



(GCP/RAS/269/GFF)

BFAR/FAO/GEF/SEAFDEC/REBYC-II CTI PROJECT

REPORT ON FISHING DEMONSTRATIONS OF BAGNET AND ACCORDION TRAP GEARS IN SAMAR SEA

INTRODUCTION

The REBYC II-CTI Project “Strategies in Trawl Bycatch Management” is implemented in Samar Sea as a Pilot site in the Philippines. The project formulated the Samar Sea Management Plan (SSFMP) as a tool to sustainably manage the fisheries in the area, including the trawls. One of the management measures under the SSFMP is a close season and exclusion of certain fishing gears, including trawls. In this regard, other fishing gears, are desired as alternative for fisherfolks that will be affected by the close season or exclusion.

Among the fishing gears considered by the REBYC-II CTI project as alternative fishing gear to municipal trawl are bagnet/liftnet (local name: *Basnigan*) and accordion trap. Bagnet is classified as an active gear which is prohibited to operate within municipal waters (15 kilometers from the shoreline). However, under the Implementing Rules and Regulations of the Republic Act 8550 as amended by Republic Act 10654, the operation of bagnet is allowed within municipal waters under the condition that a fishing boat powered by single piston engine is used. Various trap designs are commonly used in municipal waters to catch various fish species and crabs; however the accordion/collapsible type which was purportedly introduced by a Taiwanese fisherman, is a potential alternative gear to catch shrimps.

The fishing trials of bagnet and accordion trap were aimed to determine their catch efficiencies which includes catch rate and composition. The viabilities of these fishing gears would be considered as an alternative livelihood to trawl fishers that would be affected by the implementation of the closed season of the Samar Sea Fisheries Management Plan. Also, the introduction of responsible fishing practices would minimize the impact of the trawling and ensure sustainable fishery resources in Samar Sea.

MUNICIPAL BAGNET TRIALS

Gear and Boat Used

The project team, in cooperation of some members of the project TWG, constructed and rigged one (1) unit bagnet measuring 12 m x 7 m x 4 m (length x width x depth). It is constructed of polyamide (PA) nettings with mesh size of 1.05 cm and twine size of 210d/5.

The fishing gear was constructed by joining together four (4) strips of 12 meter-long Polyamide (PA) netting with twine size of 210denier by 3 strands, mesh size of 10.5 mm (30 knots) and 400 meshes down (MD) to form the base. Another 38 meter-long strip of the same material was connected to the four sides of the base to form the walls. The upper edge of the walls were supported with Polyethylene (PE) netting with twine size of 400d/12 (Denier by 12 strands), mesh size of 33.8 mm (19knots) and 7 meshes down (MD) selvedge. The net was hung using 6 mm diameter Polyethylene (PE) rope. The design and layout of the gear is attached as **Annex 1**.

The fishing boat used in the demonstration trials was a traditional wooden outriggered type with a total length (TL) of 9 m, breadth (B) of 0.70 m and depth (D) of 0.65 m. It is powered by Honda 16 Horse Power gasoline engine. The setup for the liftnet/bagnet fishing was provided with 4 pieces bamboo poles measuring 15 meters where the net is hung. The picture of the boat used is shown in **Annex 2**.

Target species and seasonality

The main target species of Bagnet was Indian anchovy (*Stolephorus indicus*), ranked number seven (7) among the top twenty (20) commercial important fish species in Samar Sea. It contributed 3.1 metric tons or 6.8% of the total annual catch landed in Samar Sea. Commercial ring net and trawl are the main fishing gears used in this fishery year round, with the peak season during the period from April to May. In some instances, this fish species are allegedly caught by the use of explosive devices such as dynamite.

Fishing trials

The boat left port at about 06:30 pm. With the boat either drifting or anchored at the fishing ground, two (2) pressurized paraffin lamps (*Petromax*) located at mid-section on both sides of the boat served as light attractors which lasted about 5-6 hours. Setting the gear commenced when the net was dropped and one *Petromax* lamp was turned off. The other lamp remained lighted at slope modeto further concentrate the fish.

Three (3) fishing trials were carried out as shown in **Annex 3**. The fishing trials yielded a minimal catch of 2.1 kg, dominated by tropical silverside (*Atherinomorus duodecimemalis*; guno; 49.41%), tooth pony (*Gazza minuta*; sap-sap; 9.8%) and blue swimming crab (*Portunus pelagicus*; alimasag; 9.8%) each, silver-stripe round herring (*Spratelloides gracilis*; Bolinao; 7.4%). Other fish caught included shrimp, croaker, goby, cardinal fish, among others.

