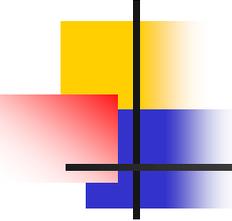


Poster Design

Katherine Wisener

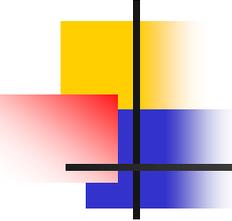
PSYC 4200 Human Factors: Technology and
Behaviour

Kwantlen Polytechnic University



Agenda

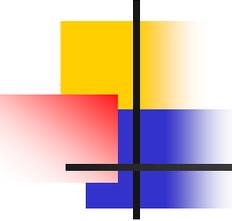
- Handout
- Introduction
- Layout
- Text
- Color
- Graphs/Pictures
- Inclusions
- Activity
- Conclusion



INTRODUCTION

- Advantages of Posters
 - Allow students to practice scientific communication
 - Students can learn from classmates
 - Focus is on data rather than writing skills
 - Can be viewed publicly and leisurely outside class time
- Previous Strengths of Posters
 - Strong sectioning (Intro, methods)
 - Inclusion of most major elements (abstract, summary)
 - Inclusion of handouts

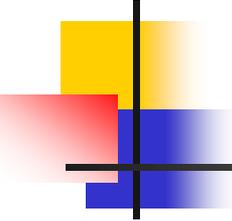
Source: Nalbone & Christopher (2003)



INTRODUCTION

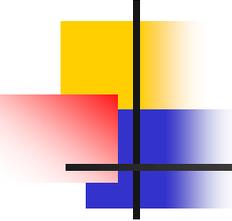
- Previous weaknesses of posters
 - Too much background detail
 - Failure to discuss implications
 - Small font size
 - Confusing tables or graphs
 - Poor overall organization

(Welch & Waehler, 1996).

