



Status report of the PICES WG37

Zooplankton Production Methodologies, Applications and Measurements in PICES Regions

Yokohama, Japan
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Neocalanus plumchrus
(Photo from National Geographic, Japan)

Progress in 5 years

after the PICES Workshop 2012

First PICES workshop on
zooplankton production measurements and methodologies

2012

2013

- Discuss the working group and its proposal during the ICES WGZE meeting in Iceland
- Submit the proposal for the working group to SCOR (not approved)

2014

- Revise the proposal for the working group to SCOR
- Propose a collaborative project to make a guideline and comparison on zooplankton production methodologies
 - 3 proposals submitted to 5 Japanese funding bodies (not approved)
 - 2 proposals submitted to Euro-Oceans (not granted)

2015

- Discuss the working group during ASLO meeting in Spain
- Submit the revised proposal for the working group to SCOR

2016

- Discuss to establish working group in PICES BIO during the workshop at Zooplankton Production Symposium in Norway
- Accept the review paper on the biochemical approaches (Adv. Mar. Biol., 76, 157-240)
- Submit the proposal for the working group to PICES BIO

2017

New PICES Working Group 37 is established.

PICES Working Group 37

Zooplankton Production Methodologies, Applications and Measurements in PICES regions

Members

12 national representatives from 6 PICES nations and 1 ex officio from ICES nation
(Co-chair: Akash Sastri and Toru Kobari)

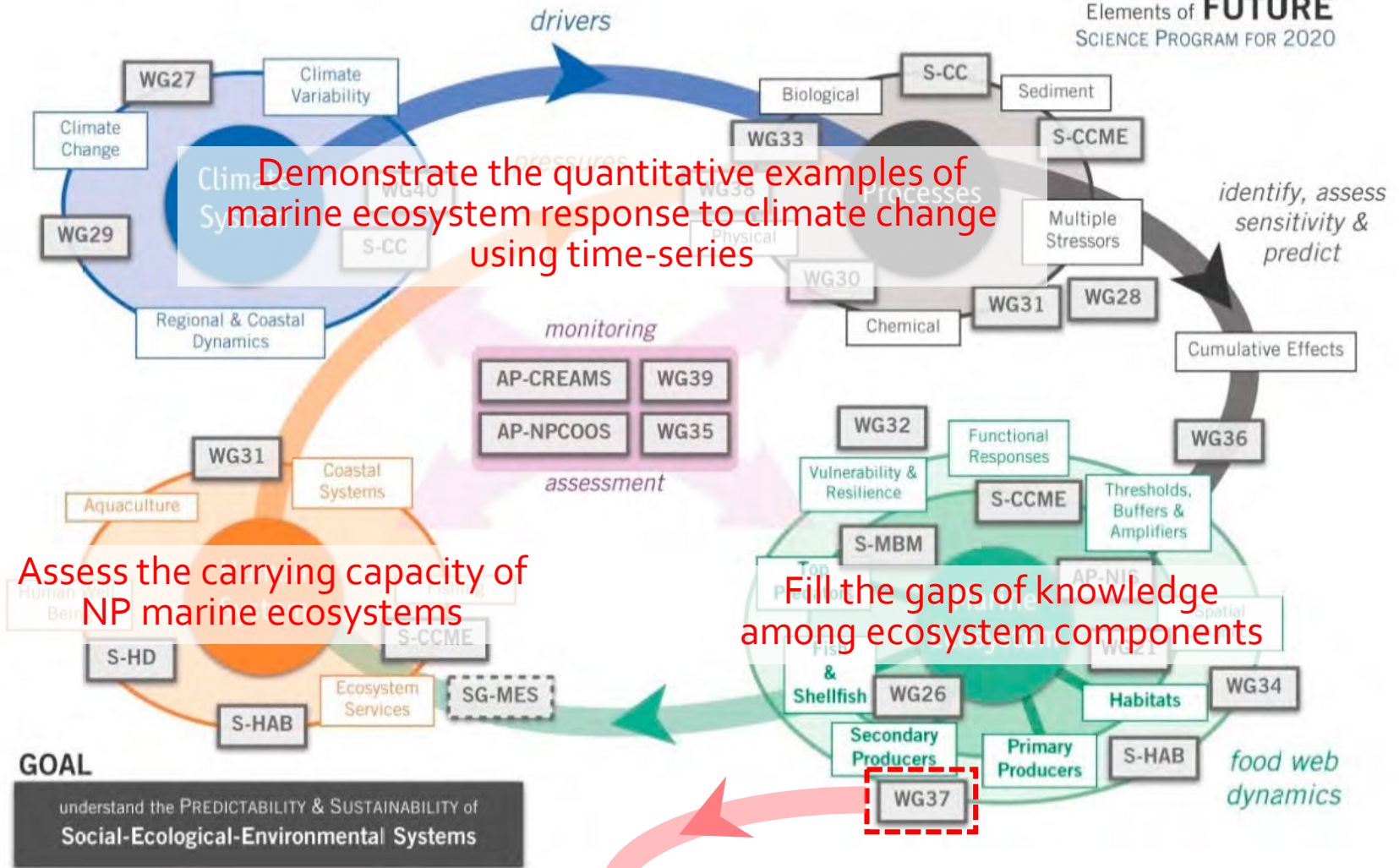
Terms of References (ToR)