Remarks / Recommendations

The three trials conducted did not result to significant catch. Adjustments made on lighting attraction system and operational techniques, however, showed some improvement of catch from first trial up to the succeeding fishing trials.

As the municipal bagnet is one of the fishing gears promoted by BFAR as alternative to the recently banned modified Danish seine, it is essential to continue fishing trials with the project and fisherfolk collaborators to gain the necessary skill. It is to be noted that small municipal liftnet/bagnet is applicable in other areas with similar fish resources (particularly anchovies and sardines) with that of Samar Sea.

TRIAL DEMONSTRATION OF ACCORDION TRAPS

The accordion trap is relatively long trap compared to various local trap designs used for capturing fish or crabs. The gear is said to have introduced by a Taiwanese fisherman that was adopted as substitute gear in areas where small trawls were prohibited.

For the purpose, a unit of the original Taiwanese product was used as a prototype and six (6) units were constructed with three mesh sizes (2 units each for 1.69 cm (19 Knots), 2.7 cm (12 Knots) and 2.54 cm (13 Knots). The gear, which is made of monofilament netting and iron bar frame, is about 5.7 m long with 9 compartments each with non-return valve (Annex 3). The fishing demonstration was conducted using 10hp small outriggered fishing banca (**Annex 4**), which can accommodate 50-100 units of traps per operation and can be operated by one person.

The demonstrations were conducted from April to July 2016 in the coastal waters of Santa Margarita and Catbalogan City (**Annex 5**). Setting time was at about 17:00h and hauled at 05:00h (overnight) or a soaking time of 10-12 hrs. Daytime operation was 06:00h to 17:00h. The traps were set alternately according to mesh size. Baited and non-baited traps were also observed.

The total catch in terms of count and weight during night and day operation shows that night operation has a better catch rate (508 g/trap) than day time operation (256 g/trap). The target species like grouper, shrimp, goatfish, octopus, goby and breams were dominant catch during night time, while terapon, blue swimming crab and nemipterids were dominant during day time. It was also observed that night time has a higher yield of the target catch, thus recommended as the more appropriate time to operate the accordion trap.

Ten (10) fishing operations were completed (6 nighttime; 4 daytime). These fishing trials yielded a total of 4.6 kilograms which comprised of groupers (8.6%), terapon (8.6%), white shrimp, trigger fish, blue swimming crab, goatfish, octopus, goby, eel, lattice monocle bream, sea mantis and nemipterids. The overall computed catch rate was 0.764 kg/trap. **Annex 6** shows the fishing banca used, its gear construction, fishing operation and catch during the demonstration.

On the catch according to mesh size, higher catch was observed in that traps with bigger mesh sizes (13K with a catch rate of 1,116 g/trap and 12K with 836 g/trap) while the trap with the smallest mesh (19k) had the lowest catch at 340 g/trap. The used of monofilament netting material may have an advantage because it is transparent underwater, likewise 13K mesh size shows a better catch result than 12K and 19k mesh size. However these observations should be considered preliminary considering the very limited trials that had been made that may not permit statistical testing.

The catch rate for baited traps was 640 g/trap, while it was 888 g/trap for traps without baits. Baited trap was observed effective during daytime catching blue swimming crab. It was however noted that, puffer fish was the dominant fish attracted by bait at daytime that destroyed the traps.

Shrimp catch (in terms of number) was also observed to be higher during night time, with shrimps catch of about 11 % compared to daytime at 3 %. It was also observed that shrimps catch was relatively higher in Catbalogan waters compared to Sta Margarita.

Remarks / Recommendations

The accordion trap can be recommended as an alternative gear to small trawl, particularly during the implementation of closed season for active gears. It is however important that as a condition for adoption, LGU should set a regulation limiting the size (number of compartments) and number of traps for each boat.

