Making Successful Scientific Posters

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KISS

Keep It Simple Stupid

An Effective poster is . .

- Focused on a SINGLE message
- Lets graphics and images tell the story
- Has a well-ordered sequence

Define that message

- Know the message
- Be bold and explicit
- Make strong statements
- State your interpretations

- MESSAGE DESIGN

Know your audience

- Your field/closely related
- Provide context
- Use plain language
- Avoid jargon
- Interpret your findings

Providing an Abstract

- NOT ON THE POSTER/separate
- Description of work
- Describes the objective
- Briefly explain methods
- State results, conclusions and recommendations

Requires planning, Art, Science, and attention to detail

Planning

- Before starting work on your poster, consider message, space, budget, format (single sheet or multi-panel), and deadlines.

Suggested schedule

- 0 Present poster
- -1 week Final print
- -1 week Make changes suggested by peers
- -1 week Distribute draft for peer review (round 2)
- -2 weeks Make changes suggested by peers
- -2 weeks Distribute draft for peer review (round 1)
- -3 weeks Edit your draft ruthlessly
- -3 weeks Create first draft of poster
- -4 weeks Plan out poster on scratch paper
- -4 weeks Define message and write an abstract (if you haven't already done so)

Focus

- Stay focused on your message and keep it simple. Create a mock-up and dispense with unneeded details.

Layout

- Use a clearly defined visual grammar to move readers through your poster.

Content

- Title, Authors, Affiliations
- Introduction (outline it)
- Methods
- Results (graphs, tables)
- Conclusion (discussion)

quite boring but understandable

Headings

- Use headings to orient readers and convey major points.

Headings

Creating Effective Poster Presentations
George Hess :: Kathryn Tosney :: Leon Liegel

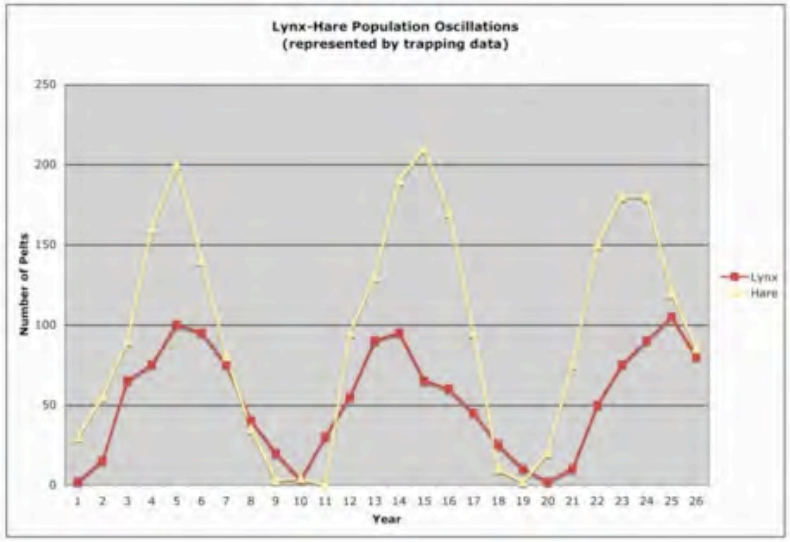
voice-over by George Hess

www.ncsu.edu/project/posters

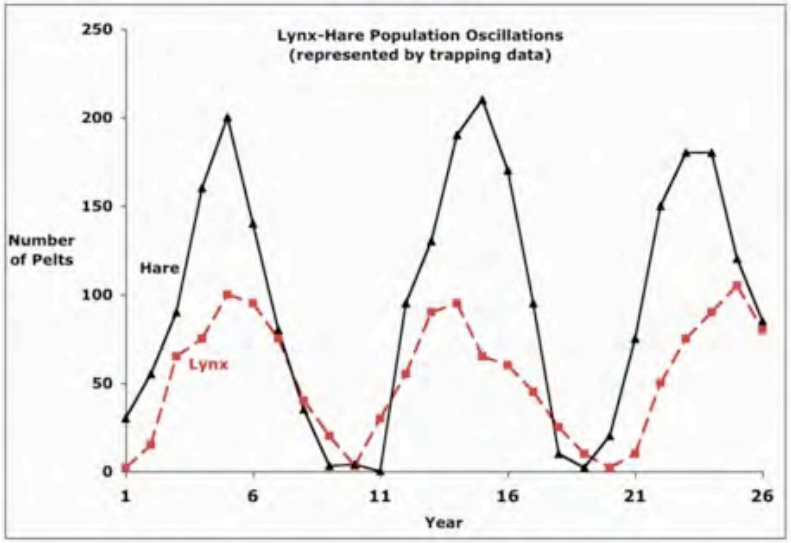
Graphics

- Simple and appropriate graphics should dominate your poster.
- Minimal content yet effective

No!



