HOKKAIDO UNIVERSITY

Title	e-対話 ： ゲームで考える海の生態系
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Description	2021年度対話の場の創造実習． 実施日：2022年2月6日10:30～12:30． 「e-対話：ゲームで考える海の生態系」で実施したオンラインで実施した海の生態系に与える人間の影響を主題にしたボードゲーム「ギョギョバトル」．
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The Rules of "GYO-GYO BATTLE"

"GYO" corresponds to a fish in Japanese, and "GYO-GYO" stands for a fishery in Japanese.

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1. Components

1.1 1 Seaboard

1 Scoreboard

1 Plankton Marker

Fish Tokens (Tuna Token etc.)

Fish Tokens (Mackerel Token, Squid Token, Crab Token, Shellfish Token etc.)

Forest Tokens

Science and Technology Tokens

1 Scoreboards*

1 Whiteboard pen*

  *Prepare them when playing this game face-to-face.

2. Overview of this game

2.1 Players / 4 people

Time / 15 ~ 20 min. required

Target Age / 7 years and over

2.2 In this game, the player is fishermen. All Players compete for earned points by catching fishes and other actions. Players must catch fishes strategically while watching the marine situation and other players' actions because marine resources are limited. After four rounds, the player with the highest points will be the winner.
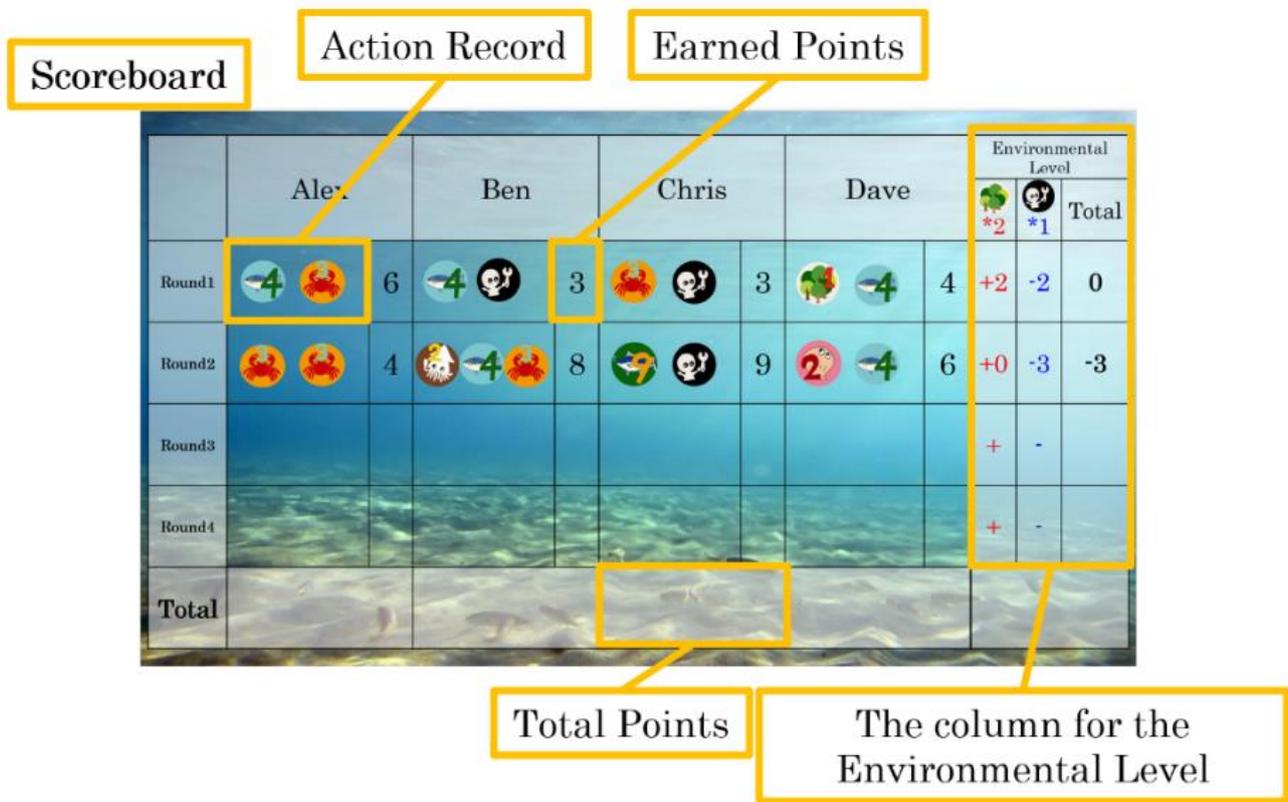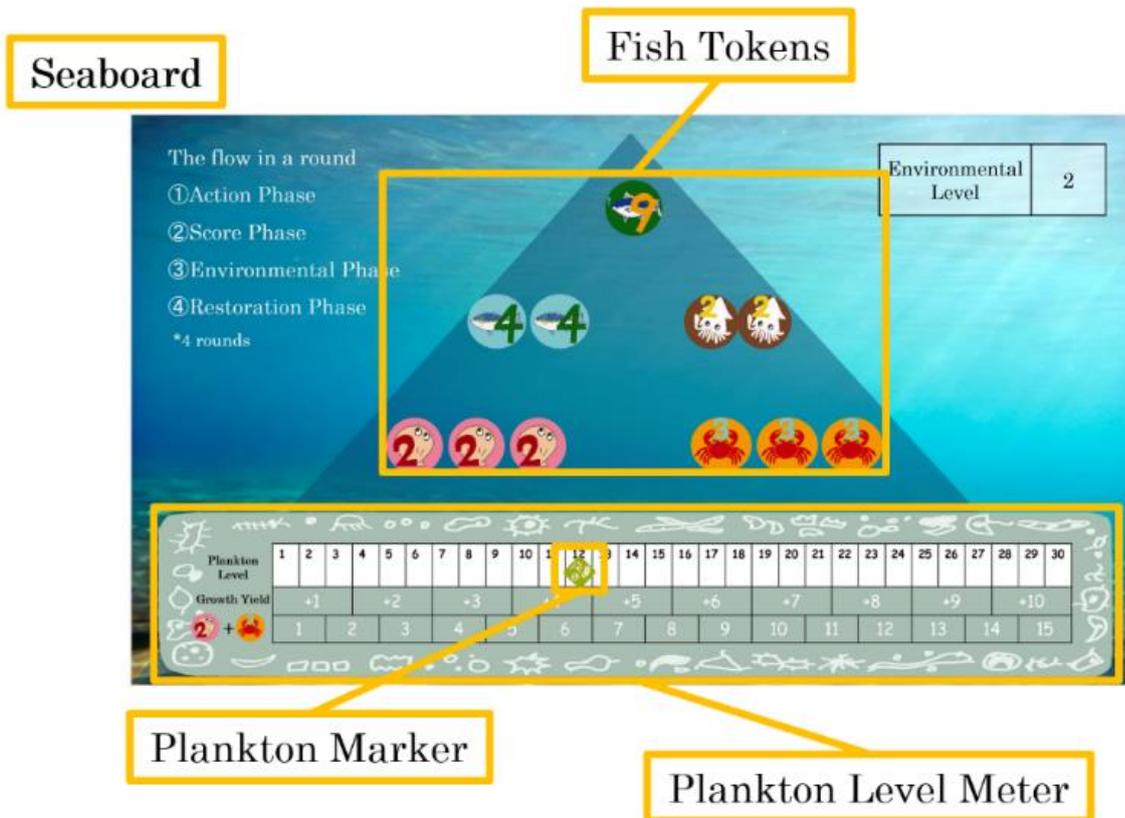
3. The name of components

