Scientific Poster Design

How to keep your poster from resembling an “abstract painting”
A poster can be better than giving a talk

More efficient because:

• you totally bomb at giving talks
• can be viewed while you nap
• can hang in the department for years
• can reach folks not in your field of research
Posters serve as...

An advertisement of your hard work

Kool, wow!, check this out!, you must be smart!
It’s just an illustrated abstract
Is my abstract effective?

- Why should anyone care?
- What am I adding to current knowledge?
- Do I need to explain methods?
- Have I told them what I found and recommend?
A portrait of a grad student
$\texttt{#&%!$$, I have 12 hours to throw this thing together and get it printed before it's due.}$
How do I get months and years of research onto my poster?

• Your poster is a short story
• Describe a few major points
• Arouse the reader’s interest to read on
• Limit it to 250 words
Recite after me, Less is best!
Simplify your paper into poster format

Find out the size required!
Who’s my audience?
Remember, most of these “scientists” come for the free booze
Start putting together your 2 main elements
1) Simple, effective data displays

Don’t make them stand on their heads to read your data!
Keep it simple but effective
2) Small blocks of supporting text

The need for chairs in front of your poster will not go over well
I could actually read this
Your copy should answer...

Why?
What am I adding?

Methods?
What did I find?

What do I recommend?
Where do I start?
Pick a software program

Although you’ll probably gravitate towards PowerPoint, consider a true design program.

www.postersw.com for free poster programs
PowerPoint

- OK, but the colors will suck
- Easy to use
- Inflexible
- Designed for low resolution
Adobe Illustrator or InDesign

- Excellent
- More difficult to learn
- What you see is what you get
- Others: Canvas, Publish-It, Corel Draw, LaTeX, etc.

www.postersw.com for free poster programs
Let’s build a poster!
Your poster title:

Think BIG! Really Big!

Your biggest impact!

**Boldface** type
Not all caps!

Group authors' names and affiliations
The Secrets of Killer Body Text:

- Large type states methods, not results
- Results artfully buried in a methods description
- Carefully omits interpretations
Poster title goes here, containing strictly only the essential number of words...

- Leave breathing space around your text
- Plain fonts
- Same size and style
- Left-aligned
Hi there, my name is Mitch Collinsworth and I would like to tell you about myself and how I got this job at Cornell. Well you see, my uncle had a friend who knew my cousin on the other side and his daughter worked for facilities. I was down on my luck and my sister told me she knew a guy who’s nephew’s wife’s kid worked for this guy’s father and what can I say, he hired me with no questions asked and just told me to keep my mouth shut. So here I am at CCMR.
Hi there, my name is mitch collinsworth and I would like to tell you about myself and how I got this job at cornell. Well you see, my uncle had a friend who knew my cousin on the other side and his daughter worked for facilities. I was down on my luck and my sister told me she knew a guy who’s nephew’s wife’s kid worked for this guys father and what can I say, he hired me with no questions asked and just told me to keep my mouth shut. So here I am at CCMR.
- Put the most important part first!
- Short and to the point!
- Upper left hand corner

Conclusions first!
Easy for the eye to follow

Utter chaos will make folks dizzy!
substance X induces Y-cells

Context:
Y-cell require induction, substance x may be the inducer because: we know virtually nothing about x, but we had some on the shelf.

1. lots and lots of tiny, tiny type and lots of details tiny type and tiny tiny type
2. lots and lots of tiny, tiny type and lots of details tiny type and tiny tiny type
3. lots of tiny type and lots of details more details of tiny type tiny tiny type
4. lots of tiny type and lots of details more details of tiny type tiny tiny type
5. lots of tiny type and lots of details more details of tiny type tiny tiny type
6. lots of tiny type and lots of details more details of tiny type tiny tiny type

My name
My place

# XX
Can anyone read your body text?
Conclusions first: 44 pt bold
Always put the most important part – your
conclusions – first! Place your conclusions in the
upper left hand corner of your poster.
Prepare your material from the reader’s
perspective. What was done, by who and your
conclusion has to be understood within a couple
of seconds reading. Use active voice when
writing the text. Text size: 34 pt regular

Introduction
Posters are primarily visual presentations.
Your poster should be dominated by self
explaining illustrations such as graphs and
pictures while the amount of text should be
kept to the minimum.

