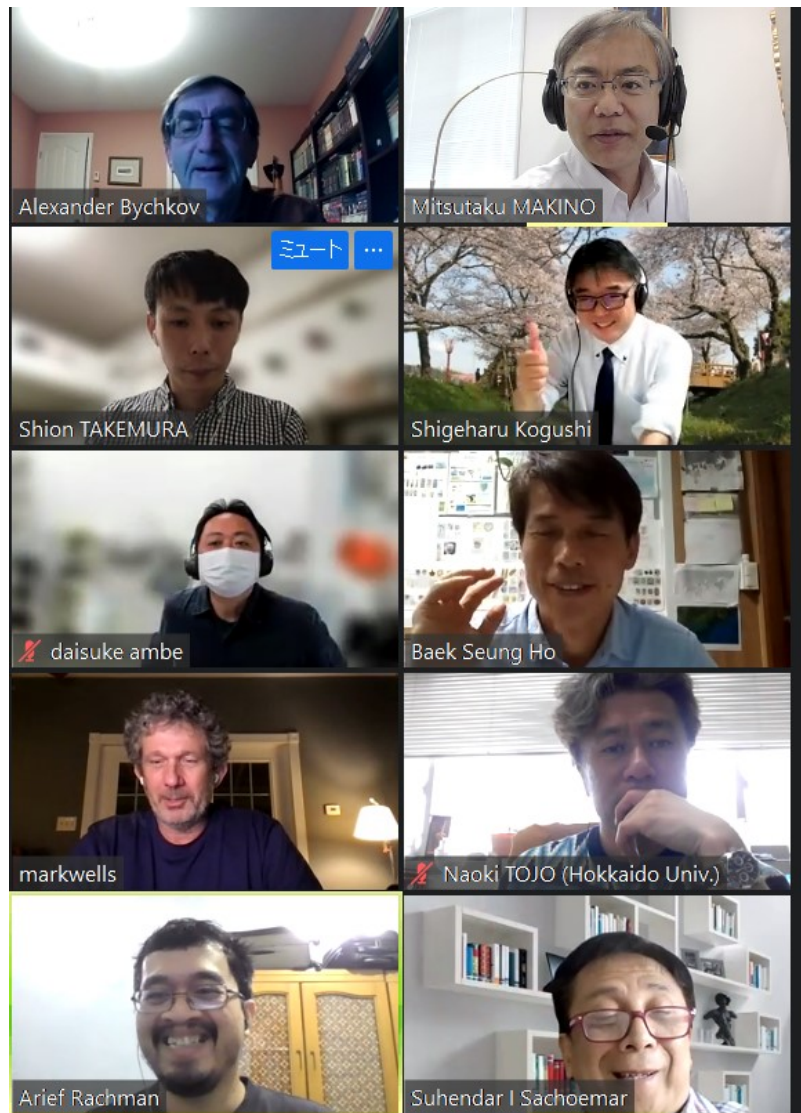


Fifth Virtual Meeting of the Project Science Team April 25/26, 2022

The fifth virtual meeting of the Project Science Team (PST) for the project on “Building local warning networks for the detection and human dimension of Ciguatera fish poisoning in Indonesian communities” (hereinafter referred to as Ciguatera) funded by the Ministry of Agriculture, Forestry and Fisheries (MAFF) of Japan, through the Fisheries Agency of Japan (JFA), was held via Zoom videoconference from 17:00–19:00 Pacific Daylight Time on April 25, 2022 (April 26, 2022 in the Western Pacific).

1. WELCOME REMARKS, INTRODUCTIONS, AND ADOPTION OF THE AGENDA

The meeting was opened with welcoming remarks to participants and brief comments on the purpose of the meeting by Dr. Mitsutaku Makino. Following introductions, the attendees (*Appendix 1*) reviewed and adopted the provisional agenda circulated prior to the meeting (*Appendices 2*). Dr. Mark Wells served as the rapporteur.



Ciguatera project meeting participants at their fifth virtual meeting on April 25/26, 2022.

