Modellering av økosystemet på Rossumøya

Anders Karlsen & Kåre Johnsen

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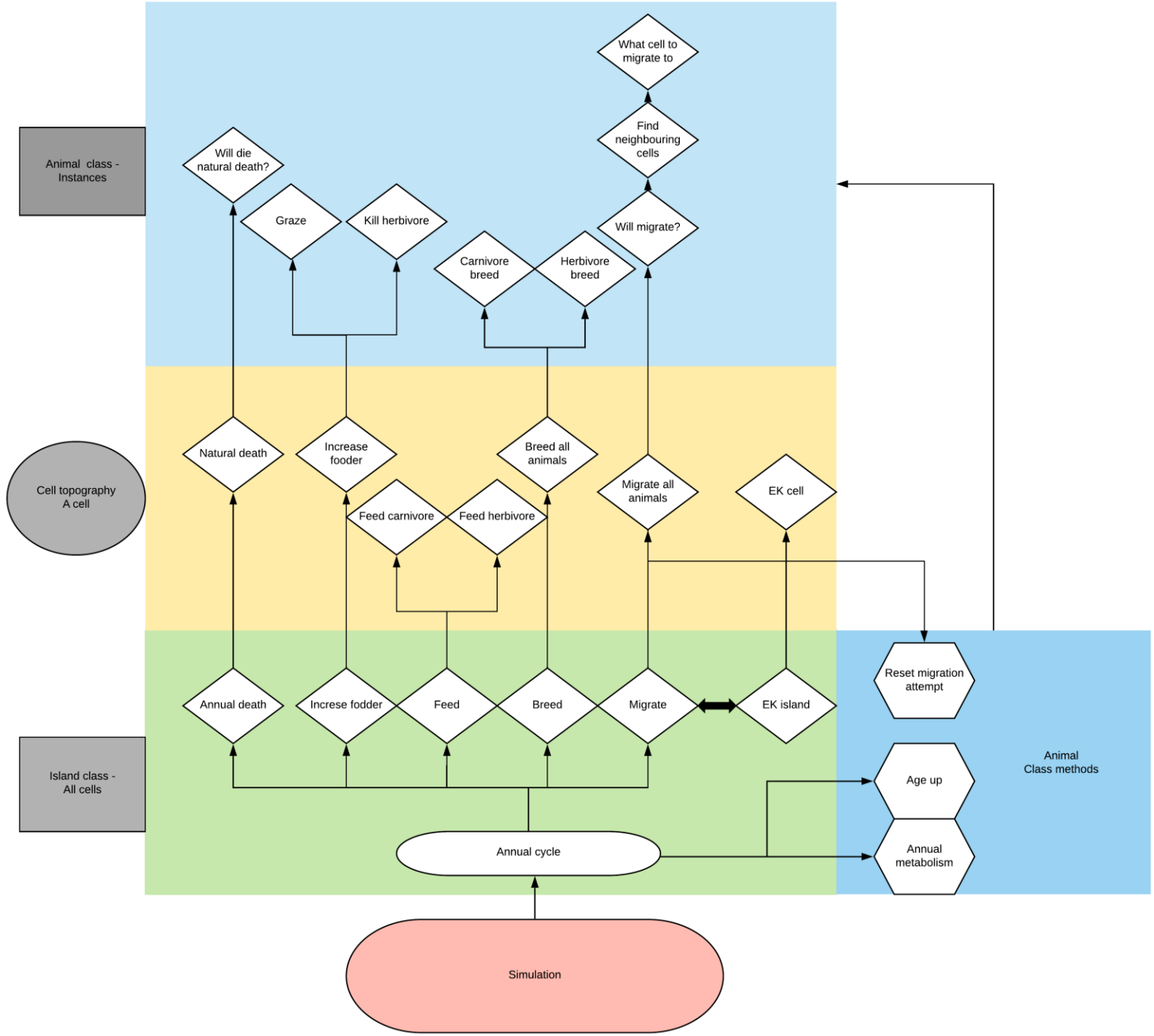
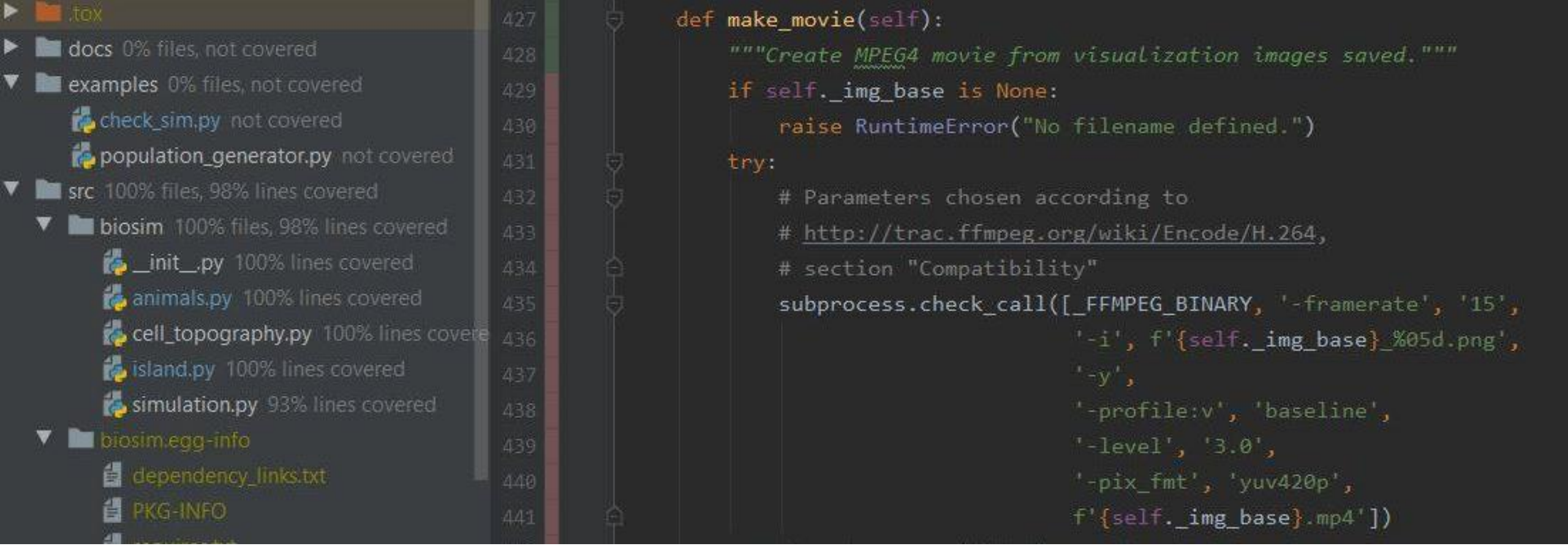
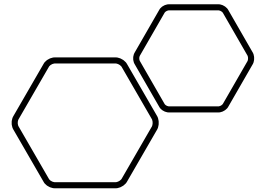

