Interdependence in an Ecosystem

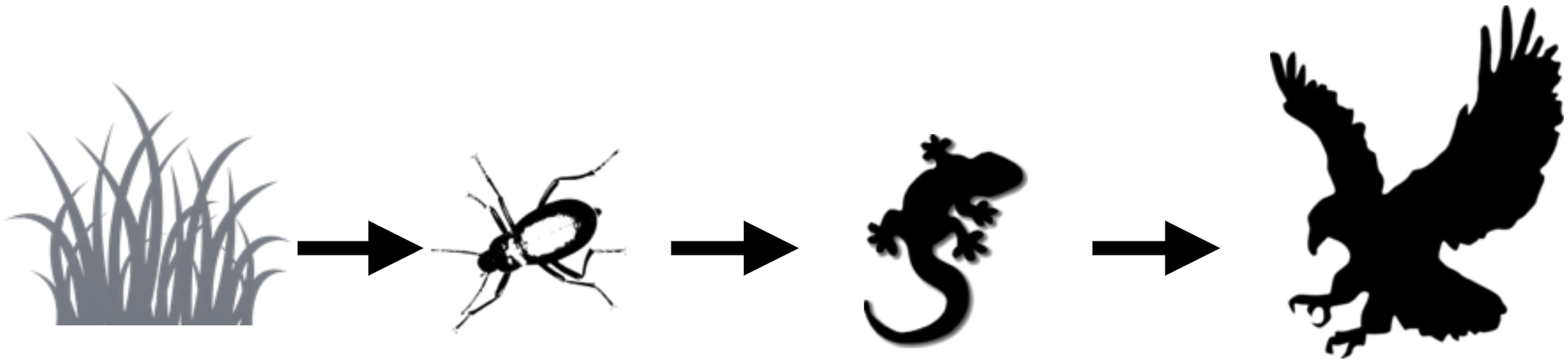
(demonstrated using a food chain)

- Ecosystems are INTERDEPENDENT: that means every living thing in an ecosystem interacts with and is dependent on every other living thing in the ecosystem in some way.

- If something happens to one population in an ecosystem, it will affect all other populations

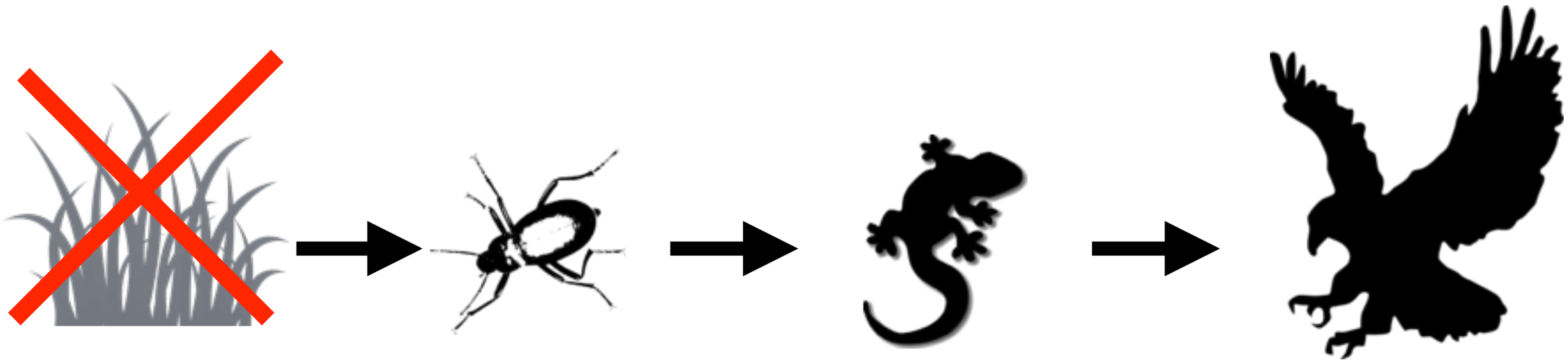
- Let's use a food chain as an example to learn more about how species in an ecosystem depend on each other…