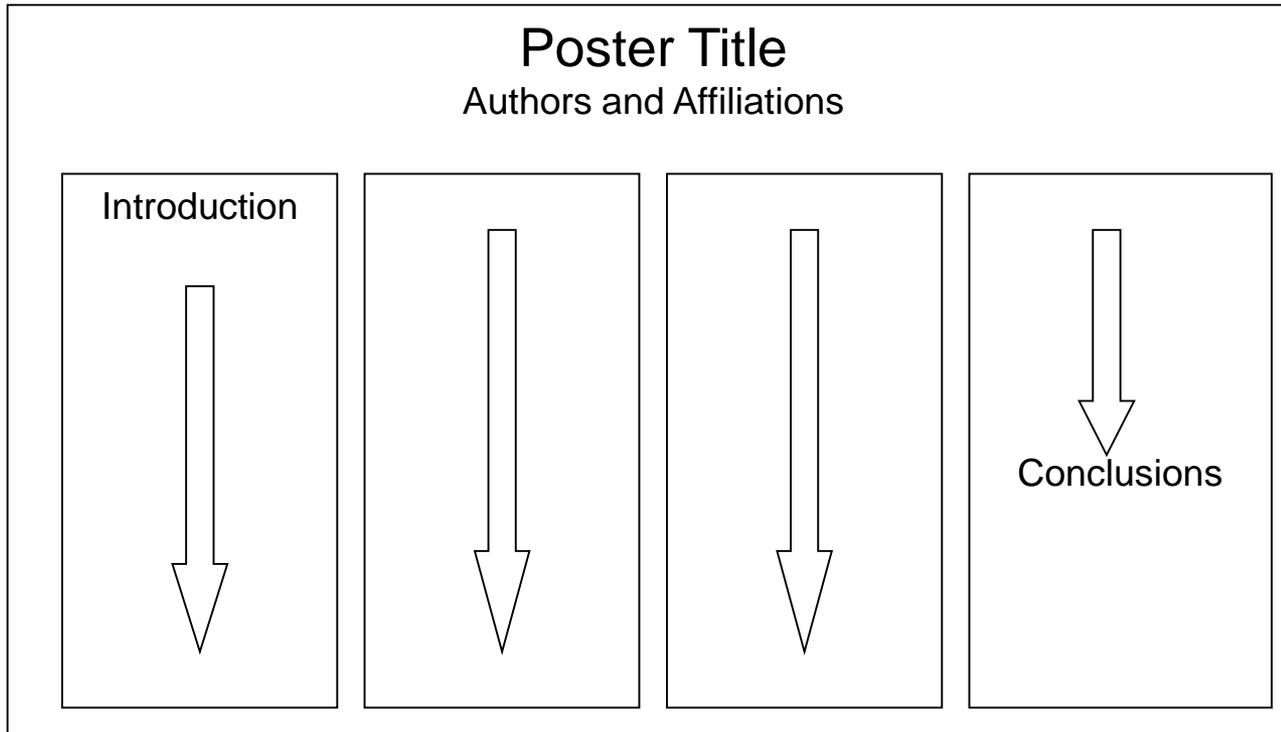


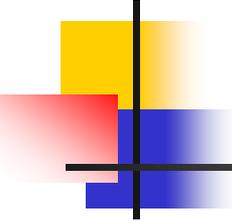
LAYOUT

- Use headings to help readers find key sections
- Balance placement of text and graphics
- Use white space to define flow of information
- Follow reader gravity that pulls eye from top to bottom, left to right
- Column format makes for easy reading. Most posters are 4 columns wide



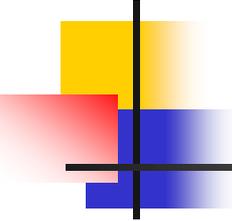
LAYOUT





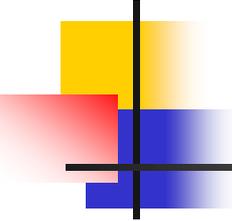
TEXT

- Minimize text
 - Keep text in blocks of no more than 50-75 words
- Use bullets instead of full sentences
- Text is usually single spaced
- Avoid technical jargon depending on audience
- Use sans-serif font (Arial or Helvetica) for text
- All text should be large enough to read from 1-2 meters
 - Use at least 20-point type for text and 48-point type for the title
- Titles should be of larger text
- Bold text can be used to highlight general conclusions



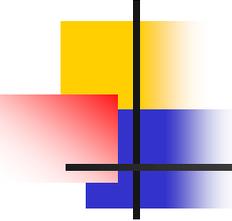
COLORS

- For optimum readability, best to use black text on a white background
- Use a light background and dark letters for contrast
- Keep lots of empty white space to enhance effect of colored sections
- A dark background with light letters is very tiring to read and induces eye strain
- Empty space between sections could be a solid color other than white
- Avoid patterned backgrounds as they are distracting



