

INF200_H21_Ju06

June 6, 2022

1 INF200 Lecture No Ju06

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1.0.2 7 June 2022

1.1 Today's topics

- Status
 - Priorities for remaining work
 - `isinstance()` considered harmful
 - Testing migration
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1.2 Status

- By **tomorrow afternoon**, all groups should have herbivores and carnivores behaving correctly in a single lowland cell as in my examples
 - By **Friday afternoon**, all groups should have a rough draft version of migration
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1.3 Priorities for remaining work

1. Correct file and directory layout
 2. Hunting
 3. Migration
 4. Visualization (use RandVis as a starting point!)
 5. Make sure your code passes `test_biosim_interface.py` test and that `check_sim.py` works with your code
 6. Documentation with Sphinx
 7. Packaging
 8. Optimization (more information later)
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1.4 `isinstance()` considered harmful

- Do not use
 - `if isinstance() ...`
 - `if type() == ...`

- if `cell.code == 'L'` ...
 - If you are tempted to do so, in 99.9% of cases you are trying to hack a solution that could be achieved much more elegantly and robustly using proper object oriented design.
 - An object shall know itself how to “behave” (through proper member functions).
 - For historical reference on the headline, see https://en.wikipedia.org/wiki/Considered_harmful.
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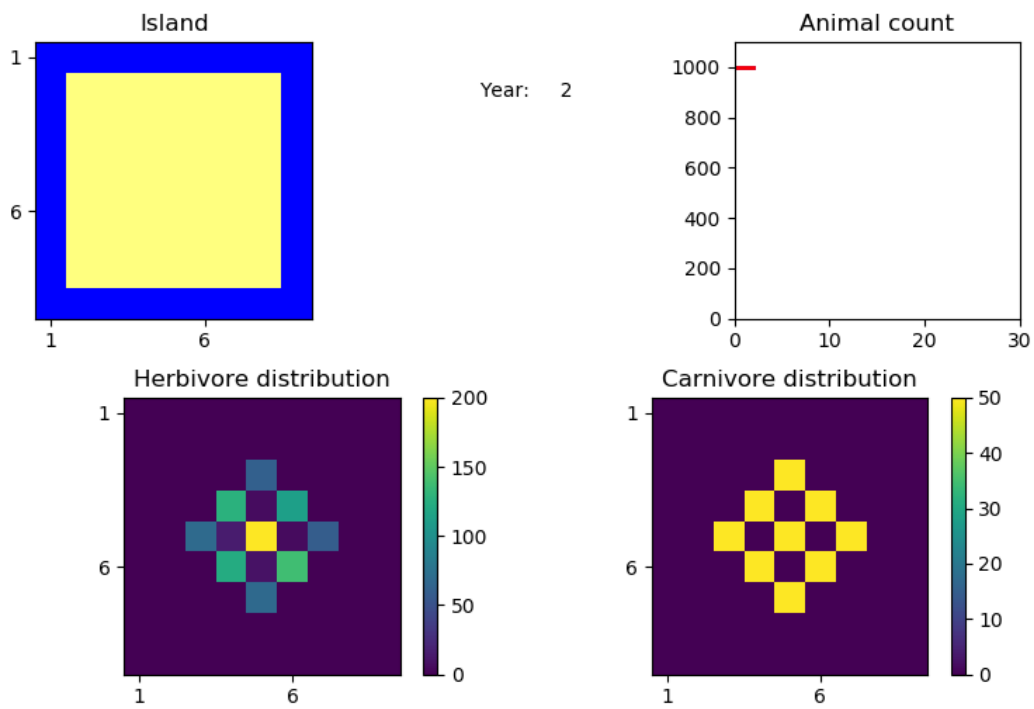
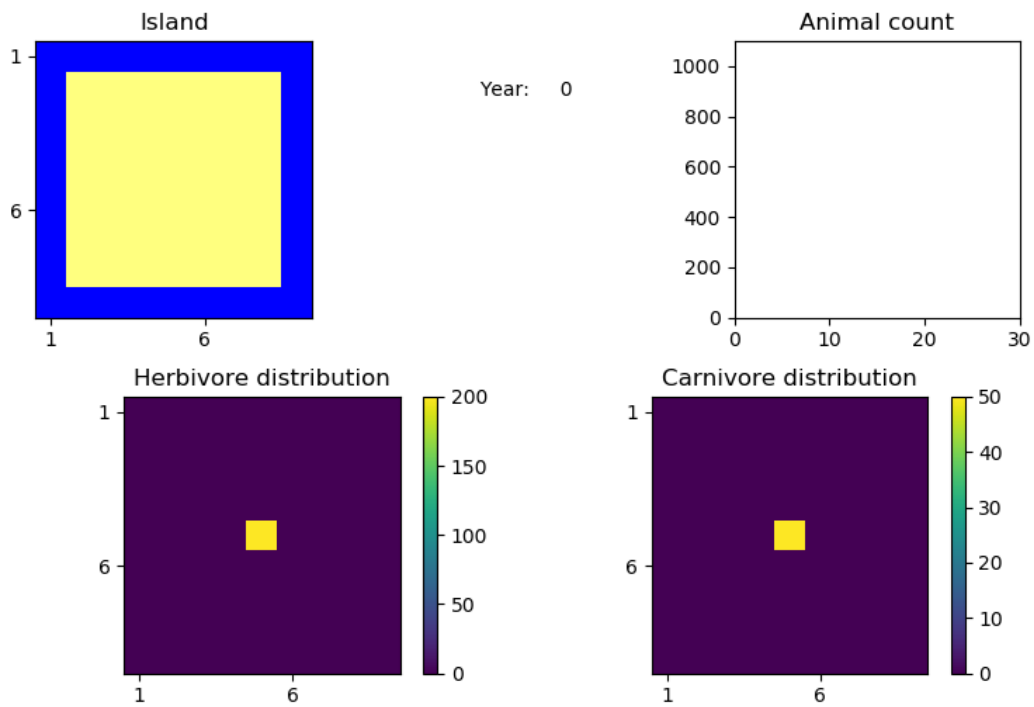
1.5 Testing migration