Better!



Readability

- Minimize text – use images and graphs instead.
- Keep text elements to 50 words or fewer.
- Use phrases rather than full sentences.
- Use an active voice.
- Avoid jargon (depends on audience)

Text

- Text - Don’t use ALL CAPs
- At least 24pt
- Viewable from 4ft
- Left-justify, avoid centering
- Use a “Serif” font for main body text
- Use a “San-Serif” font for main body

Text

- "Serif" (e.g. Times)

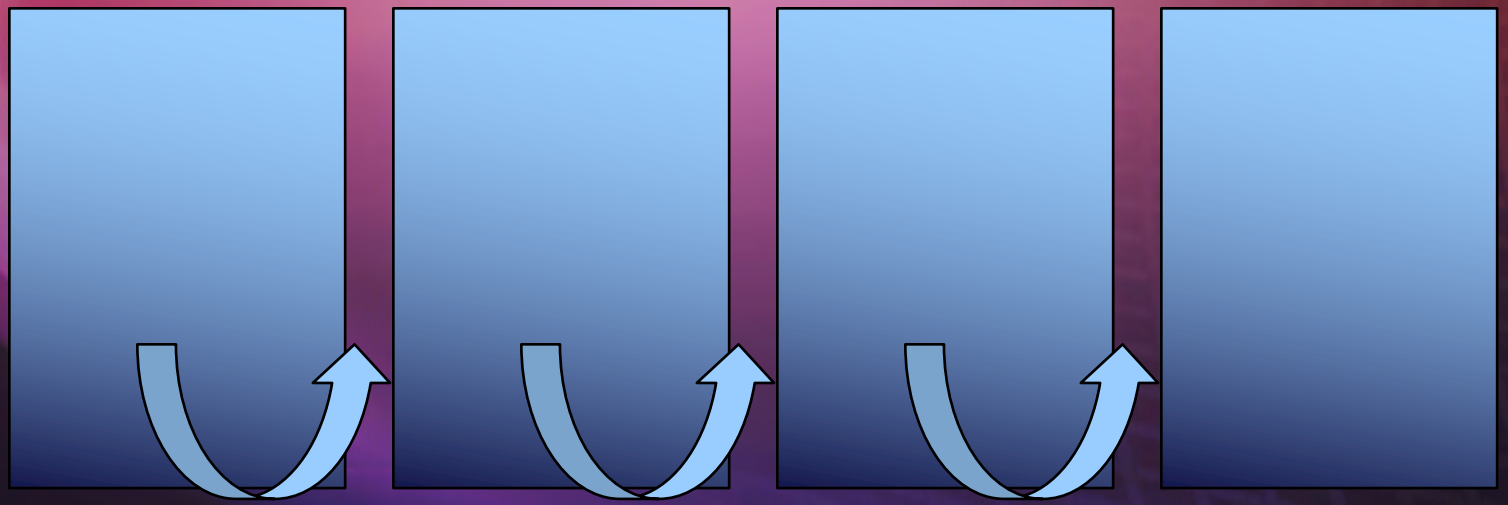
The quick brown fox jumps over the lazy dog.

- "San-Serif" (e.g. Helvetica or Ariel)

The quick brown fox jumps over the lazy dog.

Style

- Alignment
- Columns



Colors

- Colors can make a poster attractive and improve readability, but be cautious.
- Avoid dark backgrounds – tiring to eyes
- Stick to a theme of 2 - 3 colors

Editing

- Edit ruthlessly to reduce the amount of text and focus on a results-oriented message.
- Have peers review to help you.

What about those Images

- Don’t use WEB graphics (poor resolution)
- JPEGs or TIFFs ?
- “Insert > Picture > From File”

Demonstration

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.

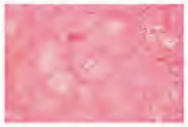
Objective

This study was conducted to determine whether southern flounder exhibit temperature-dependent sex determination (TSD), 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 weaned from a natural diet (rotifers/*Artemia*) to high protein pelleted feed and fed until satiation 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 18, 23, or 28°C for 245 days.
- Gonads were preserved and later sectioned at 2-6 microns.
- Sex-distinguishing markers were used to distinguish males (spermatogenesis) from females (oogenesis).

