

# Disseminating information on leafhopper and planthopper vectors of plant disease

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# Project objectives

To provide a comprehensive and accessible guide to the vector species of phytoplasma, bacteria and virus diseases

3 year project

Supported by The Leverhulme Trust



# Order Hemiptera

(Feeding using piercing and sucking mouth parts)

## **Sternorrhyncha**

(whiteflies, scale insects, aphids, psyllids)

## **Heteroptera**

(True bugs)

## **Auchenorrhyncha**

Leafhoppers and  
planthoppers, spittlebugs  
etc

# AUCHENORRHYNCHA

**Planthoppers:** Fulgoroidea: 21 families

10,000 species?

**Leafhoppers & treehoppers:** Membracoidea –  
Cicadellidae & Membracidae

40,000 species?

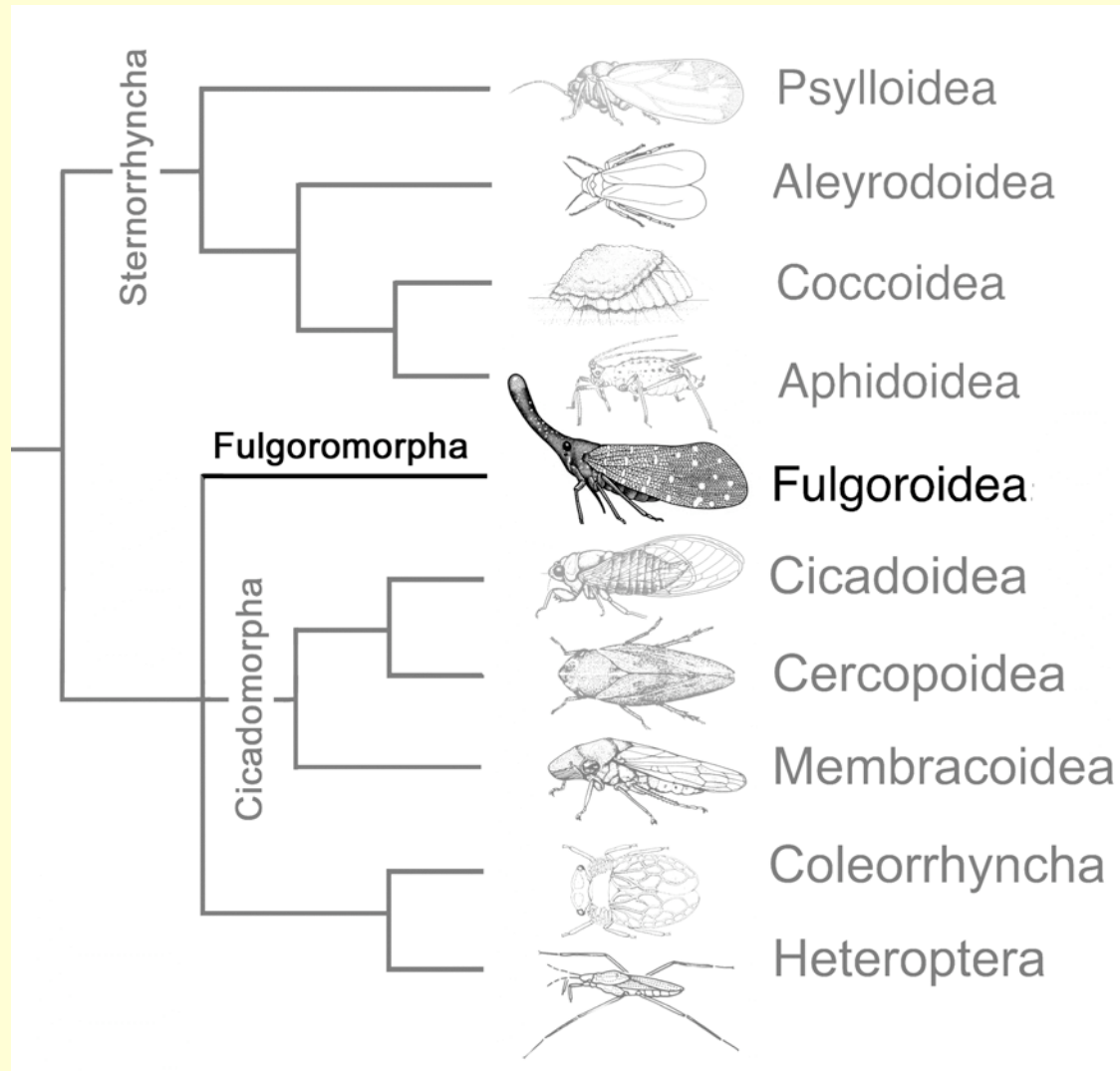
**Spittlebugs:** Cercopoidea - 4 families

