

Poster Presentations for Student Symposium

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Here are general guidelines for preparation of a poster with on campus printing. This document was prepared for a basic scientific poster presentations. **Please follow more specific guidelines that your individual faculty may give you.**

Posters are prepared as a single slide designed in PowerPoint. The recommended size is 30 inches tall by 30 inches wide. If your teacher gives you different directions to follow, please refer to your teacher.

1. Open a blank PowerPoint slide, go to “Design”, select “slide size” on the far right side, select “custom slide size”, set it to 30 in wide and 30 in tall (Figure 1).

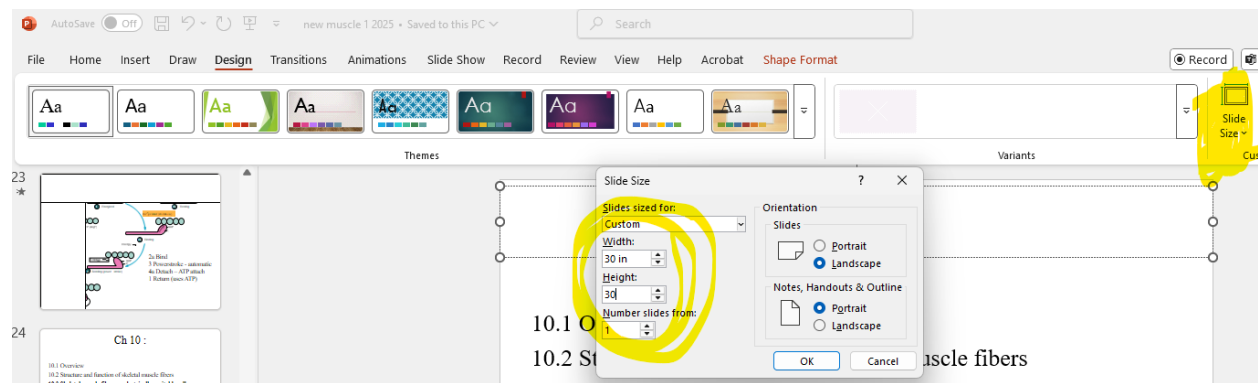


Figure 1 Image shows the "design" view and you can see the select size option on the far right side has been selected. Also notice how this Figure 1 caption is set up and referenced in the text.

2. Use Times New Roman font or other professional appearing font.
3. Select a non-distracting background color or pattern. Busy backgrounds distract from the topic you are presenting.
4. Title, Name, address/school goes across the top. The title should be 55-70 font size with your name and address a slightly smaller font. The title should be descriptive of your project.
5. A good font size for the general text is in the range of 25-35. If you have more text than space, you might need to make your font smaller. If you have less text, then you make your font a little larger. The goal is to fill up all of the space on your poster.

- Three equal columns of text works best. The columns should be the same widths and lined up across from each other so the horizontal lines match up as well. Getting the columns set up and formatted can be tricky. I recommend leaving space in your original columns for your images and then adding your images and captions over the original column.
- Text should have full justification meaning that BOTH the left and right side of the paragraphs should be straight (green arrow pointing to the “straight” right side, Figure 2). This looks much more professional when using column format. To do this, select “home”, in the “paragraph” section chose left and right justify which is the button with lines of equal length going left to right. This button is highlighted in yellow (Figure 2).