Here is an example of a food chain in a forrest ecosystem



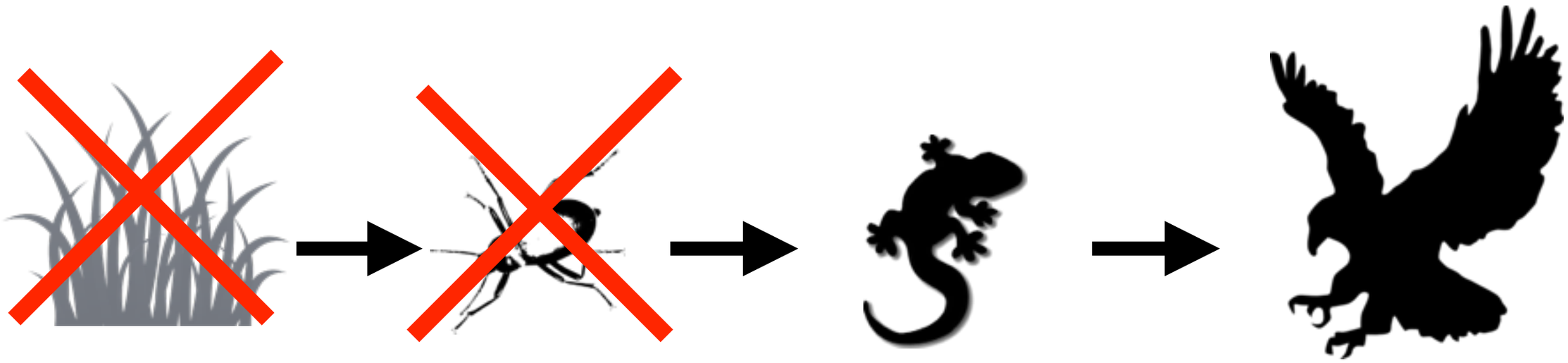
Grass Beetle Lizard Hawk

What would happen to all the species in the ecosystem if the grass disappeared?



