

Smartphone applications used/modified during the project (FishGIS, HydroColor)

Shion TAKEMURA (FRA, Japan)
Machi SASAKI (GFL , Japan)
Shigeharu KOUSHI (GFL , Japan)

FishGIS App (target users: local fishers)

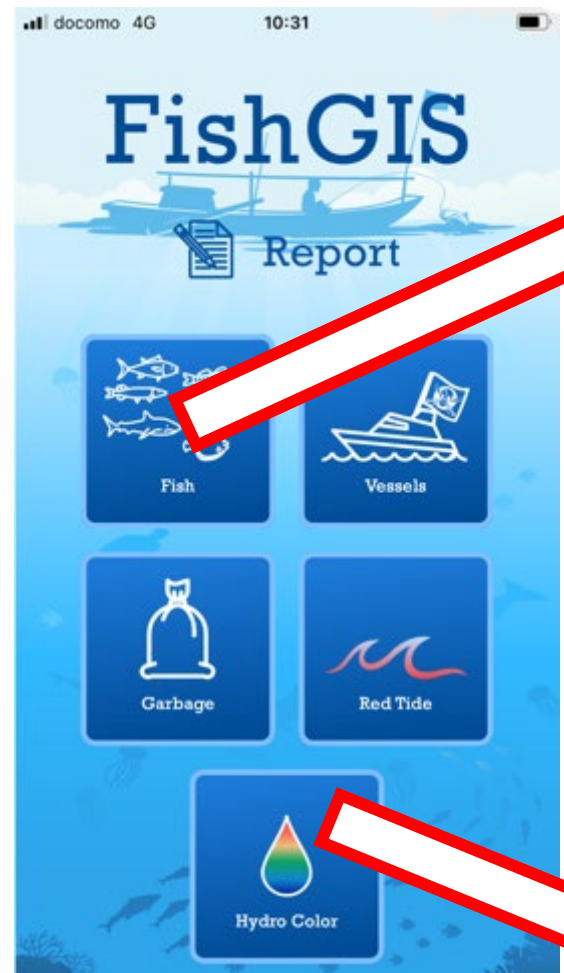
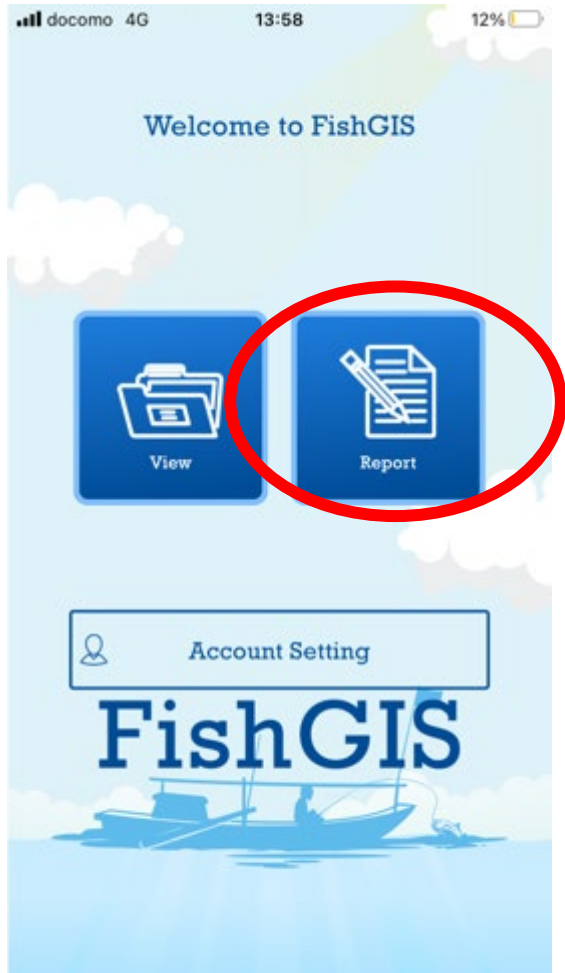
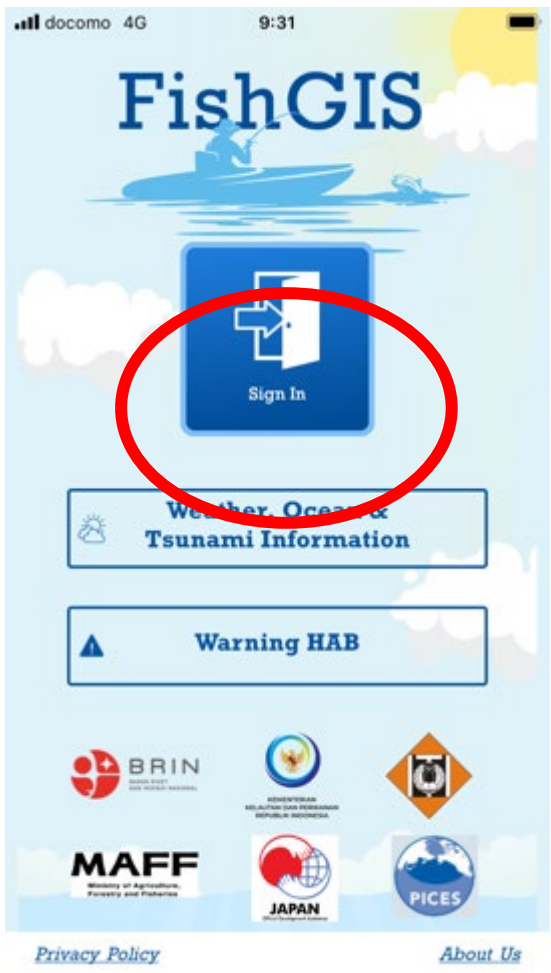
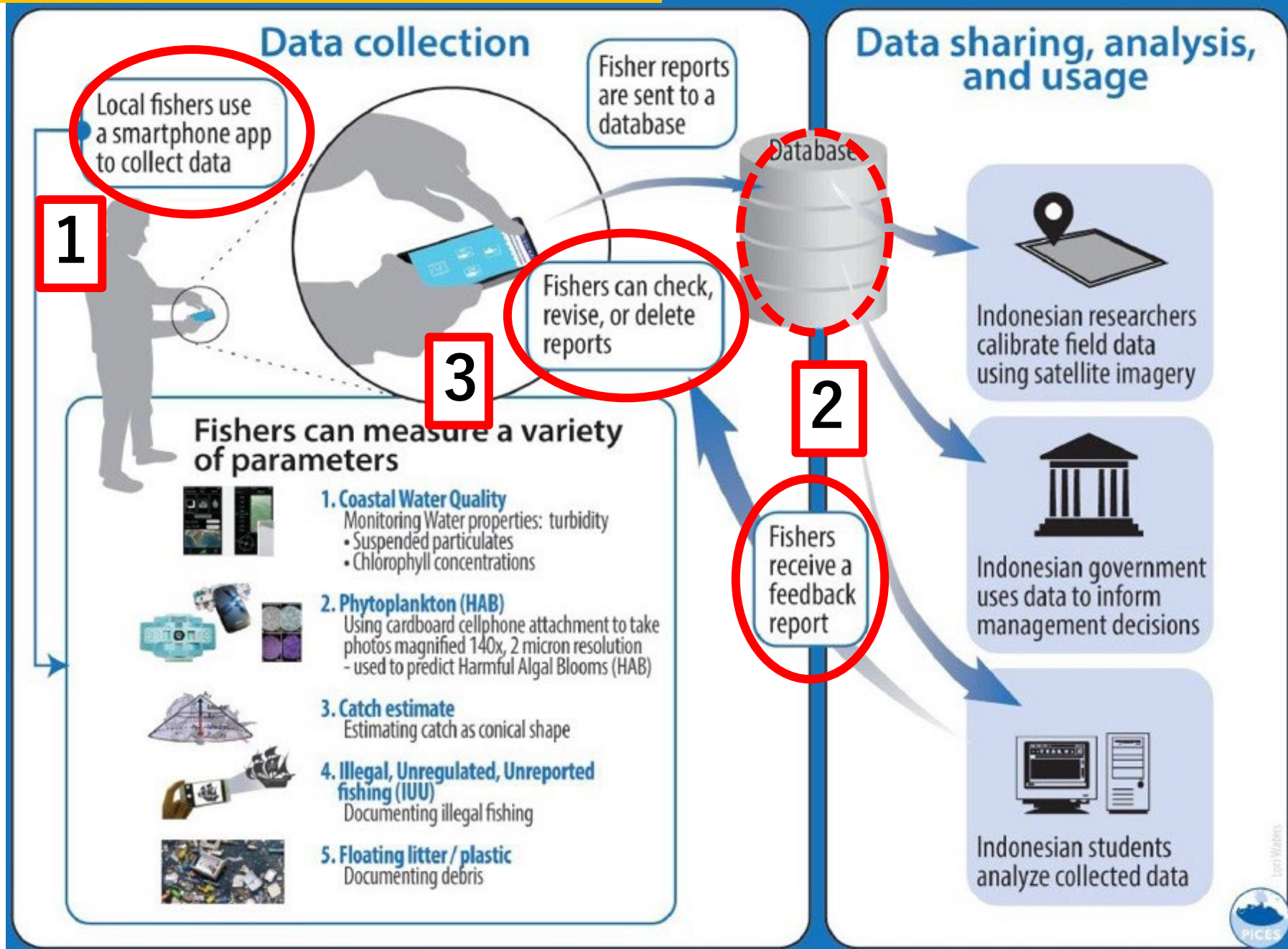


Photo of watercolor



How the ocean is changing?
→ Tools for reporting photos of ocean conditions

Three functions of FishGIS App



FishGIS can be installed from Apple Store and Google Play!!

iOS (iOS10 or later)
Search for “FishGIS” in Apple Store



Android (Android7 or later)
Search for “FishGIS” in Google Play



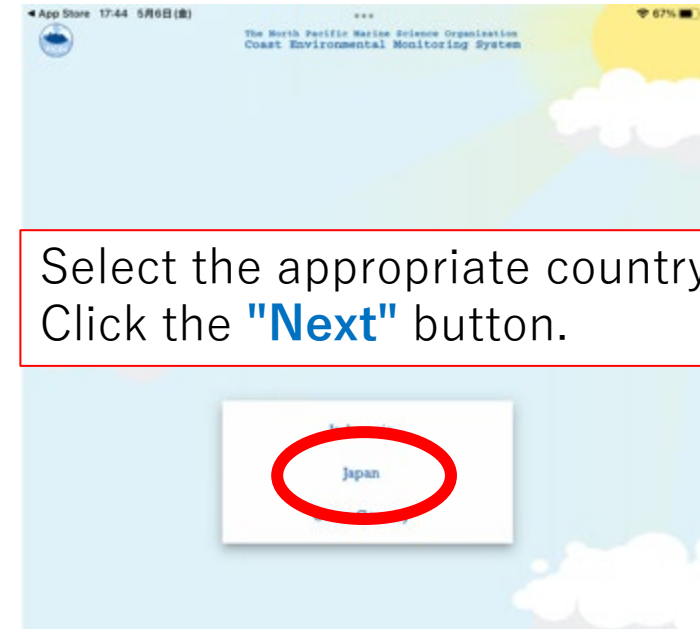
Initial setting of the application

- When the FishGIS application is launched for the first time, the initial setup screen will appear.
- Then, FishGIS application notifies to allow the use of location information, camera, and storage for the application.
- If you do not select the "Allow" button, the application will not work properly.