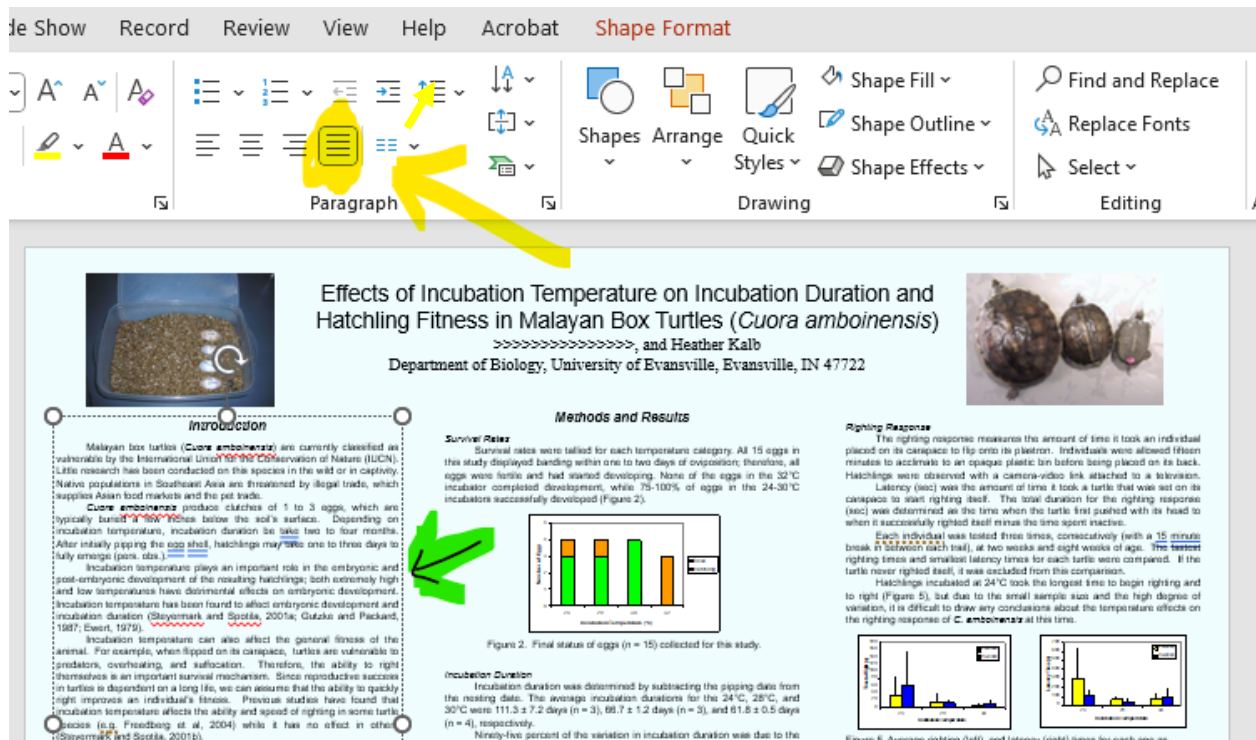


Figure 2 Notice the left and right justification for each column. Columns are also the same width and the lines of text match up as you move across the page. Note the primary captions which are centered bold, Major words capitalized and the sub-captions which are left justified and in italics.

- It is recommended that you divide your paper into labeled sections with caption headers. Examples of this might include Methods, Results, Significance, Homeostasis, Imbalance, etc. It will vary based on what exactly you are presenting. Any captions and sub-captions need to have consistent formatting throughout your poster (examples: centered, bold, italics, font size, etc) (Figure 2).

9. Use paragraphs. Remember one idea per paragraph. No one ever wants to read long paragraphs. While English teachers may not like single sentence paragraphs, it can be common in a scientific presentation.
10. If you did an original research project, then you will also have a table of descriptive data. Tables have Table caption headers not Figure caption headers. When you do original research and have data to present – you typically present averages, range (max-min), sample size or number of replicates, etc. Ask your instructor for examples of what your data table should look like.
11. If you are presenting original research, then you need to include a graph(s) showing your results. Graphs are one type of figure. They are numbered sequentially – Figure 1, Figure 2, etc and include a short descriptive statement. Additionally, they are referenced at the end of the sentence just like tables (Figure 1).
12. Figures are any type of image. In addition to graphs, actual pictures and diagrams can be very helpful in presenting your topic. With a 30” by 30” sized poster, you should have at least one picture that not only relays important information but also provides relief from all of the text! When you are discussing the topic that is portrayed in your figure you use a reference at the end of the sentence that refers your reader to the appropriate figure (Figure 1). Remember to cite where you got your figure from unless it is original work.
13. Remember 30 inches is 2.5 feet in size. A picture that takes up a third of your poster is going to be a very big picture and the resolution may not be very good.
14. You will include the complete literature cited section. The citation format will depend on what your teacher prefers. In biology, students will use the APA formatting style.
15. When you are done, critically examine your poster and have your family and peers examine it.
 - a. Is the topic clearly presented?
 - b. Do the figures help tell a coherent story?
 - c. Are the figures and tables an appropriate size and clearly able to be seen. Typically, you do not need figures that are 12 inches in size. Larger size often results in pixilation and difficulty reading.
 - d. Does it look professional?
 - e. Is it legible?
 - f. Are there any mistakes in grammar and spelling?
 - g. Lastly, double check that you have the appropriate 30” by 30” (or other requested) dimensions set up correctly.
16. Save your PowerPoint slide as both a Powerpoint slide and a PDF file with your name and send to your teacher. Posters can be printed in the morning. Be sure to submit your poster in

time to be printed for the symposium you are attending. The PDF version is what will be sent to the copy center (copycenter@wvnc.edu) on campus for printing.

