

**Coordination between Crab Trap and Crab Gill Nets Fisheries: Change and Adjustment  
of Fishing Gear for Responsible Fisheries Projects to Contribute  
Locally Based Coastal Resource Management**

**Jinda Petchkamnerd <sup>1</sup>**  
**Phattareeya Suanrattanachai <sup>2</sup>**  
**and**  
**Sayan Auimrod <sup>3</sup>**

**ABSTRACT**

Crab fisheries in Tambol Pakklong composed of collapsible crab trap and crab gill net fishers. Collapsible crab trap fishers were classified into three sub-categories by size of wire. These were small sized wire, large sized wire, and both engaged in small and large sized wires. Crab gill net fishers were categorized into three sub-categories by depth of sea water. These were fishers operated in deep sea areas, in shallow sea areas, and both deep and shallow sea areas. Landing survey team reported the data collection from collapsible crab trap and crab gill net that Catch per Unit of Effort (CPUE) of total species composition were 33.98 g/trap and 1.09kg/net. However, fishers engage in crab gill net and collapsible crab trap have conflict of utilizing blue swimming crab in the same fishing ground areas. Marine Fisheries Institute, Department of Fisheries (DOF) formulates 'Change and Adjustment of Fishing Gear for Responsible Fisheries Project to alleviate severe conflict among small-scale fishers. Main objective of this project is to enhance aquatic resources particular increase of marketable sized catch exploitation and un-utilizing fertilized crab. DOF provides net, which has mesh size about 4 inches to subsidize collapsible crab trap fishers. This 4 inches mesh size net will be used to replace bottom net of crab trap, which mesh size is 1 inch.

**Keywords:** Collapsible crab trap, crab gill net, CPUE, fishing gear for responsible fisheries project

<sup>1</sup> *Chumporn Marine Fisheries Research and Development Center*

<sup>2</sup> *Socio-economic Section, Research Division, SEAFDEC/TD*

<sup>3</sup> *Fishery Extension Officer, Provincial Office of Fisheries, Chumporn Province*



## I. Contents of the Paper

1. The contents of the paper compose of two parts. Part 1 is status of crab fisheries in Tambol Pakklong, which considers based on data collection through series of landing, environmental and socio-economic surveys in year 2002. Part 2 is rationale of Change and Adjustment of Fishing Gear for Responsible Fisheries Project and its action plan. Objective of this paper is to provide fundamental data of crab fisheries and comprehend efficiency and effectiveness of crab gill net and collapsible crab trap in fishing operation.

## II. Part I: Status of Crab Fisheries in Tambol Pakklong

2. Status of crab fisheries in Tambol Pakklong assesses based upon the data collection through series of regular base line survey (Activity I Base line survey). These series of data collection consists of landing, environmental and socio-economic surveys. Results of these data are crucial to local government officer, central government officers and the project staff to formulate multi-disciplinary activities for crab fisheries development management.

3. The results of all criteria surveys are fundamental database that it will be used for local users and stakeholders' discussion on fishing ground utilization. This is to define sharing of common interests among local users, stakeholders particular crab trap fishers and crab gill net fishers.

### 1. Characteristics and Number of Crab Fisheries

4. The socio-economic team staff conducted two surveys which topics were household survey in Tambol Pakklong and Crab fisheries survey. The results of these surveys show in *Table 1* that illustrate number of fishing households engaging in crab gill net and/ or crab trap gained through the two topics of surveys.

**Table 1 Number of Fishing Households Engaging in Crab Gill Net and/or Collapsible Crab Trap Fisheries in Tambol Pakklong, Pathew District**

Moo (Village No.)	Number of fishing households		Change in number
	From household survey	From crab fisheries survey	
Ban Thung Maha Moo 1	10	11	1
Ban Bosamrong Moo 2	15	16	1
Ban Thumthong Moo 3	4	3	-1
Ban Nampu Moo 5	0	2	2
Ban Bangbird Moo 5	6	6	0
Ban Bonrai Moo 6	4	4	0
Ban Tha-at Moo 7	32	31	-1

5. Fishers live at Ban Tha-at Moo 7 have highest number of fishing households engaging in crab fisheries which numbers of households are 31 or 32 households. Results of the crab fisheries survey categorized type of crab fisheries engagement into three main types (see *Table 2*). The types are fishing household engaged in 1) crab gill net only, 2) collapsible crab trap only and 3) crab gill net and collapsible crab trap. Fishing households engaged in crab gill net only, characterized into three sub-categories by depth of sea water, which operated in deep sea areas, in shallow sea areas and both in deep and shallow sea areas.