Fig. 1

Fig. 2

4. Default Setting

4.1 First, put one Tuna Token at the top of the Seaboard, two Mackerel Tokens and two Squid Tokens at the middle, and two Crab Tokens and two Shellfish Tokens at the bottom of that. Second, set Plankton Maker on Level 12th of the Plankton Level Meter. Third, enter 2 for the Environmental Level. (Refer to Fig. 2)

When playing this game face-to-face, each player should take the Scoreboard and the Whiteboard pen. When playing online, do not have to do that.
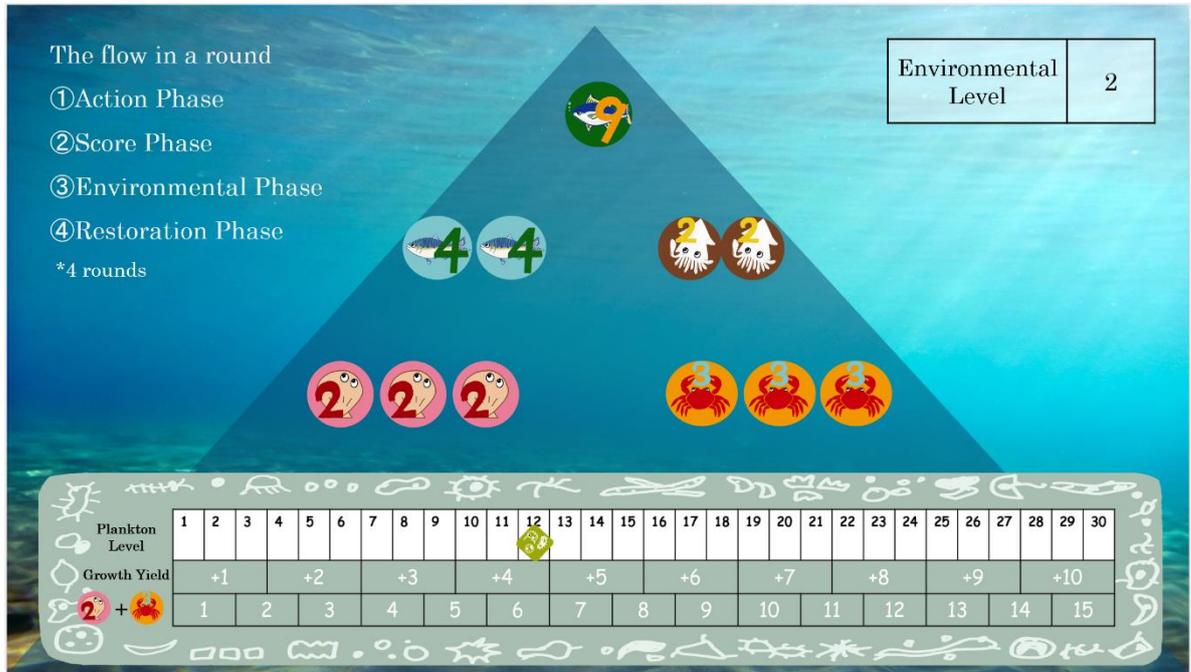

Fig. 3

5. The flow of this game

5.1 There are four phases in this game, Action Phase, Environmental Phase, Score Phase, and Restoration Phase. One round is from Action Phase to Recovery Phase and repeat four rounds. The game will end when Round 4 is finished.

5.2 <Action Phase>

5.2.1 All players should take Actions. You have two Action Points (APs) in every round, and by using APs, players can do actions any of Fishing, Tree Planting, and Development. You can select the same action two or more. However, APs that were not used in that round cannot be carried over to the next round. Once all players have made selections, present them at the same time.

5.2.2 Fishing Action

You can earn fish points by catching fishes using APs.

The kinds of fishes, required APs and fish points

Kinds of fishes	Required APs	Fish points *
Tuna	2APs	9 points
Mackerel	1AP	4 points
Squid	1AP	2 points
Crab	1AP	3 points
Shellfish	1AP	1 point

*If you try to catch more fishes than there are on the Seaboard, earned fish points will decrease. (Refer to 5.4<Score Phase> "5.3.2 What is Overfishing?")

5.2.3 Tree Planting Action

You can earn 1 point by creating Forests using 1 AP.
The forests can increase the Environmental Level by two at the Environmental Phase.

5.2.4 Development Action

You can earn 1 AP by getting Science and Technologies (S&T) using 1 AP, then this AP can be used from the next round. Since S&T affect the marine environment, the Environmental Level decrease by one at the Environmental Phase. In addition, if you utilize 1 AP with S&T in the next round, the Environmental Level decrease by one at the Environmental Phase.

5.2.5 Ex. (Refer to Fig. 3)

5.2.6 Round 1

Player A have 2 APs. He selected Mackerel by using 1 AP as the Fishing Action and got S&T by using another AP as the Development Action. (In Round 1 case, the Environmental Level decrease by one at the Environmental Phase due to getting of S&T.)

5.2.7 Round 2

He got S&T in Round 1, so he has 3 APs. He selected Mackerel and Shellfish by using 2 APs as the Fishing Action and got S&T by using another AP as the Development Action. (In Round 2 case, the Environmental Level decrease by two at the Environmental Phase due to getting and utilizing of S&T.)

5.2.8 Round 3

He got S&T in Round 1 and 2, so he has 4 APs. He selected two Mackerels and Crab by using 3 APs as the Fishing Action and created Forests by using another AP as the Tree Planting Action. (In Round 3 case, the Environmental Level decrease by two due to utilizing of S&T and increase by two due to creating forests, so the Level is not changed.)

	Alex	Ben	Chris	Dave	Environmental Level 🌳 *2	💀 *1	Total
Round1	🐟4 💀 **4**				+0	-1	**-1**
Round2	🐟4 🐟2 💀 **6**				+0	-2	**-2**
Round3	🐟4 🐟4 🦀 🌿 **12**				+2	-2	**0**
Round4					+	-	
Total	**22**						

Fig. 4

5.3 <Score Phase>

5.3.1 Based on the result of each player's selections, enter total earned points of fishes and forests for the Scoreboard. However, fish points will decrease when "Overfishing" happens. After entering the points, remove only for the fishes selected by all players from the Seaboard. (If the number of fishes selected by all players is more than that of fishes on the Seaboard, that of fishes on the Seaboard will be zero.)

