21 Jan 2018

Leptospira Dynamics v9.1

I have made the following changes in version 9.1:

1) Dog characteristics and roaming: 90% of roaming by stray dogs now occurs on or near patches with households, only 10% roaming occurs away from the household patches.
2) Probability of getting infected is 50% higher for stray dogs compared to owned dogs.
3) Have added a slider on the interface to control ‘decay rate’ of Leptospires.

Main concerns:

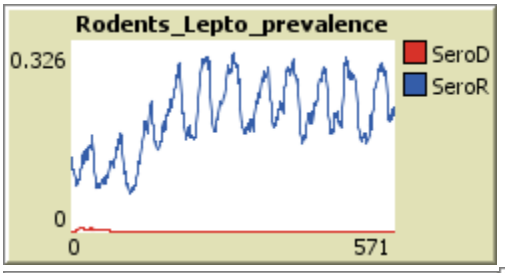
- Peak quantities of SeroR and SeroD leptospires shed by rodents in the current version is set **as μ=6100000 per mL, σ=1500000) * 7.59mL** orders of magnitude higher than **μ=50,000 per mL, σ=15,000) * 7.59Ml**. Need to know which value to use.

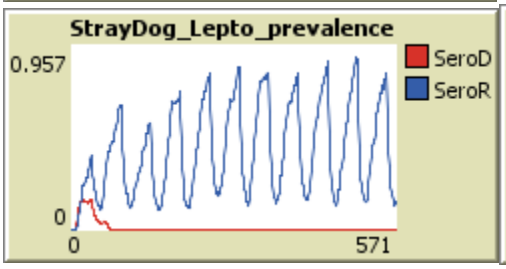
See model results.

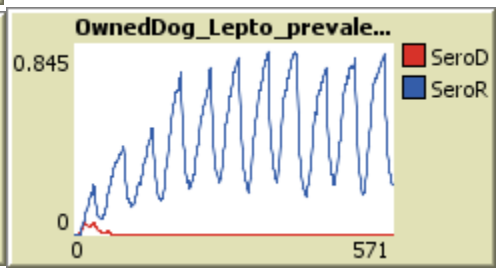
Model outputs:

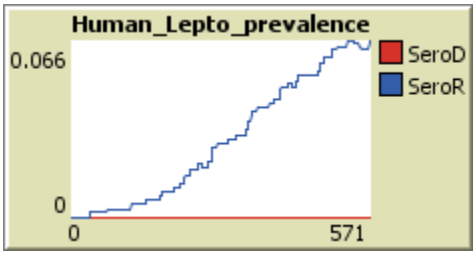
1) Environmental decay

   a) Favorable environment - 80% *Leptospires* survive to next step



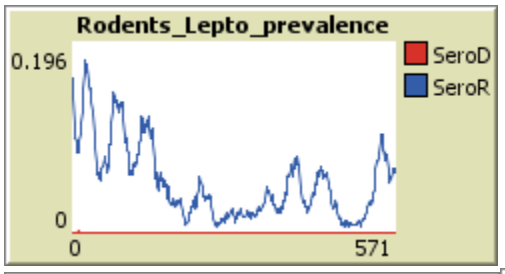


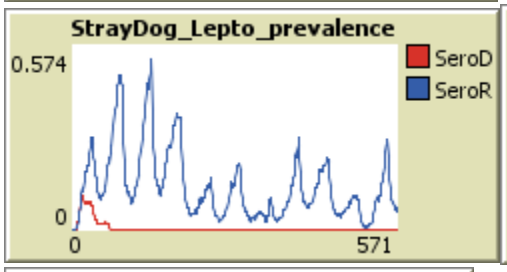


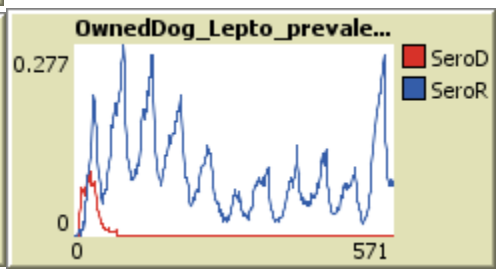


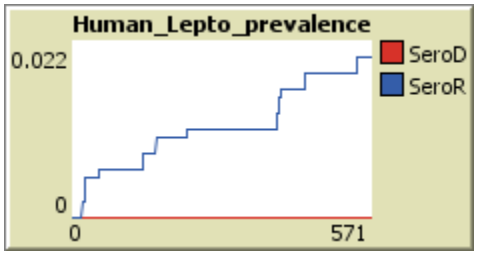
Year	AnnualDogSerovarInc/10K	AnnualRodentSerovarInc/10K
1	0	15
2	0	15
3	0	30
4	0	60
5	0	75
6	0	75
7	0	106
8	0	76
9	0	30
10	0	107

b) favorable environment - 78% *Leptospires* survive to next step



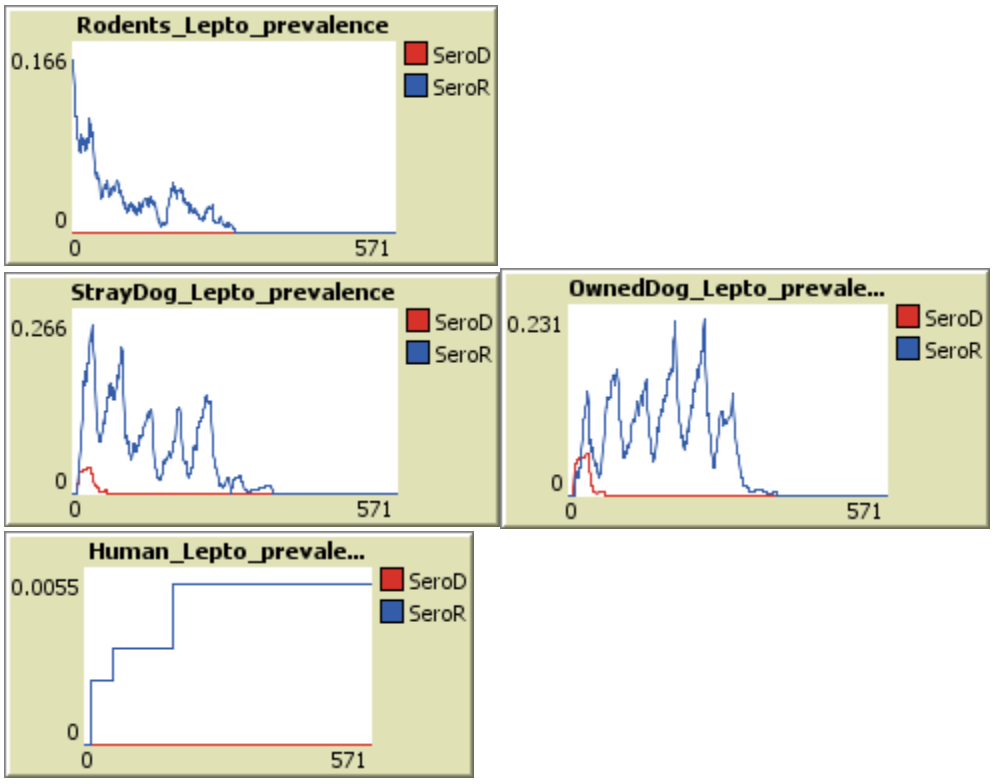






Year	AnnualDogSerovarInc/10K	AnnualRodentSerovarInc/10K
1	0	60
2	0	0
3	0	15
4	0	15
5	0	15
6	0	0
7	0	0
8	0	45
9	0	15
10	0	0

c) less favorable environment - 76% *Leptospires* survive to next step



Year	AnnualDogSerovarInc/10K	AnnualRodentSerovarInc/10K
1	0	30
2	0	0
3	0	0
4	0	15
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0