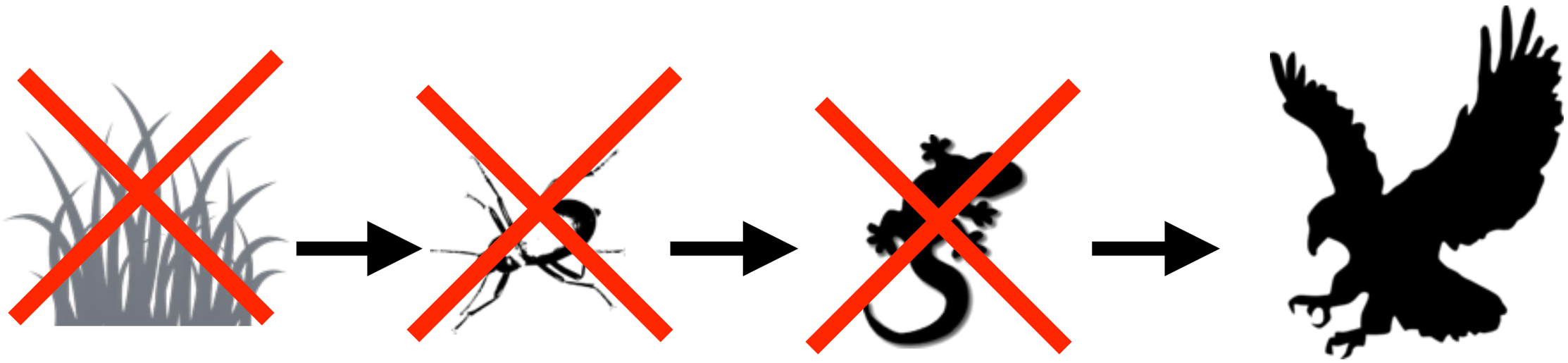
Grass Beetle Lizard Hawk

The beetles would have nothing to eat…



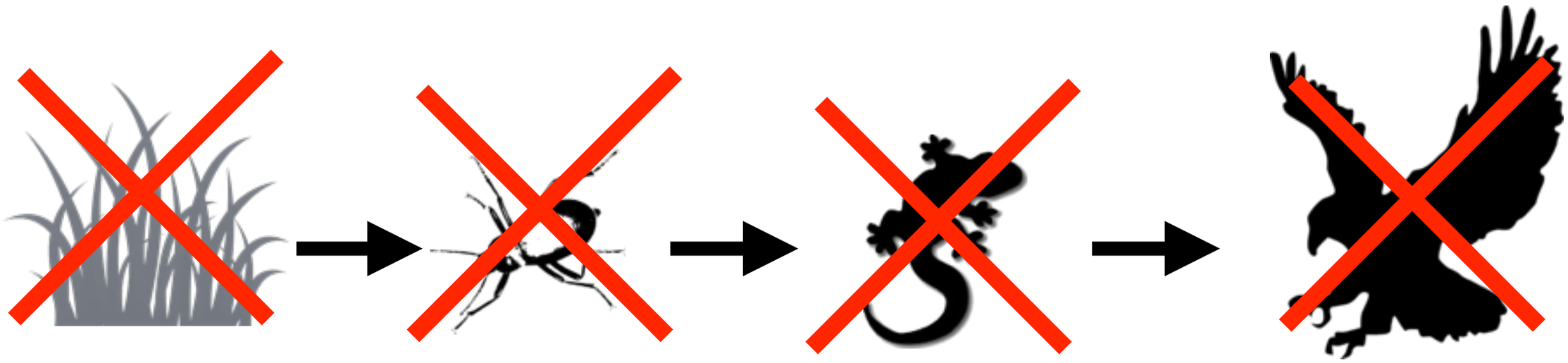
So the beetle population would decrease…

Then the lizards would have nothing to eat…



So the lizard population would decrease…

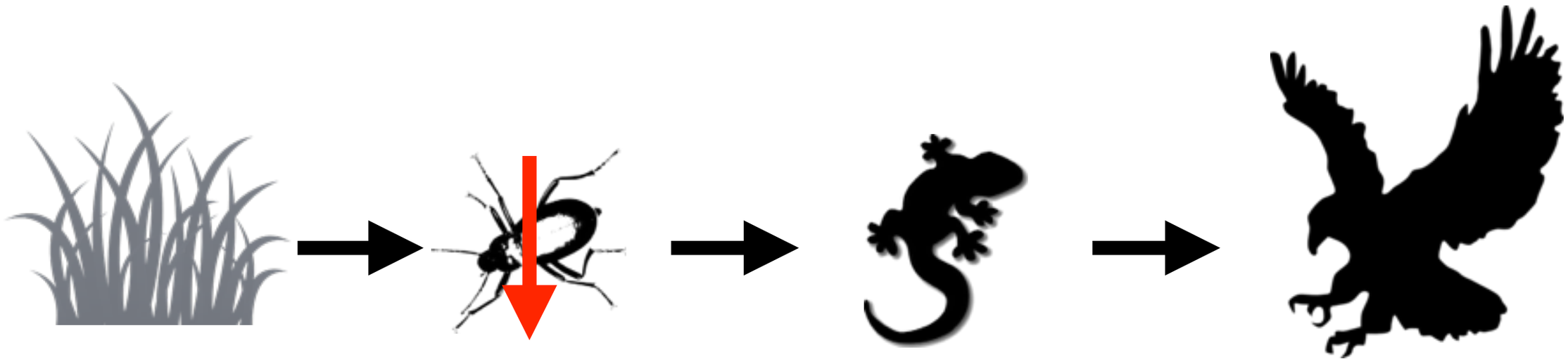
Then the hawks would have nothing to eat…



So the hawk population would decrease.

