# Lacewings and their Allies


## Part 2

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# Introduction - Part 2

- Part 2 of the two part webinar series on British Isles Lacewing and Allies identification
- Identification using a microscope
- Some features will help you identify from photographs
- Take away – be aware of important identification features for different groups and species and where to find them on the insect

# Coverage

**NEUROPTERA (Lacewings)**

**CONIOPTERYGIDAE (Waxflies)**

- *Conwentzia pineticola*
- *Conwentzia psociformis*
- *Coniopteryx borealis*
- *Coniopteryx tineiformis*
- *Coniopteryx pygmaea*
- *Coniopteryx esbenpeterseni*
- *Coniopteryx lentiae*
- *Semidalis aleyrodiformis*
- *Semidalis pseudouncinata*
- *Parasemidalis fuscipennis*
- *Aleuropteryx juniperi*
- *Helicoconis hirtinervis*

**SISYRIDAE (Spongeflies)**

- *Sisyra dalii*
- *Sisyra nigra*
- *Sisyra terminalis*

**CHRYSOPIDAE (Green Lacewings)**

- *Chrysopa abbreviata*
- *Chrysopa commata*
- *Chrysopa dorsalis*
- *Chrysopa pallens*
- *Chrysopa perla*
- *Chrysopa phyllochoma*
- *Chrysoperla carnea*
- *Chrysoperla lucasina*
- *Chrysoperla pallida*
- *Chrysopidia ciliata*
- *Cunctochrysa albolineata*
- *Cunctochrysa cosmia*
- *Apertochrysa flavifrons*
- *Apertochrysa prasina*
- *Apertochrysa ventralis*
- *Nineta flava*
- *Nineta vittata*
- *Nineta inpunctata*
- *Nineta pallida*
- *Nothochrysa capitata*
- *Nothochrysa fulviceps*
- *Peyerimhoffina gracilis*

**HEMEROBIIDAE (Brown Lacewings)**

- *Psectra diptera*
- *Micromus variegatus*
- *Micromus angulatus*
- *Micromus paganus*
- *Hemerobius humulinus*
- *Hemerobius perelegans*
- *Hemerobius simulans*
- *Hemerobius stigma*
- *Hemerobius atrifrons*
- *Hemerobius pini*
- *Hemerobius contumax*
- *Hemerobius striatus*
- *Hemerobius nitidulus*
- *Hemerobius micans*
- *Hemerobius lutescens*
- *Hemerobius marginatus*
- *Wesmaelius malladai*
- *Wesmaelius mortoni*
- *Wesmaelius ravus*
- *Wesmaelius balticus*
- *Wesmaelius nervosus*
- *Wesmaelius subnebulosus*
- *Wesmaelius concinnus*
- *Wesmaelius quadrifasciatus*
- *Sympherobius elegans*
- *Sympherobius pygmaeus*
- *Sympherobius pellucidus*
- *Sympherobius fuscescens*
- *Sympherobius klapaleki*
- *Megalomus hirtus*

**MEGALOPTERA**

**SIALIDAE (Alderflies)**

- *Sialis fuliginosa*
- *Sialis lutaria*
- *Sialis nigripes*

**MECOPTERA**

**PANORPIDAE (Scorpionflies) females**

- *Panorpa cognata*
- *Panorpa communis*
- *Panorpa germanica*

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## Covered in Part 1:

**RAPHIDIOPTERA (Snakeflies)**

**RAPHIDIIDAE**

- *Subilla confinis*
- *Xanthostigma xanthostigma*
- *Atlantoraphidia maculicollis*
- *Phaeostigma notata*

**NEUROPTERA(Lacewings)**

**OSMYLIDAE (Giant Lacewings)**

- *Osmylus fulvicephalus*

**MYRMELEONTIDAE (Antlions)**

- *Euroleon nostras*
- *Myrmeleon formicarius*

**HEMEROBIIDAE (Brown Lacewings)**

- *Drepanepteryx phalaenoides*

**MECOPTERA**

**PANORPIDAE (Scorpionflies) Males**

- *Panorpa cognata*
- *Panorpa communis*
- *Panorpa germanica*

**BOREIDAE (Snow Fleas)**

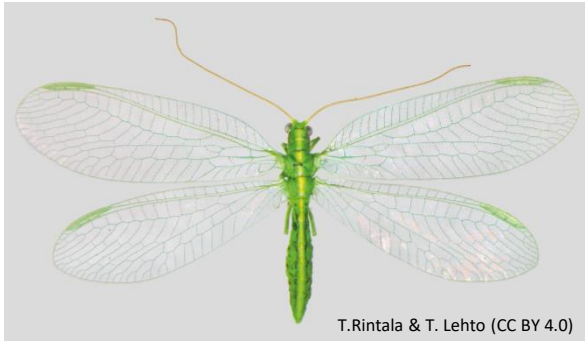
- *Boreus hyemalis*

# Preparation

- Can be pinned
- Preserved in alcohol

80% ethanol or isopropyl alcohol

- Label with important info.
- Most can be identified without much preparation
- Some require their abdomen clearing
- Some require dissection


# Clearing abdomen

- 10% Potassium hydroxide
- Detach abdomen – with coniopterygids clear whole insect
- Put in test tube (5mm deep)
- Put in bowl/pan with boiling water (from kettle) leave 30 mins
- Or leave in cold solution overnight
- Remove from solution and wash with water on shallow tray under microscope

- Be careful when using chemicals and always read instructions and warnings

K. Schultz (CC BY-4.0)


CBG Photography Group, Centre for Biodiversity Genomics (CC BY)

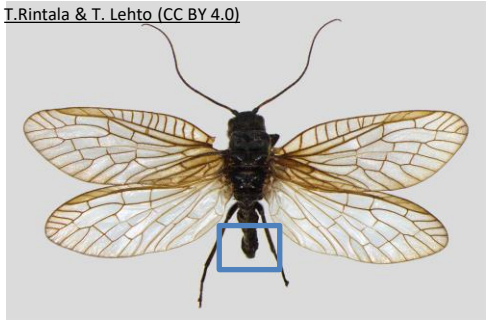
# Megaloptera (Alderflies)

- Can be preserved pinned or in alcohol
- Wing venation and general morphology similar between all species
- Can only be identified from genitalia, both male and female


*Sialis lutaria*


*Sialis fuliginosa*


*Sialis nigripes*

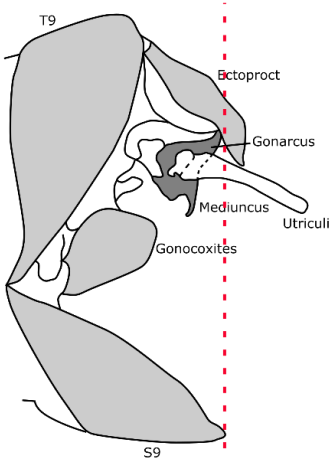


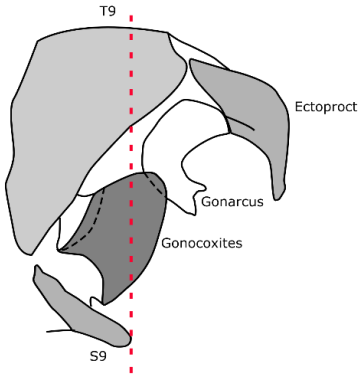
Side

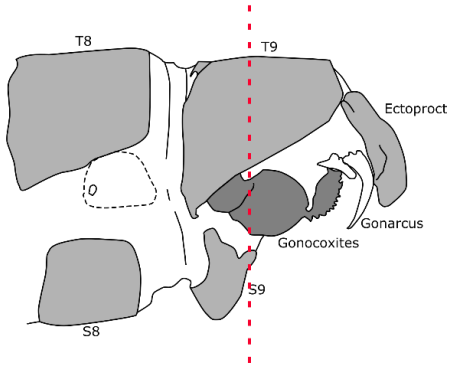
Underneath

***Sialis lutaria*** ***Sialis fuliginosa*** ***Sialis nigripes***

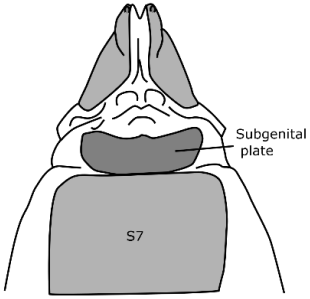
**MALE**

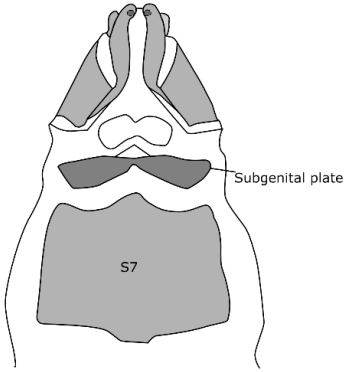


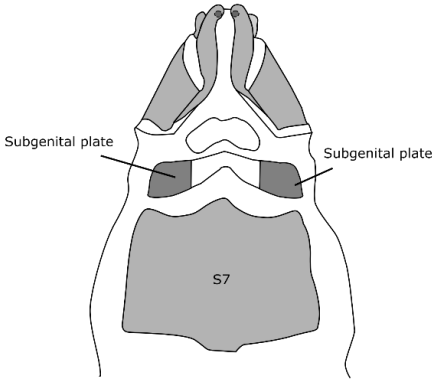




**FEMALE**




***Sialis lutaria*** ***Sialis fuliginosa*** ***Sialis nigripes***

# Neuroptera (Lacewings)

- Can be preserved pinned or in alcohol
- Important diagnostic features from body morphology, wing venation, genitalia

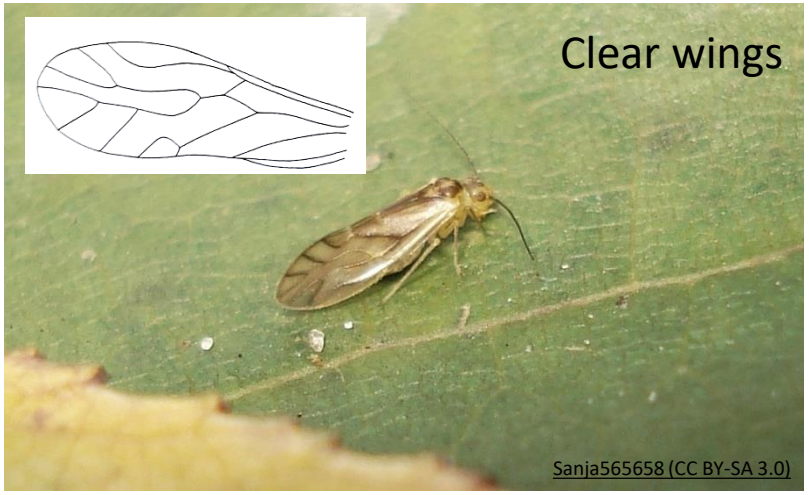


# Coniopterygidae (Wax Flies)

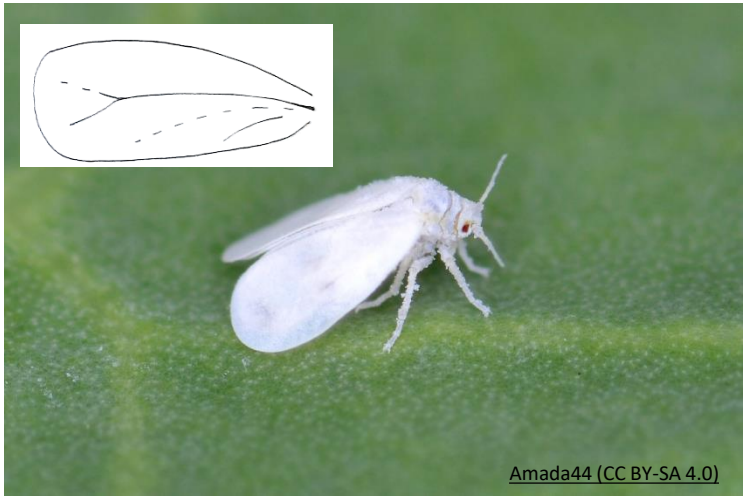
- Smallest neuropterans
- Best to preserve in alcohol
- Male specimens need to be collected for Identification
- Male genitalia diagnostic
- Many specimens need to have abdomen cleared



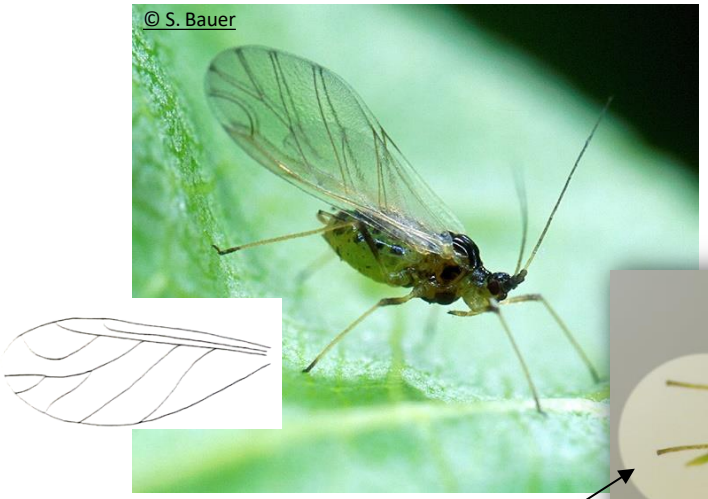
# Confusion



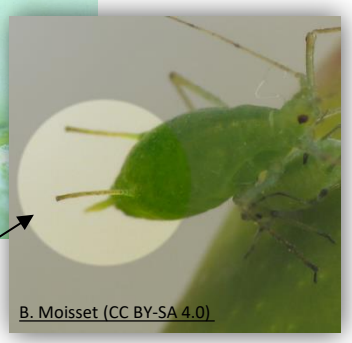

Psocoptera



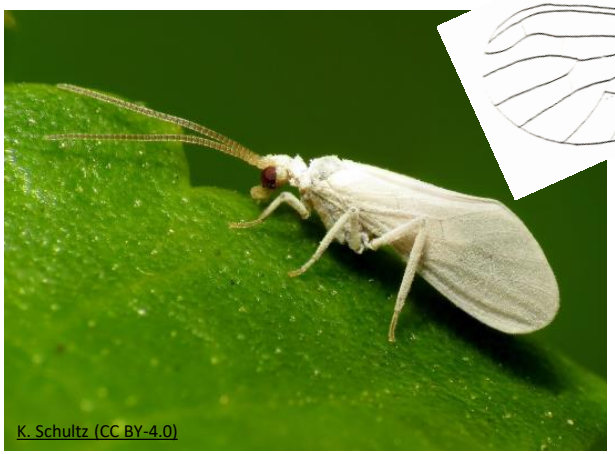

Whitefly (Hemiptera: Aleyrodidae)




Aphids

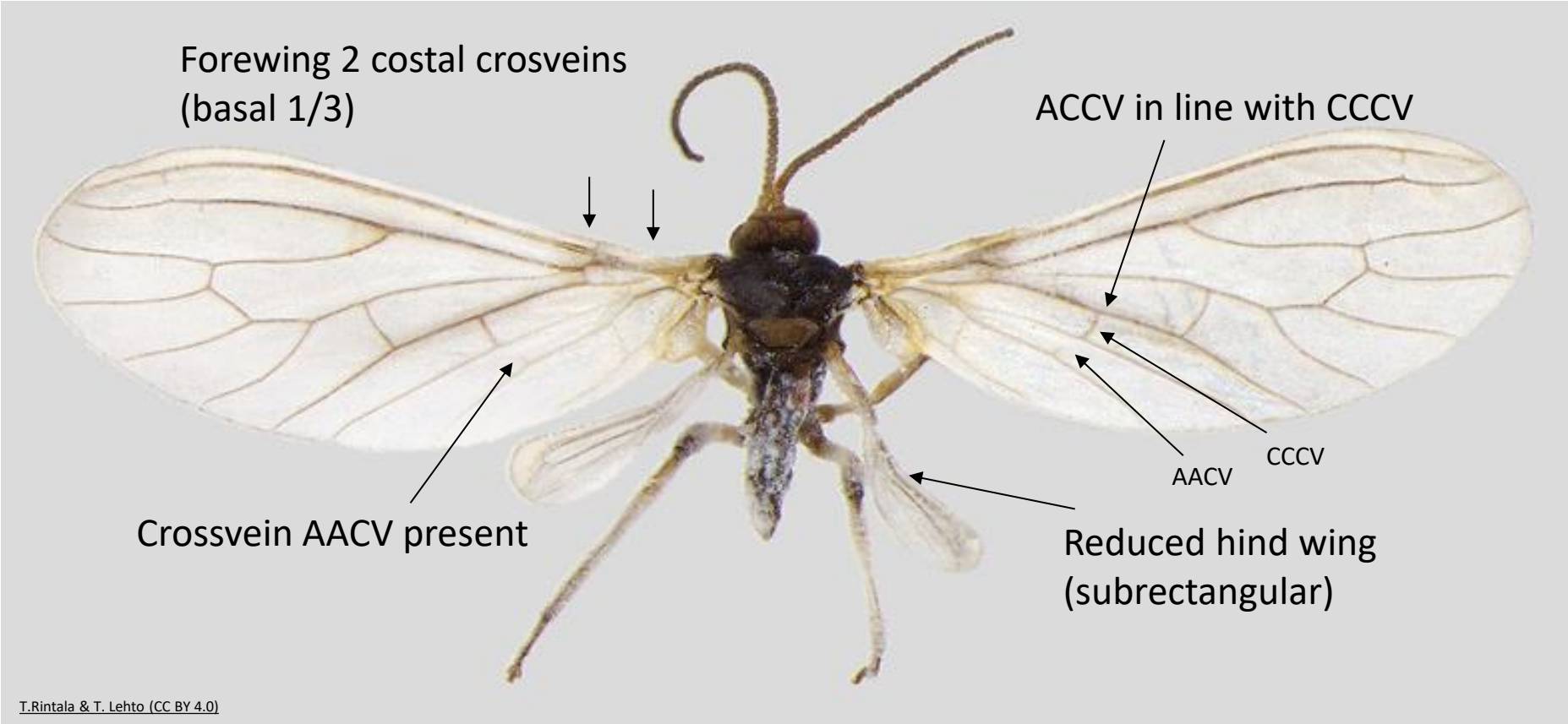



Tubes (cornicles)

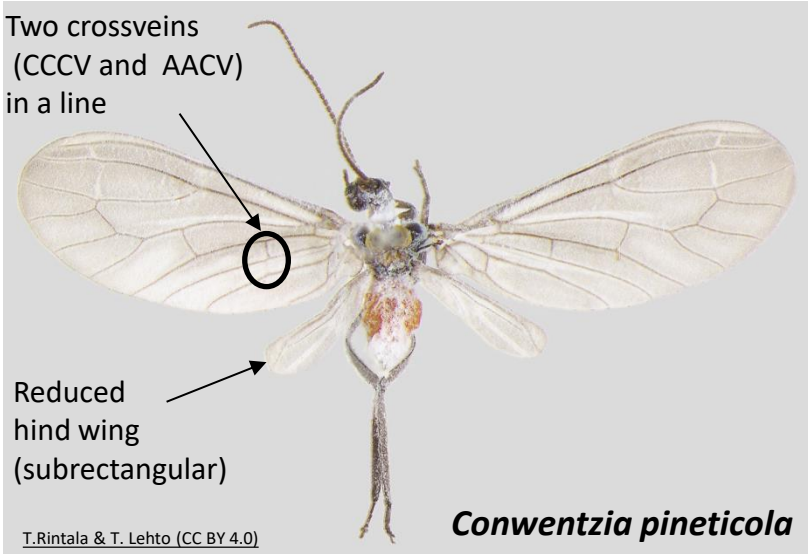


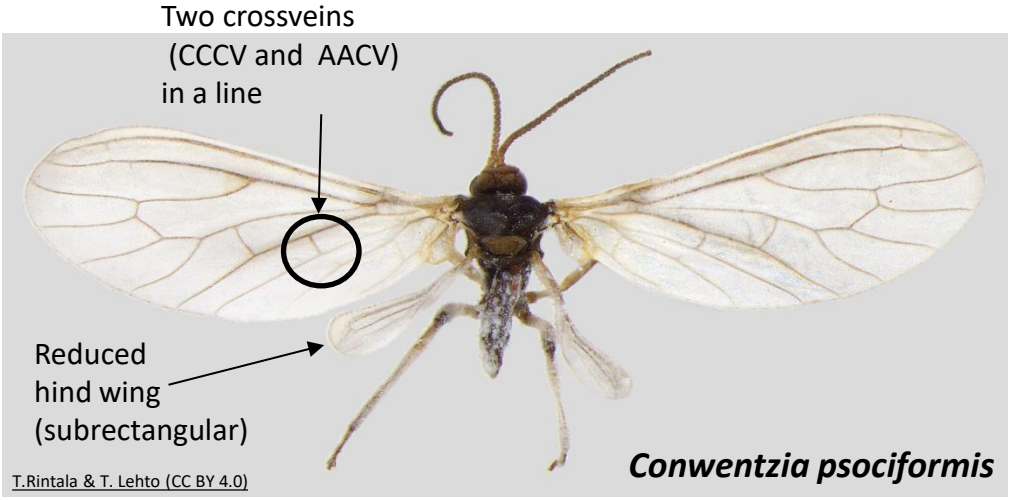

Coniopterygidae

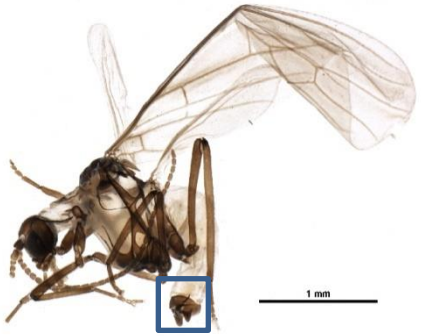
# *Conwentzia*

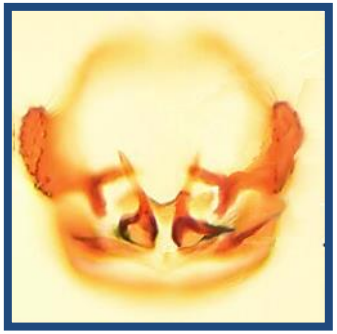


# *Conwentzia* species

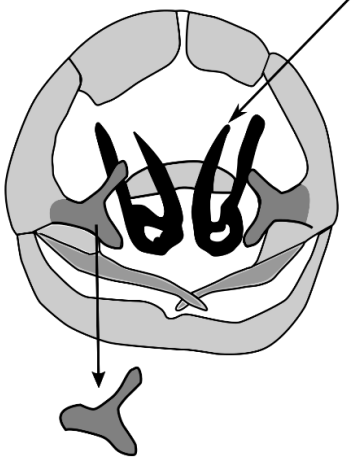


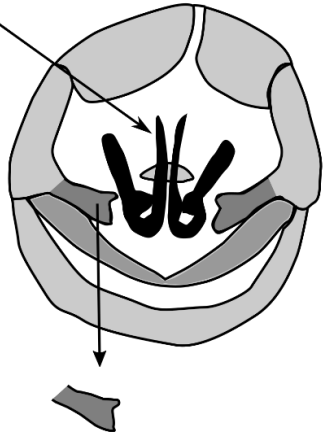



Parameres




process of ectoprocts forked

***Conwentzia pineticola***




process of ectoproct not as forked

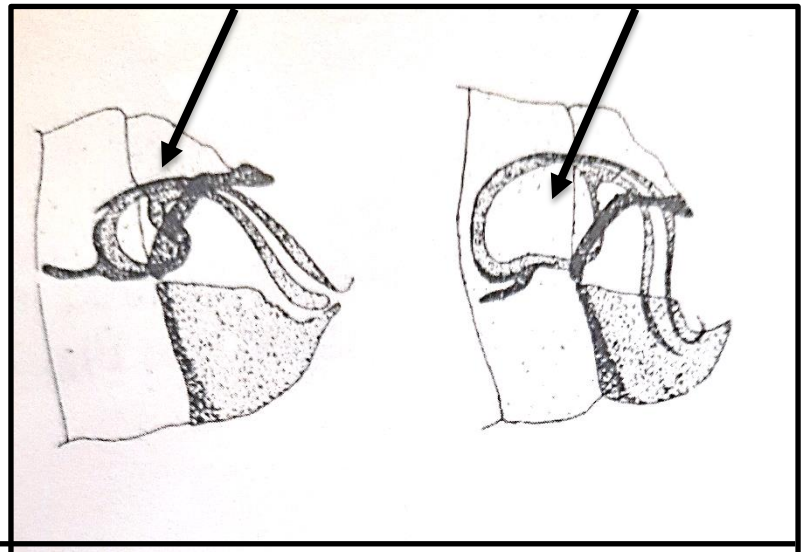
***Conwentzia psociformis***

# *Coniopteryx*

# Subgenera: ***Metaconiopteryx*** **and** ***Coniopteryx***

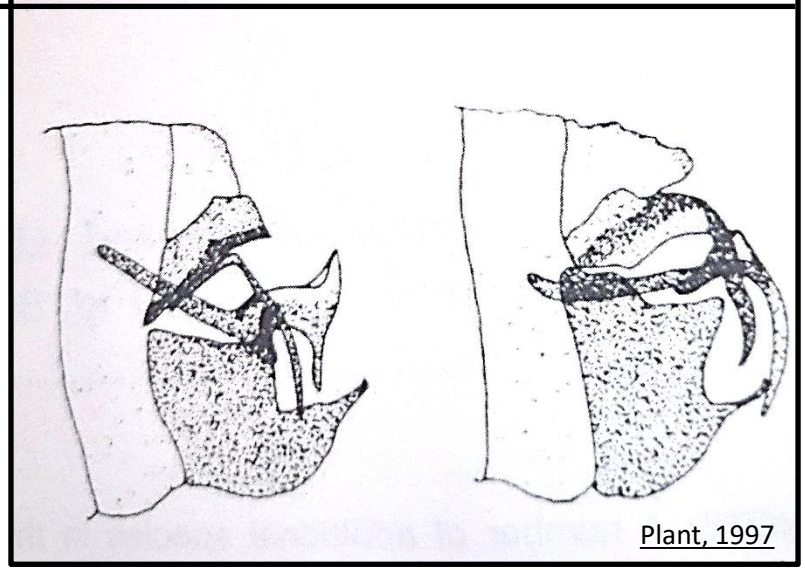
***Metaconiopteryx***

Internal genital structures in a ring



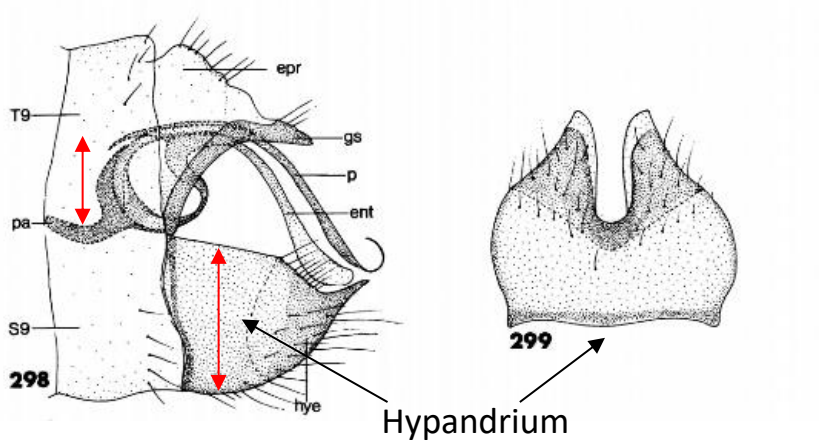
*Coniopteryx*

Internal genital structures **NOT** in a ring



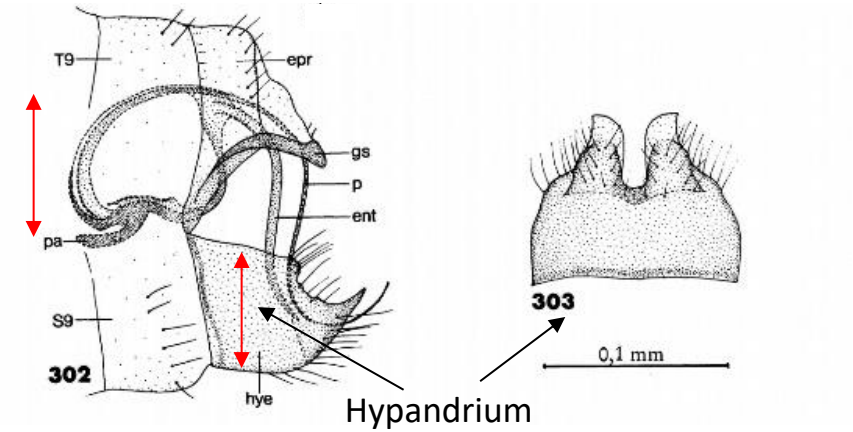
Plant, 1997

# *Coniopteryx (Metaconiopteryx)*




*Coniopteryx (Metaconiopteryx) esbenpeterseni*

SNSB, Zoologische Staatssammlung Muenchen (CC BY-NC-SA)

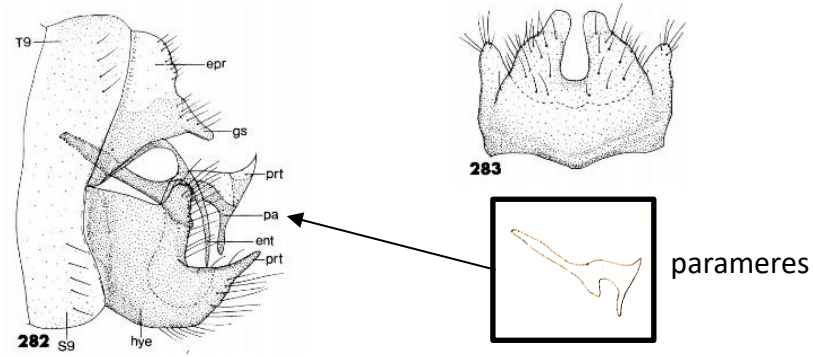



*Coniopteryx (Metaconiopteryx) lentiae*


ALetardi (CC-BY)