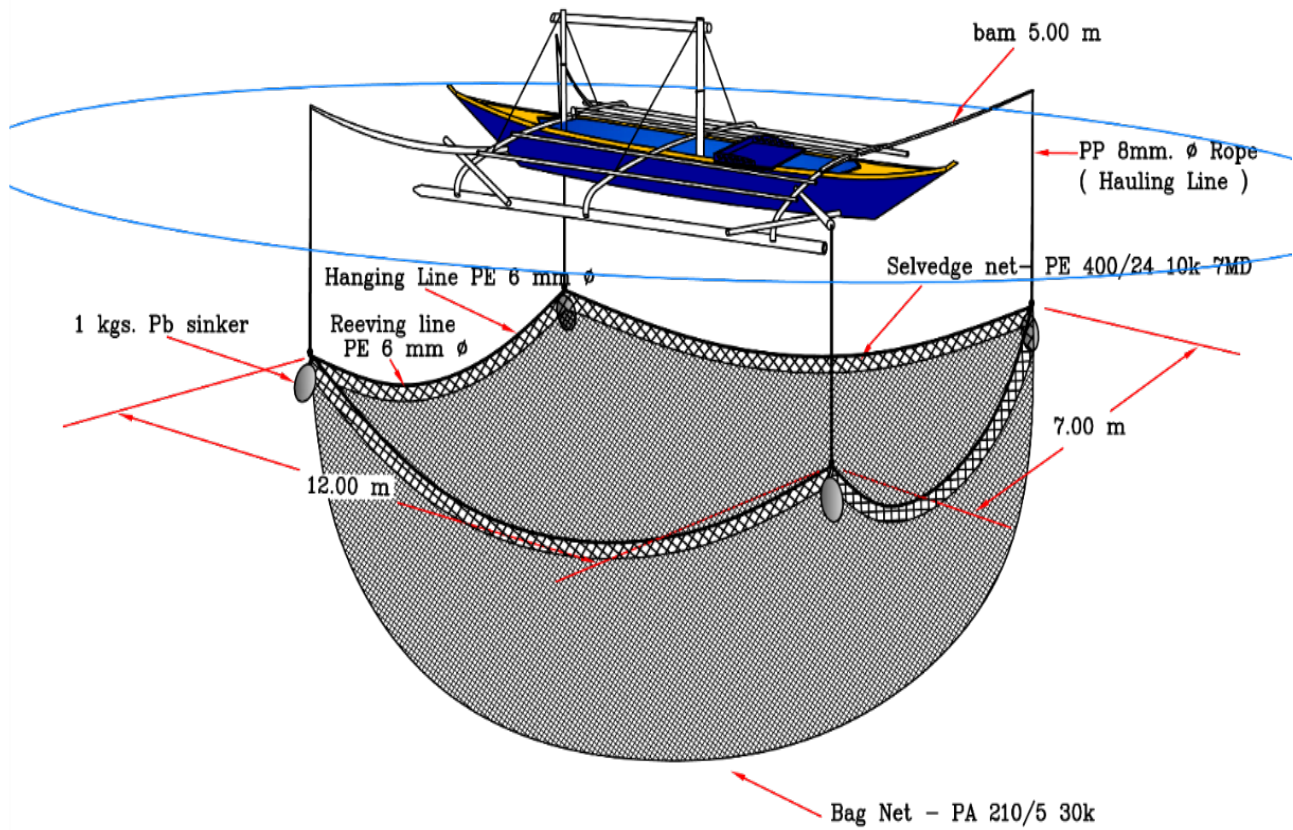
It is also observed that the trap is more effective at night time without bait, however fishing areas should be properly designated (by zoning) and marked to prevent damage or loss and conflict with other fishing gears/users.

While the better efficiency for larger mesh size traps is not conclusive, their use is recommended considering better theoretical selectivity advantage. It is however recommended to continue trials to determine appropriate mesh size.

