

Humulus
japonicus: A Non-
Native Threat to
Allergy Sufferers?

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Discovery Day 2015

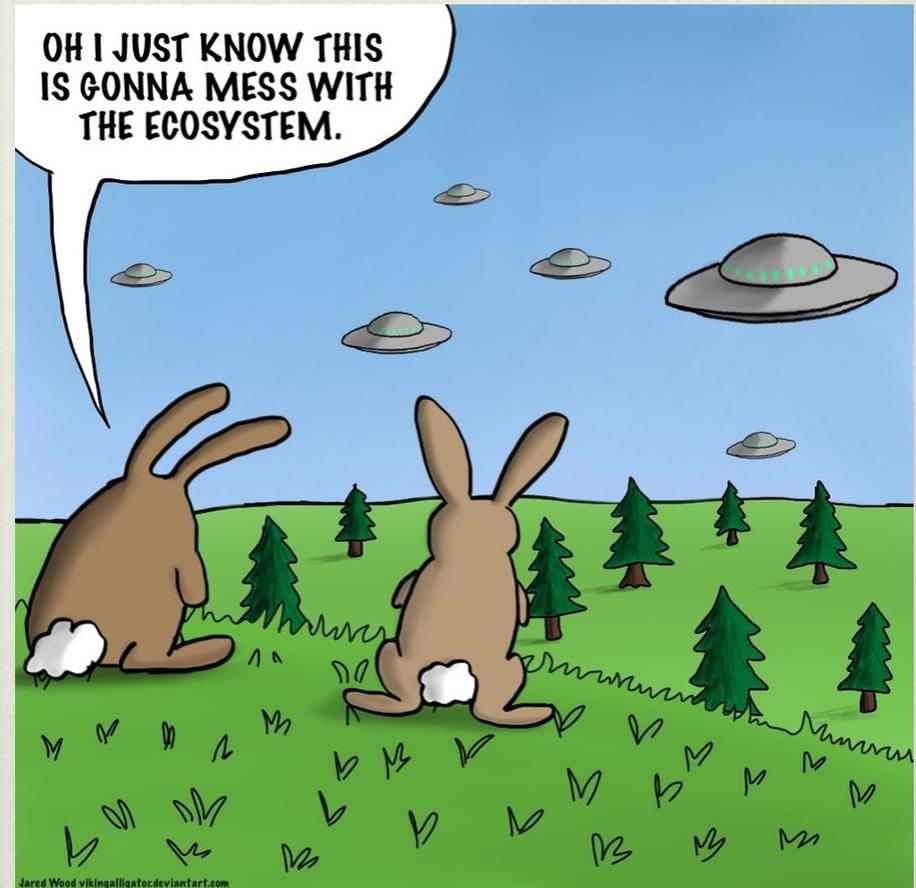
INTRODUCTION

- Member of the Cannabaceae family
- Vine native in China, Japan, and Korea
 - Originally used as a tonic in Asian medicine and related to beer hops
 - most commonly found along stream banks and flood plains- rich soils and sunlight
- An invasive species to the United States



What is an invasive species?

The National Invasive Species Council defines an invasive species as, “a species that is **non-native to the ecosystem under consideration** and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.”





Ecological Threat

- Seeds spread rapidly, can remain in soil for over three years
- Grow very rapidly- sometimes up to 35 feet per year
- Form dense patches over open ground
- Twist around shrubs and trees,
- Chokes out native species
- Hides trees and shrubs from view- forms a “blanket”



