

Rules of the game – ComComp

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ComComp an extension of Rehab

ComComp (Community Compensation) is a role-playing game revolving around the management of a renewable forests with Payments for Ecosystem Services (PES) schemes. The goal of the game is to explore the interactions between players and strategies that the players in the different roles adopt. In general, ComComp may be used as a tool to support learning of different stakeholders on management, sustainability and conservation, especially, regarding PES schemes.






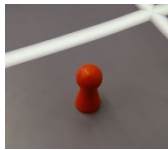

ComComp builds on the Rehab Game developed within the Companion Modeling community (see <https://www.commod.org/en/models/rehab> for more details). Lino Saam developed the ComComp extension in his master thesis at the professorship [Planning of Landscape and Urban Systems PLUS](#) (ETH Zürich). He was supported for the game development by the group [ForDev](#) at ETH Zürich and for the case study by Esther Mwangi (Principal Scientist & Hub Leader) at [CIFOR](#).

This document is a standardized game protocol based on the standard Rehab protocol developed by ForDev that can be used in different sites with different players. Such a standardized protocol facilitates comparisons between sites or between different sessions in the same site.

Introduction to the game

ComComp is introduced as a game of PES managed (mangrove) forest in a landscape. All rules are displayed to the players at the beginning of the game. The goal of each role is only displayed to the corresponding player with an information card. The players are allowed to ask and answers questions to the facilitator and to their fellow players.

Tokens explanation

20 harvesters + 2 Park ranger to be distributed amongst the participants	Non-harvesting tracer	Harvestable wood (none, 1, 2 or 3 lev- els) token	fish indicating new-born ba- bies	Penalty pawn in case of star- vation	Money token
		 or 			

Picture source: Rehab standard protocol (2015) developed by ForDev.

The landscape (board)

The landscape is a grid divided in 20 cells. Each cell is identical to each other except that for the level of wood. Cells can have:

- No wood
- 1 wood
- 2 wood
- 3 wood

Initial Setup

The initial board configuration should look as follow, numbers indicating the wood levels on each cell. Each cell is marked with a specific number, going from 1 to 20.

1	1	1	0	1
1	0	2	3	2
1	2	1	2	0
0	3	1	0	1

Total 23 wood to start the game.

Roles

There are three kinds of roles: **3 harvesters, 2 fishers and 2 park rangers**. If more players than households want to play players team up to control a household.

Harvesters

The harvesters are grouped to households consisting of 4 tokens. They are controlled by one player.

Objectives:

- The harvesters' aim is to collect wood tokens as an extra income to sustain their household as good as they can and avoid hunger and exodus

Actions

- Allocate harvester tokens to cell to collect wood tokens
- Talk to other players
- Trade resources with other players
- Receive 4 money tokens from other income sources.

Fishers

The fishers are grouped to households consisting of 4 tokens. They are controlled by one player.

Objectives:

- The fishers aim is to increase to amount of juvenile fish in the forest.
- The fishers aim is to collect wood tokens as an extra income to sustain their household as good as they can and avoid hunger and exodus

Actions

- Allocate fishermen tokens to cell to collect wood tokens
- Talk to other players
- Trade resources with other players
- Receive 4 money tokens from fishing income. The income from fishing can be increased through settling in of juvenile fish in the forest. When there are 6 juvenile fish settle, they receive 5 money tokens. When there are 12 juvenile fish settle, they receive 6 money tokens.

Park Rangers

Objectives:

- Sustainably manage the landscape
 - Increase the level of wood in the landscape
 - Increase the amount of fish
- Look after the welfare of the community

Actions:

- Talk to other players
- Indicate restricted area on up to 7 cells
- Pick a card from the PES pile every round for the requirements for receiving compensation
 - Monitor landscape: wood level, fish reproduction
 - Report Monitoring
 - Calculate compensation from PES
 - Take compensation if they meet the requirements
 - Distribute compensation accordingly

Dynamics/Rules (Updating the landscape)

Fish

Cells with 2 or 3 units of *wood* represent a suitable nesting habitat for the juvenile *fish*. The breeding success depends upon the disturbance created by the *Harvesters/Fishermen*. Any presence on the nesting cell prevents hatching (breeding = 0). In the absence of *Harvester/Fishermen* on the cell, the success of hatching depends on the proportion of neighbouring cells occupied by *Harvesters/Fishermen*: above 50% (breeding = 0), between 20% and 50% (breeding = 1), or below 20% (breeding = 2).

