Underwater Observations inside the Fish trap in Rayong Province, Thailand

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Introduction

Fish trap fishery is one of the most important small-scale fisheries in Thailand. Fish trap used all over the world. Fish trap is a type of passive fishing gear that allow fish to enter and then make it hard for them to escape. The main target species are fish. Rayong province is one that the fish trap widely used for small fishery. It is used throughout the coastal areas to catch a variety of coral reef fish. But there were very few of fish behavior underwater observations to understand the capture process of fish trap research in Thailand, Attempts to modify Fish trap or improve fishing efficiency in the fisheries future may prove more easy if understanding of fish behavior in Fish trap (Bardach and Magnuson, 1980) The study of fish behavior in Rayong fish trap have not been investigated by using underwater camera system. *In situ* Underwater camera observations have even been to use for fish behavior research work all over the world, Cole et al (2004) used video camera recordings of entries and exits from blue cod pots for improve the fishing efficiency, Renchen et al. (2014) studied on the fish behavior responses to fish trap by using underwater video camera. such underwater camera observations have not been conducted for Rayong Fish trap fisheries in Thailand. This study focused on the investigating fish shows behavior inside fish trap by using two underwater cameras surveillance in Rayong coastal area.

Materials and Methods

Two underwater cameras were set inside fish trap to take photos of fish inside fish trap. The Rayong Fish trap was a wooden frame box-shaped with one entrance funnel, structure of 1.2 x 2.3 x 0.7 m, covered with wire mesh and PE nets. Cameras were a Recolo interval recorder, IR7 and IR5 model with waterproof housing (IPX3). Time interval was 30 sec (photo could not see at night). The study was used two fish traps. Four cameras were setting inside two fish traps (two cameras/ trap). 1st and 2nd fish trap were located at a depth of 12 and12.4 m (12° 61' 49.93"N;101° 32' 10.60"E and 12° 61' 01.40"N;101° 34' 35.97"E) (Fig. 1 - 3). Setting time on 2 Oct 2014 at 07:17 AM, left cameras inside traps for 33 hours (Soaking times = 33 hours). Four cameras were retrieved from two traps on 3 Oct 2014 at 17.03 PM. Escaped fish species analysis were considered by fish species caught after trap retrieved and fish species in photos those took by cameras inside the trap.

Fig. 1. Location of observed fish traps, Rayong Province

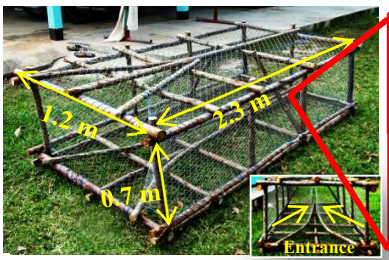

Fig. 2. Fish trap in Rayong Province, Thailand.

Fig. 3. Underwater cameras (Recolo) setting inside fish trap

Results

The new entrapped species observed from the photo taken by the 2 camera inside the 2 fish trap shown in Table 1. The species and numbers of escaped fish from the 2 traps considered from fish caught after trap retrieved compared with the numbers of fish taken by cameras inside the fish trap shown in Table 2.

Table 1 The new entrapped species in fish trap (observed from the photos taken by the 2 cameras inside each trap)

Fish trap No.1		Fish trap No.2	
Times (hr:min:sec)	New fish Species Entrapped	Times (hr:min:sec)	Fish Species Entrapped
2 Oct 2014		**2 Oct 2014**	
7:47:30 AM	*Chaetodon meyeri* (No.1-2)	12:15:00 PM	*Lutjanus vitta*(No.1)
9:26:30 AM	*Epinephelus coiodes* (No.1)	13:39:00 PM	*Monacanthus chinesis*
10:25:00 AM	*Epinephelus coiodes* (No.2)	**3 Oct 2014** 6:14:00 AM	*Epinephelus coiodes*
3 Oct 2014 5:17:00 AM	*Sargocentron rubrum Lutjanus vitta* (No.1)	7:12:00 AM	*Lutjanus russeii*
6:00:30 AM	*Rhynchostracion nasus*	7:21:00 AM	*Scolopsis monogramma* (No.1)
7:18:30 AM	*Lutjanus vitta*(No.2)	8:54:30 AM	*Cephalopholis formosa*
9:01:30 AM	*Scolopsis monogramma*	11:12:00 AM	*Diagramma pictum*
10:32:00 AM	*Siganus canaliculatus* (No.1)	12:13:00 PM	*Lutjanus vitta* (No.2-4)
11:10:00 AM	*Cephalopholis formosa*	12:34:00 PM	*Scolopsis monogramma* (No.2)
11:47:30 AM	*Siganus canaliculatus* (No.2)		

Table 2 Species and numbers of escaped fish from the 2 traps considered from fish caught after trap retrieved compared with the numbers of fish taken by cameras inside

Species	Number of fish (fish trap No.1)			Number of fish (fish trap No.2)		
	Caught after trap retrieved	Taken by cameras	Escaped	Caught after trap retrieved	Taken by cameras	Escaped
S. javus	-	-	-	1	-	-
S. canaliculatus	2	2	0	4	2	-
D. pictum	-	-	-	1	1	0
L. vitta	2	2	0	10	4	-
L. lutjanus	-	-	-	2	-	-
L. russeii	1	-	-	-	1	1
S. ciliata	-	-	-	1	-	-
S. monogramma	4	1	-	2	2	-
E. coiodes	2	2	0	-	1	1
C. formosa	-	1	1	-	1	1
P. ocellatus	1	1	0	-	-	-
C. meyeri	-	2	2	-	-	-
M. chinesis	-	-	-	1	1	0
R. nasus	-	1	1	-	-	-
S. rubrum	1	1	0	1	-	-

Discussion

From the result there were 15 fish species entrapped the fish trap. Five economic species were considered as escaped species. The escape indicated that the trap should be developed. Some species could not consider as escaped species due to numbers of fish caught after trap retrieved were higher compared with number of fish in photo took by cameras, that because of the camera visual could took photos in front of area about 1/3 of trap. For future study we will consider using video camera for improving the visual and clearly. Some escaped fish species were important marketable value species such like *E. coiodes* and *C. formasa*. Improve the catching efficiency to prevent the escape of fish species will be examined in the future.

References

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