Description

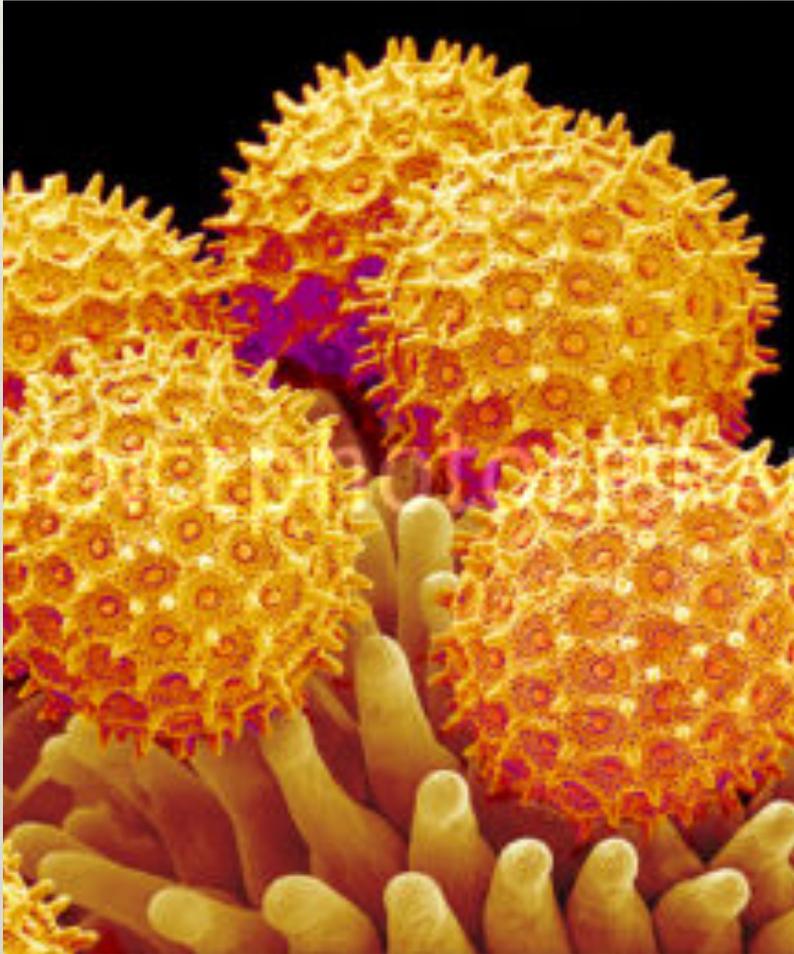
Male



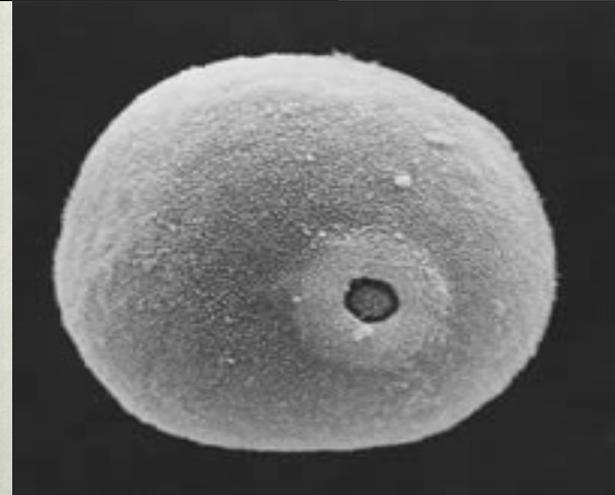
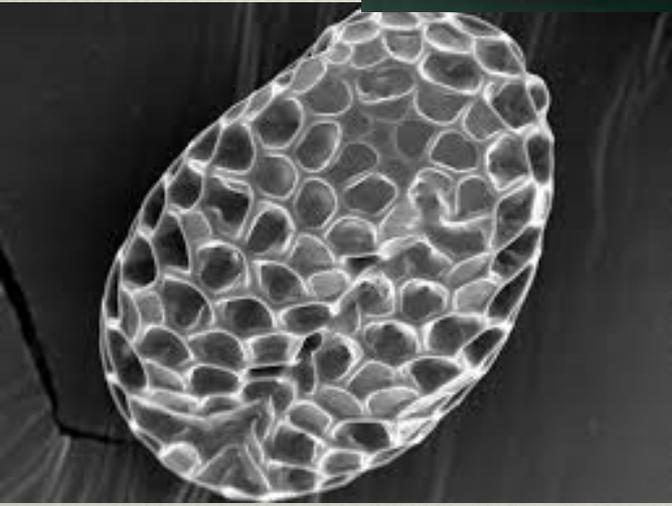
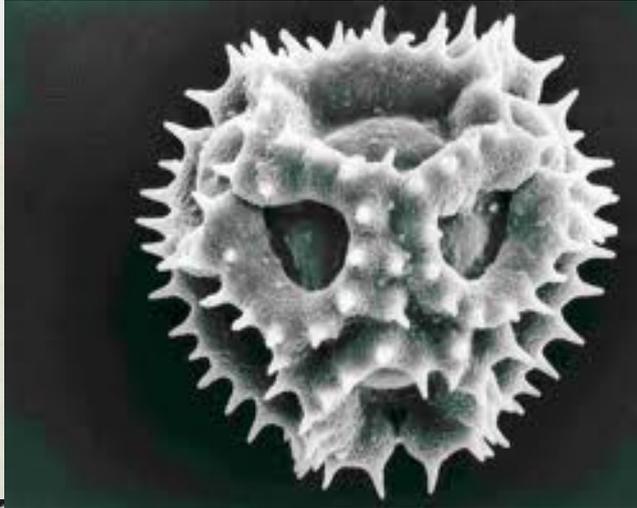
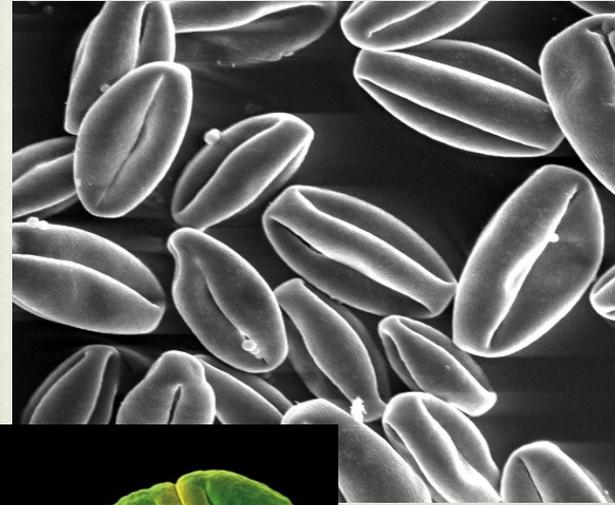
Female



