



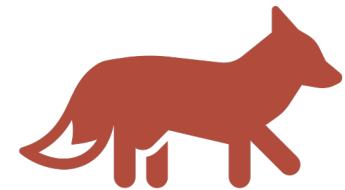
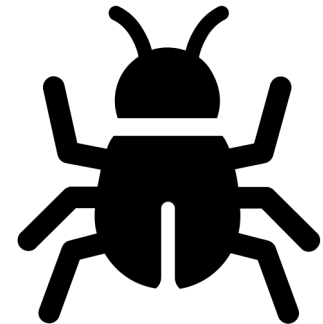
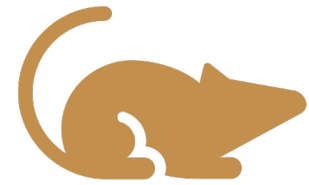
FORESTS AND FORAGERS OR PREDATORS AND PARASITES

*An Ecology-themed Board
Game Virtual Prototype*

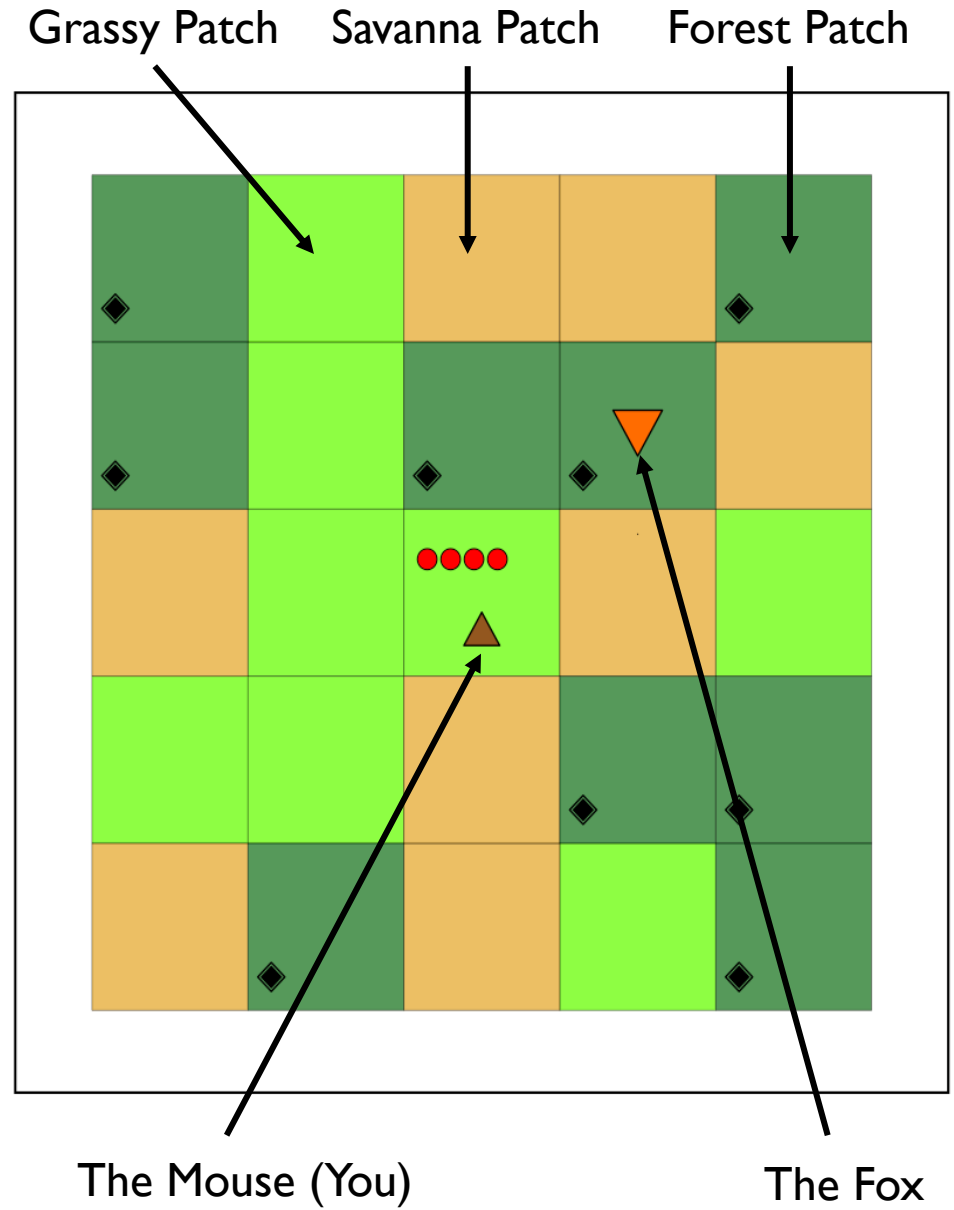
Instructions / Rules

BASIC PREMISE

- You are a mouse, living on a highly heterogeneous landscape, foraging for berries for the coming winter.
- However, you are not alone: many ticks and one hungry fox also occupy this landscape, and it's up to you to avoid them as best as you can.



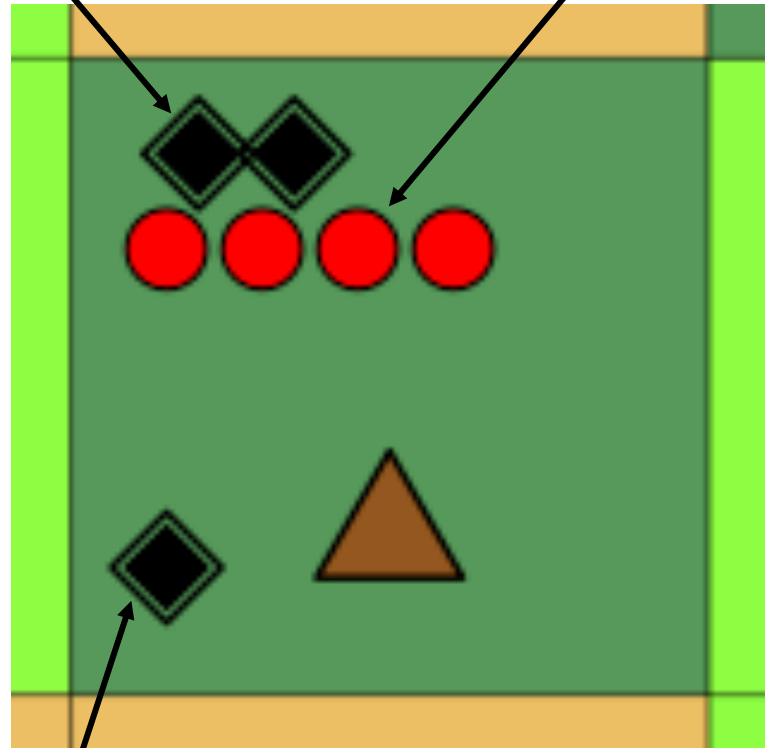
THE LANDSCAPE



A HABITAT PATCH

“Forage” Ticks

Berries



“Move” Tick

Actions

Move:

Up

Left

Right

Down

Do:

Forage

GAMEPLAY

- You have 20 turns before winter arrives.
- Each turn, you can perform one action by clicking on the respective button:
 - Move one space left, right, up, or down
 - Forage in the habitat patch you are in

MOVEMENT



WHEN YOU MOVE, YOU WILL PICK UP ANY
“MOVE” TICKS THAT ARE PRESENT ON THE
HABITAT PATCH THAT YOU ENTER,
REMOVING THEM FROM PLAY.



IN ADDITION, THE FOX WILL MOVE ONE
SPACE AT RANDOM. IF IT WOULD MOVE
OUT OF BOUNDS, IT DOES NOT MOVE.

FORAGING

- When foraging, you will “roll” a six-sided die.
- If the value of the die is less than or equal to the number of berries in the habitat patch, you gain that much energy, and those berries are removed from play.
- If the value of the die is greater than the number of berries in the habitat patch, you gain nothing, and no berries are removed.
- In addition, if there are any “forage” ticks present, you will gain them, removing them from play.
- Finally, the fox will also move one space at random. If it would move out of bounds, it does not move.