At the end of each round, the game master first indicates the number of newborn fish based on the following table:

Configuration	Nb of empty cells around	Nb of harvested cells around	Nb of newborn fish

8-neighbours	8	0	2
	7	1	2
	6	2	1
	5	3	1
5-neighbours	5	0	2
	4	1	2
	3	2	1
3-neighbours	3	0	2
	2	1	1

Wood

Harvested wood tokens are given to the players, cell by cell, and at the same time tree regeneration or non-harvesting tracer are placed.

Rules in a nutshell:

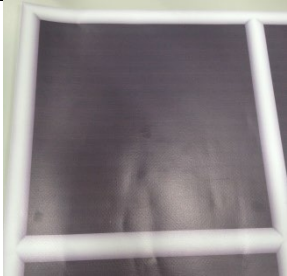
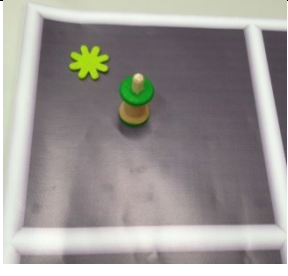
Wood regrows one level every round, when the cell was harvested the round before and this round nobody harvested it. When it is not harvested for three rounds, the wood level starts to deplete by one level every round. The not harvested rounds are indicated with non-harvested tracer (green flowers).

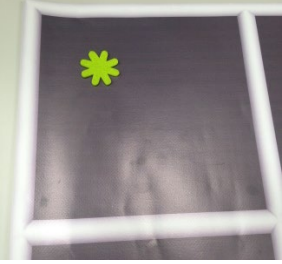
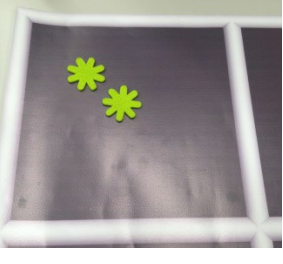
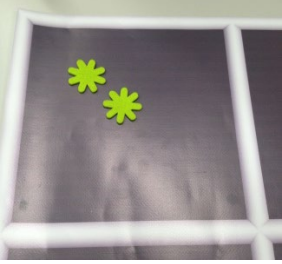
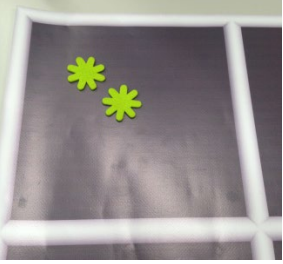
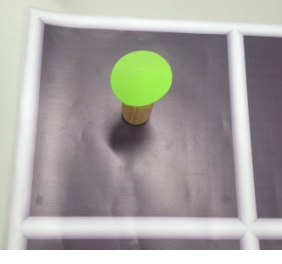
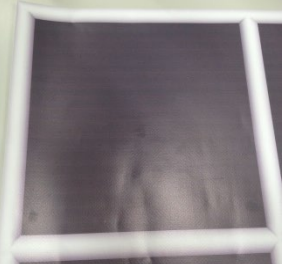
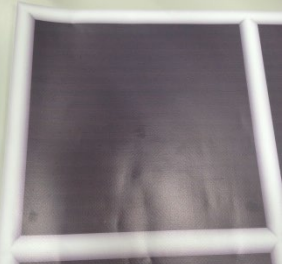
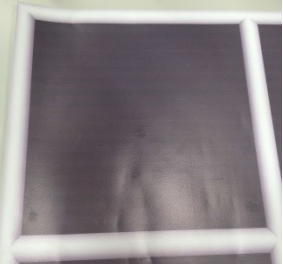
If there is one harvester in a cell, it regrows to the same level.

