

## **Fourth Virtual Meeting of the Project Science Team September 15/16, 2021**

The fourth 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 16:00–18:00 Pacific Daylight Time on September 15, 2021 (September 16, 2021 in the Western Pacific).

### **1. WELCOME AND ADOPTION OF AGENDA**

The meeting was opened with welcoming remarks to participants and brief comments on the purpose of the meeting (to collectively review the Project Design Matrix (PDM) by Dr. Mitsutaku Makino, and adoption of the agenda (*Appendices 1 and 2*).

### **2. REVIEW OF PROJECT DESIGN MATRIX**

Dr. Mark Wells led the discussion phase as PST members worked through each section (Overall Goal, Project Purpose, Outputs, and Activities) of the PDM.

The tasks were to review each item in terms of: a) the original plan, and b) revising or limiting the plan due to the COVID-19 situation. Where needed, modifications to the text of the PDM were made as follows. While the majority of the PDM was considered to not need revision, the following changes and additions were made (see also Appendix 3).

#### **“Output” section**

- Objectively Verifiable Indicators column:  
Item number 1-4 should be modified to read: “At least, informed scientific knowledge is considered with the inclusion of shared local knowledge.”
- Objectively Verifiable Indicators column:  
Item number 1-6 should be added: “Scientific information from hypothesis testing are shared with at least one community or stakeholder group by available alternatives for dissemination (*e.g.*, presentations, participatory experiments, and other media).”
- Narrative Summary column:  
As for item number 2, general information about health-related situations (such as occurrence of HAB incidents) can be gathered by local government officials or researchers. Dr. Suhendar I Sachoemar also pointed out the importance of the traceability analysis.

#### **“Activities” section**

- Narrative Summary column:  
With respect to item number 1-4, several research hypotheses were discussed, including inputs from Dr. Arief Rochman (*e.g.*, relationship between coral reef degradation and bHAB composition). Dr. Naoki Tojo suggested to study relationships between fish stomach contents and Ciguatera fish poisoning (CFP). With consideration to the diminishing available time, it was decided that PST members should give greater attention to effective guiding hypotheses after the meeting.
- Narrative Summary column:

Item number 2-1 should be re-written, replacing “Suggest specific alternatives for local fishermen to sell fishes with reduced CFP risks” with “Describe the distribution of CFP risk along supply chains.” Dr. Sachoemar noted there were some research projects in Indonesia in 2002–2009 dealing with supply chains, and this would be good information for us to consider.

- The activities 2-1 and 2-2 will be generally difficult but that discussions with local community members may offer avenues for progress.

#### “Input” section

- Given the impact COVID-19 has had on our ability to conduct the “on the ground” aspects of the project, it was suggested that we may have to shift much of our focus to “Detection and Monitoring”, fisheries information, and to the social surveys that give insight to the current status and state of understanding of CFP and other benthic HABs (bHABs).

### 3. NEXT STEPS

Dr. Wells presented 4 points/activities to be undertaken during the project period (until March 2023). Based on comments from PST members, the texts were brushed up (*e.g.*, importance of weather/environmental information), followed by discussion about how to approach these tasks.

1. Data inputs on the presence/absence and distribution of bHAB (*Gambierdiscus*, but maybe including other species presented at the previous meeting as well). Include weather aspects and broader environmental data. These data can be collected from either our original large site (Gili Islands) or elsewhere.
2. Data inputs on fisheries – what species of reef fish, numbers caught, size, *etc.* (FishGIS).
3. Social surveys that provide the needed data/insights to fisheries impacts, or potential fisheries impacts from CFP or other bHABs. We can begin with the surveys developed for the FishGIS project, but what sites would make the most sense and are more feasible logistically? Use adaptive socio-economic survey methodology.
4. Disseminate information about coral reef degradation and CFP/bHABs (if we find low levels), or risk assessment based on early monitoring results.

The following central questions were posed by Dr. Wells with the discussion outcomes listed in *italics*:

1. MAFF wishes to see a minimum of 1000 data points added to the database by the end of the project. We will not reach this with volunteers only, based on experience in our previous project. Can we arrange to provide economic incentive a subset of local fishermen (20?) to:
  - a) Deploy and retrieve the CFP sampling screens (from a buoy), and transfer the samples to a local LIPI representative?
  - b) Use the FishGIS application to get water quality data?
  - c) Use the FishGIS data to record their catch?

