**Life History Gambling**

**Number of Players:** 4

**Materials:** The game is played with standard playing cards. The game deck consists of 40 cards: 8 face cards and 32 number cards.

Face card = predator (the player is eaten and out of the game)

Number card = tadpoles (the player has successfully reproduced)

**Background/Objective:** The purpose of this game is to demonstrate the pros and cons of different reproductive strategies. The players of the game take on the role of a young male gray treefrog. The game spans a maximum of 4 “years” covering the frog’s entire life. Each year during the breeding season males gather in large numbers at ponds and lakes to call to attract females. These large groups are known as choruses and may contain hundreds of frogs from several different species. Female frogs enter these choruses and select a male with which to mate. After finding a mate the female can lay over 1000 eggs which are then fertilized externally by the male. Each male can potentially mate with several females during a single breeding season. Males can attract additional females by calling at fast rates and producing long calls. As a young male frog, it is up to the player to decide how much time and energy to invest each year in breeding. Investing heavily means increasing calling effort which is effective at attracting females; however, this can also result in an increased risk of being eaten by a predator.

The overall objective of this game is to be the frog that sires the most offspring throughout its entire life.

**Rules:** The game consists of four rounds, each round simulating one year and breeding season. At the start of each round the 40 card deck is thoroughly shuffled and the cards are spread out face down in front of the players. Each player draws a card from the deck, keeping the card face down (players are not allowed to look at their cards until the end of the round). For the remainder of the round players take turns drawing additional cards from the deck. A player can draw as many cards as he/she wants up to a maximum of 5 cards per round. Once all players have drawn their desired number of cards for the round the cards are flipped over and the scores for the round are tabulated. Each number card is worth 1 point (simulating a successful mating with 1 female resulting in many tadpoles). A face card simulates a predator; if a player draws a face card that player has been eaten and is out of the game. Any number cards drawn along with the face card are counted towards the player’s final score, but he/she cannot participate in any further rounds. Players record the number of cards drawn and the number of points received by each player on their scorecard. The cards are reshuffled and the next round begins with the surviving players. The game continues until the end of the fourth round or until all players are eaten by predators. At the end of the game, tally the total number of points for each player. The player with the most points has sired the most offspring and thus wins the game.

**Playing tip:** Play through the game several times to come up with the best “reproductive strategy”

Life History Gambling Score Sheet

For each round record the number of cards drawn by each player and the number of points received.

Game 1:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Round/ “Year”** | **Player 1 name:** | **Player 2 name:** | **Player 3 name:** | **Player 4 name:** |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |
| **4** |  |  |  |  |

How effective was your strategy? What are your plans for the next game?

Game 2:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Round/ “Year”** | **Player 1 name:** | **Player 2 name:** | **Player 3 name:** | **Player 4 name:** |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |
| **4** |  |  |  |  |

Plans for next game?

Game 3:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Round/ “Year”** | **Player 1 name:** | **Player 2 name:** | **Player 3 name:** | **Player 4 name:** |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |
| **4** |  |  |  |  |

What strategy worked the best? How does this simulation relate to natural selection?