Animal class - Instances
Cell topography A cell
Island class - All cells
What cell to migrate to
Find neighbouring cells
Will migrate?
Will die natural death?
Graze
Kill herbivore
Carnivore breed
Herbivore breed
Natural death
Increase fooder
Breed all animals
Migrate all animals
EK cell
Feed carnivore
Feed herbivore
Annual death
Increse fodder
Feed
Breed
Migrate
EK island
Annual cycle
Simulation
Reset migration attempt
Age up
Annual metabolism
Animal Class methods



Hvorfor koden vår er pålitelig

- Test coverage
- Statistiske tester
- Grafisk overvåkning

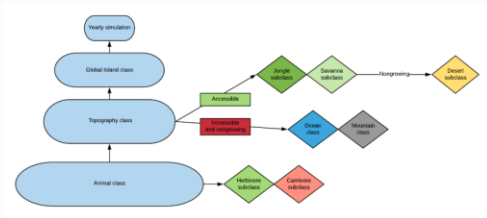


Welcome to Biosim G05's documentation!

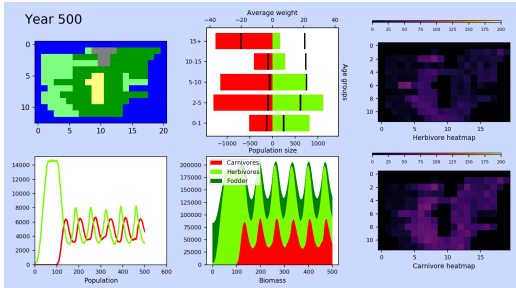
The Biosim project was developed at NMBU - The Norwegian University of Life sciences in January 2020 by Anders Karlsen and Kåre Johnsen for the Environmental Protection of Pylandia (EPAP). The project is modelling the stability of the ecosystem on Rossumøya, a small island in Pylandia, which EPAP plans to preserve as a nature park. Rossumøya is a very special island due to its unusually wide topographic diversity. The main topographic type at of the island is jungle, which at Rossumøya has a very high primary production. It also consist of savannas threatened by herbivore overgrazing, inaccessible mountains and even a desert. Another unusual feature of the island is that it only hosts two animal species, one of them herbivores and one of them carnivore predators which hunt the herbivore species.