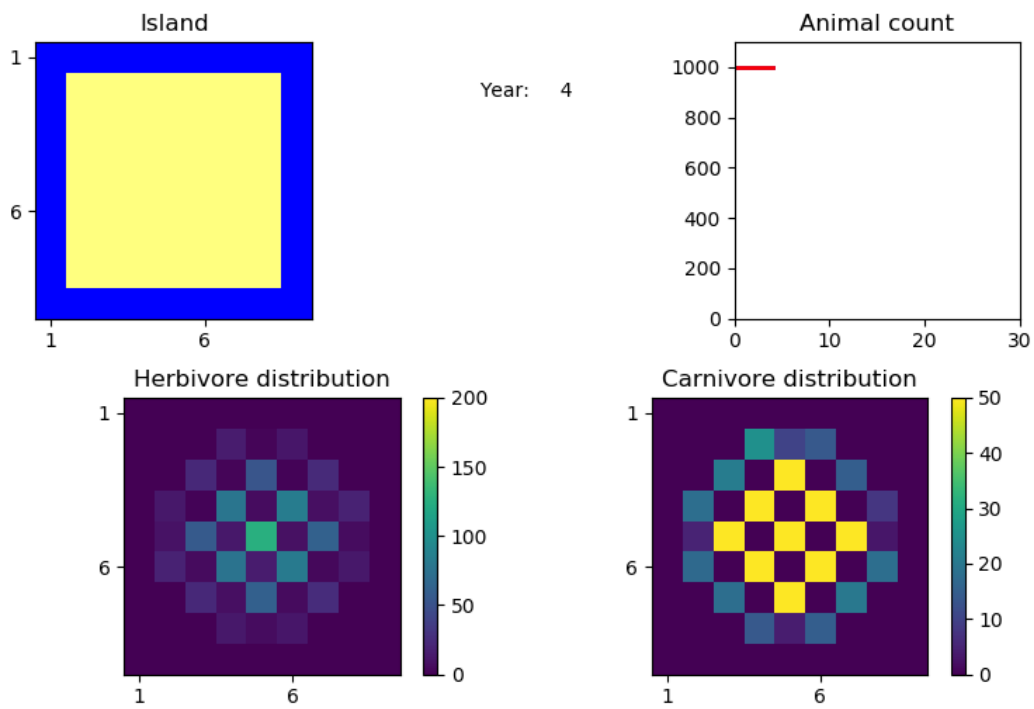
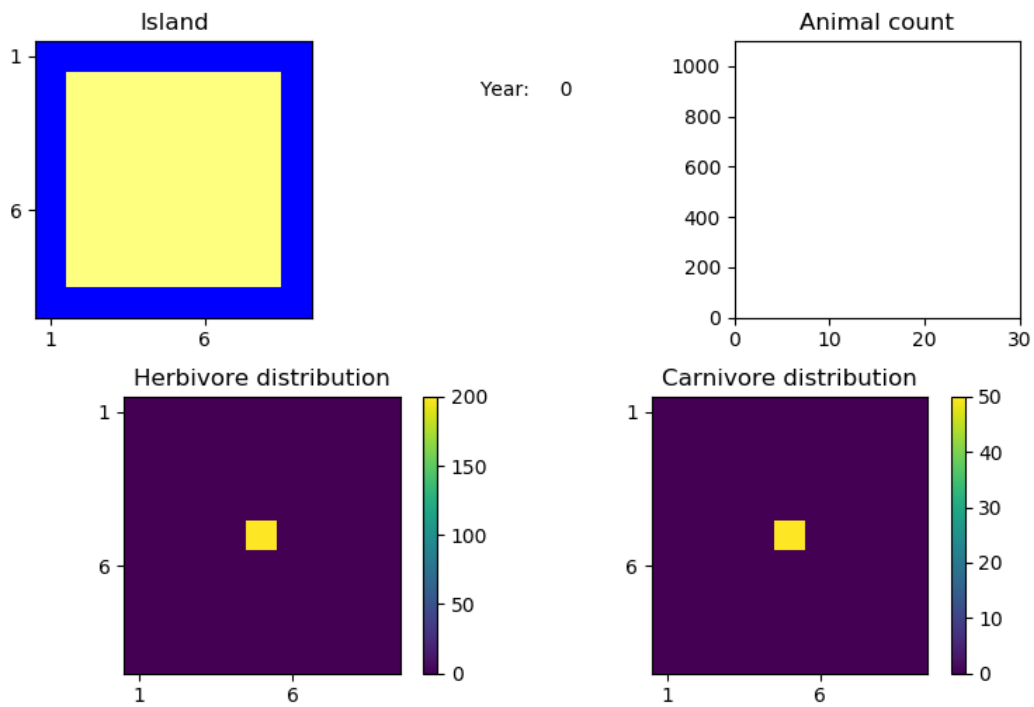
- To test if migration works, exclude all confusing effects
 - no birth or death
 - everyone walks every year
 - all destinations are accessible
- To do so
 - create square island with identical cells
 - use particular parameter settings
 - * set very large `a_half` to ensure “perfect” fitness
 - * set birth and death parameters to zero
 - * set appetite of carnivores to zero
 - * set migration parameter $\mu = 1$
 - create initial population at center of island with small age and large weight
- Expected result
 - constant number of animals
 - all animals have $\Phi = 1$ and thus $\mu\Phi = 1$, thus each animal moves every year
 - animals will move to each neighbor location with equal probability

