

系所名稱：環漁系碩士班（甲組）

* 答案以橫式由左至右書寫於答案卷上！

科目名稱：英文科學論文閱讀

一、下段文章之意義為何？試閱讀後，譯成中文。（五十分）

IV. Management measure and plans for the future tuna fishery in Taiwan

A. Active participation in international fisheries organization

The United Nations Convention on Law of the Sea has stipulated that all countries shall have the right to fish freely on high seas and that the countries interested in such marine resources are obligated to cooperate mutually in the conservation and management of the resources within the region. Taiwan, now has become a cooperating party of ICCAT, a member of extended committee of CCSBT, WCPFC, and ISC, and will be a commission member of IATTC in the near future. Despite of diplomatic reason, Taiwan has not be able to join the organization such as IOTC. But Taiwan will cooperate with these international fisheries organization actively through provision of fishery statistics, engagement of scientific researches, contributions in the international meetings, financial donations to support.

B. In cooperation with FAO's policy to preclude IUU (illegal, unreported and unregulated) and reduce of fishing capacity

Taiwan and Japan had finished a project to dismantle fleets operating under FOC. 42 longline vessels of Taiwan built in Japan were bought back by Japan for scraping before 2003, and 48 longline vessels built in Taiwan were returned to the jurisdictions of Taiwan before 2005.

In order to control the fishing capacity to a certain level, Taiwan government has executed a policy for replacement of vessels since 1989. That is, building of new vessels is only permitted after scrapings of an old vessel or decommission of a vessel at one-ton to one-ton basis. After implementation of this program in 1991-1995. A total number of 2,337 fishing vessels were bought back by the government for scraping or construction of artificial reef, in which 136 were longliners over 100 GRT. Furthermore second vessel reduction program had been introduced since 2000, 382 vessels had joined the program and bought back till 2003 (Chin-Lau Kuo etc., 2004).

C. Vessels Monitoring System (VMS) and Scientific Observer Program

For purpose of better understanding the fishing activities of tuna fisheries of Taiwan, experimental monitoring system was implemented since 1996, and the FTLL (frozen tuna longline) vessels were encouraged to install the VMS through an incentive program from 1996, also, a monitoring center was established in the Overseas Fisheries Development Council in 1997. Until 2004, all vessels of FTLL (frozen tuna longline) and DWPS (distant-water purse seine) had been installed with the VMS. On the other hand, a pilot observers program was begun at 2001. 9 observers (4 observers in the Atlantic Ocean, 3 observers in the Indian Ocean, and 2 in the Pacific Ocean) were dispatched in 2004. Over 1,600 fishing days have been observed for Taiwanese tuna fisheries. The scientific observer program will be continued. More observers will be sent on board and the catch (include bycatch) data obtained will be reviewed and use for scientific purpose in the future.

D. Control the impact of tuna fishing activity on its surrounding environment

- a. Mitigation measure to reduce or to avoid bycatches were encouraged to be taken by fishermen, such as installation of tori line, setting lines at night, thawing of bait, weighting of a bait line and using of bait casting machine.
- b. Gear control or improving gear selectivity, such as a research project was taken to use large circle hook to reduce capturing and injuring turtles.
- c. Collect reliable information on bycatches. New logsheet form had been devised

and fishermen are also asked to report the incidental catch of seabird. Observers are also asked to collect catch data and specimen of seabird, especially in the waters of high latitude.

- d. Research and cooperation: Research projects and experiments had been supported and funded to assess and study the catch, status and population dynamics of seabirds. Furthermore, cooperate with international organizations (such as CCSBT), other countries (such as South Africa) or domestic agencies (such as Wild Bird Federation Taiwan) to exchange information and push forward the necessary measures.
- e. Bycatch action plans in Taiwan's tuna fisheries: The national action plan for seabird and shark had been drafted to be taken as a guidance for government to prevent the incidental catch of seabird and shark and attain the goal of sustainable use of fishery resources. Some programs on reducing bycatch of green turtle (*Chelonia mydas*) and whale shark (*Rhincidon typus*) had been initiated. The satellite telemetry technique has been introduced to study the migration patterns of green turtle and whale shark. A total allowable catch (TAC) of whale shark had been set to 80 fish per year, since July 1, 2002, and 120 fish for July 2003 through December 2004.

二、請逐句翻譯下兩段文章： (50%)

A.

The present paper proposes a method for estimating the numerical curve of gear selectivity without the assumption of function of selectivity curve and estimating confidence intervals, using data of catch per unit effort at length for several nets of different mesh sizes obtained from fishing experiments. The paper assumes such geometric similarity as the selectivity is the same if the rate of fish length to mesh size is the same. The basic idea is due to a technique of numerical integration that uses the derivatives at various points. The natural logarithm of selectivity is expressed by an approximation equation using its cumulated derivatives. The values of derivatives at various lengths are calculated from the data. The confidence intervals are made from the bootstrap samples. The method was applied to the data of catch at length by mesh size of gill net for pink salmon. Data collection, modification and issues of the method are discussed.

B.

Seasonal changes were analyzed in the distribution of the conger eel in the waters south of Tohoku, Japan, from Sendai Bay to the Joban coast, using catch per unit effort data of trawl vessels, and the relationship was examined between distribution and water temperature at 100 m depth, in 1999 and 2000. Although the conger eel was distributed throughout the study area, it was rare north of 37°40'N during February and March in both years. This scarcity corresponded to the occurrence of water colder than 10°C. Total length, age, gonad somatic index, and condition factor were not significantly different between eels caught north of 37°30'N and those caught south of 36°N. Therefore, the seasonal change in conger eel distribution within the study area seems to be a seasonal loop migration driven by avoidance of cold water.