TRACKING YOUR STATUS

Latest Status Update

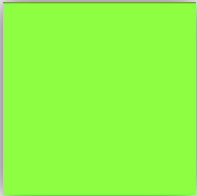
Action	Roll	Patch	Result
Forage	2	4	2 energy gained

Current Status

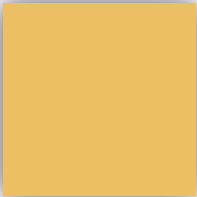
Attribute	Value
Total Energy	4.00
Total Ticks Fed	1.00
Total Turns Remaining	19.00

- You can check the result of your most recent foraging roll in the Latest Status Update table.
 - "Roll" was what you rolled
 - "Patch" was the number of berries present
 - "Result" was the outcome
- You can also track your total energy, ticks fed, and turns remaining in the Current Status table.

HABITAT STATS



Grassy habitats have 0 “move” ticks, 0 - 1 “forage” ticks, and 2 - 4 berries.



Savanna habitats have 0 “move” ticks, 1 - 2 “forage” tick, and 3 - 5 berries.



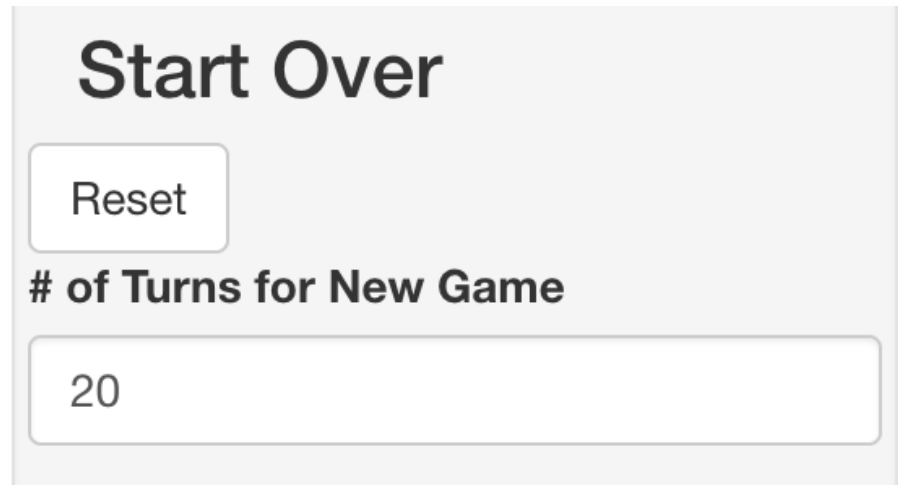
Forest habitats have 1 “move” tick, 2 - 3 “forage” ticks, and 4 - 6 berries.

END OF GAME



- The game ends when you run out of turns before winter.
- Your weight (score) is calculated as the number of berries you ate minus the half the number of ticks you fed.
- Alternatively, the game will end if you occupy the same patch as the fox, as you will be eaten, and your score will be negative.

RESETTING THE GAME



Start Over

Reset

of Turns for New Game

20

- You can start a new game by clicking reset.
- Before you do, you can change the number of turns to experiment!

NOTES ON THE PLANNED PHYSICAL VERSION

- The habitat patches will be cards, placed face down in a 5x5 grid with the habitat type and “move” ticks visible.
- A mouse token and a fox token will be placed on the cards by some rule.
- When the mouse is occupying a patch, the card will be flipped, revealing the berries and “forage” ticks on the face-up side.
- You will roll a real die to forage for berries.
- You will collect physical berries and ticks and place them on your mouse mat.
- The fox will move by a separate deck of fox movement cards (left, right, up, and down).

LEARNING/OUTREACH OBJECTIVES

- Demonstrate optimal foraging theory / Charnov's optimal value theorem
- Evoke the "Landscape of Fear" and the "Landscape of Disgust" (predator and parasite avoidance)
- Highlight mice as critical players in tick ecology