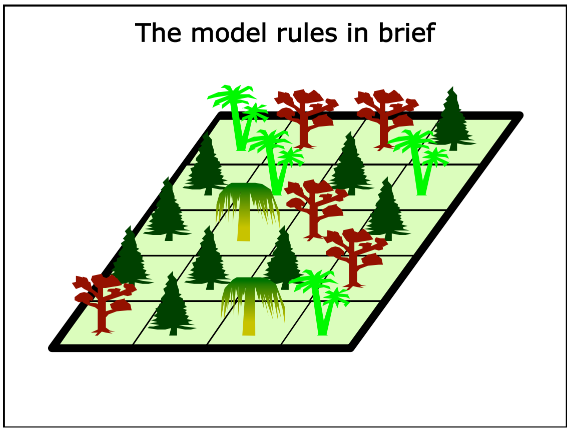
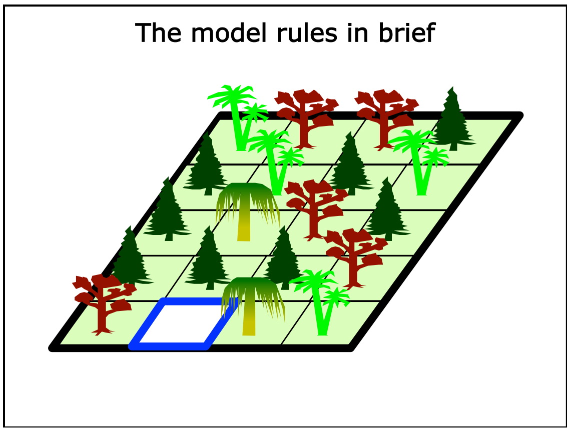
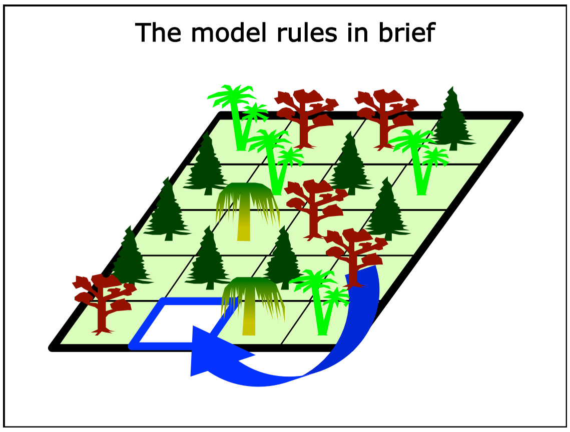


