Proposal Writing

- Elements of the proposal
- Proposal Exercise
- The Outline
- What's in a hypothesis? – IF TIME

Basic Elements

- Title Page (name, address, phone, email, date)
- Abstract (or Summary)
- Introduction and Background
  - Literature review
- Proposed Research
- Project Budget
- References

The Abstract

- **Succinctly** convey the most important aspects of your proposal
- One paragraph – 5 to 7 sentences
- Summary of issue and importance
- Question or hypothesis

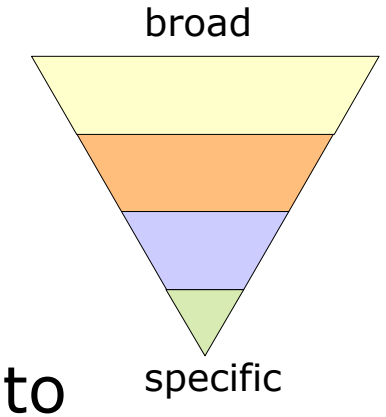
Do not

- Go into methodological or programmatic detail
- Extensively justify your argument

Don’t make it the last paragraph you write but rather make it the first

Introduction and Background

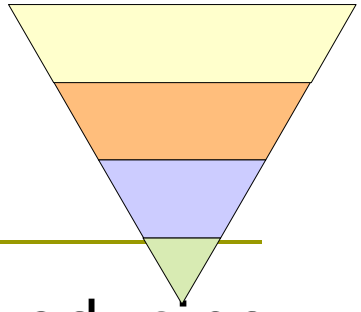
- Heart of you proposal
- Template for research paper



Two major goals

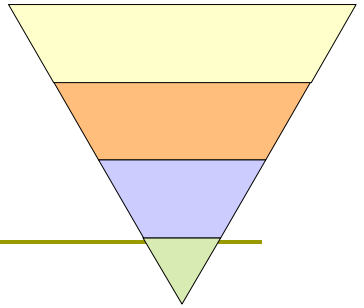
- Provide all major background essential to understanding the problem
- Set forth the rationale behind your proposed research
  - Includes and exact statement of question or hypothesis you are testing
  - **Statement of anticipated results and how you will interpret them**

Some tips



- Think hard about organization – avoid introducing to many variables. Don't let it snowball!
- Obvious or general statements are meaningless
  - "This research will further the ecology of euphausids"
- Use references! Referred publications
  - Not websites, company brochures or general textbooks
  - Past senior research is great source
- Make comparisons quantitative
  - Don't say "X is higher" , say "X is higher than Y" or even better "X (range) is high compared with Y (range)"

Proposed Research



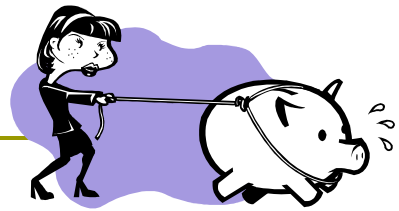
- Details of experimental plan
- Start by restating your goals
- Then start into details

- Again think big then refine
- Be as descriptive as possible:
  - Discuss every measurement you will need
  - Every station
  - Type of controls etc.
- Use citations if need be – some methods are standard

- Avoid
  - New research you haven't discussed
  - "*Other possible transect patterns are being examined to better sample any small-scale eddy*"

- Laboratory or modeling components deserve as much detail

Project Budget



- Platform costs
  - R/V T.G. Thompson - $22,000/day
  - Are you using shipboard equipment?
    - EM300 – ADCP
  - Sampling gear
    - Mud sampling, water sampling, light sampling
    - Whatever it is include it
  - Supplies – sampling bottles, filters, chemicals
    - Get your lists to Kathy Newell, 543-6119, 21 OTB
- Post cruise needs
  - Lab equipment and supplies
  - Computer software

- Clearly indicate real costs and which are no charge (Thompson time)

- You have $600 so keep your costs under control

References

- Again follow the L&O style guide
- Bulk of material should be peered reviewed articles and/or past senior research
- Avoid **websites** and general textbooks as major source
- Your reference adds validity so be wary of where your information comes from

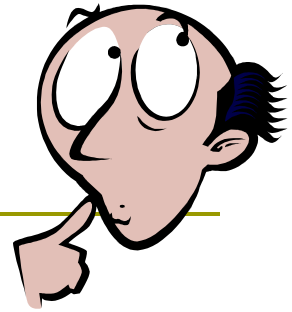
Proposal Outlines

- Outline due **Feb 16th**, drafts on the 26th
- 15% of grade
- Handout example

- Personal preference
  - Topic sentence approach

- Example
  - **Optical properties of Water**
    - The optical properties of water are divided into two types: The inhenent optical properties (IOPs) and apparent optical properties (AOPs).
      - Describe Inherent optical properties
        - depend only on the substances suspended in the water
        - Independent of the structure of the light field
        - This tells us something about what is in the water and is independent of the condition or environment

Final Thoughts



- Take advantage of each other
- Talk with your professors and me for feedback on organization and argument
- What seems obvious to you may not be to others
- Get an objective perspective

Additional Material

- Strunk and White
- Martha Davis
  - Scientific papers and presentations
- The Scientific Method
  - What's in a hypothesis - handouts

Amazon.com