1. Summarize assumptions, recent advances and limitations of both traditional and biochemical methodologies for measuring zooplankton production of natural populations and communities.
2. Produce recommendations and procedures for both traditional and biochemical zooplankton production rate measurement methodologies and make them available for worldwide users on a website.
3. Develop practical models for estimating zooplankton production to time-series.
4. Build a platform of information exchange on zooplankton production measurements through an interactive website for regional and/or global mapping.
5. Build a network of scientists and laboratories measuring zooplankton production among PICES and ICES nations as well as developing countries.
6. Promote international collaborations among zooplankton production researchers through international organizations such as PICES, ICES and IMBER.
7. Publish a final report summarizing results.

PICES Working Group 37

Contribution and collaboration to FUTURE

Elements of **FUTURE**
SCIENCE PROGRAM FOR 2020



Demonstrate the quantitative examples of marine ecosystem response to climate change using time-series

Assess the carrying capacity of NP marine ecosystems

Fill the gaps of knowledge among ecosystem components

Provide opportunities for collaborating among early-career scientists and different nations

PICES/ICES carrying capacity

GOAL
understand the PREDICTABILITY & SUSTAINABILITY of Social-Ecological-Environmental Systems

Activities to be done in 2017-2018

1. Review papers (ToR1)

- ✓ L. Yebra, T. Kobari, A. Sastri and others (2017)
Advances in biochemical indices of zooplankton production. Adv. Mar. Biol. 76: 157-240.
- ✓ T. Kobari, A. Sastri and A. Sastri (to be submitted)
Evaluation of trade-offs in traditional methodologies for measuring mesozooplankton growth rates: assumptions, advantages and disadvantages for field applications. Prog. Oceanogr. Bill's special volume

2. Workshops / Session (ToR5, ToR6)

- ✓ WG workshop in the PICES 2017 Annual Meeting (Vladivostok)
4 talks and 2 posters
- ✓ WG workshop in the PICES 2018 Annual Meeting (Yokohama)
8 talks and 4 posters
- ✓ Session in the Ocean Science Meeting (Portland)
6 talks and 9 posters

3. Carrying capacity (ToR5, ToR6)

- ✓ Practical Workshop Phase 1 (2018, Manazuru)
19 participants from 5 nations (including supporting staffs)