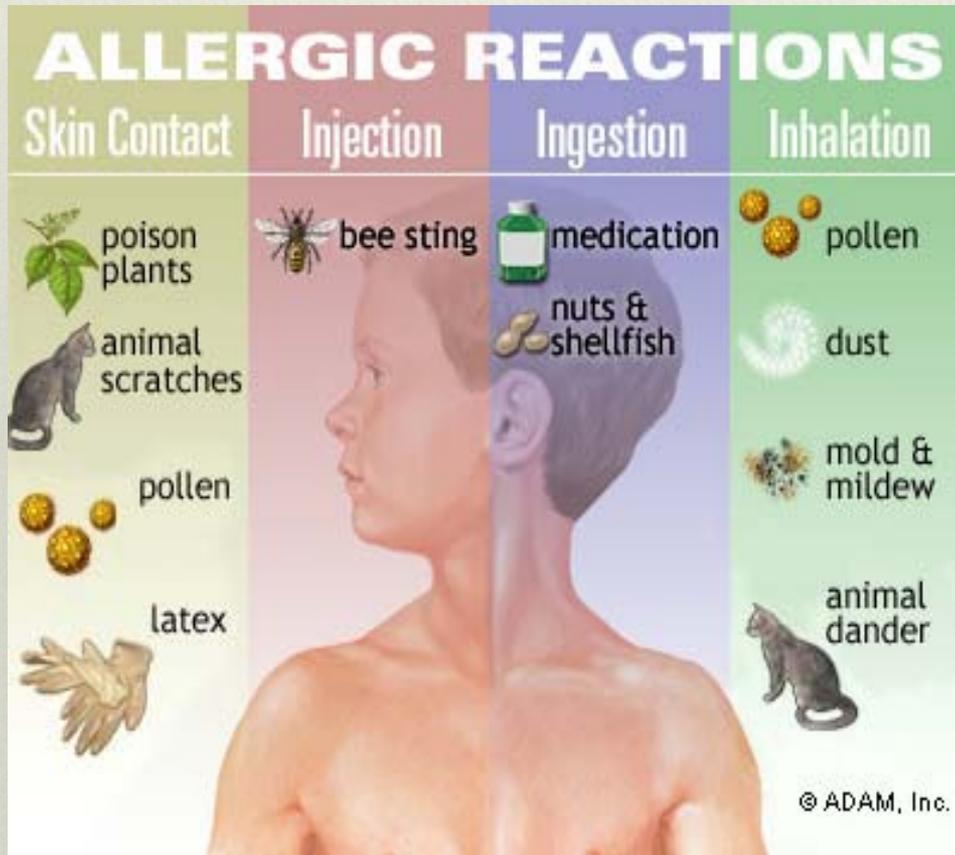
What is Pollen?



- ❖ Powdery substance containing the male microgametophytes (sperm)
- ❖ Sperm is carried by wind, insect, or other animal to self pollinate or cross pollinate
- ❖ The pollen morphology is diverse in order to help reduce cross pollination



What are allergies



- ❖ The job of immune system cells is to find foreign substances such as viruses and bacteria and get rid of them. Normally, this response protects from dangerous diseases. People with allergies have specially-sensitive immune systems that react when they contact certain harmless substances called allergens

Health threats?

- ❖ Airborne pollen pose the largest threat to seasonal allergy sufferers. Ragweed is the most common amongst airborne allergens.

