**Paper title:**

**Introduction**

* Biodiversity and need for monitoring techniques
* Methods of estimating numbers of animals:
  + Random Encounter Models (REM) vs. Capture-Recapture etc
* Background to REMs
  + Gas model
  + Marcus model
  + Our extension
  + Why it’s important

**Methods**

* REM extension
  + Gas model – 360° detector, 360° animal
  + Extension 1 – 360° detector, >180° animal
  + Extension 2 – 360° detector, <180° animal
  + Extension 3 – >180° detector, 360° animal
  + Extension 4 – >180° detector, >180° animal
  + Extension 5 – >180° detector, <180° animal
  + Extension 6 – <180° detector, 360° animal
  + Extension 7 – <180° detector, >180° animal
  + Extension 8 - <180° detector, <180° animal
  + Diagrams
* Simulation methods

**Results**

* Comparison of model and the simulation
  + 6 plots – with 9 lines, one line for each model
    - y-axis average percentage error – all plots
    - x-axis parameters changes on the simulation parameters, including: Density of animals, Speed of animals, Total length of time in simulation, Radius of detector, Angle of call, Angle of detector
    - E.g, for density:

**Discussion**

* Yes the model works
  + It’s a great new tool for monitoring animals, especially these
* Problems that might exist
  + Not a 3D model, for flying/swimming animals
  + Perfect detection, on a binary basis
  + Simplification of isomorphic sound
  + Homogenous landscape
  + Moving detetcors
  + Time expansion