COLORS

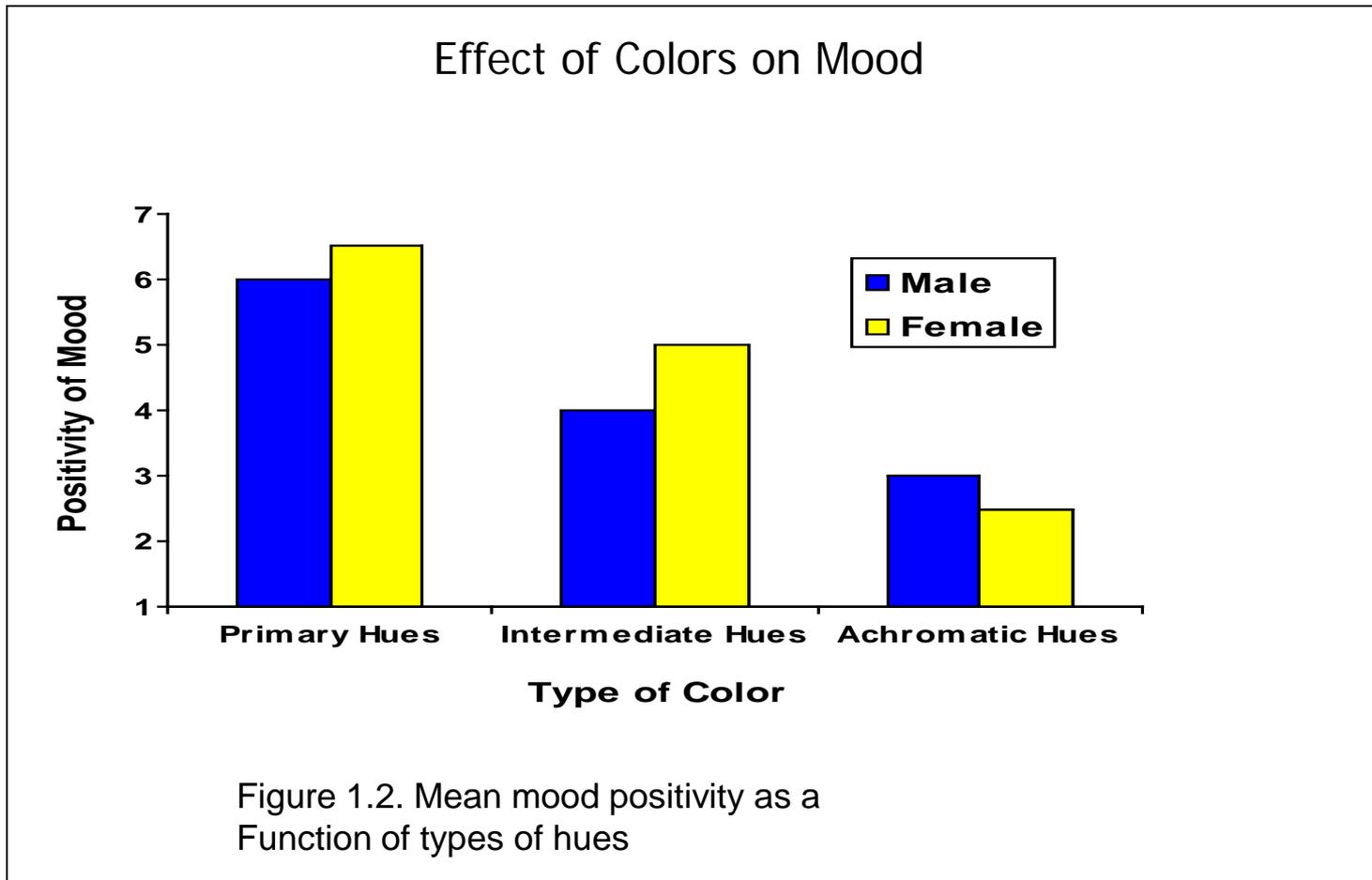
- Bright colors attract attention but are distracting
- Choose two or three colors and keep them consistent throughout poster
- Use color to highlight key words
- Use strong, primary colors such as red, blue, and yellow
- Red has very high visibility
- People who are color-blind find it hardest to distinguish between red and green

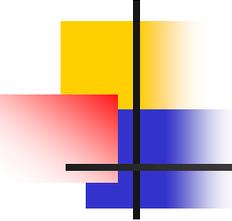


GRAPHS/PICTURES

- Graphs should communicate relationships quickly
- Graphs should be simple and clean without gridlines
- 3-D graphs and pictures are distracting, stick to simple 2-D images
- All text in figures uses same style font and shouldn't vary by more than 4 points in size
- Figure captions are descriptive

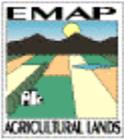
GRAPHS/PICTURES





INCLUSIONS

- Reference lists are often presented in a smaller font than the rest of the text
- The reference list sometimes can be left out if space is insufficient
- Handouts that are similar to the poster can be given to the audience so they can follow along during the presentation



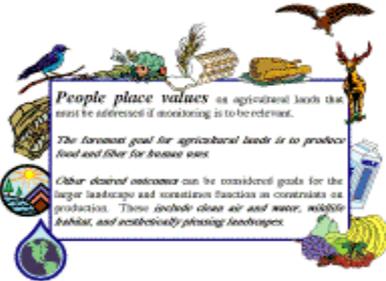
A Framework for Assessing the Condition of Agricultural Lands

George Hess¹, Anne Hellkamp², Mike Munster³, Steve Peck³, Lee Campbell³, Betty McQuaid⁴, Steve Shafer^{3,5}

Mission: To develop indicators of the condition of agricultural lands within an ecological framework, and to monitor and evaluate this condition on a regional basis.



Sustainable agriculture has been discussed, defined, and discussed in countless papers. Definitions tend to be broad and encompass ecological, economic, social, and even policy dimensions. Although those dimensions are interrelated, each may be assessed independently. In our efforts, we attempt methods to examine only the ecological aspect of sustainability.



People place values on agricultural lands that must be addressed if anything is to be retained. The foremost goal for agricultural lands is to produce food and fiber for human uses. Other desired outcomes can be considered goals for the larger landscape and sometimes function as constraints on production. These include clean air and water, wildlife habitat, and aesthetically pleasing landscapes.

