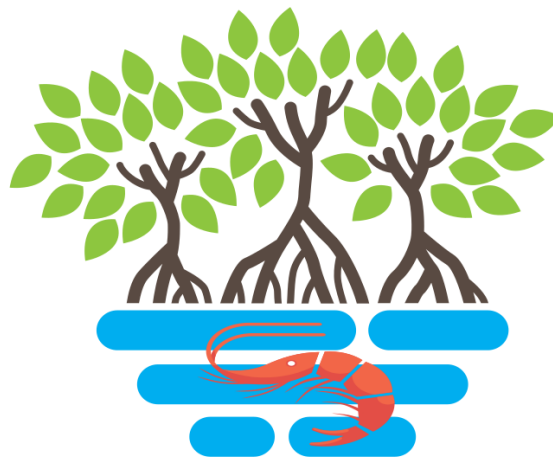


Ahli Bakau: a game to understand the issues of the conservation of mangroves in Sulawesi

AHLI BAKAU



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AHLI BAKAU

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The Tool

1. Context



A mangrove is a coastal forest of mangrove trees that marks the transition from sea to land in tropical and intertropical regions. It is located in the tidal swing zone and mangrove trees live with their feet in the water. Mangroves have a protective role against storm surges or tsunamis, and are also the home of many animal and plant species. It is also a food and wood resource for humans. In Sulawesi, as in many other islands of the Indonesian archipelago, the surface and distribution of mangroves on the coast is

decreasing at a rapid rate in favour of constructions, beaches or aquaculture establishments. This fragmentation has a significant impact on the ecosystem and its hydrodynamics.

2. The game Ahli Bakau

The game "Ahli Bakau", the "mangrove experts" in Indonesian language, is intended to an audience of 8-18 years old people and was inspired by the game Sierra Springs developed by Luis Garcia Barrios. It aims to help people understand how to reconcile the economic development needed by coastal populations with mangrove conservation.

The first objective of the game is to discover the interactions between players for the management of human activities on the coastal area of an island.



The second objective is to understand the impact of resource and space use on the ecosystem.

The game is played around a board that represents an island covered with mangrove without initial human occupation. 4 players will then have to manage establishing on this island some activities of sustainable production and exploitation of the mangrove without damaging its main ecological functions.

***Cooperation between players is necessary
but will they be able to put it in place?***

3. Terms of use

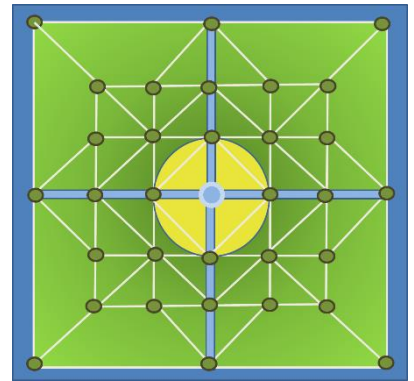
- Mention the designers, Nicolas Becu and Estelle Laubez
- Inform the designers of the undertaking of a workshop
- Transmit feedback on the implementation of the game

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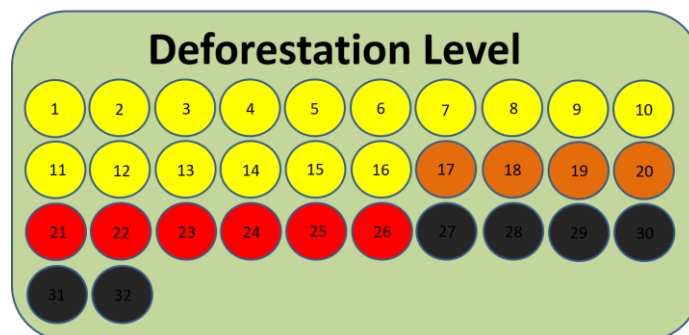
Equipment and process

1. Equipment

- **1 Gameboard:** A freshwater spring located on an island. 4 water streams connecting the spring to the sea and delimiting 4 mangrove area (one at each corner of the gameboard). 5 sites per area and 3 sites per stream, linked to each other. (Format 1mX1m)



- **1 Board of Level of Deforestation:**
 - 1 to 16: mangroves undergo moderate cut, habitat remains functional (yellow colour)
 - 17 to 21: mangroves are severely cut; habitat is no longer functional; species are disappearing (orange colour)
 - 22 to 26: habitat disappears; only a few scattered trees survive; the situation is irreversible (red colour)
 - 27 à 32: mangroves have totally vanished; the game is lost (brown colour)



- **« Land Use » token**
 - Mangrove (A) (0 point)
 - Bivalve collection (B) (1 point)
 - Extensive shrimp farming (C) (2 points)
 - Intensive shrimp farming (D) (3 points)



Note: D tokens involve the creation of urbanization with the establishment of fixed structures for intensive shrimp farming. There is no turning back once the structures are installed. The A, B and C tokens are round in shape; there are no fixed structures; activities can change.