Aspöck et al. 1980, Plant, 1997

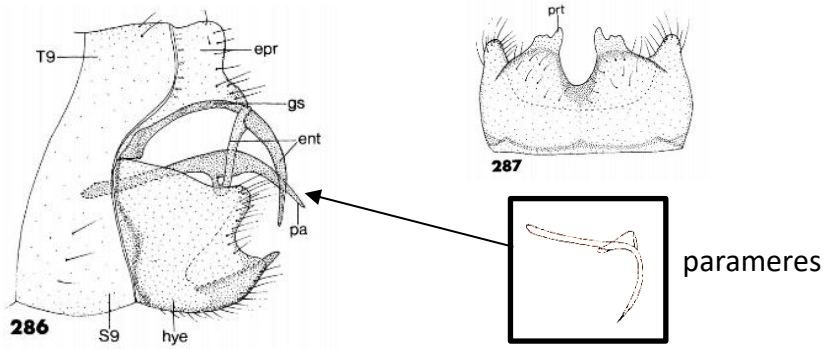
# *Coniopteryx (Coniopteryx)*




*Coniopteryx (Coniopteryx) borealis*

*Coniopteryx (Coniopteryx) borealis*

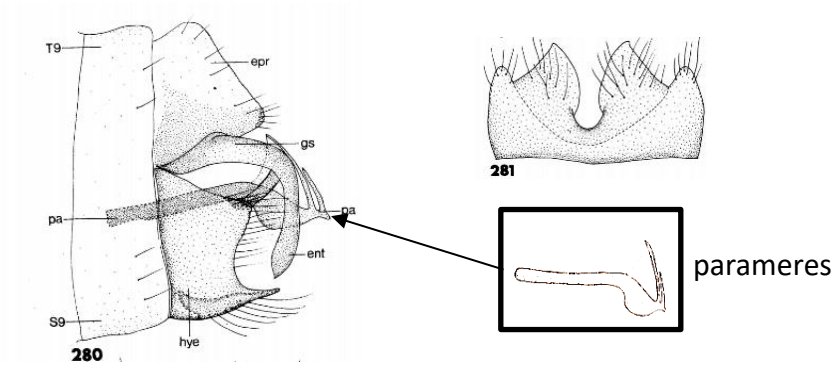





*Coniopteryx (Coniopteryx) pygmaea*

*Coniopteryx (Coniopteryx) pygmaea*

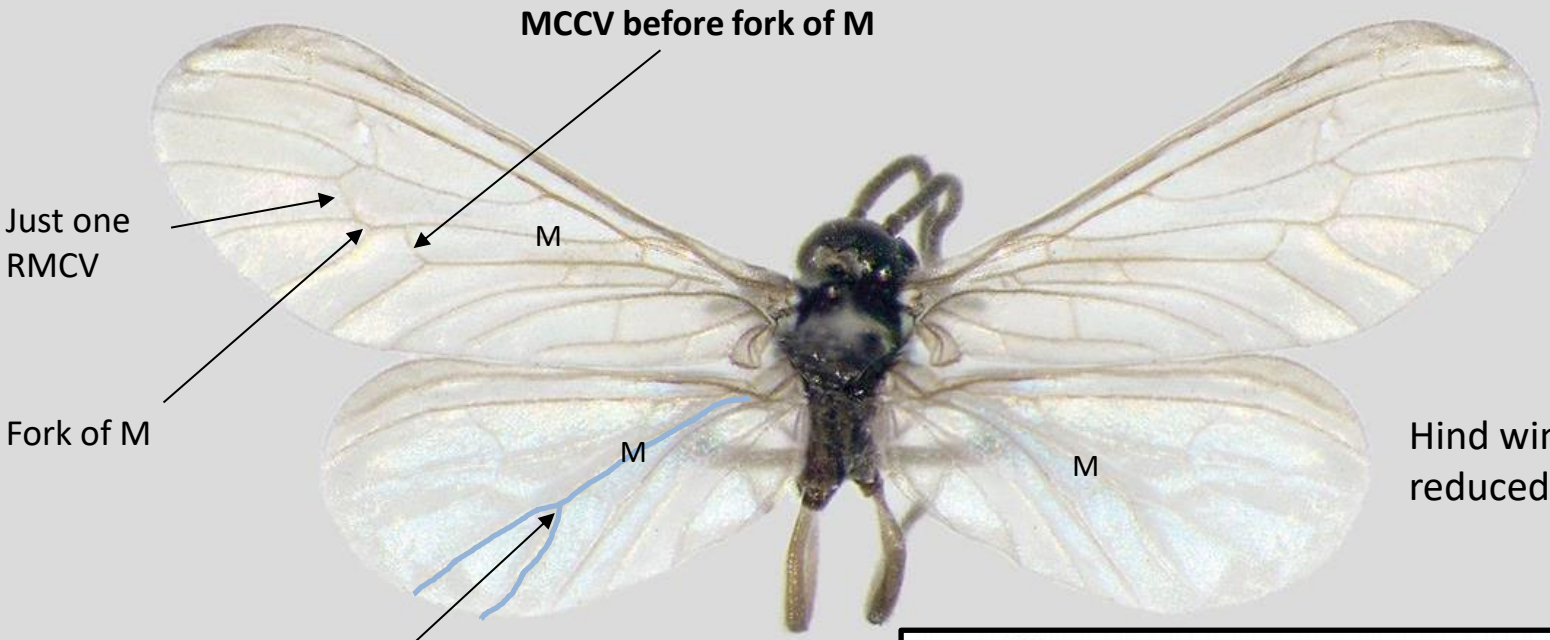





*Coniopteryx (Coniopteryx) tineiformis*

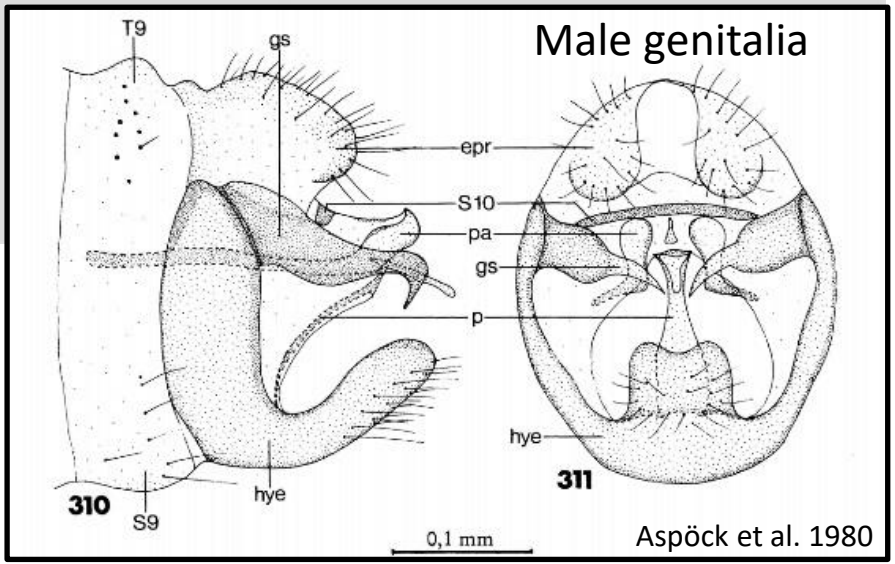
*Coniopteryx (Coniopteryx) tineiformis*

# *Parasemidalis fuscipennis*

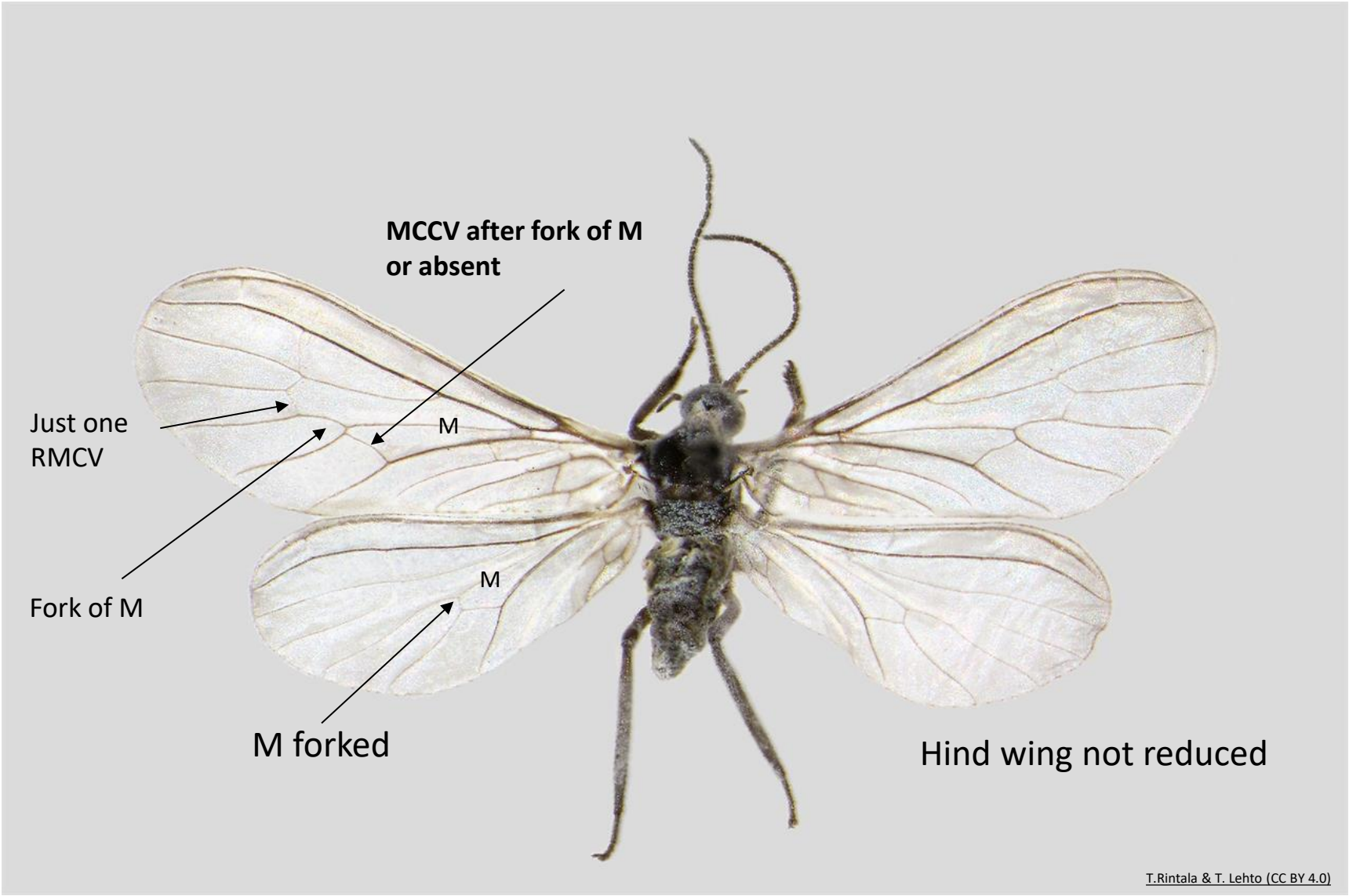





Only coniopterygid in British Isles
that can be identified by wing venation



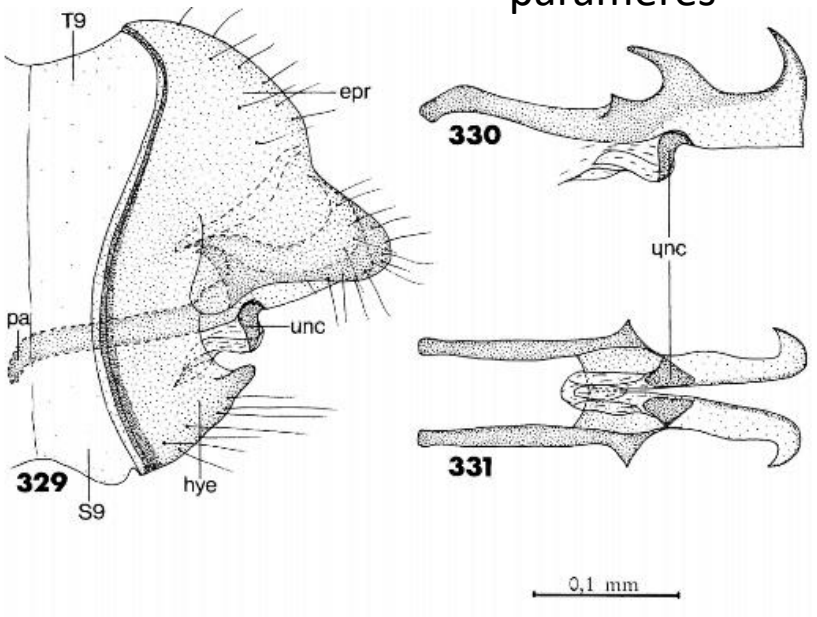
# *Semidalis*

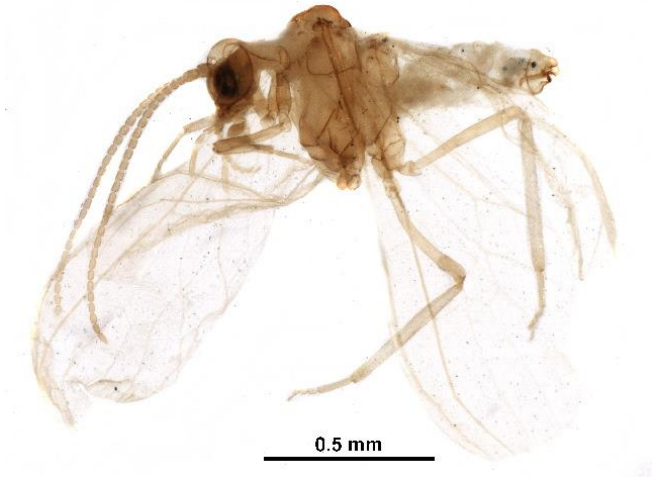


# Male genitalia


*Semidalis aleyrodiformis*

parameres

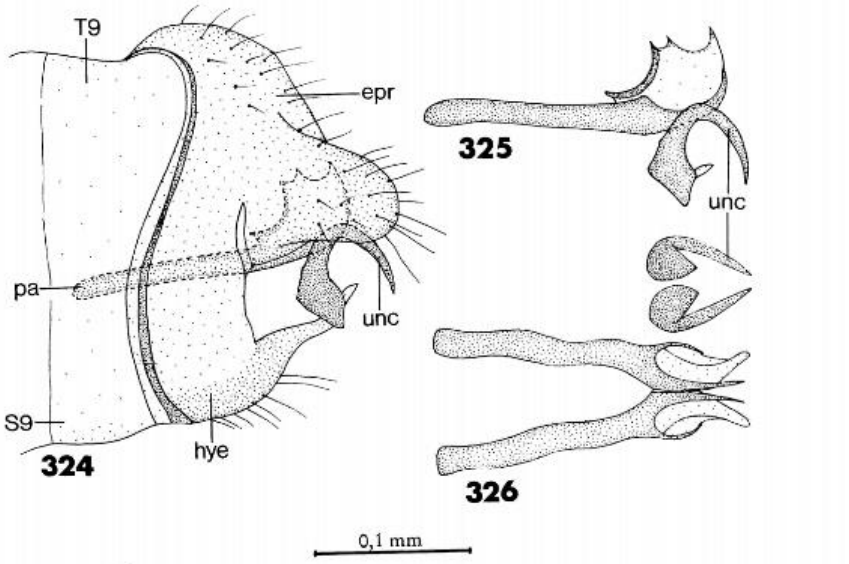



CBG Photography Group, Centre for Biodiversity Genomics (CC BY)

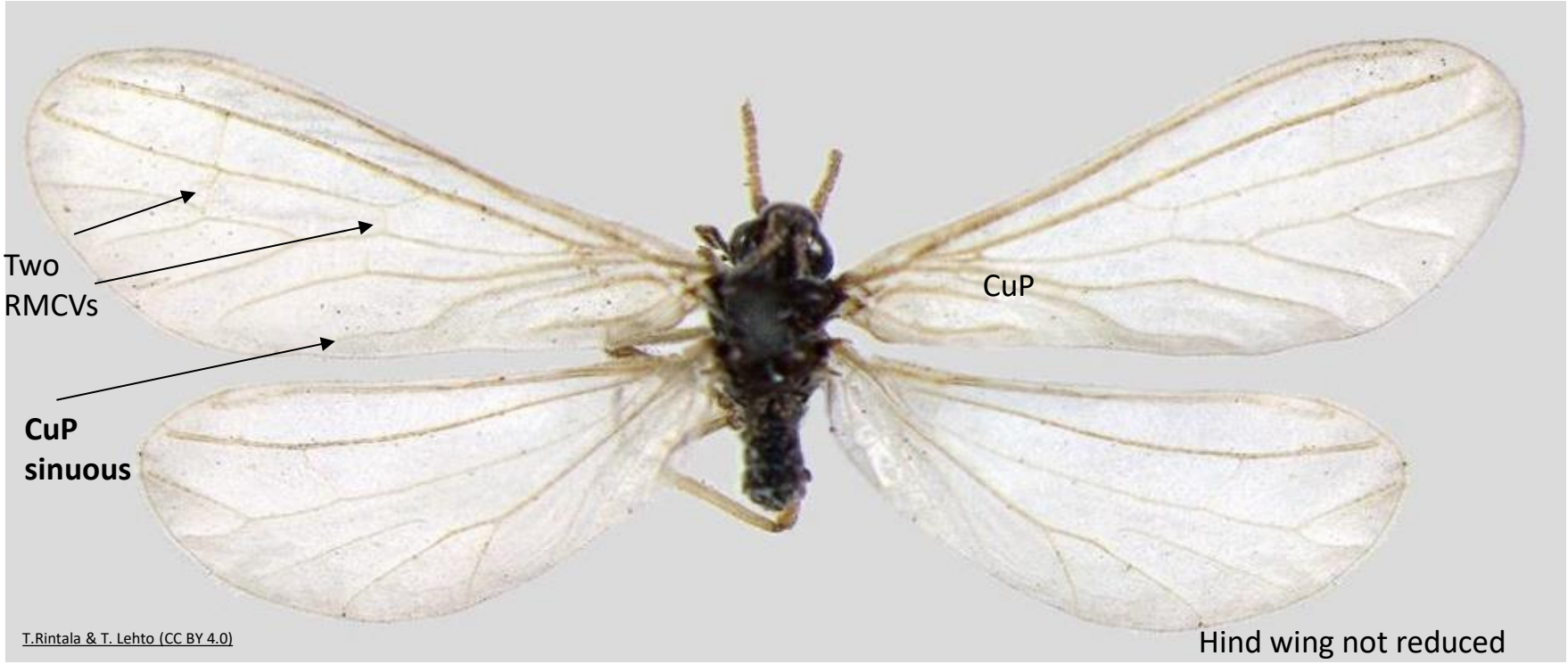
*Semidalis pseudouncinata*

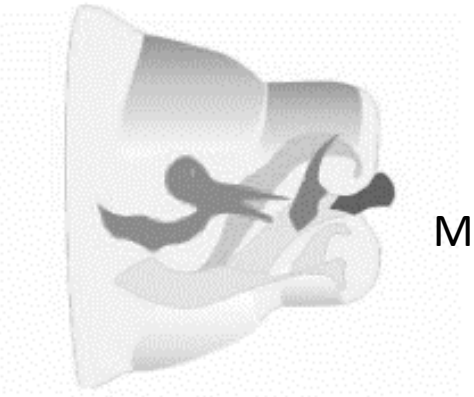
parameres




Aspöck et al. 1980

# *Aleuropteryx juniperi*



Male genitalia

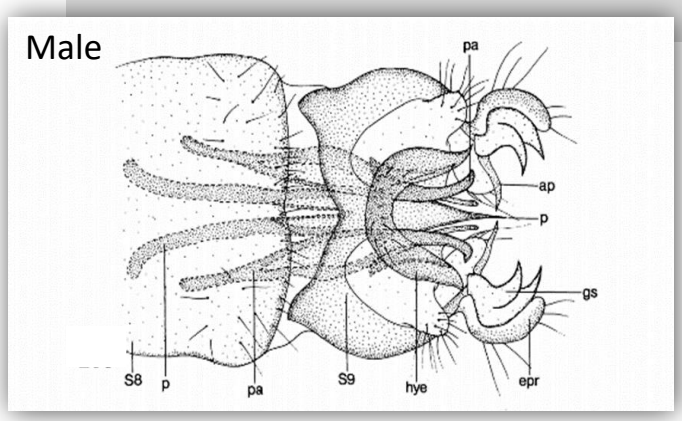
Need to check male genitalia as *Aleuropteryx loewii* is widespread in Europe and could be found in Britain

# *Helicoconis hirtinervis*

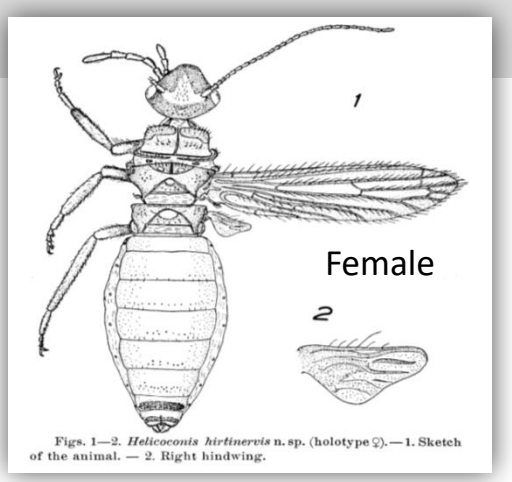
Male




Hind wing not reduced in male




Aspöck et al. 1980



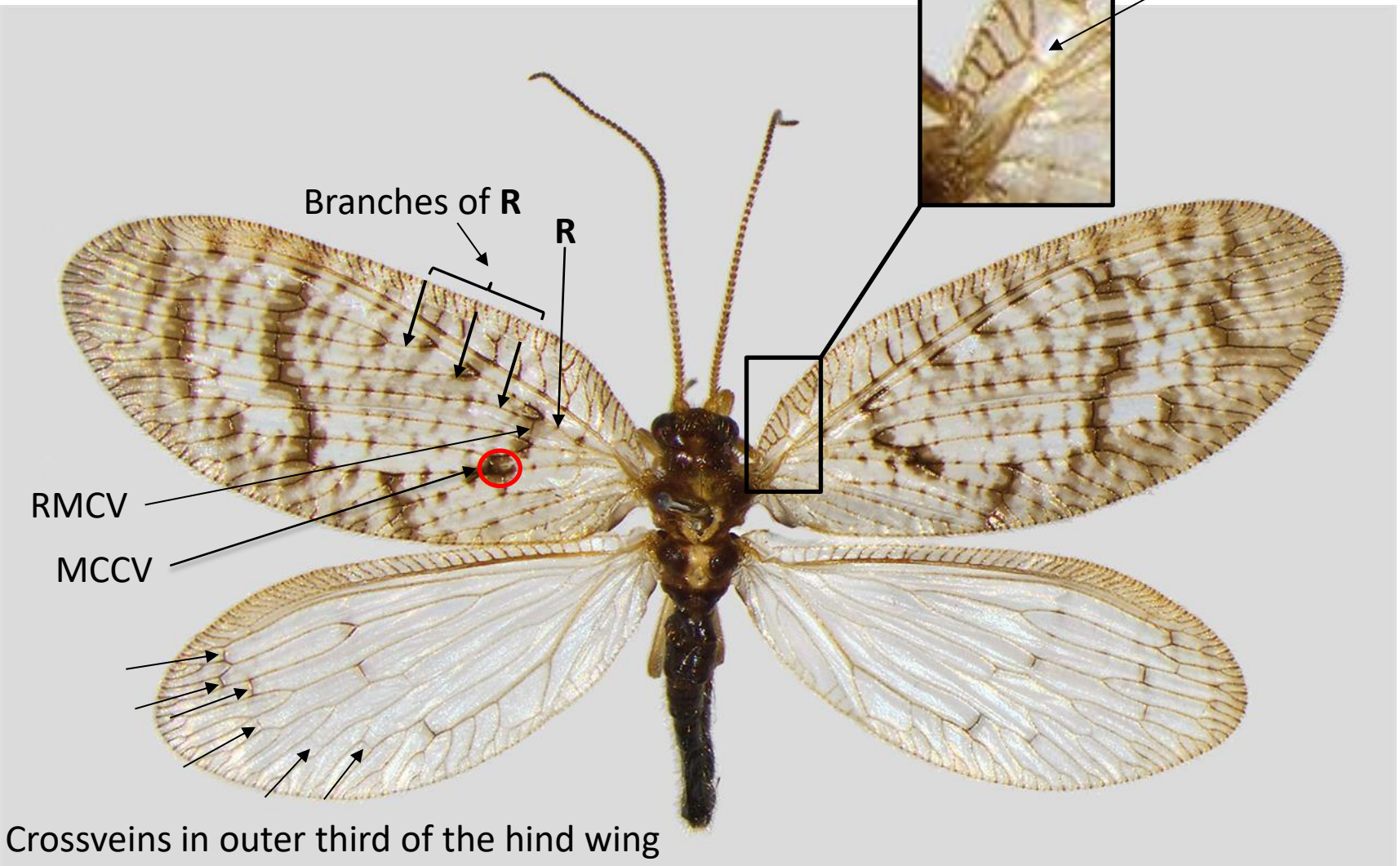

Tjeder, 1960

Female fore- and hind wing reduced

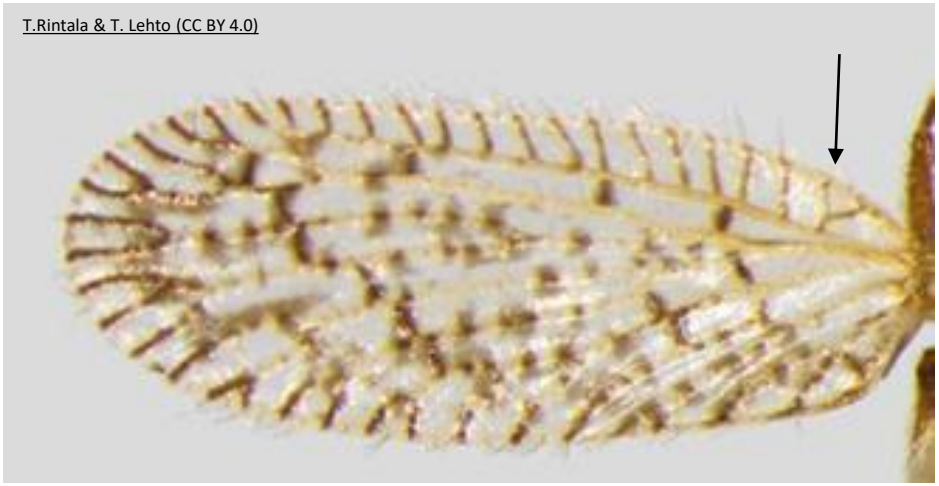
# Hemerobiidae (Brown Lacewings)

- Can be pinned or preserved in alcohol
- May need to dissect or clear the abdomen
- Genitalia often needs to be observed to confirm identity


# Key ID features - Wing



# Recurrent humeral vein absent





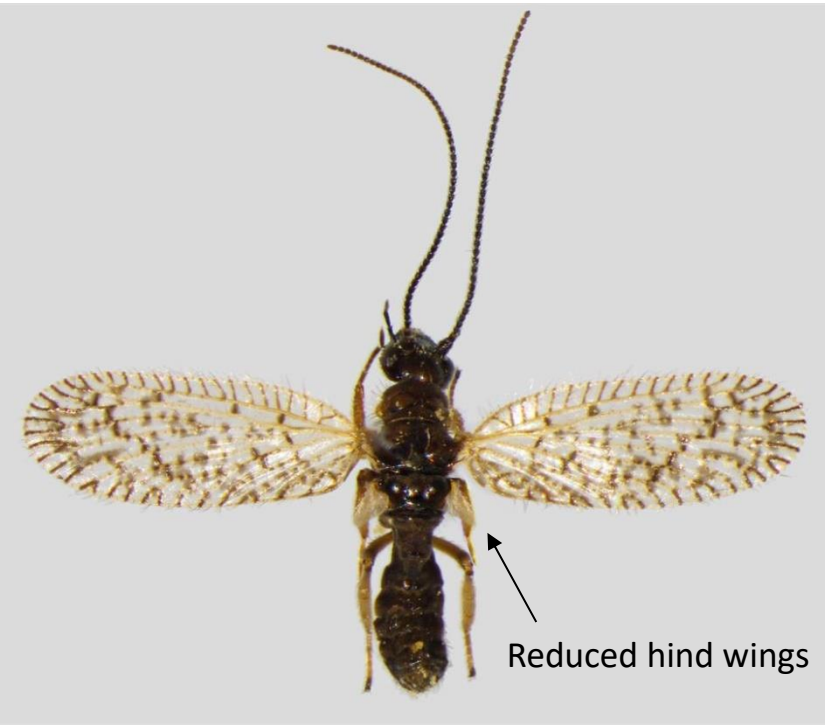
Splits of two genera: ***Psectra*** and *Micromus*

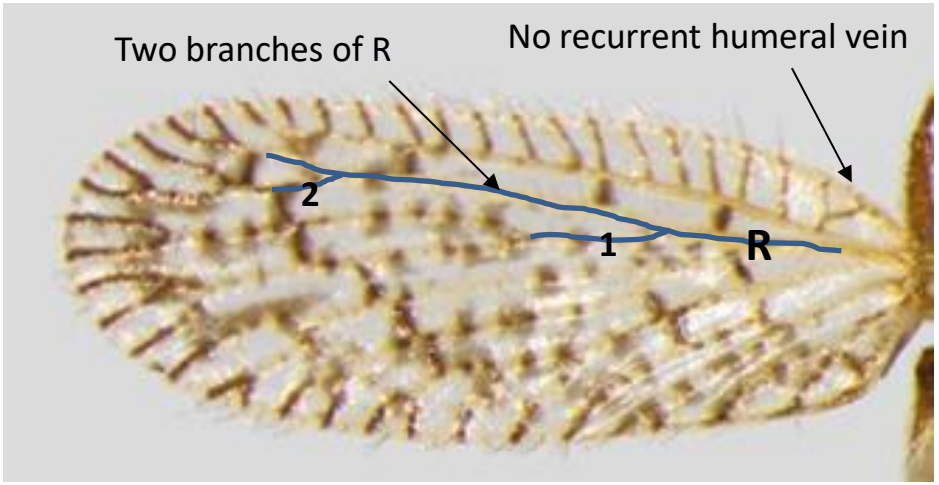
T.Rintala & T. Lehto (CC BY 4.0)

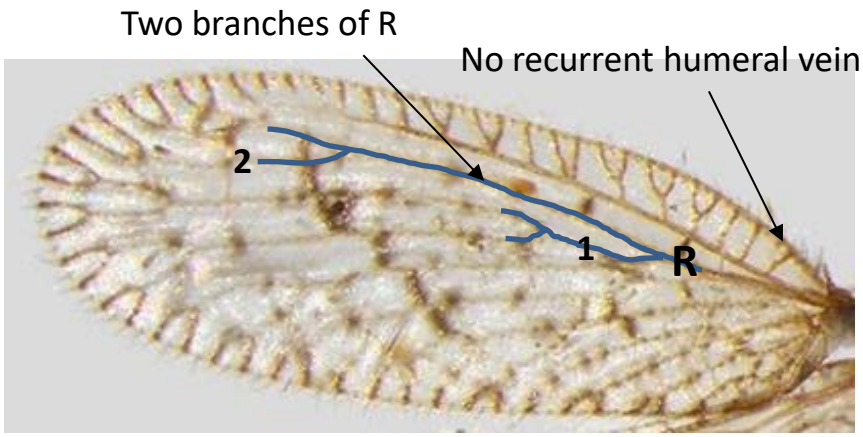
Recurrent humeral vein

First basal vein in costal area
Curves strongly backwards
and has numerous branches
coming off it