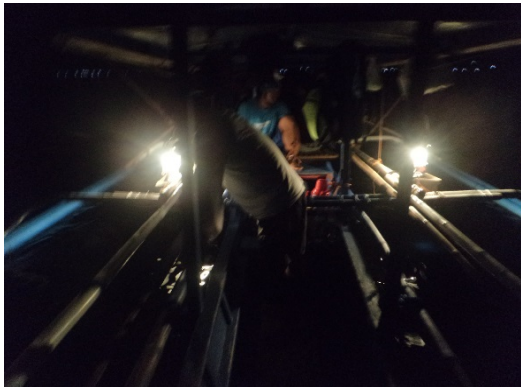
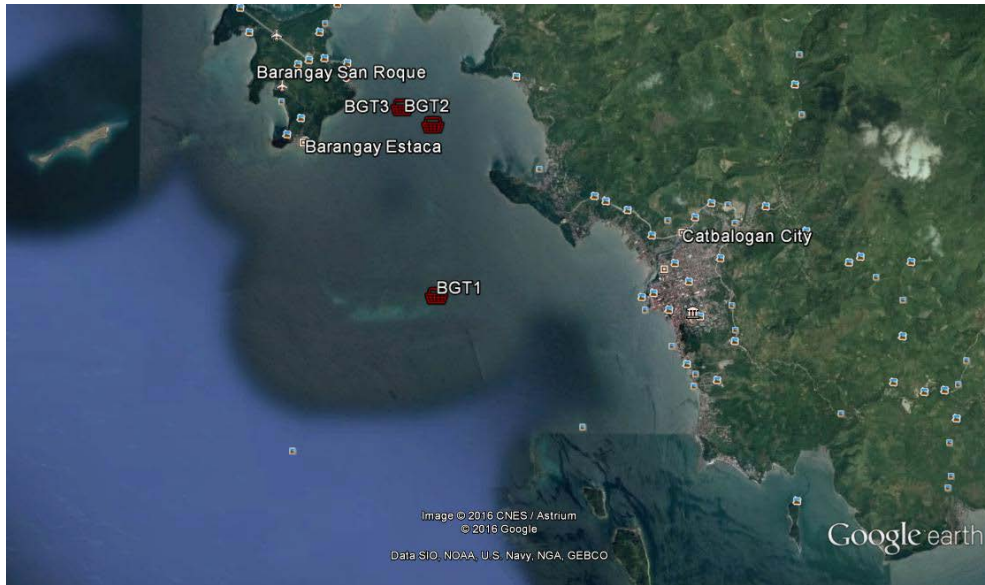
Initially, it was observed that the major catch of accordion trap is shrimp, although still in minimal quantity. Further tests/observations is therefore necessary of the gear can be potentially viable and alternative gear to catch shrimp.

ANNEXES

Annex 1: Design and layout of Bagnet (Loa: 9m x B: 0.70 x D: 0.65m)



Annex 2. Area/position of trial operations



Annex 3. Species caught by bagnet



Silver-stripe round herring (*Bolinao*)



Tropical silverside (*Gono*)



Cuttlefish and squid



Toothpony (*Sapsap*)