**Table 2 Number of Fishing Household by Type of Engagement, Tambol Pakklong, Pathew District**

Moo (Village No.)	Households							Total
	Crab gill net only			Collapsible crab trap only			Crab gill net and Collapsible crab trap	
	Deep area	Shallow area	Deep & Shallow	Small wire	Large wire	Small & Large		
Ban Thung Maha Moo 1	2	6		2			1	11
Ban Bosamrong Moo 2	4	11					1	16
Ban Thumthong Moo 3	1	2						3
Ban Nampu Moo 5		2						2
Ban Bangbird Moo 5	2	3	1					6
Ban Bonrai Moo 6	3	1						4
Ban Tha-at Moo 7	12	3		9		2	5	31
<b>Total</b>	<b>24</b>	<b>28</b>	<b>1</b>	<b>11</b>		<b>2</b>	<b>7</b>	<b>73</b>

6. Collapsible crab trap was classified into three sub-categories by size of wire. These were small sized wire, large sized wire and both engaged in small and large sized wires. Last type was fishing household engaged in both crab gill net and collapsible crab trap.

7. *Table 3* illustrates number of fishing gear such gill net and collapsible crab by net length and number of trap. Fishers in every village favor employing in crab gill net particular using in shallow seawater areas. Crab gill net fishers live at Ban Thungmaha Moo 1 employ in gill net using in shallow seawater areas estimately 70 sets of maximum owned net in numbers. Collapsible crab trap fishers live at Ban Tha-at Moo 7 use number of small and large sized wires which maximum numbers are 350 traps.

**Table 3 Number of Fishing Gears Employing in Crab Gill Net and Collapsible Crab Trap, Tambol Pakklong, Pathew District**

Moo (Village No.)	Crab gill net								Collapsible crab trap					
	In deep area				In shallow area				Small sized wire			Large sized wire		
	Max (sets)	Min (sets)	Mean (sets)	Mean length (m)	Max (sets)	Min (sets)	Mean (sets)	Mean length (m)	Max (sets)	Min (sets)	Mean (sets)	Max (sets)	Min (sets)	Mean (sets)
Ban Thung Maha Moo 1	6	2	4	353	70	1	22	334	240	180	210			150
Ban Bosamrong Moo 2	20	3	7	400	10	2	4	400			60			60
Ban Thumthong Moo 3			15	420	4	2	3	256						
Ban Nampu Moo 5					4	4	4	300						
Ban Bangbird Moo 5	11	3	7	653	13	3	6	403						
Ban Bonrai Moo 6	3	1	2	500	0	0	2	500						
Ban Tha-at Moo 7	120	8	28	288	25	1	7	343	350	45	208	350	50	125

## 2. CPUE and Species Composition

8. The landing survey team of the project summarized data collected from regularly conducted landing survey of catch, which landed at Tambol Pakklong in whole year 2002. *Table 4* figures Catch per Unit of Efforts (CPUE) of collapsible crab trap and species composition. CPUE of total catch of all species composition is 33.98 g/trap. Blue swimming crab is main species gained from this type of fishing gear. CPUE of blue swimming crab is 33.13 g/trap or 97.5% of total catch.

9. *Table 5* shows CPUE and species composition gained from crab gill net gears. CPUE of total catch is 1.09 kg/net length 100 m. Blue swimming crab is also target species of crab gill net which CPUE is 1.05 kg/ net length 100 m or 96.38% of total catch.



**Table 4 CPUE from Collapsible Crab Trap since January-December 2002 at Tambol Pakklong, Pathew District**

Species	CPUE	
	g/trap	%
<b>Total catch</b>	<b>33.98</b>	<b>100.00</b>
Blue swimming crab	33.13	97.50
Crucifix crab	0.39	1.15
Three spot swimming crab	0.37	1.09
Mud crab	0.07	0.21
Other species	0.02	0.06
Sampling trap	9.675	

**Table 5 CPUE from Crab Gill Net since January-December 2002 at Tambol Pakklong, Pathew District**

Species	CPUE	
	kg/net length 100 m.	%
<b>Total catch</b>	<b>1.09</b>	<b>100.00</b>
Blue swimming crab	1.05	96.38
Crucifix crab	0.03	2.89
Other species	0.01	0.73
Sampling size (meter)	105,280	

### 3. Length of Catch

10. Length of catch is given an imaginary size of crab catch how big they are. *Table 6* indicates length of catch gained from collapsible crab trap, which conducted landing survey from January to December 2002 at Tambol Pakklong. Length of catches categories by species and sex which length classification is minimum and maximum length, mode of length and mean of length. Length of male blue swimming crab has mean of length is 9.17 cm. Length of female blue swimming crab has mean of length is 9.56 cm.