Let’s try another situation

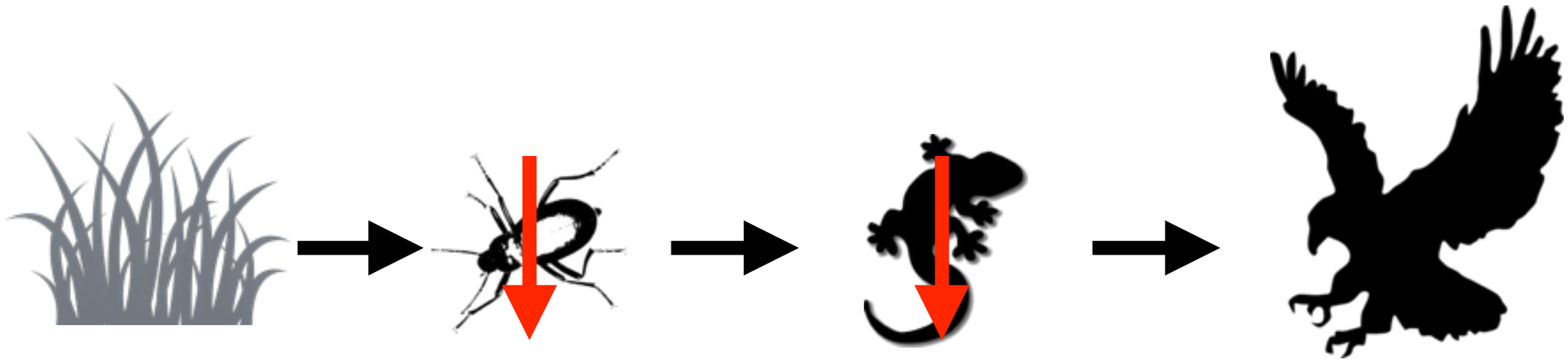
What would happen to all the species in the ecosystem if a disease killed 50% of the beetle population?