The expectation would be for a minimum of 4 samples a month for the last year of the project. Along with this question,

2. Do we need to purchase hardware (*e.g.*, phones) to enable the above? Would that, combined with pay, be enough incentive for fishermen to participate? What is the best way to incentivize local fishermen to participate and reliable contribution of data?

*It was decided that we would pursue means to incentivize local people to collect data (target is more than 1000 data points). However, we need to pay close attention on how to do it (direct payment is not advised), and we will discuss the best way with Drs. Sachoemar and Rachman.*

3. Do we need a research vessel (as listed), or will it be sufficient to use local fishermen?  
*Drs. Sachoemar and Rachman will consider this question*
4. Is BPPT willing, in collaboration with other agencies, to start outreach in the communities to provide background information about CFP and benthic HABs? If so, should we prepare a teaching module that BPPT staff and local agencies can use? (on-line module?)  
*If the pandemic situation allows, we can conduct questionnaire survey or other new methods (adaptive socio-economic survey methodology, as Dr. Tojo suggested). Local government officials can help us. Dr. Sachoemar will look into this question to find the right individuals (LIPI and BPPT and local government).*
5. Will BPPT staff be able to conduct the socio-economic surveys in the target communities? PICES would prepare a questionnaire (or more than one).  
*BPPT is willing and will consider how to proceed if the pandemic allows.*
6. What would the format be for the training components in Japan? Are there funds available in BPPT to partially support this training (e.g., BPPT covers per diem and hotel, PICES covers all transportation)? Who would be sent (local BPPT or other agency staff, senior community members)?  
*With time running out on the meeting, it was decided that we would consider this question at a future meeting.*

## ***Appendix 1***

### **Fourth Project Science Team meeting participants**

#### Members

Seung Ho Baek (Korea)  
 Vladimir Kulik (Russia, representing MONITOR)  
 Mitsutaku Makino (Co-Chair; Japan, representing HD)  
 Shion Takemura (Japan, representing HD)  
 Naoki Tojo (Japan, representing FIS)  
 Vera Trainer (USA, representing MEQ)  
 Charles Trick (Canada, representing MEQ)  
 Pengbin Wang (China)  
 Mark Wells (Co-Chair; USA, representing MEQ)

#### Other

Suhendar I Sachoemar (BPPT, Indonesia)

## ***Appendix 2***

### **Fourth Project Science Team meeting agenda**

*Wednesday, September 15, 2021 (PDT)*

1. Welcome and adoption of agenda
2. Review of Project Design Matrix
  - “Output” section
  - “Activities” section
  - “Input” section
3. Next steps

### Appendix 3

#### Project Design Matrix updated September 15/16, 2021

**Project title:** Building local warning networks for the detection and human dimension of Ciguatera Fish Poisoning (CFP) in Indonesian Communities  
**Project duration:** April 2020 – March 2023  
**Target group:** BADAN PENGKAJIAN DAN PENGKAJIAN DAN PENERAPAN TEKNOLOGI (BPPT), LEMBAGA ILMU PENGETAHUAN INDONESIA (LIPI) and coordinated organization for dissemination

