Pigment Mutation in the Wild

New Mexico

Supercomputing Challenge

Final Report

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Our project is about the wild population (or lack thereof) of albino garter snakes. We are attempting to create a simulation of a group of garter snakes and allow them to breed on their own, producing offspring and progressing through the generations. We are hoping to show the spread or isolation of the albino gene in the wild. Albinism is a color mutation which causes the animal to lack the pigment melanin. The offspring are produced as following:

- Normal + Normal yields Normal
- Normal + Albino yield 100% of the offspring Het. Albino
- Albino + Albino yields 100% of the offspring Albino
- Albino + Het. Albino yields 50% Albino and 50% Het.
- Het. Albino + Het. Albino yields 50% Het. 25% Albino 25% Normal
- Het. Albino + Normal yield 50% Normal 50% Het. Albino

We have almost completed the project. We have incorporated an age system so that only snakes of two years or older can reproduce, just like in the wild. We have put in a breeding season and birthing season correlating with their yearly cycle in the real world. We have already programmed all of the genetics including a 1-in-4,026 chance that a Normal-Normal will produce an albino. The seasons work so that if two snakes collide, depending on their color will become pregnant with babies of the correct color. They will breed in the equivalent months of March through April and into the middle of May. They will then give birth in June to early August. The only thing we still need to program is a way to keep the number of organisms from continuously increasing. We expect to be finished within the week.