

Male cottonwoods open their flowers before female cottonwoods

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A stylized, dark teal silhouette of a mountain range is positioned in the bottom right corner of the slide, extending from the right edge towards the center.

Sexual selection, “Darwin’s other theory” is based upon the fact that males can produce more offspring than females, because:

Sperm are smaller than eggs

Females frequently are the caregivers

This leads to two patterns:

Male competition

Decorations

Combats

Female choice

Sexual selection can also apply to plants (Willson and Burley, 1981):

Pollen contains sperm nuclei

Ovules contain egg nuclei

Differences in sexual investment in plants

Competition among males? For pollination!

Female choice? “Mate Choice in Plants”

Most noticeable in dioecious plants

Cottonwoods (*Populus deltoides*)

Early successional, often riparian

Dioecious (like all Salicaceae)



Systematic Botany class Spring 2003

Choose cottonwood individuals (about twenty)

Learning to identify them before budburst

Gender not known at this point

Monitor budburst dates and gender by semiweekly survey

Using GLOBE protocol for budburst

Students: southern Oklahoma and north Texas

Rice and Rice: Tulsa

Results:

Budburst date = f(gender, location, gender*location)

Gender: F=14.19 p=0.0002

Location: F=11.95 p<0.0001

Interaction: F=3.64 p<0.0001

Interpretation:

Males opened earlier

Warmer locations: trees opened earlier

Interaction: in some places, males were earlier, in some places there was no difference between males and females

Raw means: adjusted for first budburst date = 1

Males Day 5.26 4.57 to 5.95 n=159

Females Day 8.85 7.94 to 9.77 n=117

Why were there more males?

Range in budburst dates in any location up to 18 days; thus even early males overlapped with earliest females.

Bois-d'arcs (*Maclura pomifera*), like all Moraceae, are also dioecious.

Previously reported:

Females relatively more thorns

Females relatively greater leaf toxicity

Budburst dates (first date in set = 1) for bois-d'arcs

Males	7.63	5.66 to 9.60
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Females	6.74	5.23 to 8.24
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No significant differences

Unknown pollination mechanism

Difficult to detect first flowers of females

Late in semester

Diospyros virginiana (Ebenaceae) is also dioecious but blooms after the semester is over in May.

Conclusion:

At least in cottonwoods, males have earlier budburst.