**Table 6 Length of Crab from Collapsible Crab Trap since January-December 2002 at Tambol Pakklong, Pathew District**

Species	Min - Max	Mode	Mean
Blue swimming crab (Male)	5.0-13.5	9	9.17
Blue swimming crab (Female)	6.5-14.0	9.5	9.56
Crucifix crab	6.0-11.0	8.5	9.55
Mud crab	11.5	11.5	11.5

11. *Table 7* figures length of catch caught by crab gill net, which conducted landing survey from January to December in year 2002 at Tambol Pakklong. Length of male blue swimming crab has mean of length is 11.8-cm. Length of female blue swimming crab has mean of length is 12.91 cm.

**Table 7 Length of Catch caught by Crab Gill Net since January-December 2002 at Tambol Pakklong, Pathew District**

Species	Min - Max	Mode	Mean
Blue swimming crab (Male)	8.5-15.5	12.0	11.8
Blue swimming crab (Female)	9.0-15.5	12.5	12.91
Crucifix crab	9.0-14.0	10.5	12.39
Mud crab	13.5	13.5	13.5

12. Blue swimming crabs are main target species of both crab gill net and collapsible crab trap fishers. *Figure 1* shows length of catch and quantity of catch, which caught by crab gill net and collapsible crab trap. Collapsible crab trap is efficiently caught a large number of crab catch which is higher than crab gill net. However, crab gill net is effectively caught crab catch which size is bigger than crab catches are caught by collapsible.

### III. Part II: Change and Adjustment of Fishing Gear for Responsible Fisheries Project

#### 1. Rationale of the Project

13. The Department of Fisheries (DOF), Thailand recognizes severe competition of resource utilization. This causes to conflict among commercial and small-scale fishers and also among small-scale fishers themselves. Resource users get tough to operate fishing. They often meet conflict of utilizing marine resource in the same fishing ground areas and the same target species. This cause is main problem of resource utilization in Tambol Pakklong. Fishers engage in crab gill net and collapsible crab trap gears have conflict of utilizing blue swimming crab in the same fishing ground areas (see *Figure 2*).

14. Marine Fisheries Institution, DOF formulates Change and Adjustment of Fishing Gear for Responsible Fisheries Project to alleviate severe conflict among small-scale users. The institution inputs the project arrangement into Tambol Pakklong. This project is effective action plan and mechanism to contribute the locally based coastal resource management to achieve long term of resource utilization.

#### 2. Objectives of the Project

- 1) Encourage resource users to participate in utilizing marine resource in proper and responsible ways and point out how marketable sized catch gets valuable price and return reasonable incentive.
- 2) Contribute resource users to involve in extension program that relies on an increase of marketable sized catch exploitation and un-utilize fertilized crab to enhance aquatic resources.

#### 3. Action Plan of Subsidy

15. DOF fully provide net, which has mesh size about 4 inches to subsidize collapsible crab trap fishers. This 4 inches mesh sized net will be used to replace 1 inches mesh sized net. DOF officers and the fishers agreed to change bottom net from 1 inch to be 4 inches. DOF officer and the fishers had controversial on position of net change that should be at the bottom of the crab trap. This is to save bait from other marine species. This controversial is specifically used only in Tambol Pakklong.



16. DOF primarily provides net subsidies to 25 fishers. It qualifies particular poorest fishers, low income, good human relationship and range of 25-60 year olds.

#### **4. Implementation of the Project and its Progress**

17. Chumporn Marine Research Fisheries and Development Center staff announces the project proposal and action plan to fishers in Tambol Pakklong. The center staff proposes to select Ban Tha-at Moo 7 to be the project site for the project's implementation. This is because there are number of collapsible crab trap larger than other village. Therefore, fishers of this village has household economic status is lower than other by observation of household settlement and sanitary in community.

18. The center staffs have gotten name lists of collapsible crab trap fishers who nominate themselves to participate in the project.