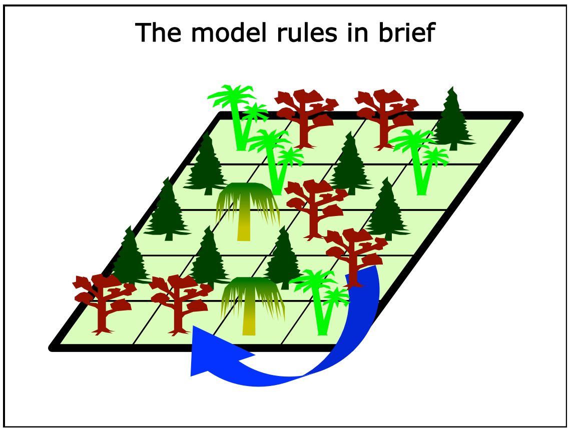
The model rules in brief



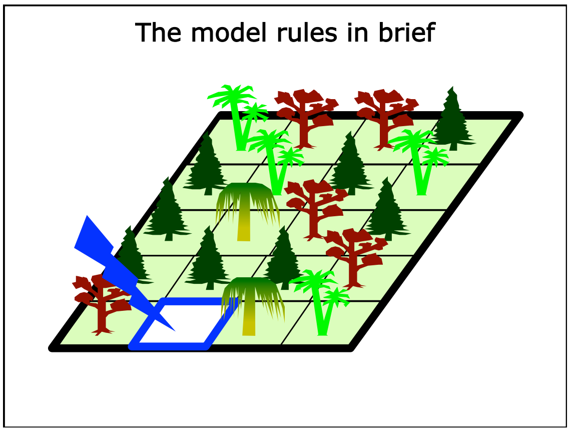
The model rules in brief



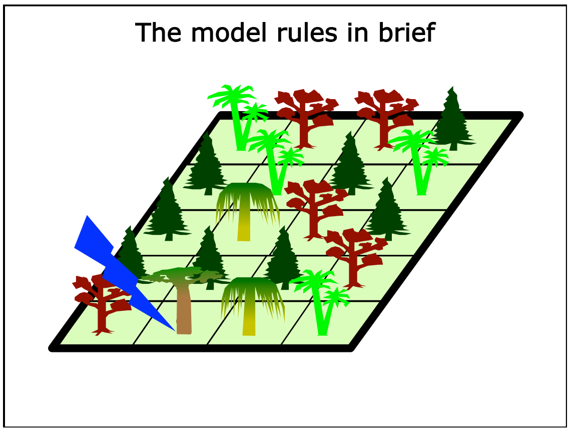
The model rules in brief



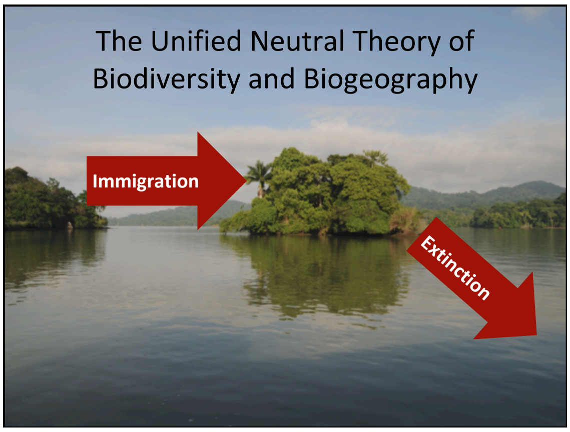
The model rules in brief



The model rules in brief

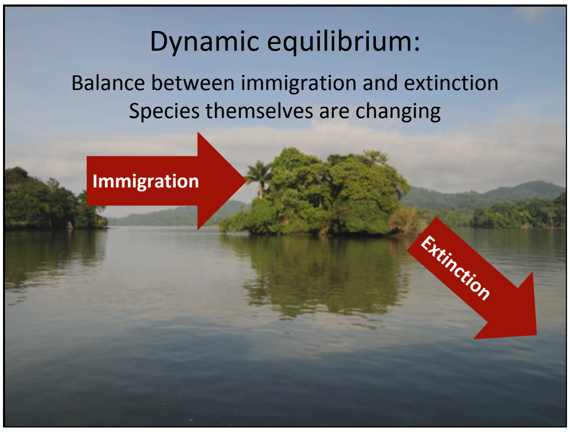


The model rules in brief



The Unified Neutral Theory of Biodiversity and Biogeography

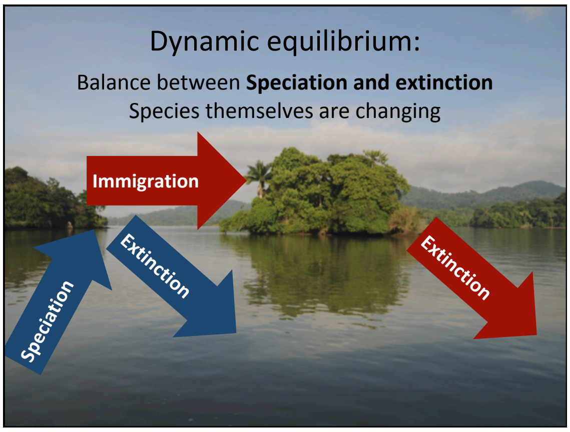
Immigration
Extinction



Dynamic equilibrium:

Balance between immigration and extinction
Species themselves are changing

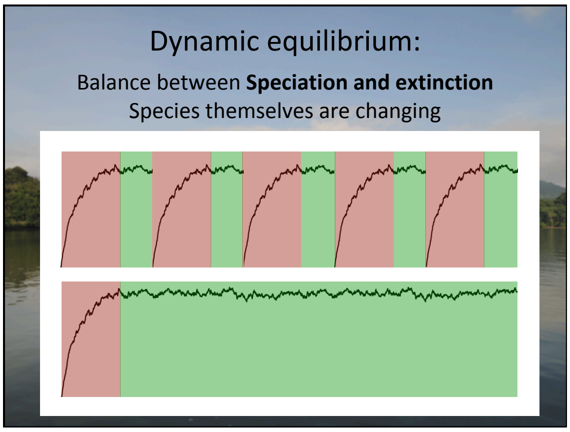
Immigration
Extinction



Dynamic equilibrium:

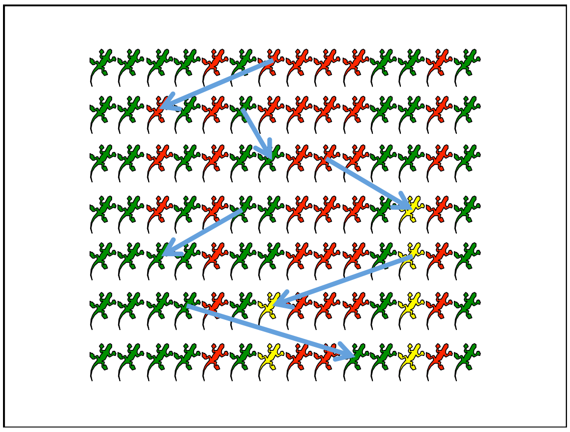
Balance between **Speciation and extinction**
Species themselves are changing

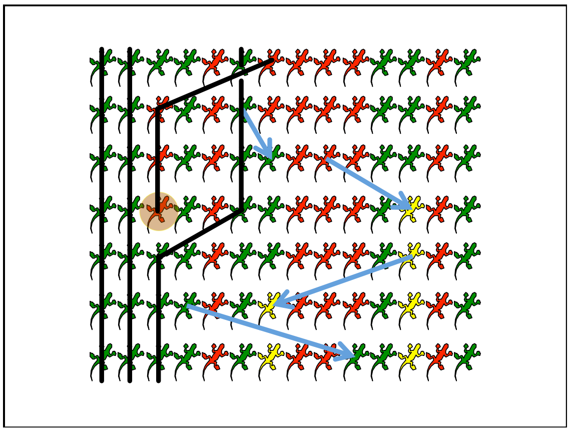
Immigration
Speciation
Extinction
Extinction