The ecological condition of agricultural land is defined by its productivity and the degree to which natural biotic and abiotic resources are conserved and protected. Agricultural land in good condition is productive and does not compromise valued resources. Sustainability is the ability to maintain good conditions over time.

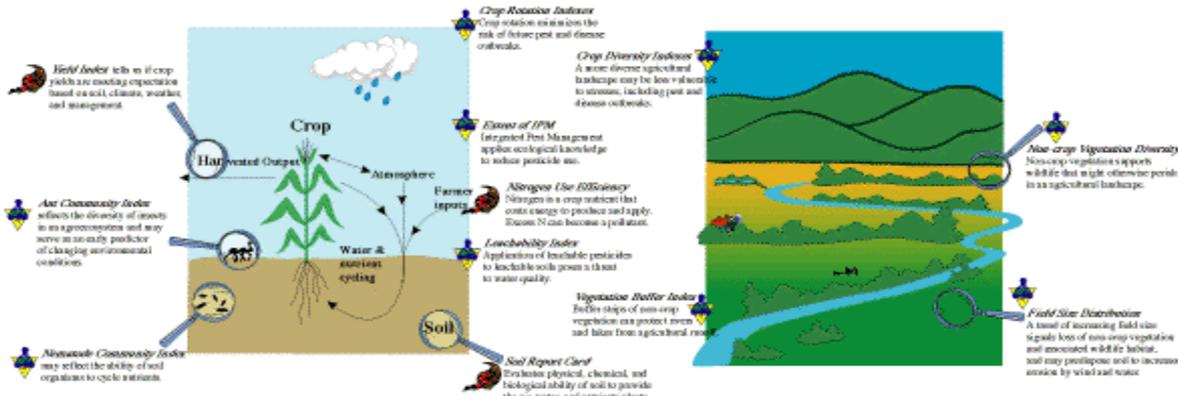


Indicators were selected to reflect crop productivity and land stewardship. In making an assessment, condition is reported for each indicator. An overall condition may also be reported, but depends critically on the relative weighting of the goals for agricultural lands. For sustainability, one can examine trends in crop productivity and stewardship practices.

Potential Indicators for Annually Harvested Herbaceous Cropland

As a starting point, we chose to concentrate our efforts on developing indicators for annually harvested herbaceous cropland — *annual plants with crops that are harvested every year* whether the plants are annual or perennial. Common examples are corn, wheat, soybeans, alfalfa hay, and strawberries.

We also endeavored to supplement, rather than duplicate, existing efforts. Our conceptual framework is flexible enough to incorporate indicators based on data from other monitoring efforts. For example, an erosion indicator could be developed using the USDA Natural Resources Conservation Service's Natural Resource Inventory data.



Fields are for crops . . .

. . . but landscapes are for all of us.

Acknowledgements: The EMAP Agricultural Lands Base-Case Group thanks the many individuals and organizations that made this effort a success. The individuals are too numerous to mention, but organizations include the USDA's Agricultural Research Service, Forest Service, National Agricultural Statistics Service, and Natural Resources Conservation Service; the U.S. Environmental Protection Agency; North Carolina State University; University of Maine; Oregon State University; University of Nebraska; and, well, I guess the list of organizations is pretty long, too. Thanks to all!

- 1. North Carolina State University, Forestry Department, Raleigh NC
- 2. Duke University Medical Center, Durham NC
- 3. North Carolina State University, Department of Plant Pathology, Raleigh NC
- 4. USDA Natural Resources Conservation Service, Raleigh NC
- 5. USDA Agricultural Research Service, Raleigh NC

GOOD

- Colorful graphics
- Very attractive
- Concepts and themes defined
- Good mix of text and graphics.

BAD

- Organization unclear
- Difficult to follow.

Modeling Rare Plant Communities in Jocassee Gorges State Park

Name, Affiliation, and Location Obliterated

Purpose

- Determine the correlation between landscape characteristics (elevation, aspect, slope) and landform information derived from a 10 meter digital elevation model (DEM)
- Model rare communities (rich cove forest, pine-oak heath, spray cliff) in Gorges State Park

Material and Methods

- Compared elevation, slope and aspect data collected in Gorges State Park (Survey 1946) against 10 meter DEM, 10 meter DEM derived using bilinear resampling and 10 meter DEM using cubic convolution resampling
- Determine elevation, slope, aspect, curvature and drainage flow hydrology characteristics between rich cove, pine-oak heath and spray cliff sample points
- Model the rare communities based on landscape characteristics

Results

Figure 1. Average Elevation, Slope and Aspect Differences Between Field Data and DEMs.