Step 1. Select Place/Country of Residence



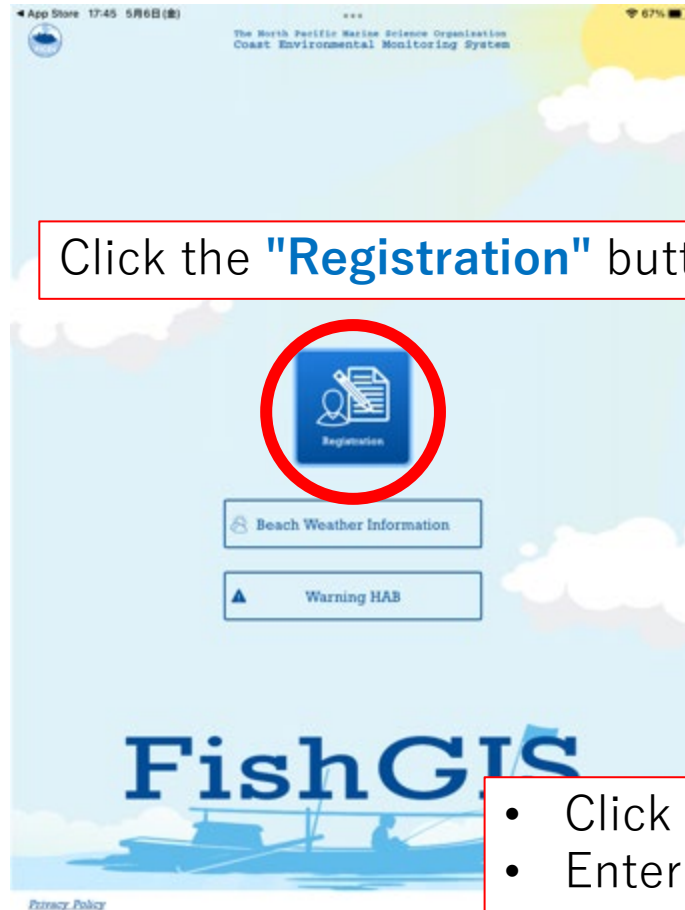
Click on the "▼ sign"



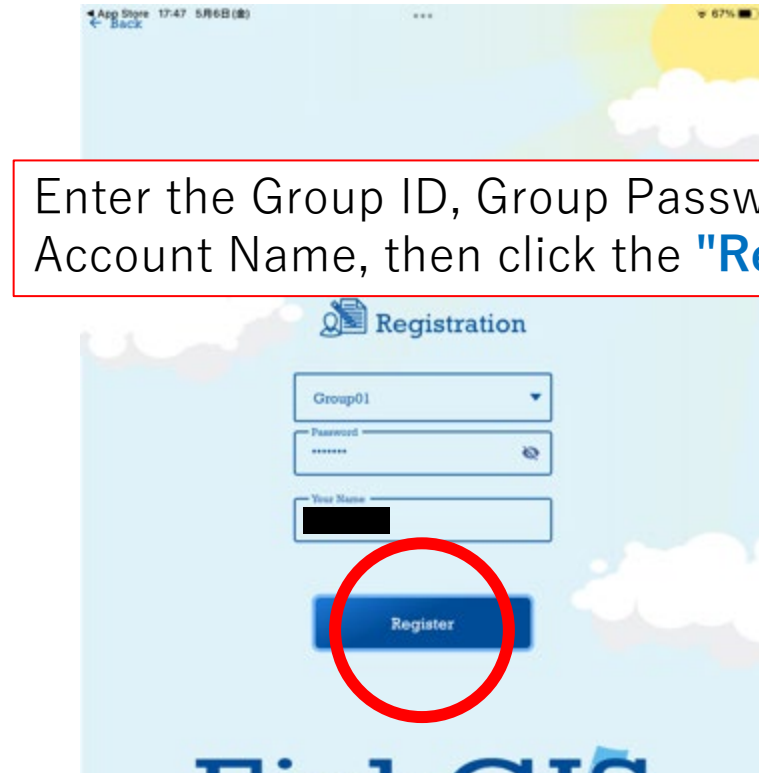
Select the appropriate country name and Click the "Next" button.

- Select **"Indonesia"** ← for Indonesian partners
→ Language is Indonesian & Data are stored on Indonesian server.
- Select **"Other Country"** ← for PICES experts
→ Language is English & Data are stored on Japanese server.
- Select **"Japan"** ← for Japanese Developers & Testers
→ Language is English & Data are stored on Japanese server.

Step 2. Registration



Click the **"Registration"** button



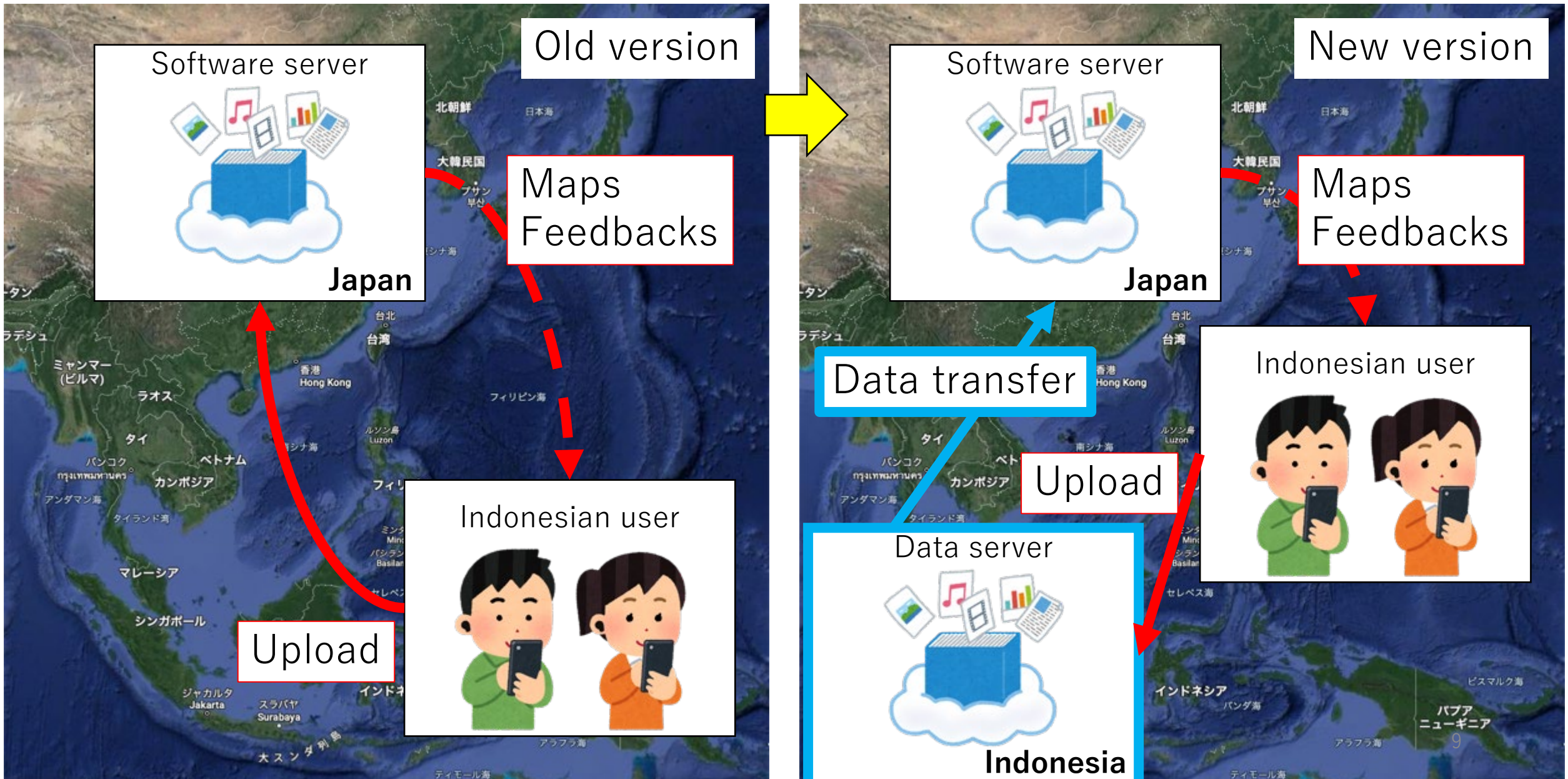
Enter the Group ID, Group Password, and Account Name, then click the **"Register"** button.

- Click the "**▼ sign**" in the upper row and select **"FishGIS"**.
- Enter **"00pices"** in the middle row (Password).
- Enter your **"account name"** in the lower row.
- Finally, click **"Register"** button.

