

Boot Camp Sri Lanka, Aug-Sept 2019, outline schedule

as at 4 April 2019

Note

This is an outline only. We will not try to “cover all the material”, as we believe it is more important for participants to have a good grasp of the basic concepts than to be exposed to a lot of material superficially.

Proposed work flow

Items in **bold** are physical activities.

Time slot	What we do	Comments
Before the workshop begins	Before the Boot Camp participants are asked to: <ol style="list-style-type: none"> Download and install the necessary software and R packages. Download and preview the workshop materials. Send in one PPT slide to introduce themselves; these are compiled and used for the “Introductions” session. Complete the pre-course Knowledge Survey. 	
Wed 28 August 2019 “Day 0”	<ol style="list-style-type: none"> Participants arrive at venue. Registration, collect name tags, hand in knowledge surveys, etc. Possibly a reception and formal opening. 	
Thurs 29 August 2019 Day 1 Preliminaries, wildlife data and sampling error, R statistical software	<ol style="list-style-type: none"> Why wildlife data are different (PPT) Introductions (PPT / round-the-room / throw socks) Housekeeping, times, code of conduct Cross the line activity Lottery activity Frogs in ponds 1 : binary data and binomial distribution Orangutan 1 : count data and Poisson distribution Orientation : R basics Quiz 	
Fri 30 August Day 2 Bayesian methods for binary data and for count data	<ol style="list-style-type: none"> Review previous day + quiz, today's quiz sneak peek Rain and clouds (PPT) Web search for info on Hep C. Rare disease : Hep S activity Hep S 2: Comb method + Bayes visit Bayes biopic and Bayes Rule (PPT) Orangutan 2 : Bayesian analysis of count data, comb method in spreadsheet then in R. Ages : median, IQR, mean, variance, SD Quiz 	
Sat 31 August Day 3 Bayesian analysis with MCMC	<ol style="list-style-type: none"> Sketch: Bayes balls Review previous day + quiz; today's quiz sneak peek Squirrels 1 : gather data, calculate mean. 	

	<ol style="list-style-type: none"> 4. Distributions; spinner activity 5. (if time: Dice activity for “Why is Gaussian normal?”) 6. Squirrels 2 : <ul style="list-style-type: none"> • Bayesian analysis, estimation of population mean and SD, credible intervals with <code>wiqid</code>. • Using samples to define a distribution. • (if time: look at MCMC process; Kruschke’s politician.) • Compare strong vs weak priors. 7. Exercise: estimate mean size for two groups of crabs; look at probability that those inside no-fishing zone are bigger. 8. Frogs in ponds 2: Bayesian analysis and CrI. 9. Quiz 	
Sun 1 September	Rest day	
Mon 2 September Day 4 Likelihood and AIC, regression	<ol style="list-style-type: none"> 1. Review previous day + quiz; today's quiz sneak peek 2. Probability meanings: Fisher vs Bayes; non-Bayesian methods using only likelihood. 3. Frogs 3 : analysis with likelihood only 4. Frogs 4 : modelling + Akaike visit 5. Akaike biopic 6. Which bag : AIC 7. Belugas : Simple regression 8. Socks in Box (logistic regression) in R 9. Quiz 	
Tues 3 Sept Day 5 Likelihood cont. Study Design : the research question, design schema	<ol style="list-style-type: none"> 1. Review previous day + quiz; today's quiz sneak peek 2. More on AIC 3. Belugas 2: Decision making and loss functions 4. Marmosets : 2 questions, 1 design 5. Participants’ research questions (RQs) : put up on sticky sheet 6. Design Schema 1 : 2 types of study, look at RQs 7. Discuss causation and experiments 8. Quasi-experiments and BACI (PPT), any RQs suitable for this? 9. Pseudo-replication 10. Design Schema 2 : observational studies 11. Quiz 	
Wed 4 Sept Day 6 Study Design : sampling strategies, simulations	<ol style="list-style-type: none"> 1. Review previous day + quiz; today's quiz sneak peek 2. Sampling (PPT) 2. Design Schema 3 : choice of sampling strategy 3. Sampling shells 4. Design Schema 4 : Measurement, Putting it together 5. Simulations in R: squirrel sample size, <i>Rafflesia</i> and stratified sampling. 6. Quiz 	

Thur 5 Sept	Rest day	
Fri 6 Sept Day 7 Occupancy	<ol style="list-style-type: none"> 1. Review previous day + quiz; today's quiz sneak peek 2. Ant survey or Where's Waldo? : Analysis in R, then back to spreadsheet to explain need for >1 survey. 3. American toads in R, with covariates and time trend: Bayesian and MLE versions 4. Meaning of occupancy: frogs-in-ponds, herons-at-ponds, porcupine activity. 5. Design of occupancy studies (PPT) 6. Overview of extensions of occupancy (the multis) (PPT) 7. Quiz 	
Sat 7 Sept Day 8 Density from mark-recapture data	<ol style="list-style-type: none"> 1. Review previous day + quiz; today's quiz sneak peek 2. Intro to SECR (PPT) 3. Geckos activity, analysis with 'secr' package in R; MCMC version in <code>wiqid</code> 4. Stoats as main example (<code>secr</code> in R). 5. (if time) SECR with individual or site covariates 6. Study design for SECR: detector types, scattered clusters of traps (PPT) 7. Quiz 	
Sun 8 Sept Day 9 Data management. Survival : Cormack-Jolly-Seber (CJS) model	<ol style="list-style-type: none"> 1. Review previous day + quiz; today's quiz sneak peek 2. Data management (PPT) 3. Dates in spreadsheets 4. Road kills exercise 5. Rats experiment for CJS survival, analysis in R (ML & Bayes) 6. Dipper CJS survival (ML & Bayes) in R 7. Design issues for survival estimation 8. Plans for next day 9. Quiz 	
Mon 9 Sept Day 10 à la carte	<ol style="list-style-type: none"> 1. Review previous day + quiz 2. Whatever folks requested... (options are: review and further examples of topics covered already; relevant topics not covered already; presentation and discussion of participants' research questions). 3. Post-course knowledge survey and participants' feedback 4. Importance of follow up for short courses; postcards. 5. Presentation of certificates 6. Wrap-up 	