

Size and species selectivity by improving collapsible trap design for blue swimming crab in Thailand

A. Boutson¹, T. Arimoto¹, C. Mahasawasde², S. Mahasawasde² and S. Tankijjanukij²

¹Tokyo University of Marine Science and Technology, Tokyo, Japan

²Faculty of Fisheries, Kasetsart University, Bangkok, Thailand

ABSTRACT

Blue swimming crab (*Portunus pelagicus*) is one of the important coastal species with the annual production of around 40,000 tons (50 million US \$), both for the domestic and exporting market in Thailand. Collapsible trap is a major type of fishing gear for catching the blue swimming crab. After the introduction of this type of trap from Japan in 1981, the intensive fishing activities was started with 80-120 traps for individual setting and with 5,000 for long-line type setting per commercial boat at present, which resulted in the decrease of catch per unit effort, and in the increased catch of the smaller size of blue swimming crab. Furthermore the trap also catches other fin-fish and shell-fish species including the small size of economical species, which can be associated with the discard problem. This trend requires the urgent mitigation measures for the resource conservation together with the renovation of coastal environment for the resource management and stock enhancement.

The experiments were conducted at sea and in the laboratory of Sriracha Fisheries Research Station, Choburi Province, Thailand.. The catch composition of collapsible crab trap was reviewed through onboard observations for the experimental operation with 100 pots, for the purpose to identify the catch composition for understanding the size and amount of target and discard species. The series of laboratory experiments were also conducted for examining the possibility of gear modification by designing the appropriate escape vent to improve the species/size selectivity, and to reduce the catch of un-matured size of blue swimming crab. The comparative fishing with and without the escape vent were conducted for examining the species and size selectivity.

The square shape design of escape vent, located at the bottom side panel, showed the positive performance to release the un-matured crab. The size selectivity according to the different length of escape vent was confirmed for indicating the selection length ($L_{50\%}$) as 39.1mm for 40mm, 43.6mm for 45mm, and 48.3 mm carapace length for 50mm vent length. The vent of 35x45 mm size was the most suitable to release the smaller crabs than the first mature size (>46 mm carapace length), with the confirmation from the laboratory observation on escape behavior of blue swimming crab through the vent. According to the comparative fishing, the traps with the escape vent could reduce the un-matured size of the blue swimming crab from 61-80 % to 14-15 % (by number), while not being associated with the catch efficiency of the matured size crab.