The 6th Annual Meeting of **Asian Fisheries Acoustics Society**

The International Conference on Underwater Acoustics for Sustainable Fisheries in Asia

AFAS 2012 Official Program and Abstract



November 26-27, 2012 **VISTAS Hotel, Pukyong National University, BUSAN, KOREA**

Host:



Sponsors:



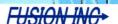






























Asian Fisheries Acoustics Society

| 10:45-11:00 | ES-7 |
|-------------|--|
| | Estimation of Japanese sandeel (Ammodytes personatus) distribution in the |
| | northern coast of Hokkaido, Japan, using a quantitative echo sounder |
| | Safruddin', Kazuhiko Itaya, Keiji Maeda, Koki Abe, Ryuichi Matsukura, Hiroki |
| | Yas-uma and Kazushi Miyashita (Hokkaido University, Japan) |
| 11:00-11:15 | ES-8 |
| | Carrying knowledge into new fields Trial of acoustic surveys in coastal shallow |
| | area |
| | Yoshinori Miyamoto [*] , Soichiro Matushita, Keiichi Uchida, Yuttana Theparoonart |
| | Monton Anongponyoskun, Satoshi Ishikawa, Yap Minlee and Toyoki Sasakura (Tokyo |
| | University of Marine Science and Technology, Japan) |
| 1 | |

| 11:15-11:30 | Coffee Break |
|-------------|--|
| | Chair: Hsueh-Jung Lu, Yoo-Won Lee (chair of SGES) |
| 11:30-11:45 | ES-9 p.30 |
| | Acoustic survey of fisheries resource in Dahuofang Reservoir |
| | Yong Tang [*] , Danqing Lin, Jianfu Sun, Jiuqi Li and Zan Zhang (Dalian Ocean |
| | University, China) |
| 11:45-12:00 | ES-10 p.31 |
| | Identification of zooplankton using two frequency difference methods and their spatial distribution after spring blooms around Funka Bay, Hokkaido Japan |
| | Eunho Kim*, Tohru Mukai and Kohji Iida (Hokkaido University, Japan) |
| 12:00-12:15 | ES-11 p.32 |
| | Behavior analysis of fish upon time-change around artificial reefs using |
| | hydroacoustic technique |
| | Eun-A Yoon*, Doo-Jin Hwang, Ayumi Takano and Wan-Ki Kim (Chonnam National |
| | University) |
| 12:15-12:30 | Discussion of Session IV |

12:30-14:00 Lunch

| | Session V. Broad Aspect of Underwater Acoustics for Fisheries | |
|-------------|--|----|
| * | Chair: Yoshinori Miyamoto, Myoung Hee Kang (chair of SGA | A) |
| 14:00-14:15 | AA-1 | 33 |
| | Activity patterns of black rockfish Sebastes schlegeli in the marine ranching ar | ea |
| | from acoustic telemetry. | |
| | Kyoungmi Kang* and Hyeon-Ok Shin (Pukyong National University, Korea) | |
| 14:15-14:30 | AA-2 | 34 |
| | Diel swimming pattern of brown trout in a dam by acoustic tracking | |
| | Keiichi Yamamoto*, Yoko Mitani, Kazushi Miyashita (Hokkaido University, Japan) | |



ES-7

Estimation of Japanese sandeel (Ammodytes personatus) distribution in the northern coast of Hokkaido, Japan, using a quantitative echo sounder

Safruddin^{1,2}, Kazuhiko Itaya³, Keiji Maeda³, Koki Abe^{4,} Ryuichi Matsukura⁴, Hiroki Yasuma⁵ and Kazushi Miyashita⁶

¹ Laboratory of Marine Ecosystem Change Analysis, Field Science Center for Northern Biosphere, Graduate school of Fisheries Science, Hokkaido University, 3-1-1 Minato-Cho, Hakodate 041-8611, Japan E-mail: safruddin unhas@yahoo.com

²Faculty of Marine science and Fisheries, Hasanuddin University, Makassar-Indonesia ³ Wakkanai Fisheries Research Institute, Hokkaido Research Organization, Wakkanai, Hokkaido 097-0001, Japan.

⁴National Research Institute of Fisheries Engineering, FRA, 7620-7 Hasaki, Kamisu, Ibaraki 314-0408, Japan ⁵Graduate school of Fisheries Science, Hokkaido University, 3-1-1 Minato-Cho, Hakodate 041-8611, Japan ⁶Field Science Center for the Northern Biosphere, Hokkaido University, 3-1-1 Minato, Hakodate 041-8611, Japan

The Japanese sandeel (Ammodytes personatus) is widely distributed in the coastal area of Japan, and especially in the summer months, they could be found in the northern coast of Hokkaido. Sandeel plays an important role in marine ecosystem and represents one of the most commercial coastal fisheries species in Japan. In order to get a better understanding of the Japanese sandeel distribution in the northern coast of Hokkaido for sandeel abundance estimation and management, fishery-independent method for sandeel distribution estimates is needed. The main objective of this study is to estimate the Japanese sandeel distribution in the northern coast of Hokkaido and the secondary objective is to characterize the suitable condition as sandeel habitat. The study area is located off Wakkanai, in the northern coast of Hokkaido, Japan. Acoustic surveys and measurement of oceanographic conditions were conducted in June 2010 and 2011 respectively. Sandeel distribution was estimated by species identification using the volume backscattering strength (SV) difference method. Target strength (TS) of sandeel was estimated by theoretical TS method (distorted-wave Born approximation, DWBA) and the mean and standard deviation for the tilt angle distribution were substituted into theoretical model. Using this TS values, echo trace of sandeel schools was converted to number of individual per unit area. Spatial patterns of sandeel schools were analyzed based on acoustic data and oceanographic conditions such as temperature, salinity, and depth. In this study, number of sandeel schools in 2010 was 8 and 11 schools in 2011, respectively. Most of sandeel abundance was found in the coastal area of 30 to 50 m in bottom depths, and they existed in the near sea bottom. In relation with oceanographic condition, this study showed that sandeel densities tended to be highest in the specific range of 9 - 10oC in temperature, and 33.8 - 33.9 psu in salinity. Probably, sandeel distribution was affected by the mixed water of Soya Warm Current (SWC) and East Sakhalin Current (ESC). From these results, there is a possibility that the oceanographic condition is an important factor for explaining the spatial distribution of Japanese sandeel in the northern coast of Hokkaido.

Keywords: Japanese sandeel, distribution, quantitative echo sounder, oceanographic conditions