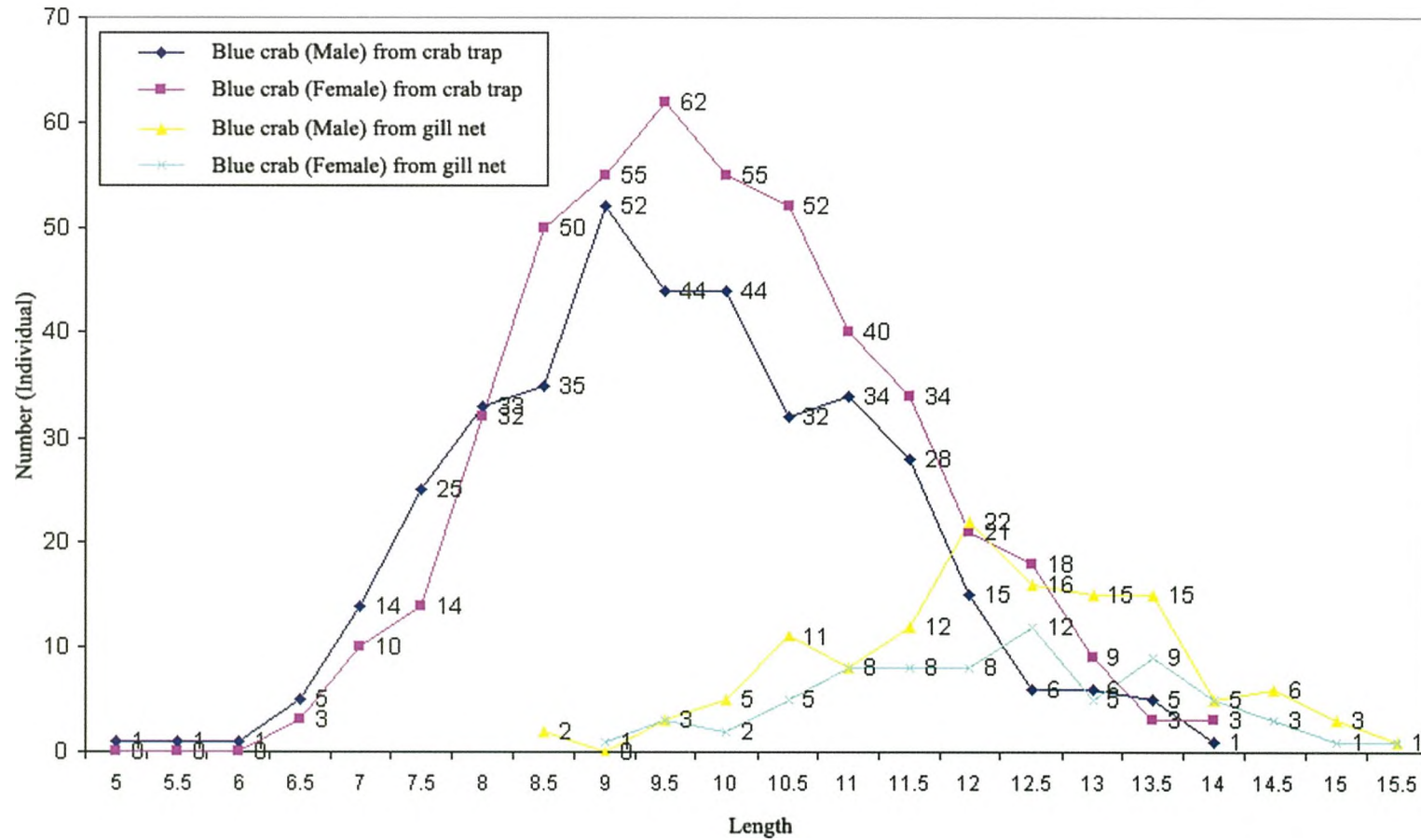
#### **5. Expectation of this paper**

19. This paper provides only database of crab fisheries status, problems and the project arrangement for solving problems. All the project staff anticipates that this database and information arrangement will useful to all sectors concerned to participate in brainstorming to define proper solution. This proper solution will take all resource users particular collapsible crab trap fishers and crab gill net fishers to satisfy with their common interests.