Your aim
Your poster is an advertisement for your
research and as such it needs to be eye-
catching and straight to the point. You only
have seconds, or at best a few minutes to
attract the attention of the visitor to a poster
session. Keep your message short and clear

Your message
Keep your message clear and your text concise.
Decide what is relevant for this poster and try to
get your message across to your target group.

Layout, photos and print
Contact your library for help with design and
layout enhancements. For printed and professional
photographs contact photographs. For more information:
www.cornell.edu

Tips:
The best font for text blocks that are as short
as they should be on a poster is a sans serif
Helvetica family. Therefore, use basic scientific
such as Arial or Minion sans, rather than serif
fonts like Times New Roman.
AVOID CAPITAL LETTERS IN TEXTS THAT
ARE LONGER THAN ONE LINE, SINCE
THEY ARE MORE DIFFICULT TO READ.

Handouts
If you succeed in getting the reader’s
attention, provide them with more detailed
information in the form of handouts or printed
articles. Include references on your handout
instead of your poster.

It is always nice to put in a picture and
write some few short notes of what’s
going on in the future. Put handouts,
business cards, ready - on a table or in
an envelope hung with the poster.
Images and graphs say much more than words
Keep posters visual!

Southern Flounder Exhibit Temperature-Dependent Sex Determination

J. Aileen Laddershott, John Goodwin, and Russell Brooks
Department of Zoology, Duke University, Durham, NC 27707

Introduction
Southern flounders exhibit loco-dendrigranm offendor dominance and are known to react to changes in temperature and sex determination. This study was conducted to determine whether southern flounder weight is temperature-dependent sex determination (TDS) and if growth is affected by rearing temperature.

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

Methods
- Southern flounder broodstock were kept in saltwater and fed a diet of herring and krill.
- Females were induced to spawn at a temperature of 15°C.
- Eggs were fertilized and incubated at 18°C in 24 cm Petri dishes.
- Larvae were transferred to a temperature of 25°C and reared to a total length of 9 cm.
- Sex was determined at the age of 6 months using the method of TDS.

Histological Analysis

Temperature Affects Sex Determination

Growth Does Not Differ by Sex

Results
- Sex was determined in all fish at the age of 6 months.
- High (18°C) temperature produced 5% females.
- Low (12°C) temperature produced 25% females.
- Mid-range (22°C) temperature produced 50% males.
- Fish reared at high or low temperatures showed reduced growth compared to those reared at the mid-range temperature.
- Fish reared at the mid-range temperature showed different growth responses to temperature.

Conclusions
- These findings indicate that sex determination in southern flounder is temperature-sensitive and that temperature has a profound effect on growth.
- A high-temperature rearing temperature (22°C) appears to affect the sex of female and increase the growth of young southern flounder.
- Although adult flounder are known to grow larger than males, no difference in growth between males and females was observed in this study.

Acknowledgments
The authors acknowledge the support of the National Science Foundation (grant no. DEB-0549519) for the study of sex determination in southern flounder.
Picture perfect photos

• Avoid resolution overkill!
  At least 150 dpi, but no more than 350 dpi

• Save photos as jpg or png
  Line art as a png (graphs)

• Web images are usually poor resolution
AVP (median, 1st, 3rd quartile)

AVP (pg/ml)

control

colic

*
Your cool images mean nothing without a scale bar or description.
Don’t forget your funding acknowledgements

CNF-NSF-BMR, etc
Your department can provide you with the required wording
Your contact info!!!

Without it you’ll become
“ya know, those guys with the awesome poster”

Include all contact info:
• Mail address
• Phone
• E-mail
Using color to engage your readers

2-3 colors, no more!

Dark type on light color background
This attracts attention but wears out the eye
Be careful with the primary colors
Blue on Red appears blurry to the human eye.