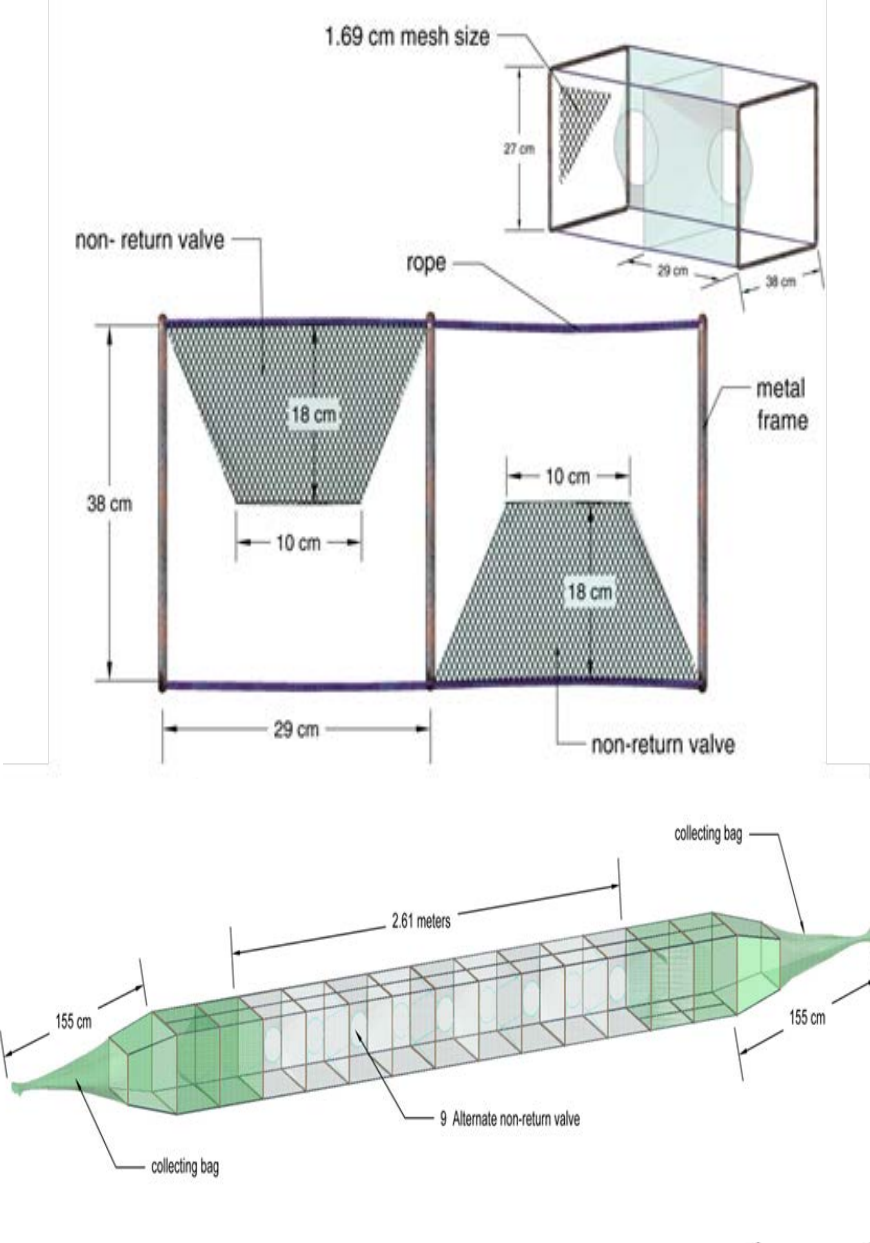


Yellowstripescad (*Salayginto*)

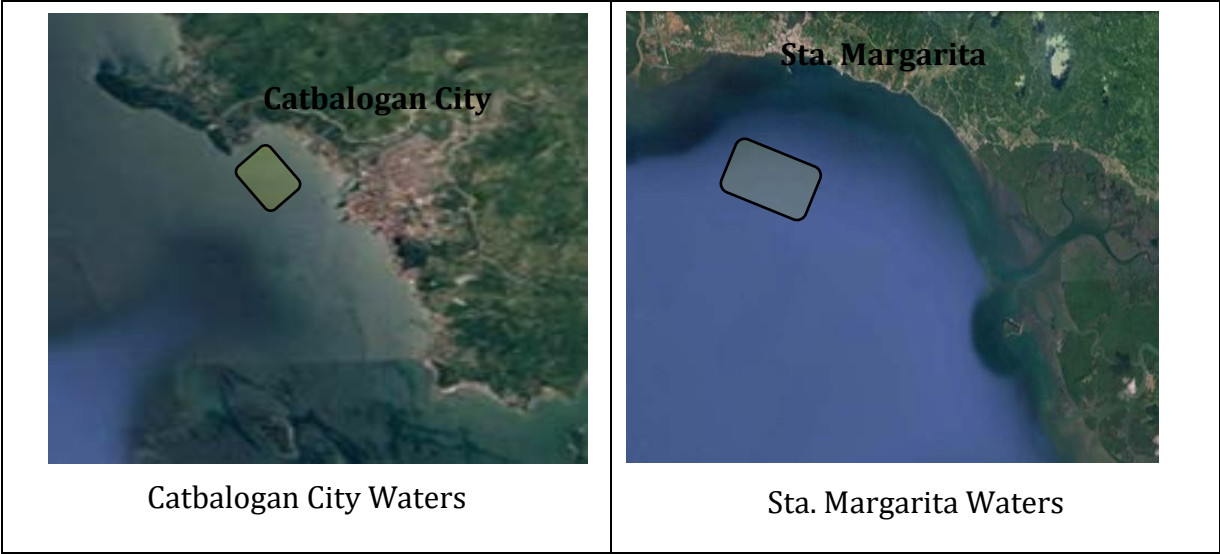


Cardinal fish (*Moong*)

Annex 4. Design of accordion trap



Annex 5. Fishing areas for accordion trap trials/demonstration



Annex 6. Fishing banca used, construction, fishing operation and catch during the trap fishing demonstration



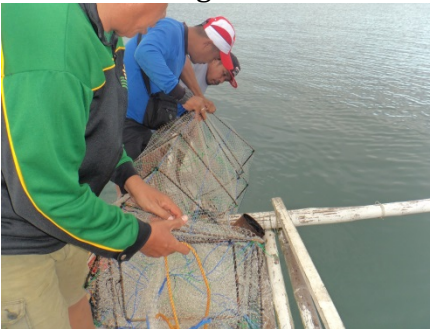
Fishing Banca



Construction



Collapsible trap



Setting Operation

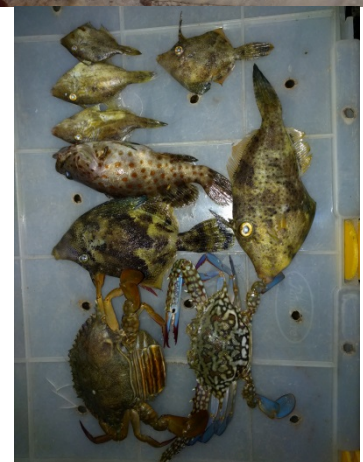


Hauling Operation



Light marker used

Photo documentation of catch



Annex 7. Catch composition of accordion or collapsible trap in Catbalogan City and Sta. Margarita waters