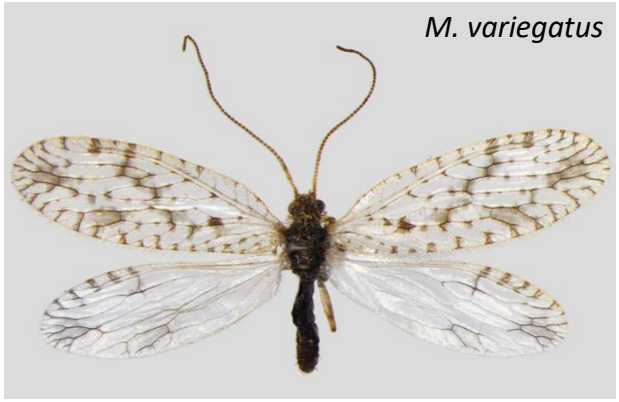
# *Psectra diptera*

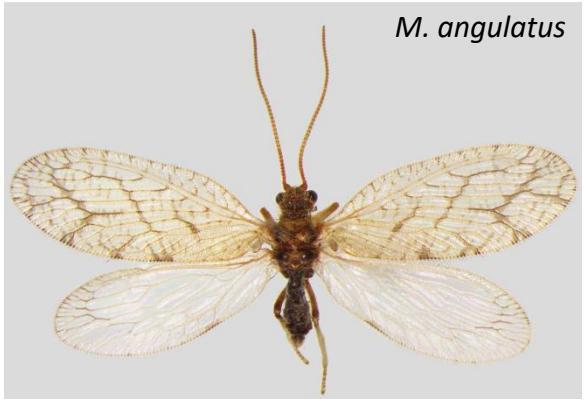



# *Micromus*



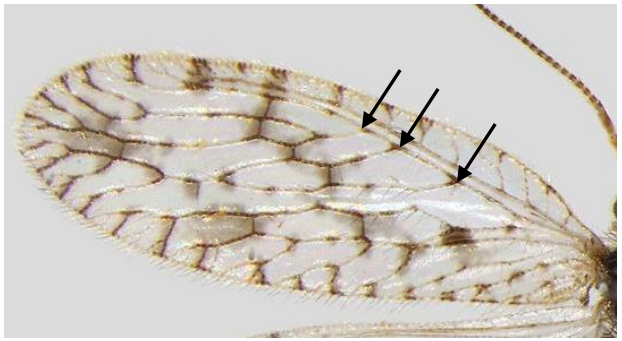


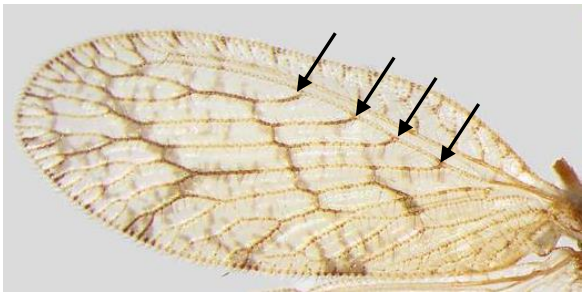
No recurrent humeral vein

(Two or) three branches R

Four branches R

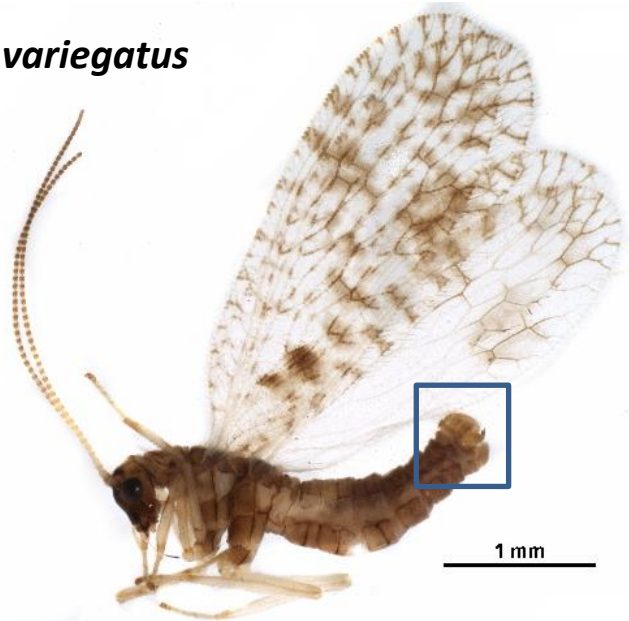
(Four or) five branches R



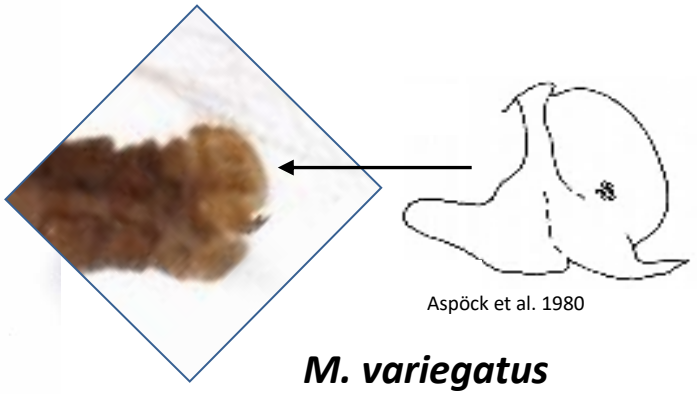


Male genitalia

***Micromus variegatus***

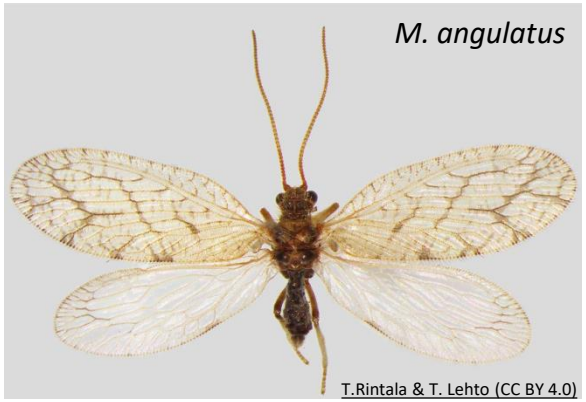



CBG Photography Group, Centre for Biodiversity Genomics (CC BY)



Aspöck et al. 1980

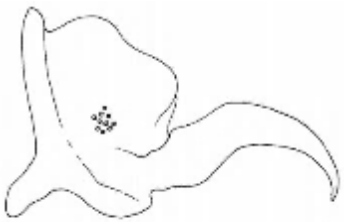
***M. variegatus***




T.Rintala & T. Lehto (CC BY 4.0)

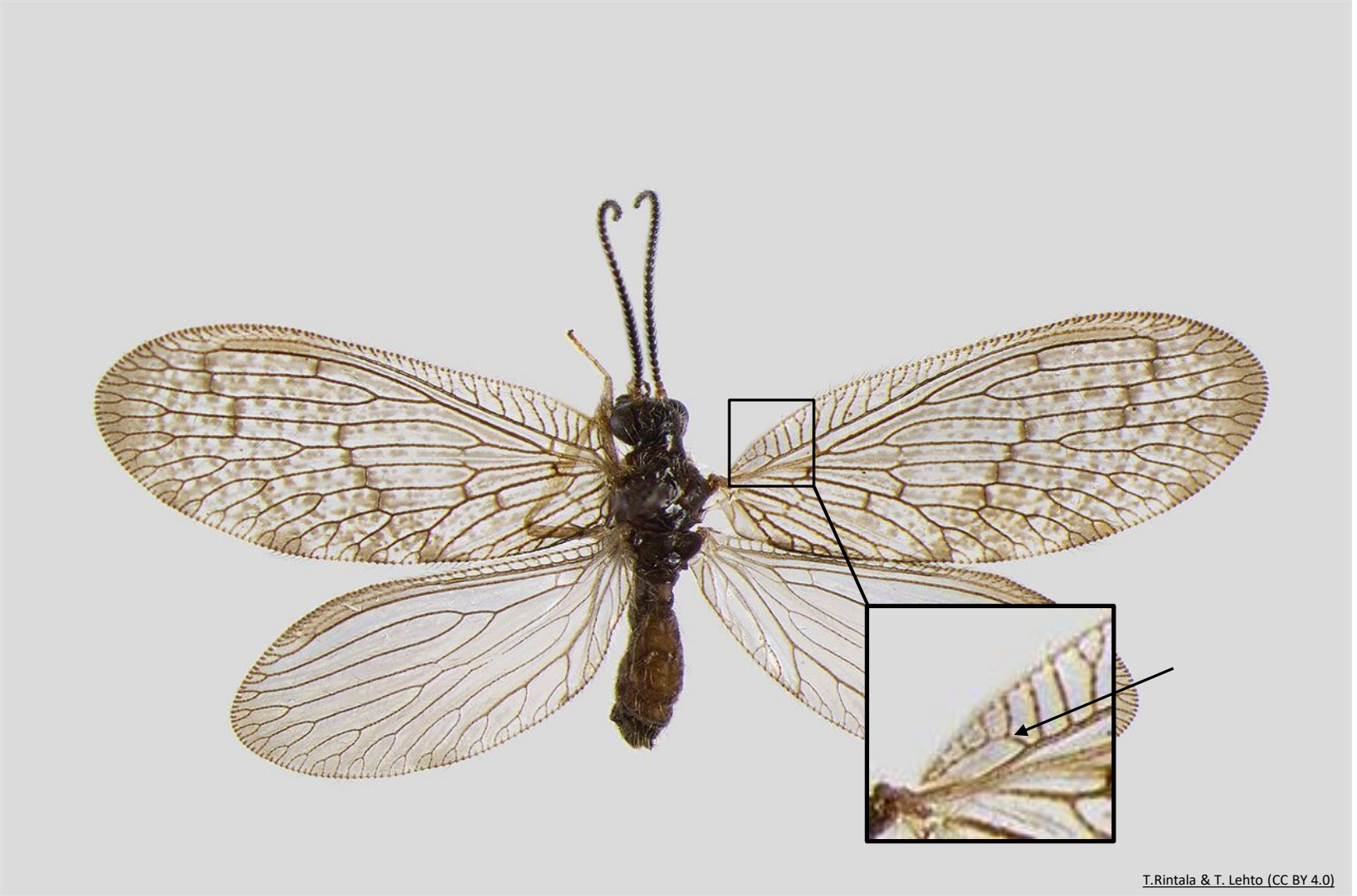
Aspöck et al. 1980


T.Rintala & T. Lehto (CC BY 4.0)



Aspöck et al. 1980

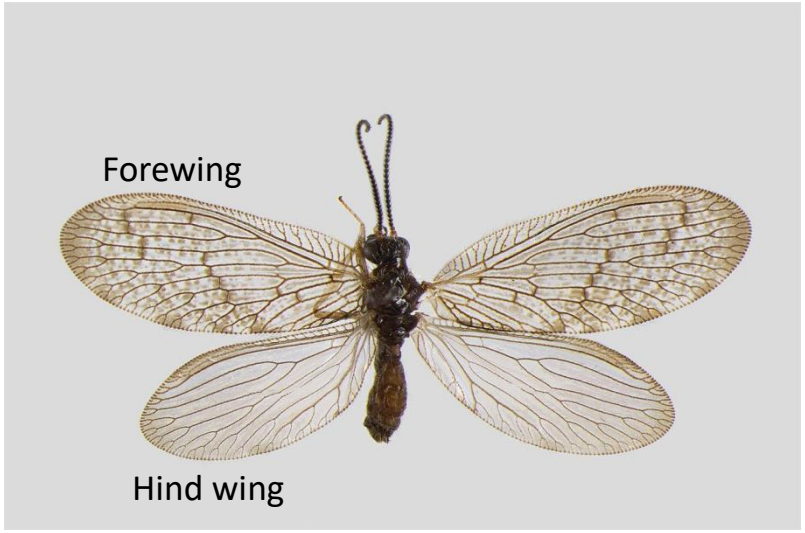
# Recurrent humeral vein present

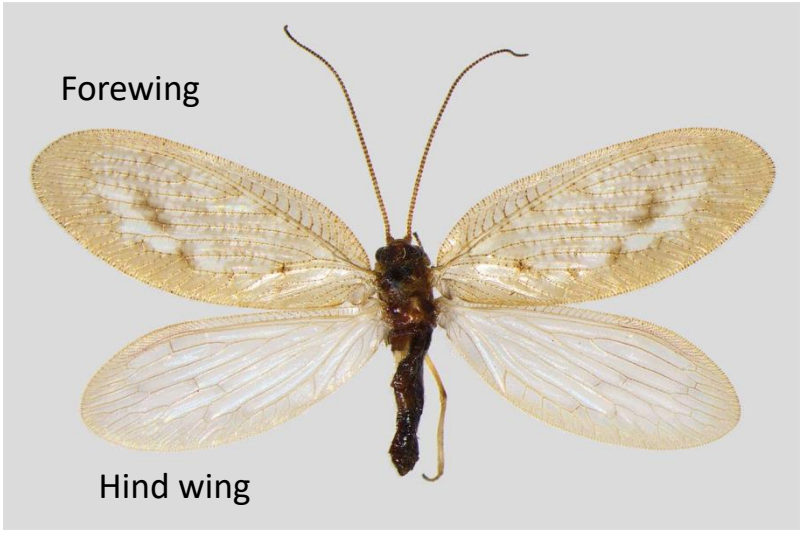




***Sympherobius, Megalomus, Hemerobius, Wesmaelius***

# Hind wing crossveins

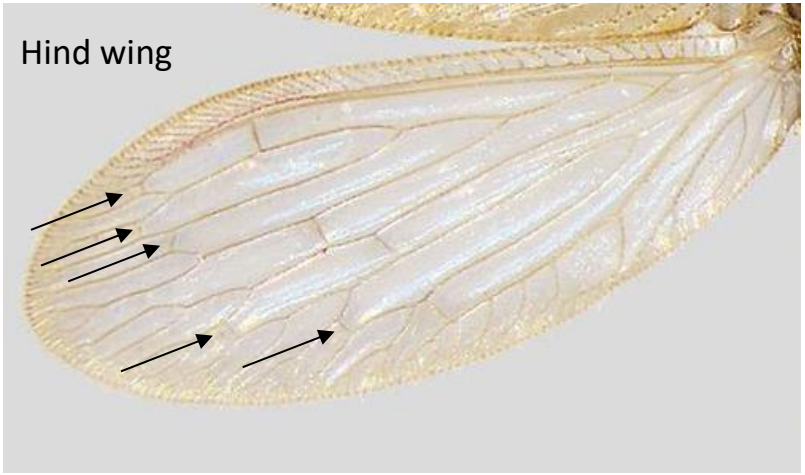




No more than 4 crossveins in outer third hind wing

***Sympherobius***

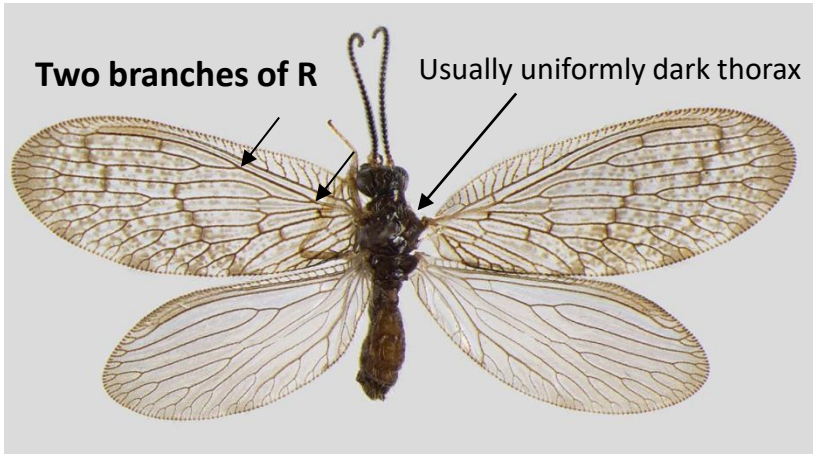


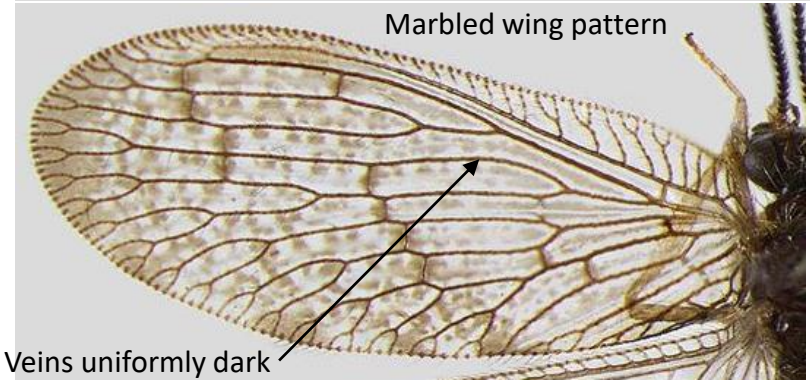

At least 5 crossveins in outer third hind wing

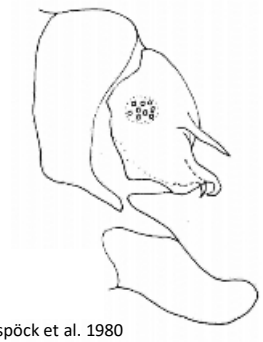
*Megalomus, Hemerobius, Wesmaelius*

# *Sympherobius*

## *Sympherobius elegans*



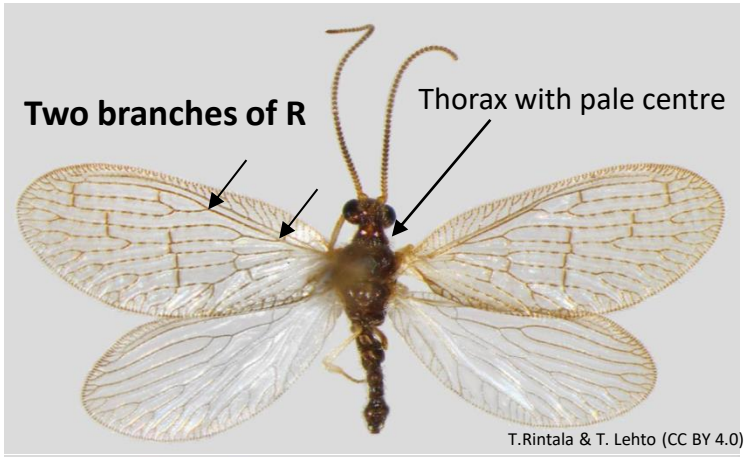



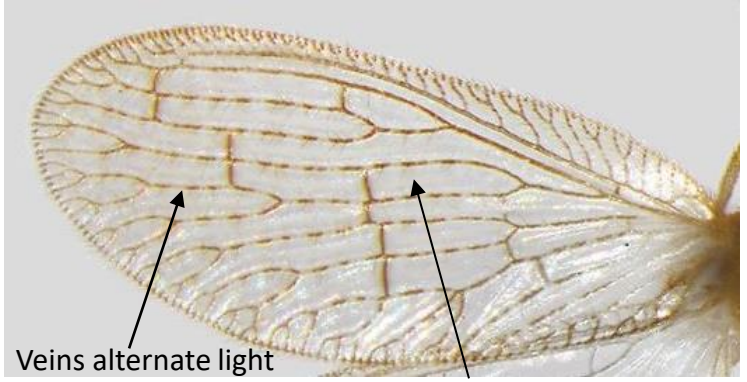
Male genitalia

Aspöck et al. 1980

## *Sympherobius pygmaeus*




T.Rintala & T. Lehto (CC BY 4.0)

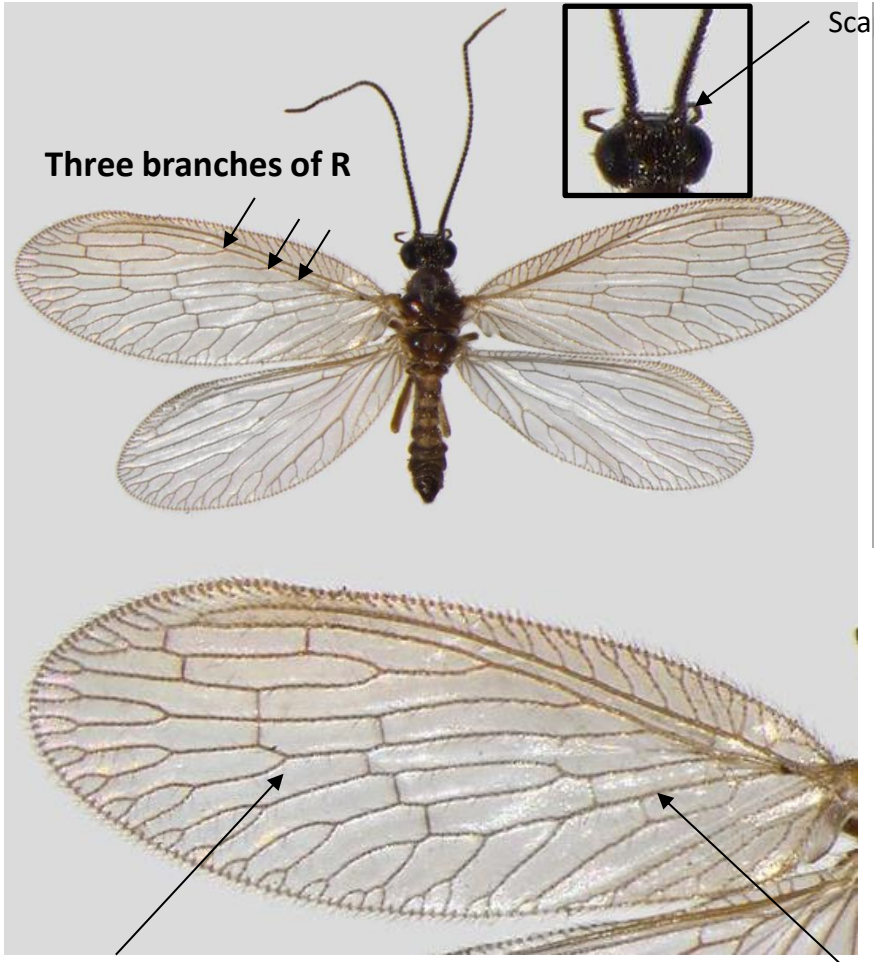



Male genitalia

Aspöck et al. 1980

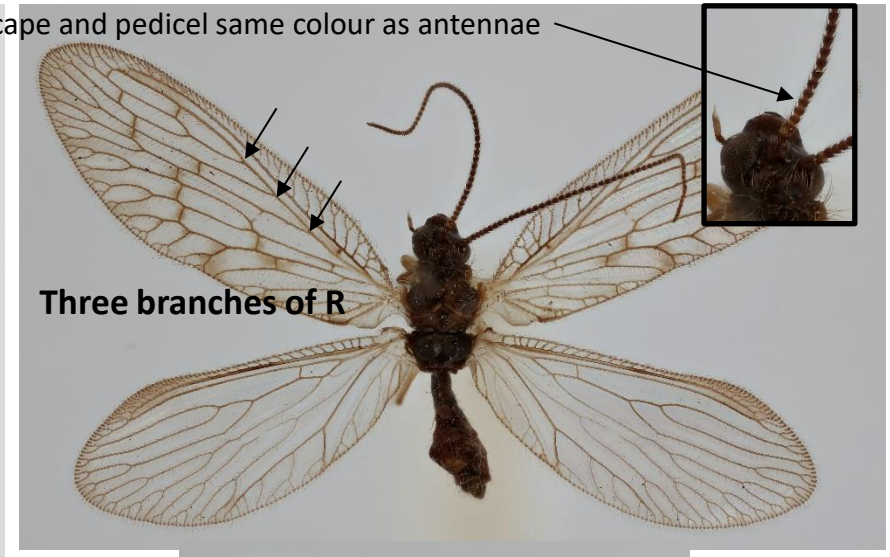
All photos: T.Rintala & T. Lehto (CC BY 4.0)

