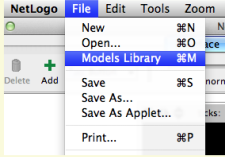


Sample Model: Wolf-Sheep Predation

We'll open one of the Sample Models and explore it in detail. Let's try a biology model: Wolf Sheep Predation, a predator-prey population model.

- Open the Models Library from the File menu.



The screenshot shows the NetLogo application window with the 'File' menu open. The 'Models Library' option is highlighted in blue. Other visible options include 'New', 'Open...', 'Save', 'Save As...', 'Save As Applet...', and 'Print...'. The 'Zoom' menu is also visible to the right.

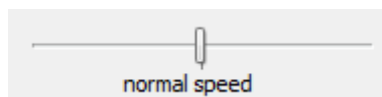
- Choose "Wolf Sheep Predation" from the Biology section and press "Open".

If you'd like to make the window larger so that everything is easier to see, you can use the Zoom menu.

When you first open the model, you will notice that the "view" (the graphical display of the agents in the model) is empty (all black). To begin the model, you will first need to set it up.

- Press the "setup" button.
What do you see appear in the view?
- Press the "go" button to start the simulation.
As the model is running, what is happening to the wolf and sheep populations?
- Press the "go" button to stop the model.

The speed slider allows you to control the speed of a model, that is, the speed at which *turtles* (the name of *agents* in NetLogo) move, patches change colour, and so on.



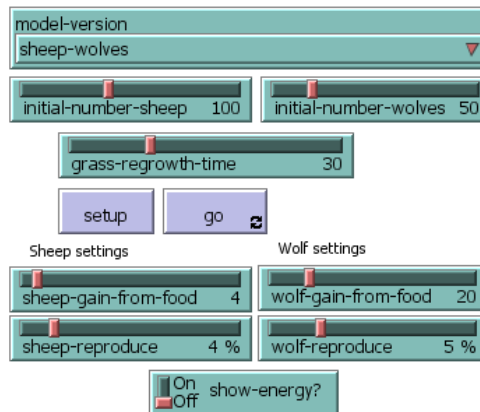
- If you like, experiment with the "setup" and "go" buttons in the Wolf Sheep Predation model.
Do you ever get different results if you run the model several times with the same settings?

What patterns do you find in the predator-prey relationships? How do populations develop?

Adjusting Settings: Sliders and Switches

A model's settings let you explore different scenarios or hypotheses. Altering the settings and then running the model to see how it reacts can give you a deeper understanding of the phenomena being modeled.

Switches and sliders give you access to a model's settings. Here are the switches and sliders in Wolf Sheep Predation:



Let's experiment with their effect on the behaviour of the model.

- Open Wolf Sheep Predation if it's not open already.
- Press "setup" and "go" and let the model run for about 100 ticks. (The tick count is shown above the view.)
- Stop the model by pressing the "go" button.

What happened to the sheep over time?

Let's take a look and see what would happen to the sheep if we change a setting.

- Turn grass on by switching to the «sheep-wolves-grass» model version
- Press "setup" and "go" and let the model run for a similar amount of time as before.

What did the switch do? Was the outcome the same as your previous run?

Turning the "grass on" affected the outcome of the model. With grass off, the amount of grass available always stayed the same. This is not a realistic look at the predator-prey relationship; so by setting and turning on a grass regrowth rate, we were able to model all three factors: sheep, wolf and grass populations.

Another type of setting is called a slider.

Besides switches, a model may also have sliders. While a switch has only two values, on and off, a slider has a whole range of numeric values. For example, the "initial-number-sheep" slider has a minimum value of 0 and a maximum value of 250. The model could run with 0 sheep or it could run with 250 sheep, or anywhere in between. Try this out and see what happens. As you move the marker from the minimum to the maximum value, the number on the right side of the slider changes; this is the number the slider is currently set to.

Let's investigate Wolf Sheep Predation's sliders.

- Change from the Interface to the Info tab to learn what each of this models' sliders represents.

The Info tab offers guidance and insight into the model. Within this tab you will find an explanation of the model, suggestions on things to try, and other information. You may want to read the Info tab before running a model, or you might want to just start experimenting, then look at the Info tab later.

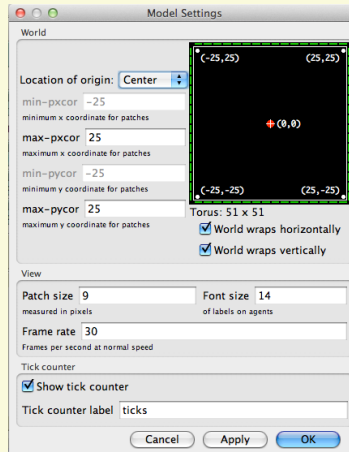
Controlling the View

The size of the view is determined by five separate settings: min-pxcor, max-pxcor, min-pycor, max-pycor, and patch size. Let's take a look at what happens when we change the size of the view in the "Wolf Sheep Predation" model.

There are more model settings than there's room for in the toolbar. The "Settings..." button lets you get to the rest of the settings.

- Press the "Settings..." button in the toolbar.

A dialog will open containing all the settings for the view:



What are the current settings for min-pxcor, max-pxcor, min-pycor, max-pycor, and patch size?

- Press "cancel" to make this window go away without changing the settings.
- Place your mouse pointer next to, but still outside of, the view.

You will notice that the pointer turns into a crosshair.

- Hold down the mouse button and drag the crosshair over the view.

The view is now selected, which you know because it is now surrounded by a gray border.

- Drag one of the square black "handles". The handles are found on the edges and at the corners of the view.
- Unselect the view by clicking anywhere in the white background of the Interface tab.
- Press the "Settings..." button again and look at the settings.

What numbers changed?

What numbers didn't change?