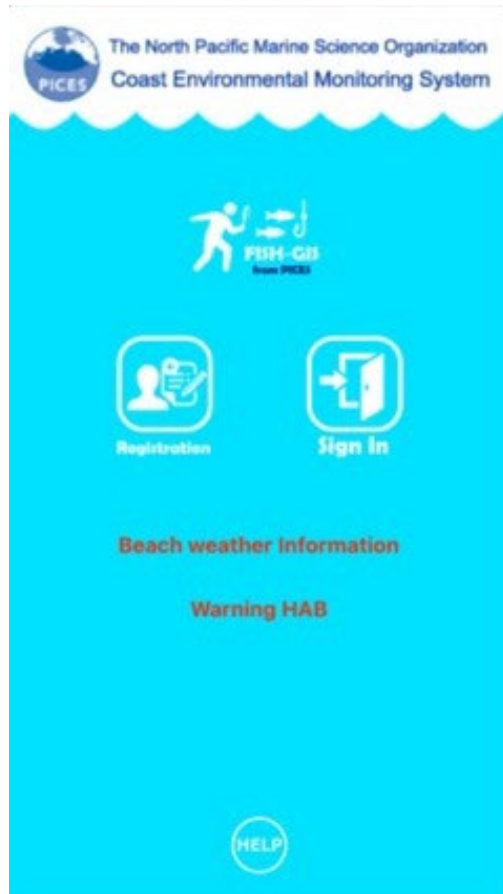
Smartphone applications used/modified during the project (FishGIS, HydroColor)

- To modify and refine of FishGIS app
- To collect data using FishGIS and HydroColor technologies

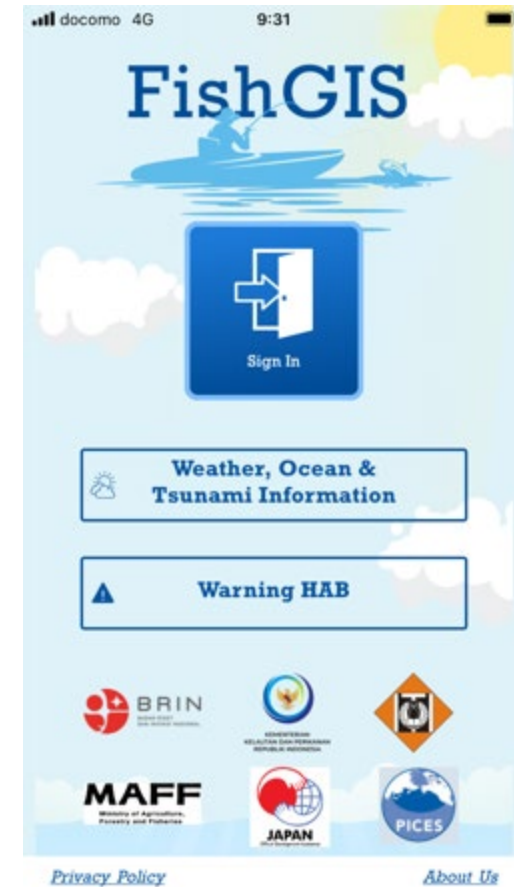
1. Compliance with ABS (Access to genetic resources and Benefit Sharing)



2. Update of User Interface (UI)



Old version



New version

- User interface have been modified more user friendly.
- New version of app is supported **iOS 10** / **Android 5.1** or later.

Old version

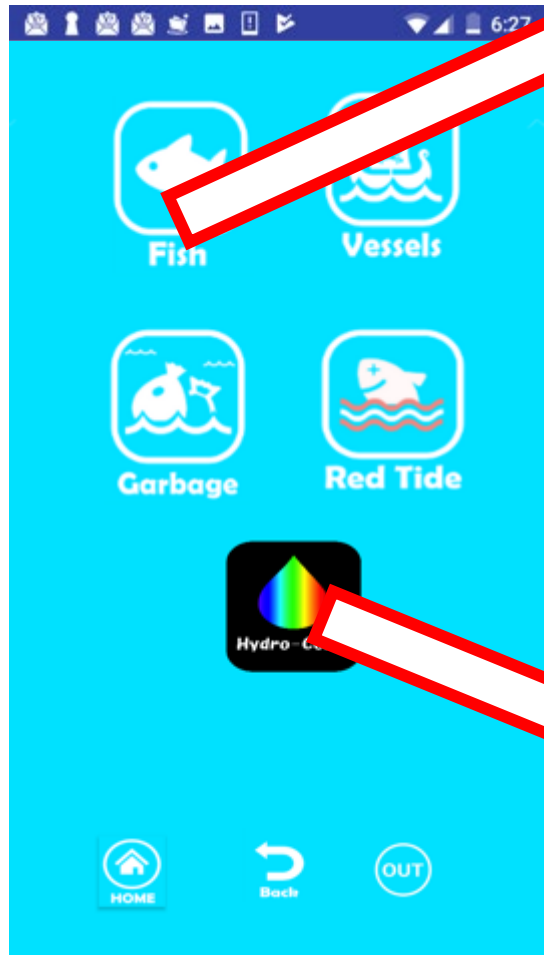
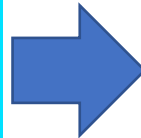
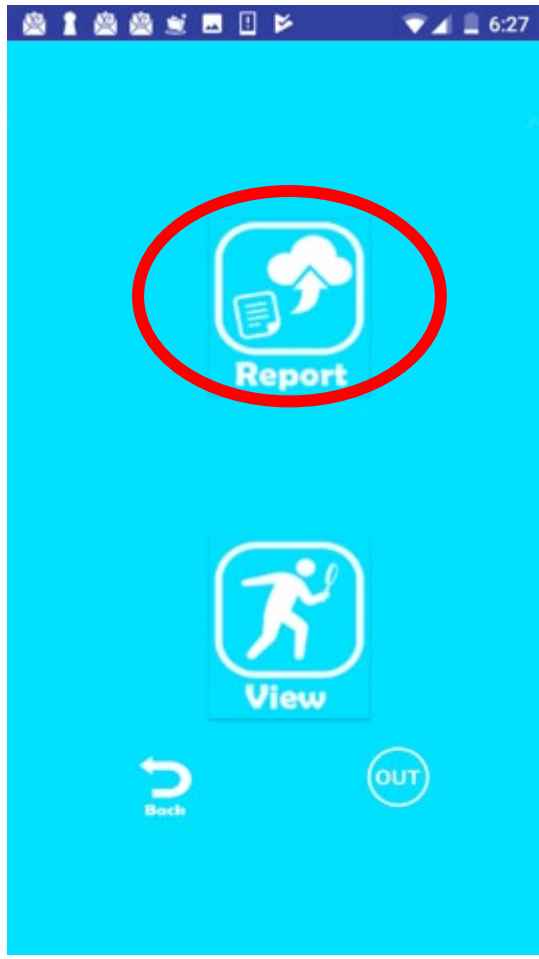
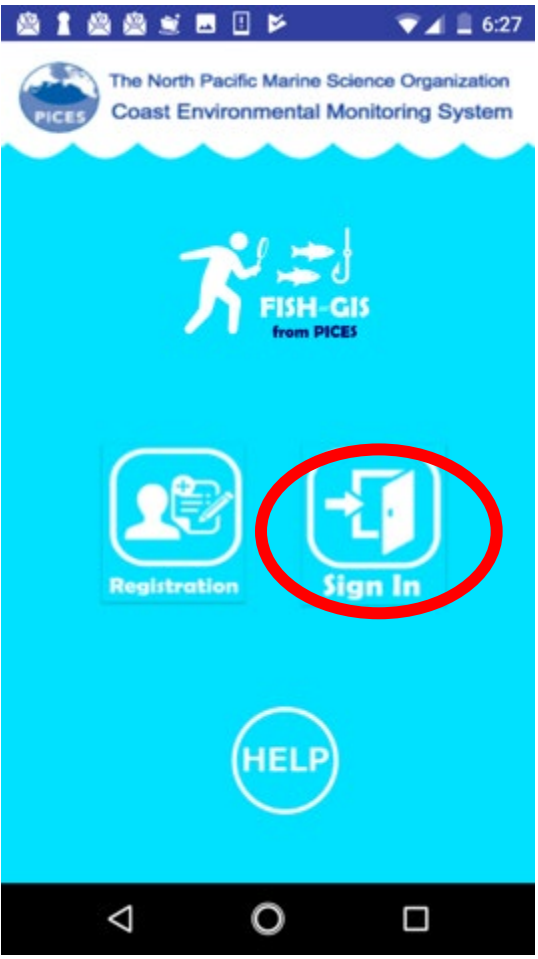
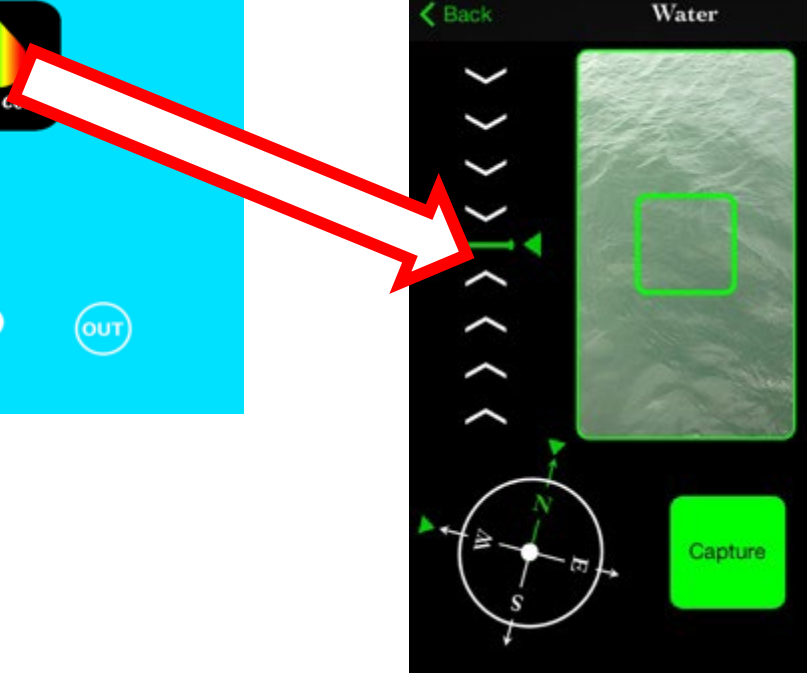