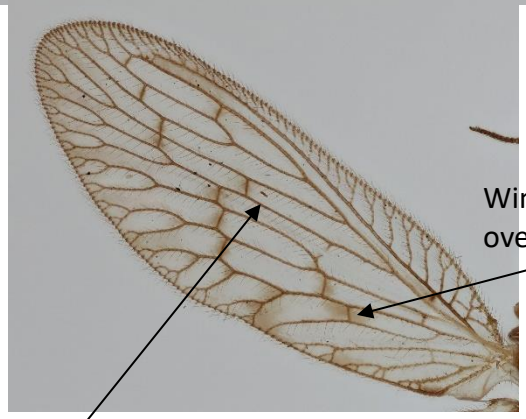
## *Sympherobius fuscescens*




Wings clear membrane or brown tinged

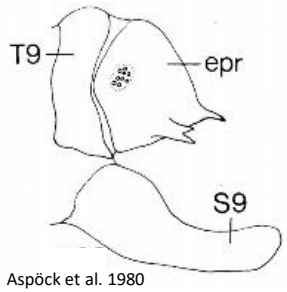
## *Sympherobius pellucidus*



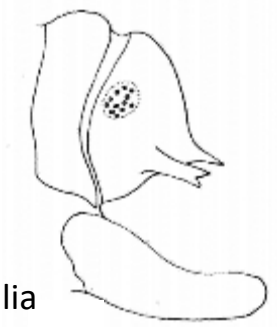

**Veins uniformly dark NEVER alternating light and dark**

Male genitalia



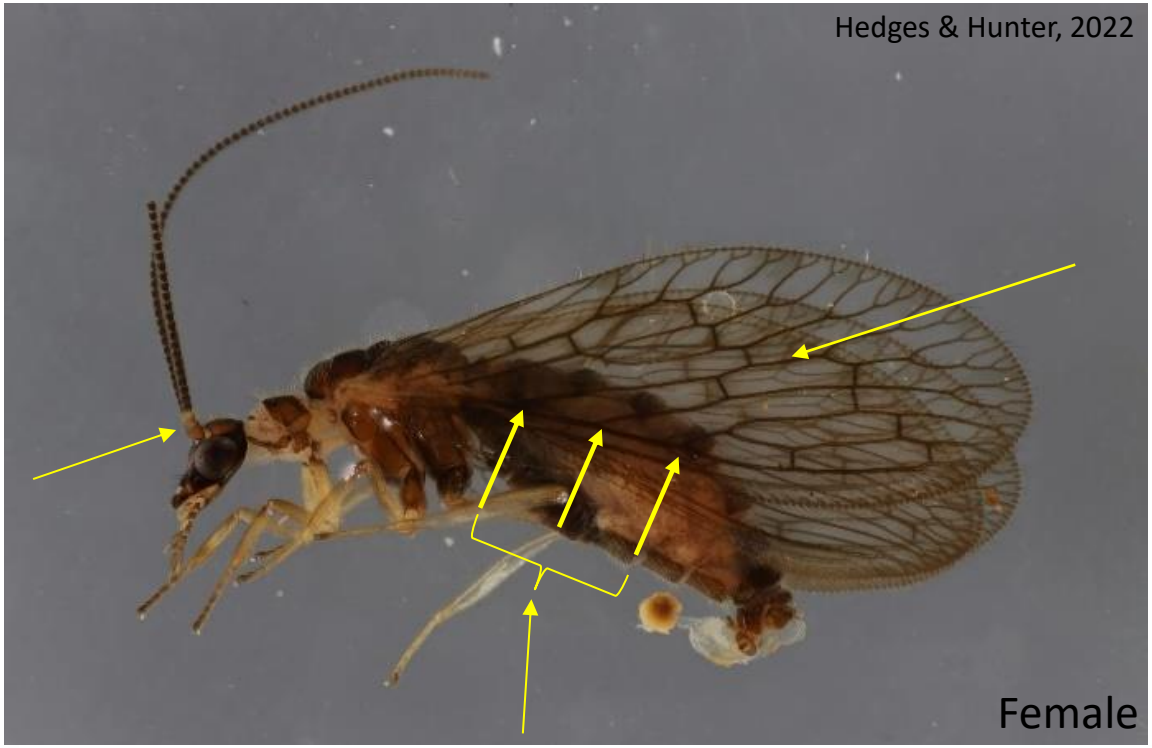

Aspöck et al. 1980

Male genitalia



Aspöck et al. 1980

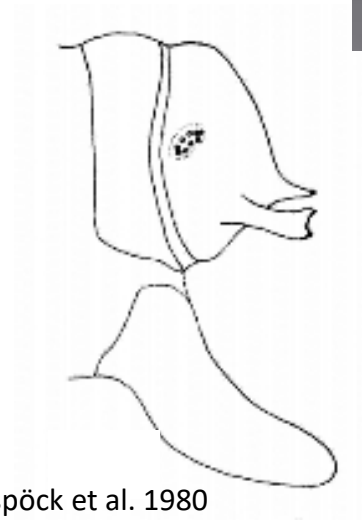
# *Sympherobius klapaleki*




**Scape and pedicel pale yellow different to rest of antennae**

Veins uniformly dark not alternating light and dark

3 branches of R



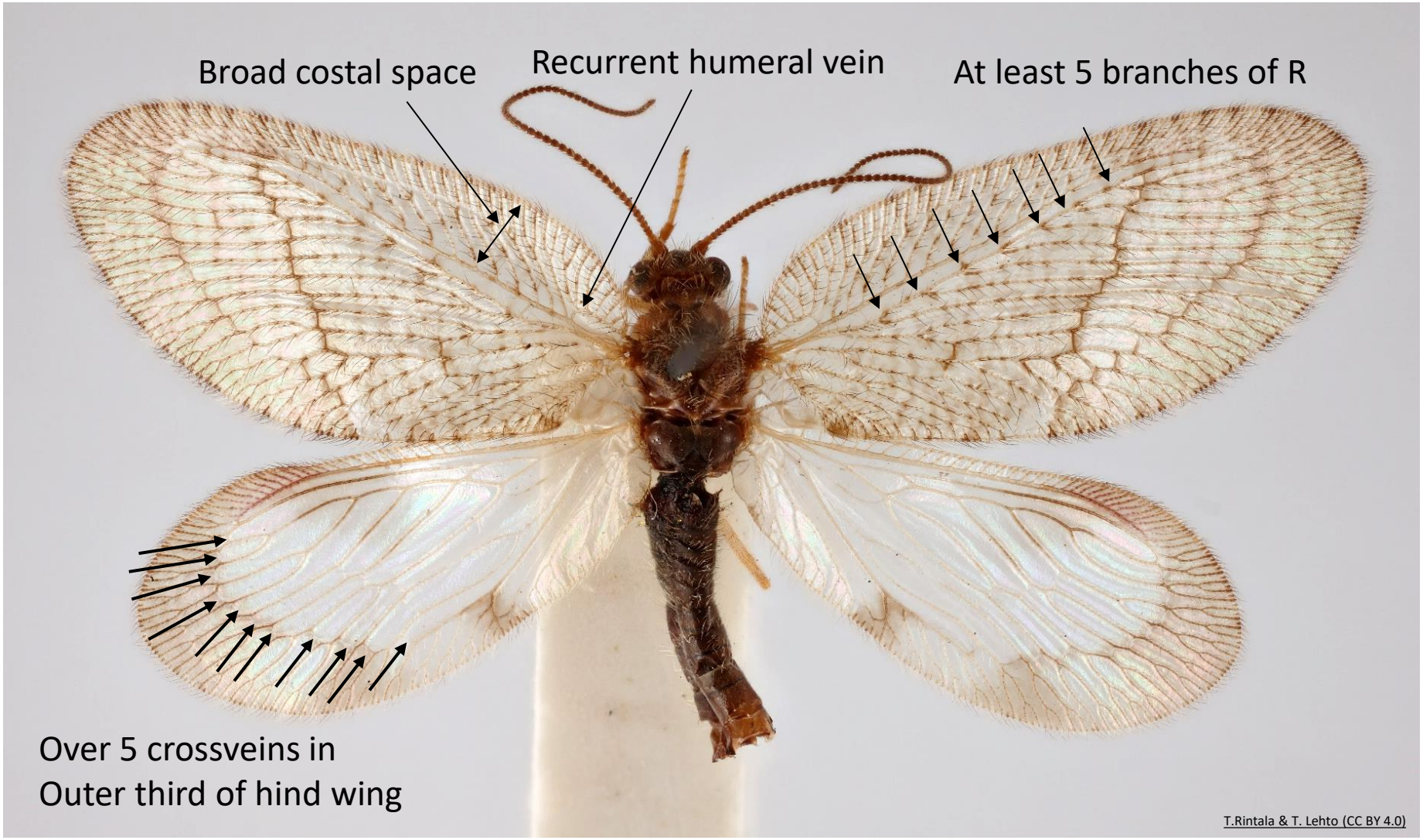
Male genitalia

Aspöck et al. 1980


At least 5 crossveins in outher third hind wing

***Megalomus, Hemerobius, Wesmaelius***

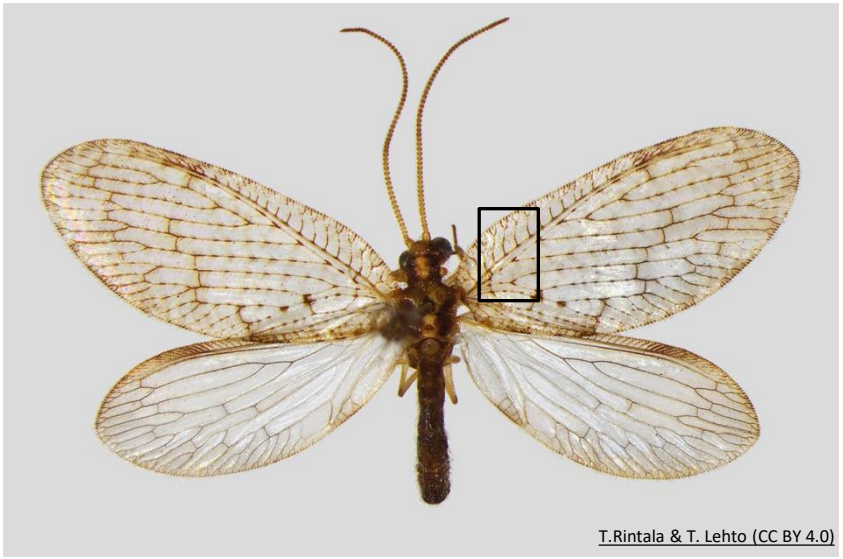
# *Megalomus hirtus*

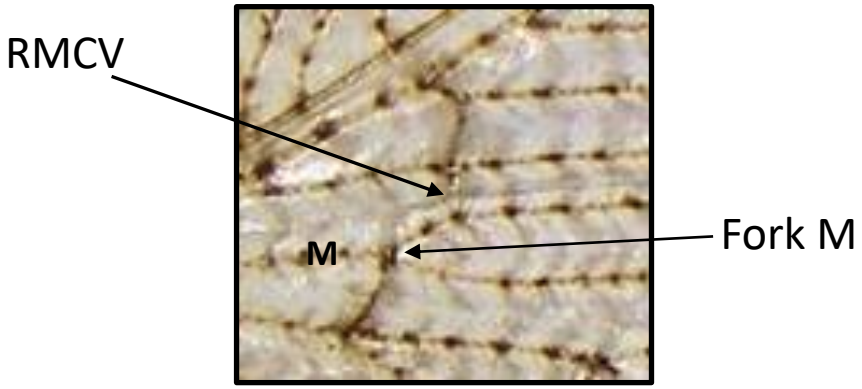


# RMCV and fork of M

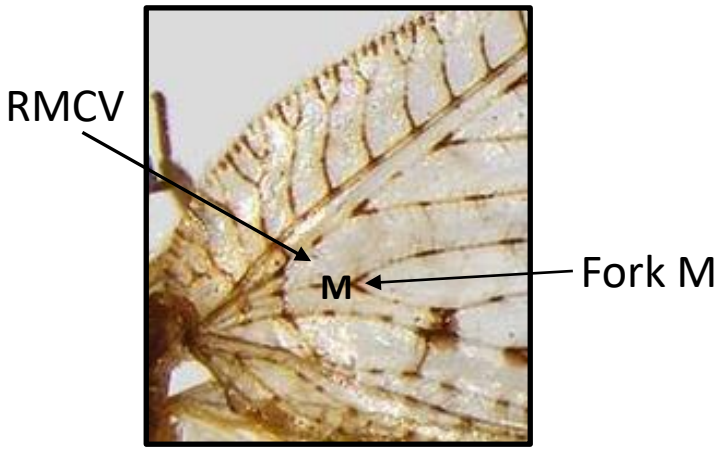
RMCV dark after fork of M


RMCV pale before (or at) fork of M



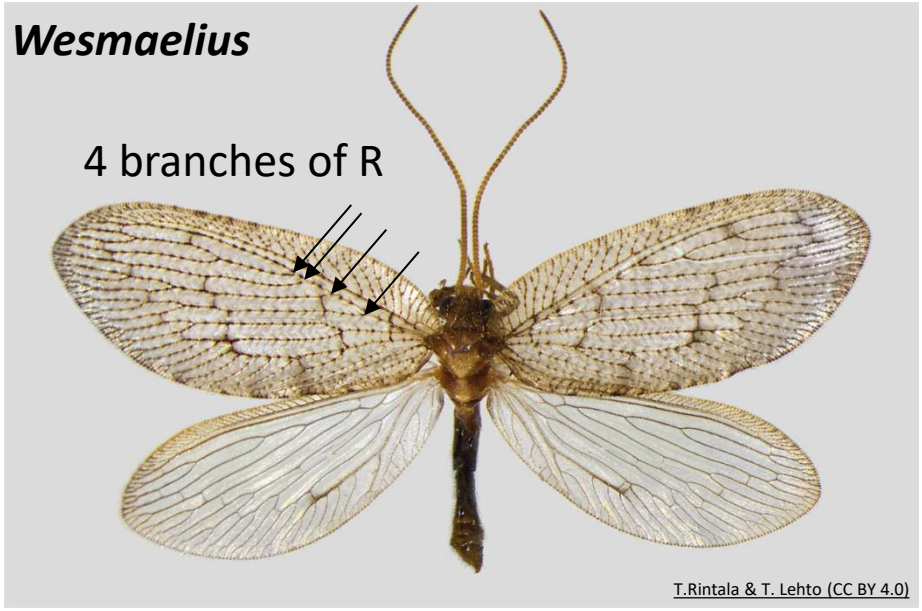

***Wesmaelius***

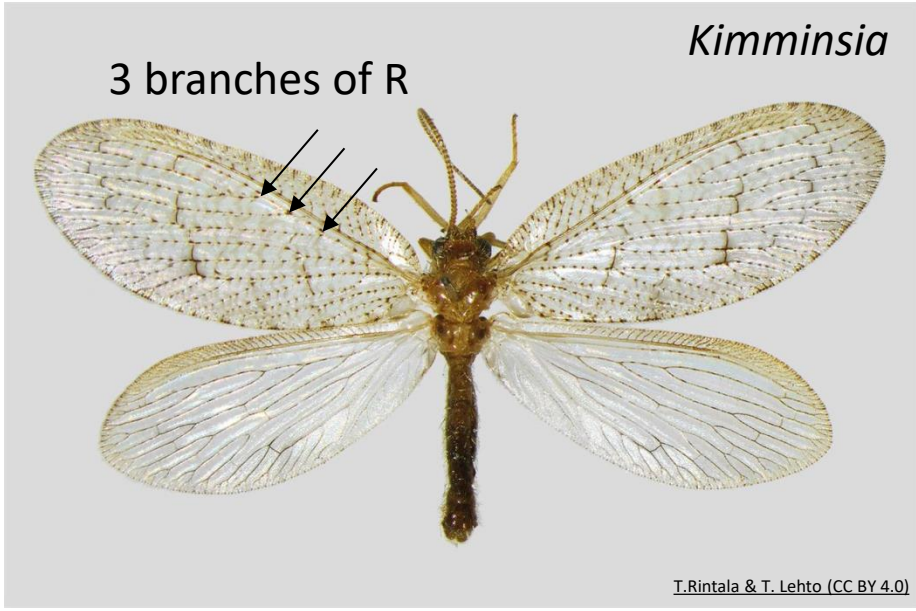


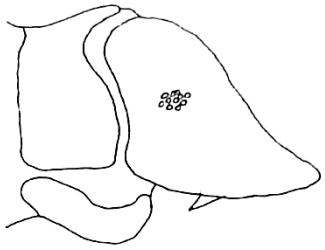

*Hemerobius*

# *Wesmaelius*

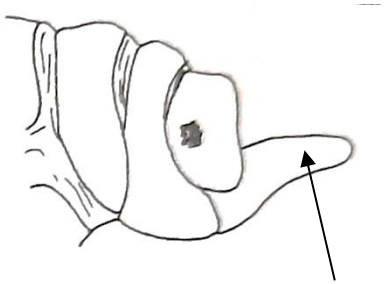
Two subgenera: ***Wesmaelius*** and ***Kimminsia***



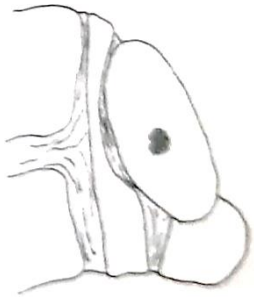



**Male** genitalia triangular



**Female** genitalia with long process

**Male** genitalia not triangular various shapes



**Female** genitalia with final segment rounded not elongate

Plant, 1997

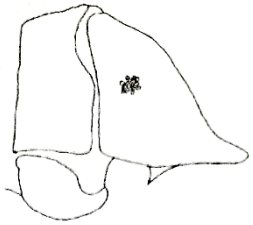
## *Wesmaelius (Wesmaelius) concinnus*

orange-brown
no stripe

T.Rintala & T. Lehto (CC BY 4.0)

Longitudinal veins with spots (1.5-2x width of vein)

Forewing with V on membrane centred on spots, angle of V Points to wing base



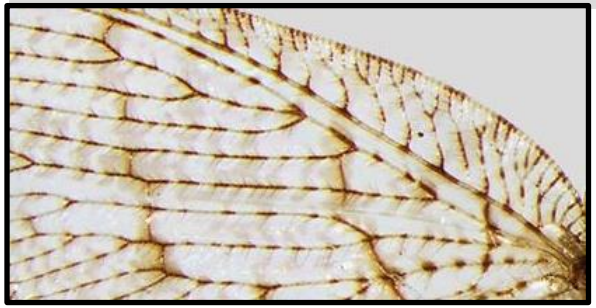
Male genitalia

Female anal plates

## *Wesmaelius (Wesmaelius) quadrifasciatus*

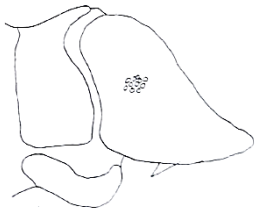
pale stripe

T.Rintala & T. Lehto (CC BY 4.0)



Longitudinal veins with streaks
(2x+ width of vein)

Forewing membrane with V pattern running into each other - broader



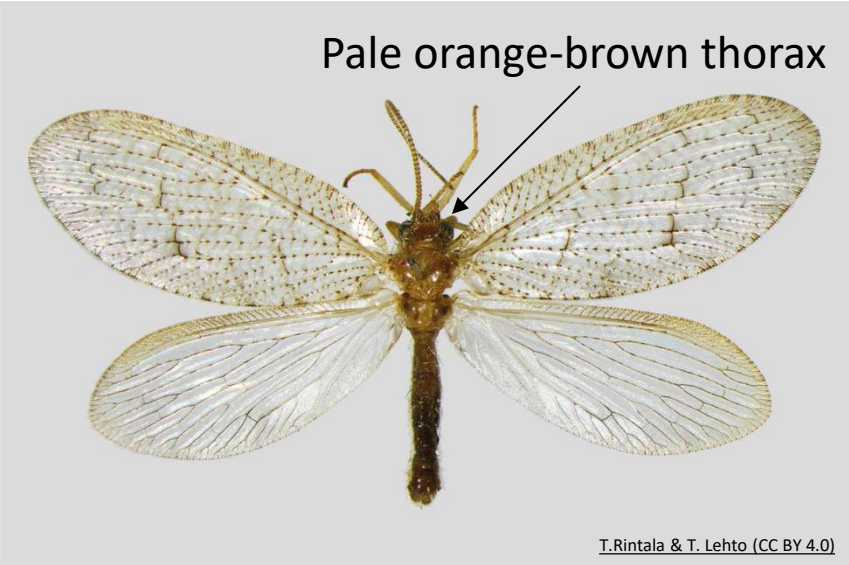
Male genitalia

Female anal plates

Plant, 1997

# *Kimminsia*

- Six species
- Only identified by genitalia



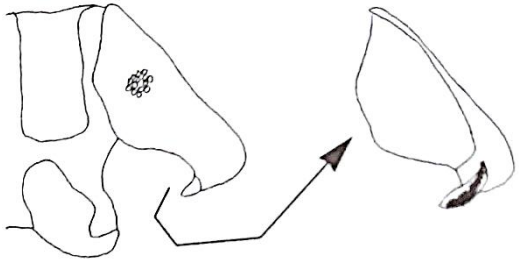

***Wesmaelius (Kimminsia) mortoni***
***Wesmaelius (Kimminsia) balticus***


*Wesmaelius (Kimminsia) subnebulosus*
*Wesmaelius (Kimminsia) nervosus*
*Wesmaelius (Kimminsia) malladai*
*Wesmaelius (Kimminsia) ravus*

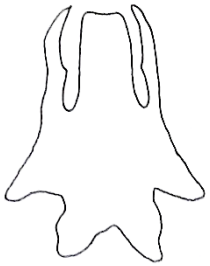
## *Wesmaelius (Kimminsia) mortoni*

Not recorded since 1898 - extinct in British Isles?
Was recorded in Scotland
If found voucher specimen should be retained


Forewing longitudinal veins with spots



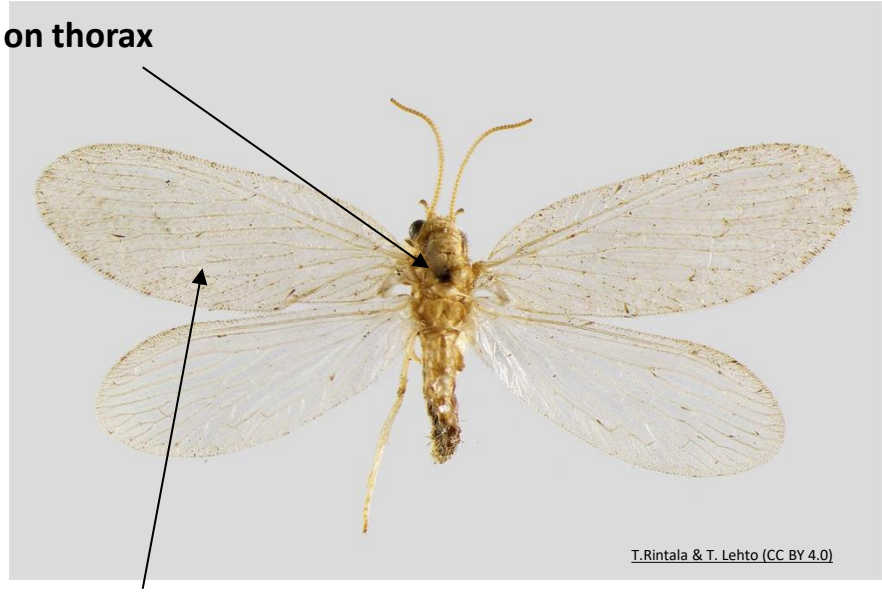
Male genitalia



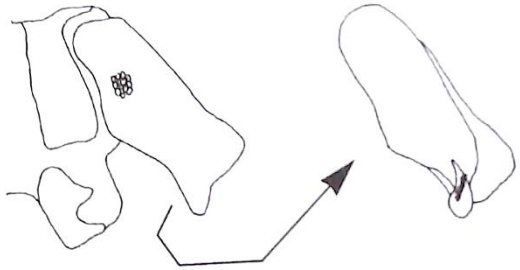
Female anal plate

## *Wesmaelius (Kimminsia) balticus*

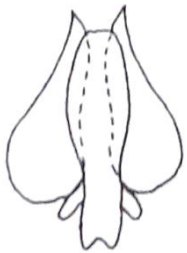
**No stripe on thorax**




Forewing longitudinal veins without spots



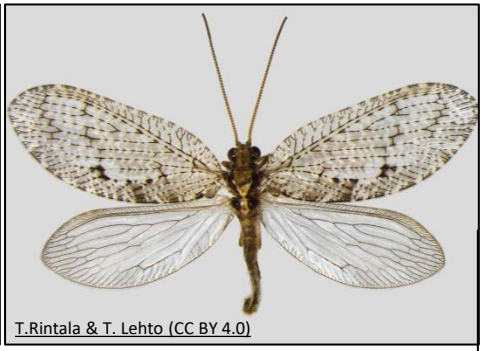
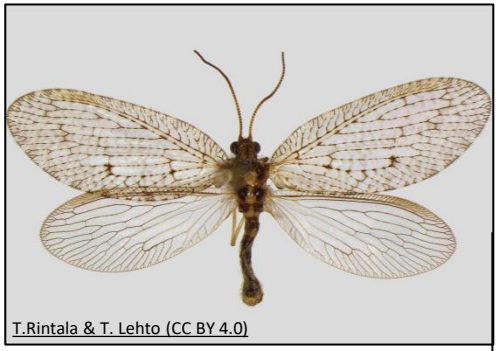
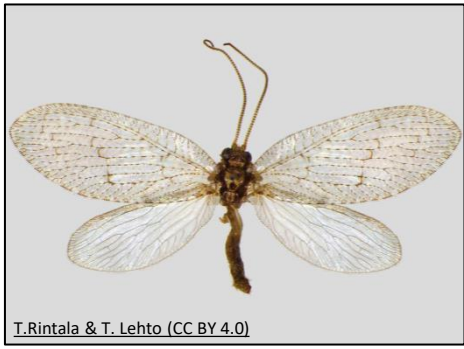
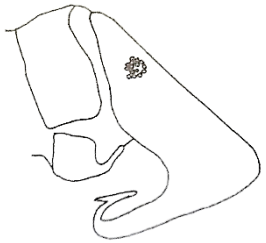
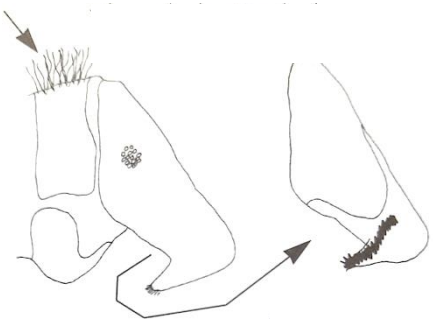
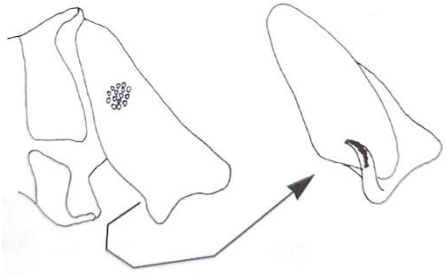
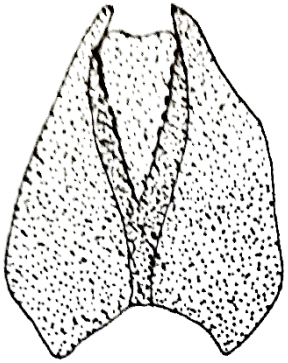
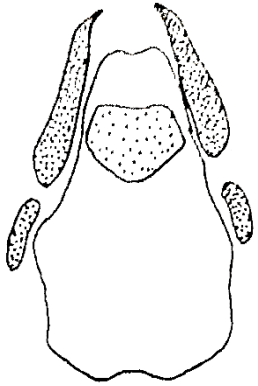
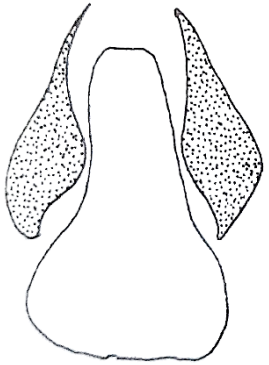
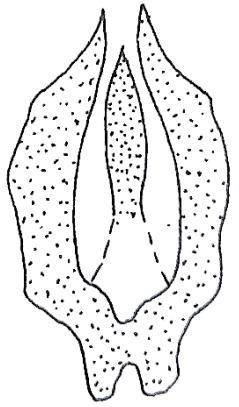
Male genitalia



Female anal plate

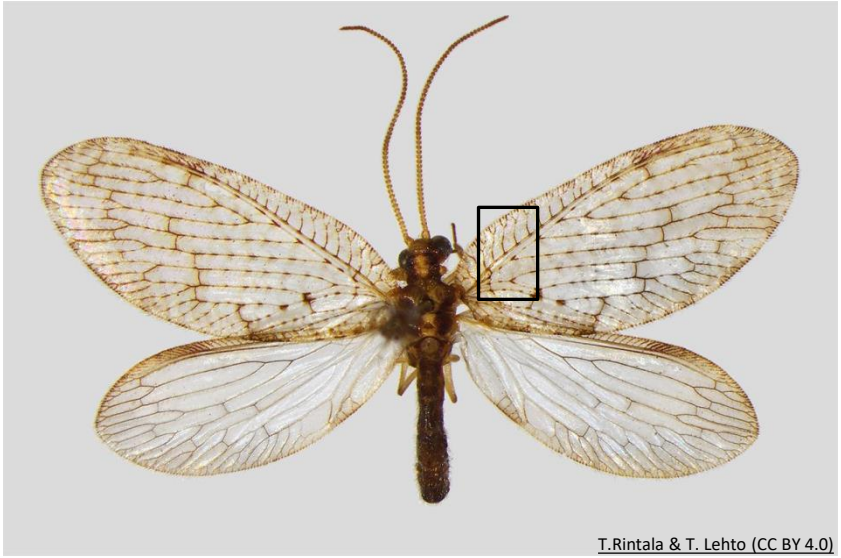
Plant,1997

# Pale stripe on thorax

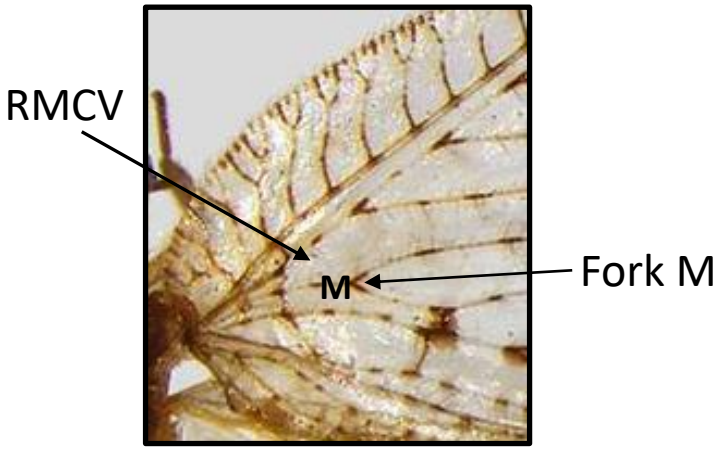
| *W. (Kimminsia) subnebulosus* | *W. (Kimminsia) nervosus* | *W. (Kimminsia) malladai* | *W. (Kimminsia) ravus* |
|---|---|---|---|
|  T.Rintala & T. Lehto (CC BY 4.0) |  T.Rintala & T. Lehto (CC BY 4.0) |  T.Rintala & T. Lehto (CC BY 4.0) |  T.Rintala & T. Lehto (CC BY 4.0) |
| Male genitalia: | | | |
|  |  |  |  |
| Female anal plates: | | | |
|  |  |  |  |

Plant, 1997

RMCV pale and before fork of M








***Hemerobius***

# Media-Cubitus crossvein (MCCV) and Forewing patterns



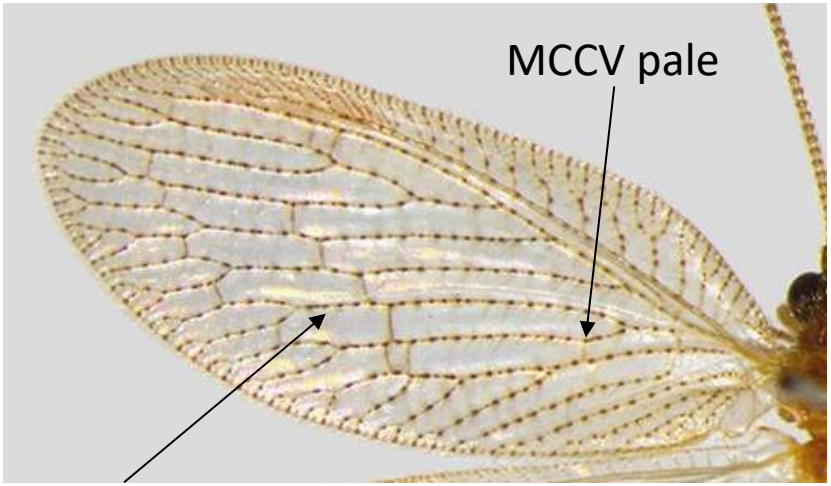
MCCV colourless (if dark membrane around clear)
Forewing no pattern

***Hemerobius nitidulus, H. micans***

MCCV dark
Forewing with pattern

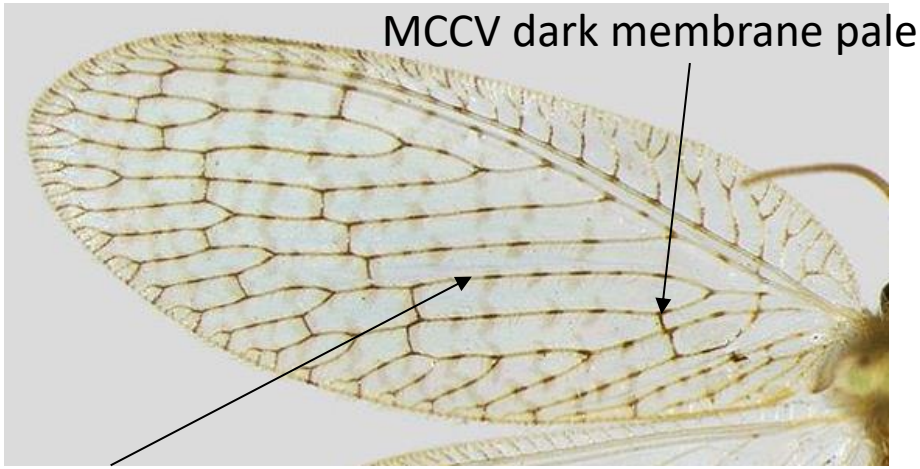
*Hemerobius stigma, H. atrifrons, H. marginatus, H. lutescens H. striatus, H. contumax, H. pini, H. simulans, H. perelegans, H. humulinus*

## *Hemerobius nitidulus*




Main veins with spots
Wing hairs from dots dark

## *Hemerobius micans*

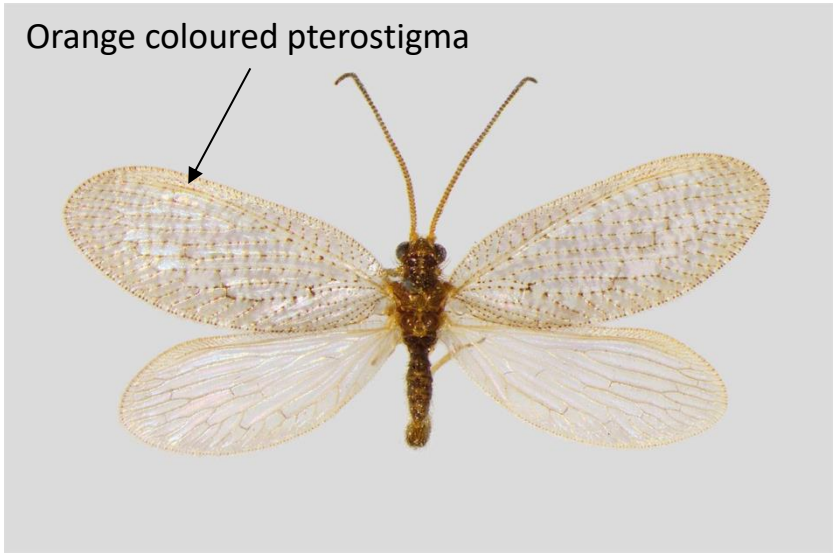



Main veins with dashes (2x long as width)
Wing hairs from dashes pale

MCCV dark
Forewing with pattern

***Hemerobius stigma, H. atrifrons, H. marginatus, H. lutescens H. striatus, H. contumax, H. pini, H. simulans, H. perelegans, H. humulinus***

# Thorax stripe




Without stripe

*Hemerobius stigma*

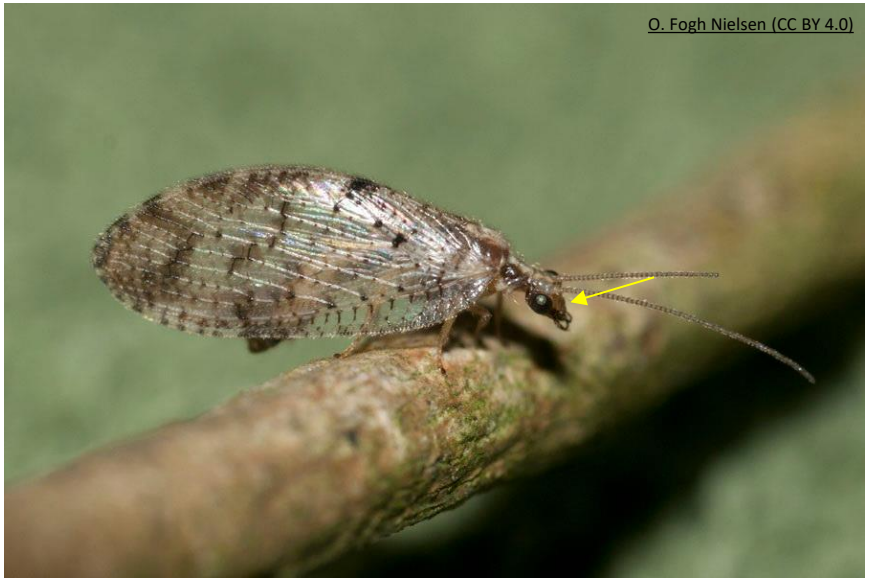
With stripe

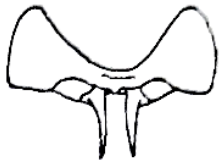
***Hemerobius atrifrons, H. marginatus, H. lutescens H. striatus, H. contumax, H. pini, H. simulans, H. perelegans, H. humulinus***

# Face colour

Front of head shining glossy black


Not shiny, brown face



Plant, 1997

Internal male genitalia

*Hemerobius atrifrons*

***H. marginatus, H. lutescens H. striatus, H. contumax, H. pini, H. simulans, H. perelegans, H. humulinus***

# Basal SC-R crossvein

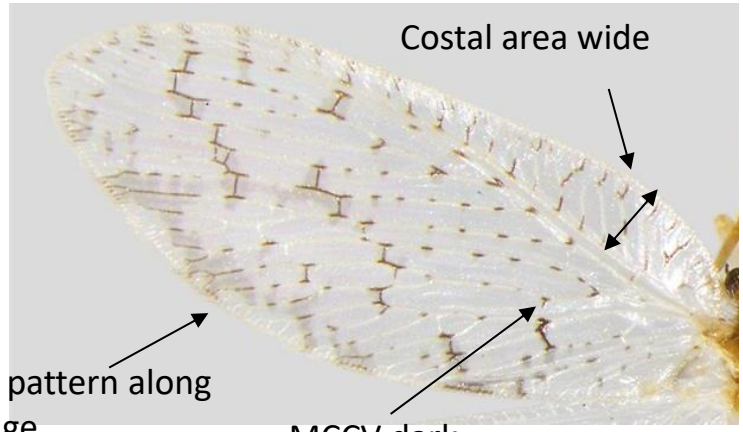
Pale or only slightly darkened
at the end that joins to R

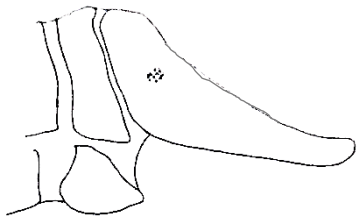
***Hemerobius marginatus, H. lutescens***

Dark, usually black

*Hemerobius striatus,*
*H. contumax, H. pini, H. simulans,*
*H. perelegans, H. humulinus*

