


Where are we Now:

An Overview of the Systematics of Flower flies

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 2 September 2005


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Where are we Now?

- Numbers
- How we got in this Mess
 - A short history of Syrphidae Classification
- What we can learn from the Past
 - Words of Wisdom for Today

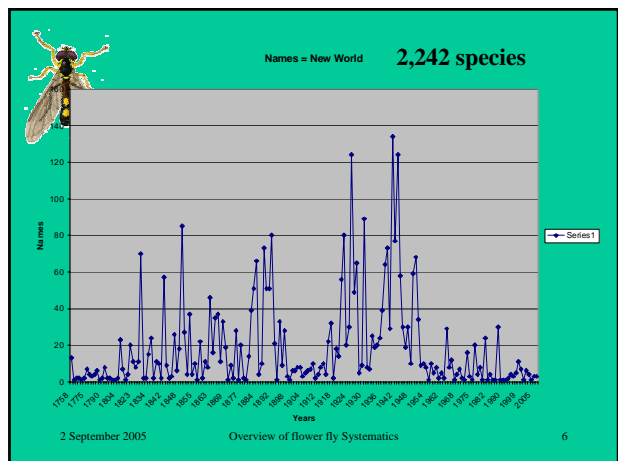
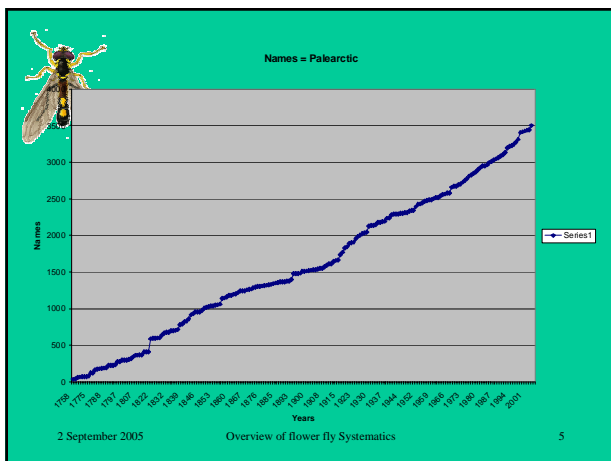
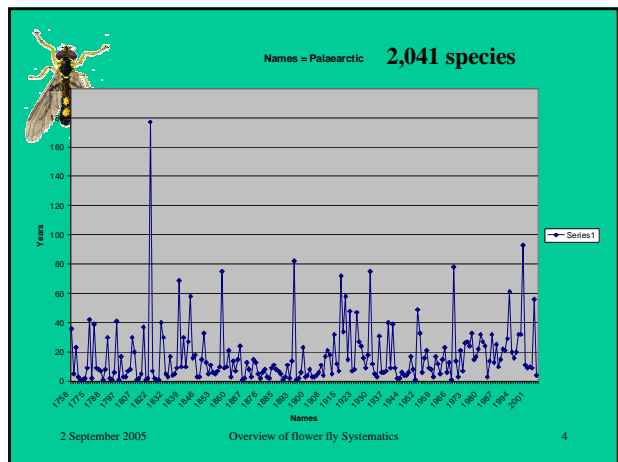
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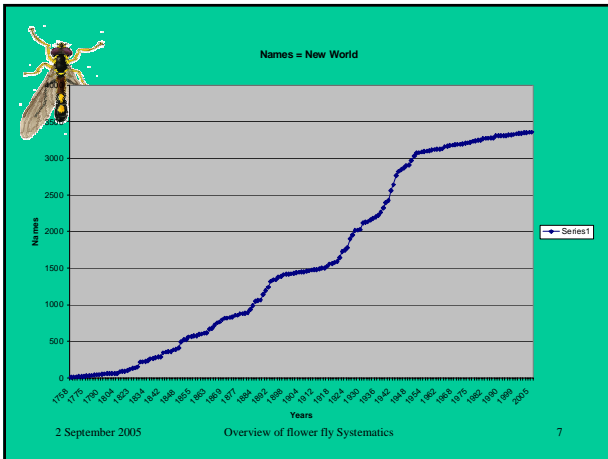


