

## **Working Group 26 on *Jellyfish Blooms around the North Pacific Rim: Causes and Consequences***

The third meeting of PICES WG 26 (*Jellyfish Blooms around the North Pacific Rim: Causes and Consequence*) was held inter-sessionally in Hiroshima, Japan, (June 4, 2013) before the Fourth International Jellyfish Blooms Symposium in early June. The meeting was chaired by Dr. Shin-ichi Uye and Dr. Richard Brodeur. A new Korean WG member, Dr. Seungshic Yum, met with the group for the first time. All PICES member countries were represented at the WG meeting and several prominent jellyfish scientists from non-PICES nations also attended and provided useful comments and suggestions. A total of 11 members attended the WG meeting. PICES co-sponsorship of the Jellyfish Blooms Symposium was acknowledged which allowed for funding support for two invited speakers (Drs. Larry Madin and Rob Condon) to present at the meeting (*WG 26 Endnote 1*). The WG proposed a theme session to be held at the PICES FUTURE Open Science Meeting in Hawaii (April 15–18, 2014) entitled “*Natural and anthropogenic drivers of jellyfish blooms in coastal ecosystems: Correlation, causation, and prediction*” to be co-convened by WG members Uye, Brodeur and Lucas Brotz. The proposal was reviewed by Science Board and it was recommended that instead of being a separate session, this topic should be merged with another session on “*Identifying multiple pressures and system responses in North Pacific marine ecosystems*” led by Dr. Ian Perry. Discussions are underway with the organizers of that session to integrate jellyfish research into this theme section.

The remainder of the meeting consisted of discussions on the current state of writing for the WG report. Over the last twelve months, the WG members have been researching and writing their sections for the report and numerous emails have been exchanged among members. Progress by the different WG members was presented along with updates of the status of bloom conditions in several PICES regions. After brief discussions, the WG made slight modifications to the outline of the report, adding several new sections that were deemed useful to include. The major sections of the WG report are as follows:

- 1) Introduction and purpose,
- 2) Life history and population dynamics,
- 3) Sampling considerations,
- 4) Spatio-temporal variations of biomass and current bloom conditions in regional seas,
- 5) Physio-ecological properties,
- 6) Impacts on marine ecosystems and socio-economics,
- 7) Reducing jellyfish impacts, and
- 8) Conclusions and prioritized recommendations for future research.

Discussions were included on how this report may best address the goals and themes of the FUTURE program.

During the past summer, WG Co-Chair, Dr. Brodeur, worked with two ICES colleagues (Cornelia Jaspers of Denmark and José Luis Acuña of Spain) to put together a proposal for a joint ICES/PICES session on jellyfish at the next ICES Annual Meeting to be held in A Coruña, Spain, in September 2014 (see *WG 26 Endnote 2* for title and description). This is a followup to the very successful PICES/ICES collaborative session held at the 2012 PICES Annual Meeting in Hiroshima, Japan. In contrast to the one in 2012, this session would focus on the socio-economic impacts of blooms on humans, particularly related to fisheries. The other WG Co-Chair, Dr. Uye, was proposed as a keynote speaker for this session. ICES reviewed the proposal at their September annual meeting and ranked it as the top proposed session so it is likely to be approved for the next meeting. The WG will next request sponsorship by the BIO and FIS committees prior to moving forward to Science Board for consideration.

Finally, due to circumstances beyond their control, neither WG Co-Chair was able to attend the proposed WG business meeting at the 2013 PICES Annual Meeting in Nanaimo, Canada, so the meeting was cancelled. It was suggested instead that the WG members continue to write their reports and submit them to the WG Chairs.

**WG 26 Endnote 1**

***Report on International Jellyfish Blooms Symposium in PICES Press***

[https://www.pices.int/publications/pices\\_press/volume21/v21-n2/pp\\_14-15\\_Jellyfish-Symposium.pdf](https://www.pices.int/publications/pices_press/volume21/v21-n2/pp_14-15_Jellyfish-Symposium.pdf)

**WG 26 Endnote 2**

**Proposal for joint 1-day ICES/PICES Topic Session on**

***“Gelatinous zooplankton on a global perspective: interactions with fisheries and consequences for socio-economics”***

**Convenors:** José Luis Acuña (Spain, ICES), Richard Brodeur (USA, PICES), Cornelia Jaspers (Denmark, ICES)

**Proposed Invited speaker:** Shin-Ichi Uye (Japan)

Gelatinous zooplankton, such as ctenophores, jellyfish and pelagic tunicates, contain groups belonging to the fastest growing metazoans on Earth, contributing more to secondary production than crustacean zooplankton during periods in certain regions. Irrespectively, gelatinous zooplankton remain understudied and disregarded in most food web investigations and are largely viewed as a dead end in the food chain. Lately, evidence has accumulated that gelatinous zooplankton populations have increased and likely have benefitted from global change. Further, anthropogenic stressors such as eutrophication, bio-invasions and overfishing have been correlated with increased jellyfish and ctenophore abundances with documented changes in food web structure, functioning and productivity of many marine ecosystems around the world. Especially in the Mediterranean Sea, the Black Sea, the East Asian marginal seas, the Benguela Current, and fjord systems around northern Europe, bio-invasions and blooms of gelatinous zooplankton have gained public attention, with documented shifts in the food web structure, functioning and corresponding socio-economic consequences for fisheries and tourism. This theme session aims at addressing the role, position and importance of gelatinous zooplankton organisms for marine ecosystems and their impact on food web structure, functioning and overall productivity.

We encourage presentations on gelatinous zooplankton and their:

- spatial and temporal distribution patterns
- contributions to carbon cycling in pelagic & benthic ecosystems including higher trophic levels
- population dynamics or species interactions of native and invasive groups
- socio-economic impacts e.g. on fisheries, aquaculture and tourism
- potential as a fast growing, renewable resource