Activities to be done in 2017-2018

Practical Workshop Phase 1



Group photo for participants



Lecture for applying empirical models



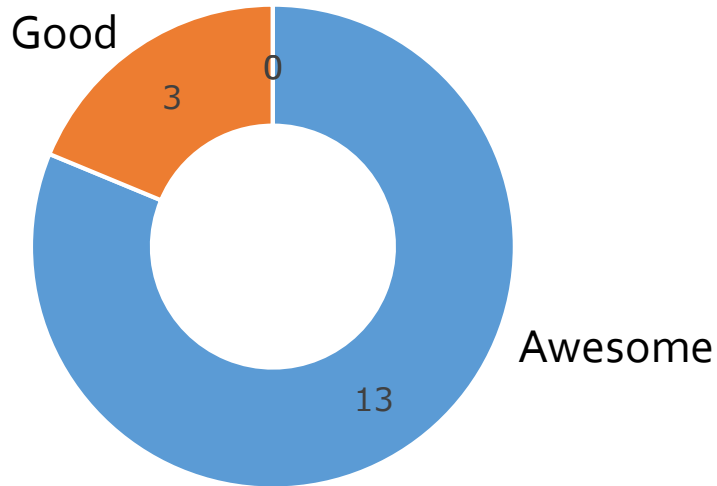
Experiment works of egg production



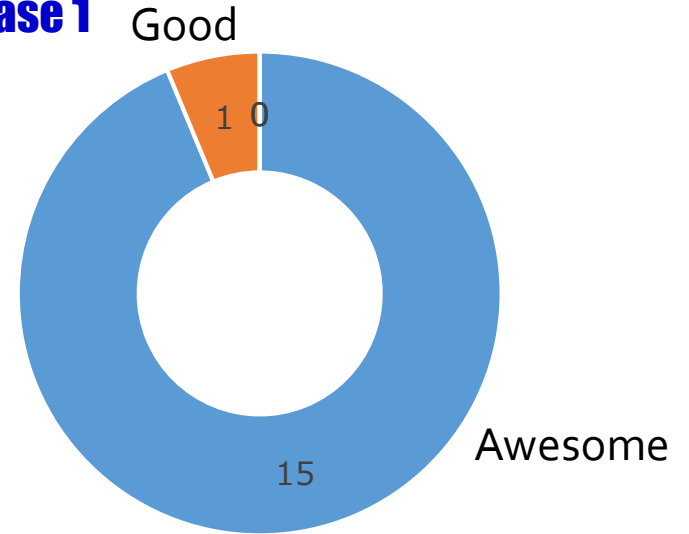
Night session with Japanese soul foods

Activities to be done in 2017-2018

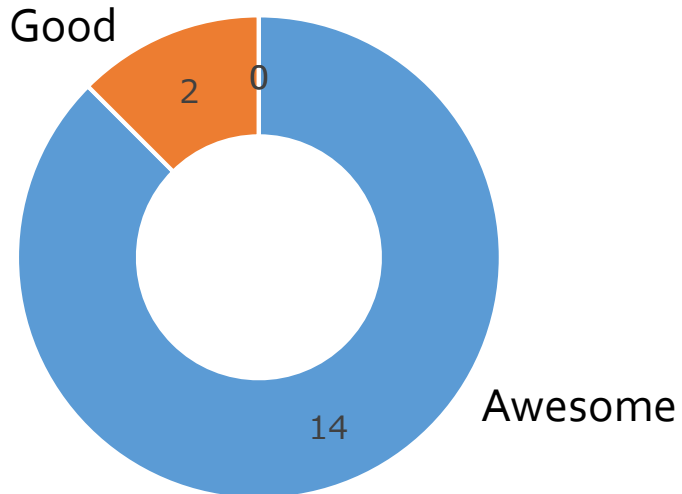
Practical Workshop Phase 1



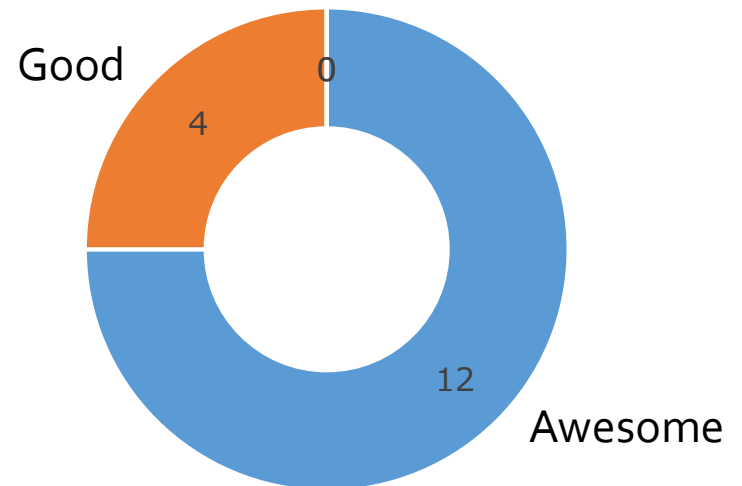
How do you rate your satisfaction to lectures?



How do you rate your satisfaction to night sessions?



How do you rate your satisfaction to experiment works?



How do you rate the quality of this workshop?

Ongoing and planned activities

1. Methodology manuals (ToR₂)

- ✓ Biochemical approaches (AARS, Chitobiase, Nucleic acids)
- ✓ Traditional methodologies (Molting rate, Artificial cohort, Egg production, Empirical models, Physiological model)

2. Practical models (ToR₃)

- ✓ Application of the Ikeda-Motoda model to 8 zooplankton time-series or data-sets
- ✓ Developing PICES regional models using the previously measured data at Japanese and Alaskan coasts

3. Platform of information exchange (ToR₄)

- ✓ Collaboration with COPEPOD website
- ✓ Bibliography for zooplankton production measurements in PICES regions

4. Building network (ToR₅)

- ✓ List of scientists and laboratories measuring zooplankton production in PICES region (to be posted at the PICES website)
- ✓ Practical Workshop Phase 2 (PICES 2019 Annual Meeting, Victoria)

5. Promoting international collaboration (ToR₆)

- ✓ Comparisons of production estimates with the Ikeda-Motoda model among some time-series

6. Final report (ToR₇)

- ✓ Draft plan of the contents and responsible authors

Most of ToR are well ongoing by the WG members and colleagues