Foodchain

An interactive ecosystem

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Objective:

Explore and ***stimulate*** environmental scenarios

How do different variables affect a Foodchain?

What is the cause of Foodchain imbalance?

Which organism has the highest survival rate?

What and is there an optimal Foodchain?

What is in the Foodchain environment (initially)?

• Animals - Wolf (10) - Rabbit ()	• Plants - Dandelion ()

Foodchain hierarchy

(**Predator -> Prey**)

Wolf->Rabbit->Dandelion

What are the *variables* in the ecosystem?

Weather condition (Rainfall): factor multiplied to plant variables in order to affect growth, birth, etc.

- Intensity (Range: 1-10)

Birth rates/periods: periods of time between reproduction counted by **ticks***

- Wolf born period (Range: 1-400)
- Rabbit born period (Range: 1-400)

Exploration:

Scenarios with differing **Independent Variables**

Control group: **average** variable levels/intensity

Variables:

- Weather condition= Initial (5)
- Born periods: Initial (200)

Description:

The initial state of the habitat; assuming all variables stay constant

Results (Data):

- Video

Conclusion:

- The

Real World Application

- An example of this could be the European rabbits in Australia
- **European rabbits:**
  - Have a lack of natural predators
  - Can give birth to more than **four litters** a year with as many as **five kits** (baby rabbits) each (**high birth rate**).
- **This is a problem because they:**
  - Drive out native species from their homes
  - Compete for food and other resources
  - Loss of plant biodiversity

Scenario #1: Heavy Rainfall (weather condition)

Variables

- Weather condition= Highest (10)
- Born periods: Initial (200)

Description:

A situation in which a habitat experiences abnormally high levels of rainfall.

Results (Data):

- Video

Conclusion:

- The

Real World Application

- An example of this could be the European rabbits in Australia
- **European rabbits:**
  - Have a lack of natural predators
  - Can give birth to more than **four litters** a year with as many as **five kits** (baby rabbits) each (**high birth rate**).
- **This is a problem because they:**
  - Drive out native species from their homes
  - Compete for food and other resources
  - Loss of plant biodiversity

Scenario #2: Light Rainfall (weather condition)

Variables

- Weather condition= Lowest (1)
- Born periods: Initial (200)

Description:

A situation in which a habitat experiences abnormally low levels of rainfall.

Results (Data):

- Video

Conclusion:

- The

Real World Application

- An example of this could be the European rabbits in Australia
- **European rabbits:**
  - Have a lack of natural predators
  - Can give birth to more than **four litters** a year with as many as **five kits** (baby rabbits) each (**high birth rate**).
- **This is a problem because they:**
  - Drive out native species from their homes
  - Compete for food and other resources
  - Loss of plant biodiversity

Scenario #3: Shortened Wolf born period

Variables:

- Weather condition= Initial (1)
- Wolf born period: Lowest (1)
- Rabbit born period: Initial (200)

Description:

A situation in which the habitat's wolves reproduce at an abnormally high rate; period of time between each birth shortened

Results (Data):

- Video

Conclusion:

- The

Real World Application

- An example of this could be the European rabbits in Australia
- **European rabbits:**
  - Have a lack of natural predators
  - Can give birth to more than **four litters** a year with as many as **five kits** (baby rabbits) each (**high birth rate**).
- **This is a problem because they:**
  - Drive out native species from their homes
  - Compete for food and other resources
  - Loss of plant biodiversity

Scenario #4: Lengthened Wolf born period

Variables:

- Weather condition= Initial (1)
- Wolf born period: Highest (400)
- Rabbit born period: Initial (200)

Description:

A situation in which the habitat's wolves reproduce at an abnormally low rate; period of time between each birth lengthened

Results (Data):

- Video

Conclusion:

- The

Scenario #5: Shortened Rabbit born period

Variables:

- Weather condition= Initial (1)
- Wolf born period: Initial (200)
- Rabbit born period: Lowest (1)

Description:

A situation in which the habitat's rabbits reproduce at an abnormally high rate; period of time between each birth shortened

Results (Data):

- Video

Conclusion:

- The

Real World Application

- An example of this could be the European rabbits in Australia
- **European rabbits:**
  - Have a lack of natural predators
  - Can give birth to more than **four litters** a year with as many as **five kits** (baby rabbits) each (**high birth rate**).
- **This is a problem because they:**
  - Drive out native species from their homes
  - Compete for food and other resources
  - Loss of plant biodiversity

Scenario #6: Lengthened Rabbit born period

Variables:

- Weather condition= Initial (1)
- Wolf born period: Initial (200)
- Rabbit born period: Highest (400)

Description:

A situation in which the habitat's rabbits reproduce at an abnormally low rate; period of time between each birth lengthened

Results (Data):

- Video

Conclusion:

- The

Appendix

- Ticks (Slide 4): an iteration through the class, Life's live() method

Exploration Takeaways

- Foodchain imbalance could be caused by:
  - Due to drastic changes in the variables, some part of the Foodchain is eliminated, the entire chain of predators before it that relied on it for food would be affected
  - **Example from our Foodchain:**
    1. Wolf->Rabbit (high birth rate)->~~Dandelion~~ (all eaten by Rabbit; extinct)
    2. Wolf->~~Rabbit~~ (high birth rate but now; no food source; all eaten by Wolf; extinct)
    3. ~~Wolf~~ (no food source, extinct)

  - Introduction of **non-native species** with extremely high birth rates, such as the rabbit, could end up causing plant species, like the dandelion, **to go extinct**, which causes the rabbits to go extinct as well, if dandelions were a crucial part of their diet; this also impacts the wolves who hunt the rabbits for food (the WHOLE Foodchain affected)