

S3 FIS/BIO Topic Session

Early life stages of marine resources as indicators of climate variability and ecosystem resilience

Co-Convenors: Richard D. Brodeur (U.S.A.), Douglas E. Hay (Canada), Suam Kim (Korea), Gordon H. Kruse (U.S.A.), Vladimir I. Radchenko (Russia) and Yoshiro Watanabe (Japan)

As management strategies become more ecosystem-based and climate-driven, there is a need for more information on the role of species interactions and oceanographic variability in regulating fisheries resources. The early life stage of fish and invertebrates has been shown to be critical in determining year-class success and subsequent recruitment to the fisheries. This session will examine changes in the abundance, distribution, and ecological relationships of early life stages (eggs to juveniles) of important fish and invertebrate species in relation to climate fluctuations. Studies examining these stages in relation to adult recruitment and their use as indicators of ecosystem stress or variability are invited. Examples of the uses of ichthyoplankton or juvenile surveys in the assessment or management of stocks and in forecasting future trends in fisheries are highly encouraged. The session is especially interested in papers that examine the role of early life stage work relative to ecosystem structure and vulnerability of ecosystems to climate change, with particular reference to the processes of recruitment.

Day 1, Wednesday, October 28 (9:00-12:30)

- 9:00 **Introduction by Convenors**
- 9:10 **Mark Dickey-Collas and Jonathan A. Hare (Invited)**
Ichthyoplankton surveys, great for assessment and day to day management but are they so relevant for understanding the future? (S3-5584)
- 9:40 **Miriam J. Doyle (Invited)**
Responding to the call for Ecosystem Based Management of marine fisheries: Perspectives from fish early life history studies in the Northeast Pacific Ocean (S3-5712)
- 10:10 **Elizabeth A. Logerwell, Janet Duffy-Anderson, Matt Wilson and Denise McKelvey**
Processes affecting the productivity of capelin and pollock in the Gulf of Alaska (S3-5581)
- 10:30 **Coffee / tea break**
- 10:50 **Sukgeun Jung, Dong-woo Lee, Yeonghye Kim, Hyung Kee Cha, Hak-jin Hwang and Jeong-yong Lee**
Contrasting recruitment of two gadoid species (*Gadus macrocephalus* vs. *Theragra chalcogramma*) to Korean coastal waters in relation to climate change (S3-5613)
- 11:10 **Lu Guan, John Dower and Skip McKinnell**
Quantifying long-term variability in composition of the Strait of Georgia ichthyoplankton community (S3-5651)
- 11:30 **Andrey Suntsov and Tony Koslow**
Nearshore ichthyoplankton communities off southern and central California (S3-5954)
- 11:50 **Richard D. Brodeur, Toby Auth, Elizabeth A. Daly and William T. Peterson**
Ichthyoplankton as indicators of climate change and recruitment variability of marine fishes and salmon along the northwest coast of the US (S3-5822)

- 12:10 **Jun Shoji, Yasuhiro Kamimura, Ken-ichiro Mizuno and Shun-ichi Toshito**
Fish production in seagrass habitat under global warming: Effects of temperature on early growth and production of a dominant species, black rockfish, in temperate waters of the western North Pacific (S3-5852)
- 12:30 **Day 1 Session ends**

Day 2, Thursday, October 29 (9:00 - 12:30)

- 9:00 **John C. Field, Stephen Ralston and Keith Sakuma**
Rockfish (*Sebastodes*) recruitment and ecosystem indicators for the Southern California Current (S3-5885)
- 9:20 **Chiyuki Sassa and Youichi Tsukamoto**
Distribution and growth of chub mackerel *Scomber japonicus* and spotted mackerel *S. australasicus* larvae in the southern East China Sea (ECS) in response to oceanographic conditions (S3-5636)
- 9:40 **David Checkley, Yoshioki Oozeki, Sam McClatchie, and Akinori Takasuka**
Comparison of spawning habitats of anchovy and sardine in the Pacific Ocean off Japan and North America (S3-5999)
- 10:00 **Motomitsu Takahashi (Invited)**
Contrasting responses in growth rates between anchovy and sardine to changes in water structures in the eastern and western North Pacific (S3-5939)
- 10:30 **Coffee / tea break**
- 10:50 **Masahide Kaeriyama, Hideaki Kudo, and Hyunju Seo**
Global warming effects on the early ocean life of Hokkaido chum salmon (S3-5542)
- 11:10 **Igor Zhigalov, Alexander Figurkin and Svetlana Ovsyannikova**
Oceanographic conditions and the distribution of walleye pollock eggs in the southern Kuril Islands region during March – April of 2006 and 2007 (S3-5623)
- 11:30 **Yoshiro Watanabe**
Linear response of growth rates to ambient temperature in larval round herring *Etrumeus teres* in the Pacific coastal waters off southern Japan (S3-5684)
- 11:50 **Nam-II Won, Tomohiko Kawamura, Hideki Takami and Yoshiro Watanabe**
Food web structures in crustose coralline algae bed during early life stages of abalone *Haliotis discus hannai* in relation with recruitment process (S3-5689)
- 12:10 **Tadanori Fujino, Hideaki Kidokoro, Tsuneo Goto and Yongjun Tian**
Effect of the oceanographic condition on the abundance of mesopelagic fish: *Maurolicus japonicus* in the Japan Sea (S3-5743)
- 12:30 **Session ends**

S3 Posters

- S3-5520 **Mikhail A. Zuev**
Distribution and abundance of juvenile long armed gonatid squid (*Gonatus madokai*) in the northern Sea of Okhotsk
- S3-5540 **Chen-Yi Tu, Yu-heng Tseng, Tai-sheng Chiu and Chih-Hao Hsieh**
Use particle tracking simulation in hydrodynamic model to investigate spawning migration of Japanese anchovy *Engraulis japonicus* from the East China Sea to Taiwan
- S3-5738 **Alexander A. Antonov, Irina Yu. Bragina and Elena M. Latkovskaya**
Nutrients transport, forage base and survival of juvenile pink salmon in Aniva Bay (south of Sakhalin Island)
- S3-5768 **Ana L. Rosa, J. Yamamoto and Yasunori Sakurai**
Effects of environmental variability on the spawning areas, catch and recruitment of the Japanese common squid, *Todarodes pacificus*
- S3-5806 **Heeyong Kim, D.H. Kim, Hakjin Hwang and Y.I. Seo**
Effect of Siberian High on the catch fluctuation of pacific cod, *Gadus macrocephalus*, in the Yellow Sea
- S3-5814 **Yuji Okazaki, Hiroshi Kubota, Kaori Takagi, Hiroshi Itoh and Nobuhiro Saito**
Feeding ecology of larval and juvenile sardine (*Sardinops melanostictus*) and anchovy (*Engraulis japonicus*) in the western North Pacific