## *Hemerobius marginatus*

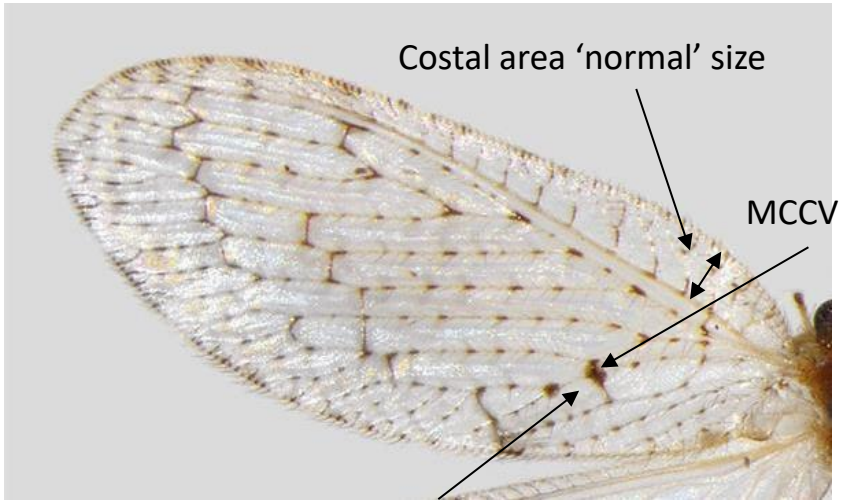


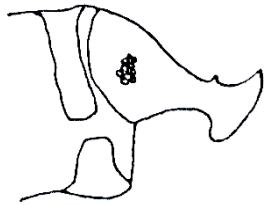



Male genitalia

Plant, 1997

## *Hemerobius lutescens*



Male genitalia

Plant, 1997

# Basal SC-R crossvein

Dark, usually black

***Hemerobius striatus,***
***H. contumax, H. pini, H. simulans,***
***H. perelegans, H. humulinus***

# Forewing hind margin shading

Uniform shading

***Hemerobius striatus, H. contumax, H. pini***

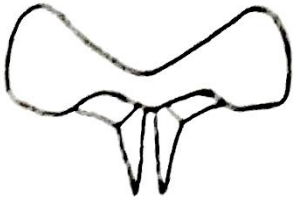
Not uniform some transparent areas

*H. simulans, H. perelegans, H. humulinus*

# Forewing inner and outer gradate series of crossveins


Inner dark and outer pale

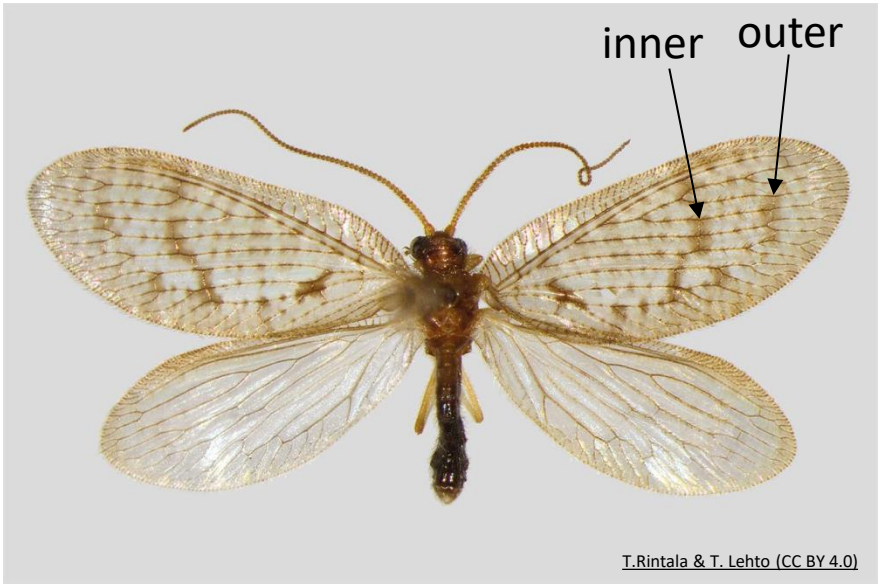
*Hemerobius striatus* *(= Hemerobius fenestratus)*



Plant, 1997

Internal male genitalia

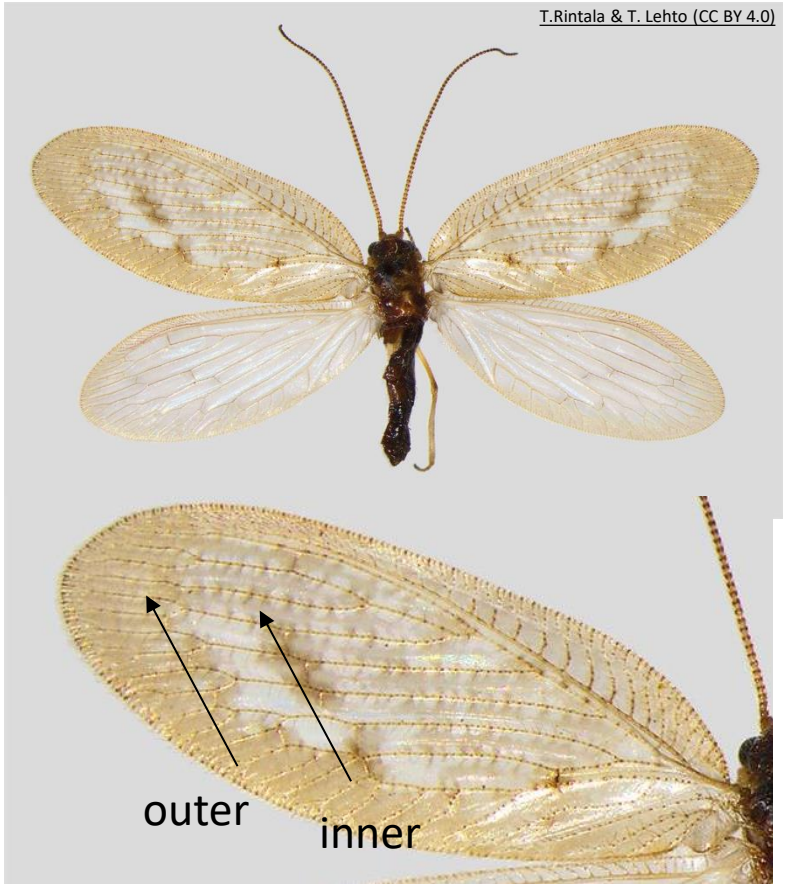
Recently found
Records require verification



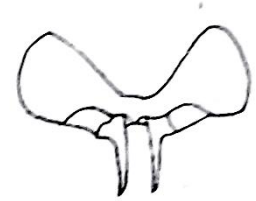

Both inner and outer dark

***Hemerobius contumax, H. pini***

## *Hemerobius contumax*




Gradate series of crossveins close and parallel



Plant, 1997

Internal male genitalia

**Not recorded since 1952 –**
**possibly extinct in Britain**
**Was recorded in Surrey, Hampshire, Buckinghamshire, Sussex**
**Records require verification**

## *Hemerobius pini*


Gradate series of crossveins diverging not parallel

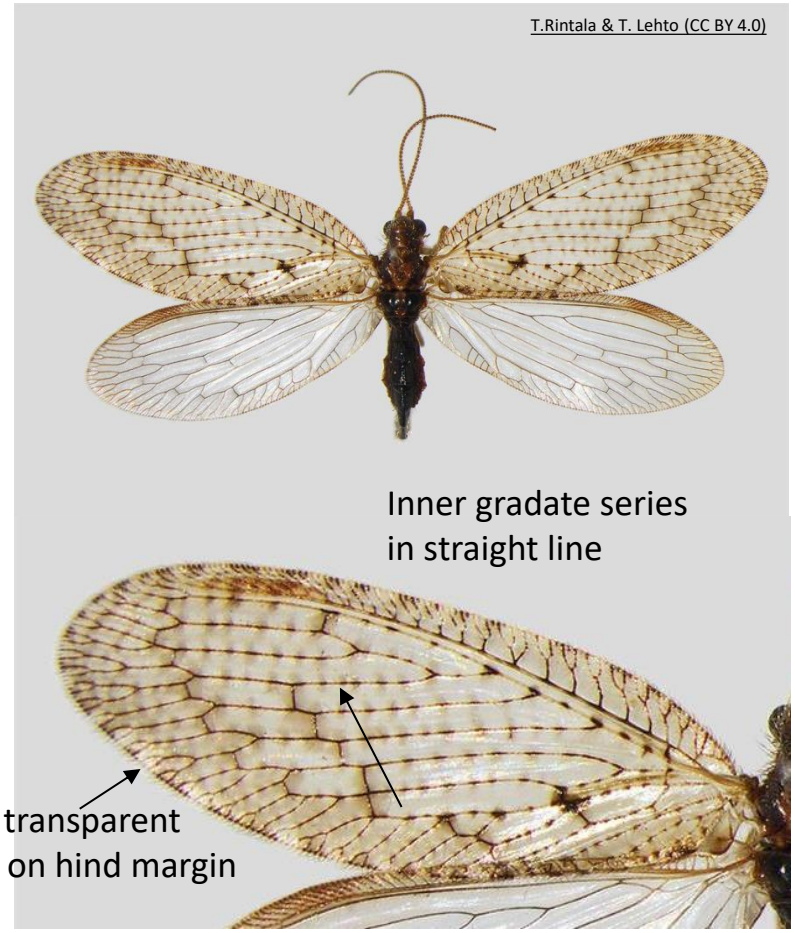
Plant, 1997

Internal male genitalia

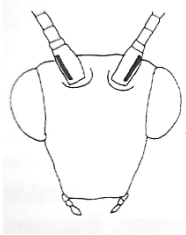
# Forewing hind margin shading not uniform


Not uniform some transparent areas

***H. simulans, H. perelegans, H. humulinus***

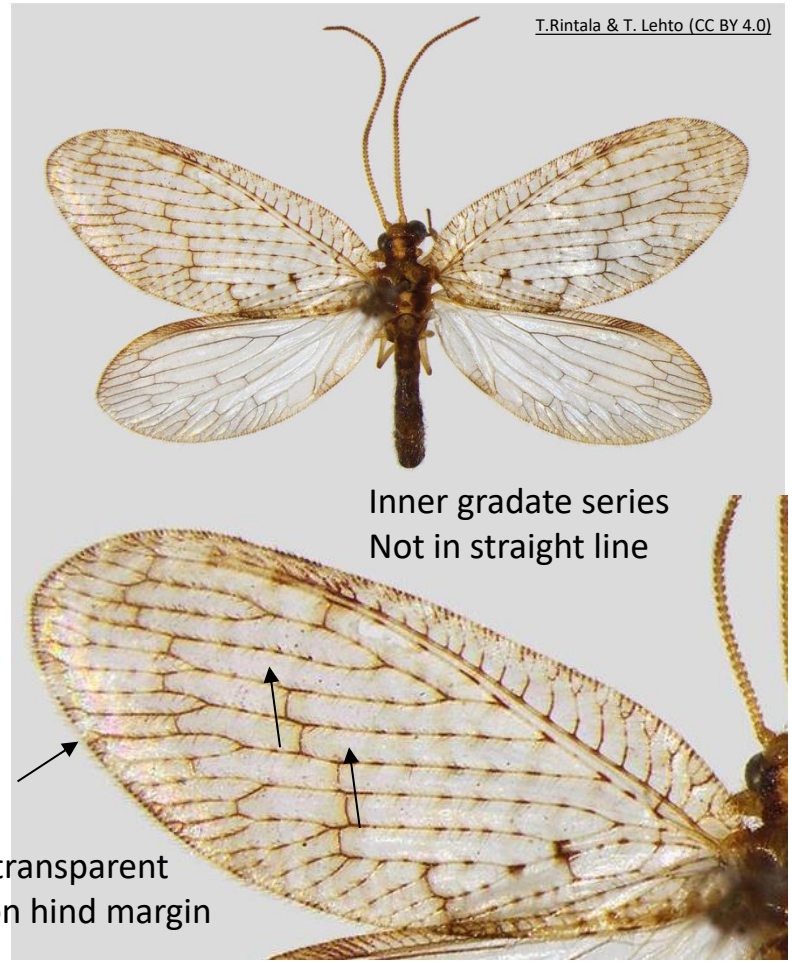



Wing span greater than 20 mm



Scape usually with dark stripe

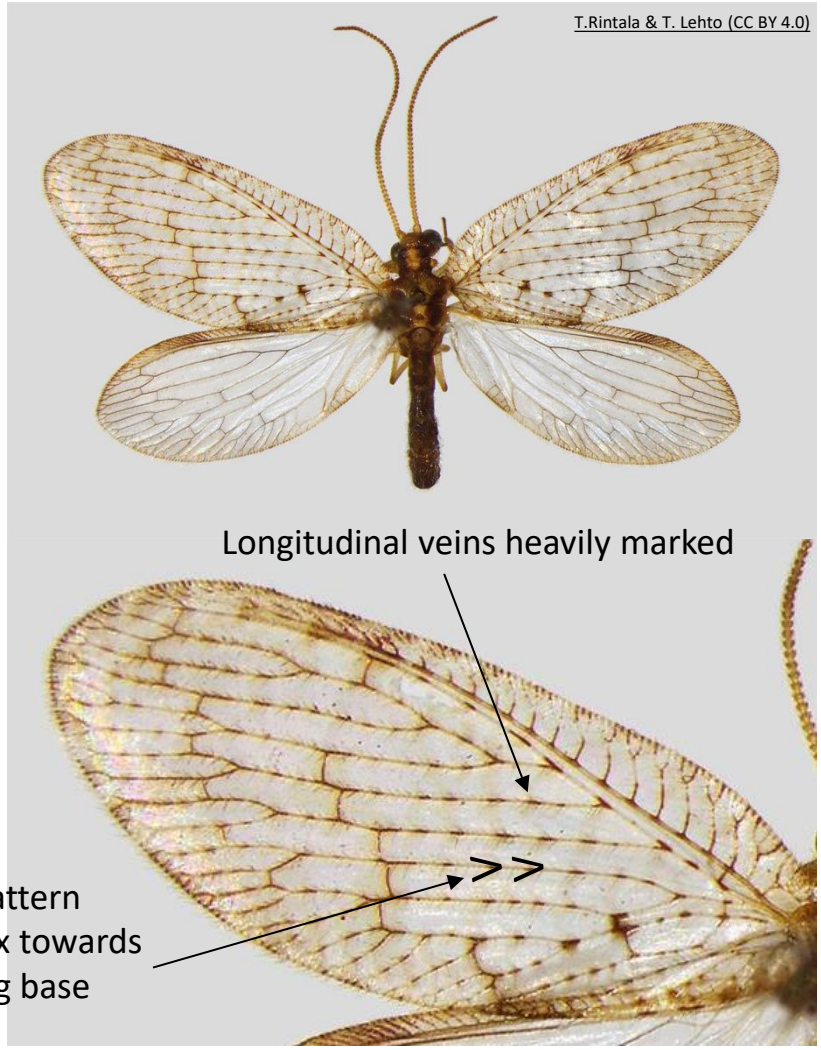
*Hemerobius simulans*




Wing span less than 18 mm
Scape without dark stripe

***H. perelegans, H. humulinus***

## *Hemerobius perelegans*

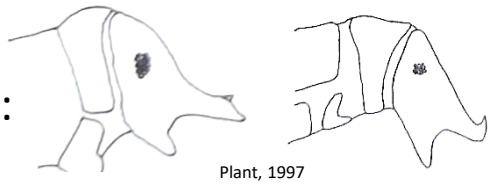



Red brown forewings

## *Hemerobius humulinus*


Pale forewings
Any V shape pattern pale and not standing out

Male genitalia:



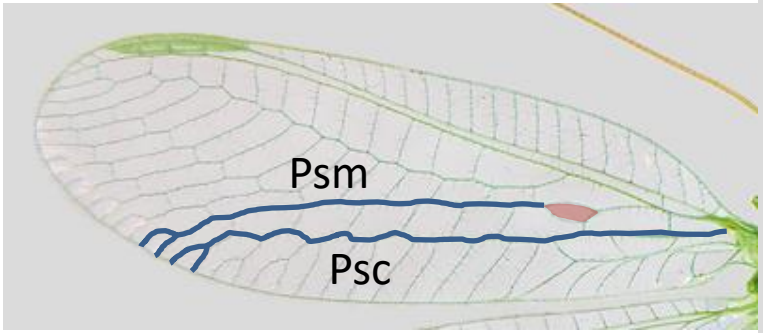
Plant, 1997

# Chrysopidae (Green Lacewings)

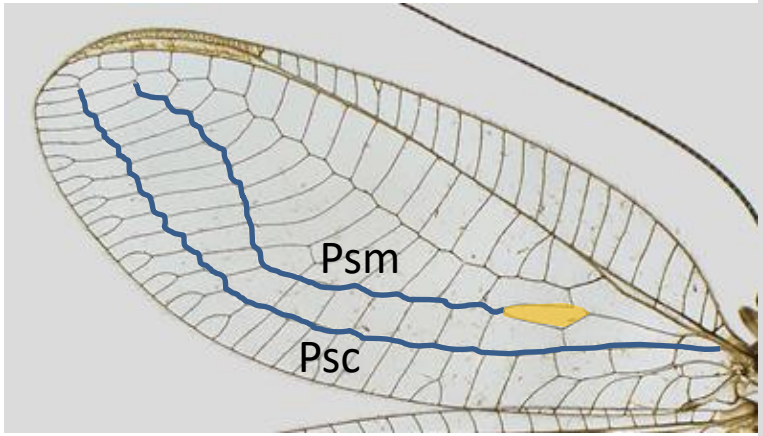
- Can be preserved as both pinned and in alcohol, usually pinned
- Can generally be identified without abdomen clearing or dissection


# Pseudomedia and Pseudocubitus

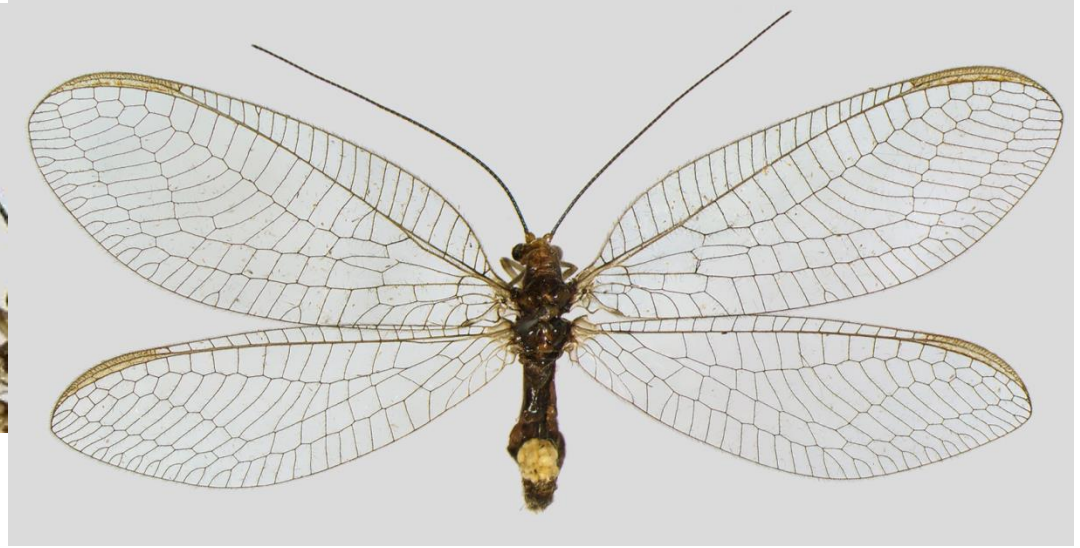
Psm = Pseudomedia
Psc = Pseudocubitus



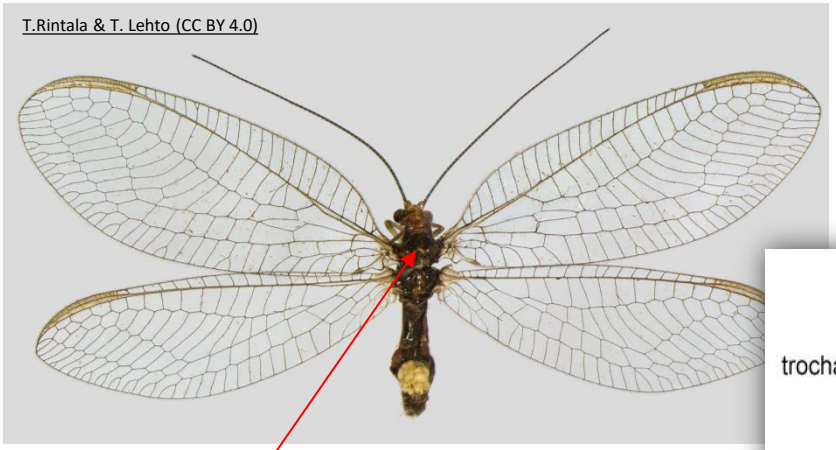

Other genera

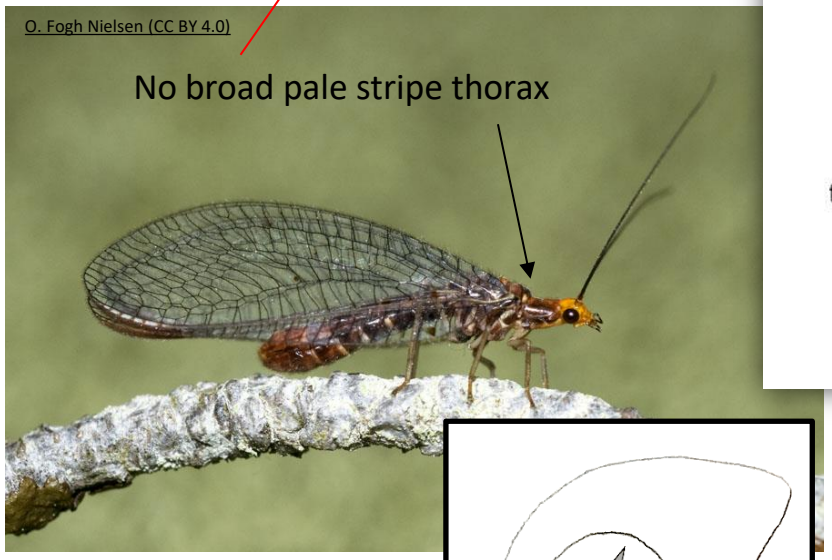



***Nothochrysa*** species

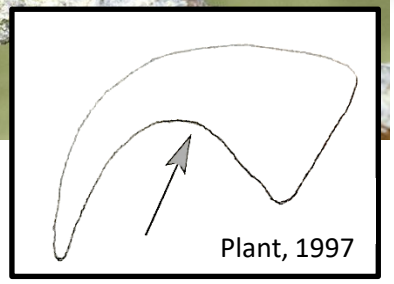


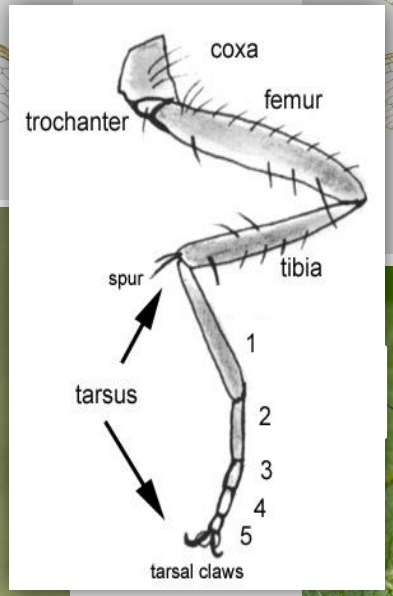
## *Nothochrysa capitata*



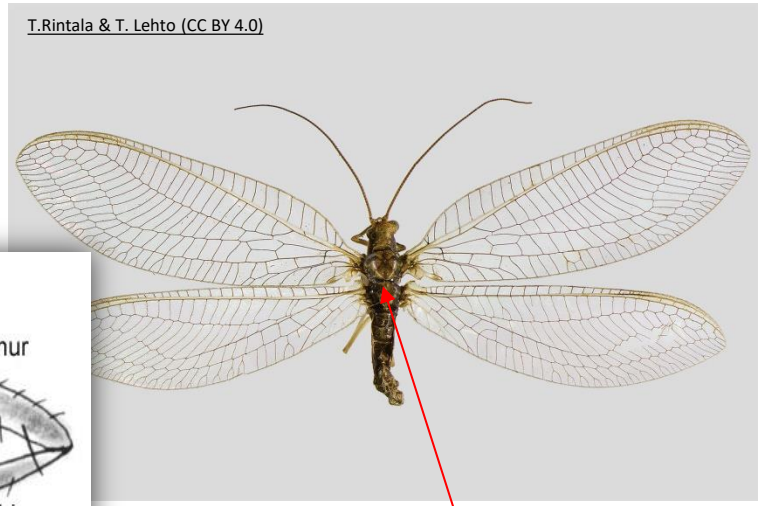



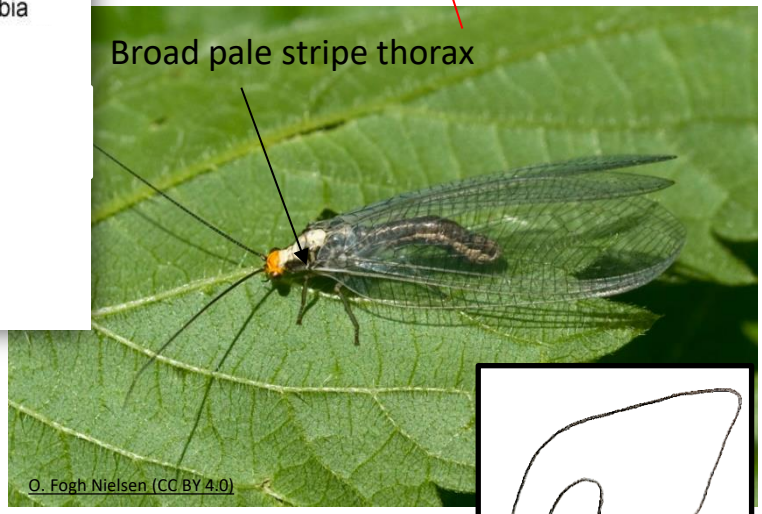

Tarsal claw simple



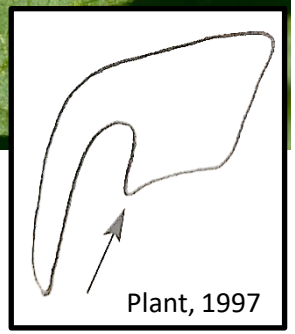




## *Nothochrysa fulviceps*

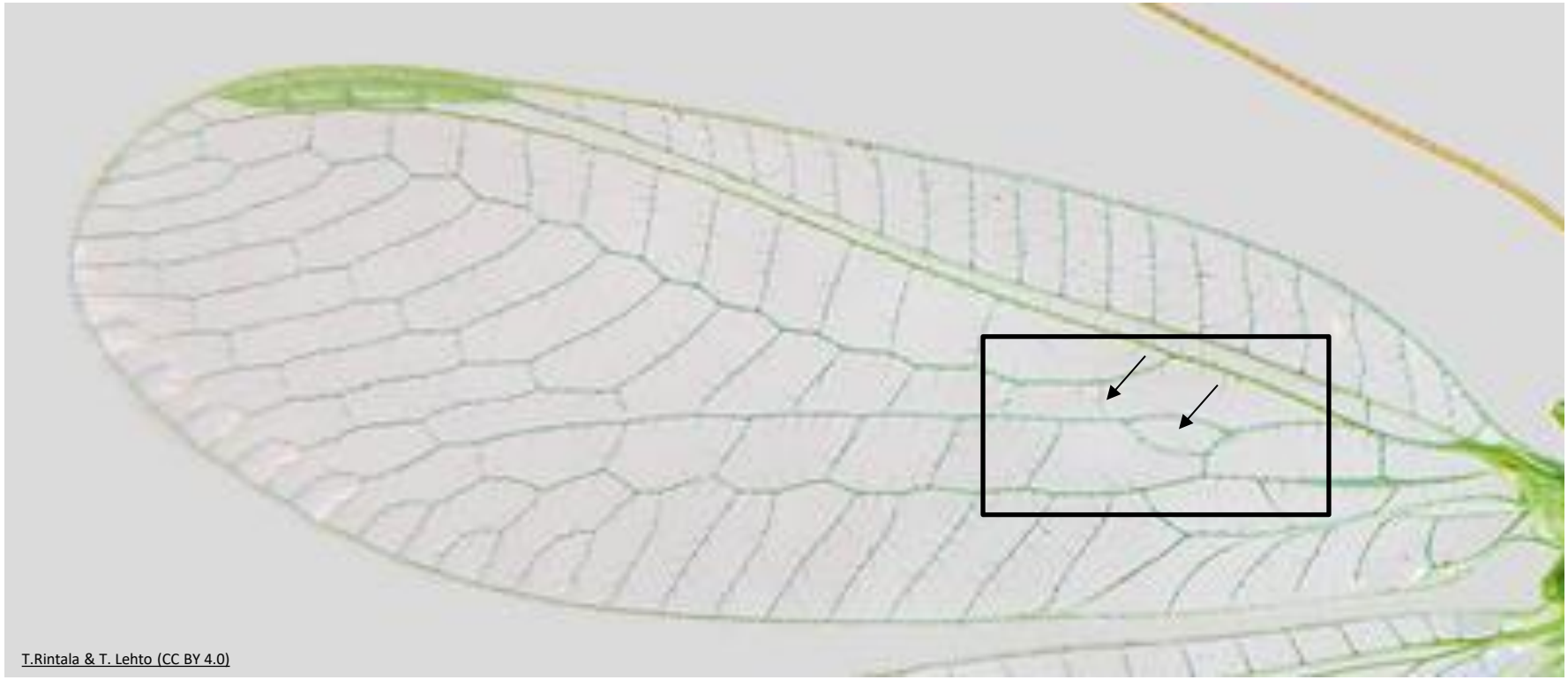



Tarsal claw with tooth

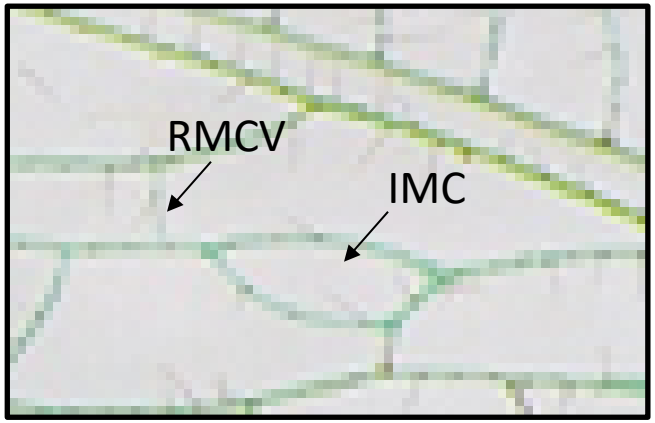


# Relationship of Intramedial cell and Radial-Media Crossvein





- Intermedial cell (IMC)
- Radial-Media crossvein (RMCV)



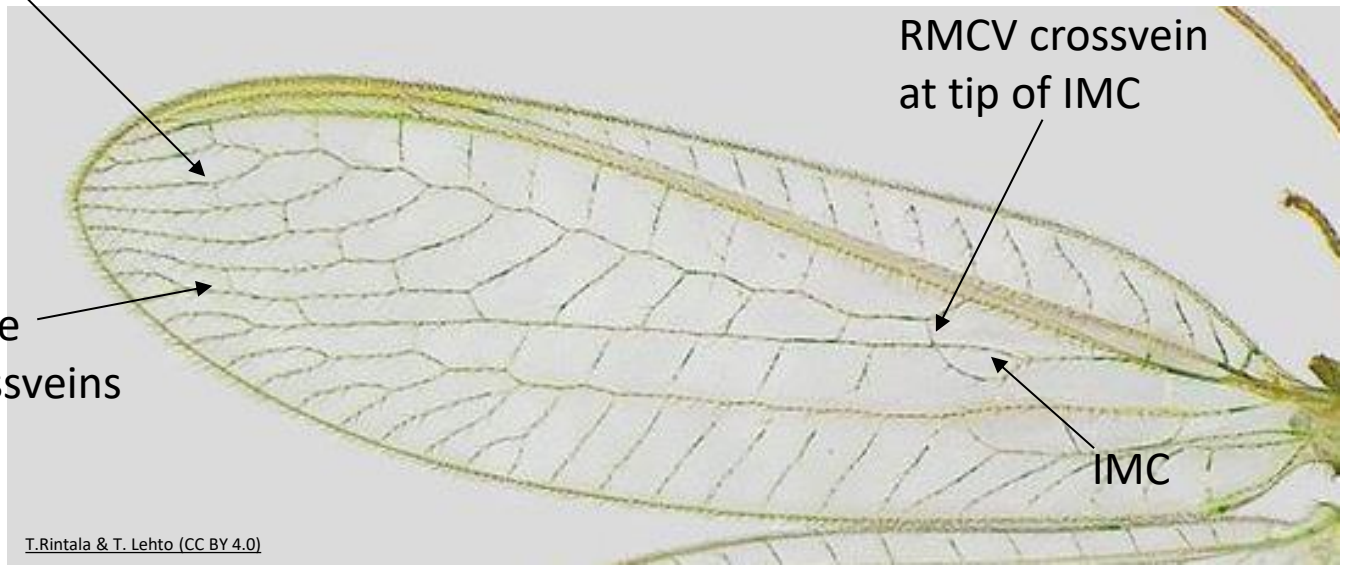
# *Peyerimhoffina gracilis*

Inner gradate series of crossveins with at least 2x as many as outer series



Inner gradate series of crossveins

Outer gradate series of crossveins



# ***Chrysoperla carnea*** group

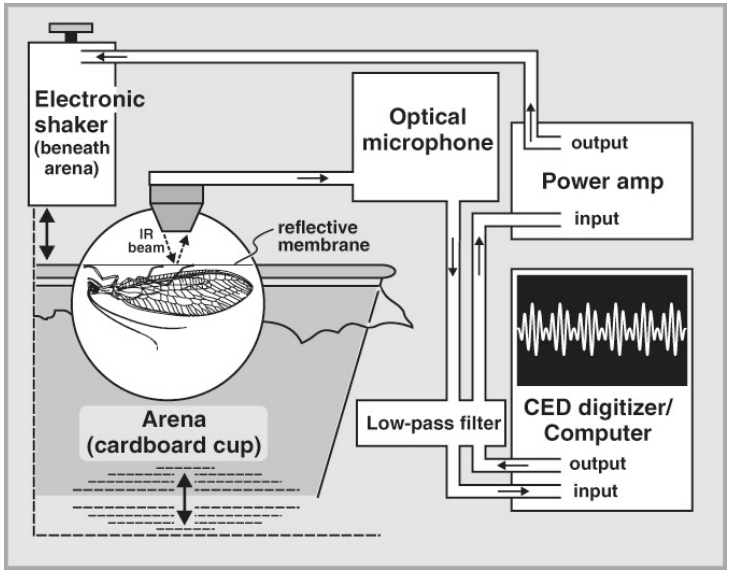
- *Chrysoperla carnea*
- *Chrysoperla lucasina*
- *Chrysoperla pallida*