What mistakes in formatting can you find in this poster? Does this poster look nice? Is it easy to read? Is formatting consistent? Note this paper is a presentation of original research and uses the typical scientific format for data presentation.



Introduction

Malayan box turtles (*Cuora amboinensis*) are currently classified as vulnerable by the International Union for the Conservation of Nature (IUCN). Little research has been conducted on this species in the wild or in captivity. Native populations in Southeast Asia are threatened by illegal trade, which supplies Asian food markets and the pet trade.

Cuora amboinensis produce clutches of 1 to 3 eggs, which are typically buried a few inches below the soil's surface. Depending on incubation temperature, incubation duration be take two to four months. After initially pipping the egg shell, hatchlings may take one to three days to fully emerge (pers. obs.).

Incubation temperature plays an important role in the embryonic and post-embryonic development of the resulting hatchlings; both extremely high and low temperatures have detrimental effects on embryonic development. Incubation temperature has been found to affect embryonic development and incubation duration (Steyermark and Spotila, 2001a; Gutzke and Packard, 1987; Ewert, 1979).

Incubation temperature can also affect the general fitness of the animal. For example, when flipped on its carapace, turtles are vulnerable to predators, overheating, and suffocation. Therefore, the ability to right themselves is an important survival mechanism. Since reproductive success in turtles is dependent on a long life, we can assume that the ability to quickly right improves an individual's fitness. Previous studies have found that incubation temperature affects the ability and speed of righting in some turtle species (e.g. Freedberg et al., 2004) while it has no effect in others (Steyermark and Spotila, 2001b).

At the University of Evansville, we maintain an assurance colony of 46 adult *C. amboinensis* that were wild-caught from confiscations of illegal trade in Asia. The objective of this project was to determine what effects different incubation temperatures have on hatchlings. We examined the survival rates, incubation duration, and fitness by way of righting and feeding responses.

General Methods

Adult females were housed in a 96"×44"×11" semi-aquatic fiberglass tanks. Nesting areas were checked daily for eggs.

Eggs were weighed (g) and measured (mm), then placed in plastic bins with a 2:1 water to vermiculite weight ratio. The bins were placed in Fisher Scientific and Precision Scientific incubators set to 24°C, 28°C, 30°C, or 32°C. Dataloggers recorded temperature at 30-minute intervals.

Incubating eggs were checked daily to determine the date of first pipping and emergence. Upon emergence, the hatchlings were weighed (g) and measured (mm), notched for identification, and placed in 40"×18"×6" plastic aquaria equipped with a UVB bulb, a heat/basking bulb, a ZooMed Turtle Clean Filter, a flat rock, and two half-log shelters (Figure 1). Water was kept at depths of 39-51 mm and averaged about 25°C (32.1-18.6°C).

Hatchlings were fed Reptomin pellets for five minutes five days a week. Length and weight measurements were recorded every two



Figure 1. Housing aquaria for hatchlings.

Effects of Incubation Temperature on Incubation Duration and Hatchling Fitness in Malayan Box Turtles (*Cuora amboinensis*)

Department of Biology, University of Evansville, Evansville, IN 47722

Methods and Results, and Heather Kalb

Survival Rates

Survival rates were tallied for each temperature category. All 15 eggs in this study displayed banding within one to two days of oviposition; therefore, all eggs were fertile and had started developing. None of the eggs in the 32°C incubator completed development, while 75-100% of eggs in the 24-30°C incubators successfully developed (Figure 2).

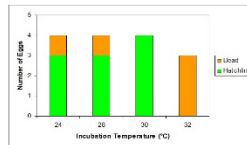


Figure 2. Final status of eggs (n = 15) collected for this study.

Incubation Duration

Incubation duration was determined by subtracting the pipping date from the nesting date. The average incubation durations for the 24°C, 28°C, and 30°C were 111.3 ± 7.2 days (n = 3), 66.7 ± 1.2 days (n = 3), and 61.8 ± 0.5 days (n = 4), respectively.

Ninety-five percent of the variation in incubation duration was due to the temperature treatment (Figure 3). For every increased degree in incubation temperature there was a decrease of approximately eight days in incubation duration.

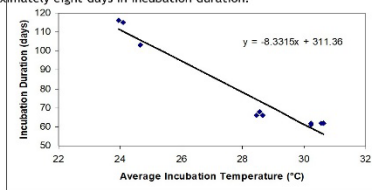


Figure 3. Average incubation temperature versus incubation duration for each hatchling ($r^2 = 0.947$, $F = 142.887$, $p < 0.001$, $n = 10$).

