Frog Fungus

Introduction

A mysterious fungus is impacting organisms that live in pond ecosystems. Scientists are concerned about the potential effects on the overall health of the aquatic ecosystems. Using models of populations within the pond ecosystem, help scientists predict how the introduction of the fungus affects larger aquatic ecosystems.

Prompt 1

Look at Model 1 and Model 2 below, which show two key organisms in a pond ecosystem:

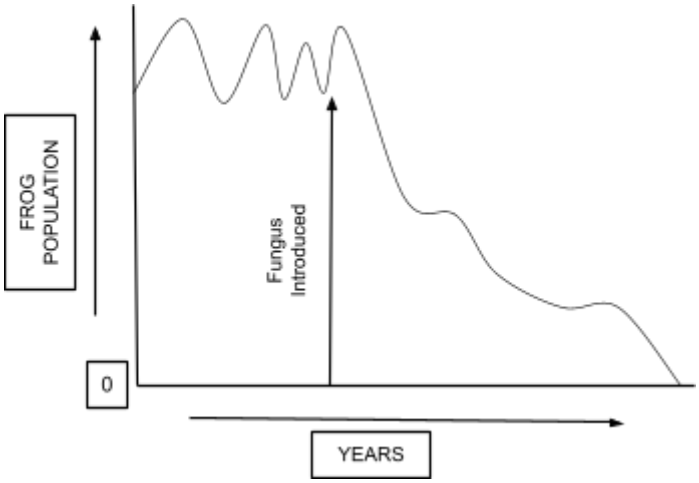
Frogs



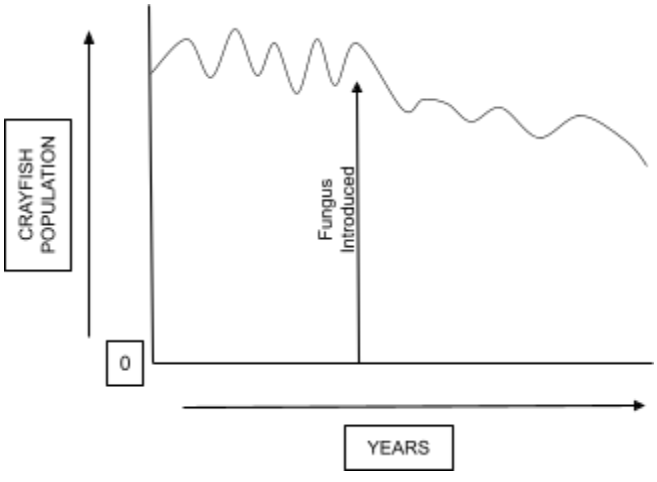
Crayfish



Model 1. Frog Population Over Time



Model 2. Crayfish Population Over Time



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a. Use Models 1 and 2 above to describe the changes in the frog and crayfish populations:		
	The population BEFORE the introduction of the fungus…	The population AFTER the introduction of the fungus…
Frog Population		
Crayfish Population		

b. How are the carrying capacities of the frog and crayfish populations changing in different ways? Use evidence from Model 1 and Model 2 to support your answer.

c. What might be a limiting factor in the pond ecosystem that is causing the carrying capacities of the frog and crayfish populations to change? Use evidence from Model 1 and Model 2 to support your answer.

Prompt 2

No other organisms in the pond ecosystem appear to be affected by the fungus, but scientists

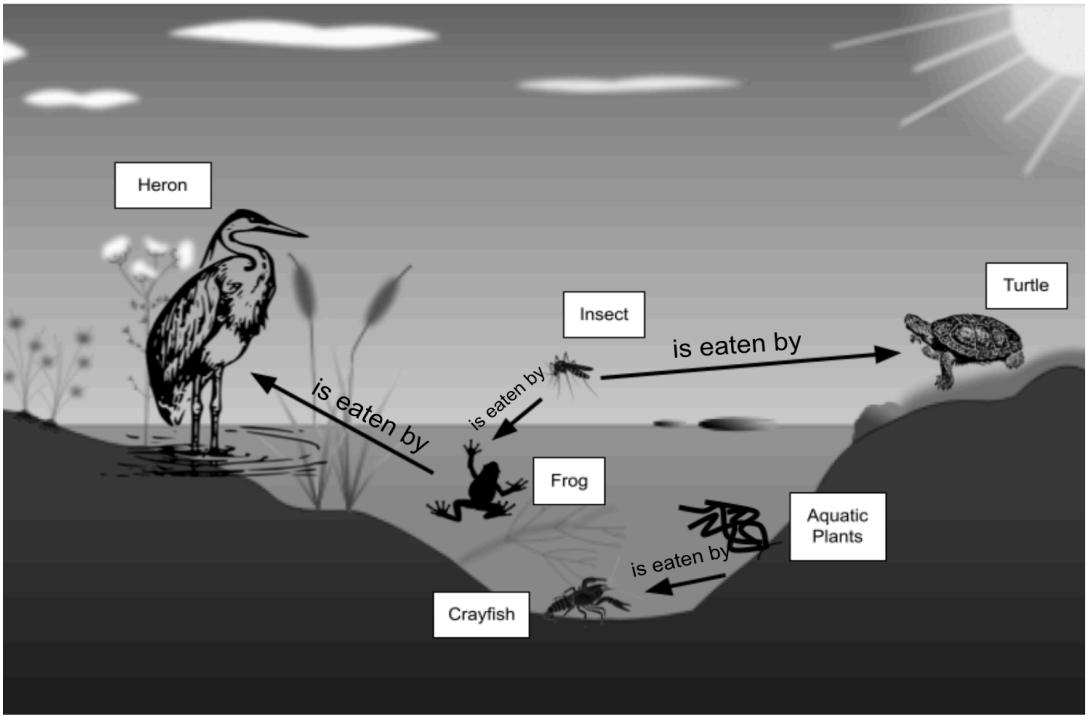
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are worried about the overall health of the pond ecosystem.