2. SUMMARY OF YEAR 2 ACTIVITIES

a) Current state of the FishGIS application

Drs. Takemura and Kogushi provided a summary of the improvements that have been made to the FishGIS application. These included revamping the appearance of the application to simplify its operation, as well as substantial revision of the software so that older versions of Android (5.1) and iOS (10) are supported. Both of these changes better enable access and use of the application by Indonesian fishermen. The test flight version (ver. 1.0) of the revised application will be available on Apple Store and Google Play in mid-May. Collected data are to be stored on a server in Indonesia (provided by Google) and transferred in real time to a server in Japan for data backup. The Indonesian government allows access to these data. It was suggested that the Indonesian National Water Association should be invited to the next meeting in Indonesia to explore how the application might aid in their conversation work.

b) Project Design Matrix and Plan of Operation

Dr. Makino gave a summary of what earlier efforts had added to the Project Design Matrix (PDM), and discussion turned to the draft Plan of Operation (PO). While the initial draft PO has not changed, it is recognized that the pandemic has impacted what is possible. The PST will work to update the PO based on the current activities. The latest PDM and PO are posted under “Products” on [the project website](#). This topic will be an agenda item at the next PST meeting.

c) Memorandum of Understanding with the Indonesian Institute of Technology

Dr. Makino reviewed the Memorandum of Understanding (MOU) with the Indonesian Institute of Technology (ITI) signed on March 23, 2022 (JST), and led a discussion on the rationale and structure for developing this formalized collaboration. The MOU provides three primary advantages to the project in that (1) it allows for the smooth communication of project funds between PICES and project counterparts in Indonesia, (2) it enriches the project goals by forging new collaborations with ITI faculty and students, and (3) it helps to provide a stronger foundation for the project that increases the likelihood that project activities will continue beyond the project term. There also is an opportunity to invite faculty of the University of Indonesian (UI) and University of Mataram (UNRAM) to participate. Dr. Sachoemar presented a flow chart of how the planned activities and responsibilities will be spread among the National Research and Innovation Agency (BRIN), ITI and PICES. The broad categories are harmful algal species observations, coastal marine environmental conditions, local human dimension facets, as well as socioeconomic impacts and food safety. The increased span of collaboration among PICES, BRIN, ITI, UI and UNRAM is a significant advance for the project.

3. BUDGET SUMMARY

Dr. Bychkov provided a summary of the project budget, along with the plans for supporting the planned BRIN-funded field program in the Gili Island region, Lombok. This will allow more frequent surveys and thereby give insight to how the water quality and distribution and abundance of toxic benthic organisms changes during the wet, dry and transitional seasons (see 4b for details). After the transfer of funds to ITI, there will be roughly \$130,000 CDN remaining for Year 3 activities.

4. WORKPLAN FOR YEAR 3

a) Improvements to the FishGIS application and Terms of Use and Privacy Policy of the application

The following issues have been brought up during discussion on improvements to the FishGIS application:

- The logos for BRIN and ITI have to be added to the application, but first a confirmation is needed that we have license to use these logos. The reorganization of Indonesian agencies under the single BRIN umbrella is still working through many issues and, while there is expectation that it will not be a problem to include the BRIN logo, given that BRIN is funding part of the work, Dr. Rachman will check.
- The mapping function of benthic toxic algae needs to be improved and adapted for better display of larger datasets. This work is on-going.
- It would be advantageous to link the FishGIS application with data from the Indonesian Meteorological, Climatological and Geophysical Agency (BMKG). This way weather and sea data can be presented in the application, thereby providing fishermen another reason to utilize this tool. The linkage also will allow tsunami warning capability to be added to the application. Dr. Sachoemar will discuss this idea with his colleagues at BMKG.
- It would be preferential if users could directly link with the Hydrocolor application through the FishGIS application. Dr. Wells will contact the Hydrocolor developer to determine how feasible this might be, or whether it would require significant re-coding of the Hydrocolor application.
- There is some question about who may “own” the copyright to FishGIS data (Terms of Use and Privacy Policy of the application) – a culmination of many users and providers. There was discussion about what approaches might work. For example, with Twitter the user owns the copyright of data, but allows Twitter (*i.e.*, other users) to access it. Alternatively, Facebook owns the copyright on all data, but gives license to Meta to use these data, which is closer to the situation with FishGIS. Dr. Ambe will discuss this question about data sharing with TCODE. The current feeling among PST members is that a partial sharing structure be developed with some data remaining restricted.

