



As the name suggests, this model simulates the foraging behavior of two predator species. Predators forage and gain energy from prey while using energy to move (plus a regular decrement for metabolism). The predators will die if their energy level reached zero. The model tracks the mean and standard deviation in energy for each species. Prey can be clumped, uniformly or randomly distributed; and static, slow, or fast moving. Each predator can have two foraging strategies based on individual energy levels. The predator's foraging parameters include: their movement likelihood, speed, and directional shifts. The predator's threshold for shifting strategies is also adjustable. In general, the way to explore this model is to set the prey parameters, then compare how the predator parameters affect the species' foraging success.

Figure 1. Screenshot of the Searching Behavior Model

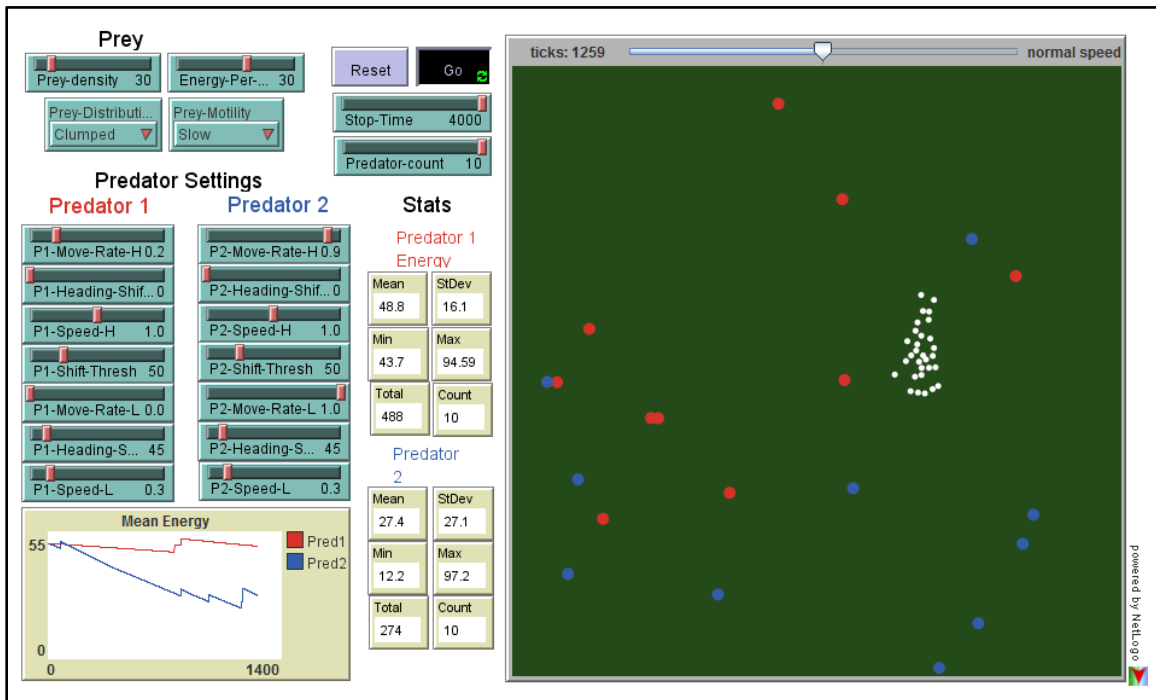


Table 1: Controls for the Searching Behavior Model

Control	Action
Reset	Clears all values, resets model to current parameters

Go	Sets the model in motion
Stop-Time	Stops the simulation after a set time (0-4000)
Predator-Count	Sets the number of each predator species (0-10)
Prey Settings	
Prey-density	The number of prey in the area (0-200)
Energy-Per-Prey	The amount of energy a predator gains from eating one prey (0-50)
Prey-Distribution	Sets the distribution to clumped, random, or uniform
Prey-Motility	Sets the movement of the prey to static, slow, or fast
Predator Settings	
There are two paired sets of settings for each predator, one which governs behavior when the individual has high energy reserves, and one for when it has low energy reserves	
P-Move-Rate	Sets the probability of a predator moving in a given time step (0-1.0)
P-Heading-Shift	Sets the range in degrees within which the predator will randomly change its heading (0-360)
P-Speed	The speed at which the predator moves when it is moving (0-2)
P-Shift-Threshold	The energy level at which the predator switches to the low energy strategy

Table 2: Reporters for the Searching Behavior Model

Reporter	Description
Mean Predator Energy (Graph and Numeric)	The average energy of the predator species
StDev	The standard deviation in energy of each predator species
Min & Max	The minimum and maximum energy of each predator species
Total	The total energy of each predator species
Count	The number of each predator species alive

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