Nipa Kulanujaree 2008: Management of Cuttlefish Fishery (*Sepia aculeata* and *Sepiella inermis*) in the upper Gulf of Thailand. Master of Science (Fishery Management), Major Field: Fishery Management, Department of Fishery Management. Thesis Advisor: Assistant Professor Methee Kaewnern, Ph.D. 122 pages

The study on Management of Cuttlefish Fishery (*Sepia aculeata* and *Sepiella inermis*) in the Upper Gulf of Thailand was conducted. The data of catch and species composition of cuttlefish during 2004-2005 from Thai Department of Fisheries's research vessel, the data of length frequency, catch and price gathered from sampled commercials boats in the Upper Gulf of Thailand in 2004 were collected and analyzed. In addition, catch and effort data of otter board trawl, pair trawl and push net from Fisheries Statistic in 1995-2004 were analyzed. The results indicated that cuttlefish distributed cover every areas of the Upper Gulf of Thailand especially along the west coast. *S. aculeata* with the size smaller than 6 cm was abundant in January March, May and September. Meanwhile, *S. inermis* with the size smaller than 4 cm was abundant in March and September.

Lengths at first capture of *S. aculeata* by otter board trawl and pair trawl were 7.33 and 8.70 cm, respectively. Length at first capture of *S. inermis* by otter board trawl was 4.46 cm. The results indicated that the optimum mesh size for otter board trawl and pair trawl for *S. aculeata* fishing were 3.48 and 2.93 cm, respectively. Meanwhile, the optimum mesh size for otter board trawl for *S. inermis* fishing was 3.24 cm. The estimated values of curvature parameter, total mortality coefficient, natural mortality coefficient and fishing mortality coefficient of *S. aculeata* were 2.16, 18.89, 3.17 and 5.88 $year^{-1}$, respectively, meanwhile the estimated values of *S. inermis* were 3.74, 9.03, 5.18 และ 3.15 $year^{-1}$, respectively. Asymptotic length and exploitation rate of *S. aculeata* were 23.34 cm and 0.83. Asymptotic length and exploitation rate of *S. inermis* were 9.17 cm and 0.61, respectively.

Result of stock assessment in 2004 showed that yield, biomass and value of *S. aculeata* were 2,231.59 tons, 1,047.02 tons and 123.31 million Bath, respectively. The results indicated that the maximum sustainable yield is 4.121.58 tons and the maximum sustainable economic yield is 339.01 million Baths when reduce 85 percent of fishing effort. Yield, biomass and value of *S. inermis* were 344.47 tons, 130.57 tons and 9.67 million Bath, respectively. For *S. inermis*, the maximum sustainable yield is 347.49 tons when reduced 20 percent of fishing effort and the maximum sustainable economic yield is 11.15 million Bath when reduced 50 percent of fishing effort. The holistic models analysis results showed that the maximum sustainable yield of cuttlefish in Upper Gulf of Thailand are 2,782 and 2,855 tons according to Schaefer's and Fox's models, respectively. The optimum fishing efforts are $2,028 \times 10^3$ และ $1,656 \times 10^3$ hours. The maximum sustainable yield will be gained when reduced fishing effort by 20 and 35 percent for Schaefer's model and Fox's model, respectively.

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