Photo of Fish

Photo of watercolor



New version

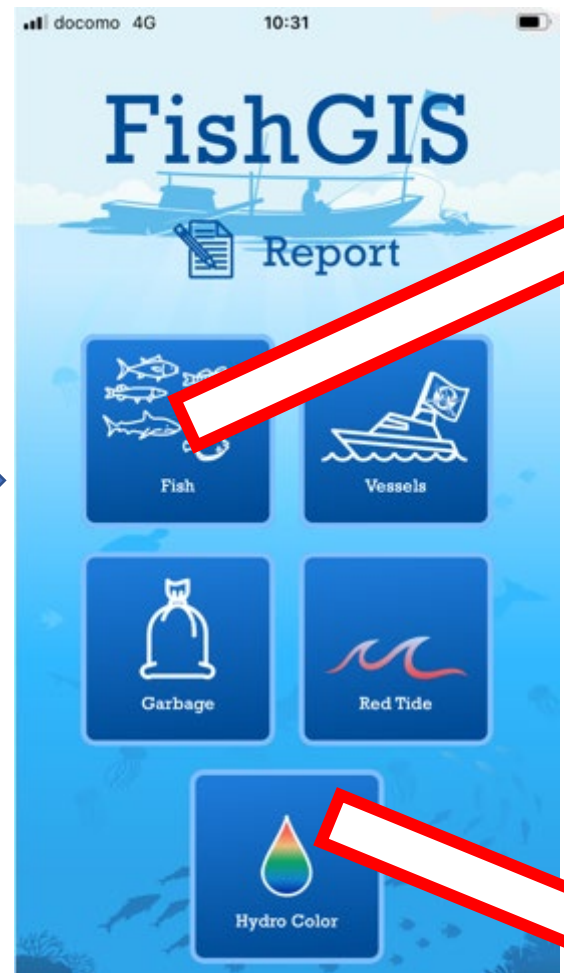
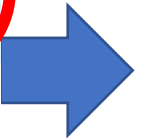
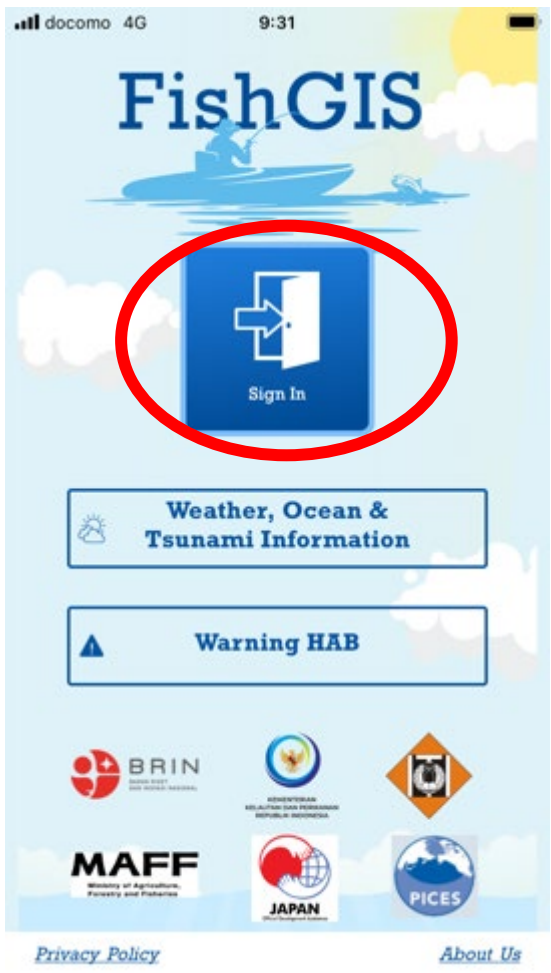
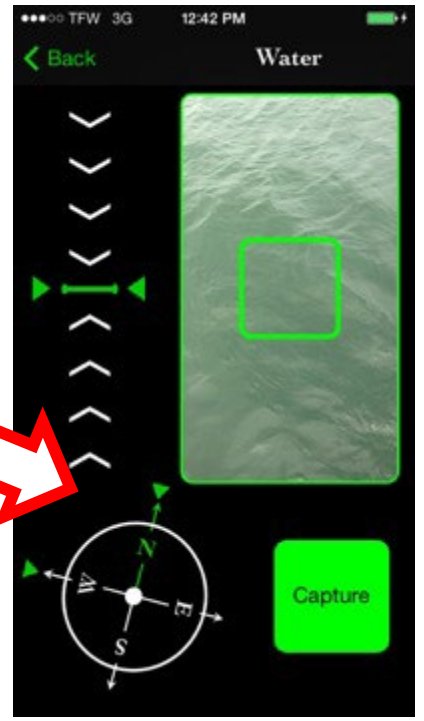
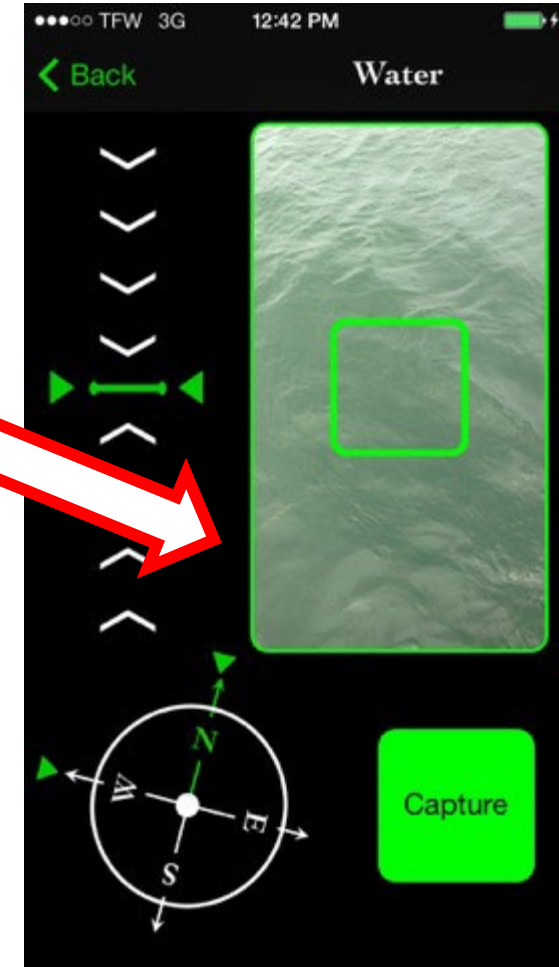
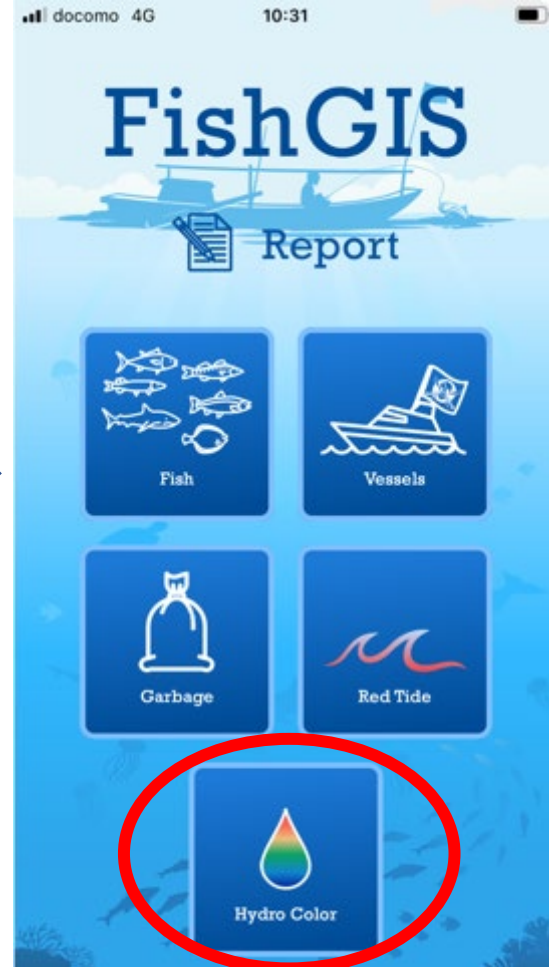


Photo of watercolor



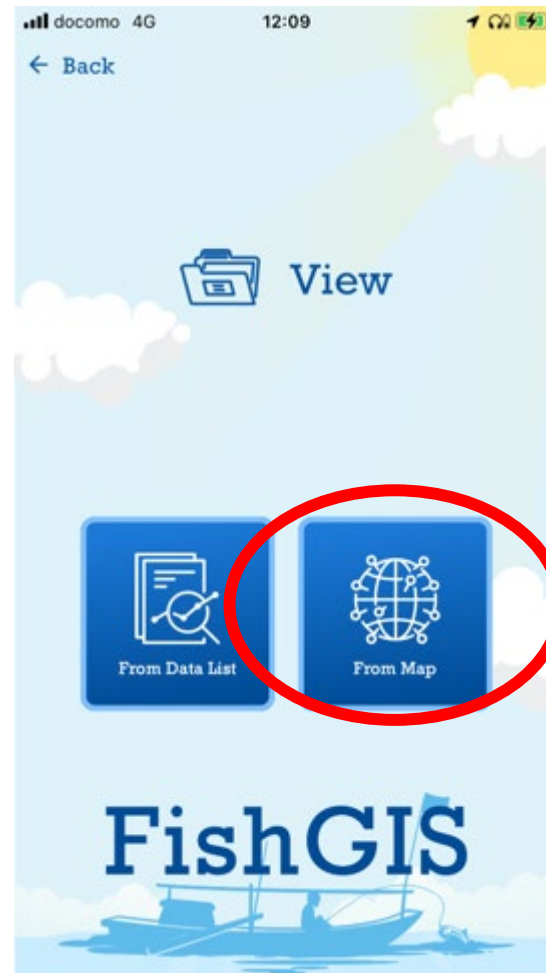
● User interface have been modified more user friendly.

