

Appendix 4. GAME PROTOCOL (TRANSLATED FROM FRENCH)

[first set up the seating, preferably forming a circle, read consent form, record player names write their identifier codes on the score recording sheet, set up tablets, and put in player identifier]

Hello, and thank you for being here today.

Today we are going to play a game about land use decision making. You'll play in groups of four, and each player will have an equal share of the land in the game, a total of 9 squares. Your participation is voluntary but we would really appreciate if you stay for the full session as the game can't run without all four participants.

We are offering some gift items to thank you for your participation in today's experiment which should take about 90-120 minutes. In addition, the content of the gift items will depend on your management decisions in the game, which we will explain in a moment.

Do you consent to continue? If at any time you find that this is something that you do not wish to participate in for any reason, you are of course free to leave whether we have started the game or not.

In each of those squares, you can do one of four things:



1. Farm the square for your private business
2. Farm the square for your private business and use non-lethal deterrent methods to scare elephants away
3. Farm the square for your private business and kill elephants found marauding on your farmlands
4. Lease your farm plot for elephant conservation (zones dedicated to elephant conservation or "elephant habitat").

Each of the you will take responsibility for land use decisions on a 3x3 grid-cell section (farm) of a 6 x 6 grid-cell agricultural landscape as shown in the following figure.

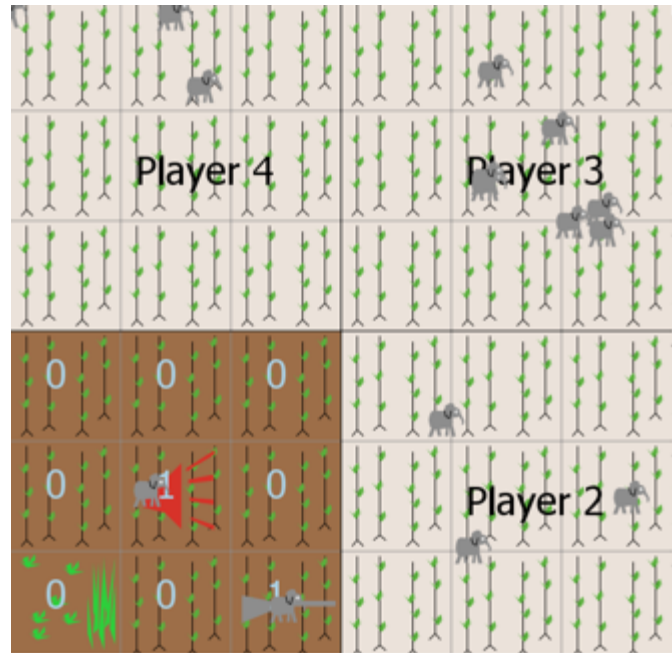


Figure: Bottom left corner of the landscape is active player

Each of these four options has different benefits and costs. Let me introduce each of them in turn.

Farming the square (options 1, 2 and 3) brings a yield of +4. Providing elephant habitats brings no yield. Non-lethal scaring brings a cost of -1 while lethal scaring costs -2. These costs reflect both the materials, efforts, and also the risk associated with the illegal nature of these activities.

We are going to play a few rounds per game session – rounds can be analogous to years. In each round, there are a certain number of elephants in the landscape. When elephants land on farmed cells (options 1, 2, 3), they cause damages and decrease your farm yield. This is described in the second line in the above figure (“elephant damage”), the amount of elephant damage on each farmed square depends on the number of elephants in that square.

You don’t need to memorize this – you can use this sheet as a reference while you play the game [hand out sheet now].

At the start of each round, the default land use options on all 36 grid cells are farmlands (option 1). Elephants are randomly distributed across the landscape with an equal chance. If you decide to scare elephants on a given cell, then some will leave the cell and reorient in other cells based on the attractiveness of the three options. Elephant habitats (the fourth option) is the most attractive option, that is elephants are much more likely to be drawn to an elephant square (option 1) than on your farmlands (options 1, 2, 3). These habitats contain some palatable crops and can therefore reduce agricultural damages across the landscape by drawing elephants from other places. However, elephant habitats may slightly increase the amount of elephant damage in farmlands that immediately surround them by bringing more elephants close to them in the landscape. However, rest assured that the neighbourhood effect of the habitat is small enough and may only marginally significantly affect the yield of adjacent farmlands. Put simply, elephant habitats may make things significantly better for some farms by keeping elephants at bay.