4,000 species?

**Cicadas:** Cicadoidea

2,000 species?

# Hemiptera Cladogram



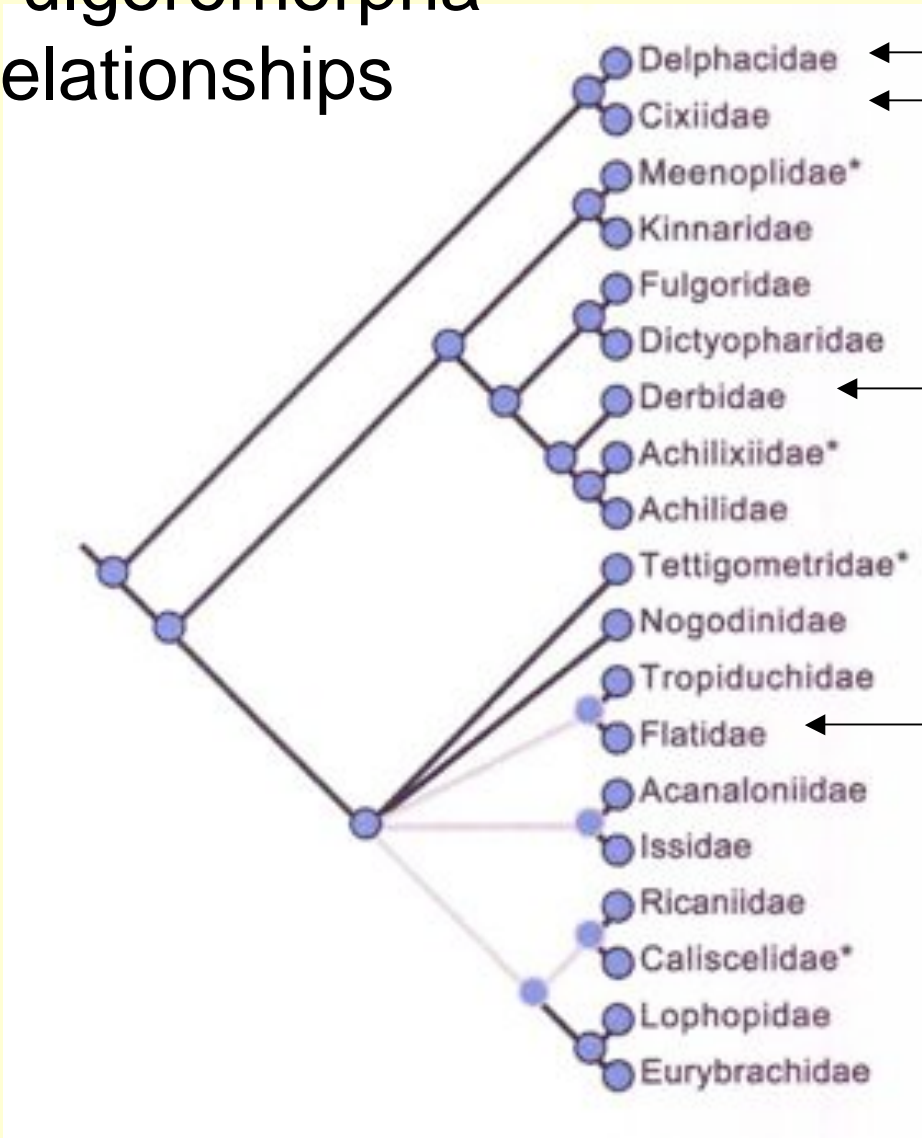
vectors

vectors

vectors