3. Integrate with HydroColor



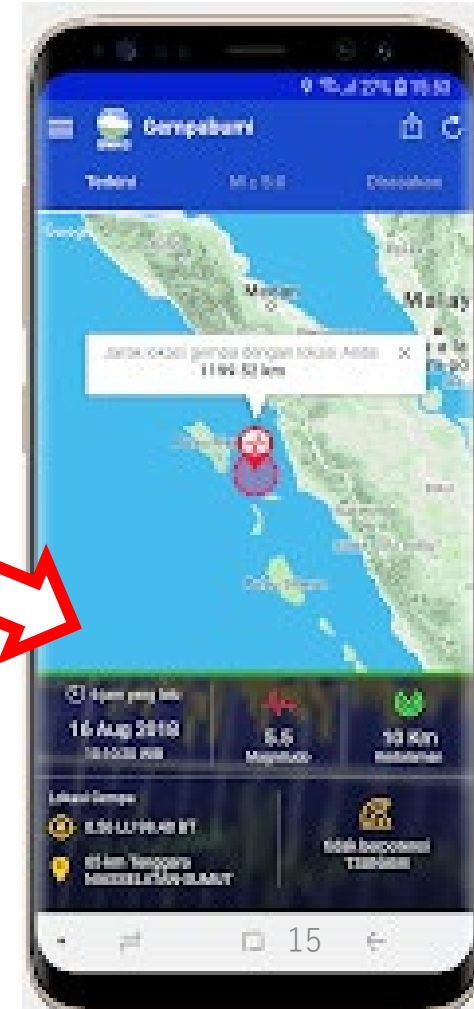
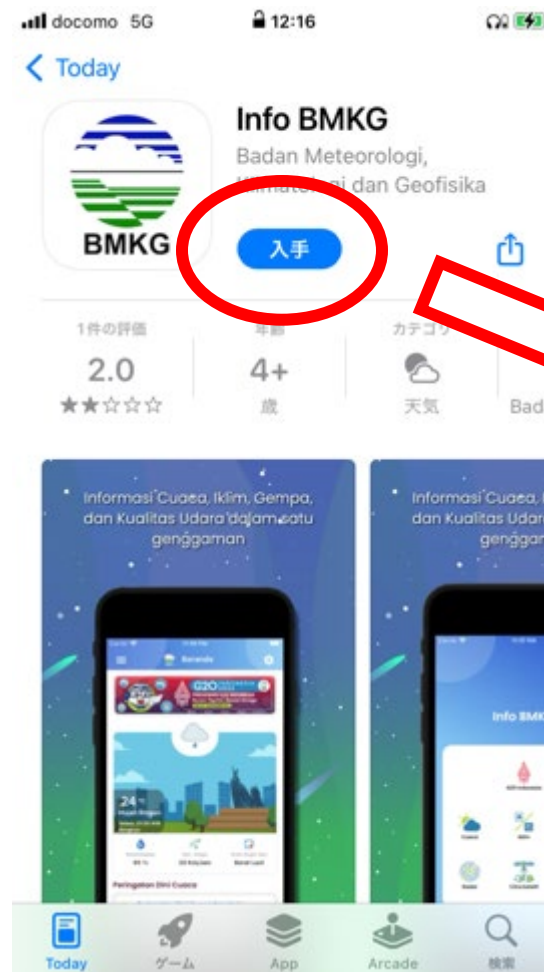
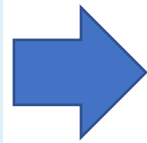
- Launch HydroColor from FishGIS
- Collect ocean color images using the HydroColor → cloud storage

3. Integrate with HydroColor (cont.)



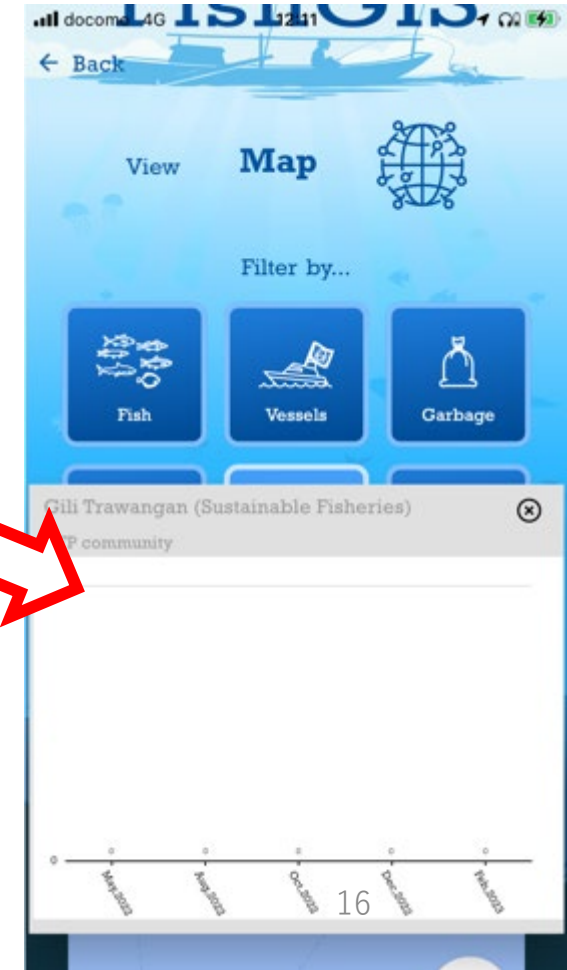
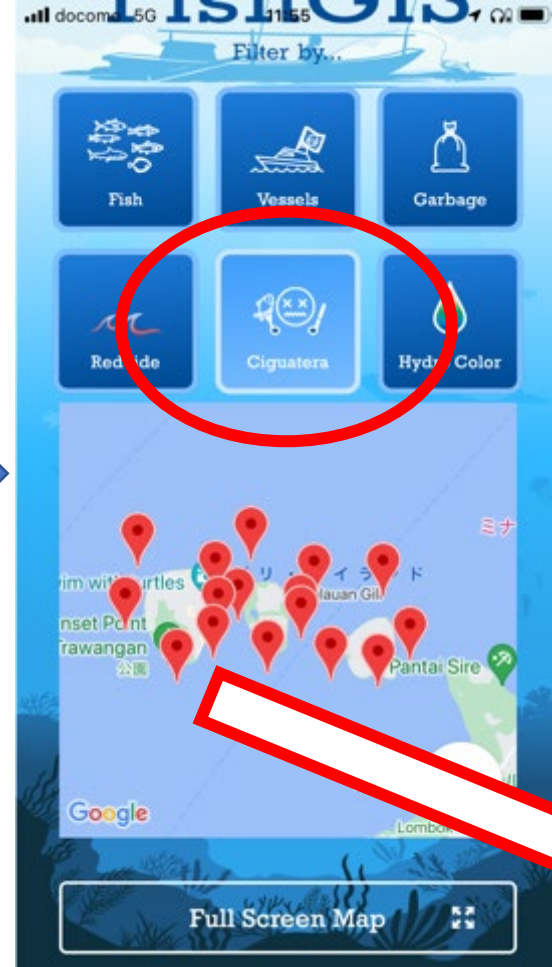
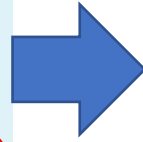
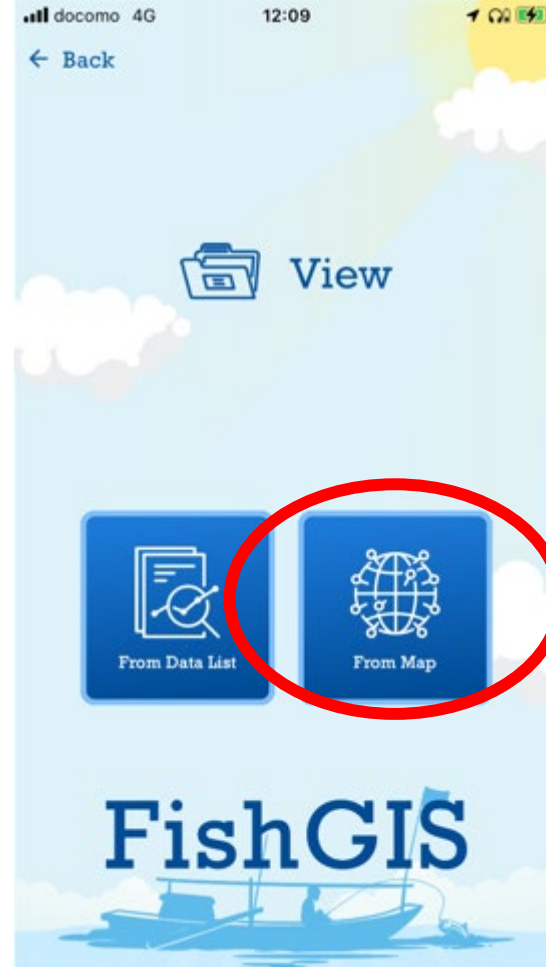
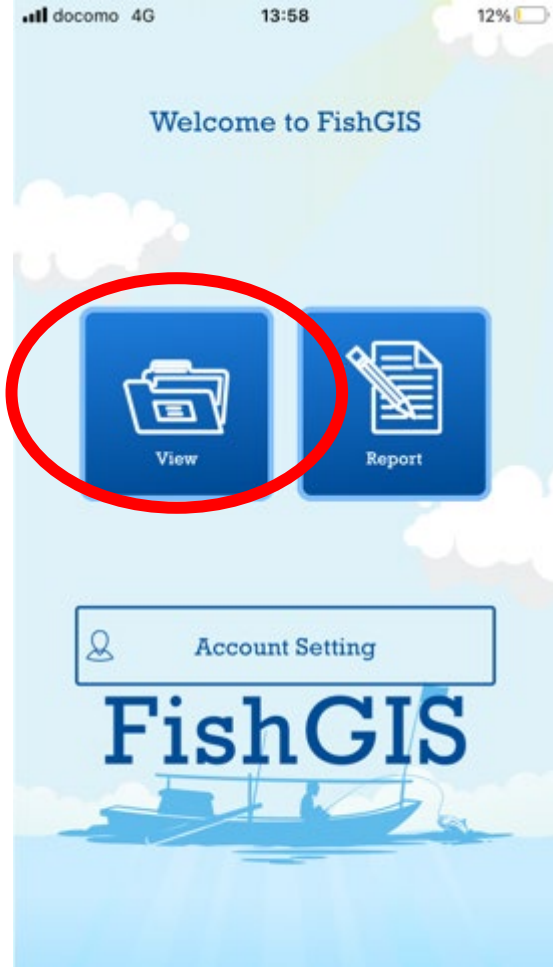
- Import of HydroColor data stored in the cloud storage
→ Major update of HydroColor requires some modifications of FishGIS