Yellow on white is hard to read

Red on Blue appears blurry to the human eye.
http://www.colorshemeer.com/online.html
Be aware of busy backgrounds

Snook Growth in Habitats with Differing Abiotic Variability
Alexia Read, North Carolina State University, anread@unity.ncsu.edu

PROPOSED OBJECTIVE
To create a useful tool for assessing potential stocking habitats based on degree of variability in water quality.

- Snook are a popular game fish found in the estuarine creeks of Florida.
- Snook population has been on the decline due to overfishing and habitat degradation.
- Numerous stock enhancement endeavors are currently underway without sufficient preliminary research.
- Abiotic variability is a prominent feature of these estuaries.
- Temperature, dissolved oxygen, and salinity might play influential roles in the survivorship of the juvenile snook.

STUDY SITES
North Creek Sites

METHODS
1. Juvenile snook are reared in fiberglass tanks (100-250 ml) in the marine bio-lab.
2. Algal growth is fitted with growth requirements.
3. Fish are placed in nursery habitat at the research site for 8-12 weeks.
4. Fish are weighed and measured for growth.

RESULTS
North Creek Lower (High Variability)
- Negative Growth
- Dissolved Oxygen (mg/L) 0-22
- Salinity (ppt) 2-21
- Temp (°C) 25-34

North Creek Middle (Medium Variability)
- Positive Growth
- Dissolved Oxygen (mg/L) 4-8
- Salinity (ppt) 16-20
- Temp (°C) 30-38

North Creek Upper (Low Variability)
- Slow Growth
- Dissolved Oxygen (mg/L) 0-4
- Salinity (ppt) 16-30
- Temp (°C) 24-33

CONCLUSION
- Snook exhibit increased growth in habitats with a medium degree of abiotic variability.
- Stock enhancement projects will be more efficient by releasing juvenile snook primarily in nursery habitats with a medium degree of abiotic variability.
Southern Flounder Exhibit Temperature-Dependent Sex Determination

J. Allen Luckenbach, John Godwin and Russell E. Brock
Department of Zoology, Box 7617, North Carolina State University, Raleigh, NC 27695

Introduction

Southern flounder (Paralichthys lethostigmus) support valuable fisheries and show great promise for aquaculture. Female flounders are known to grow faster and reach larger size 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 cell line temperature-dependent sex determination (TSD) and if growth is affected by rearing temperature.

Methods

- Southern flounder broodstock were used to spawn to obtain eggs and sperm for in vitro fertilization.
- Embryos were reared in a modified diet consisting of high protein diet until detection of sex at hatching (30 days).
- Embryos were reared under three temperatures (5, 15, or 25°C) for 245 days.
- Embryos were preserved and sex identified at 245 days.
- Sex-determining mechanisms were used to distinguish males (neoteny/sex reversal) from females (sex-reversed).

Histological Analysis

- Male differentiation
- Female differentiation

Temperature Affects Sex Determination

Results

- Sex was determined in most fish greater than 120 days.
- High (25°C) temperature produced 96% males.
- Low (5°C) temperature produced 97% females.
- Mid range (15°C) temperature produced 49% males.
- Fertilized at high or low temperatures showed reduced growth compared to those at the mid-range temperature.
- Up to 245 days no differences in growth between sexes.

Rearing Temperature Affects Growth

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 (25°C) appears to maximize the number of females and promote fish growth with a young southern flounder.
- Although flounders are known to gain larger sizes faster, no difference in growth between sexes occurred in age-0 to 5 year southern flounders.

Acknowledgements

The authors acknowledge the Advanced Research Program of the National Institute of Standards and Technology for funding this research. Special thanks to Lisa Willard and Beth Mace for help with histology.
Even better!

Southern Flounder Exhibit Temperature-Dependent Sex Determination
J. Adam Luckenbach, John Goodwin and Russell Borsic
Department of Zoology, Box 2617, North Carolina State University, Raleigh, NC 27695

Introduction
Southern flounder (Paralichthys lethostigmus) 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 females found is important for aquaculture.

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

Methods
- Southern flounder (Western Atlantic) were skip spawned to collect eggs and sperm for in vitro fertilizations.
- Hatched larvae were reared from a natural diet (phytoplankton) in high protein filtered feed and fed until settlement at least twice daily.
- Upon reaching a mean total length of 40 mm, the juvenile flounder were reared at equal densities into one of three temperatures, 15, 23, or 28°C for 245 days.
- Females were preserved and later sectioned at 2.4 microns.
- Sex distinguishing markers were used to distinguish males (premetamorphosis) from females (postmetamorphosis).