Feeding Study

Hatchlings were isolated in their respective tanks for feeding on three consecutive days at the ages of 2-, 4-, and 8-weeks. An enclosure was set up using two clear Plexiglas walls at the end of the tank, creating a V-shaped enclosure (Figure 4). Food consumption ratios were calculated by dividing the average weight of Reptomin pellets consumed (g) over a three day period by the weight (g) of the hatchling on the first day of that feeding period.

Hatchlings incubated at 28°C ate more food per gram of body mass than hatchlings at 24°C or 30°C, but due to the small sample size and high variability no statistics have been completed.

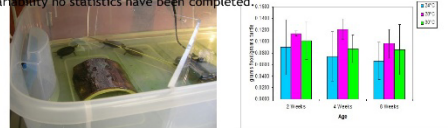


Figure 4. Feeding response enclosure (left) and average (± SD) feeding ratios (g food/g turtle) for the hatchlings from the same incubation temperatures split by the age at which the feeding response was performed (24°C n = 3; 28°C n = 3; 30°C n = 4).



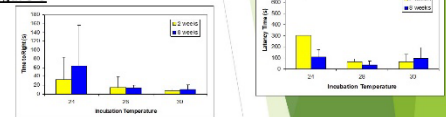
Righting Response

The righting response measures the amount of time it took an individual placed on its carapace to flip onto its plastron. Individuals were allowed fifteen minutes to acclimate to an opaque plastic bin before being placed on its back. Hatchlings were observed with a camera-video link attached to a television. Latency (sec) was the amount of time it took a turtle that was set on its carapace to start righting itself. The total duration for the righting response (sec) was determined as the time when the turtle first pushed with its head to when it successfully righted itself minus the time spent inactive.

Each individual was tested three times, consecutively (with a 15 minute break in between each trial), at two weeks and eight weeks of age. The fastest righting times and smallest latency times for each turtle were compared. If the turtle never righted itself, it was excluded from this comparison.

Hatchlings incubated at 24°C took the longest time to begin righting and to right (Figure 5), but due to the small sample size and the high degree of variation, it is difficult to draw any conclusions about the temperature effects on the righting response of *C. amboinensis* at this time.

Figure 5



Discussion

We found a strong correlation between incubation duration and incubation temperature; this relationship has been demonstrated for other turtle species (Xiang et al., 2003; Choo and Chou, 1987; Ewert, 1979). We believe that 32°C is nearing the maximum temperature for successful development of *C. amboinensis* since no embryos fully developed. An estimate of the minimum temperature has not been established, as most embryos incubated at 24°C developed successfully.

No differences in feeding studies or righting times are apparent yet between incubation temperature (24°C, 28°C, 30°C) groups. Feeding and righting responses were chosen as fitness indicators due to the instinctive nature of these behaviors. True fitness is a measure of reproductive success and would be an interesting comparison to make back to these initial hatchling studies. Since individuals of *C. amboinensis* take at least five years to sexually mature, such an extensive project will take many years to research.

Eggs used in this study were produced by the UE captive colony. Based on the previous year's high egg production, we had expected to have more eggs available. Unfortunately, there was a drop in nesting activity shortly after this project began, resulting in our low sample sizes. Egg production has since resumed and this project is ongoing.

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References

- Choo, BL and LM Chou. 1987. Journal of Herpetology 22(2): 230-232.
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How does this poster look in comparison to the previous?



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## Methods and Results

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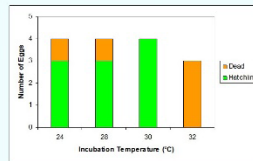


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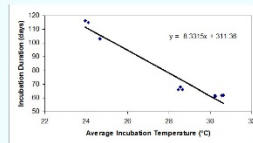


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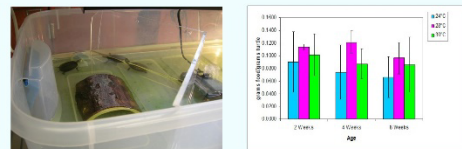


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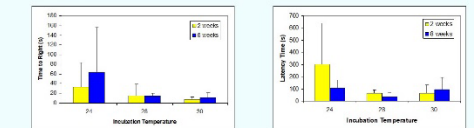


Figure 5. Average righting (left) and latency (right) times for each age as compared to incubation temperatures (24°C: n = 3; 28°C: n = 3; 30°C: n = 4, 3).

## Discussion

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