4. Integrate with Info BMKG (Tsunami information in Indonesia)



- Launch Info BMKG app from FishGIS app
- Users can get tsunami information from Info BMKG

5. Visualize CFP data



- Click a pin of the survey sites
- Ciguatera survey data are displayed as a bar chart

5. Visualize CFP data (cont.)

PICES SYSTEM

PICES SYSTEM Control Page

Report List

ReportData Download(csv)

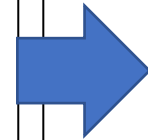
Alarm List

Ciguatera List

Import Ciguatera Data(csv)

Logout

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PICES SYSTEM

Return System Control Page

Import Data

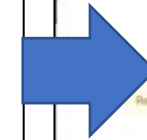
CSV Upload

Select file Upload(CSV only)

Choose a file...

Upload Cancel

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PICES SYSTEM

Return System Control Page

Ciguatera List

| seq_no | localID | local_name | latitude | longitude | checking_date | obs_value | group_name | HAB_types |
|--------|---------|--|----------|-----------|---------------|-----------|----------------------|---------------|
| 1 | 1 | Gili Trawangan (Core) | -8.35352 | 116.0236 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |
| 2 | 2 | Gili Trawangan (Utilization) | -8.33868 | 116.0265 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |
| 3 | 3 | Gili Trawangan (Harbour) | -8.3535 | 116.0455 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |
| 4 | 4 | Gili Trawangan (Rehabilitation) | -8.36012 | 116.0443 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |
| 5 | 5 | Gili Trawangan (Sustainable Fisheries) | -8.36574 | 116.0358 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |
| 6 | 6 | Gili Meno (Core) | -8.34595 | 116.0681 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |
| 7 | 7 | Gili Meno (Harbour) | -8.35293 | 116.0649 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |
| 8 | 8 | Gili Meno (Rehabilitation) | -8.35575 | 116.065 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |
| 9 | 9 | Gili Meno (Sustainable Fisheries) | -8.36373 | 116.0572 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |
| 10 | 10 | Gili Meno (Utilization) | -8.35152 | 116.0502 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |
| 11 | 11 | Gili Meno (Sustainable Fisheries) | -8.33727 | 116.0532 | 2022/5/25 | 0 | pices-maff-ciguatera | CFP community |

- Data managers can upload Ciguatera survey results (CSV file) from the control page
- Only users with the same group ID can view the data from the app

6. Manage data by FishGIS app (Control page for PC)

PICES SYSTEM

PICES SYSTEM Control Page

Report List

ReportData Download(csv)

Alarm List

Ciguatera List

Import Ciguatera Data(csv)

Logout

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Report List

Fish Vessels Garbage RedTide

Select Group

Select User


Sort by created

newest oldest

Search

| type | image | group name | user name | created_at | |
|------|-------|-------------|----------------------|------------------|--------|
| Fish | | FishGIS | kssuisan-narita | 2023/02/28 19:38 | Detail |
| Fish | | pices-maff- | Suhendar I Sachoemar | 2023/02/24 09:06 | Detail |

Return List Page



Details


Fish Name Kakap, Flatfish, Tulang Belakang

Size Meningkat

Amount Berkurang

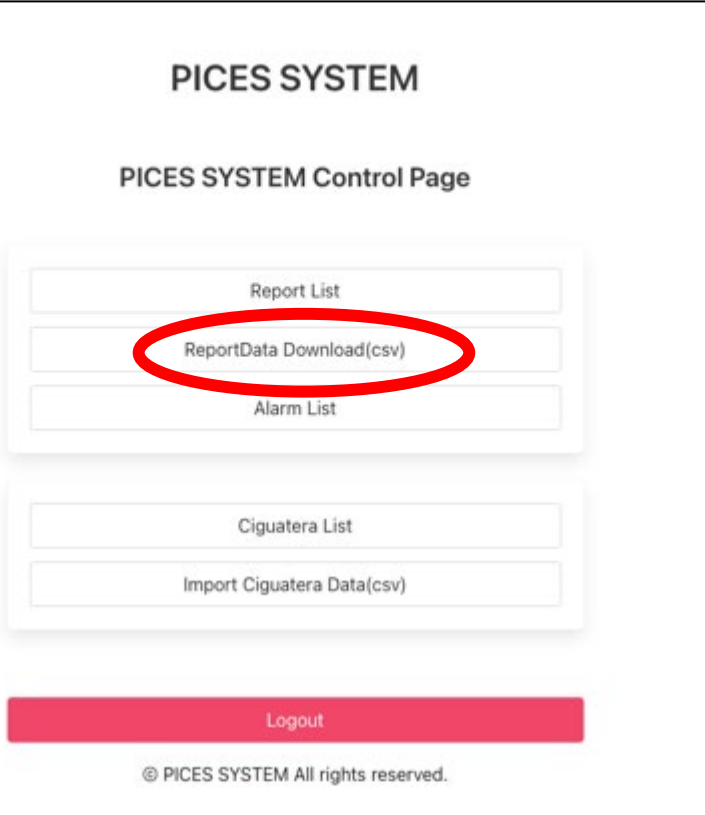
Fishing Ground ?

Map



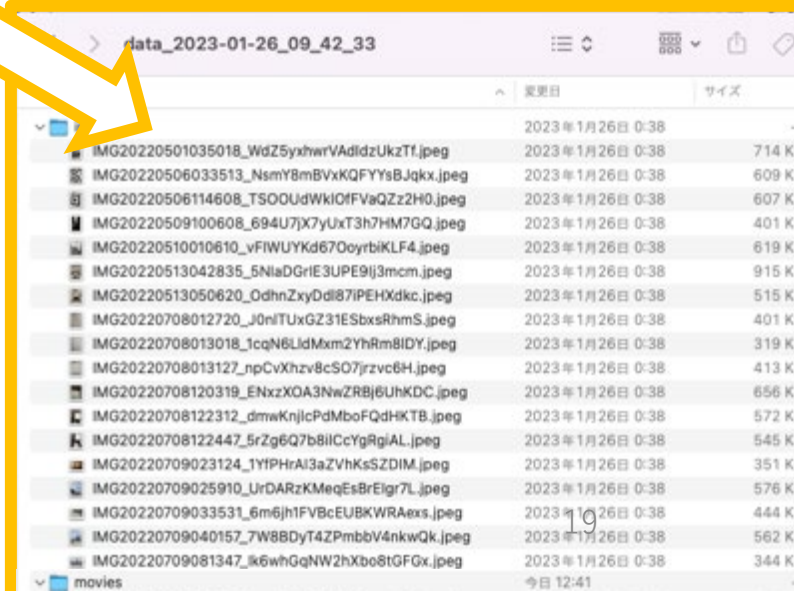
● Data managers can search and view reports and images from the control page for PC.

6. Manage data by FishGIS app (cont.)



| A | B | C | D | E | F | G | H |
|-------------|--------------|-----------|----------|---------------|---------------|-----------------------|-------|
| Reporter I | Reporter | Date | Research | Item | Item2 | Item3 | Item4 |
| 7U... | ... | 2022/5/1 | Fish | Tuna, Bonito | Increasing | Increasing | 1 |
| W... | ... | 2022/5/6 | Vessels | Pukat helada | Pukat helada? | ? | ? |
| NwYyW8lChl | shion | 2022/5/6 | Fish | Monster (unc? | ? | ? | ? |
| na1407b6IX | shiotake | 2022/5/9 | Fish | Monster (unc? | ? | ? | ? |
| GC6NUniTN | shion | 2022/5/10 | Fish | Monster (unc? | ? | ? | ? |
| CV8hSSa2pE | ssk | 2022/5/13 | Garbage | ? | Not Change | Once of week | |
| CV8hSSa2pE | ssk | 2022/5/13 | Fish | Tuna, Bonito | ? | ? | |
| SUbeR2qGPI | TEST-Miyata | 2022/7/8 | RedTide | ? | ? | ? | |
| SUbeR2qGPI | TEST-Miyata | 2022/7/8 | RedTide | ? | ? | ? | |
| Qnsoov0gz6f | kogu | 2022/7/8 | RedTide | ? | ? | ? | |
| CV8hSSa2pE | ssk | 2022/7/8 | RedTide | ? | ? | ? | |
| Qnsoov0gz6f | kogu | 2022/7/8 | Vessels | ? | ? | ? | ? |
| Qnsoov0gz6f | kogu | 2022/7/8 | RedTide | ? | ? | ? | |
| WA9WumGj | TEST-Edami | 2022/7/9 | RedTide | ? | ? | ? | |
| fCxq5iY80T | TEST-ramu | 2022/7/9 | RedTide | ? | ? | ? | |
| WA9WumGj | TEST-Edami | 2022/7/9 | RedTide | ? | ? | ? | |
| fCxq5iY80T | TEST-ramu | 2022/7/9 | RedTide | ? | ? | ? | |
| Qnsoov0gz6f | kogu | 2022/7/9 | RedTide | ? | ? | ? | |
| Qnsoov0gz6f | kogu | 2022/7/9 | RedTide | ? | ? | ? | |
| mTUFizOp9A | Suhendar I S | 2022/8/1 | Fish | Ikan lainnya | Meningkat | Tidak Beruba | 1 |
| mTUFizOp9A | Suhendar I S | 2022/8/1 | Garbage | Plastic | Meningkat | Sekali dalam seminggu | |
| cA88rkcVRHl | Mustafa Tah | 2022/8/2 | Fish | Tuna, Bonito | Tidak Beruba | Tidak Beruba | 1 |
| 8k1zrDCXbfl | shion_test | 2022/9/9 | Fish | ? | ? | ? | ? |
| 8k1zrDCXbfl | shion_test | 2022/9/9 | Fish | ? | ? | ? | ? |
| 8k1zrDCXbfl | shion_test | 2022/9/9 | Vessels | ? | ? | ? | ? |
| 8k1zrDCXbfl | shion_test | 2022/9/9 | Garbage | ? | ? | ? | |

- Data managers can download CSV data, images, and videos from the control page.
- Data managers can only download data that are allowed by login authentication.



