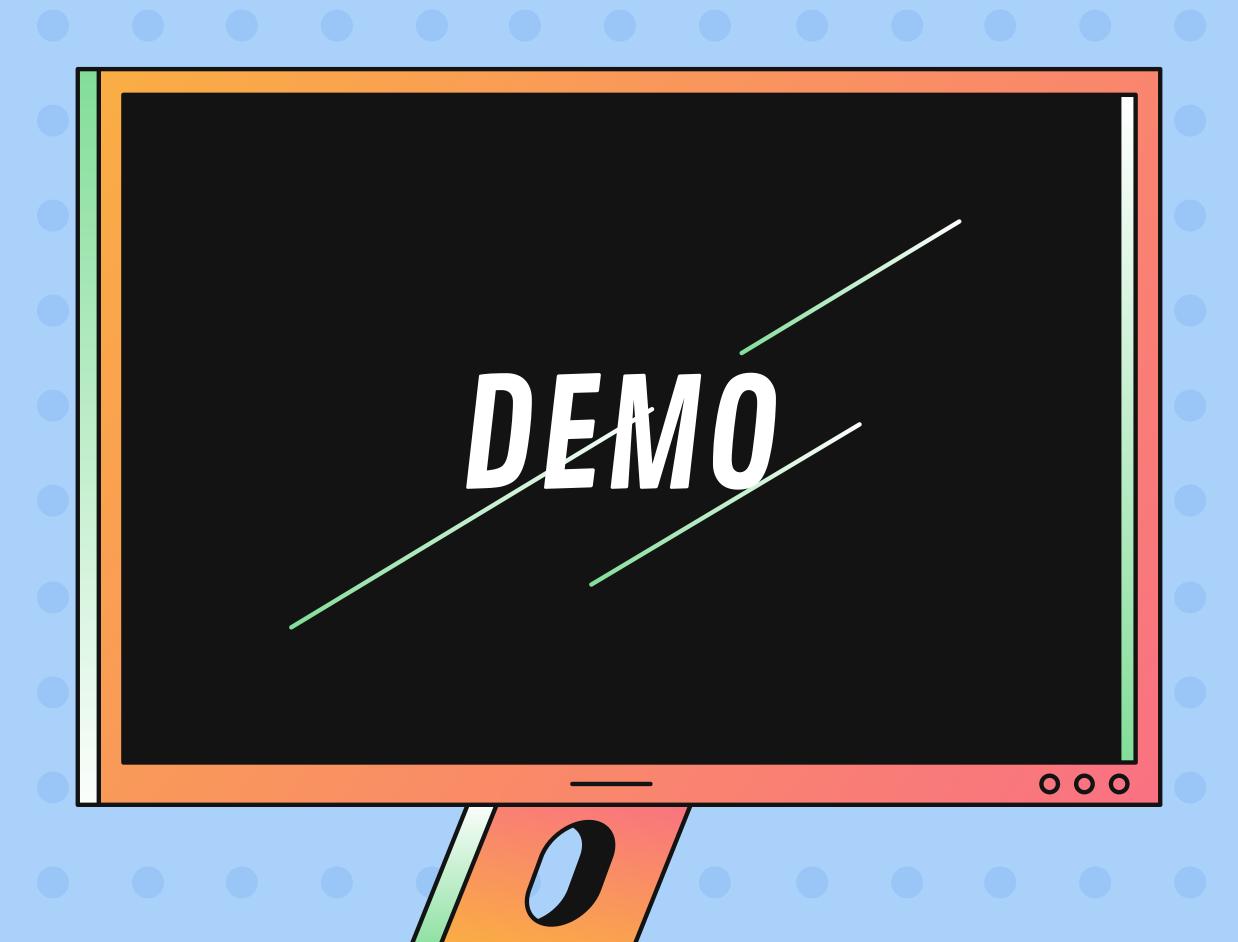DEFINE THE AGENTS

```
breed [ rabbits a-rabbit ]
breed [ foxes fox ]
```
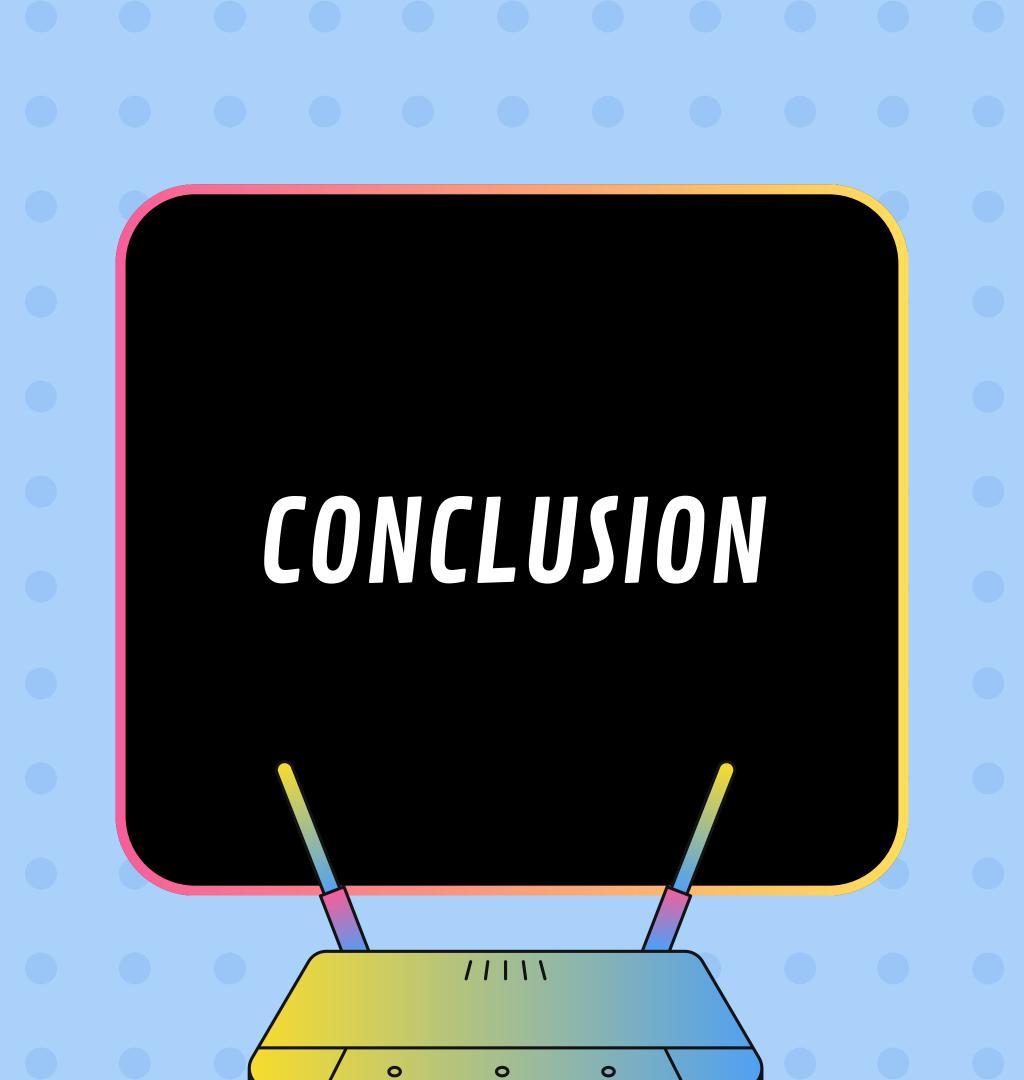
# INITIALIZING VARIABLES

```
to setup
  clear-all
  ifelse netlogo-web? [ set max-rabbits 10000 ] [ set max-rabbits 30000 ]

  ifelse Growth-Model = "Constrained-Growth" [
    ask patches [
      set pcolor one-of [ green brown ]
      ifelse pcolor = green [
        set countdown grass-regrowth-time
      ][
        set countdown random grass-regrowth-time
      ]
    ]
  create-foxes initial-number-foxes [
      set shape "wolf"
      set color orange
      set size 2
      set energy random (2 * fox-gain-from-food)
      setxy random-xcor random-ycor
    ]
  ][
```

```
][
    ; For "Unconstrained-Growth", make all patches green immediately and set countdown to 1
    ask patches [
      set pcolor green
      set countdown 1
    ]
  ]

  create-rabbits initial-number-rabbits [
    set shape "rabbit"
    set color white
    set size 1.5
    set energy random (2 * rabbit-gain-from-food)
    setxy random-xcor random-ycor
  ]
  reset-ticks
end
```

- *Exponential growth in the absence of predators.*
- *Grass levels recovered when herbivore numbers dropped.*
- *Ecosystem balance depends on interaction among species*
- *Predator-prey dynamics led to population cycles*

CONCLUSION

- **Predator presence is essential to control prey population**
- **Balanced ecosystems show rational population dynamics**
- **Predator-prey interactions help restore and maintain plant resources**
- **Ecosystem stability relies on species interaction and resource limits**