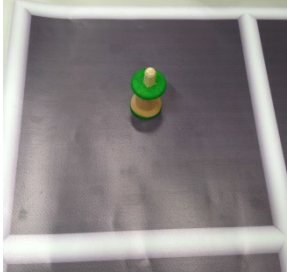
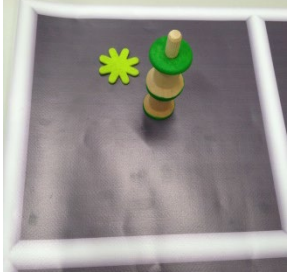
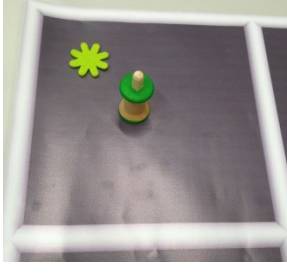
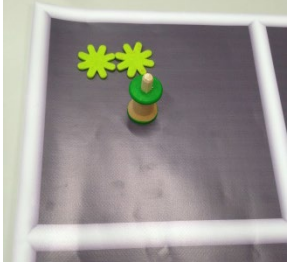
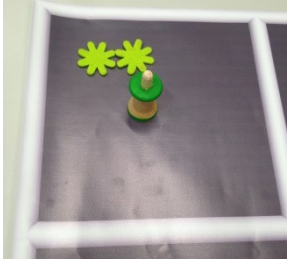
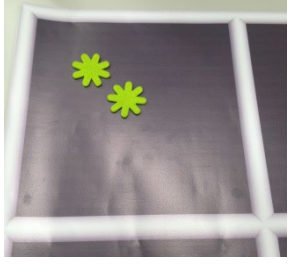
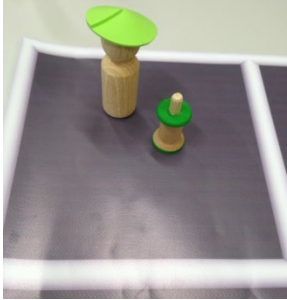
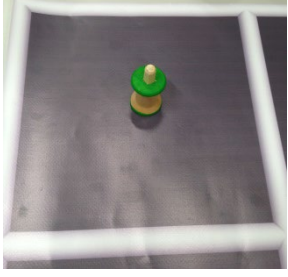
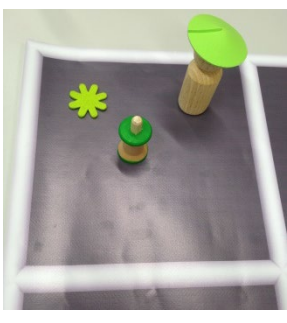
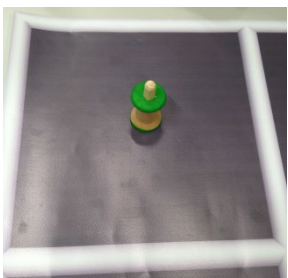
If there are two harvesters in a cell, it depletes: from 3 wood to 1: from 2 to 0: from 1 to 0.