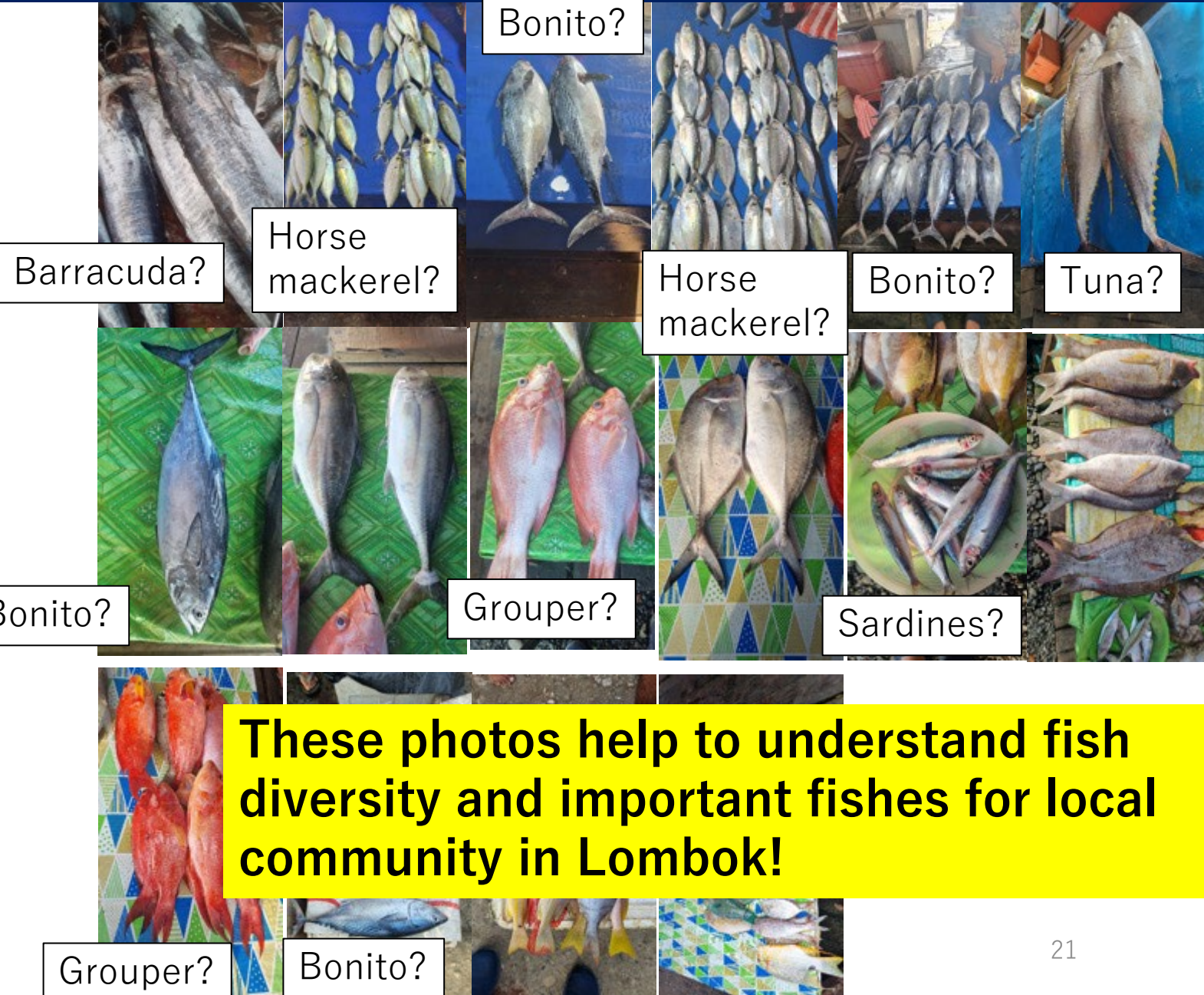
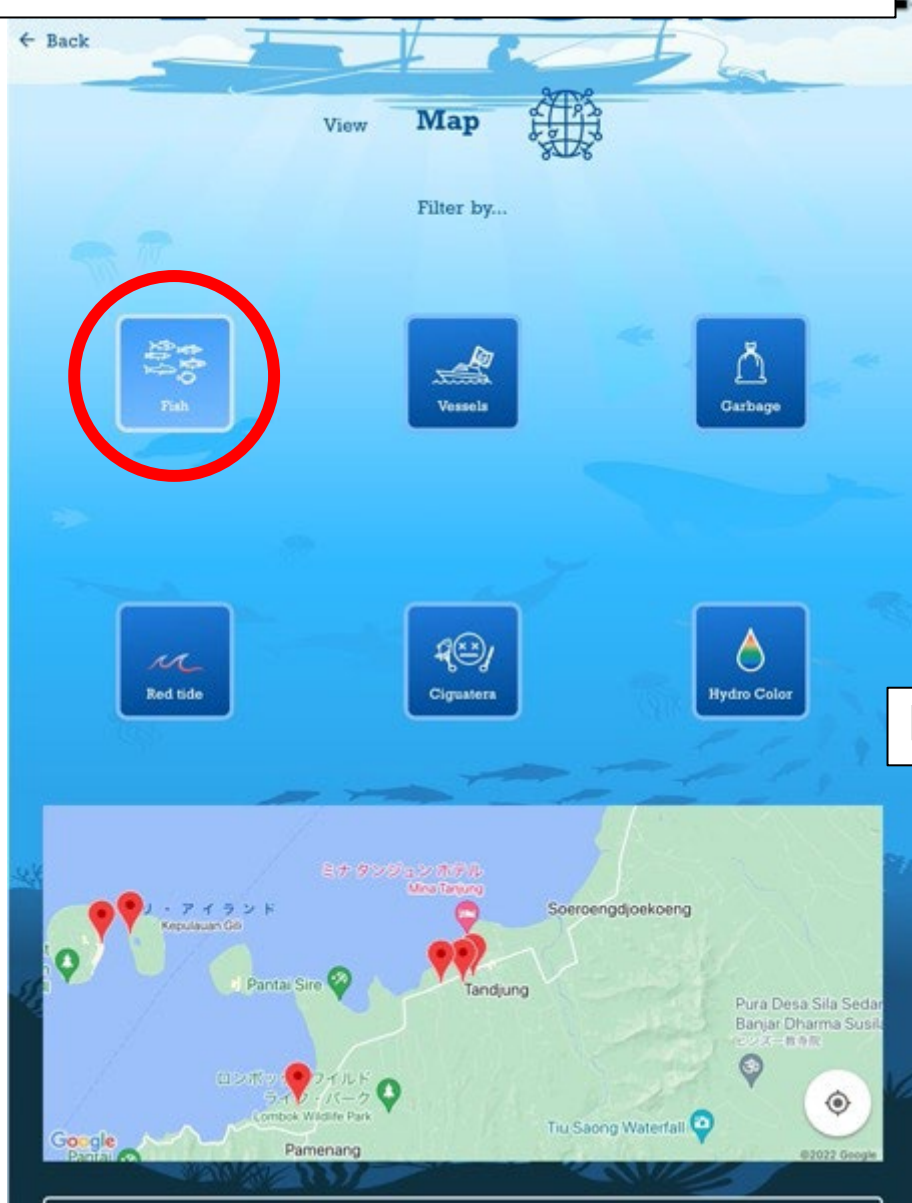
Smartphone applications used/modified during the project (FishGIS, HydroColor)

- To modify and refine of FishGIS app

- To collect data using FishGIS and HydroColor technologies

Examples of **fish photos** collected by the *FishGIS* App

Our research teams collected data.



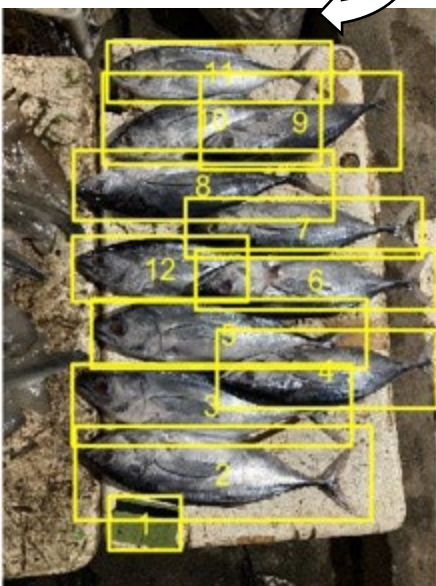
These photos help to understand fish diversity and important fishes for local community in Lombok!