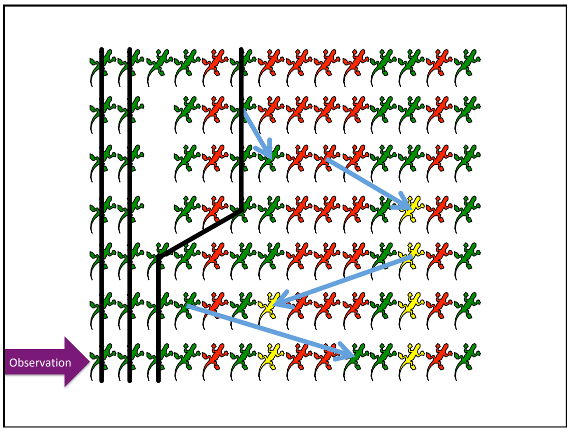


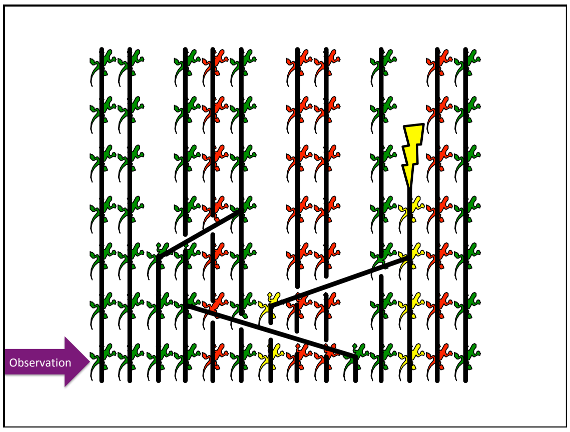
Dynamic equilibrium:

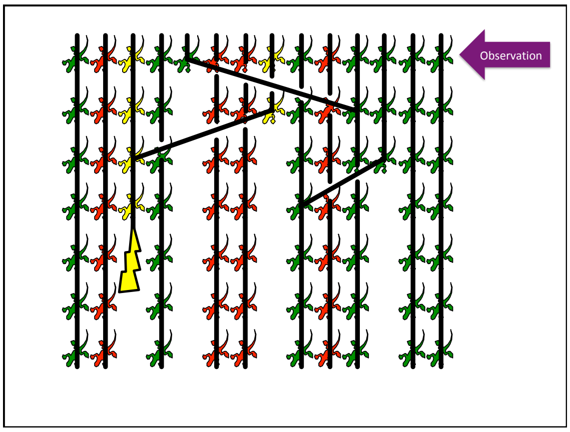
Balance between **Speciation and extinction**
Species themselves are changing