The project model

The model is built on the principle of object oriented programming and encapsulation:



Simulation



The ecosystem stability is simulated and the results are visualized as above.

- The top left figure shows a map of Rossumøya
- The lower left figure shows the population development
- The top middle figure shows the population pyramid of the island (lower x-axis), and the mean weight for the respective weight group (higher y-axis).
- The lower middle figure visualize the Rossumøyas total biomass as a stacked plot.
- The top and lower right figures shows the heatmap for respectively the herbivore and carnivore population

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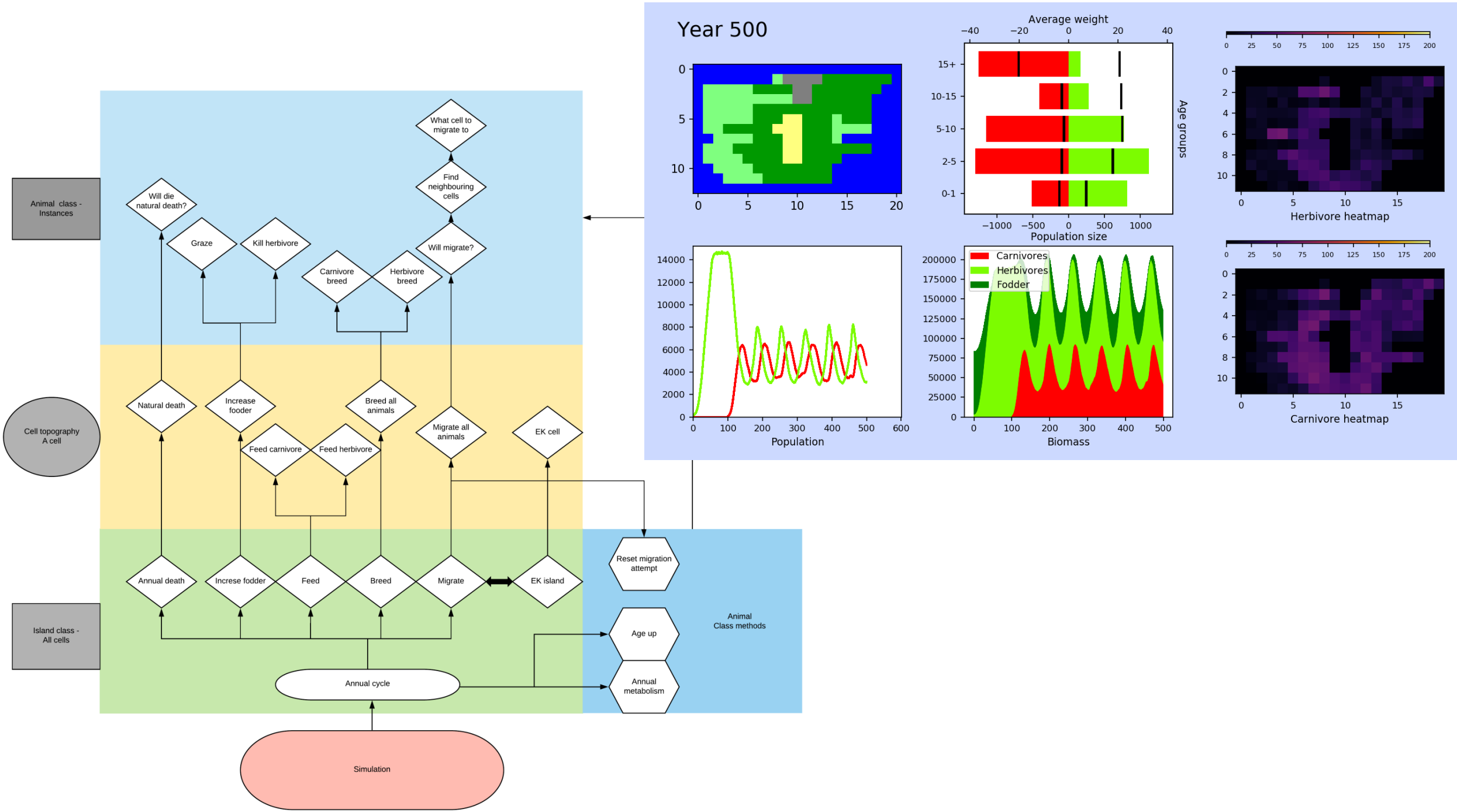
Year 500
Average weight
Age groups
Population size
Herbivore heatmap
Carnivore heatmap
Carnivores
Herbivores
Fodder
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