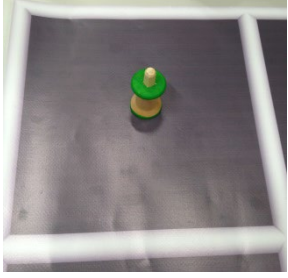
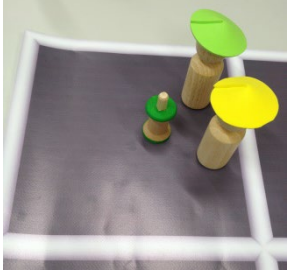
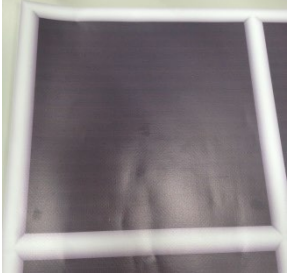
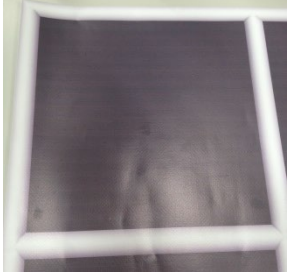
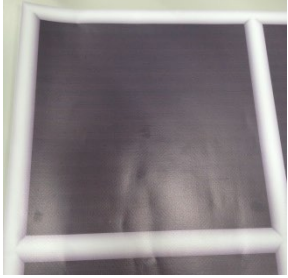
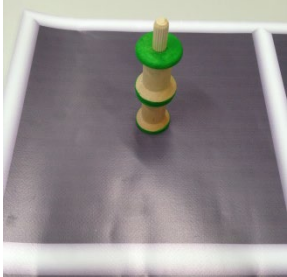
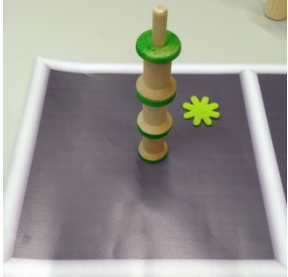
Each harvester collects 2 wood, when it is possible, otherwise 1 or 0. When there are two harvesters in cell, one takes 2 wood the other takes the rest, they can share it or distribute it by chance by throwing a dice.

Check for all cell configuration below for growth and harvesting processes of wood:

NO BIOMASS		COMMENTS
		Harvested the year before => regeneration

			<p>Non-harvesting tracer added</p>
			<p>No changes</p>
			
<p>0 Biomass 1 Harvester 1 Flower</p>			
<p>0 Biomass 1 Harvester 2 Flowers</p>			
<p>1 BIOMASS UNIT</p>			

			<p>The cell was harvested the round before, but not this one, biomass is increased and a non-harvesting tracer is placed</p>
			<p>No biomass regeneration (the cell wasn't harvested) and non-harvesting tracer is added</p>
			<p>After two rounds without harvest, the biomass level decreases by 1 unit.</p>
			<p>Harvest at sustainable rate, biomass remains the same</p>
			

	<p>1 Harvester 1 Biomass 2 Flowers</p>		
			<p>Harvest above sustainable rate, resource is depleted</p>
	<p>2 Harvester 1 Biomass 1 Flower</p>		
	<p>2 Harvester 1 Biomass 2 Flowers</p>		
	<p>2 BIOMASS UNITS</p>		
			



Picture source: Rehab standard protocol (2015) developed by ForDev.

Harvester/Fishermen tokens

Each token (harvester/fishermen) needs 1 money/tree token to sustain itself per round. If they cannot fulfill this requirement they receive one hunger point per lacking wood/money token.

PES

The park rangers take a card from the PES pile every round. The Card allows them to count the amount of wood and fish in the forest (monitoring) and informs them about the compensation they receive if they fulfill the conservation efforts. The conservation efforts are also indicated on the card.

1st test round

- Restrict the conservation areas on up to 7 cells.
- You can receive compensation for conservation efforts if you fulfill the requirements. The requirements increase from round to round and the compensation might vary, since it is dependent on global markets.
- Fill out the monitoring sheet to receive compensation.
- **Minimal requirements:**
- basic level (existing amount of wood) + 5 wood in total
→ 5 money token compensation.
- **Extended requirements:**
- basic level + 7 wood in total
→ 8 money token compensation.

1st round

- Restrict the conservation areas on up to 7 cells.
- You can receive compensation for conservation efforts if you fulfill the requirements for six rounds. The requirements increase from round to round and the compensation might vary, since it depends on global markets.
- Fill out the monitoring sheet to receive compensation.
- **Minimal requirements:**
basic level + 5 wood in total
→ 5 money token compensation.
- **Extended requirements:**
basic level + 7 wood in total
→ 8 money token compensation.
- Distribute the compensation based on the **individual efforts** each harvester/fishermen made to conservation.