Narrative summary	Objectively Verifiable Indicators (hereafter, OVI)	Means of Verification	Important Assumptions
<b>Overall goal*</b> *...3-5 years after the Project, monitored by post-project evaluation			
1. Consumers can purchase CFP-risk free fish products from the local community in Indonesia. 2. Socio-economics of coastal communities do not have to fully depend upon products with CFP-risks. 3. Many coral beds declines are of interest and understood by local communities in developing nations, including Indonesia.	1. There are more than 1 product or 1 certificate based on the Project activities that can be provided to Indonesian supply chains with information of CFP control. 2. Half of members in target communities improved their socio-economic capacity (e.g. capital, income sources) based on efforts based on the technical transfers in the Project. 3a. A Coral ecosystem status is monitored using > 2 biological indicators at least once a season by locals with governmental instruction. 3b. > 2 International publications are published. 3c. > 100 local stakeholders continuously follow the official Social Networks after the termination of the Project.	1. Product or/and certificate with CFP control information. 2. Results of evaluation surveys with questionnaires for locals (Adequate questionnaires will be developed during the Project with observers). 3a. Survey reports by officers, submitted to Ministries 3b. Publications with authors from Counter Parts (CPs). 3c. Followers of official SNS account (Official SNS should be established during the Project).	
<b>Project purpose*</b> *...evaluated at the Project termination			
Capacities of coastal community of Indonesia are improved in sustainable manner with less uncertainties and risks from CFP and degradation of coral ecosystem.	1. > 100 of total local fishers participate in the annual meeting for technical transfer and information exchanges (= "general workshop"). 2. Total > 2 small workshops at target communities are held with representing locals (= "local workshop"). 3. More than half of government extension officers and community leaders who participate in general workshop are certificated by BPPT and PICES with more than 70 % of understanding in the technologies and necessary background knowledge (as a good status).	1. Lists of participants from general workshops and local workshops. 2. Certification of the officialized by BPPT training workshops with scores of exams. (The exam will be provided from PICES expert in the workshop.)	-

Output			
<p>1. The <u>influence</u> of CFP upon <u>human dimensions</u> and <u>ecological sustainability</u> of coastal communities is explained based on specific <u>hypotheses tests</u>.</p> <p>“DETECT and ASSESS”</p>	<p>1-1. &gt;2 scientific reports or other publications on CFP are publicized or presented with quantified impacts/influences (1 for HD, 1 for ecology/biology).</p> <p>1-2. Test at least 1 hypothesis with available CFP related information.</p> <p>1-3. The explanation (oral presentations, brochure, and/or other media) in the impacts/potential impacts of CFP are made in ALL general workshops and local workshops by experts and members of partner organizations, including perspectives from each area of science.</p> <p>1-4. At least, informed scientific knowledge is considered with the inclusion of shared local knowledge.</p> <p>1-5. &gt;2 scientific reports or other publication in the background mechanisms of CFP issues such as coral ecosystem degradation and change of aquatic fauna are publicized or presented in PICES (1 for HD, 1 for others).</p> <p>1-6. Scientific information from hypothesis testing are shared with at least one community or stakeholder group by available alternatives for dissemination (e.g. presentations, participatory experiments, and other media).</p>	<p>1-1. Published scientific report/journal articles.</p> <p>1-2. 1-2. and 1-3.</p> <p>a. Official agenda with the title of presentations and supplemental brochures.</p> <p>b. Media provided by experts and partner organizations.</p> <p>1-3. Presentation in the PICES annual meetings.</p>	
<p>2. Fish products distribution in the common supply chains in Indonesia with consideration in potential health risks from CFP.</p> <p>“AVOID”</p>	<p>2-1. &gt;1 scientific reports or other publication in the potential health risks are publicized or presented.</p> <p>2-2. &gt; 1 model products with CFP controls are produced based on collected information in the Project.</p> <p>2-3. A integrative warning system is suggested based on the collected information, chemical analyses, and regional oceanography.</p> <p>2-4. Awareness of the stakeholders increases &gt; 20% from the Project information and activities.</p>	<p>2-1a Published scientific report/journal articles.</p> <p>2-1b Presentation in the PICES annual meetings.</p> <p>2-2. Model product with certification and consumers Willingness to Pay (WTP) upon it in the regional markets in the official surveys.</p> <p>2-3. warning system with a Geographic Information System (GIS) platform.</p> <p>2-4. Responses to questionnaires in general workshops and local workshops. (Adequate questionnaires will be developed during the Project with observers.)</p>	
<p>3. Sustainable monitoring continues after the termination of the project.</p> <p>+ “POST PROJECT SUSTAINABILITY”</p>	<p>3.1. Members of partner organizations operate monitoring activities at least once a season.</p> <p>3.2. Members of partner organizations publish the status report of monitoring activities at least once a year.</p> <p>3.3. Members of partner organizations hold &gt; 2 committee meeting with PICES experts for activities and self improvement in the topic in the Project.</p> <p>3.4. Saving of actively involved stakeholders, who joined to the monitoring &gt;80% of fishing days, maintained or increased during the Project.</p>	<p>3.1. Extension officers report.</p> <p>3.2. Status report with confirmation of supervisors.</p> <p>3.3. Agenda and RD* from the meeting.</p> <p>3.4. Responses to questionnaires in the first and final general workshops. (Adequate questionnaires will be developed during the Project with observers.)</p> <p>*...Record of Discussion</p>	