Syrphidae

- 3 Subfamilies
- 14 Tribes
- 11 Subtribes
- 292 Genera and subgenera
- 189 Genera
- 5,845 Species
- 8,807 Name records
 - Per BioSystematic Database of Diptera
 - Version 7.5 release date 15 September 2005

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Gunilla's Questions:

How did we get into this mess?

Explain your classification?

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“Traditional*” Classification

- Microdontinae
- Syrphinae
 - Bacchini
 - Paragini
 - Syrphini
 - Toxomerini
- Eristalinae (continued)

*Yes, Gunilla, a mess, but this is what we use for the BioSystematic Database of World Diptera. Maybe a Finn can clean it up ☺

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“Traditional” Classification

- Eristalinae
 - Spheginobacchiini
 - Pipizini
 - Rhingiini
 - Callicerini
 - Volucellini
 - Eristalini
 - Sericomyiina
 - Helophilina
 - Eristalina
- Merodontini
- Brachyopini
 - Brachyopina
 - Spheginina
- Cerioidini
- Milesiini
 - Criorhinina
 - Blerina
 - Temnostomina
 - Tropidiina
 - Milesina
 - Xylotina

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Linnaeus (1758)

37 Syrphids
All
In genus
Musca

Well, Gunilla, it started with a Swede!

Fabricius 1775 - 1805

1775, All syrphids to the genus **SYRPHUS**

But by 1805 they were scattered among half dozen genera

Gunilla, it took a Great Dane To get it Right ☺

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Latreille (1797)

- A family for flower flies



So, *Gunilla*, it took a Frenchman to give us our own family ☺

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Meigen (1803-1838)

- Expansion of generic classification
- 1803 => 10 new genera
- 1822 => another 10 new genera

But, *Gunilla*, it is the Germans who do it Right!

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Edward Newman 1835


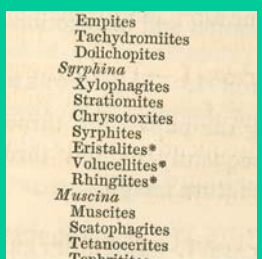
- First subfamily classification
 - Chrysotoxites
 - Long antennae (*Microdon*, *Chrysoxum*)
 - Syrphites
 - Syrphities
 - Eristalities
 - Volucellities
 - Rhingities

So, *Gunilla*, while Alan does not believe it, it took an Englishman to order the ever increasing number of genera ☺

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Newman 1835

Empites
Tachydromites
Dolichopites
Syrphina
Xylophagites
Stratiomites
Chrysotoxites
Syrphites
Eristalites*
Volucellites*
Rhingites*
Muscina
Muscites
Scatophagites
Tetanocerites
Tachypterygites

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Rondani 1845, 1856

- Volucellina => plumose arista (Linnaeus)
- Eristalina => R4+5 sinuate (Harris 1776)
- Syrphina => everything else
- Microdonina => scutellum tubercles
- Callicerina => antenna with terminal style



And an Italian to turn it into Pasta!

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Schiner 1865 etc

- Syrphinae
- Volucellinae
- Eristalinae
- Milesiinae => Apical r-m crossvein
- Chrysotoxinae
- Microdoninae
- Cerinae



Naturally, one needs an Austrian to bring Order with analytical keys, etc., BUT ...

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Williston 1883, 1887



- Syrphinae
 - Pelecocerini*
 - Microdonini
 - Bacchini
 - Brachyopini*
 - Syrphini
 - Cheilosini*
 - Melanostomini*
- Eristalinae
 - Eristalini
 - Volucellini
 - Sericomiyini
 - Milesini
 - Xylotini*
- Cerinae

Finally an American, with more Resolution, but no VISION!

