

Land Conservation Game: Instructions

Overview

The classroom space represents an area of land in rural Cameroon. You are a farmer, and you own a plot of land. The location of your land within the larger area is the location of your seat in the classroom. The agricultural quality of your land is determined by the number (1-10) on the card you were dealt.

The Federal Government has identified this land as having ecological value and wants to encourage farmers to conserve some land instead of farming it. To this end, over the coming years, the government will try different payment schemes to enroll farmers like you in conservation contracts for fixed contract periods (which last 10 years each). In each contract period, you and the other farmers will individually decide whether you choose to farm or conserve your land. These decisions will determine your earnings in each contract period. Each contract period is independent of the other periods: choices in one period do not affect outcomes in other periods.

At the end of today's class, one student will be picked at random, and then one contract period will be picked at random. That student will be paid his or her earnings from the chosen contract period, at a rate of \$1 per \$2,000 earned in the round. Since you may be chosen to be paid, and since your choices in each contract period may affect your earnings, you should attend to all of your decisions carefully.

Your earnings: In each contract period your earnings are calculated as:

$$\text{Earnings} = \text{FarmingIncome} + \text{ConservationPayments} + \text{EcosystemServices}$$

1. **Farming Income:** if you do not farm, your farming income is zero. If you farm, your farming income equals the agricultural quality of your land (the number on your card) times \$1,000.
2. **Conservation Payments:** if you farm, your conservation payments are zero. If you do not farm and instead conserve, you get a conservation payment from the government. The size of the conservation payment depends on the current conservation payment policy and may also depend on the farming decisions of the farmers around you.
3. **Ecosystem Services:** everyone benefits from ecosystem services provided by conserved land. These benefits include habitat for animals like Hornbills and Lowland Gorilla. Fragmented habitat is less able than contiguous habitat to support wildlife. Therefore ecosystem services depend on the number (#) and size (Z) of connected blocks of conserved land as listed in Table 1. Any such benefits will be complemented by a *Megafauna Survival (MS)* bonus of \$3000 when creating a corridor of conserved land that allows Hornbills migrate from one side of the room to the other. This corridor must be a contiguous path of conserved land from left to right; there is no added benefit from an additional corridor when one has been formed, nor does a wider corridor create more benefit. The total Ecosystem Services benefit (ESS) is therefore calculated as:** $ESS = E1 * B_1 + \dots + E16 * B_{16} + MS$

where $E1 - E16$ are as in Table 1, B_n is the number of n-plot blocks, and MS is the value of the Megafaunal Survival bonus.

Table 1: Ecosystem values generated by blocks of different sizes.

Block Size (Z)	Ecosystem Value (EV) in \$
1	50
2	100
3	200
4	400
5	800
6	1600
7	2400
8	3200
9	4000
10	4500
11	4700
12	4800
13	4850
14	4900
15	4950
16	5000

Game Play and Scenarios

There are six contract periods. In each contract period, you will decide whether to farm or conserve your land. Each contract period has a conservation payment available. After decisions are made for each period, the government will record all decisions and you will calculate your earnings.

Contract Period 1: Flat Conservation Payment

The government offers a fixed conservation payment of \$2,000 for each plot conserved.

Contract Periods 2 and 3: Border Bonus

The government offers a conservation payment of \$2,000 for each plot conserved, and also pays a bonus of \$1,000 for each border a conserved plot shares with another neighboring conserved plot on any of its four sides. The maximum conservation payment per plot is thus \$6,000.

Contract Periods 4 and 5: Corridor Bonus

The government offers \$2,000 for each conserved plot, and also pays a special “corridor bonus.” A corridor is any path of contiguously conserved land at least one row wide that leads from the left side of the room to the right side of the room. This may be a straight left-to-right line, or it may involve turns. (Since the path must always be at least a row wide, a turn requires more plots of land to be involved!) If a plot of land is part of an eligible corridor, then that plot’s owner receives an additional \$3,000.

However, the government will only pay a bonus for one conserved corridor. If there are two or more corridors, only one corridor is eligible: the government will consider only the corridor(s) that make the shortest paths (fewest plots of land), and if there are more than one of those, it

will randomly pick one of them to receive the corridor bonus, and the plots in other corridors will just receive the \$2,000 conservation payment.

Contract Period 6: Auction [NB: we are unlikely to get to this contract period]

Farmers submit bids that represent the payment they would accept to conserve their land. The government takes the lowest 50% of the bids. (If there is a tie at the winning bid, it will be broken randomly.) For each successful bid, the farmer conserves his or her land and receives a subsidy payment equal to his or her bid. Farmers who submit rejected bids farm their land.

Land Conservation Game: Decision and Earnings Worksheet

Name:

My Agricultural Quality (Card Number):

My location (circle in grid below):

Table 2: Classroom location of each plot of land.

Front Door	row 2	row 3	Front Window
A1	B1	C1	D1
A2	B2	C2	D2
A3	B3	C3	D3
A4	B4	C4	D4
A5	B5	C5	D5
A6	B6	C6	D6
A7	B7	C7	D7
A8	B8	C8	D8
A9	B9	C9	D9
A10	B10	C10	D10

Table 3: My decisions and earnings (fill in the table below as the contract periods progress):

Contract Period	Subsidy Type	Bid	Choice	Farming Income	Conserv. Payment	Ecosyst. Serv.	Earnings
1	Flat	n/a	F or C	\$	\$	\$	\$
2	Border	n/a	F or C	\$	\$	\$	\$
3	Border	n/a	F or C	\$	\$	\$	\$
4	Corridor	n/a	F or C	\$	\$	\$	\$
5	Corridor	n/a	F or C	\$	\$	\$	\$
6	Auction	\$	F or C	\$	\$	\$	\$

TOTAL EARNINGS: \$

Source

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