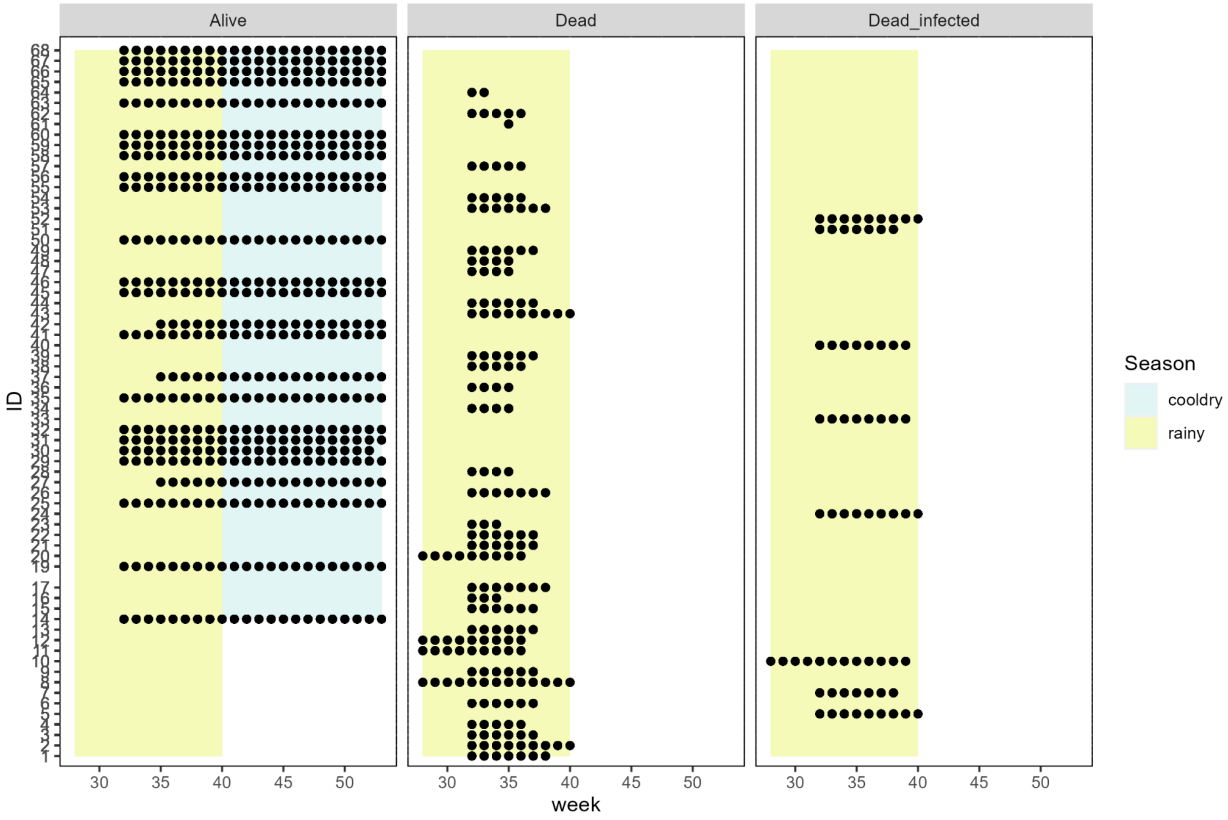
Data structure:



A total of 68 tagged individuals with 27 non-infected, 33 presumably infected (Dead), and 8 infected (Dead infected) individuals. For the model fitting, we selected the rainy season only since all the unknown and infected individuals were released and died during the rainy season.

m3: Informed model (with different mean turn angles);

We also tested if the model estimation differs by different initial turn angle setups. The best-performed model assumes the mean turn angle distribution as 0. We set different mean turn angle values for each state. For example, exploring states have directional movement (mean angle as 0) while resting states will have less direction movement patterns (mean angle as pi). The model 3 is selected for the manuscript because of their best fit.

Final model:

```
Value of the maximum log-likelihood: -578915.1


step parameters:
----------------
           NE       NR       IE       IR        D
mean 1977.122 343.5034 334.2901 5.413495 11.11288
sd   1086.782 476.4657 388.4555 4.344715 12.58539

angle parameters:
-----------------
                         NE          NR         IE        IR         D
mean           -0.02973995 -0.25655180 0.07046873 3.1377466 3.1296912
concentration   1.88920467  0.04305918 0.10724335 0.4541838 0.7442241

Regression coeffs for the transition probabilities:
---------------------------------------------------
                1 -> 2 1 -> 3 1 -> 4 1 -> 5      2 -> 1 2 -> 3     2 -> 4    2
-> 5 3 -> 1 3 -> 2      3 -> 4 3 -> 5 4 -> 1 4 -> 2
(Intercept) -0.7386564 -1e+06 -1e+06 -1e+06 -1.81165344 -1e+06 -7.3350253
-9.083568 -1e+06 -1e+06 -2.65275129 -1e+06 -1e+06 -1e+06
shrub       -0.0558424 -1e+06 -1e+06 -1e+06 -0.07995076 -1e+06  0.2128888
0.000000 -1e+06 -1e+06  0.06989157 -1e+06 -1e+06 -1e+06
                 4 -> 3    4 -> 5 5 -> 1 5 -> 2 5 -> 3 5 -> 4
(Intercept) -0.79625354 -4.967093 -1e+06 -1e+06 -1e+06 -1e+06
shrub        0.03259497  0.000000 -1e+06 -1e+06 -1e+06 -1e+06

Transition probability matrix (based on mean covariate values):
---------------------------------------------------------------
           NE        NR        IE          IR            D
NE 0.75674732 0.2432527 0.0000000 0.000000000 0.0000000000
NR 0.08455032 0.9126494 0.0000000 0.002696733 0.0001036001
IE 0.00000000 0.0000000 0.8963009 0.103699129 0.0000000000
IR 0.00000000 0.0000000 0.3608007 0.634779054 0.0044201969
D  0.00000000 0.0000000 0.0000000 0.000000000 1.0000000000

Initial distribution:
---------------------
          NE           NR           IE           IR            D
1.163841e-05 8.797675e-01 2.300802e-06 1.202186e-01 5.741440e-08
```