Grass Beetle Lizard Hawk

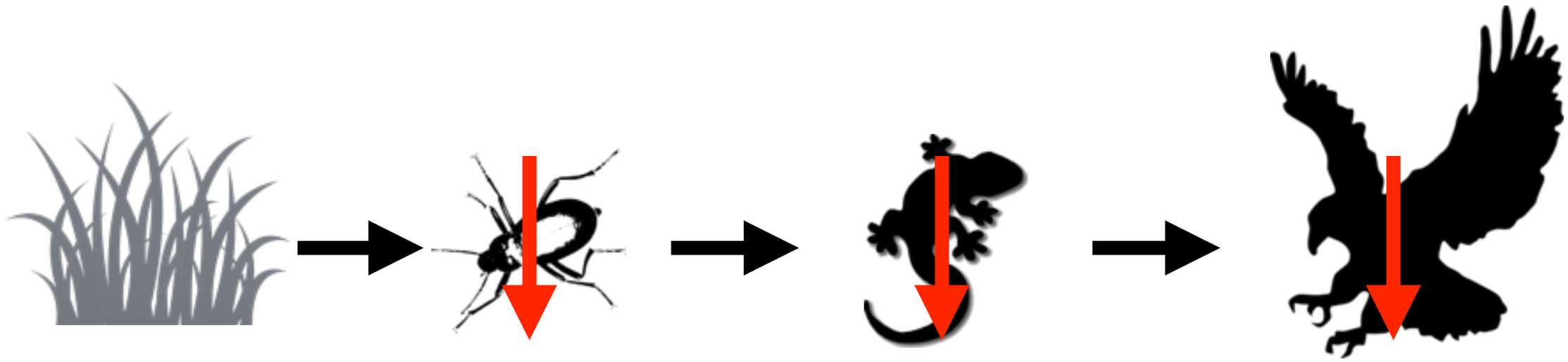
The beetle population is decreased…

There would not be enough food for all the lizards to survive



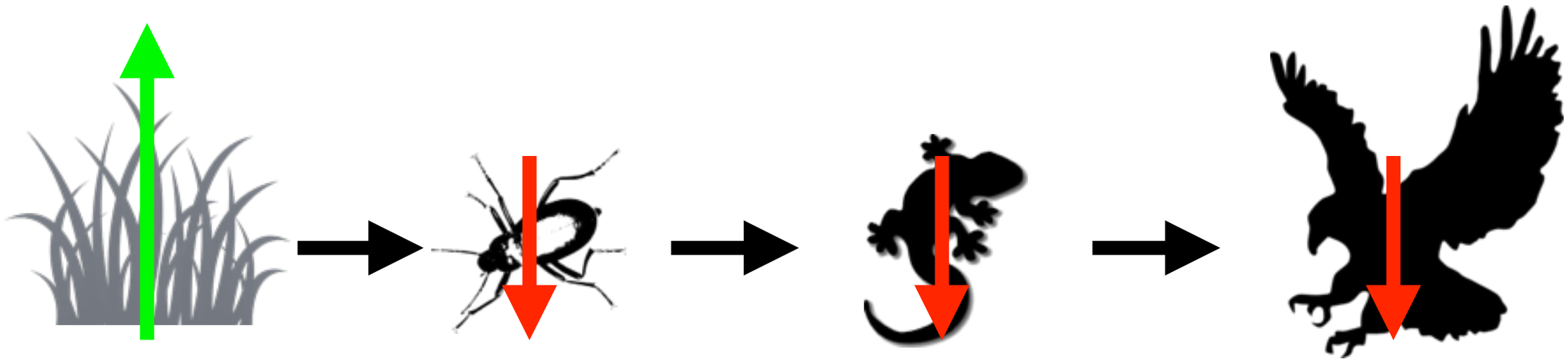
So the lizard population would also decrease…

And there would not be enough food for all the hawks to survive



So the hawk population would also decrease…

But what about the grass???

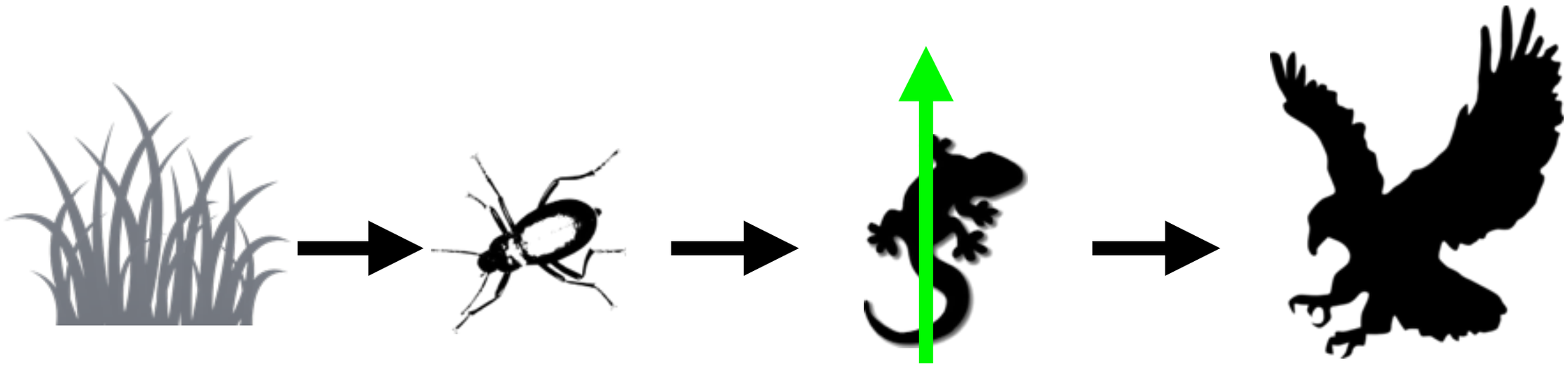


Grass Beetle Lizard Hawk

With fewer beetles to eat it, the grass population will INCREASE!