NO.	SPECIES	Operation No.	Total Length (mm)	Weight (g)	Mesh Size (k)	Variation	Time	Depth (Fathoms)	Fishing Ground	Date
1	Cardinal fish	1	50	15	12	no bait	night	6	Sta. Margarita	02/06/2016
2	<i>Terapon sp.</i>	1	130	20	12	no bait	night	6	Sta. Margarita	02/06/2016
3	Crab	1	110	12	12	no bait	night	6	Sta. Margarita	02/06/2016
4	Crab	1	90	12	12	no bait	night	6	Sta. Margarita	02/06/2016
5	Crab	1	110	12	12	no bait	night	6	Sta. Margarita	02/06/2016
6	white shrimp	1	43	10	12	no bait	night	6	Sta. Margarita	02/06/2016
7	Cardinal fish	1	60	0.5	19	no bait	night	6	Sta. Margarita	02/06/2016
8	Trigger fish	1	55	0.25	19	no bait	night	6	Sta. Margarita	02/06/2016
9	Trigger fish	1	48	0.25	19	no bait	night	6	Sta. Margarita	02/06/2016
10	<i>Terapon sp.</i>	2	120	13	19	no bait	day	5	Sta. Margarita	02/07/2016
11	<i>Terapon sp.</i>	2	105	11	19	no bait	day	5	Sta. Margarita	02/07/2016
12	<i>Terapon sp.</i>	2	116	12	19	no bait	day	5	Sta. Margarita	02/07/2016
13	<i>Terapon sp.</i>	2	110	12	19	no bait	day	5	Sta. Margarita	02/07/2016
14	<i>Terapon sp.</i>	2	112	12	19	no bait	day	5	Sta. Margarita	02/07/2016
15	<i>Terapon sp.</i>	2	126	13	19	no bait	day	5	Sta. Margarita	02/07/2016
16	<i>Terapon sp.</i>	2	110	12	19	no bait	day	5	Sta. Margarita	02/07/2016
17	<i>Terapon sp.</i>	2	115	12	19	no bait	day	5	Sta. Margarita	02/07/2016
18	<i>Terapon sp.</i>	2	117	13	19	no bait	day	5	Sta. Margarita	02/07/2016
19	Goat fish	2	138	20	19	no bait	day	5	Sta. Margarita	02/07/2016
20	Eel	2	870	480	13	no bait	day	5	Sta. Margarita	02/07/2016
21	Sungayan	2	103	11	13	no bait	day	5	Sta. Margarita	02/07/2016
22	Sungayan	2	90	9	13	no bait	day	5	Sta. Margarita	02/07/2016
23	Sungayan	2	87	9	13	no bait	day	5	Sta. Margarita	02/07/2016
24	Sungayan	2	110	11	13	no bait	day	5	Sta. Margarita	02/07/2016
25	Goat fish	2	135	30	13	no bait	day	5	Sta. Margarita	02/07/2016
26	Nemipteridae	2	150	40	13	no bait	day	5	Sta. Margarita	02/07/2016
27	Trigger fish	2	105	11	12	no bait	day	5	Sta. Margarita	02/07/2016