vectors

# Fulgoromorpha relationships

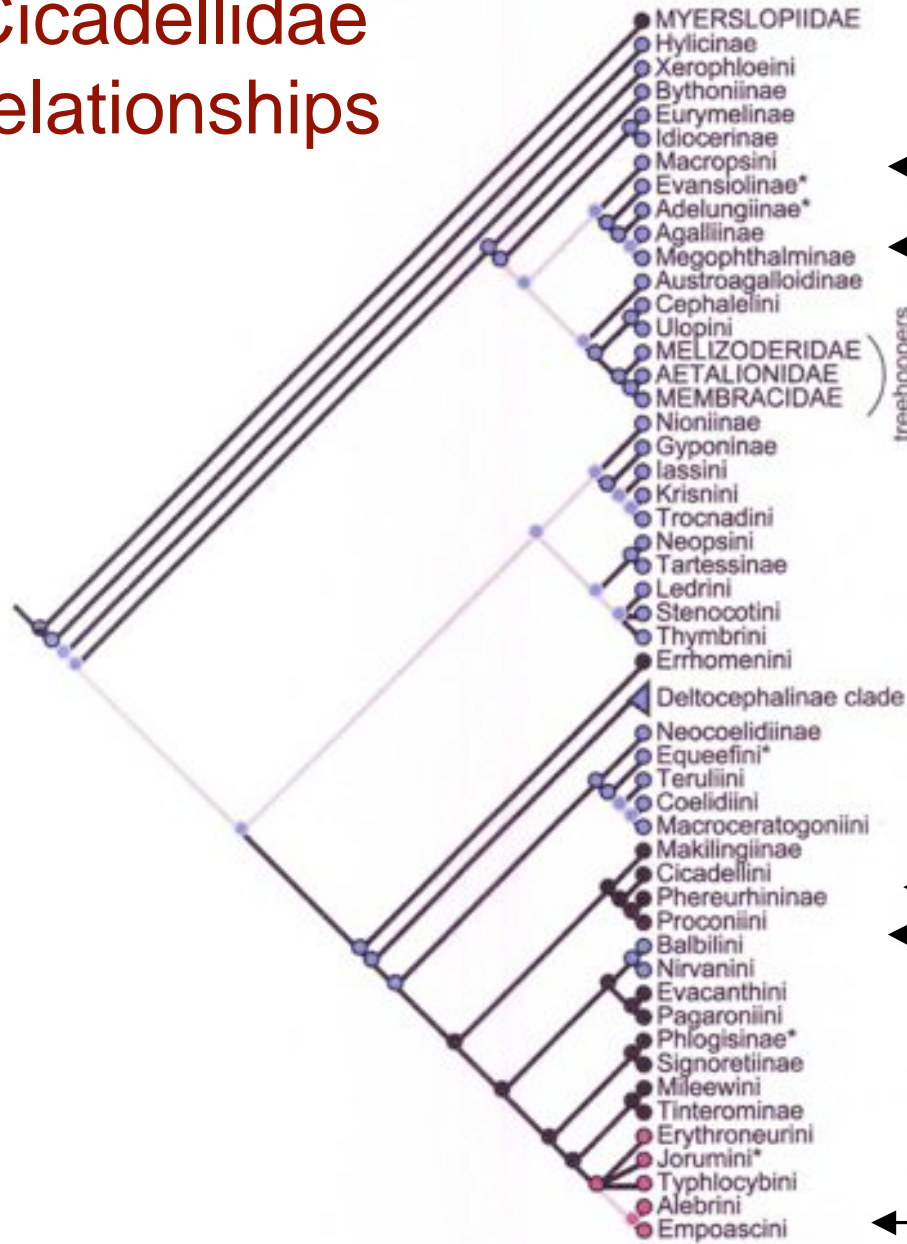


← ← Vector species

← Vector species (1)

← Vector species? (1)