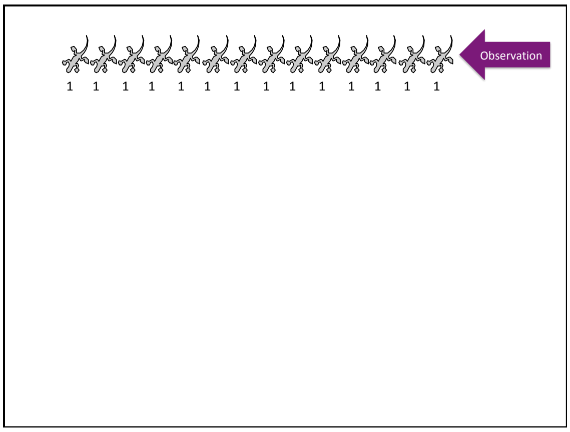


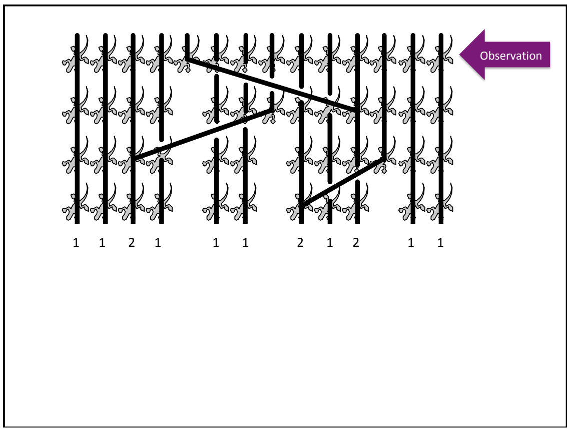


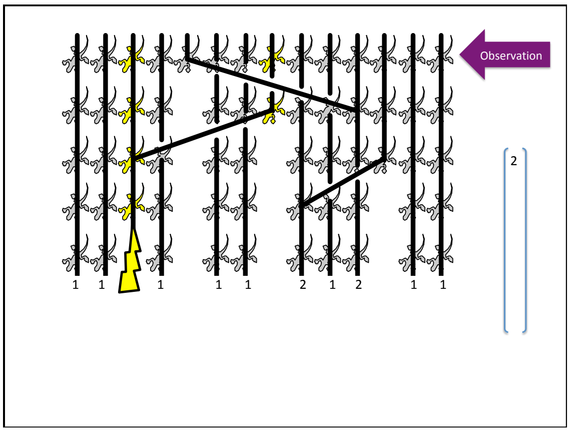

Observation

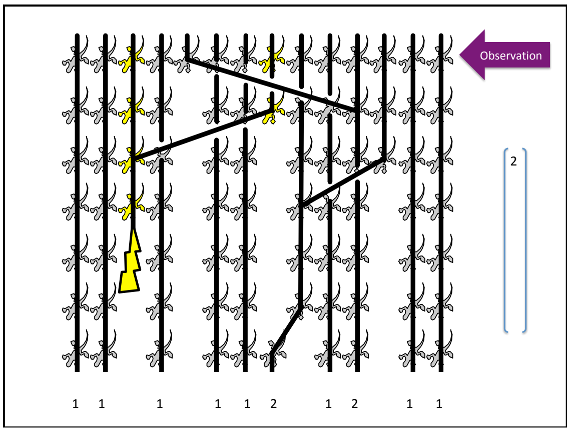

Observation


Observation

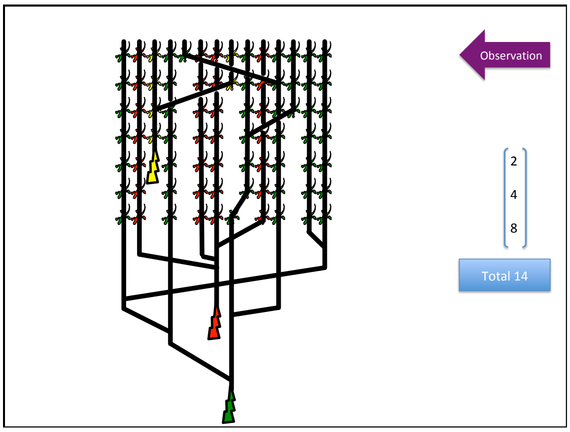

Observation
1 1 1 1 1 1 1 1 1 1 1 1 1 1


Observation
1 1 2 1 1 1 2 1 2 1 1

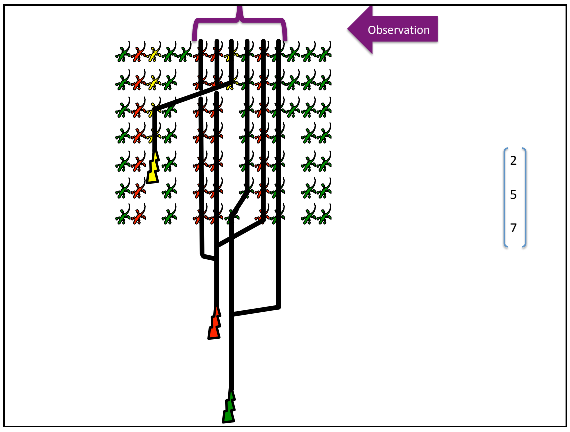

Observation
1 1 1 1 1 2 1 2 1 1
2

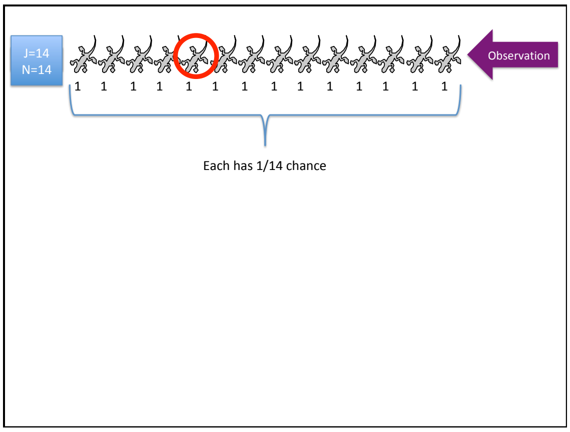

Observation

2
1 1 1 1 1 2 1 2 1 1


Observation

Total 14

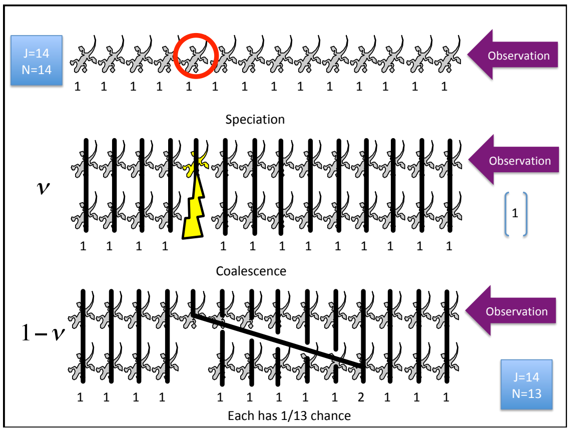

Observation


J=14
N=14

Observation

1 1 1 1 1 1 1 1 1 1 1 1 1 1

Each has 1/14 chance


J=14
N=14

Observation