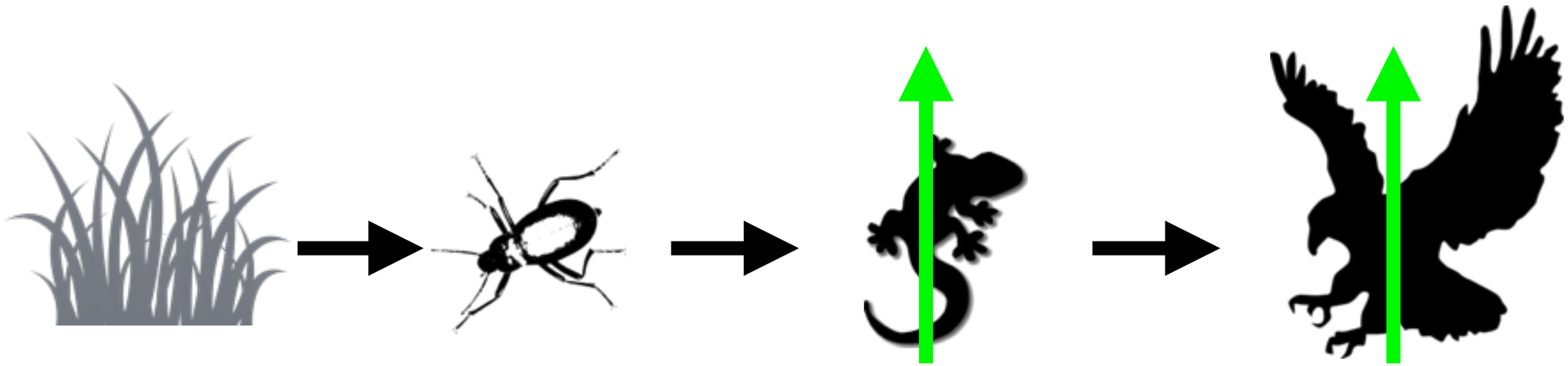
Let’s try another situation

What would happen to all the species in the ecosystem if more lizards joined the ecosystem?



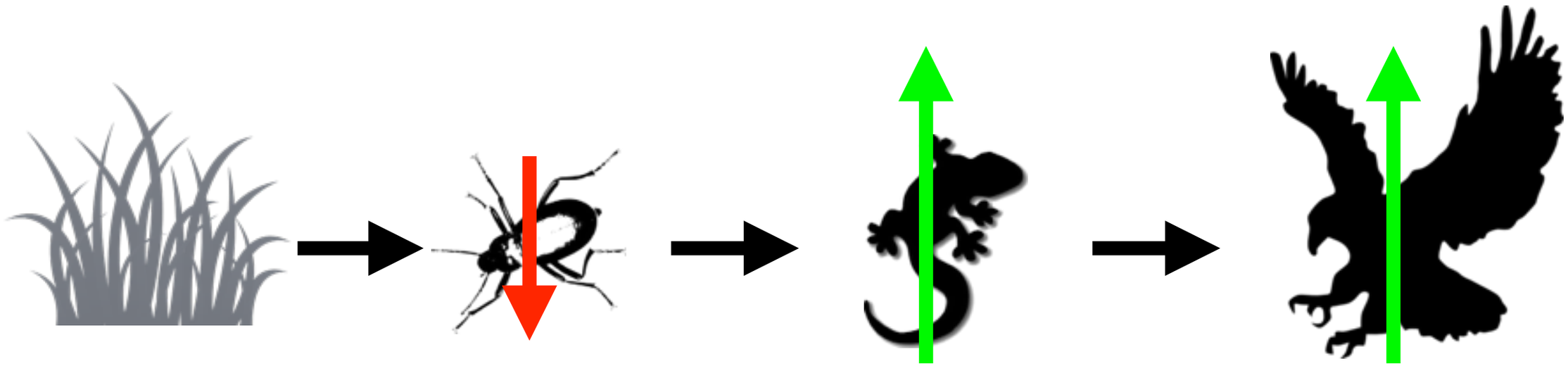
The lizard population is increased…

There will be more food for the hawks to eat.