- ❖ allergy seasons

Allergen	Season
Trees	Spring
Shrubs	Summer
Weeds	Fall

- ❖ In 2010:
 - ❖ \$17.5 billion on health related costs
 - ❖ 6 million days of work and school missed
 - ❖ 16 million visits to the doctor

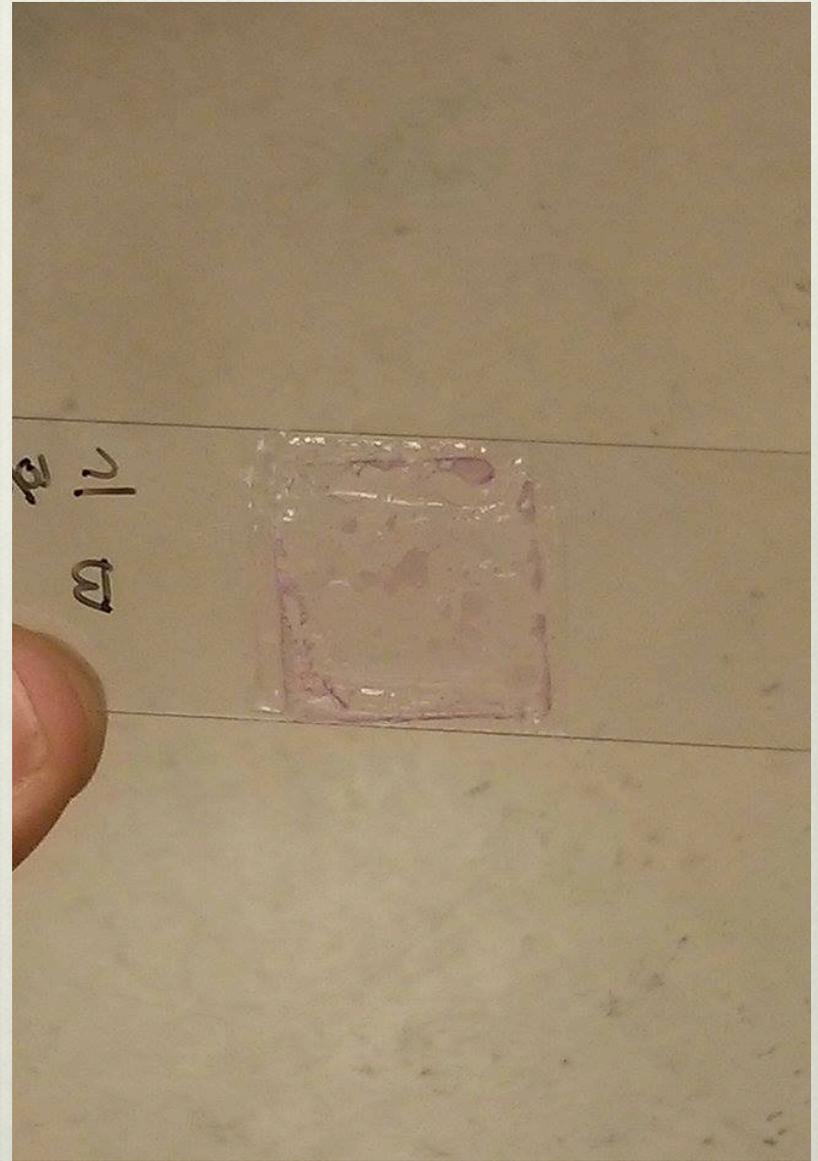
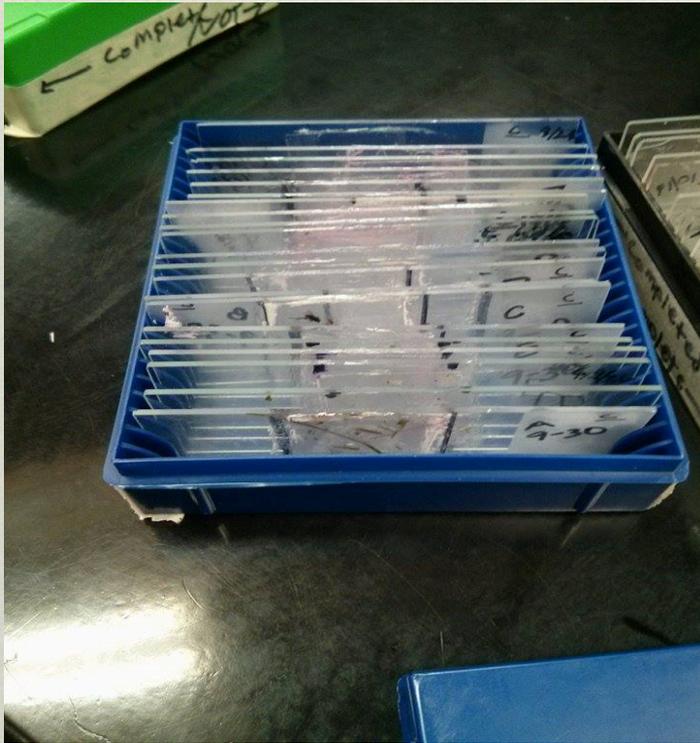
Objective and Hypothesis