T.Rintala & T. Lehto (CC BY 4.0)

O. Fogh Nielsen (CC BY 4.0)

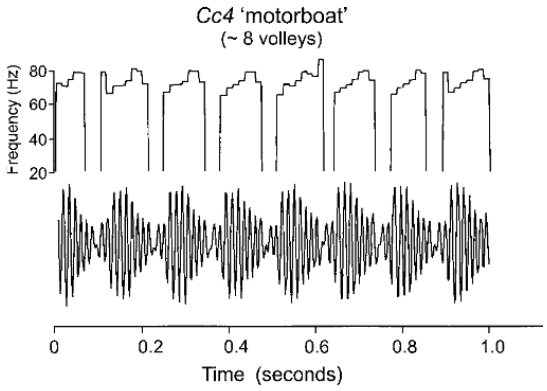
# Songs

- Substrate based song by abdominal vibration to attract a mate
- The abdomen doesn't strike the substrate – insect shakes the leaf or conifer needle which its standing on
- Travels around a metre at most

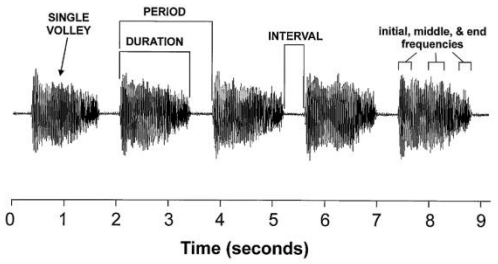



Henry et al. 2013

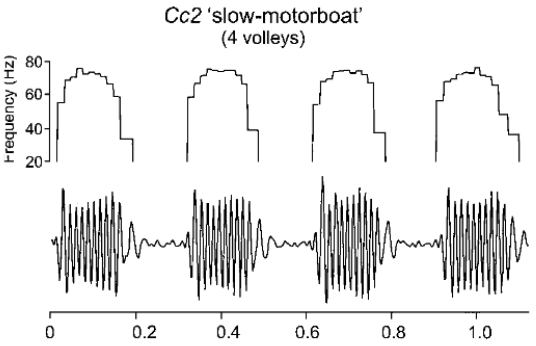
***Chrysoperla carnea***




***Chrysoperla lucasina***




***Chrysoperla pallida***



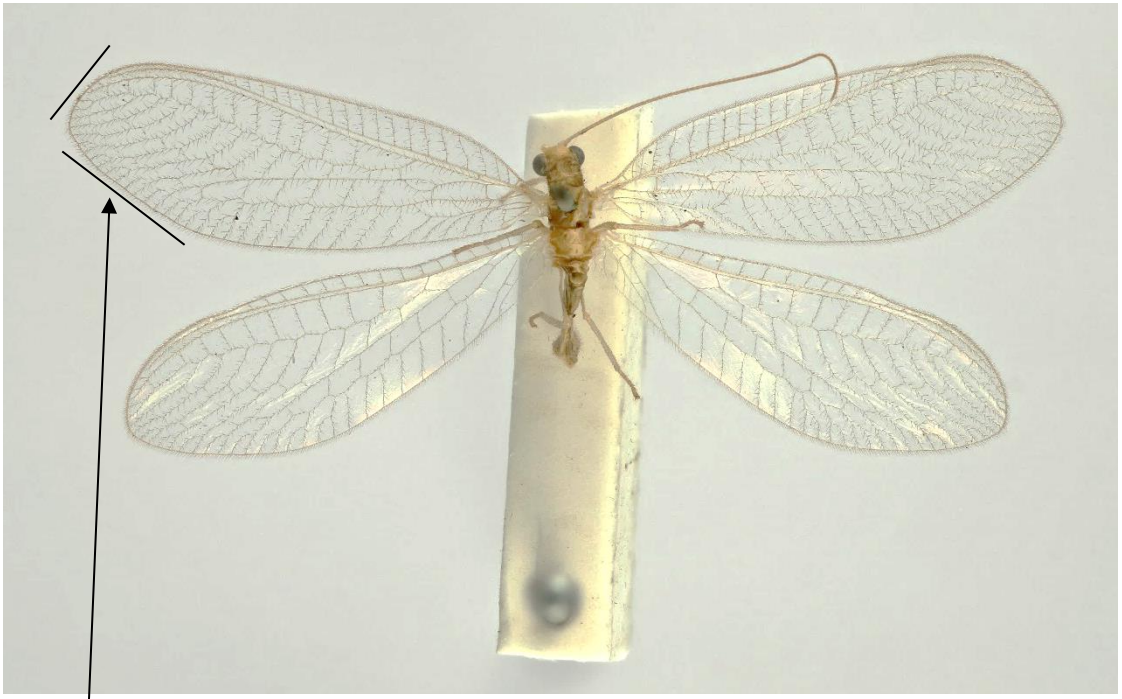

Henry et al. 2002

# *Chrysoperla carnea*

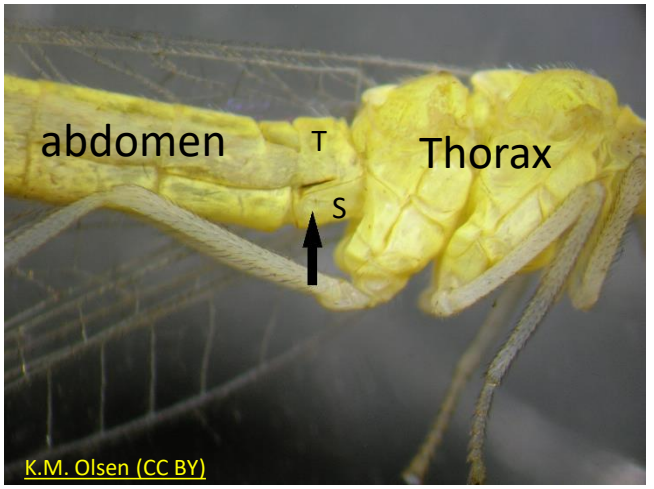

More rounded wing tip

Become brown for Autumn/Winter hibernation

# *Chrysoperla lucasina*

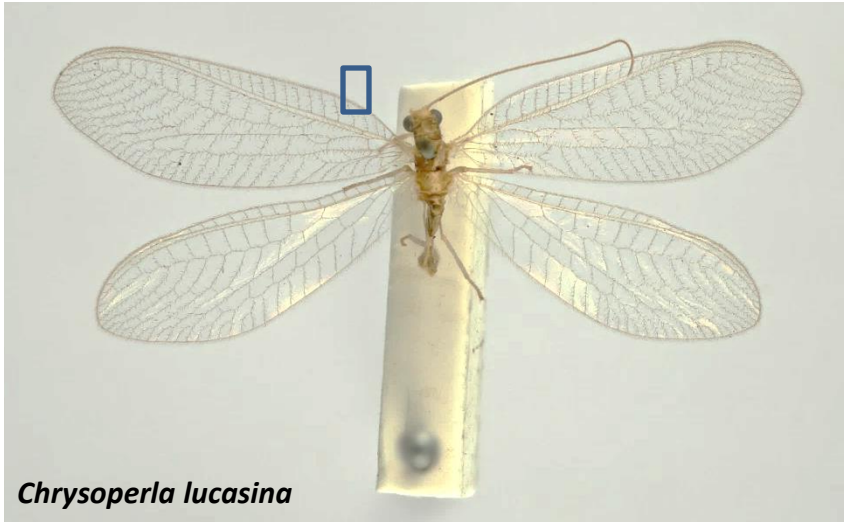


Wing tip appears more pointed

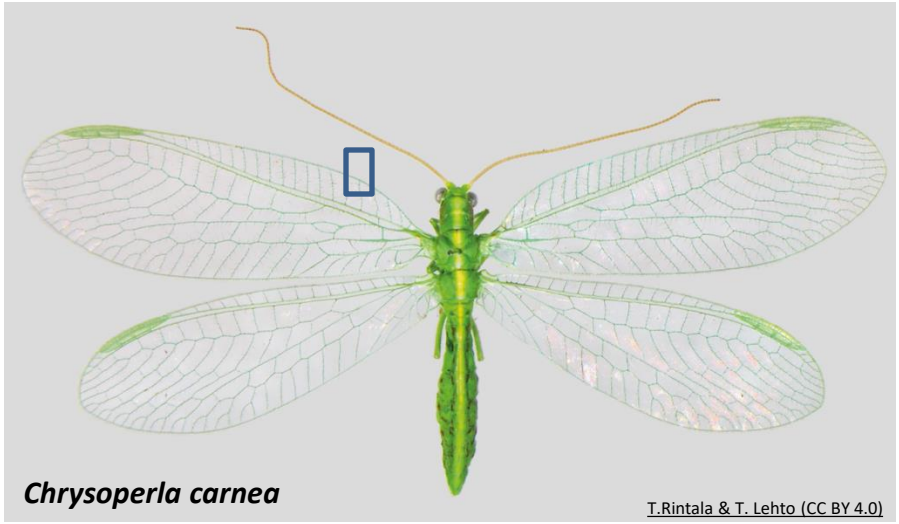



Brown line on membrane between first 1 or 2 tergite (upper) and sternite (lower).

Ignore any colour on tergite (T) and sternites (S).



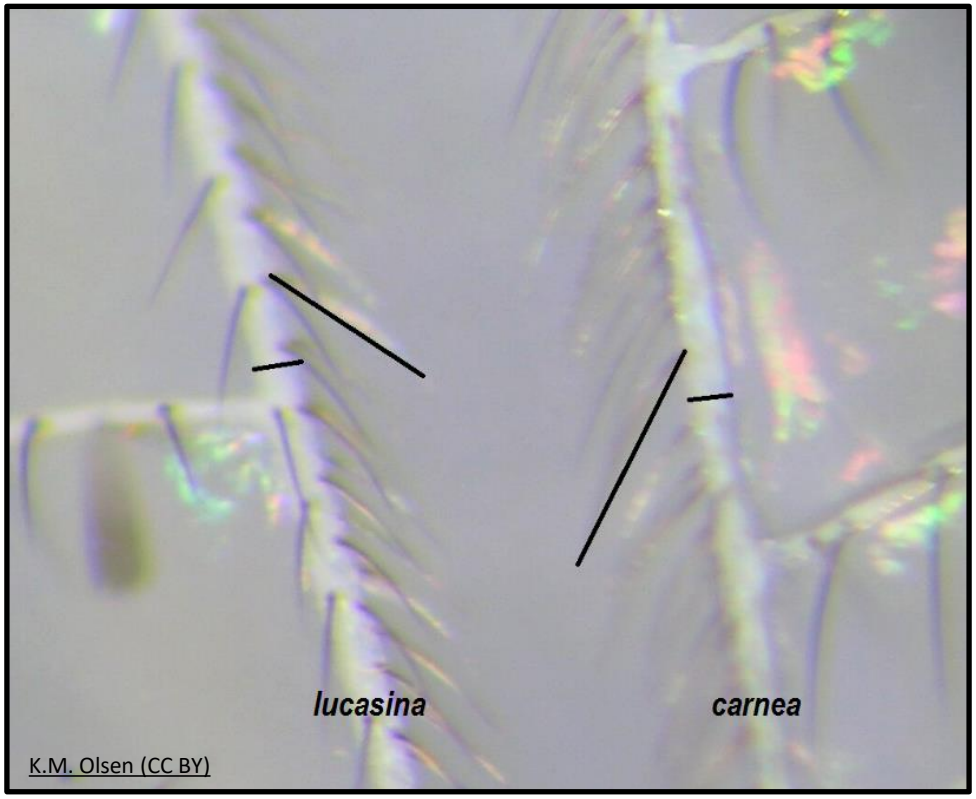
***Chrysoperla lucasina***



***Chrysoperla carnea***



Shorter hairs



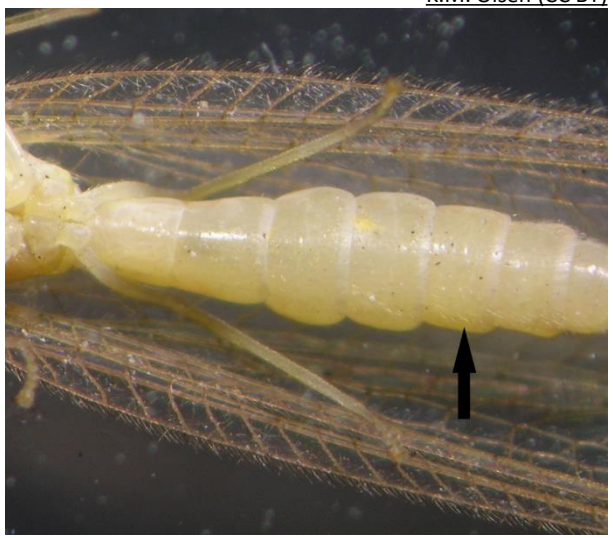



Longer hairs

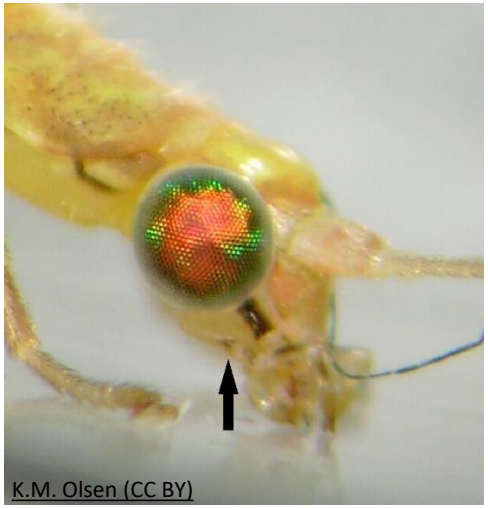
# *Chrysoperla pallida*

- A newly described species (described 2002)
- Identified from song and some morphological traits


K.M. Olsen (CC BY)

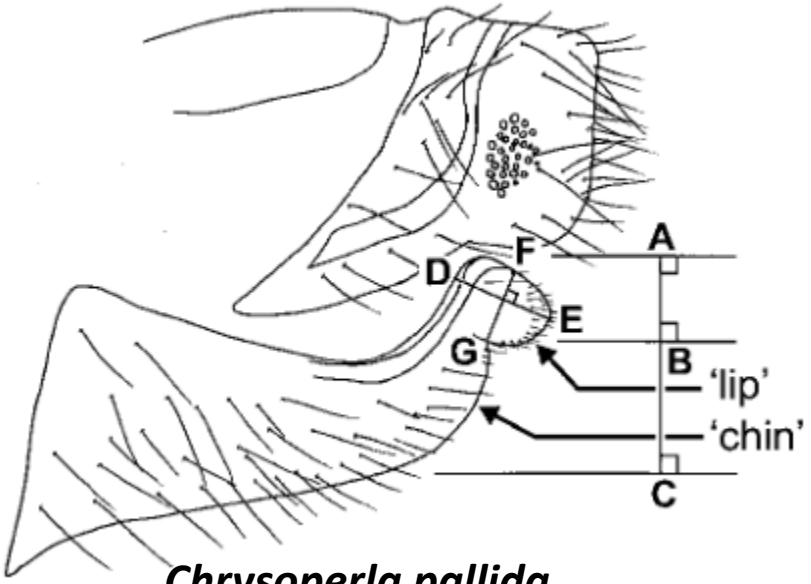


Abdomen with blond setae



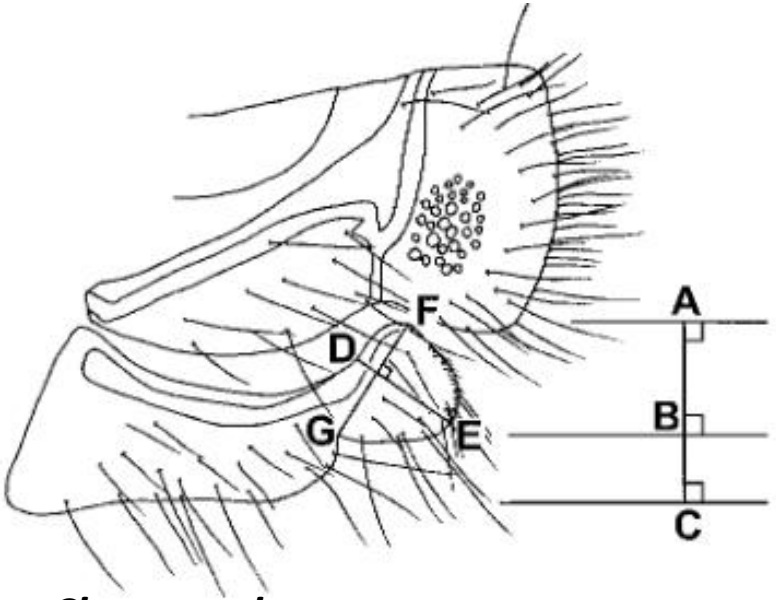

Narrow brown stripe on the cheek (gena) below the eyes

Lip short and narrow with short pale setae.
Chin broad




***Chrysoperla pallida***

Lip broader and more protuberant
and bears several long, coarse dark setae.
Chin narrow




***Chrysoperla carnea***

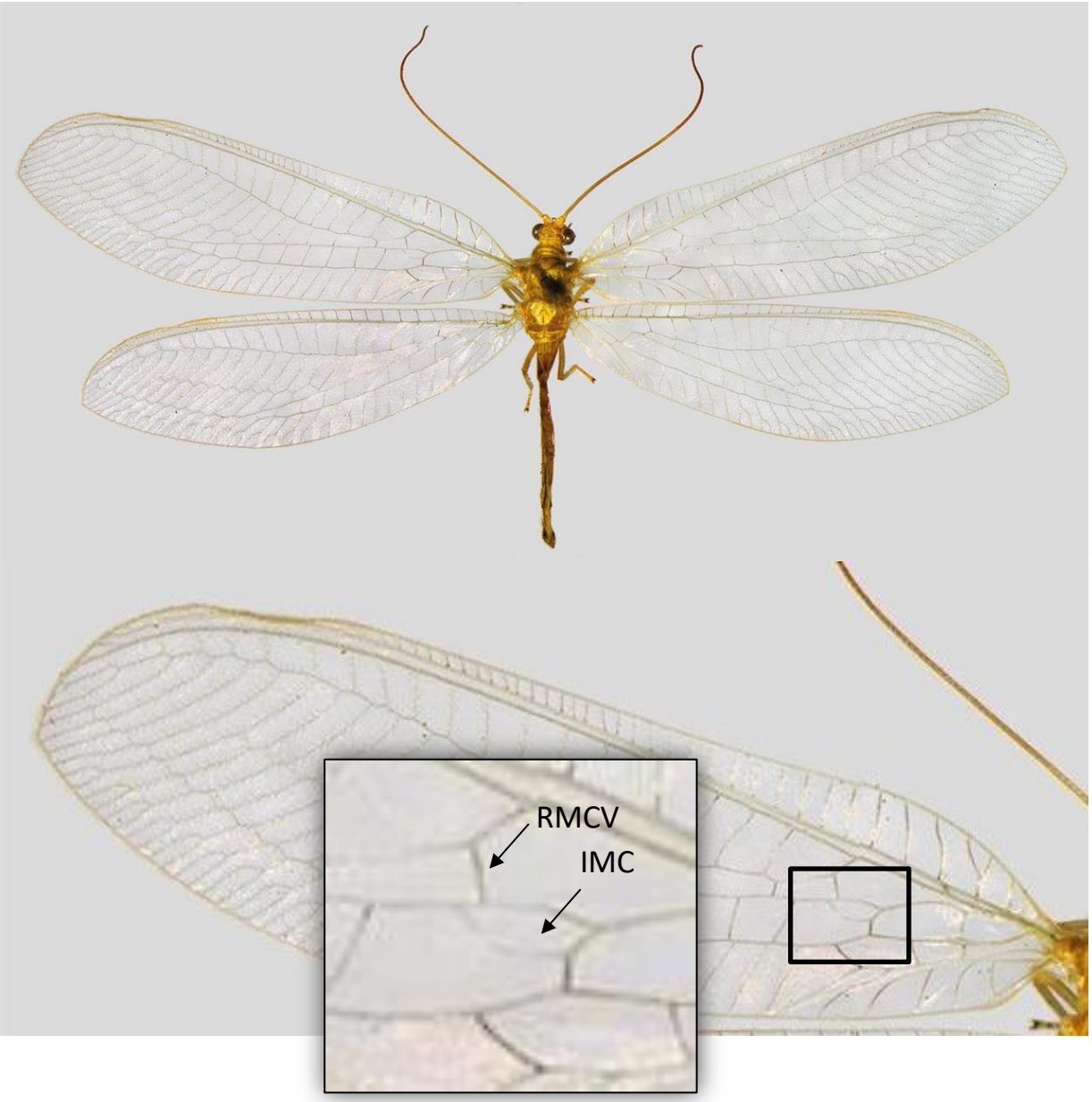
Terminus of male abdomen showing line segments AC, AB, DE, and FG used for calculating the ratios describing the shape of the genital "lip" and "chin".

**Narrow lip** = narrow and not protruding if DE>FG
**Broad chin** = if AB<BC

Henry et al. 2002

# If in doubt ……..

Record as ***Chrysoperla carnea*** group (agg.)

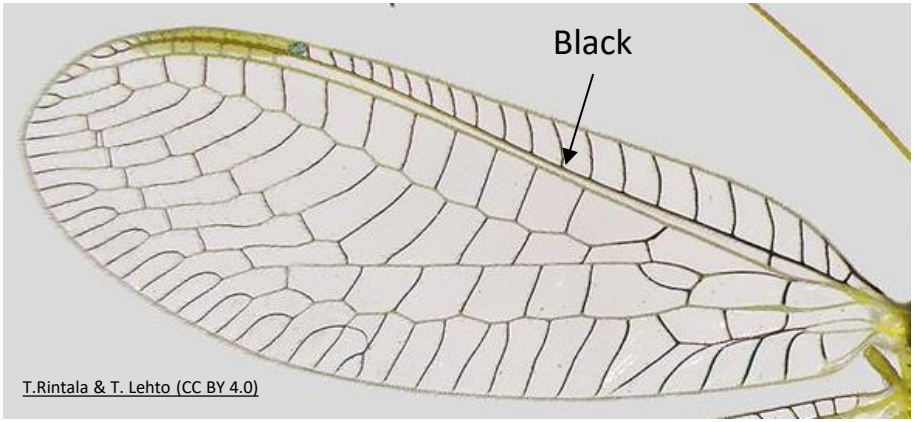



- *Chrysopa dorsalis*
- *Chrysopa perla*
- *Chrysopa commata*
- *Chrysopa abbreviata*
- *Chrysopa phyllochroma*
- *Chrysopa pallens*
- *Apertochrysa ventralis*
- *Apertochrysa prasina*
- *Apertochrysa flavifrons*
- *Nineta vittata*
- *Nineta flava*
- *Nineta inpunctata*
- *Nineta pallida*
- *Chrysopidia ciliata*
- *Cunctochrysa albolineta*
- *Cunctochrysa cosmia*

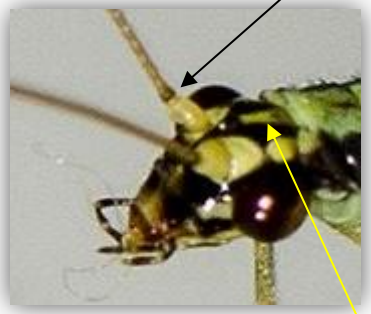
# Vein Sc black or green

**Black:**

*Chrysopa dorsalis*

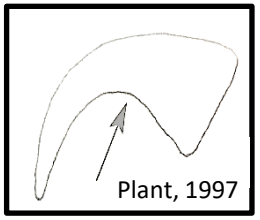



Second antennal segment (pedicel) black



Head with extensive black markings

Small pale elongate area on top of head

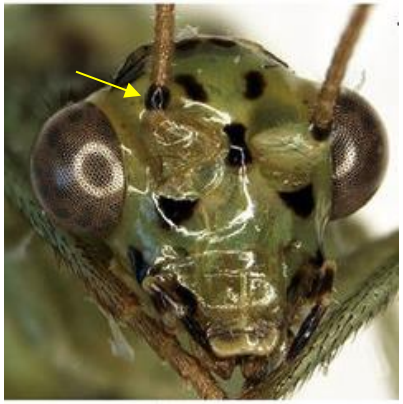



Tarsal claw simple

**Green:**

***Chrysopa perla***
***Chrysopa commata***
***Chrysopa abbreviata***
***Chrysopa phyllochroma***
***Chrysopa pallens***
***Apertochrysa ventralis***
***Apertochrysa prasina***
***Apertochrysa flavifrons***
***Nineta vittata***
***Nineta flava***
***Nineta inpunctata***
***Nineta pallida***
***Chrysopidia ciliata***
***Cunctochrysa albolineta***
***Cunctochrysa cosmia***

# Second antennal segment: black or green



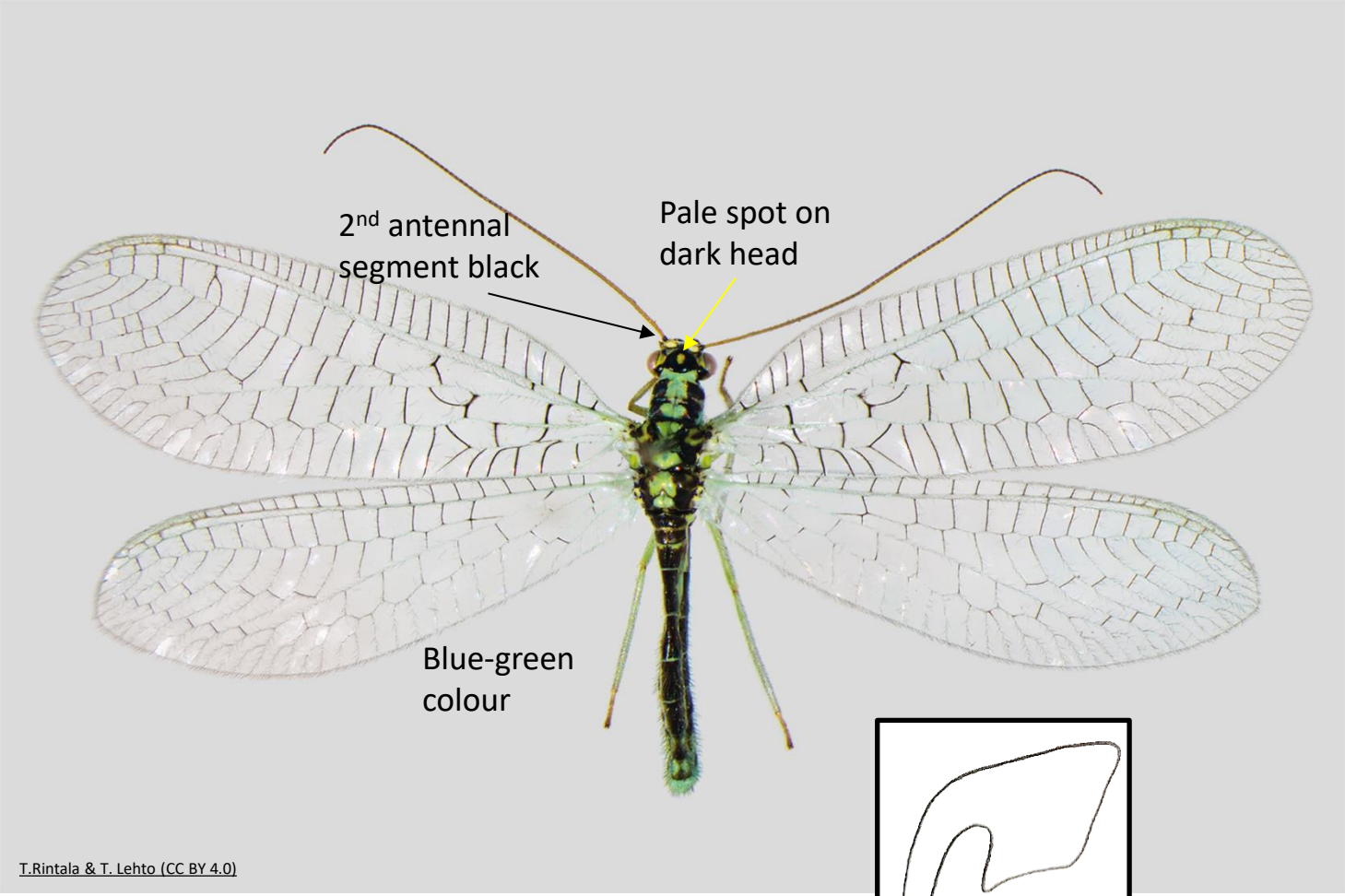
Second antennal segment black

***Chrysopa perla***
***Chrysopa commata***
***Chrysopa abbreviata***
***Chrysopa phyllochroma***

Second antennal segment green

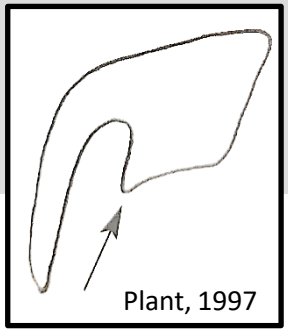
*Chrysopa pallens*
*Apertochrysa ventralis*
*Apertochrysa prasina*
*Apertochrysa flavifrons*
*Nineta vittata*
*Nineta flava*
*Nineta inpunctata*
*Nineta pallida*
*Chrysopidia ciliata*
*Cunctochrysa albolineta*
*Cunctochrysa cosmia*

# *Chrysopa perla*






Tarsal claw with tooth

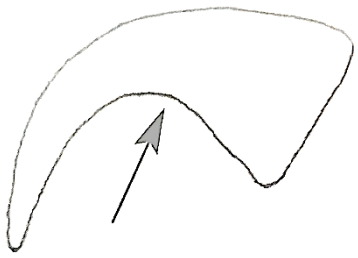


# *Chrysopa commata*

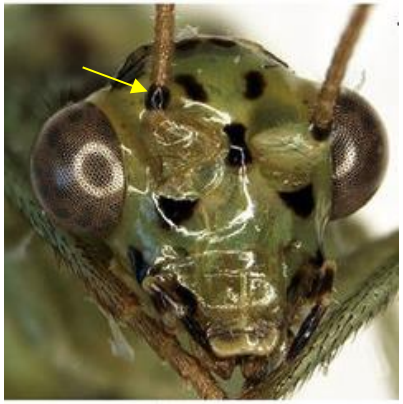
O. Fogh Nielsen (CC BY 4.0)

T.Rintala & T. Lehto (CC BY 4.0)