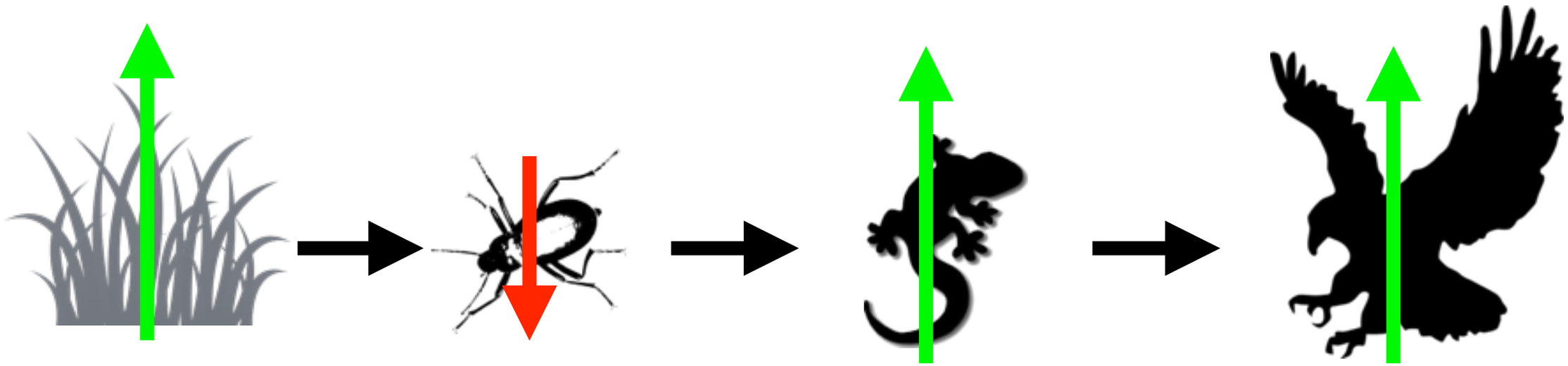
So the hawk population would also increase…

BUT, there will be more lizards eating beetles



So the beetle population will decrease…

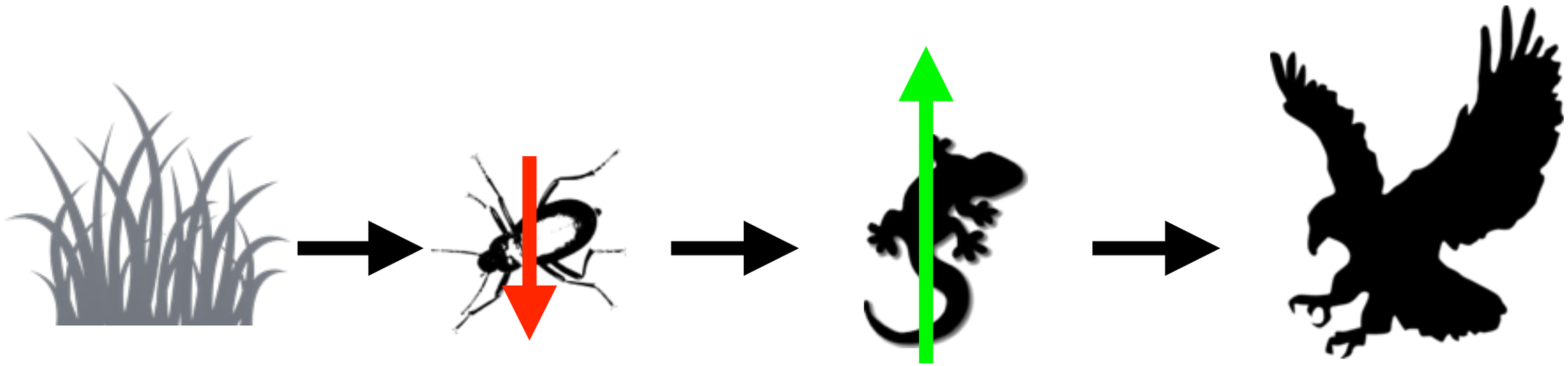
With fewer beetles, more grass will survive.



So the grass population will increase!