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Sorry, but




- I forgot the
 - Frenchman => Bigot
 - Bacchini
 - Xylotini
 - Etc.
 - The other Italian => Lioy
 - The other Austrians => Brauer, et alia

But, Gunilla, I only have 20 minutes ☺

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George Verrall 1901



- Followed tradition (Schiner, Williston)
- But give an evolutionary scenario
 - *Paragus*, as most primitive
 - *Ceria*, as most advance
 - With Pipiza, Cheilosines, Syrphines, Volucellines, Eristalines and Chrysotoxines in between

Gunilla, apparently Darwin had effect on the British!


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Shannon, 1921-23

- Nausigasterinae*
- Cerioidinae
- Microdontinae
- Syrphinae
 - Melanostomini
 - Syrphini
 - Bacchini
 - Paragini
- Volucellinae
- Sericomiyiinae
- Milesiinae
- Chilosinae
 - Pipizini
 - Spheginini
 - Pelecocerini
 - Brachyopini
 - Chilosini
- Eristalinae
 - Helophilini
 - Eristalini
- Xylotinae
 - Xylotini
 - Temnostomini*


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Shannon

- New Characters
 - Postpronotum, pilose or bare
 - Number of Male pre-genital segments
 - Malloch = Metafemoral basal setal patch
 - Etc.
- Syrphinae, clearly defined as well as
- Eristalinae, rat-tailed maggots

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Hull, 1949

14 subfamilies
17 tribes

Developed character morphoclines, especially facial shape

- Syrphinae
 - Syrphini
 - Bacchini
 - Melanostomini
- Chrysotoxinae
- Microdontinae
- Eumerinae
- Nausigasterinae
- Cheilosinae
 - Rhingiini
 - Pipizini
 - Chrysogasterini
 - Spheginini
 - Myioleptini
 - Cheilosini
- Calliceratinae
- Pelecoceratinae
- Volucellinae
- Sericomiyiinae
- Xylotinae
 - Xylotini
 - Temnostomini
 - Milesini
 - Criorhinini
 - Pocotini
 - Tropicini
- Psarinae
- Cerioidinae
- Eristalinae
 - Helophilini
 - Eristalini

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Shiraki, 1949

- 21 Subfamilies (no tribes)
- Splits off
 - *Graptomyza* &
 - *Merapioides* for new subfamilies


Gunilla, the Japanese took it to the MAX!

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Goffe 1952

Capt. E. Rivenhall, R.A.O.C. (retd.), F.R.E.S.



- Historical Review
- Return to TWO subfamilies
 - Syrphinae & Sphixinae
- Used LARVAL characters
 - But Pipizines with Sphixinae!!
- Reversed traditional morphoclines
- Used characters for categorical ranking
- Hence, tribes & subtribes did not make sense

So, Gunilla, a retired pilot brings sense back to Our classification ☺

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Slobodan Glumac, 1961



- Overlooked, but
- Use of Male Genitalia first time for higher classification

So, Gunilla, new characters, better hypotheses ☺


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Wirth et alia 1965

- First of the Modern Regional Diptera Catalogs
- Merged the Shannon-Hull classification into Goffe's two subfamily system
- Hence, set the future trend for family classifications

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Thompson 1969

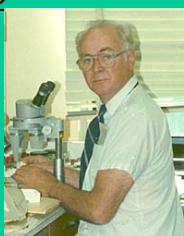


- **Paragodon**
- Elevation of Microdontinae again
- Hennig Argumentation Scheme
- Problem of Pipizini characterized.