Sutures on thorax black



Tarsal claw simple



Second antennal segment black

Discrete spots on the head

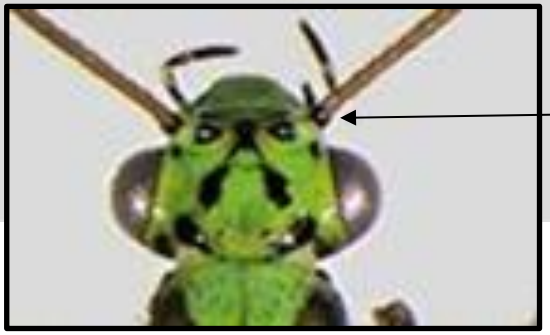
Plant, 1997

Dobosz et al. 2019

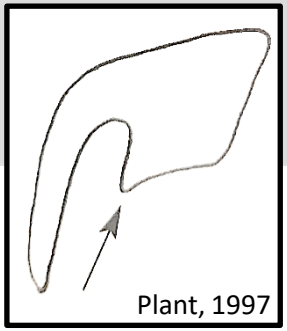
# *Chrysopa abbreviata*



Discrete spots on head



Second antennal segment black



Tarsal claw with tooth

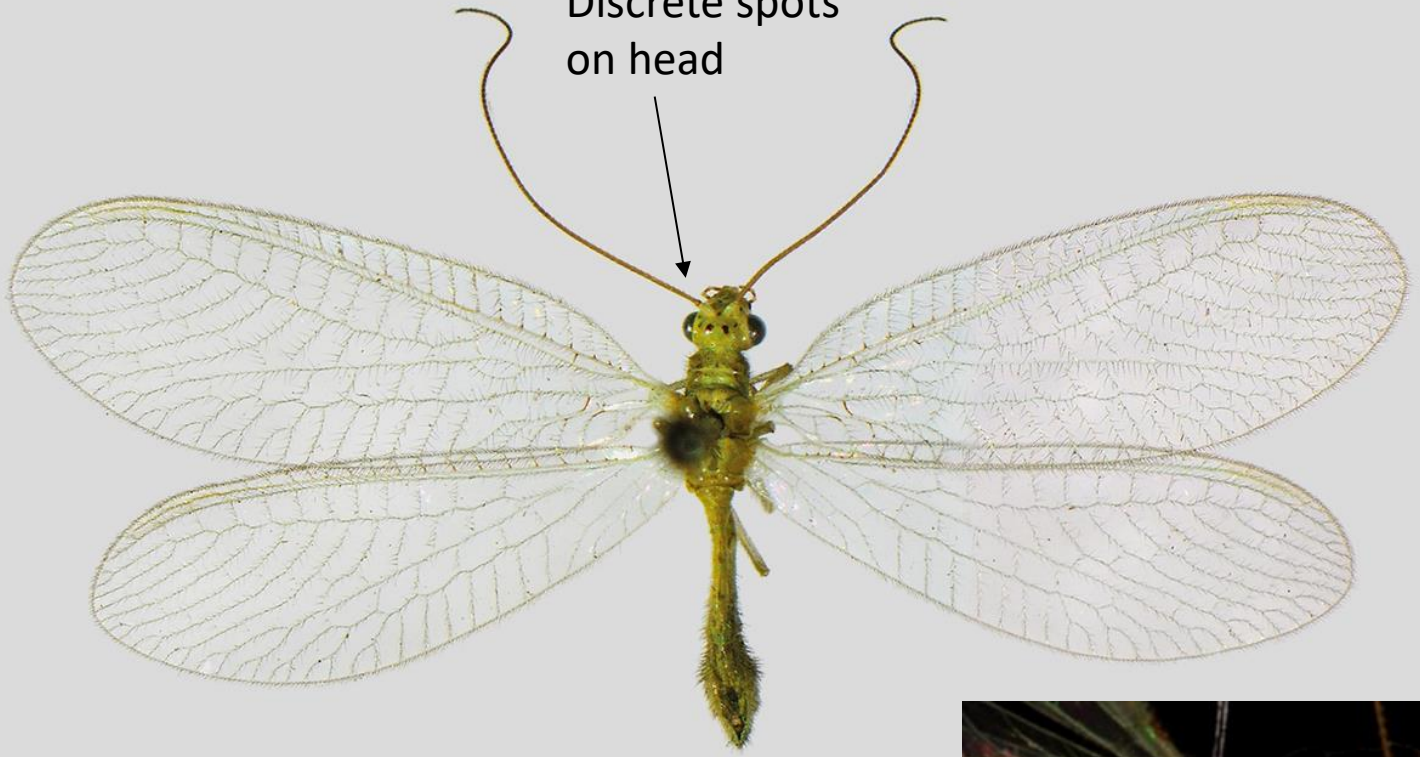
Plant, 1997

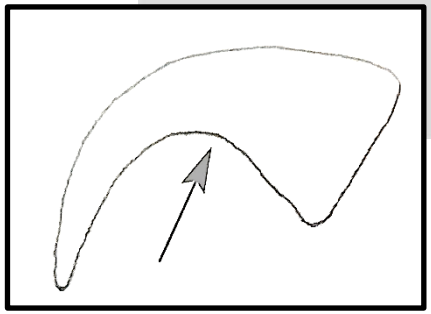
# *Chrysopa phyllochroma*

2nd antennal segment black



Discrete spots on head





Tarsal claw simple

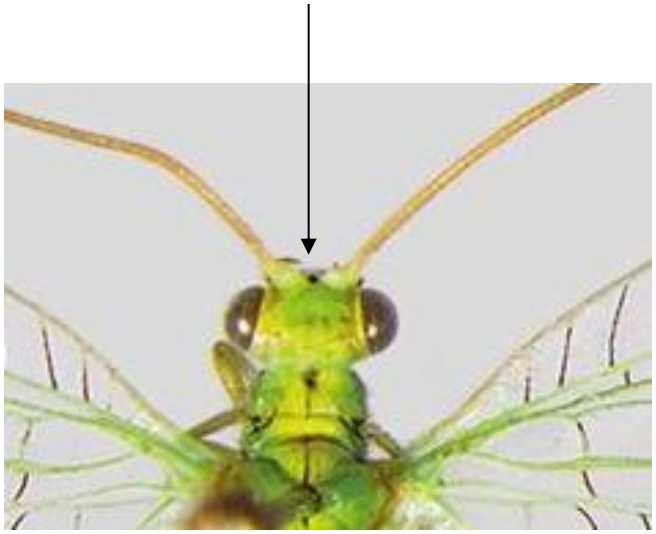
Side of thorax green no dark lines

Duelli et al. 2016

Second antennal segment green

***Chrysopa pallens***
***Apertochrysa ventralis***
***Apertochrysa prasina***
***Apertochrysa flavifrons***
***Nineta vittata***
***Nineta flava***
***Nineta inpunctata***
***Nineta pallida***
***Chrysopidia ciliata***
***Cunctochrysa albolineta***
***Cunctochrysa cosmia***

# Black spot between the antennae





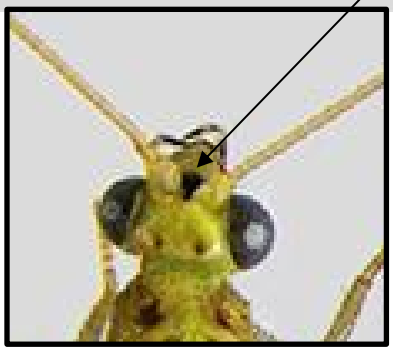
***Apertochrysa ventralis***
***Apertochrysa prasina***
***Chrysopa pallens***

# ***Apertochrysa ventralis*** (=*Dichochrysa ventralis*)



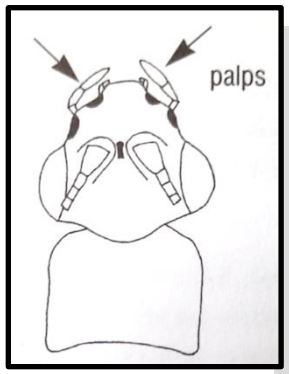
Under surface of abdomen glossy black

Black spot Between antennae



T.Rintala & T. Lehto (CC BY 4.0)

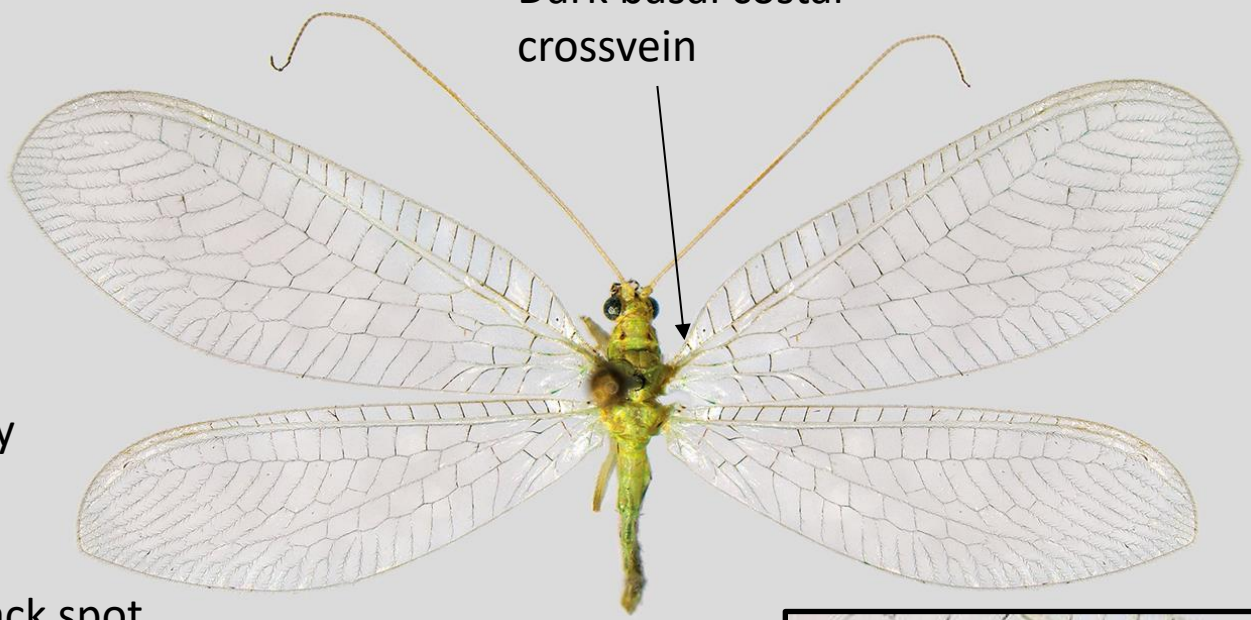
# ***Apertochrysa prasina*** (=*Dichochrysa prasina*)




3-5 spots on head

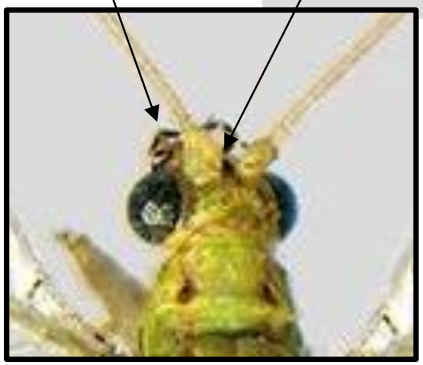


Dark basal costal crossvein

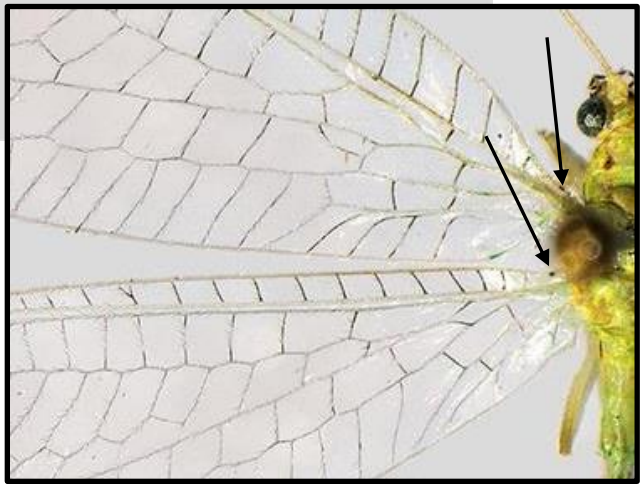


Palps ringed with black (appear entirely black in dried Specimens)

Black spot between antennae



Dark spot at base of Costa



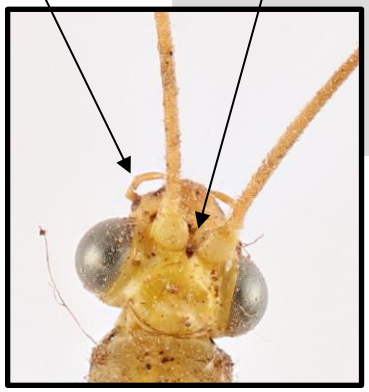
# *Chrysopa pallens*

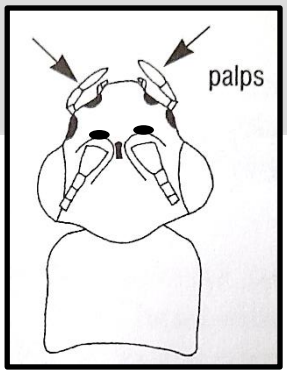


Basal costal crossvein green

Palps green
or brown-green
never black

Black spot
between antennae






7 spots on head

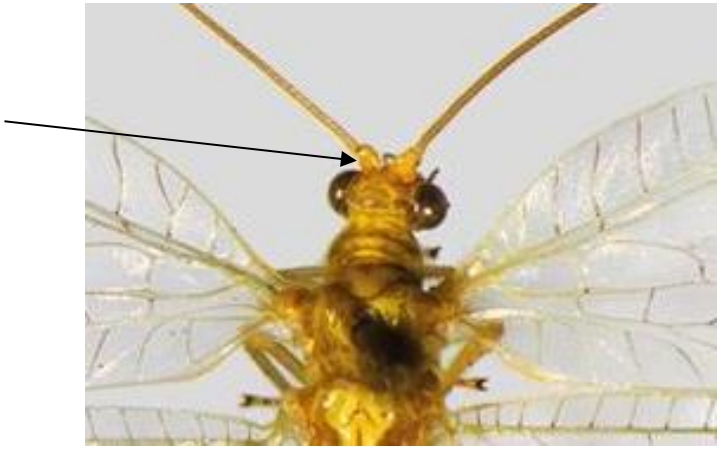
# No black spot between the antennae



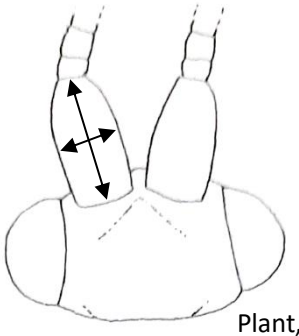
***Apertochrysa flavifrons***
***Nineta vittata***
***Nineta flava***
***Nineta inpunctata***
***Nineta pallida***
***Chrysopidia ciliata***
***Cunctochrysa albolineta***
***Cunctochrysa cosmia***

# Antennal scape

T.Rintala & T. Lehto (CC BY 4.0)



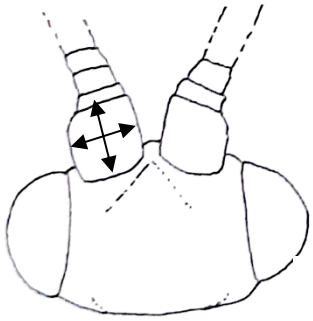
T.Rintala & T. Lehto (CC BY 4.0)



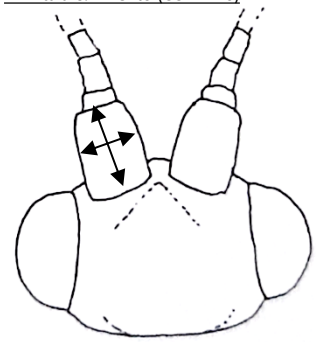
Plant, 1997

Twice as long as wide

*Nineta vittata*



More or less square



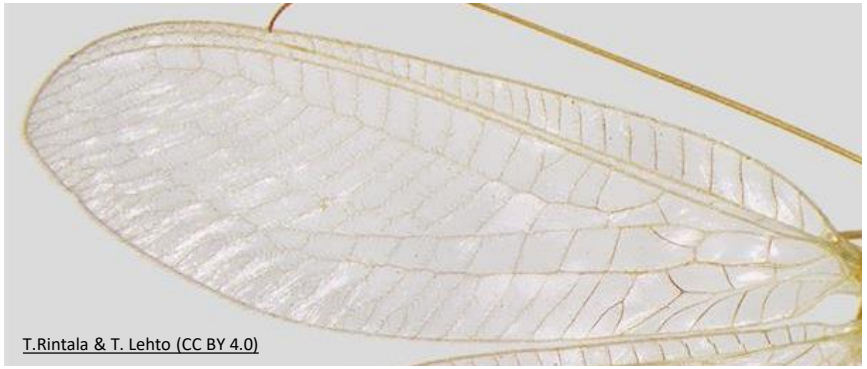
Plant, 1997

Slightly longer than wide

***Nineta flava***
***Nineta inpunctata***
***Apertochrysa flavifrons***
***Chrysopidia ciliata***
***Cunctochrysa albolineata***
***Cunctochrysa bellifontensis***

# Wing length and costal margin

Straight




Concave or straight


Forewing *less than* 16 mm
Costal margin straight *NEVER* concave

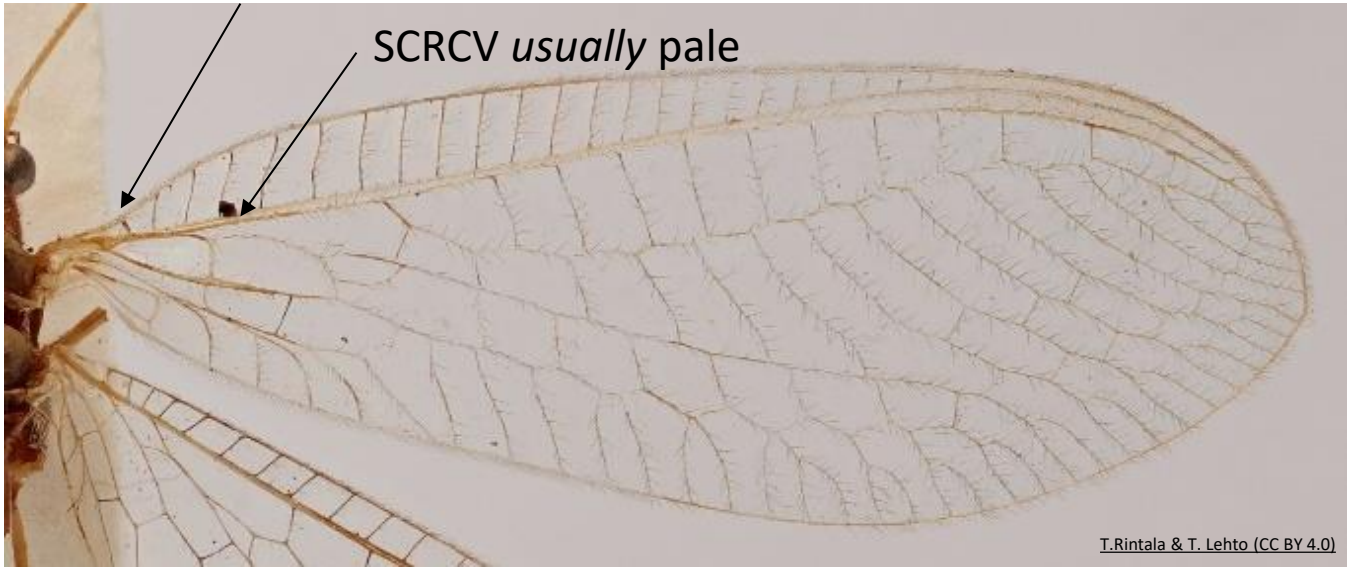
***Apertochrysa flavifrons***
***Cunctochrysa cosmia***
***Cunctochrysa albolineata***
***Chrysopidia ciliata***

Forewing 16 mm or *greater*
Costal margin straight or concave

*Nineta flava*
*Nineta pallida*
*Nineta inpunctata*

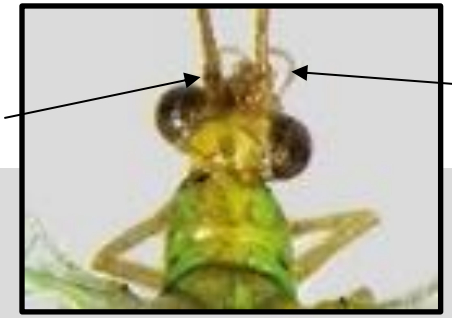
# Colour of basal costal crossvein and SCRCV


***Cunctochrysa albolineata***
***Chrysopidia ciliata***



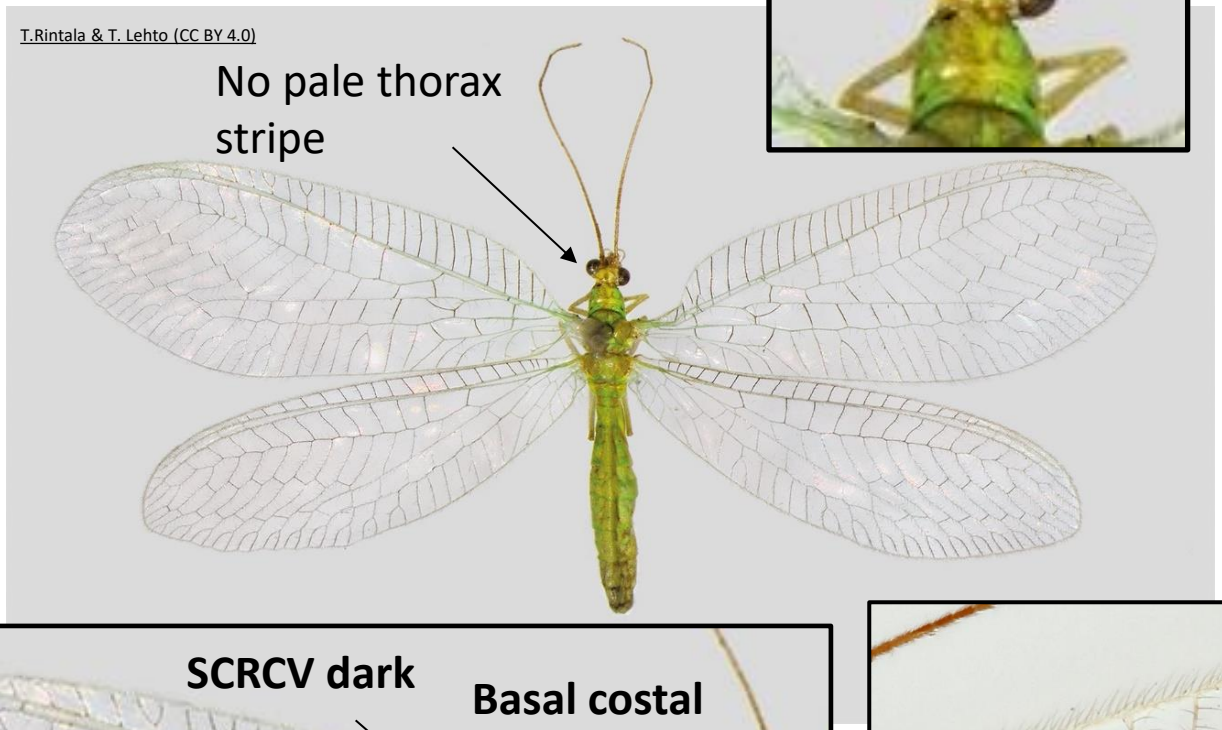

*Apertochrysa flavifrons*
*Cunctochrysa cosmia*

# *Chrysopidia ciliata*

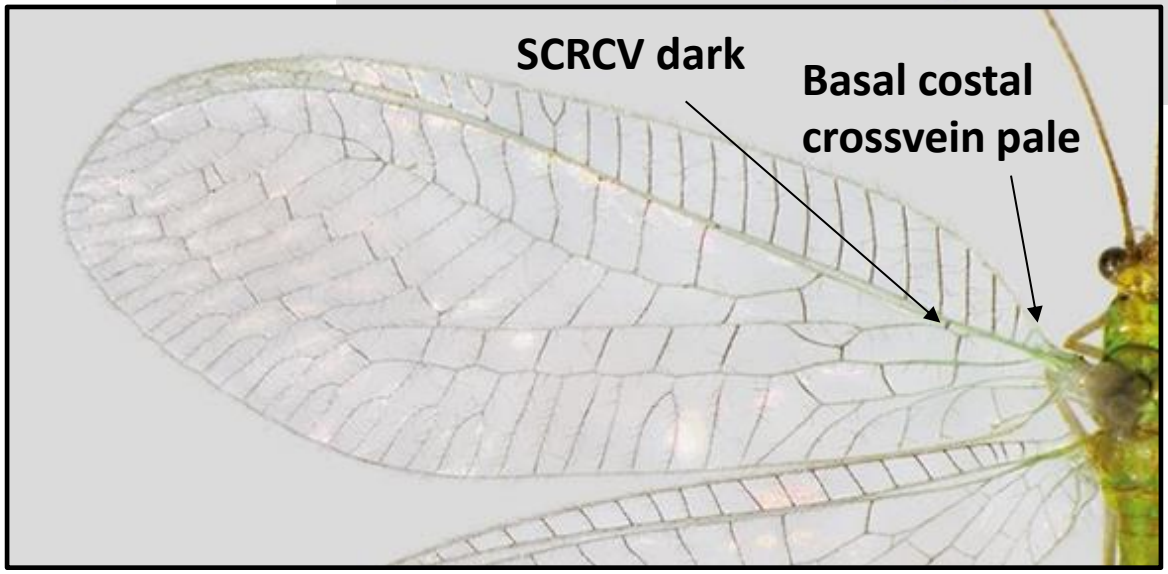


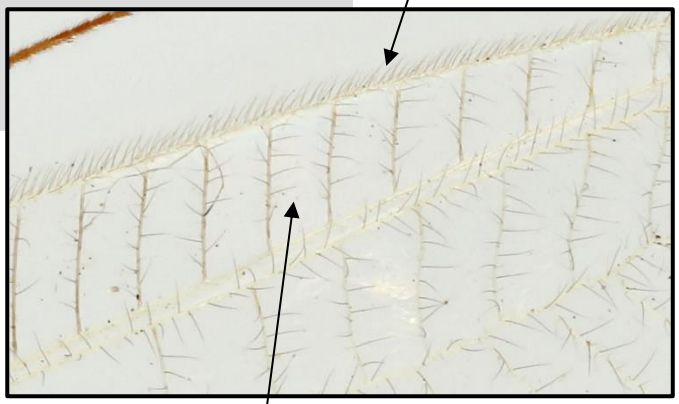
Square scape

Palps pale



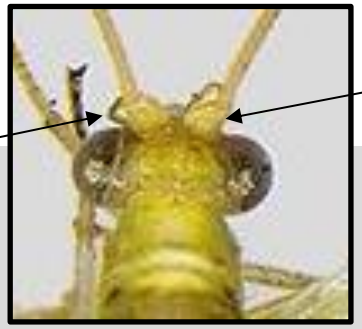

Hairs on Costa 7 or 8 times long as width of Costa



Hairs on Costal crossveins often longer than ½ width of cell pointing in both directions, overlapping

# *Cunctochrysa albolineata*



Square scape

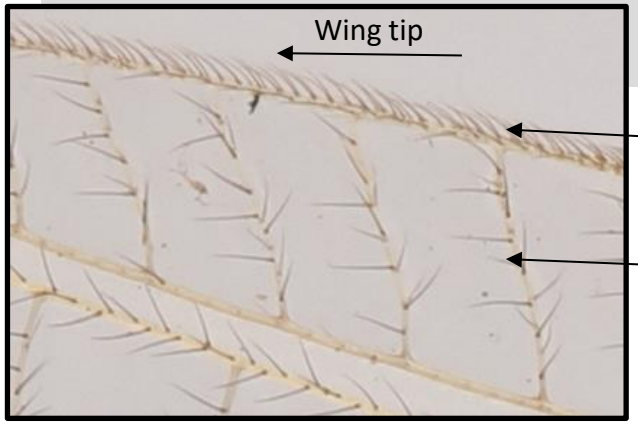
Palps dark on outer face

Usually pale stripe on thorax

**Basal costal crossvein pale**

**SCRCV dark**

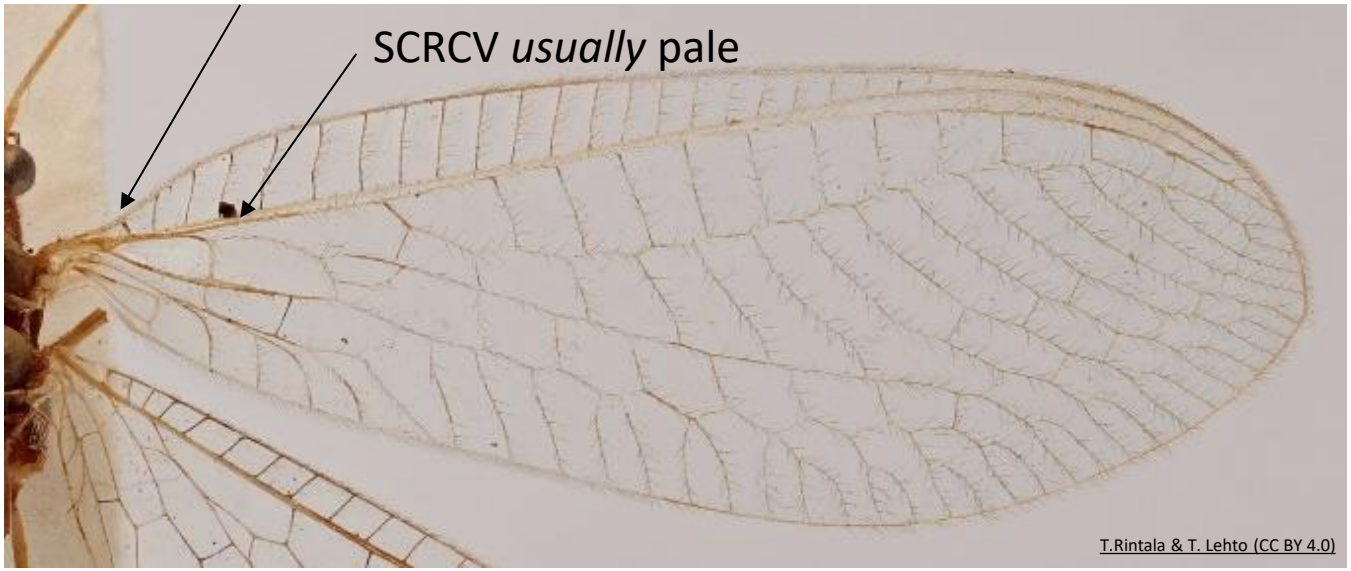
T.Rintala & T. Lehto (CC BY 4.0)




Hairs on Costa 2 or 3 times long as width of Costa

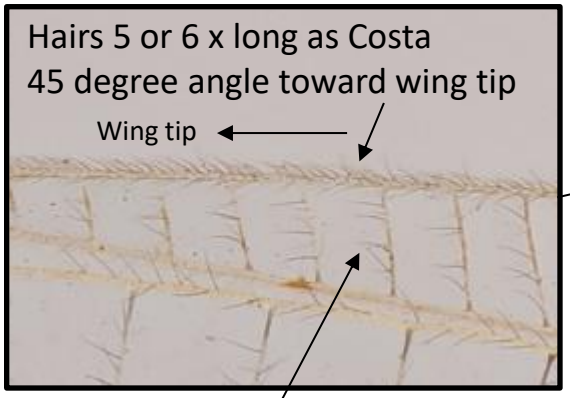
Hairs on costal veins pointing towards wing tip
Around 1/3 length of cell