1 1 1 1 1 1 1 1 1 1 1 1 1 1

Speciation

ν

Observation

1 1 1 1 1 1 1 1 1 1 1 1 1
1

Coalescence

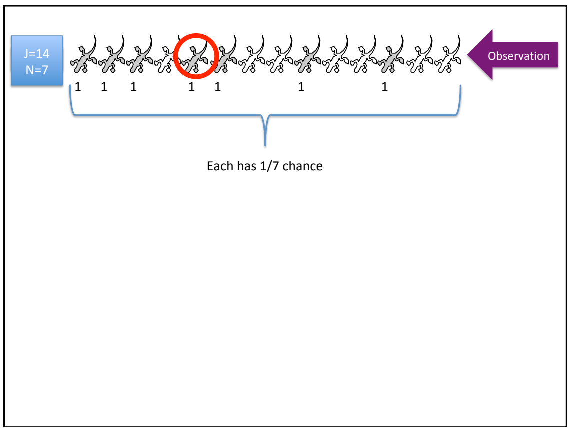
$1-\nu$

Observation

1 1 1 1 1 1 1 1 1 2 1 1 1

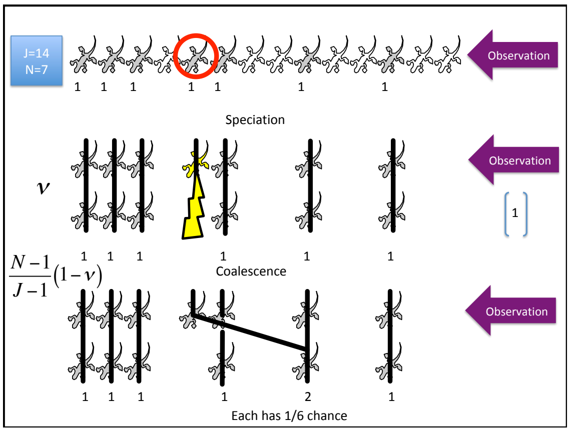
J=14
N=13

Each has 1/13 chance


J=14
N=7

Observation

Each has 1/7 chance


J=14
N=7
1 1 1 1 1 1 1
Observation
Speciation
ν
Observation
1
1 1 1 1 1 1
$\frac{N-1}{J-1}(1-\nu)$
Coalescence
Observation
1 1 1 1 2 1
Each has 1/6 chance

Advantages of coalescence

- Always at equilibrium
- Much faster
- Sampling based

Disadvantages of coalescence

- Not ideal for time series
- Complex to program
- Fewer ways in which model can be changed