2nd round:

- You can receive compensation for conservation efforts if you fulfill the requirements.
- Fill out the monitoring sheet to receive compensation.
- **Minimal requirements:**
basic level + 3 wood in total
→ 5 money token compensation.
- **Extended requirements:**
basic level + 7 wood in total
→ 6 money token compensation.
- Distribute the compensation based on the **individual efforts** each harvester/fishermen made to conservation.

3rd round:

- You can receive compensation for conservation efforts if you fulfill the requirements.
- Fill out the monitoring sheet to receive compensation.
- **Minimal requirements:**
basic level + 5 wood in total
→ 5 money token compensation.
- **Extended requirements:**
basic level + 7 wood in total
→ 8 money token compensation.
- Distribute the compensation to the **whole group**.

4th round:

- You can receive compensation for conservation efforts if you fulfill the requirements.
- Fill out the monitoring sheet to receive compensation.
- **Minimal requirements:**
basic level + 5 wood in total
→ 3 money token compensation.
- **Extended requirements:**
basic level + 7 wood in total;
→ 6 money token compensation.
- Distribute the compensation to the **whole group**.

5th round:

- You can receive compensation for conservation efforts if you fulfill the requirements.
- Fill out the monitoring sheet to receive compensation.
- **Minimal requirements:**
basic level + 5 wood in total;
→ 3 money token compensation.
- **Extended requirements:**
basic level + 7 wood in total;
→ 6 money token compensation.
- Distribute the compensation **as you want**.

6th round:

- You can receive compensation for conservation efforts if you fulfill the requirements.
- Fill out the monitoring sheet to receive compensation.
- **Minimal requirements:**
basic level (existing amount of wood) + 5 wood in total;
→ 5 money token compensation.
- **Extended requirements:**
basic level + 7 wood in total;
→ 8 money token compensation.
- Distribute the compensation **as you want**.

7th round:

- You do not receive compensation for conservation efforts anymore. The project ended.
- Please, fill out the monitoring sheet

8th round:

- You do not receive compensation for conservation efforts anymore. The project ended.
- Please, fill out the monitoring sheet

Game Flow (how a round unfolds)

The game will be played for 8 rounds whereby possible PES start in round 1. Each round has different parts, when different actions can be done by players or dynamics occur according to the actions the players took.

1. Decision making: Everybody is allowed to talk. The harvesters/fishermen decide where to harvest or not. The Park rangers work on receiving PES (pick requirement card from PES pile). (3 minutes)
2. Fish settle (are placed in the fields, in which they occur according to the rules)
3. Each player collects (it is distributed to them) his harvest, at the same time the regeneration of the wood is done.
4. (If the park rangers are implementing a PES) The park rangers check if they fulfilled the compensation requirements and receive compensation accordingly.
5. Each player has to give away 2 money/tree token per household member to sustain himself. If he/she cannot, for every 2 token lacking 1 hunger point is distributed.
6. The fish swim away into the ocean.

Players

Principally, the game can be played with all kind of player configuration. In order to find out more about gender specific behaviour it is recommended to play it with mixed gender groups.

Debriefing

The game session is followed by a debriefing in order to cool the players down, and explore with them what happened during the game and what can be learned.

Immediate emotional response of the participants to the game and its outcomes.

How did you feel during the game? And now?

How do you assess your collective result?

How do you assess your individual result?

Collective analysis of group dynamics (quality of communication, knowledge sharing and emergence of leaders).

What were your strategies? (park manager, harvester, fishermen)

Did you change your strategies/behaviour? (PES/money)

Did you reach agreements and how?

How were conflicts resolved?

Bridging gaming context and reality of the tragedy of commons and the influence of a PES by selecting striking features of the session. (e.g. trust, discussion, compromise, money, transparency)

This is a game, it is fiction. Nevertheless, what similarities & differences can you see between the game and reality?

Do you have any questions or remarks? You can also ask questions tomorrow, when we will have another short interview.

Case Study

Gazi Bay player configuration

For the purpose of this master's thesis it was played with the following configurations:

- 2 mixed gender game session
- 2 male game session
- 2 female game session