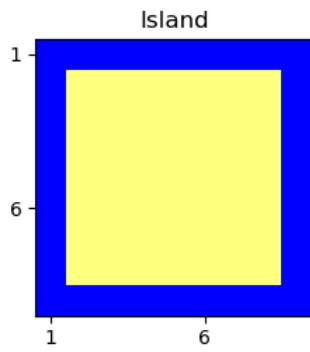
1.5.1 Example

- 1000 herbivores and 1000 carnivores placed in center initially
- All animals initially have age 5, weight 50
- Parameters set with

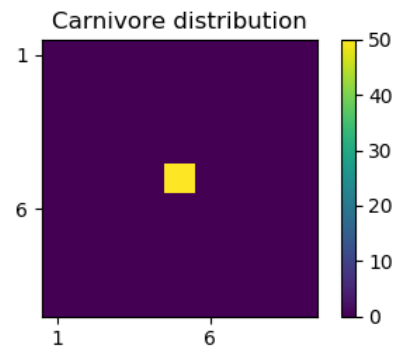
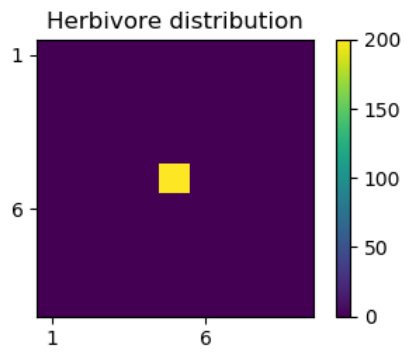
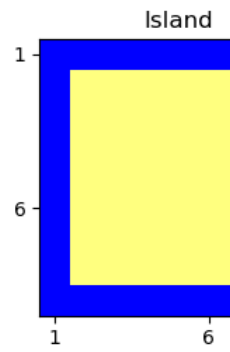
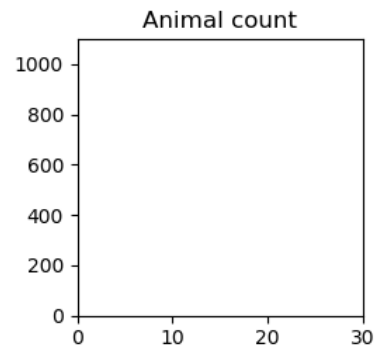
```
sim.set_animal_parameters('Herbivore',
                          {'mu': 1, 'omega': 0, 'gamma': 0,
                           'a_half': 1000})
sim.set_animal_parameters('Carnivore',
                          {'mu': 1, 'omega': 0, 'gamma': 0,
                           'F': 0, 'a_half': 1000})
```







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