How were the **data gathered** and what **methods** are used to **analyze** the data?

The **Materials and Methods** section of a paper will describe (in great detail) both the type of data that were gathered and the way the data were analyzed. **Describe the dataset**, specifically characterizing the **type** of samples collected and the **number** of samples. Also list or describe the way the samples were analyzed, being careful to focus on the **method** rather than the name of the software.

For Example:

Data: the Carbon and Nitrogen isotopic composition of collagen and modern flight feathers from 25 modern and 40 museum birds, map sample locations, radio-carbon dating

Analysis: ANOVA, Tukeytest

What is/are the **specific** research question(s)?

This is where you list hypotheses, including the null hypothesis where appropriate. Note the difference between these *specific* questions and the "*big question*" or "*gap in knowledge*." →

For example:

What is the foraging history of the Hawaiian petrel from pre-human to modern times?
What is the spatial and seasonal variation in petrel foraging habits?

The context for the research conducted will be established in the **introduction** of a paper. The author(s) will provide a summary of the *state of knowledge* around their area of research and identify a critical gap in knowledge that their study aims to fill.

You should state:

- **the two most important known pieces of information**, and
- **the gap this paper aims to fill → this is often the BIG remaining question(s) in the field**

Example Gap: How has human historical predation on seabirds and modern fishing affected the *oceanic* food web (i.e. *not just* the near-shore regions)?

Why is this research broadly important to the field **and** to society?

In the **Discussion** or **Conclusion** section, the authors will place their results in a broader context. Specifically, they should explain the paper's contribution to the broader field of evolutionary biology **and** society (inc. conserving species or habitats). You should try to list both types of contribution. This is where you focus on *interpreting* the results, rather than *listing* the results.

For example: Indirect effects of fishing on marine food webs extend beyond near-shore regions. Understanding and mitigating widespread shifts in prey availability may be critical to conserving marine predators.

What are the **major** research findings?

The **Results** or **Results and Discussion** section of a paper will describe the major research findings. Be careful to distinguish what the study actually found (i.e. a decline of 1.8 per mil of the stable isotope ^{15}N over past 100 years for petrels from Hawaii) rather than the interpretation (i.e. petrels have experienced a decline in trophic level due to overfishing).

You should list **no more than 3** major research findings. Be selective. What are the most important (i.e. major) research findings described in the paper?

Name:_____ Article (Author, year): _____

How were the **data gathered** and what **methods** are used to **analyze** the data?

What is/are the **specific** research question(s)?

Why is this research broadly important to the field **and** to society?

What **previous** work & Knowledge led to this study? What **gap** in knowledge will the study fill?

What are the **major** research findings?