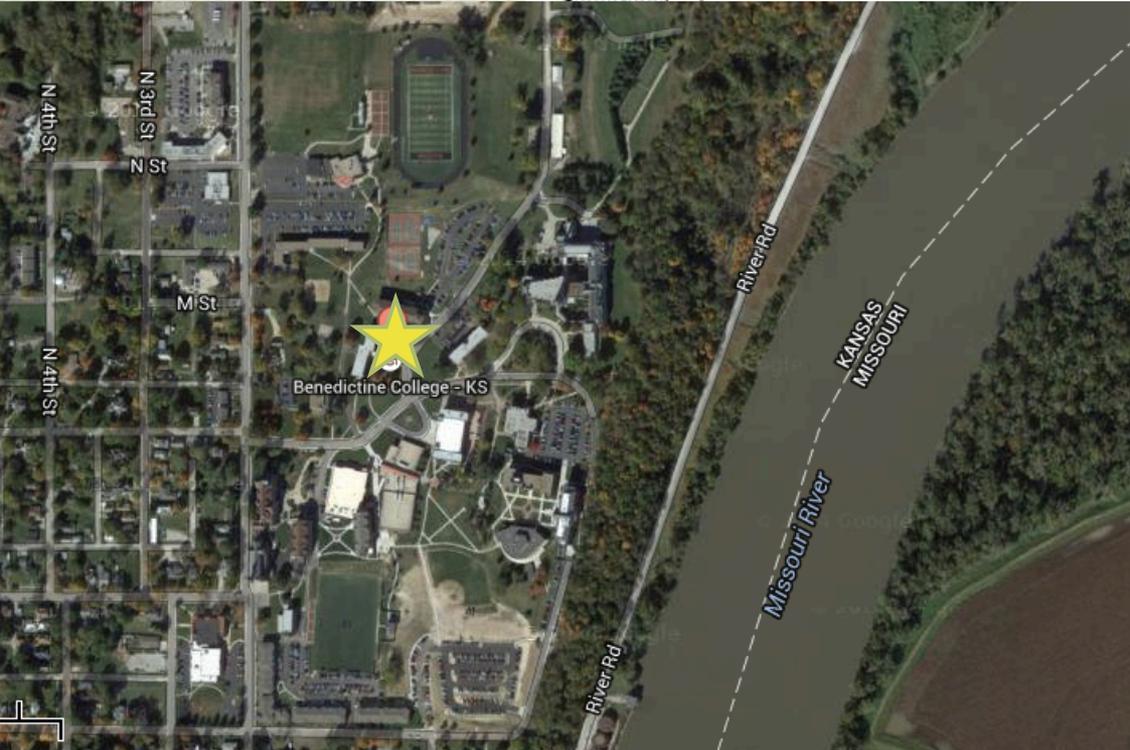
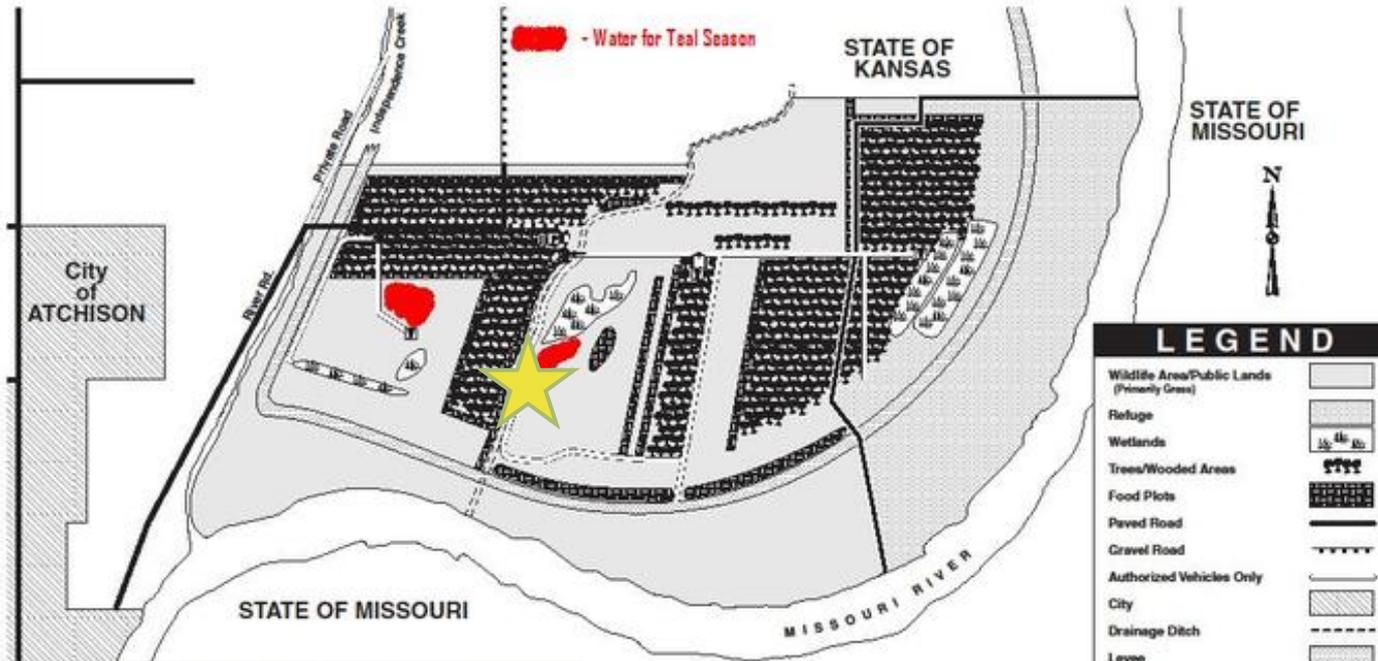
- ❖ The purpose of this study is to determine if *Humulus japonicus* pollen poses an allergy threat through large productions of pollen.
- ❖ We hypothesized that the *H. japonicus* pollen will be as abundant as other allergy species. Further, we hypothesize that there will be a portion of the population which tests positive for allergies to *H. japonicus* pollen.