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Vockeroth, 1969




- Global Revision Syrphin
 - Based in part on Dusek & Laska European work
- Reviewed Syrphinae tribal classification
- 5 tribes
 - Syrphini
 - Paragini
 - Toxomerini
 - Chrysotoxini
 - Bacchini =>
 - which he questioned status of
- Zoogeographic analysis

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Thompson, 1972

- Revision Neotropical Milesiinae
- But from Global perspective
- Hennigian argumentation schemes for tribes
- Character x Taxon Data Matrix
- Zoogeographic analysis
- Enlarged Eumerini
 - (Psilota, Nausigaster, Alipumilio, Merodon)



Notice, Gunilla, that I am lost at the ends of the Earth! ☺

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From then to now

- Shatalkin 1975
 - More characters, new analyses
- Regional Diptera Catalogs
- Regional Diptera Manuals
 - Nearctic
 - Palaearctic
 - Central America


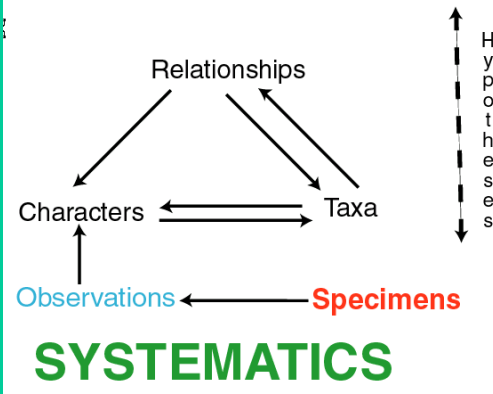
So, Gunilla, usage sets the current "traditional" classification! ☺

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What's the solution?

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Get rid of "Descriptive," Systematics Is a Science, Not Art

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Solutions from the past

- History reveals a progression of
- More characters! From
- More Taxa!
- Resulting in better hypotheses!

So, Gunilla and your team are the FUTURE ☺

We need molecular sequence data, BUT ...

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Beware

- *Drosophila* is not a Barnacule!
- Despite the best, more comprehensive analysis done on the largest character dataset from all sources, etc
- Cladophenetics is not necessarily Science

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Presentation given at the 3rd Syrphidae Symposium,
Leiden, The Netherlands, 2nd to 5th September, 2005

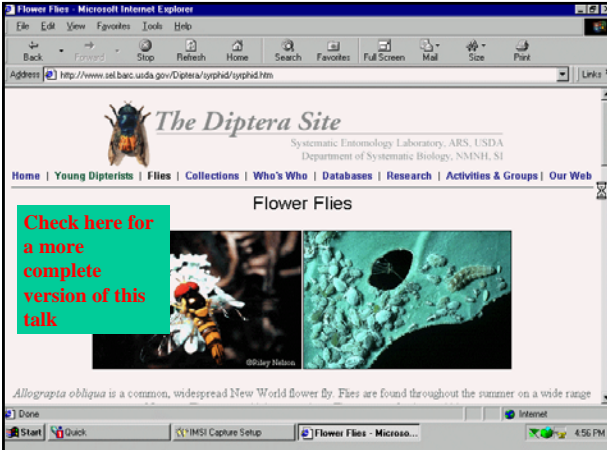


Challenges

Diversification of flower flies happens along with diversification of Schizophora, that is, what we call the families of Calypterates and Acalypterates. Syrphidae must have arisen in the Upper Cretaceous, but first fossils are Eocene (*Asarkina!*) ...

Time [Hennigian Rank] and effectiveness of genes for resolution of evolutionary change are correlated. SO ... more genes need to be explored. AND naturally, we need more immatures reared.

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Flower Flies - Microsoft Internet Explorer

Address: <http://www.sel.barc.usda.gov/Diptera/syrphid/syrphid.htm>

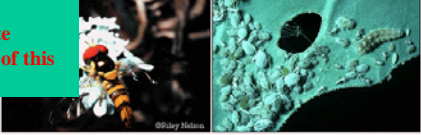
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Flower Flies

Check here for a more complete version of this talk



Allograpta obliqua is a common, widespread New World flower fly. Flies are found throughout the summer on a wide range

Done

Start Quick MSI Capture Setup Flower Flies - Microso...

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