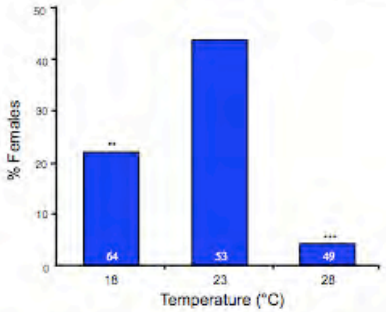
Histological Analysis



Male Differentiation

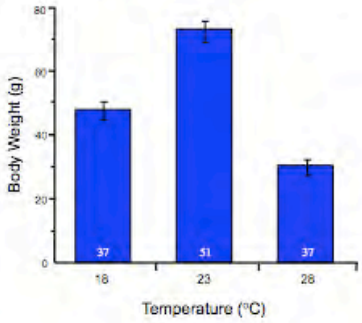
Female Differentiation

Temperature Affects Sex Determination

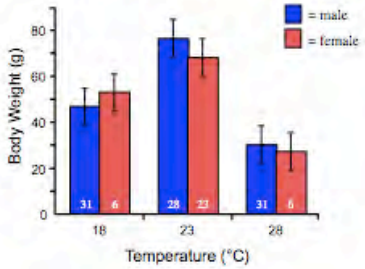


(**P < 0.01 and ***P < 0.001 represent significant deviations from a 1:1 male:female sex ratio)

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 (18°C) temperature produced 22% females.
- Mid-range (23°C) temperature produced 44% females.
- Fish 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[illegible]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

The authors acknowledge the Saltonstall-Kennedy Program of the National Marine Fisheries Service and the University of North Carolina Sea Grant College Program for funding this research. Special thanks to Lea Ware and Beth Shimps for help with the work.

Demonstration

Rooting Fraser Fir Cuttings

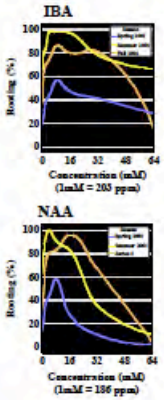
NC STATE UNIVERSITY

Chris Rosier and John Frampton
Christmas Tree Genetics Program, Department of Forestry, North Carolina State University, Raleigh, N.C., 27695-8002

Goal: To understand how various factors influence the rooting ability of Fraser fir cuttings in order to develop an economically feasible clonal propagation system.

Season and Auxin Study

- What is the best season for collecting and rooting cuttings: Fall (August), Winter (February) or Summer (June)?
- What is the best auxin to treat cuttings with: IBA or NAA?
- What is the best auxin concentration to treat cuttings with: 0, 1, 2, 4, 8, 16, 32 or 64 mM?



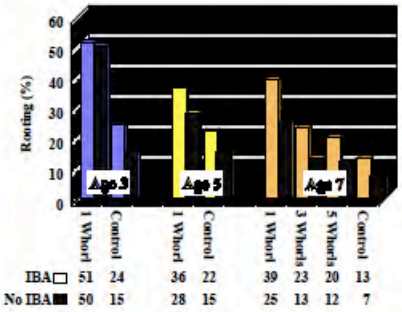
Conclusions

Fraser fir cuttings from 3-0 or 4-0 seedlings rooted best (90-100%) when:

- Collected in summer (June)
- Treated with either:
  - 4 – 16 mM (~800-3200 ppm) IBA
  - 2 –8 mM (~375-1500 ppm) NAA

Age and Stumping Study

- What is the effect of age on rooting: 3, 5 and 7 years in the field?
- Do cuttings from stumped trees root better: stumped to bottom 1 whorl vs. control (Ages 3 and 5), stumped to bottom 1, 3 and 5 whorls vs. control (Age 7)?



Stumping Treatments

Conclusions

Rooting ability in Fraser fir:

- Decreases from field age 3 to 7 years
- Increases with the severity of stumping

Thanks to Joe Shoupe and the NC DFR Linville River Nursery for donating seedlings.
Thanks to the following growers for donating trees: Waightstill Avery, Wayne Ayers, Sam Cartner, Tom & Rock Hall and Jack Wiseman

Demonstration

Can Suburban Greenways Provide High Quality Bird Habitat?