# Cicadellidae relationships



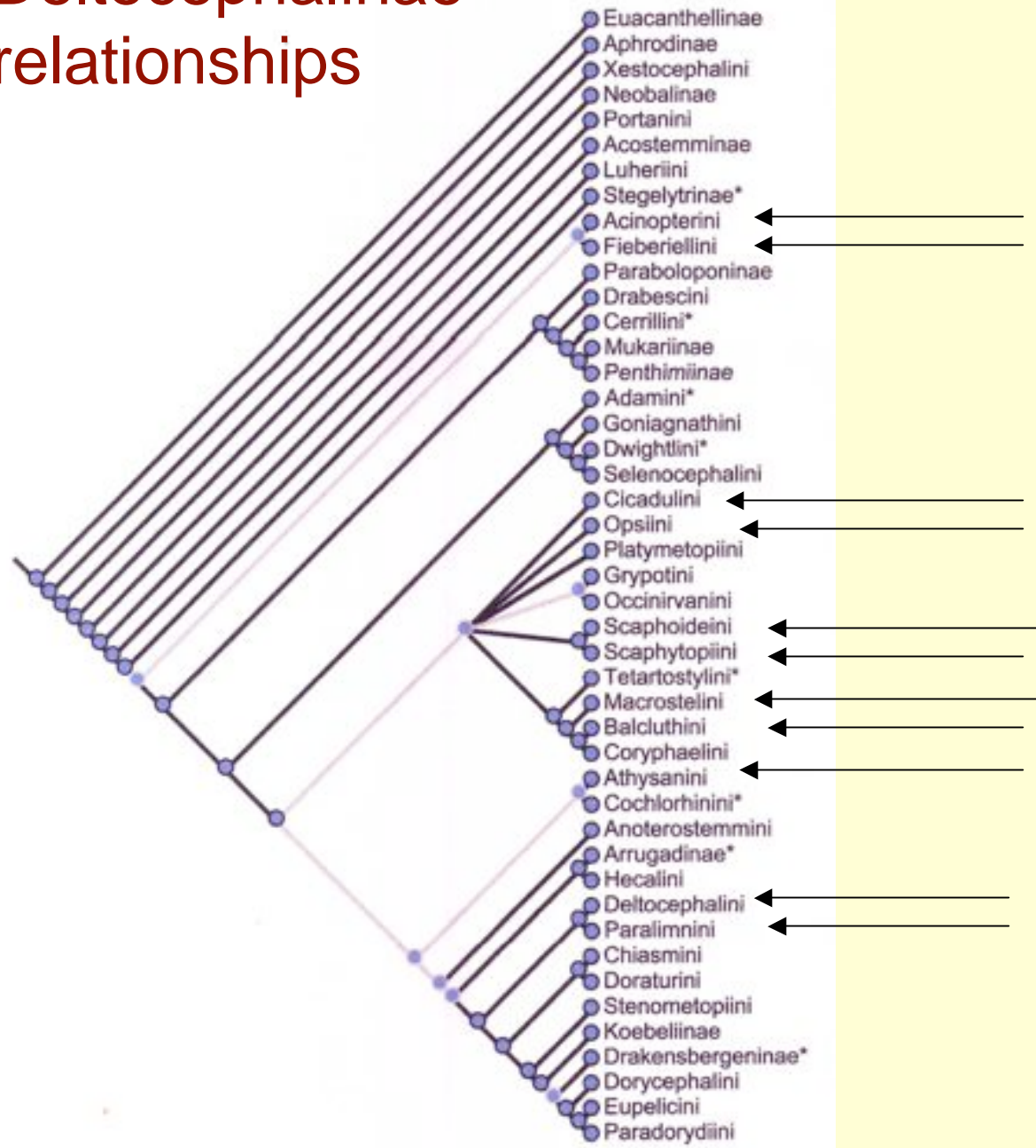
Phytoplasma

Phytoplasma + virus

Xylella

Phytoplasma

# Deltocephalinae relationships



Phytoplasma  
Vectors

Around 200 Auchenorrhyncha  
species known as vectors

But since there may be at least 700  
phytoplasma and other diseases.....