NO.	SPECIES	Operation No.	Total Length (mm)	Weight (g)	Mesh Size (k)	Variation	Time	Depth (Fathoms)	Fishing Ground	Date
28	Trigger fish	2	90	9	12	no bait	day	5	Sta. Margarita	02/07/2016
29	Cardinal fish	3	70	0.5	19	no bait	night	5	Sta. Margarita	02/08/2016
30	Trigger fish	3	88	10	19	no bait	night	5	Sta. Margarita	02/08/2016
31	Cardinal fish	3	92	10	13	no bait	night	5	Sta. Margarita	02/08/2016
32	Flat fish	3	160	24	12	no bait	night	5	Sta. Margarita	02/08/2016
33	crablet	3	29	1	12	no bait	night	5	Sta. Margarita	02/08/2016
34	Goat Fish	4	14.5	40	13	No bait	Night	7	Sta. Margarita	03/02/2016
35	Goat Fish	4	16	50	12	No bait	Night	7	Sta. Margarita	03/02/2016
36	Cardinal fish	4	8	10	12	No bait	Night	7	Sta. Margarita	03/02/2016
37	Sea Mantis	4	3	20	19	No bait	Night	7	Sta. Margarita	03/02/2016
38	Cardinal fish	4	8	10	19	No bait	Night	7	Sta. Margarita	03/02/2016
39	Grouper	4	21	160	13	No bait	Night	7	Sta. Margarita	03/02/2016
40	Octopus	4	10	240	13	No bait	Night	7	Sta. Margarita	03/02/2016
41	White shrimp	4	4	20	12	No bait	Night	7	Sta. Margarita	03/02/2016
42	Cardinal fish	4	8	10	12	No bait	Night	7	Sta. Margarita	03/02/2016
43	Cardinal fish	4	7	6	19	No bait	Night	7	Sta. Margarita	03/02/2016
44	Cardinal fish	4	9	9	19	No bait	Night	7	Sta. Margarita	03/02/2016
45	Sea Mantis	5	3	40	13	No bait	Day	5	Sta. Margarita	03/03/2016
46	White shrimp	5	4	20	13	No bait	Day	5	Sta. Margarita	03/03/2016
47	Pakol	5	7.5	5	12	No bait	Day	5	Sta. Margarita	03/03/2016
48	Crablet	5	3.5	0.5	13	No bait	Day	5	Sta. Margarita	03/03/2016
49	Cardinal fish	6	8	10	12	No bait	Night	7	Sta. Margarita	03/04/2016
50	Cardinal fish	6	8	10	12	No bait	Night	7	Sta. Margarita	03/04/2016
51	Grouper	6	13	40	12	No bait	Night	7	Sta. Margarita	03/04/2016
52	Octopus	6	14	600	12	No bait	Night	7	Sta. Margarita	03/04/2016
53	Crablet	7	60	26	12	w/ bait	night	5	Catbalogan City	3/19/2016
54	Crablet	7	45	23	12	w/ bait	night	5	Catbalogan City	3/19/2016
55	Crablet	7	36	17	12	w/ bait	night	5	Catbalogan City	3/19/2016
56	Crablet	7	42	22	12	w/ bait	night	5	Catbalogan City	3/19/2016

NO.	SPECIES	Operation No.	Total Length (mm)	Weight (g)	Mesh Size (k)	Variation	Time	Depth (Fathoms)	Fishing Ground	Date
57	Crablet	7	35	15	12	w/ bait	night	5	Catbalogan City	3/19/2016
58	Crablet	7	50	24	12	w/ bait	night	5	Catbalogan City	3/19/2016
59	Eel	7	620	390	12	w/ bait	night	5	Catbalogan City	3/19/2016
60	Cardinal Fish	7	80	3	12	w/ bait	night	5	Catbalogan City	3/19/2016
61	Crablet	7	50	20	13	w/ bait	night	5	Catbalogan City	3/19/2016
62	Crablet	7	52	20	13	w/ bait	night	5	Catbalogan City	3/19/2016
63	Crablet	7	45	20	13	w/ bait	night	5	Catbalogan City	3/19/2016
64	Cardinal Fish	7	80	5	13	w/ bait	night	5	Catbalogan City	3/19/2016
65	Triger Fish	7	130	25	13	w/ bait	night	5	Catbalogan City	3/19/2016
66	Triger Fish	7	75	15	13	w/ bait	night	5	Catbalogan City	3/19/2016
67	Octopus	7	140	540	13	w/ bait	night	5	Catbalogan City	3/19/2016
68	Pupper fish	7	100	20	19	w/ bait	night	5	Catbalogan City	3/19/2016
69	Grouper	7	130	30	19	w/ bait	night	5	Catbalogan City	3/19/2016
70	Cardinal Fish	7	80	7	13	No bait	night	5	Catbalogan City	3/19/2016
71	White shrimp	7	53	24	19	No bait	night	5	Catbalogan City	3/19/2016
72	White shrimp	7	53	24	19	No bait	night	5	Catbalogan City	3/19/2016
73	White shrimp	7	53	24	19	No bait	night	5	Catbalogan City	3/19/2016
74	White shrimp	7	53	24	19	No bait	night	5	Catbalogan City	3/19/2016
75	White shrimp	7	53	24	19	No bait	night	5	Catbalogan City	3/19/2016
76	Grouper	7	67	3	19	No bait	night	5	Catbalogan City	3/19/2016
77	Cardinal Fish	7	67	3	19	No bait	night	5	Catbalogan City	3/19/2016
78	Triger Fish	7	130	30	19	No bait	night	5	Catbalogan City	3/19/2016
79	Crablet	7	50	20	19	No bait	night	5	Catbalogan City	3/19/2016
80	Nutmegs shell	7		10	19	No bait	night	5	Catbalogan City	3/19/2016
81	Hairy triton shell	7		25	19	No bait	night	5	Catbalogan City	3/19/2016
82	Blue Swimming Crab	8	125	110	12	w/ bait	day	4	Catbalogan City	3/20/2016
83	Triger Fish	8	90	9	13	w/ bait	day	4	Catbalogan City	3/20/2016
84	Triger Fish	8	90	9	13	w/ bait	day	4	Catbalogan City	3/20/2016