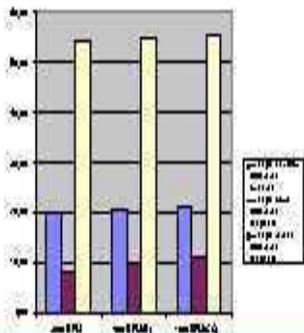


Figure 2. Distribution of Spray Cliffs, Rich Cove Forests and Pine-Oak Heath.

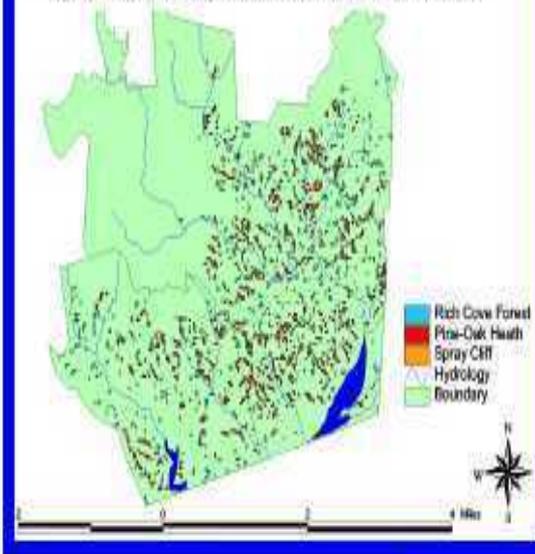
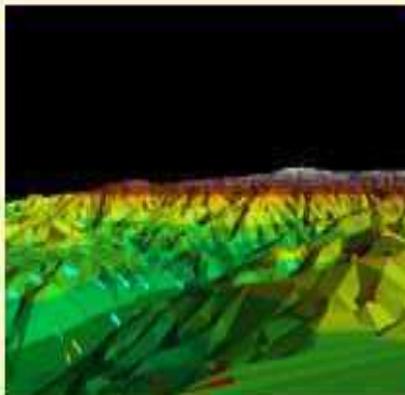


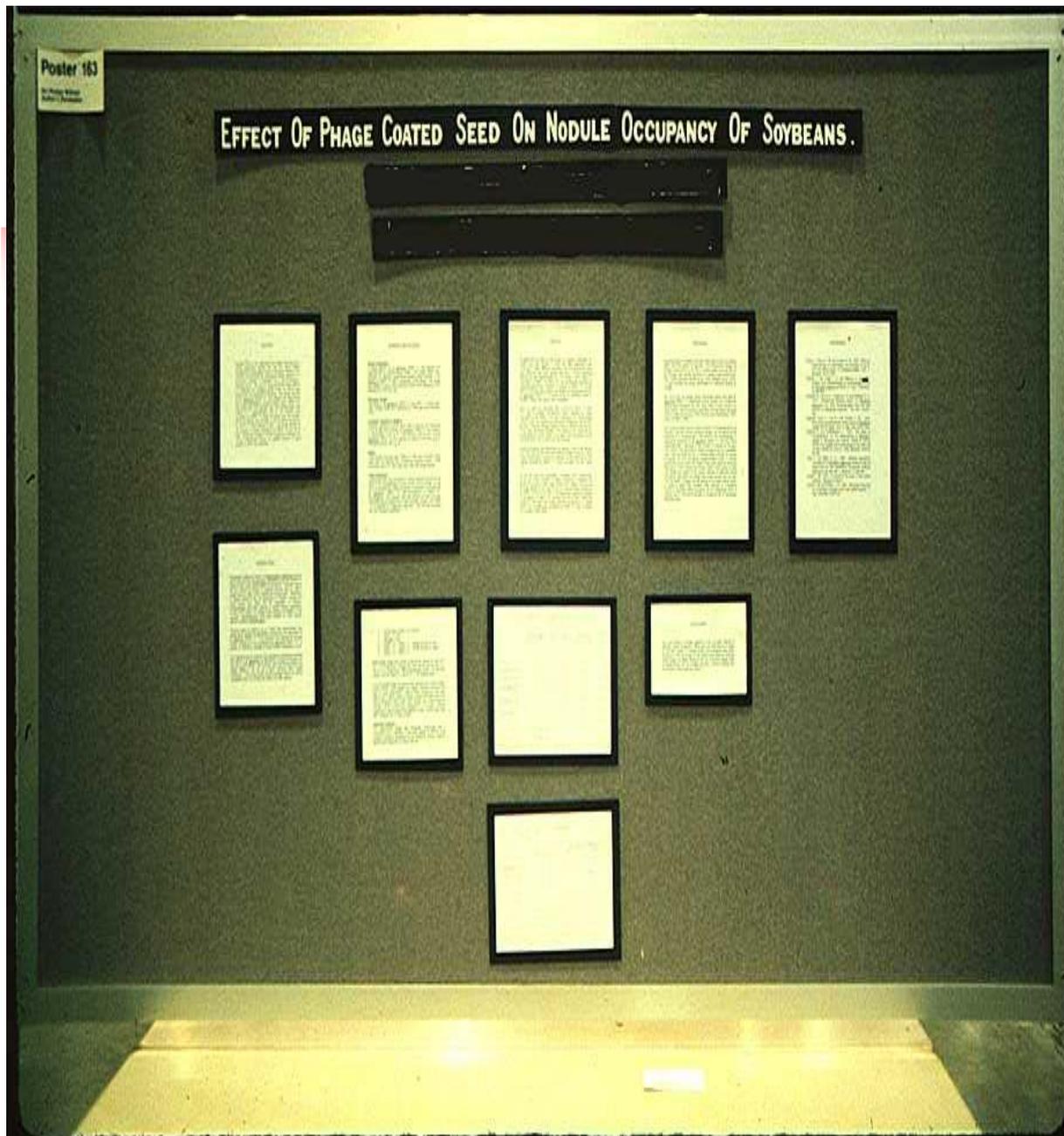
Figure 3. 3 dimensional view of Gorges State Park



