:15	05:59	5° 02.960'	119° 49.161'	5° 02.396'	119° 48.211'	1.300	0.710	1.970
3	1	27-Aug-08	18:03	19:49	5° 03.325'	119° 47.598'	5° 03.275'	119° 47.846'	1.700	1.310	3.030
	1	28-Aug-08	04:11	05:56	5° 03.328'	119° 47.601'	5° 03.280'	119° 47.848'	4.800	0.590	5.390
	2	27-Aug-08	18:13	19:56	5° 02.520'	119° 48.563'	5° 02.380'	119° 48.205'	1.500	1.800	3.250
	2	28-Aug-08	04:05	05:49	5° 02.525'	119° 48.570'	5° 02.390'	119° 48.208'	0.400	1.940	2.310
	3	27-Aug-08	18:09	19:52	5° 02.963'	119° 49.170'	5° 02.406'	119° 48.225'	2.400	0.450	2.810
	3	28-Aug-08	04:16	05:58	5° 02.971'	119° 49.178'	5° 02.411'	119° 48.228'	1.300	0.400	1.730
4	1	28-Aug-08	18:11	19:56	5° 03.335'	119° 47.608'	5° 03.290'	119° 47.855'	0.900	1.260	2.180
	1	29-Aug-08	04:05	05:47	5° 03.341'	119° 47.615'	5° 03.296'	119° 47.861'	2.000	0.260	2.280
	2	28-Aug-08	18:17	19:59	5° 02.531'	119° 48.576'	5° 02.396'	119° 48.213'	1.400	0.290	1.710
	2	29-Aug-08	04:12	05:56	5° 02.54'	119° 48.586'	5° 02.401'	119° 48.220'	0.800	0.280	1.050
	3	28-Aug-08	18:14	19:57	5° 02.99'	119° 49.188'	5° 02.420'	119° 48.241'	3.700	0.510	4.170
	3	29-Aug-08	04:09	05:53	5° 02.935'	119° 49.191'	5° 02.428'	119° 48.248'	2.000	0.280	2.320

APPENDIX 46. DETAILS OF BOTTOM-SET GILLNET FISHING OPERATION DURING THE MONITORING EVENT IN TAWI-TAWI BAY IN YEAR 2010

Day	Station No.	Date	Time		Start Position		End Position		Catch (kg)		
			Set	Haul	Lat.	Long.	Lat.	Long.	7◊	8◊	Total
1	1	5-Aug-10	7:01	8:01	5° 03.534'	119° 47.491'	5° 03.245'	119° 47.817'	2.570	1.755	4.325
1	1	6-Aug-10	4:45	5:45	5° 03.530'	119° 47.497'	5° 03.247'	119° 47.819'	0.820	1.000	1.820
1	2	5-Aug-10	18:55	19:55	5° 02.493'	119° 48.541'	5° 02.369'	119° 48.181'	1.590	0.680	2.270
1	2	6-Aug-10	4:50	5:50	5° 02.497'	119° 48.544'	5° 02.372'	119° 48.183'	1.580	0.970	2.550
1	3	5-Aug-10	19:05	20:05	5° 02.929'	119° 49.121'	5° 02.795'	119° 48.705'	1.500	2.130	3.630
1	3	6-Aug-10	4:55	5:55	5° 02.931'	119° 49.123'	5° 02.797'	119° 48.707'	1.750	1.150	2.900
2	1	6-Aug-10	18:45	19:45	5° 03.530'	119° 47.487'	5° 03.245'	119° 47.817'	2.330	1.355	3.685
2	1	7-Aug-10	4:55	5:55	5° 03.534'	119° 47.491'	5° 03.241'	119° 47.813'	0.410	0.430	0.840
2	2	6-Aug-10	18:50	19:50	5° 02.490'	119° 48.538'	5° 02.365'	119° 48.177'	1.110	0.830	1.940
2	2	7-Aug-10	4:40	5:40	5° 02.493'	119° 48.541'	5° 02.369	119° 48.181'	0.300	0.430	0.730
2	3	6-Aug-10	18:55	19:55	5° 02.933'	119° 49.125'	5° 02.798'	119° 48.708'	0.995	1.570	2.565
2	3	7-Aug-10	4:45	5:45	5° 02.929'	119° 49.121'	5° 02.795'	119° 48.705'	0.650	0.760	1.410
3	1	7-Aug-10	18:50	19:50	5° 03.530'	119° 47.487'	5° 03.245'	119° 47.817'	1.090	1.030	2.120
3	1	8-Aug-10	4:40	5:40	5° 03.534'	119° 47.491'	5° 03.241'	119° 47.813'	0.470	0.580	1.050
3	2	7-Aug-10	18:45	19:45	5° 02.490'	119° 48.538'	5° 02.365'	119° 48.177'	0.960	0.670	1.630
3	2	8-Aug-10	4:55	5:55	5° 02.493'	119° 48.541'	5° 02.369'	119° 48.181'	0.630	0.590	1.220
3	3	7-Aug-10	19:00	20:00	5° 02.933'	119° 49.125'	5° 02.798'	119° 48.708'	0.440	0.920	1.360
3	3	8-Aug-10	4:55	5:55	5° 02.929'	119° 49.121'	5° 02.795'	119° 48.705'	0.640	0.450	1.090
4	1	8-Aug-10	18:45	19:45	5° 03.530'	119° 47.487'	5° 03.245'	119° 47.817'	1.600	2.160	3.760
4	1	9-Aug-10	4:50	5:50	5° 03.534'	119° 47.491'	5° 03.241'	119° 47.813'	2.400	0.830	3.230
4	2	8-Aug-10	18:40	19:40	5° 02.490'	119° 48.538'	5° 02.365'	119° 48.177'	0.750	1.280	2.030
4	2	9-Aug-10	4:55	5:55	5° 02.493'	119° 48.541'	5° 02.369'	119° 48.181'	0.485	0.380	0.865
4	3	8-Aug-10	18:45	19:45	5° 02.933'	119° 49.125'	5° 02.798'	119° 48.708'	0.560	0.780	1.340
4	3	9-Aug-10	4:50	5:50	5° 02.929'	119° 49.121'	5° 02.795'	119° 48.705'	0.660	0.875	1.535
1	1	5-Aug-10	7:01	8:01	5° 03.534'	119° 47.491'	5° 03.245'	119° 47.817'	2.570	1.755	4.325
1	1	6-Aug-10	4:45	5:45	5° 03.530'	119° 47.497'	5° 03.247'	119° 47.819'	0.820	1.000	1.820
1	2	5-Aug-10	18:55	19:55	5° 02.493'	119° 48.541'	5° 02.369'	119° 48.181'	1.590	0.680	2.270
1	2	6-Aug-10	4:50	5:50	5° 02.497'	119° 48.544'	5° 02.372'	119° 48.183'	1.580	0.970	2.550