

Behavioural Ecology

1. Designing an experiment
2. Analyzing data
3. Publishing results
4. Presenting results

1. Designing an experiment

- Study species?
- Research question?
- Some researchers will choose their species first, some will choose their question first
- Some will want to know everything there is to know about a species, some will look for a pattern in how a behaviour is expressed across species

1. Designing an experiment

- Not all study species are the same
- What factors are important when choosing a study species?

1. Designing an experiment

Choosing a study species

- abundant - large sample size
- conspicuous - easy to find
- easy to catch - most experiments involve handling the animal
- safe - big + hungry + poisonous = bad
- easy to maintain - many experiments involve husbandry
- short life cycle - can study heritability of behaviour
- easy to manipulate - may involve marking for identification
- close - travel to get a single data set is prohibitive
- interesting - get people excited about what you do
- well-understood - knowing how the observed behaviour fits into an animal's entire suite of characters is the difference between a good experiment and a great experiment

1. Designing an experiment

- Note that homeothermic animals use a lot of food resources to produce heat. Thus, they tend to have lower population densities than poikilothermic animals (and produce lower sample sizes)
- Homeotherms – mammals, birds
- Poikilotherms – insects, fish, amphibians, reptiles

1. Designing an experiment

- Also, top predators need a lot of food to survive and thus have lower population densities than their prey
- 'Charismatic' species are studied more than would otherwise be predicted based on their population densities

1. Designing an experiment

- Always:
 - Identify the research problem
 - State your hypothesis
 - Describe your experiment
 - State your predictions with respect to the experiment

2. Analyzing data

- Experiments should be designed with a statistical test in mind
- If your p-value is greater than 0.05, consider examining other variables
- Other variables that you have recorded may tell you something interesting about your species

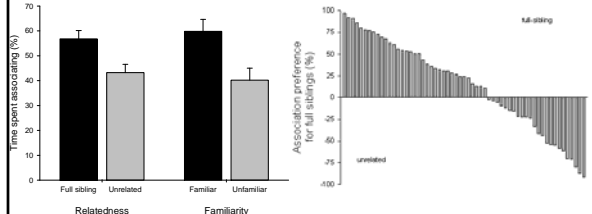
2. Analyzing data

- Example: offspring recognition in bluegill sunfish



2. Analyzing data

- Presentation is important
 - the same data can be presented in different ways



3. Publishing results

- Publish or perish
- Journals have different styles and different audiences
- Few journal articles are accepted without revision
- Some reviewers are jerks
 - "The authors clearly know nothing about kin selection."*

3. Publishing results

- Publish or perish
- Journals have different styles and different audiences
- Few journal articles are accepted without revision
- Some reviewers are jerks
 - "The authors clearly know nothing about kin selection."*
 - "It seems it was carelessly written due to a many inconsistencies."*

3. Publishing results

- Top journals: Nature, Science
- High-impact journals: PNAS, PLoS, Current Biology, TREE (for reviews)
- Broad readership: Proceedings of the Royal Society, Molecular Ecology, Ecology, Evolution
- Specialized: Behavioral Ecology, Behavioral Ecology & Sociobiology
- Low-impact: Canadian Journal of Zoology, Ethology, Behaviour, taxon-specific journals

4. Presenting results

- There are a lot of papers published
- Presentations at conferences are one way to advertise your science to a captive audience
- Academic job interviews typically include 2 presentations
- Presentations should be informative, well-organized, and entertaining

4. Presenting results

Content (guidelines only!)

- Title slide - one slide. Introduce yourselves.
- Introduction - two or three slides. Identify your question, how it fits into behavioural ecology, and describe your study species
- Methods - two or three slides. A picture can say a lot. You do not need a slide to describe your statistics
- Results - one or two well-described slides
- Discussion - one or two slides

4. Presenting results

- What font should I use?
 - sans serifs (Arial, Verdana, etc.) project best
- What colour scheme should I use?
 - background / text colours should contrast
- Avoid blank space
 - Better to increase font size and change wording than to leave the slide as it is or to throw in a meaningless picture

Methods

- Collared flycatcher
- Native to Europe
- White forehead patch
- Socially monogamous





Methods

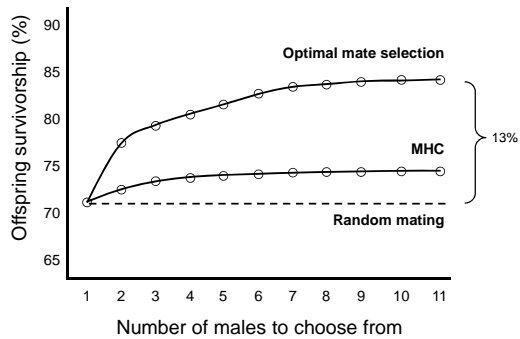
- Collared flycatcher
- Native to Europe
- Forehead patch
- Monogamous

4. Presenting results

Questions

- The presentations allow five minutes for questions
- With longer defences, examiners try to test how much you know, this generally means that eventually they will find a question you cannot answer
- Take a moment to think about the question before answering
- Answer the question that you were asked
- If you do not know the answer, admit it, but based on what you do know, speculate on what the answer might be
- The examiner does not always know the right answer

Sexual selection



Think about

1. Font, font size, colour, spacing
2. Strive for the “neutral slide”
3. Let a picture be a picture
4. Fewer words is better for a research presentation (different from lectures); read all words on a slide
5. Describe each axis, and read all words on a slide
6. One minute per slide as rule of thumb
7. Rehearse, rehearse, rehearse