Activities	Input		Preconditions
<p>1-1. Carry out monitoring activities to obtain sufficient CFP-related data/information.</p> <p>1-2. Test multiple hypotheses with the available CFP-related data/information.</p> <p>1-3. Locate and synthesize statistics or reports in CFP impact in terms of human health.</p> <p>1-4. Conduct background study in mechanisms of CFP issues with priorities with specific hypotheses.</p> <p>2-1. Describe the presence of distribution of CFP risk along with supply chains.</p> <p>2-2. Disseminate knowledge in CFP risks for Indonesian non-fisher stakeholders along supply chains.</p>	<p>PICES and MAFF side:</p> <p>1. PICES experts</p> <ul style="list-style-type: none"> <li>- Proposal(s) in the protocol and design for CFP survey</li> <li>- Smartphone based monitoring/warning system (technologies, techniques and advices for application)</li> <li>- GIS and database techniques</li> <li>- Practical social mapping methods (“EZU” methodology)</li> </ul> <p>2. Provide Software and Equipment</p> <ul style="list-style-type: none"> <li>- Photo-base sampling technologies, including new version of smartphone software (FishGIS)</li> <li>- Necessary survey devices including tablets and CFP survey toolkit</li> </ul> <p>3. Training of Indonesian Counterpart Personnel in Japan Program(s) covering:</p> <ul style="list-style-type: none"> <li>- Photo-base sampling technologies</li> <li>- GIS and database techniques</li> <li>- Practical social mapping methods (“EZU” methodology) in Japanese fields and case studies</li> <li>- Fees for traveling of the program participants*</li> </ul> <p>4. Costs</p> <ul style="list-style-type: none"> <li>- Costs for the general workshop*</li> <li>- Costs for community workshop*</li> <li>- Costs for Equipment</li> </ul> <p>*...based on specific agreement with chief adviser through the Project coordinator of Japanese side</p>	<p>Indonesian side:</p> <p>1. Counterparts in the field of:</p> <ul style="list-style-type: none"> <li>- CFP and coral ecosystem survey and analysis</li> <li>- Fisheries Sciences (esp. coastal resources)</li> <li>- Food sciences/human health</li> <li>- Socio-economic survey and analysis</li> <li>- IT</li> <li>- Technical dissemination and developmental education (e.g., extension office)</li> </ul> <p>2. Facilities and equipment</p> <ul style="list-style-type: none"> <li>- Meeting Spaces (Jakarta and Giri Island)</li> <li>- Web server (BPPT) and the sufficient Internet connections</li> <li>- Fundamental laboratory spaces for on-site research activities</li> <li>- Research vessel and its fuel</li> <li>- CFP survey toolkit</li> <li>- Fundamental experimental equipment,</li> <li>- Part of tablets, cellphone and sim card for dissemination</li> </ul> <p>3. Costs</p> <ul style="list-style-type: none"> <li>- Operation and maintenance of research vessel</li> <li>- Operation and maintenance of survey tools and devices</li> <li>- Personnel expenses of counterpart personnel</li> <li>- Agreed logistics for officers for workshops</li> <li>- Per-diem and other supports for despatched counterparts for the training program to Japan</li> </ul>	<p>Duties and responsibilities of BPPT and LIPI will not be changed.</p>
<p>3-1. Visualize measures and the process of problem solving to counterparts of target organizations and local communities in the Project.</p> <p>3-2. Monitor and provide technical assistance for financial and economic returns/uncertainties to participants (Fishers) from the Project.</p> <p>3-3. Suggest a management system for CFP risk warning with consideration in sustainability by Indonesian sectors.</p> <p>3-4. Provide technical guidance to maximize the efficiency of fishing activities with CFP monitoring.</p> <p>3-5. Provide opportunities to disseminate practical knowledge for target local community with consultation by PICES experts.</p> <p>3-6. Follow data management with related policies in Indonesia.</p>			

## Appendix 4

## Tentative Plan of Operation as of September 15/16, 2021

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