b) Indonesian field sampling program

Dr. Rachman provided a summary of the planned field program, which is a joint collaboration among PICES, BRIN, ITI, UI and UNRAM. He has a 5-year project funded to study ciguatera in Indonesian waters, and this field program is the first of the project. Combining funding from the PICES/MAFF project and from BRIN will allow carrying out the enhanced field program in the Gili Island region, with a total of five 6-day long sampling surveys (2 funded by BRIN and 3 by this PICES/MAFF project). Two surveys are scheduled for May and August 2022, with three more to be conducted through February 2023. The combined surveys are expected to provide measurements across wet, dry and transition periods. The field program is designed to compare human-impacted reef systems to those in a local marine conservation area. Community participation in the first two surveys is restricted due to pandemic regulations so emphasis will be on oceanographic observations (with active use of the smartphone-based FishGIS and Hydrocolor tools), phytoplankton assemblage composition, and toxic benthic algae distributions. Community participation will be incorporated when conditions permit.

c) Capacity building and knowledge dissemination

Progress on these aspects of the project plan has been very limited due to the inability of PST participation in face-to-face workshops with Indonesian government agencies, universities and local communities. There was discussion about the potential for training and dissemination workshops in the Lombok and Gili islands region to be organized in January/February 2023. The COVID and quarantine situation in Indonesia will be monitored while tentative planning steps are taken. If the situation allows, a short visit by a small group of PICES experts will be arranged in late 2022 to facilitate workshop planning.

As a special capacity building initiative, the PST has agreed to support six undergraduate students from ITI, UI and UNRAM (two from each) to participate in the field sampling program by providing them partial tuition (a portion of Year 2 project funds were re-directed for this activity).

d) Collecting data using the FishGIS application

This was not discussed due to the lack of time.

e) Collecting data on fish products distribution in the common supply chains in Indonesia

This was not discussed due to the lack of time.

f) PST meetings

The next PST meeting is planned to be in-person and to take place on September 22, immediately before the next PICES Annual Meeting (PICES-2022) in Busan, Korea. The PST meeting place has not been settled, but is likely to be the PICES-2022 venue. The main objectives for the meeting will be to: (1) review overall progress on the field sampling program in the Gili Island region to date, (2) evaluate the latest version of the FishGIS application (ver. 2.0), (3) initiate planning for a community training workshop to be held in early 2023, (4) discuss the latest PDM and further steps in the development of this framework, and (5) generate a list of tasks for the preparation of a final scientific report and other project outcomes.

5. OTHER BUSINESS

a) Year 2 annual reports and Year 3 workplan

The Year 2 annual report and Year 3 workplan will be prepared by the project co-chairs (Drs. Makino and Wells) in collaboration with the project coordinator (Dr. Bychkov). The near final draft will be circulated to PST members for comment and revision.

b) Update on the next MAFF project

Given that the current project is going well overall, despite setbacks related to the pandemic, MAFF has expressed a very positive outlook for funding the next MAFF project to build upon this foundation. A final decision will come from the Ministry of Finance, but it is very encouraging news.

Appendix 1

Fifth Project Science Team meeting participants

Members

Daisuke Ambe (Japan, representing TCODE)
Seung Ho Baek (Korea)
Alexander Bychkov (PICES, *ex-officio*)
Mitsutaku Makino (Co-Chair; Japan, representing HD)
Shion Takemura (Japan, representing HD)
Naoki Tojo (Japan, representing FIS)
Mark Wells (Co-Chair; USA, representing MEQ)

Other

Shigeharu Kogushi (GFI, Japan)
Suhendar I Sachoemar (BRIN, ITI, Indonesia)
Arief Rachman (BRIN, Indonesia)

Appendix 2

Fifth Project Science Team meeting agenda

Tuesday, April 25, 2022 (PDT)

1. Welcome remarks, introductions, and adoption of the agenda
2. Summary report of Year 2 activities
 - a) Current state of the FishGIS application
 - b) Project Design Matrix and Plan of Operation
 - c) MOU and IA with ITI
3. Summary report of the budget
4. Workplan for Year 3
 - a) Improvements to the FishGIS application and Terms of Use and Privacy Policy of the application
 - b) Indonesian field sampling program
 - c) Capacity building and knowledge dissemination
 - d) Collecting data using the FishGIS application
 - e) Collecting data on fish products distribution in the common supply chains in Indonesia
 - f) PST meetings
5. Other business
 - a) Year 2 annual reports and Year 3 workplan
 - b) Update on the next MAFF project