Phase one

Pollen counting

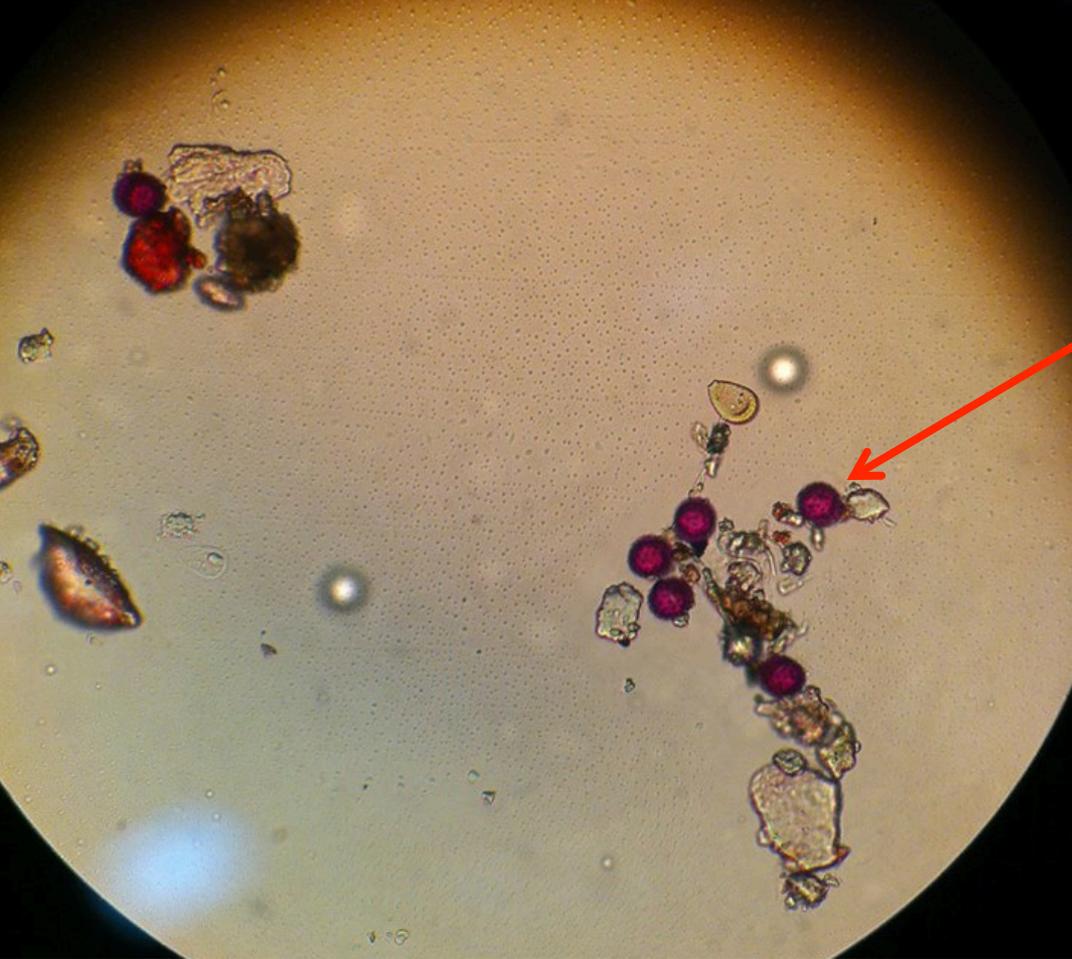
Pollen samples



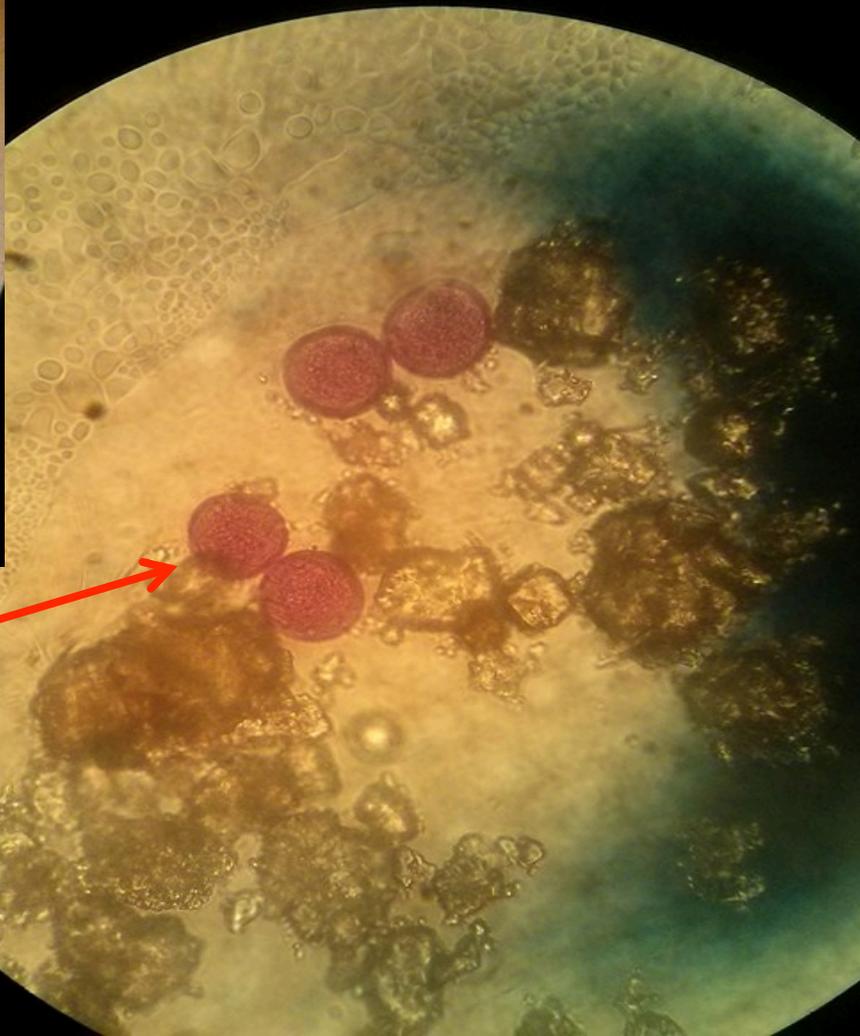


WILDLIFE BOTTOMS WILDLIFE AREA





Ragweed Pollen



H. japonicus Pollen

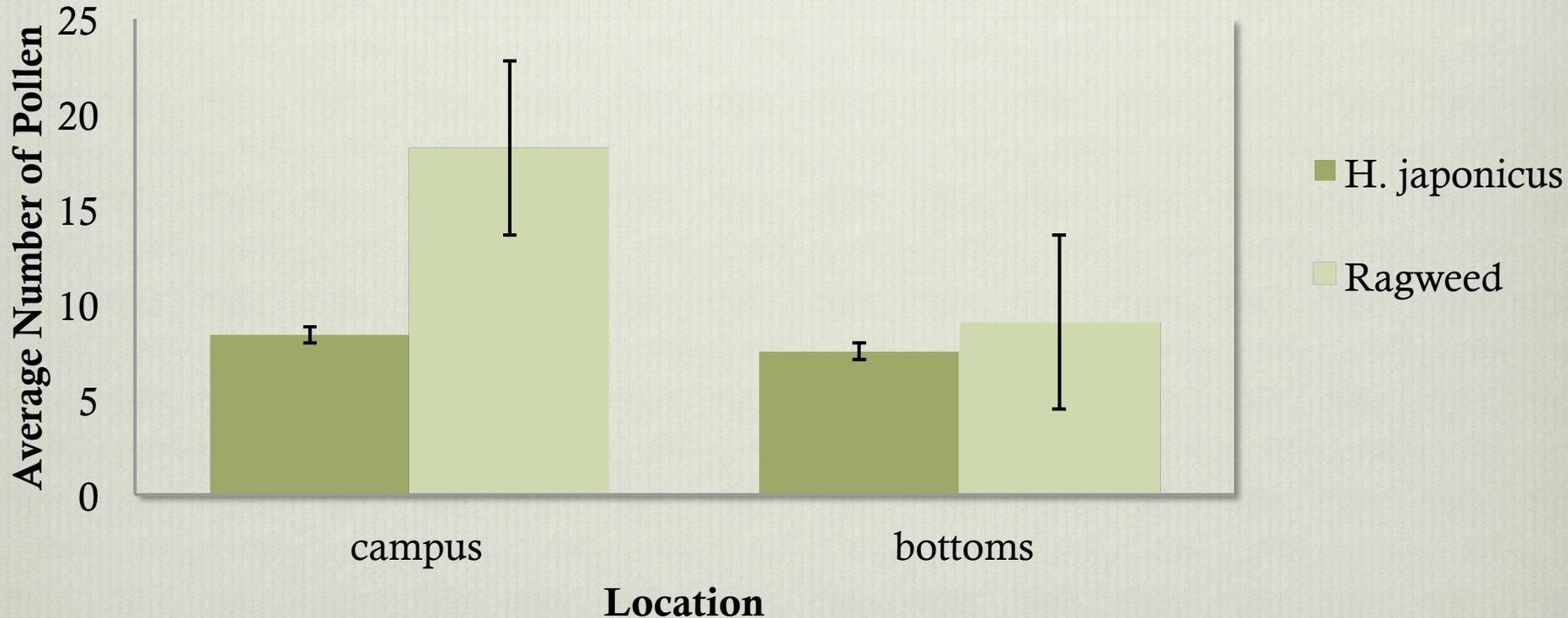


Results

Campus: p-value =0.08

Bottoms: p-value =0.71

Amounts of pollen Per Sample



