**Capture mark recapture (CMR) analyses for paleontological analyses for Erlangen Analytical Paleobiology Workshop 2022 – Instructor: Lee Hsiang Liow**

Learning goals – 2 days (\*bonus)

1. Grasp of CMR analyses (in the original ecological context and paleontological situations)
2. Grasp of CMR models often used in paleontology (e.g. Pradel seniority model)
3. Ability to run selected analyses of CMR using R via the openCR package. (e.g. time-constant, time-varying covariates, individual covariates)
4. Have awareness of software and resource availability for CMR.
5. Understand the basic assumptions of using CMR and ability to roughly compare these with other methods used in paleontology
6. \*Gain ability to explore the ever-expanding CMR literature and software
7. \*Be inspired to contribute to model development for paleo datasets using CMR
8. \*Get introduced to a time series analysis software layeranalyzer

**Thursday 1.9.2022**

9:00-9:45 Sampling and the fossil record: Intro to CMR (ErlangenLiow1.pdf) 30-45 mins

10:00-10:45 Computer Lab, sit with a partner (Erlangen Tutorial 1.R and Erlangen Tutorial 1 - with suggested answers.R) A little warm up exercise.

10:45-11:15 Discussion of computer lab questions as a class

11:30-12:15 Basic overview/features of CMR for paleobiology (ErlangenLiow2.pdf) 45-60 mins

~Lunch Break~

13:30-14:15 Pradel senority models different models using “time-reversal”, open-closed models edge effects (identifiability), time interval effects, introduction to openCR and tutorial (ErlangenLiow3.pdf) 30 min

14:30-17:00 Computer Lab (Erlangen Tutorial 2.R)

Write/ask me questions from today’s tutorial/lectures, I will discuss selected Q/A with the whole class tomorrow morning.

**Friday**

Recap of yesterday and Q and A and intro to computer lab (30 min)

Computer Lab (Erlangen Tutorial 3.R)

Late morning or early afternoon \*ErlangenLiow4.pdf

Examples of capture recapture papers in paleo (Lightning intro to layeranalyzer); brief comparison other approaches, other software than open CR

Q and A and conclusions (improvements to how it was presented, will you use this method for anything? What do you wish this method could do?)