Model 3 shows the relationships between frogs, crayfish, aquatic plants, turtles, and herons in the pond ecosystem. The arrows show feeding relationships in the ecosystems. For example, frogs are eaten by herons, so the arrow goes from the frog towards the heron.

Model 3. Pond Ecosystem



Predict how the introduction of the fungus to the pond ecosystem changes the carrying capacity for turtles and herons. Use evidence from Models 1 and 3 to support your answer.

After the introduction of the fungus, I predict that the **turtle** population will

_____ and the **heron** population will _____.

The models support this because...

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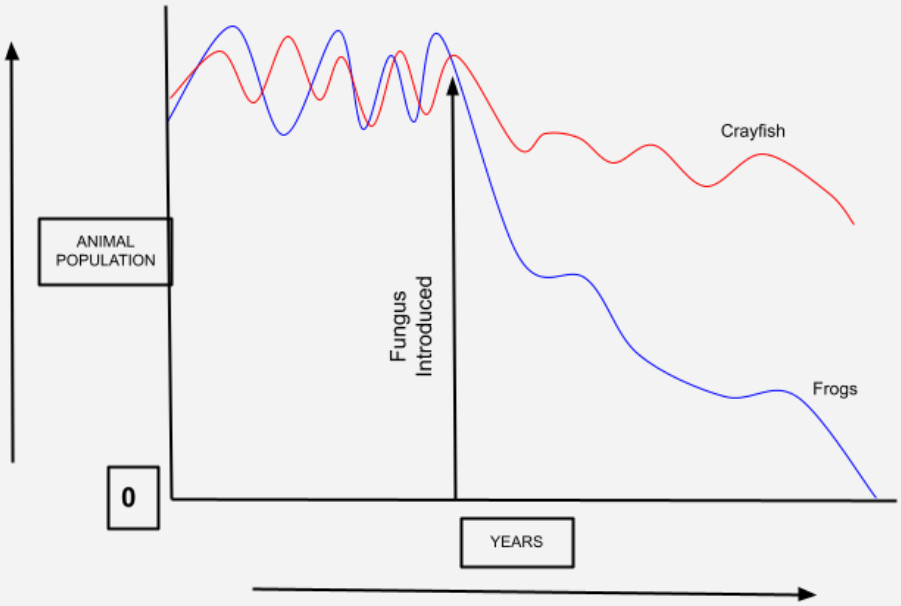
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Prompt 3

Based on the previous models from Prompts 1 and 2, develop a new model to predict how the introduction of the fungus will affect the carrying capacity of turtles and herons in the pond ecosystem. The model has been started for you below by combining the frog and crayfish models from Prompt 1.

a. On the model below, draw and label:
- The changes/fluctuations in the turtle population size
- The changes/fluctuations in heron population size

Model 4. Animal Populations in Pond Ecosystem Over Time



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b. How will the introduction of the fungus to the pond ecosystem change the carrying capacity for turtles and herons? Use evidence from the model you created above to support your answer.

Based on my model, I predict that the introduction of the fungus will change the carrying capacity for **turtles** by…

Based on my model, I predict that the introduction of the fungus will change the carrying capacity for **herons** by…

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Prompt 4

The pond ecosystem you have explored is an example of a smaller scale aquatic ecosystem. Lakes, swamps, and large wetland complexes are examples of larger aquatic ecosystems. There is a lake that has the same organisms as the pond, but also has ducks and fish.

a. In the table below, use previous models to describe what each organism eats. Information related to ducks and fish has been added for you.

Population	Food Source(s)
Frogs	
Crayfish	
Turtles	
Herons	**_____, fish**
Ducks	**Insects, aquatic plants**
Fish	**Worms**

b. If a larger aquatic ecosystem, like the lake in Model 5, is infected with the mysterious fungus, predict what will happen to the health of the entire ecosystem?

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PREDICTION:

To support your prediction, use <u>all</u> the evidence you gathered throughout this task and reasoning to explain how all of the populations from the table above will be affected in the larger ecosystem.

EVIDENCE with REASONING:

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