Many more vectors will be  
discovered

No comprehensive identification keys  
to vectors available

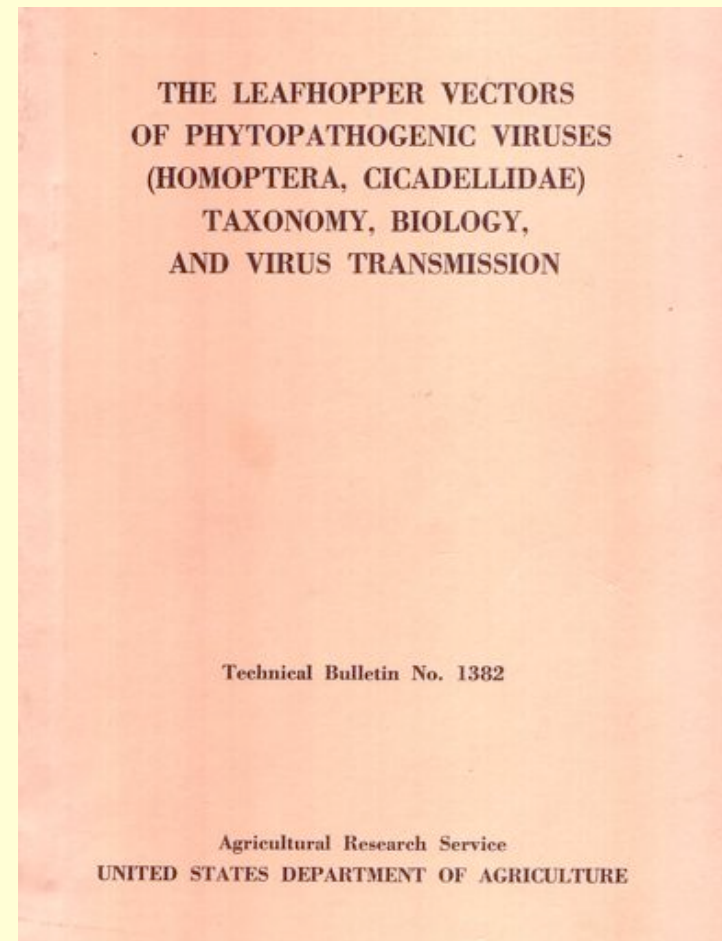
# Leafhopper vectors of phytopathogenic viruses (Nielson 1968)

No whole insect figures

Many taxonomic changes in last 40 years

Only leafhoppers covered

Everything called a virus vector



First stage

# Compile database of known diseases and vectors

Insect Name/ synonyms

Family

Subfamily

Tribe

Disease / reference

Host plants

# Datasheets

- High quality digital images of adult insects + nymphs where available
- Taxonomical drawings of morphological features
- Biology
  - Host plants
- Pest status
- Taxonomy
- Identification
  - Similar species
- Distribution
- Bibliography

# Leafhopper & Planthopper Vectors of Plant Disease

Vectors

Pathogens

References

All Records

Find

Sort Records

## Vectors

*Oncometopia nigricans* Walker 1851b: 783

Kingdom	Animalia	Autofill Taxonomy	
Phylum	Arthropoda		
Class	Insecta		
Order	Hemiptera	Valid	
Sub-order	Auchenorrhyncha		
Infra-order	Cicadomorpha	Common name	
Superfamily	Membracoidea		
Family	Cicadellidae		
Subfamily	Cicadellinae		
Tribe	Proconini	Original Genus	
Genus	<i>Oncometopia</i>		
Subgenus		Author	Year page
Species	<i>nigricans</i>	Walker	1851b: 783
Subspecies			



Image details

## Synonymy

<i>Oncometopia marginata</i> (Walker 1851b: 785)
<i>Oncometopia acutiflata</i> Walker 1851b: 786
<i>Oncometopia tenebrosa</i> Walker 1851b: 787

E001018	BM(NHM)	Columbia
E001020	BM(NHM)	Columbia

## Geographical Data

### Synonymy

### Identification

### Biology

### Diseases Transmitted

### References

### Additional Information

#### Continental Distribution

- Africa
- Asia
- Australia & Oceania
- Central America
- Europe
- Middle East
- North America
- South America

