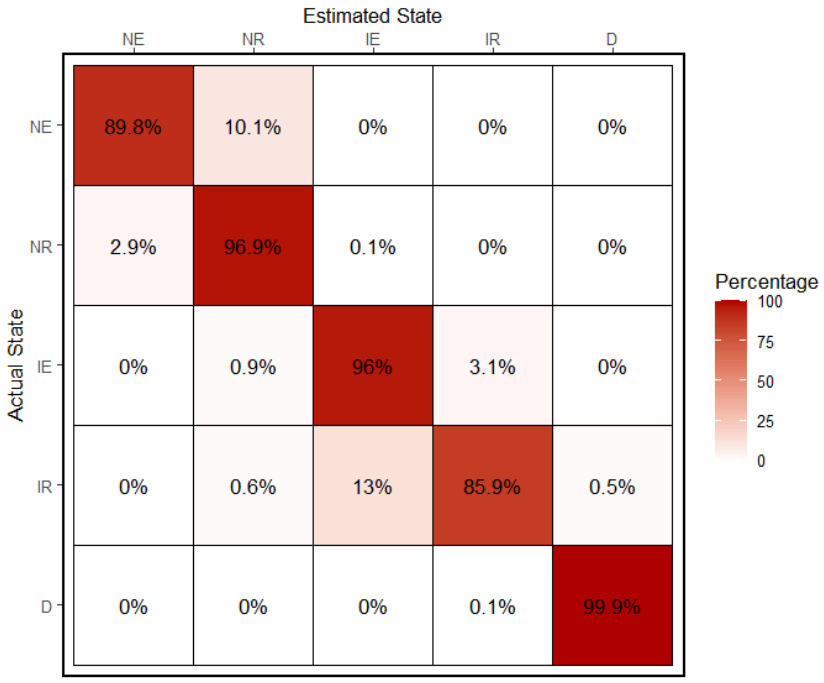
HMM simulation

The simulation is conducted using the **simData()** function from **momentuHMM** R package (McClintock and Michelot. 2018). The simulation structure is similar to the 5-state HMM structure we used for the manuscript.

Output for the HMM:



Accuracy metrics used to assess the model performance:

We used the metrics to assess the simulated model performance: precision, recall, and F1 scores (Powers. 2020; Vélez et al. 2023). Precision indicates the probability that states in the simulated data are correctly classified, given that the HMM estimates them to be the true state. Recall calculates the probability that the true states from the simulated data are correctly classified, given that the state is present. The F1 score provides a weighted average of precision and recall.

States	Precision	Recall	F1
NE	0.91	0.90	0.91
NR	0.96	0.97	0.97
IE	0.95	0.96	0.96
IR	0.90	0.86	0.88
D	0.99	0.99	0.99

References:

- Powers, D. M. (2020). Evaluation: from precision, recall and F-measure to ROC, informedness, markedness and correlation. *arXiv preprint arXiv:2010.16061*.
- Vélez, J., McShea, W., Shamon, H., Castiblanco-Camacho, P. J., Tabak, M. A., Chalmers, C., ... & Fieberg, J. (2023). An evaluation of platforms for processing camera-trap data using artificial intelligence. *Methods in Ecology and Evolution*, *14*(2), 459-477.