Conclusions and Recommendations

- There is very little correlation between the landscape field data and the DEM derived data.
- The resampled 10 meter DEMs didn't model the field data as well as the 10 meter DEM.
- Detailed soils and geology information would be helpful in modeling the more landscape.
- A field accuracy assessment needs to determine the accuracy of the model.

- GOOD
 - Colorful graphics
 - Font size easy to read
 - Key points identified and titled
 - Good mix of text and graphics.
- BAD
 - Figure 2 comes before Figure 1 (reader gravity)
 - Graph is too distracting with gridlines



■ GOOD

- Large Title

■ BAD

- Too much text
- No pictures
- Writing too small
- This problem is often seen at conferences

Example of an award winning poster

NC STATE UNIVERSITY



Southern Flounder Exhibit Temperature-Dependent Sex Determination

J. Adam Luckenbach*, John Godwin and Russell Borski

Department of Zoology, Box 7617, North Carolina State University, Raleigh, NC 27695



Introduction

Southern flounder (*Paralichthys lethostigma*) support valuable fisheries and show great promise for aquaculture. Female flounder are known to grow faster and reach larger adult sizes than males. Therefore, information on sex determination that might increase the ratio of female flounder is important for aquaculture.

Objective

This study was conducted to determine whether southern flounder exhibit temperature-dependent sex determination (SDS), and if growth is affected by rearing temperature.

Methods

- Southern flounder broodstock were strip spawned to collect eggs and sperm for *in vitro* fertilization.
- Hatched larvae were reared from a natural diet (rotifers/Artemia) to high protein pelleted food and fed until saturation at least twice daily.
- Upon reaching a mean total length of 40 mm the juvenile flounder were stocked at equal densities into one of three temperatures (8, 23, or 28°C) for 245 days.
- Groats were preserved and later sectioned at 2-6 microns.
- Sex-distinguishing markers were used to distinguish males (spermatogenesis) from females (oogenesis).