#### Island Group

#### Country

#### County

#### Locality

#### Island

#### State/Province

#### EcoZone Distribution

- Old World
- New World
- Afrotropical
- New Guinea
- Madagascar
- Nearctic
- Asia
- Neotropical
- Australasia
- Pacific

#### Geographical Distribution

#### EcoZone Distribution

New World: Neotropical

## Leafhopper & Planthopper Vectors of Plant Disease

[Vectors](#)[Diseases](#)[References](#)[Find](#)[Sort Records](#)

*Orcometopia nigricans* Walker 1851b: 783

[Return](#)

8221017 BMNH | / det. Knight, Mann Beach, Florida, US

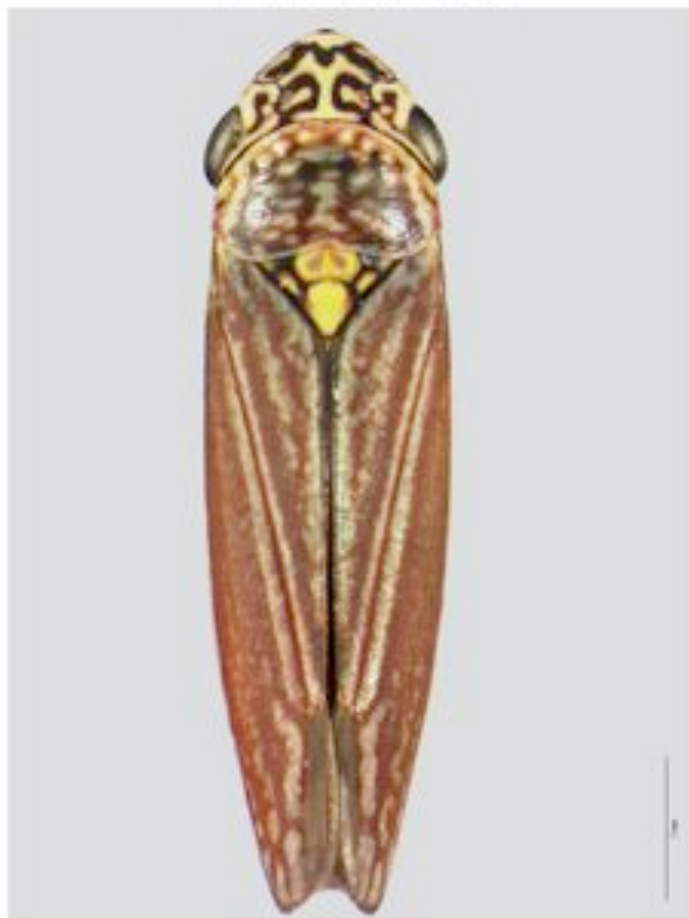
8221018 BMNH | / Royal Palm Park, Florida, US

8221019 BMNH | / Colorado

## Leafhopper & Planthopper Vectors of Plant Disease

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*Graphocephala stollata* (Ball 1861b: 52)

[Return](#)

8221020 BMNH | / det. Mason, Stone County, MO, US

8221021 BMNH | / det. Mason, Tucker Pratts, Calhoun County, MO, US

8221022 BMNH | / det. Mason, Tucker Pratts, Calhoun County, MO, US



## Leafhopper & Planthopper Vectors of Plant Disease

[Vectors](#)[Pathogens](#)[References](#)[All Records](#)[Find](#)[Sort Records](#)

### Pathogens

Maize stripe virus *Tenuivirus*

Type  Xylella  Virus  Phytoplasma  Spiroplasma

Kingdom	Virus	
Class		
Order		
Family		Common Name
Genus	Tenuivirus	
Species	Maize stripe virus	Acronym

PhytoGroup

### Pathogen Vectors

Taxon	Citation
<input type="checkbox"/> <a href="#">Peregrinus maidis</a>	
<a href="#">Delete Entire Record</a>	<a href="#">Clear Citation</a>
<input type="checkbox"/>	
<a href="#">Delete Entire Record</a>	<a href="#">Clear Citation</a>

[Geographical Data](#)[Host Plants](#)[Biology](#)[Links](#)[References](#)[Additional Information](#)

Website should be online this  
summer 2010

Additions and information to include  
very welcome