2. Workshop duration

- Setting the equipment: 10 minutes
- Explaining the game: 10 minutes
- Duration of a game play: 1h10 i.e. around 20-30minutes for each round
- Debriefing: 40 minutes

3. Participants

- 1 facilitator
- 4 to 8 players college level (12-14 years old)

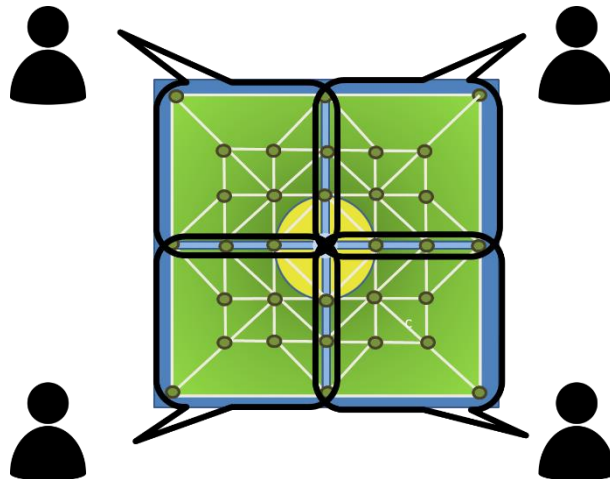
4. Playing the game Ahli Bakau

Objective of the game: To discover player interactions for the management of human activities on the coastal area of an island. To understand the consequences and impacts of resource use and space occupation.

Organisation of Players

- 1 participant to count points and control the rules of the game
- 4 participants manage the 4 mangrove areas, one per area

The participant at the top left has access only to the green area locations in the corner at the top left of the board (reserved access). The locations along the streams are accessible only to players bordering the stream (first come, first served).



Rules of the game

Install the deforestation level board and the game board on the table. At first all sites must be covered with mangrove tokens. Afterwards the participants settle around the plateau to start exploiting the mangroves.

- **Round 1: Competing (20 minutes)**

Objective: the first player with 13 points has won.

At the beginning of the game, the mangrove is present on all sites. In each turn, each player makes a choice of occupation of the territory (Chosen B or C). D can only be placed in place of C.

- Deforestation is occurring when the C and D activities are developed. When activity B is developed, the mangrove is preserved, token A is placed above token B;
- It is forbidden to develop two D activities on adjoining sites (same line);
- It is forbidden to develop more than two shrimp farming activities (C and D combined) on the same stream and on sites located near the source;
- If there are more than two mangrove-free sites on the river: there is erosion of the area, all shrimp farming activities disappear on the stream and adjacent sites (linked to the sites of the stream);
- To re-exploit a site that has been lost, we replace B + mangrove (A);
- If there are more than two farms near the source, there is pollution at the source: all activities disappear. The game is lost for all players;
- When a person has placed an intensive shrimp farm (D), it is irreversible, the constructions are fixed.

- **Round 2: Co-operating**

Objective: All players must get 13 points, otherwise all lose the game. The game is played in less than 20 minutes. Players must not degrade more than 16 mangroves (deforestation level board).

There is no round of play, all players play at the same time (unlike in Round 1).

All intensive farms (D) placed in this round are fixed for the rounds 2 and 3 (rounds 2 and 3 are played in continuity).

- Same limiting rules as before;
- Consultation is necessary to place intensive shrimp farming;
- Activities B, C and D can be directly placed;
- Activities B and C can be changed during the game.

- **Round 3: Innovating (optional)**

At the beginning of the game, the mangrove (A) is present on all sites. New tokens are available in this third round.

Objective: In this round, the cost of living has increased, the first player who gets 15 points has won.

New tokens:

- Mangrove plantation - growth stage 1 (P1=0pt)
- Mangrove plantation - growth stage 2 (P2=0pt)
- Replanted mangrove and net fishing (E=4pts).



There is a difference here between the natural mangrove (A) in which the collection of bivalves (B) is practiced, and the replanted mangrove (P1 or P2) which may have fewer species, wider spaced trees..., in which net fishing activities (E) are undertaken. A replanted mangrove token (P1 or P2) is only applicable on sites on which "extensive shrimp farming" tokens (C) are already placed. Once the P1 token is positioned on a site, if no risks occur, it will turn into P2. On the next round, if no risks, it is transformed into a replanted mangrove token with net fishing (E) which has a value of 4 points.

- The number of "Replanted Mangrove with net fishing" (E) is limited to 2 per area.

Mangrove plantation growth and natural hazards:

When the player in turn plays, if he has P1 or P2 on his plot, he must roll two dices:

For a P1 token:

- If the sum of the two dice is > 9: P1 is swept away due to erosion (and / or pollution) created by extensive farming of adjoining sites -> P1 is replaced by C in the next round (during one round the location is empty)
- If the sum of the two dice is <=9: the mangrove growth continues and P1 is replaced by P2

For a P2 token:

- If the sum of the two dice is > 11: P2 is taken away because of the erosion (and / or pollution) created by intensive farming of adjoining sites -> P2 is replaced by C in the next round (during a round the location is empty)
- If the sum of the two dice is <=11: the mangrove is well established which ensures its stability (not vulnerable to hazards) and allows the development of net fishing -> P2 token is replaced by E

5. Debriefing

- In a nutshell, express a feeling that the game has given you?
- How to manage the environment: Have you seen a difference between the competing and the co-operating rounds?
- What can you deduce about the function of mangrove habitat?
- What comparisons can you make with the reality in your territory?
- What are the benefits of preserving the environment?
- What could you do to improve the condition of mangroves?