Histological Analysis

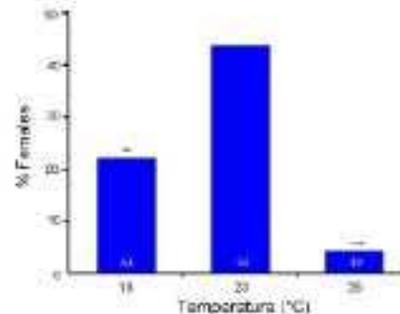


Male Differentiation



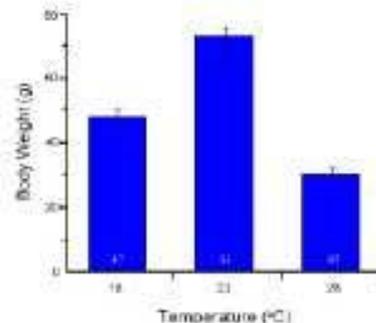
Female Differentiation

Temperature Affects Sex Determination

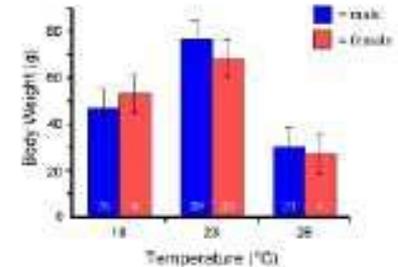


*** $P < 0.01$ and **** $P < 0.001$ represent significant deviations from a 1:1 male:female sex ratio.

Rearing Temperature Affects Growth



Growth Does Not Differ by Sex



Results

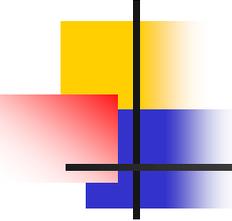
- Sex was discernible in most fish greater than 120 mm long.
- High (28°C) temperature produced 4% females.
- Low (8°C) temperature produced 22% females.
- Mid-range (23°C) temperature produced 44% females.
- Fish reared at high or low temperatures showed reduced growth compared to those at the mid-range temperature.
- Up to 245 days, no differences in growth existed between sexes.

Conclusions

- These findings indicate that sex determination in southern flounder is temperature-sensitive and temperature has a profound effect on growth.
- A mid-range rearing temperature (23°C) appears to maximize the number of females and promote better growth in young southern flounder.
- Although adult females are known to grow larger than males, no difference in growth between sexes occurred in age-0 (i.e. 1 year) southern flounder.

Acknowledgements

The authors acknowledge the Advanced Research Program of the National Marine Fisheries Service and the University of North Carolina Sea Grant College Program for funding this research. Special thanks to Lee Wilson and Beth Branson for help with the work.



Conclusion

- A poster is simply a large-format presentation of an otherwise written up paper, but...
 - Allows for creativity
 - Is a visual form of displaying one's findings.
- Ultimate goal of the poster
 - Viewers to understand the topic and subject matter being displayed.

A GUIDE FOR EFFECTIVE POSTERS

Katherine Wisener
Kwantlen Polytechnic University

LAYOUT

- Use headings to help readers find key sections
- Balance placement of text and graphics
- Use white space to define flow of information
- Follow reader gravity that pulls eye from top to bottom, left to right
- Column format makes for easy reading. Most posters are 4 columns wide

TEXT

- Minimize text use bullets instead of full sentences
- Text is usually single spaced
- Avoid technical jargon depending on audience
- Use sans-serif font (Arial or Helvetica) for text
- Posters are usually viewed from at least 3 ft. away. Use at least 20-point type for text and 48-point type for the title
- Titles should be of larger text so they can be visible from a further distance
- Bold text can be used to highlight general conclusions

COLORS

- For optimum readability, best to use black text on a white background
- Use a light background and dark letters for contrast
- Keep lots of empty white space to enhance effect of colored sections
- A dark background with light letters is very tiring to read and induces eye strain
- Empty space between sections could be a solid color other than white
- Avoid patterned backgrounds as they are distracting
- Bright colors attract attention but are distracting
- Choose two or three colors and keep them consistent throughout poster
- Use color to highlight key words
- Use strong, primary colors such as red, blue, and yellow
- Red has very high visibility
- People who are color-blind find it hardest to distinguish between red and green

GRAPHS/PICTURES

- Graphs should communicate relationships quickly
- Graphs should be simple and clean without gridlines
- 3-D graphs and pictures are distracting, stick to simple 2-D images
- All text in figures uses same style font and shouldn't vary by more than 4 points in size
- Figure captions are descriptive

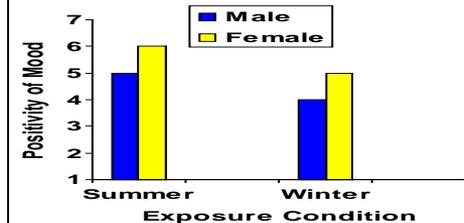


Figure 1. Mean mood positivity as a Function of seasonal exposure condition

INCLUSIONS

- Reference lists are often presented in a smaller font than the rest of the text
- The reference list sometimes can be left out if space is insufficient
- Handouts that are similar to the poster can be given to the audience so they can follow along during the presentation