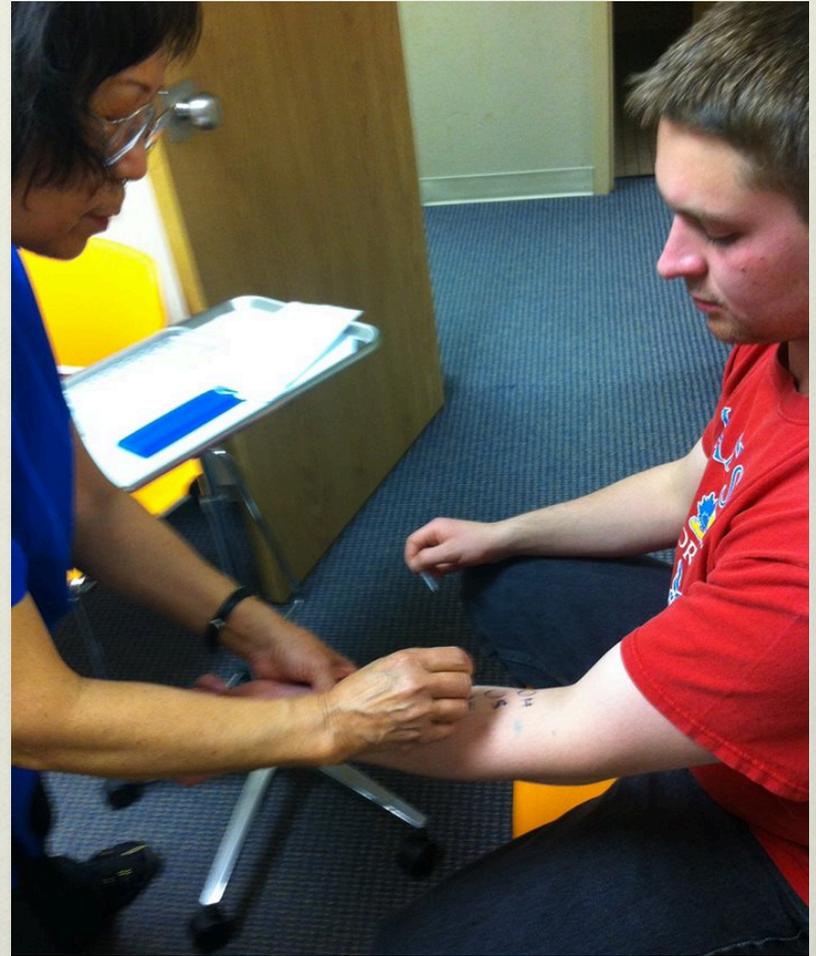
Allergy testing

Phase two

Testing Methods



Skin Prick Test





Results

- ❖ One out of thirteen people tested positive for *H. japonicus* allergies, which is equivalent 8% of our sample population

Discussion

- ❖ The results from the slides indicates that the amount of pollen produced by *H. japonicus* compares to that of common allergens.
- ❖ The allergy testing indicated that *H. japonicus* does act as an allergen.
- ❖ This is significant because *H. japonicus* is a rapidly spreading and growing invasive species. Therefore, the amount of people it's pollen could potentially affect could increase quickly.