Report images



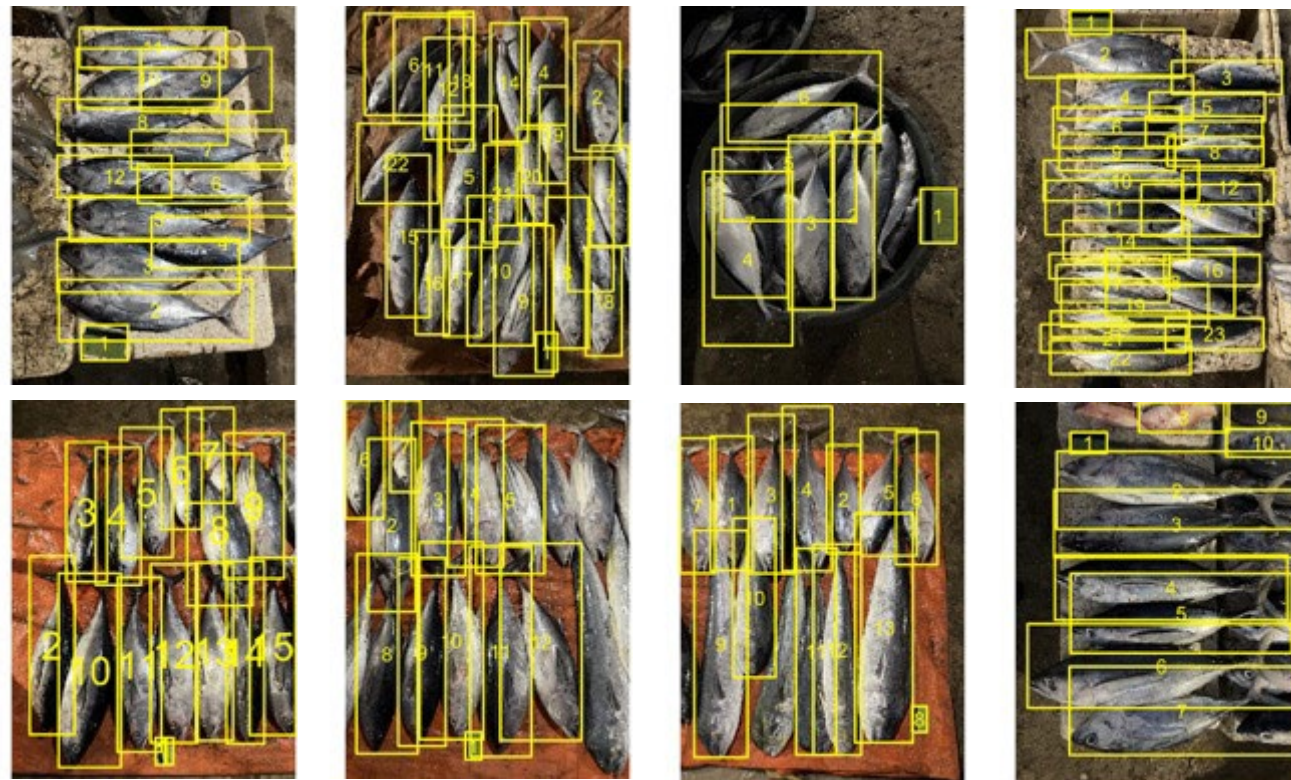
Work time per image:
less than 1 minute

Identify fish species



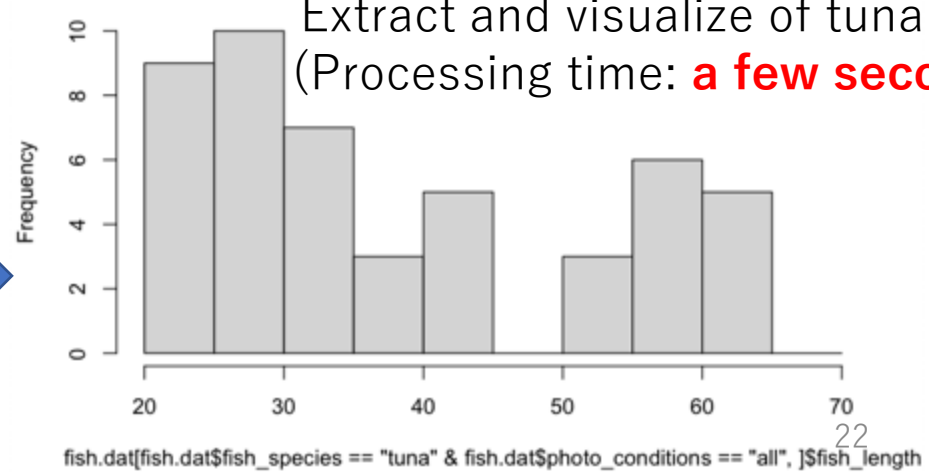
Work time per image:
about 5 ~ 10 minutes

Automatically measure body length from images (by R)



`fish.dat[fish.dat$fish_species == "tuna" & fish.dat$photo_conditions == ""]`

Extract and visualize of tuna data
(Processing time: **a few seconds**)



tuna



mahimahi



greater amberjack



mackerel scad



bonito



dogtooth tuna



snapper



double-lined fusilier



grouper



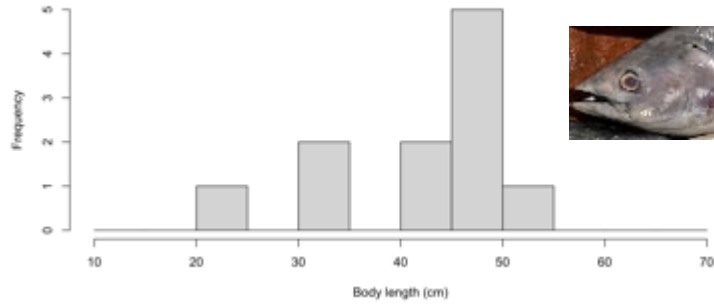
yellowtail blue snapper



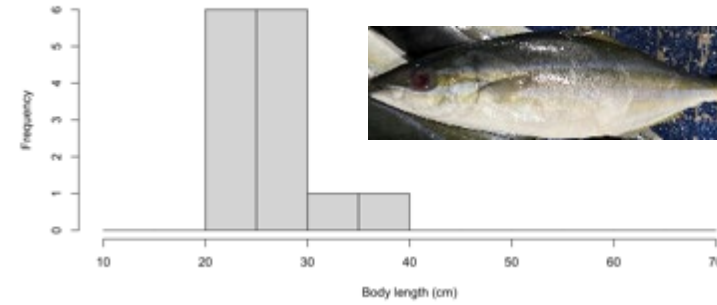
goatfish



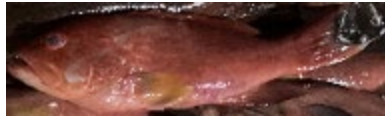
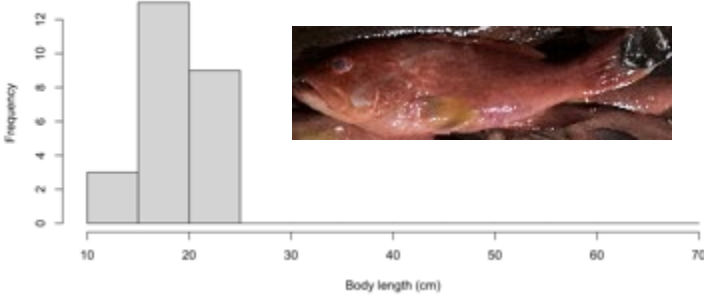
bonito



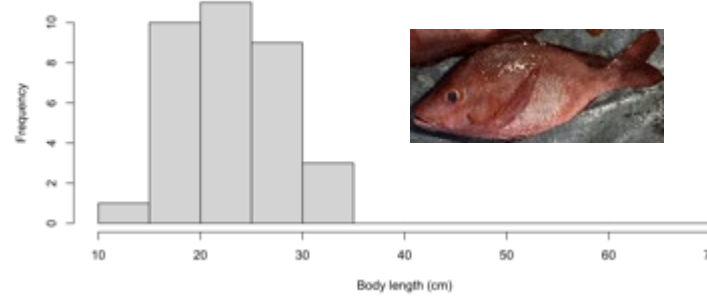
greater amberjack



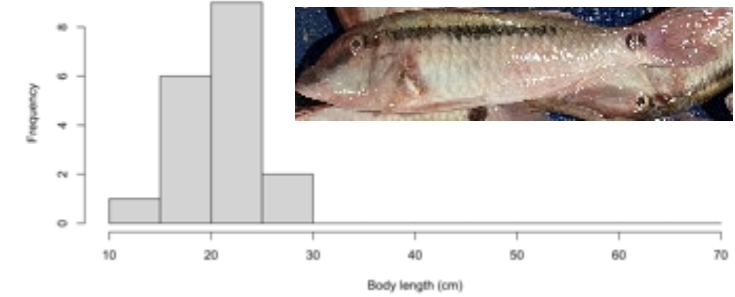
grouper



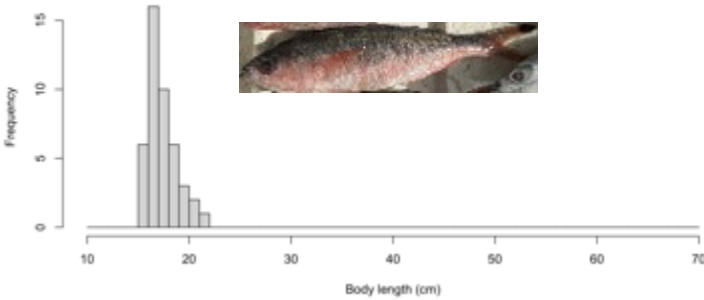
snapper



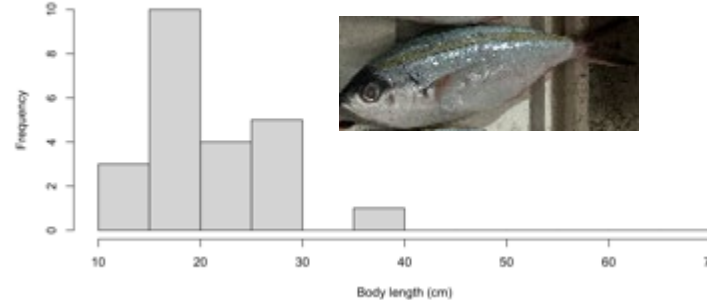
goatfish



double-lined fusilier



yellowtail blue snapper



FishGIS helps to collect basic information on fish stocks.

→ yearly and seasonal changes of composition of catch (species, size)

Examples of data collected by the *HydroColor* App

Our research teams collected data.

C