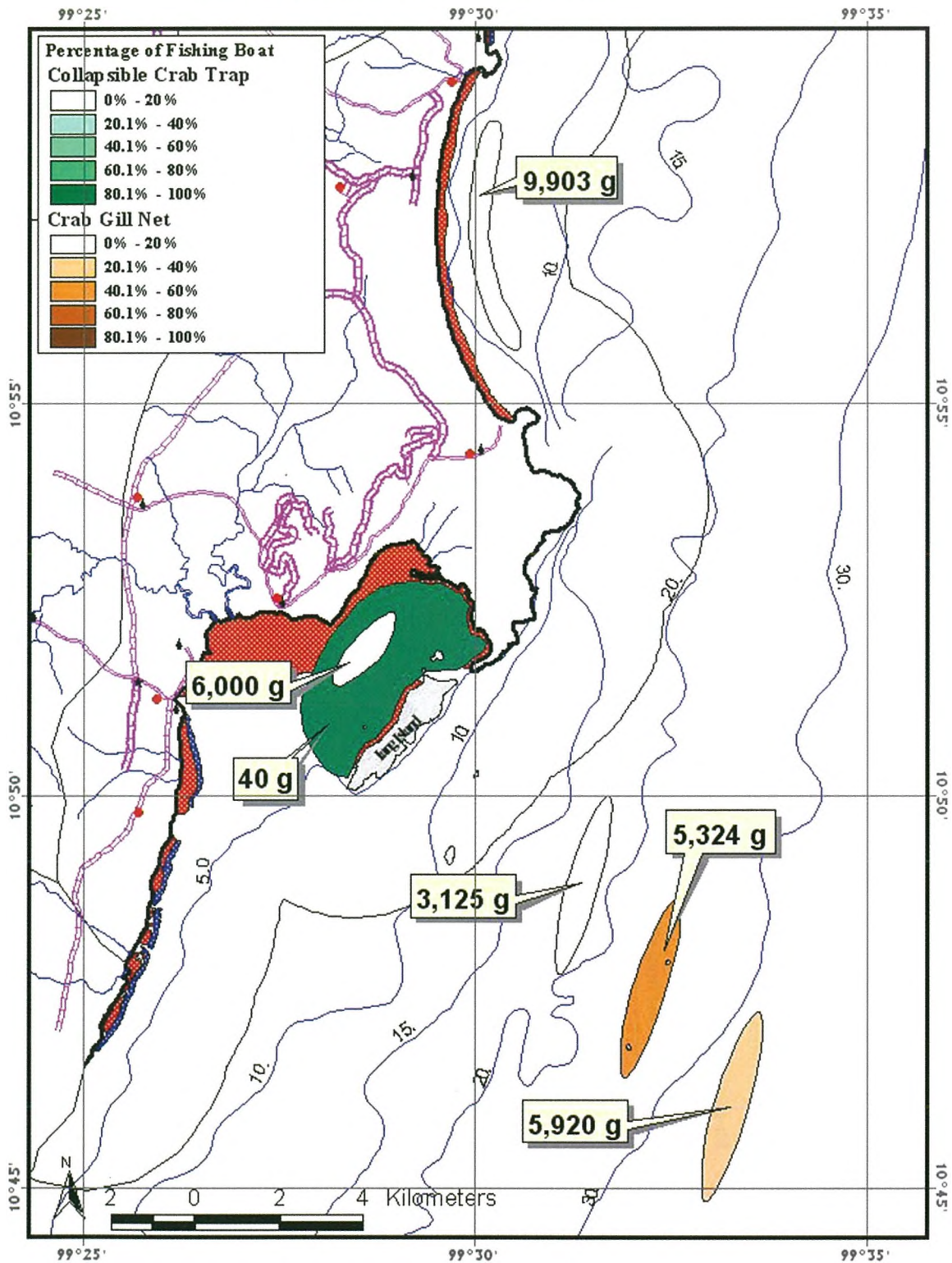
#### **IV. Acknowledge**

20. Author and co-authors would like to thank to the landing survey team staffs (particular Ms. Pamonpan Chatpumi and Ms. Phattarajit Kaewnuratchadasorn) that kindly and helpfully provide a valuable database for all participants' comprehension. Therefore, we owe gratitude to local fishers, Ao.Bo.To. and all who concerned that kindly support us both indirectly and directly without any stinginess.

**Figure 1** Blue swimming crab were caught by crab trap and gill net at project area



**Figure 2 Fishing Ground Areas of Collapsible Crab Trap and Crab Gill Net Utilization.**



Arranged by Sukchai Amupapboon and Siripom Pangson, Research Division.  
 Southeast Asian Fisheries Development Center, Training Department. February, 2003.