The number of elephants at the start of each round equals 18 and decreases with lethal scaring efforts (the more you shoot, the less elephants there are left). Please note that non-lethal and lethal scaring techniques are not 100 % effective, just like in real life, so you may try to deter elephants, but they

might still raid your farm, likewise, you may attempt to kill them, but some will survive. We have set the games so you will success at killing an elephant 8 out of 10 times, using deterrent techniques however only works 3 out of 10 attempts.

In some of the game sessions that we are going to play today, a subsidy and/or bonus is given for every elephant habitat in the landscape. In another game session, the subsidy will offset the cost of the non-lethal deterrent method, i.e. the cost of the non-lethal deterrent option (option 2) becomes zero.

You can cycle through the choices for each square by clicking on the square itself, and we'll practice that in a minute. When you've decided, you can click 'Confirm' and wait for the other players to confirm. Once everyone has confirmed, the round is over and the "score" (i.e., the total points earned) is calculated for each cell based on your choices in and around the cell, and the process is repeated in the next round.

You will be permitted a period of discussion (one minute) before you make your individual decisions at the beginning of each round. You will make decisions simultaneously on your land squares and will see at the end of each round what has happened across the whole landscape, what yields are achieved in each square, and what scores are earned by each player. Although you can observe individual players' decisions, you won't be able to match decisions to the individual.

One other note – you can change any of the 9 squares to any of the two land use choices you like, in each round.

So just to review, farming brings a yield of +4. Scaring techniques bring a cost of -1 or -2. Elephant habitats bring no yield but they may decrease elephant damage across the landscape by keeping elephants away from farmlands.

Let's look now at the game screen and see how this all fits together.

This is a screen shot from the first turn for Player 1, in the bottom left quadrant. The identifiers of the other three players are shown over their quadrants, which are lighter in colour, and can't be modified by Player 1. The white coloured number on each square is the number of elephants.



Figure 2: Bottom left corner of the landscape is active player, actions taken by other players in previous turn are visible.

[Note, we don't show a sample here as we don't wish to suggest any strategies]

After I have finished the explanation we will play a short practice game to help you to understand the process.

Practice

We'll just play a few short rounds now so that you get comfortable with the rules of the game. I'll walk you through the first turn so you can see how it goes, and you can ask me questions during your turn or between rounds. I encourage you to use the practice session as an opportunity to explore different options and see what happens. Feel free to discuss with others, but please do keep your screen to yourself.

[walk through a 4-round practice game]

Got it? *[answer any follow-up questions]*

Ok, let's move on to the experiment.

We are going to play four different games, each one of which will differ a little bit, and might change a bit from what we've done in the practice.

Now, as you make your decisions, we'd like you to maximize your utility (or "do well") by trying to earn points, and that's where the gift items come in. At the end of the session, we'll record the score for each player on the paper and pick one of the four games that you played randomly and look at the highest score. The gift items (content and number) that you will each receive equally will be based on that highest score.

Please remember that there are different ways to earn points, either by playing individually or as a team working together. Most importantly, we want your decisions to reflect what you would do in real life.

Ok, let's begin.

[Each game group will play 4 treatments; the order are randomised across groups. Thus, the four treatments can be introduced in a way that does not depend on other treatments having been played first.]

G1: Baseline treatment:

In this game, the settings are just like they were in the practice. There is no subsidy from providing elephant habitats. You are allowed to discuss the game with the other players at the beginning of each round, but please keep your screen to yourself. This game will last at least 6 rounds.

G2: Flat Rate Subsidy: A subsidy from X points (drawn randomly at the beginning of the game and held constant during the game)

In this game, you are being offered a subsidy for each square of land that you lease as elephant habitats. You'll receive a subsidy which will add to your total score. You are free to discuss the game with other players at the beginning of each round, but keep your screen to yourself. This game will last at least 6 rounds.

G3: Support for deterrents

In this game, the settings are just like they were in the practice. There is no subsidy from leasing plots for elephants. However, you will get some support for deterring elephants from your farmlands, the support will offset the cost of non-lethal deterrent methods. You are allowed to discuss the game with the other players at the beginning of each round, but please keep your screen to yourself. This game will last at least 6 rounds.

G4: Agglomeration payment

In this game, you are being offered a subsidy for each square of elephant habitat in your land. You'll receive a subsidy worth X points which will add to your total score. In addition, you will also get an additional bonus of 1 point for every elephant square that has at least one elephant square next to it. You are free to discuss the game with other players at the beginning of each round, but keep your screen to yourself. This game will last at least 6 rounds.