George R. Hess :: NC State University :: Department of Forestry & Environmental Resources :: Raleigh NC 27695-8002 USA :: george_hess@ncsu.edu
Christopher E. Moorman, Jamie H. Mason, Kristen E. Sinclair, Salina K. Kohut :: NC State University :: Department of Forestry & Environmental Resources
www4.ncsu.edu/~grhess/GreenwaysForWildlife

Birds of Conservation Concern in Decline

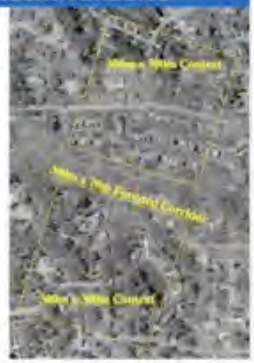
- Many bird species of conservation concern – including neotropical migrants, insectivores, and forest-interior specialists – decline with increasing human development
- Greenways might mitigate this effect
- Habitat patch size, vegetation composition & structure, and landscape context are key factors
- Standards are lacking for designing and managing suburban greenways as high quality habitat

Objective: Greenways for the Birds

- Determine how development-sensitive forest birds are affected by
  - forested corridor width
  - adjacent development intensity
  - vegetation composition & structure
- Develop recommendations for greenway designers and planners

Study Design & Independent Variables

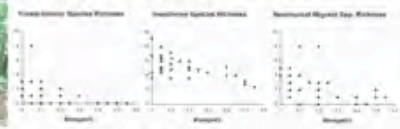
- Sampled 34 - 300m corridors in Raleigh & Cary, NC, USA
- Sampled range of
  - Forested corridor widths (20 – 1,200m)
  - Adjacent density (low density residential – office/commercial)
- Additional measures
  - Vegetation composition & structure in corridor
  - Land cover in 300m x 300m adjacent to corridor (context)

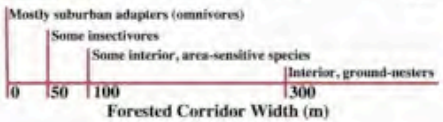


- Measured richness & abundance of
  - Breeding birds
  - Neotropical migrant birds during stopovers
  - Mammal nest predators

Breeding Birds of Concern More Common in Wider Greenways with Less Managed Area Surrounded by More Forest Canopy

- 8-minute, 50m point counts at center of corridor
- Revisited 4 times during breeding season



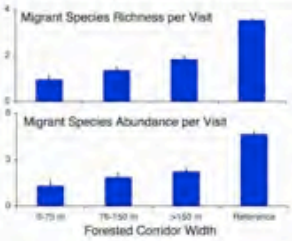


Significant Predictors for Breeder Abundance

Greenway:	*Adjacent Landscape:*
(–) Managed Area	(+) Canopy Cover
(+)Shrub Cover	(–) Building Density
	(–) Bare Earth

Spring Neotropical Migrant Stopovers More Common in Wider Greenways with More, Taller Hardwood Trees

- 200m x 25m transects along one side of greenway path
- Revisited sites for two spring seasons and one fall season
- Width *not* significant, but trend consistent with other findings



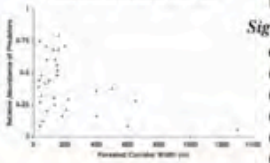
Significant Predictors for Spring Migrant Abundance

Greenway:
(+) % Hardwoods
(+) Canopy Height

Adjacent Landscape:
(–) Bare Earth

Nest Predators Less Common in Wider Greenways with Narrower Paths

- Five baited scent stations along each greenway segment
- Observed for 5 nights each

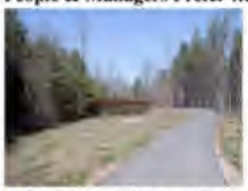


Significant Predictors for Predator Abundance

Greenway:	*Adjacent Landscape:*
(–) Corridor width	(–) Building density
(+) Trail width	
(+) Mature forest	
(+) Ground cover	
(–) Vine cover	

Greenways for Development-Sensitive Forest Birds Might Conflict with Intense Recreational Use

People & Managers Prefer …



- Good for walking, running, cycling, strollers, wheelchairs
- Easier to maintain, especially with higher intensity use

Forest Birds Prefer …

- Narrow path avoids splitting forested corridor
- Discourages heavy human use
- Fewer nest predators

Potential Solution: Wide Corridor, Trail Near Edge

- Make corridors at least 50m wide; wider is better
- Don't split forested corridor
  - Keep trails as narrow as possible
  - Avoid wide grassy areas along trails within forested corridor
  - Locate trails near the edge of forested corridors

Templates, Logos, How-to Guides

med.wayne.edu/biomedcom

Support & Downloads tab

Resource: Creating Effective Poster Presentations

- http://www.ncsu.edu/project/posters/NewSite/

I am never afraid of what I know.

Anna Sewell (1820 - 1878)

was an English novelist, best known as the author of the classic novel *Black Beauty*

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