# Colour of basal costal crossvein and SCRCV

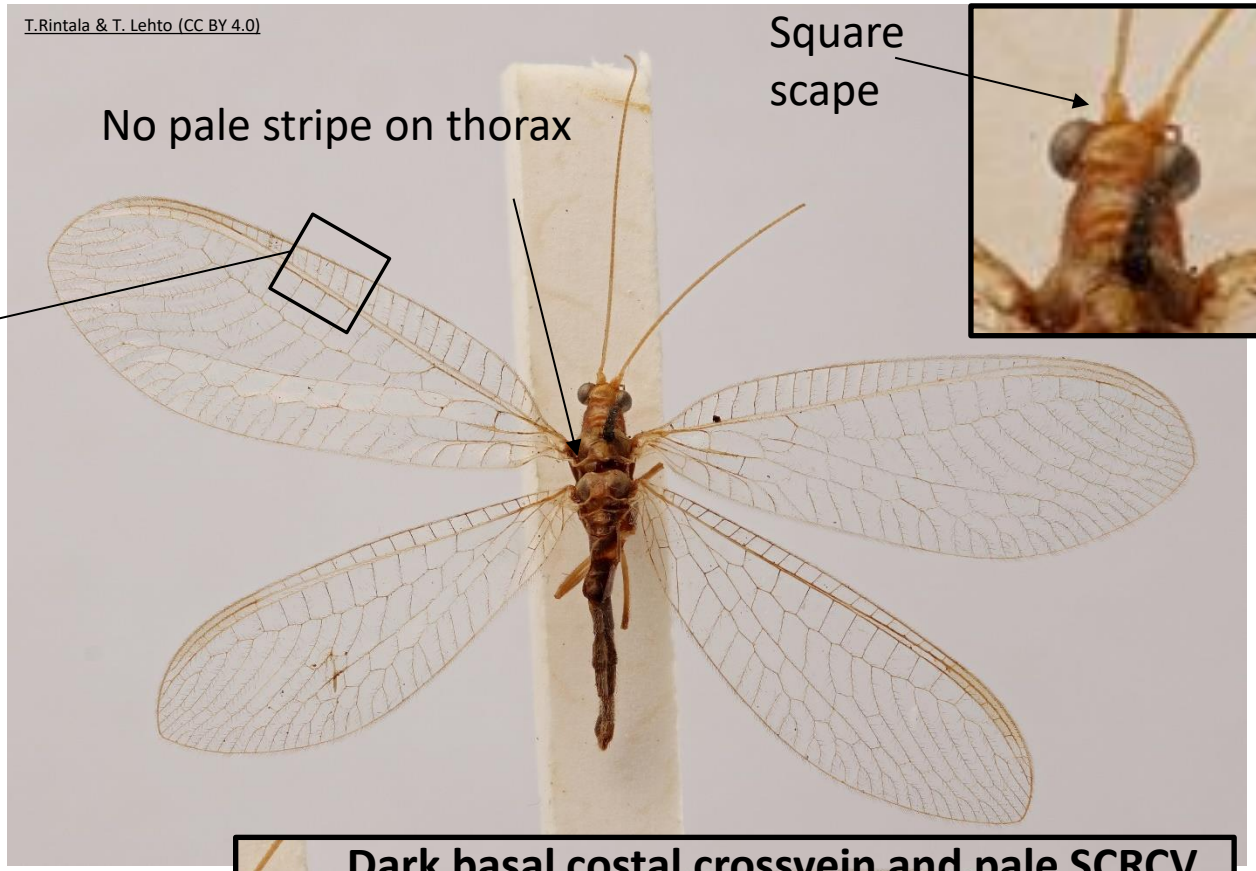



*Apertochrysa flavifrons*
*Cunctochrysa cosmia*

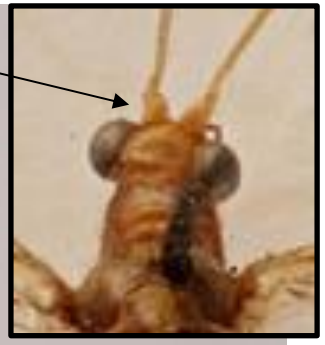
# ***Apertochrysa flavifrons*** (=*Dichochrysa flavifrons*)



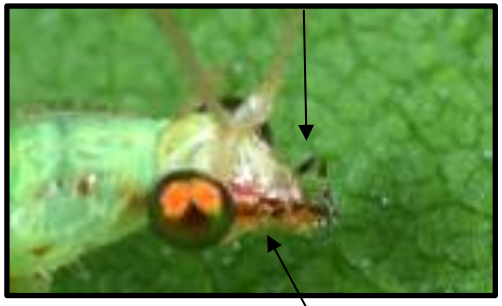

Hairs on costal crossveins
do not quite reach half way
Most point towards wing tip




Square scape

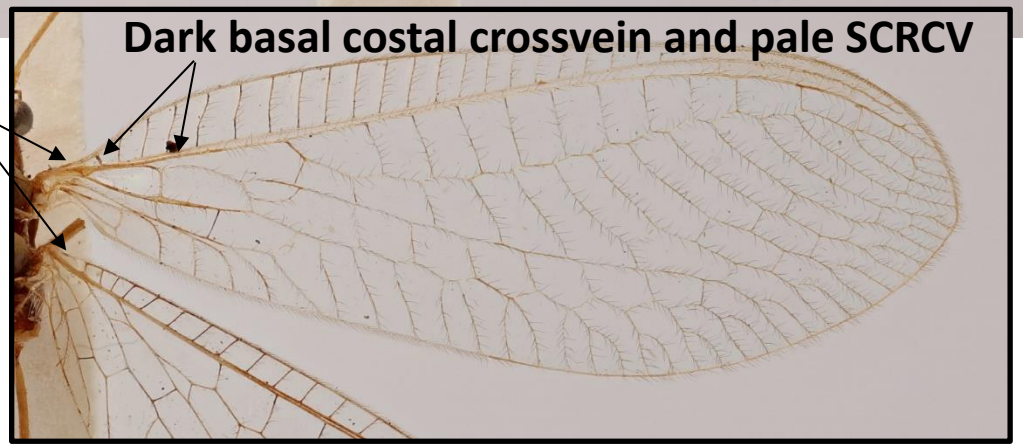


Palps ringed black

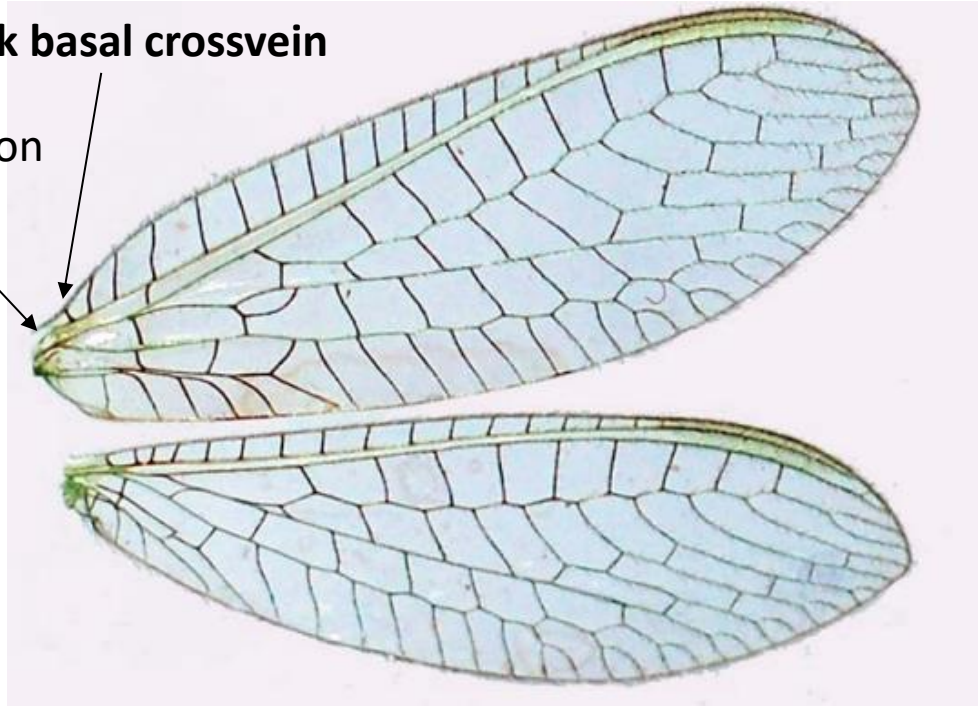


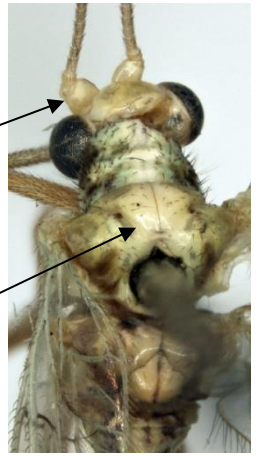
Red-Brown spots on side of face

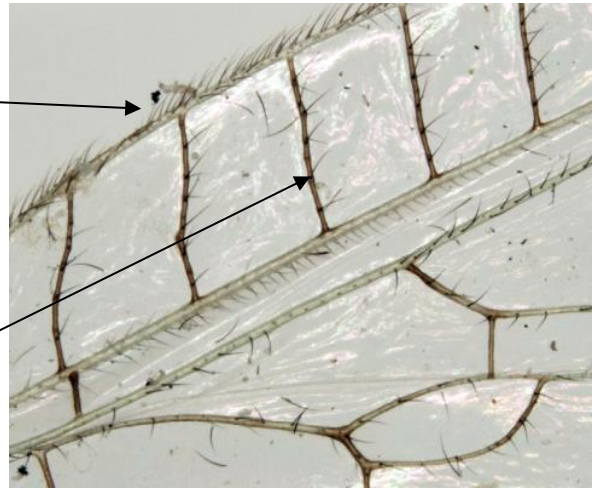
Dark spot on base of Costa

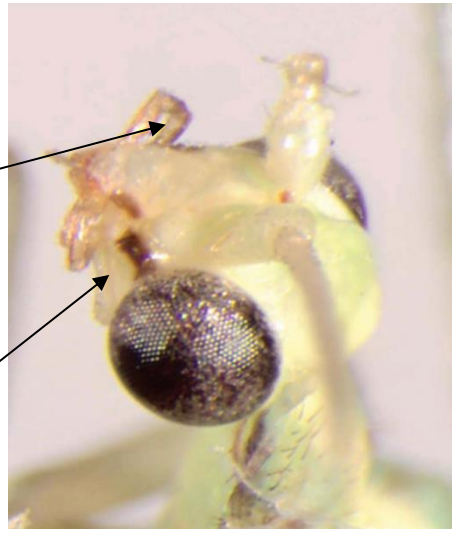


# *Cunctochrysa cosmia*




Dobosz & Junkiert 2018

Concave or straight

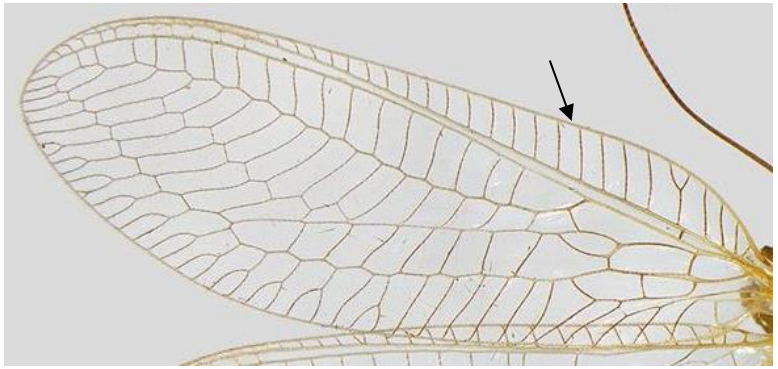



Forewing 16 mm or greater
Costal margin straight or concave

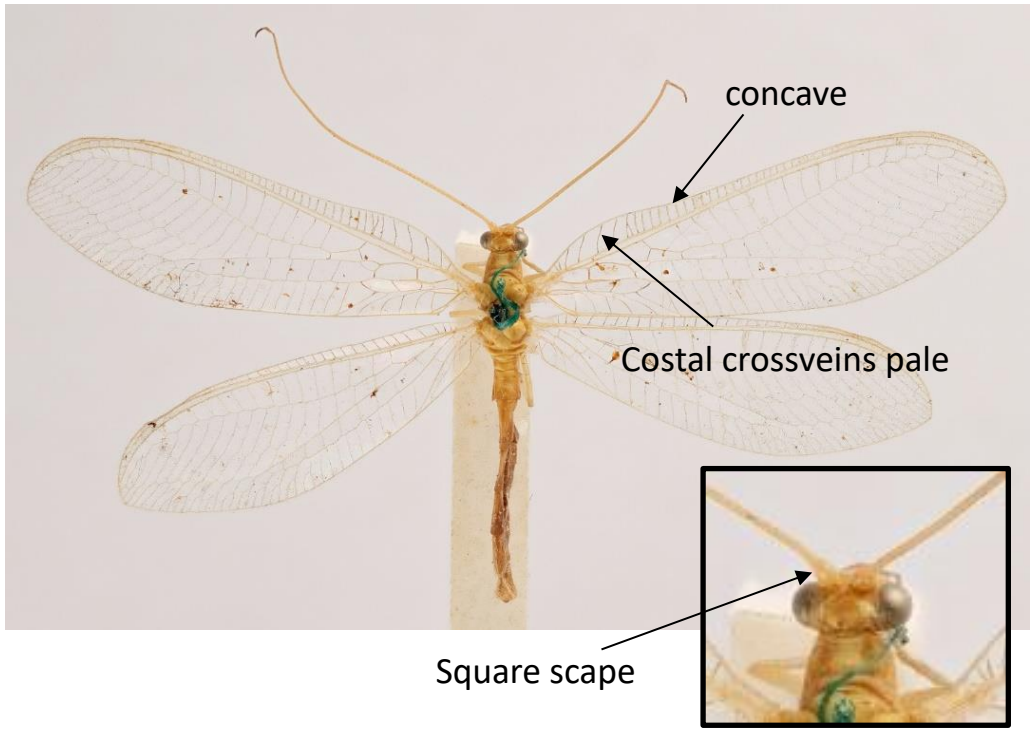
***Nineta flava***
***Nineta pallida***
***Nineta inpunctata***

Concave

Straight



*Nineta flava*




***Nineta inpunctata***
***Nineta pallida***

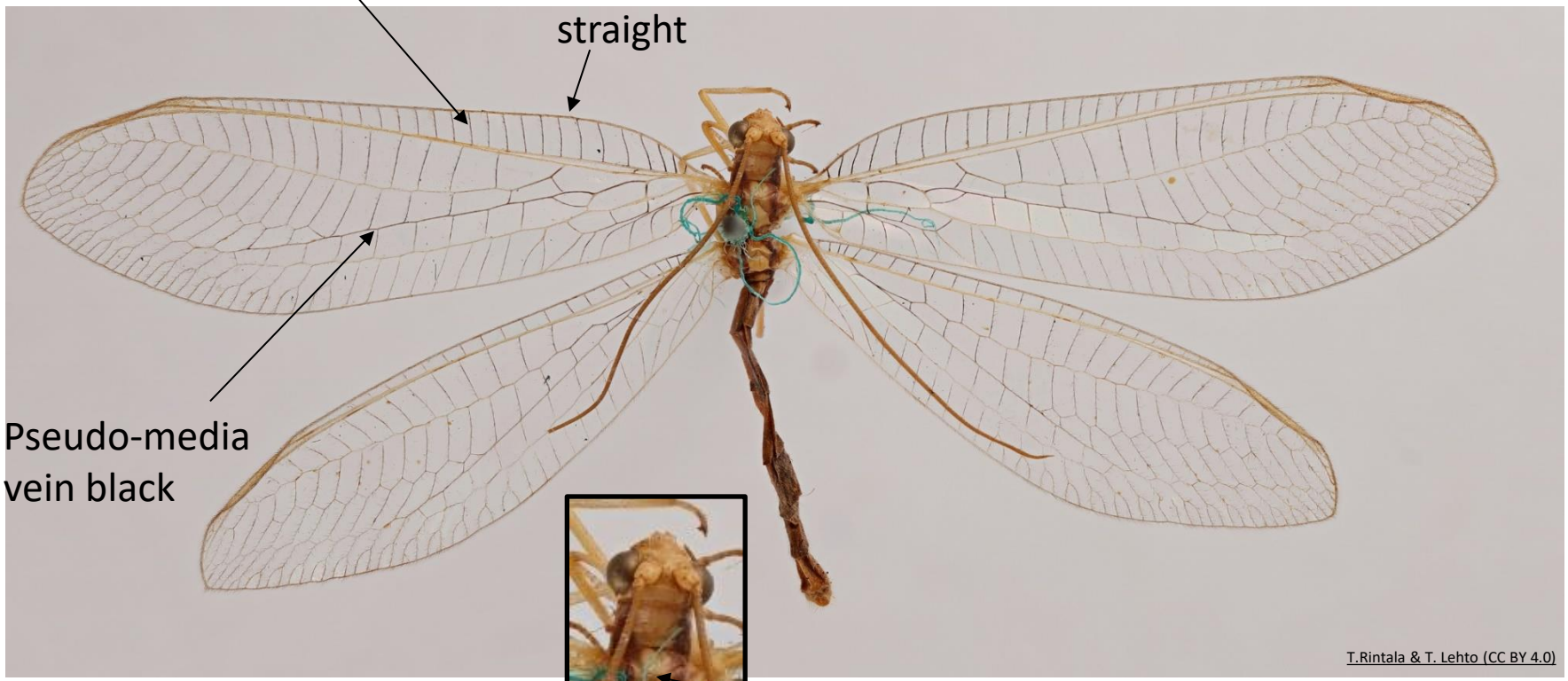
# *Nineta pallida*

Square scape

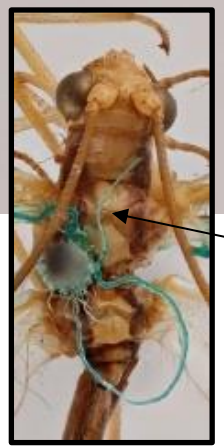
Costal crossveins green

straight

Pseudo-media
vein black

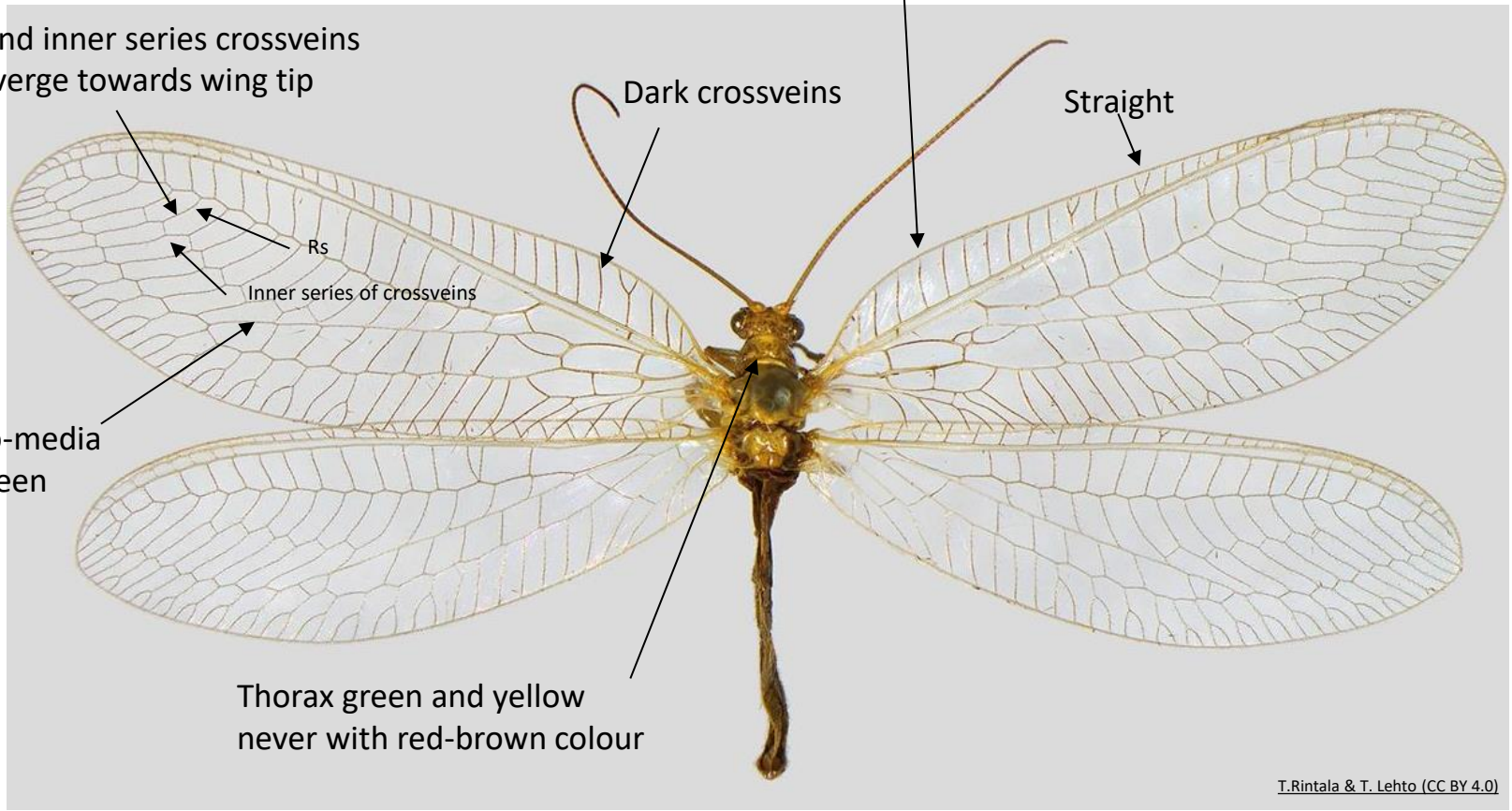






Pale stripe on thorax
flanked by red-brown bands

# *Nineta inpunctata*

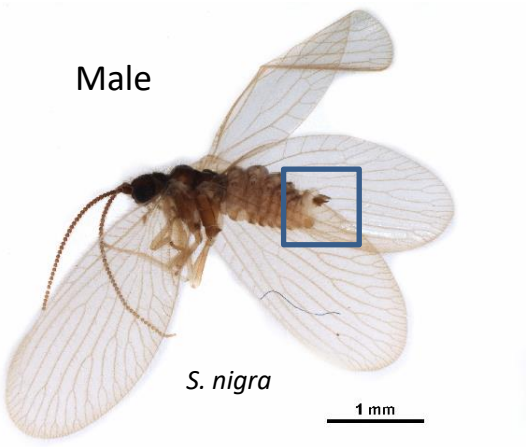


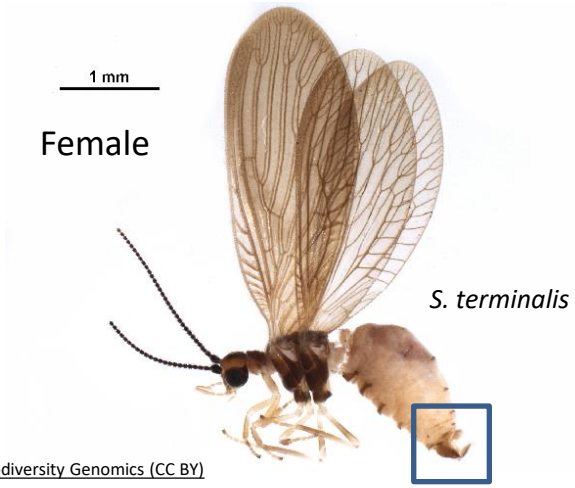

Only one British record from Essex (1996)
Retain a voucher specimen

# Sisyridae (Sponge Flies)

- Can be preserved pinned or in alcohol
- Can identify from photographs but genitalia is important for confirmation

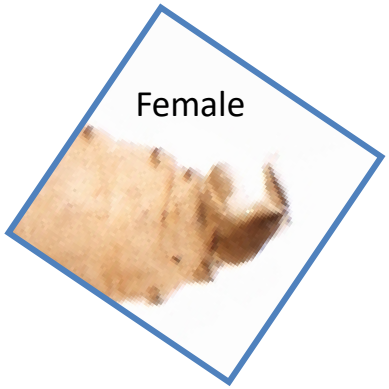

# Sisyridae genitalia

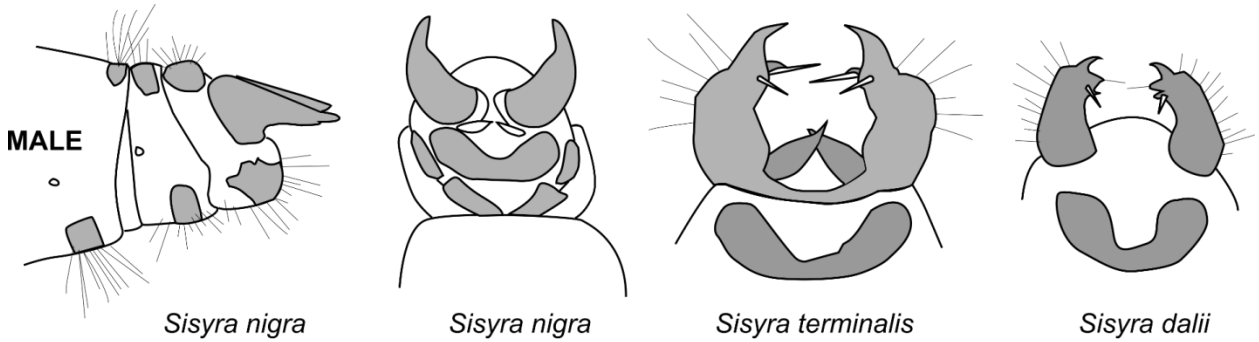


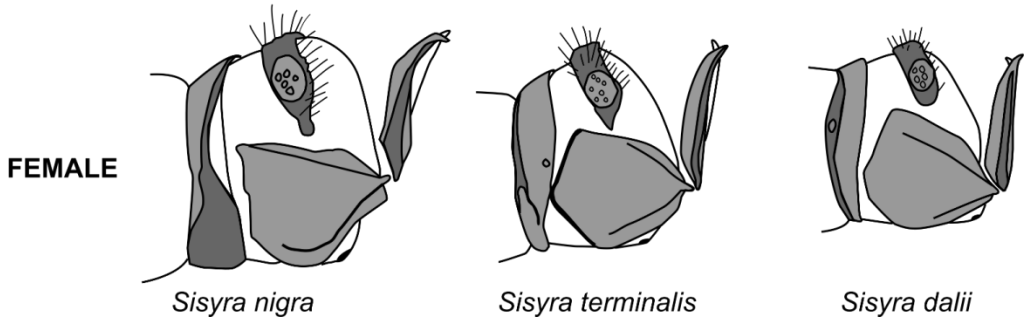









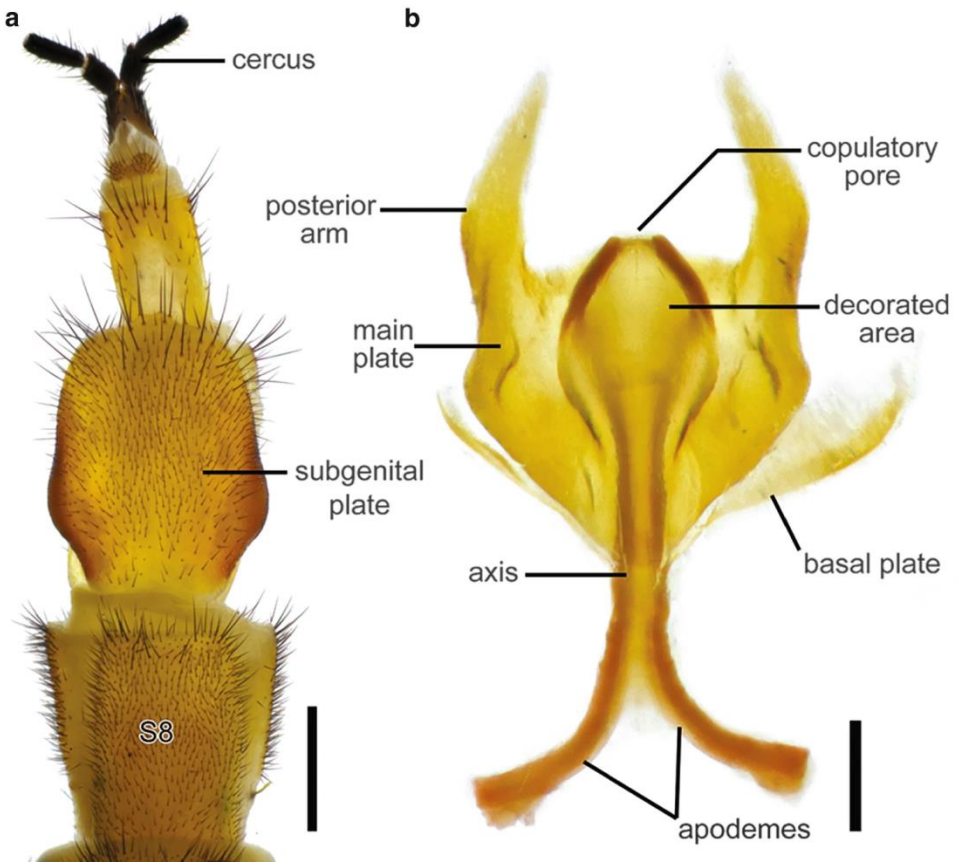
# Mecoptera (Scorpionflies)

- Can be preserved pinned or in alcohol
- Males can be identified in the field from genital capsule
- Females need to be dissected to identify species confidently


Male


Female

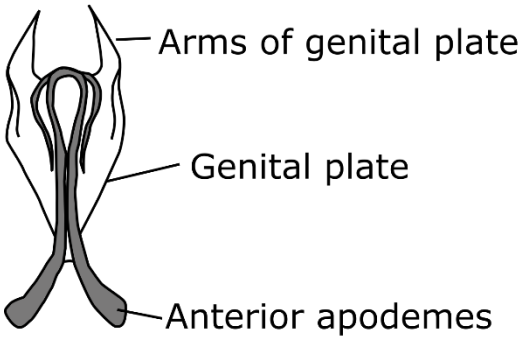
# Mecoptera Females


Wang & Hua, 2022

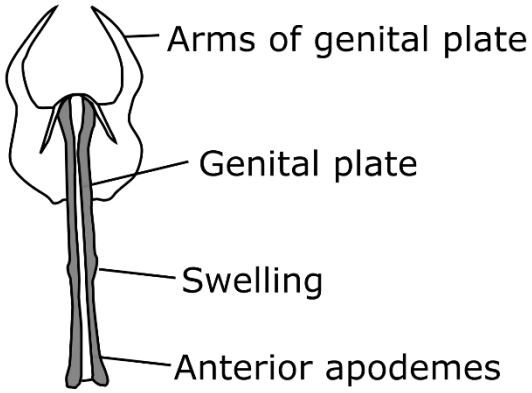
*Panorpa communis*

***Panorpa communis***



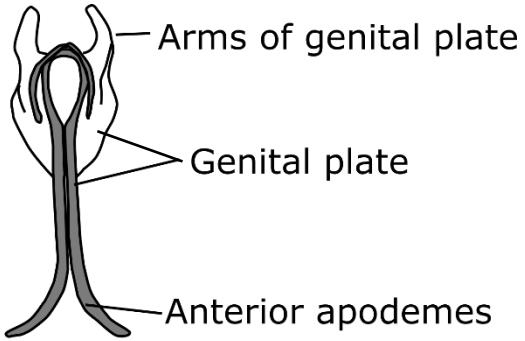

- Arms of genital plate taper to a point
- Anterior apodemes, short or flattened, or broad diverging most of length

***Panorpa germanica***




- Arms as long as genital plate
- Long straight apodemes with swelling

***Panorpa cognata***




- Arms blunt and shorter than genital plate
- Apodemes long, narrow, diverging towards tip

# British Isles Lacewing and Allies Recording Scheme

**Submitting your records**

*Email them to:*

**LacewingRS@gmail.com** or **colinwplant@gmail.com**

*Upload records onto* **iRecord**

*British Lacewing and Allies Recording Scheme Website:*

https://www.laars.jamesjepson.com

Useful websites:

**Neuropterida of Norway and the Nordic Countries:**
https://www.artsdatabanken.no/Pages/223140/Nettvinger__mudderfluer_og_kamelhalsfluer_i

**Apple Wildlife:**
http://applewildlife.co.uk/photos-lacewings/lacewings.php

**Lacewing Digital Library:**
https://lacewing.tamu.edu/