NO.	SPECIES	Operation No.	Total Length (mm)	Weight (g)	Mesh Size (k)	Variation	Time	Depth (Fathoms)	Fishing Ground	Date
85	Triger Fish	8	65	7	13	w/ bait	day	4	Catbalogan City	3/20/2016
86	Blue Swimming Crab	8	110	60	19	w/ bait	day	4	Catbalogan City	3/20/2016
87	Grouper	8	150	60	12	no bait	day	4	Catbalogan City	3/20/2016
88	Triger Fish	8	150	50	12	no bait	day	4	Catbalogan City	3/20/2016
89	Triger Fish	8	170	70	13	no bait	day	4	Catbalogan City	3/20/2016
90	Sea Snake	8			13	no bait	day	4	Catbalogan City	3/20/2016
91	Grouper	8	190	35	13	no bait	day	4	Catbalogan City	3/20/2016
92	Cardinal Fish	8	90	8	19	no bait	day	4	Catbalogan City	3/20/2016
93	Grouper	9	115	40	19	w/ bait	night	4	Catbalogan City	3/21/2016
94	Lattice monocle bream	9	125	30	19	w/ bait	night	4	Catbalogan City	3/21/2016
95	Cardinal Fish	9	80	5	19	w/ bait	night	4	Catbalogan City	3/21/2016
96	Crablet	9	62	28	19	w/ bait	night	4	Catbalogan City	3/21/2016
97	Crablet	9	40	22	19	w/ bait	night	4	Catbalogan City	3/21/2016
98	Alphabet cone shell	9		15	19	w/ bait	night	4	Catbalogan City	3/21/2016
99	Goby	9	105	11	12	w/ bait	night	4	Catbalogan City	3/21/2016
100	Goby	9	103	10	12	w/ bait	night	4	Catbalogan City	3/21/2016
101	Goby	9	90	9	12	w/ bait	night	4	Catbalogan City	3/21/2016
102	White shrimp	9	52	30	13	w/ bait	night	4	Catbalogan City	3/21/2016
103	Grouper	9	85	10	19	No bait	night	4	Catbalogan City	3/21/2016
104	Lattice monocle bream	9	95	10	19	No bait	night	4	Catbalogan City	3/21/2016
105	Cardinal Fish	9	78	5	19	No bait	night	4	Catbalogan City	3/21/2016
106	Triger Fish	9	96	11	12	No bait	night	4	Catbalogan City	3/21/2016
107	Triger Fish	9	65	9	12	No bait	night	4	Catbalogan City	3/21/2016
108	Cardinal Fish	9	85	6	13	No bait	night	4	Catbalogan City	3/21/2016
109	Triger Fish	9	70	4	13	No bait	night	4	Catbalogan City	3/21/2016
110	Grouper	10	195	40	13	w/ bait	day	4	Catbalogan City	3/21/2016
111	Grouper	10	110	30	13	w/ bait	day	4	Catbalogan City	3/21/2016

NO.	SPECIES	Operation No.	Total Length (mm)	Weight (g)	Mesh Size (k)	Variation	Time	Depth (Fathoms)	Fishing Ground	Date
112	Triger Fish	10	130	40	13	w/ bait	day	4	Catbalogan City	3/21/2016
113	Crablet	10	45	6	13	w/ bait	day	4	Catbalogan City	3/21/2016
114	Crablet	10	35	4	13	w/ bait	day	4	Catbalogan City	3/21/2016
115	Blue Swimming Crab	10	125	100	13	w/ bait	day	4	Catbalogan City	3/21/2016
116	Blue Swimming Crab	10	105	90	13	w/ bait	day	4	Catbalogan City	3/21/2016