5.3.2 What is "Overfishing"?
In the Action Phase, if the number of fishes selected by some players is more than that of fishes on the Seaboard, "Overfishing" will happen. When "Overfishing" happens, earned fish points will decrease. The calculation method is follows.
[fish points] * [the number of fishes on the Seaboard] / [the number of fishes selected] (Round down) = [earned fish points]

5.3.3 Ex.
There are two Mackerels, two Squids, three Crabs, and three Shellfishes on the Seaboard. Alex, Ben, Chris, and Dave selected as below.
  Alex {Mackerel and Squid}, Ben {Mackerel and Crab}
  Chris {Mackerel and Mackerel}, Dave {Squid and Crab}
In this case, although there are only two Mackerels on the Seaboard, four Mackerels are selected, therefore Mackerel points will be changed according to the above formula.
[Mackerel points] * [the number of Mackerels on the Seaboard] / [the number of Mackerels selected] = 4 * 2 / 4 = 2 [earned Mackerel points]
So, earned fish points of each player are below.
  Alex earned 4 points {2 + 2}, Ben earned 5 points {2 + 3}
  Chris earned 4 points {2 + 2}, Dave earned 5 points {2 + 3}

5.4 <Environmental Phase>

5.4.1 Based on the result of each player's selections, change the Environmental Level. (There is the column for the Environmental Level on the Scoreboard.) The Environmental Level will be changed by the number of Forests, the Development Action, and APs with S&T. The calculation method is follows.
[The number of Forests created by all players in that round] * 2 will be increased.
[That of the Development Action taken by all players in that round] * 1 will be decreased.
[That of APs with S&T using by all players in that round] * 1 will be decreased.
Depending on this result, change the Environmental Level at the top right of the Seaboard and after, change the Plankton Level according to the Environmental Level. It will never decrease below Level 1st. (When the Plankton Level become Level -8th, it will be corrected Level 1st.)

5.4.2 **Ex.** (Refer to Fig. 4)

5.4.3 Round1: The number of Forests is zero, and that of the Development Action is two, so the Environmental Level will decrease by two.

5.4.4 Round2: The number of Forests is one, that of the Development Action is one, and that of APs with S&T is two, so the Environmental Level will decrease by one.

	Alex		Ben		Chris		Dave		Environmental Level		
									🌳 *2	💀 *1	Total
Round1	🐟4 🦑2	6	🟢9	9	🔴2 🔧	2	🐟4 💀	4	+0	-2	-2
Round2	🔴2 🔴2	4	🐟4 💀🔧	4	🦑2 🔴2 🌳4	5	🐟4 🟢9	13	+2	-3	-1
Round3									+	-	
Round4									+	-	
Total											

Fig. 5

5.5 <Restoration Phase>

5.5.1 Restore the fishes and planktons on the Seaboard.

5.5.2 Increase the Plankton Level on the Plankton Level Meter according to the Growth Yield.

5.5.3 Double all the fishes on the Seaboard.

5.5.4 Restore the fishes that removed from the Seaboard the same number of the fishes as the default setting. (Like one Tuna, two Mackerels, two Squids, three Crabs, and three Shellfishes) At this time, the Plankton Level will decrease by two by each type of the restored fish. The Plankton Level will never decrease below Level 1st.
Ex. When the Plankton Level is Level 2nd, if you restore the Tuna, Mackerels, and Crabs to the default setting, it will be Level 1st.

5.5.5 Adjust the number of fishes on the Seaboard, and that is determined according to the Plankton Level. The maximum number of Crabs + Shellfishes is shown in the Plankton Level Meter. If that is exceeded, you must change Crabs + Shellfishes to the maximum number. Therefore, remove them from the fishes with higher points (Crabs > Shellfishes) one by one to the maximum number.

5.5.6 The maximum number of Mackerels + Squids is the number of Crabs + Shellfishes. If that is exceeded, remove them from the fishes with higher points (Mackerels > Squids) one by one to the maximum number.

5.5.7 The maximum number of Tunas is [the total number of other fishes / 6 (Round down)] If that is exceeded, remove them to the maximum number.

6. The end of this game

6.1 When the Restoration Phase of Round 4 is finished, this game is end. Sum earned points of each round and enter the total points on the Scoreboard. The player with the highest points is the winner. If there are players with the same points, the player with the fewer Development Action during the four round is winner. If that is still not settle, share the victory.