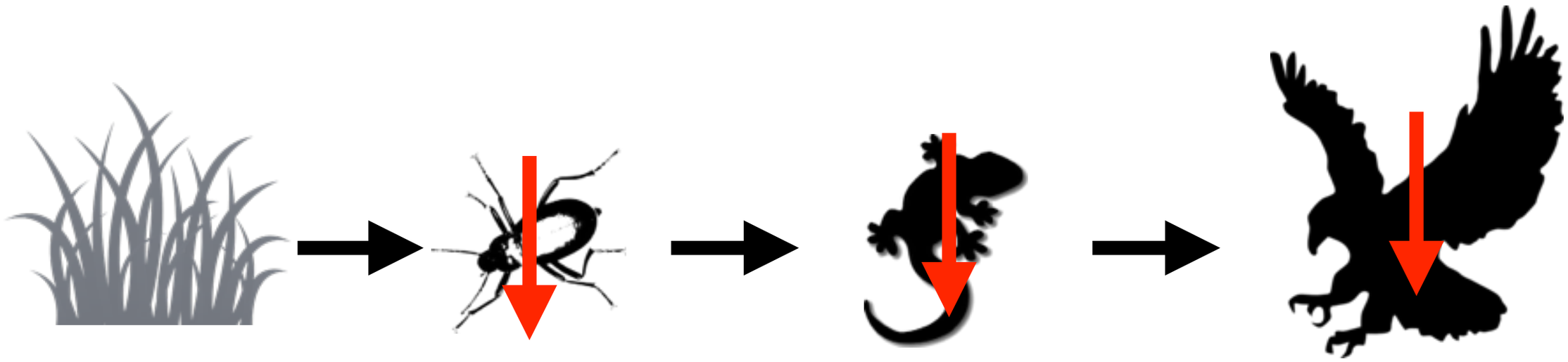
But this is not sustainable…

After a while, the lizards will eat all the beetles.



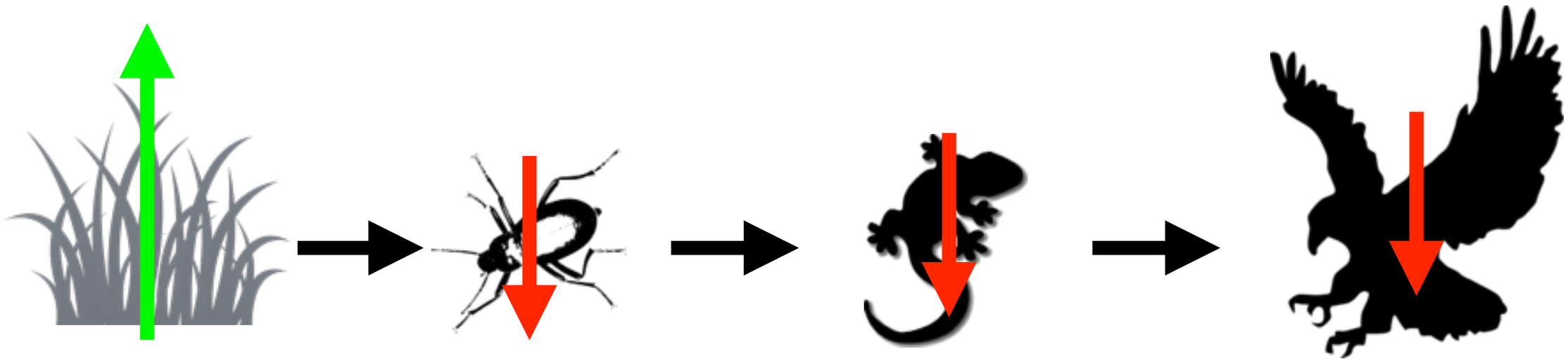
The lizard population is increased and the beetle population is decreased…

And then the lizard population will start to decrease



Which will cause the hawk population to decrease…

But the grass will continue to increase as long as there is enough sunlight, space, and nutrients!



Grass Beetle Lizard Hawk

In conclusion…

- A change in one population in an ecosystem will affect all other populations.

- In other words, ecosystems are **INTERDEPENDENT**