Histogram Analysis

Temperature Affects Sex Determination

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 (15°C) temperature produced 22% females.
- Mid-range (23°C) temperature produced 44% females.
- Those raised 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 (< 1 year) southern flounder.

Acknowledgements

\[ \text{Acknowledgements} \]
Southern Flounder Exhibit Temperature-Dependent Sex Determination

Introduction

Southern flounder (Paralichthys lethostigmus) 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 rate of female flounder is important for aquaculture.

Objective

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

Methods

- Southern flounder (Paralichthys lethostigmus) were obtained from a natural population and reared in a temperature-controlled hatchery at 26°C.
- Flounder were fed a high-protein diet and fed daily.
- Eggs were collected from females at temperatures of 18, 22, and 26°C for 2-6 days.
- Eggs were sorted and reared in 2.6 cm cubes.
- Sex distinguishing markers were used to distinguish males from females.

Histological Analysis

![Histological Analysis Images]

growth}

Temperature Affects Sex Determination

Results

- Sex was discernible at temperatures greater than 12°C.
- Low (18°C) temperatures produced 4% females.
- Medium (22°C) temperatures produced 48% females.
- High (26°C) temperatures produced 44% females.
- High (26°C) temperatures showed reduced growth compared to those at the mid-range temperature.
- Up to 24°C, 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 (22°C) appears to maximize the number of females and promotes better growth in young southern flounder.
- Although adult females are known to grow larger than males, no differences in growth between sexes occurred in age 1 or 1-year-old southern flounder.

Acknowledgements

[Research Collaboration and Funding Details]
Edit, Edit, Edit and Evaluate!
Print out a letter size draft

Can you read the type?
Are these the colors you really want?
Does it look too busy?
Do my main points pop?

Keep it simple
CCMR has new poster printers!

Our wonderful computing facilities offers state of the art poster printing

http://cf.ccmr.cornell.edu/posters.html
You’re not done yet...

Prepare a 3-5 minute verbal explanation

Is he ever going to SHUT UP???
Prepare mini size poster handouts

- Provides a written record for interested folks
- Makes you look together
- Be sure to include complete contact information
- Might even get you a job!
Let’s judge some designs and see what you’ve learned
A bit text heavy but not too bad.
Where do I begin?
I’m feeling sleepy
OK, but which way do I go?
Oh my gawd!
Nice flow, but too metallic
I’ve fallen, and I can’t get up
Your Ingenious Teaser Right Here to Woo Them Down to the Body

Conclusions first: 44 pt bold
Always put the most important part - your conclusions - first! Place your conclusions in the upper left hand corner of your poster.
Prepare your material from the reader's perspective. What was done, by who and your conclusion has to be understood within a couple of seconds' reading! Use active voice when writing the text. *Notes:* 34 pt regular

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Your message
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Layout, photos and print
Contact Mediacentre at University Library for help with layout and image arrangement. For printouts and professional photographers contact Mediacentre. For more information: https://www.ccmr.cornell.edu/mediacentre

Tips:
The best font for text blocks that are as short as they should be on a poster is a Sans Serif 'helvetica family'. The fonts use sans serif fonts such as Arial or Noto sans, rather than serif fonts like Times or Courier.

Avoid capital letters in texts that are longer than one line since they are more difficult to read.

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If you succeed in getting the reader's attention, provide him with more detailed information in the form of handouts or printed articles. Include references on your handout instead of your poster.

It is always nice to put in a picture and write some few short notes of what's going on in the future. Put handouts, business cards, etc. on a table or in an envelope hung with the poster.

Gorgeous!
Welcome to the 80’s
Fer sure!
This works!
Helpful sites on poster presentations:

http://www.ncsu.edu/project/posters/IndexStart.html

http://www.swarthmore.edu/NatSci/cpurrin1/posteradvice.htm
LiLynn Graves
Web and Graphic Designer, CCMR