

Identification of *Orthosia* moths

External and internal
morphology together with
DNA barcoding

Minna Kohonen



Orthosia incerta

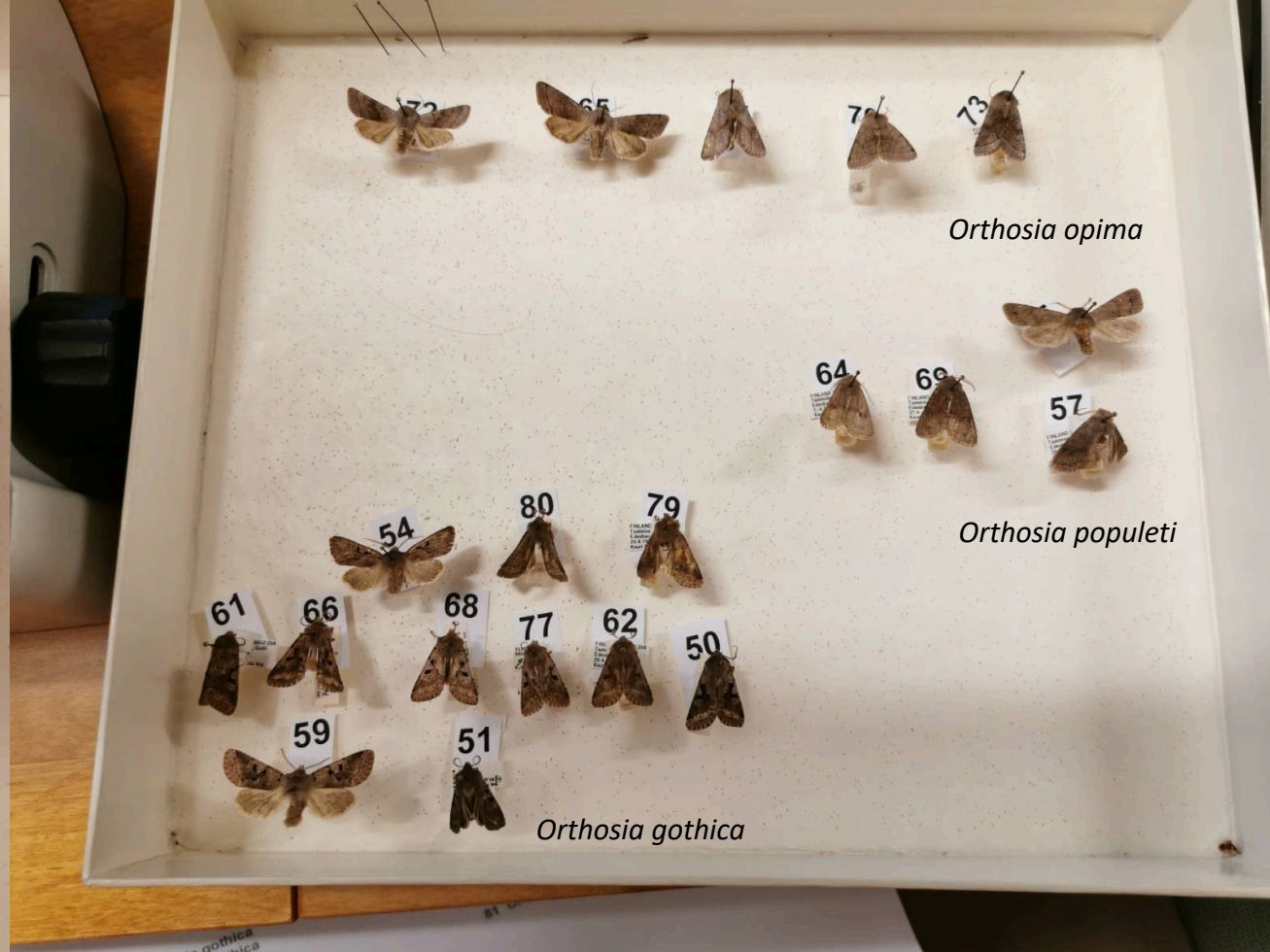
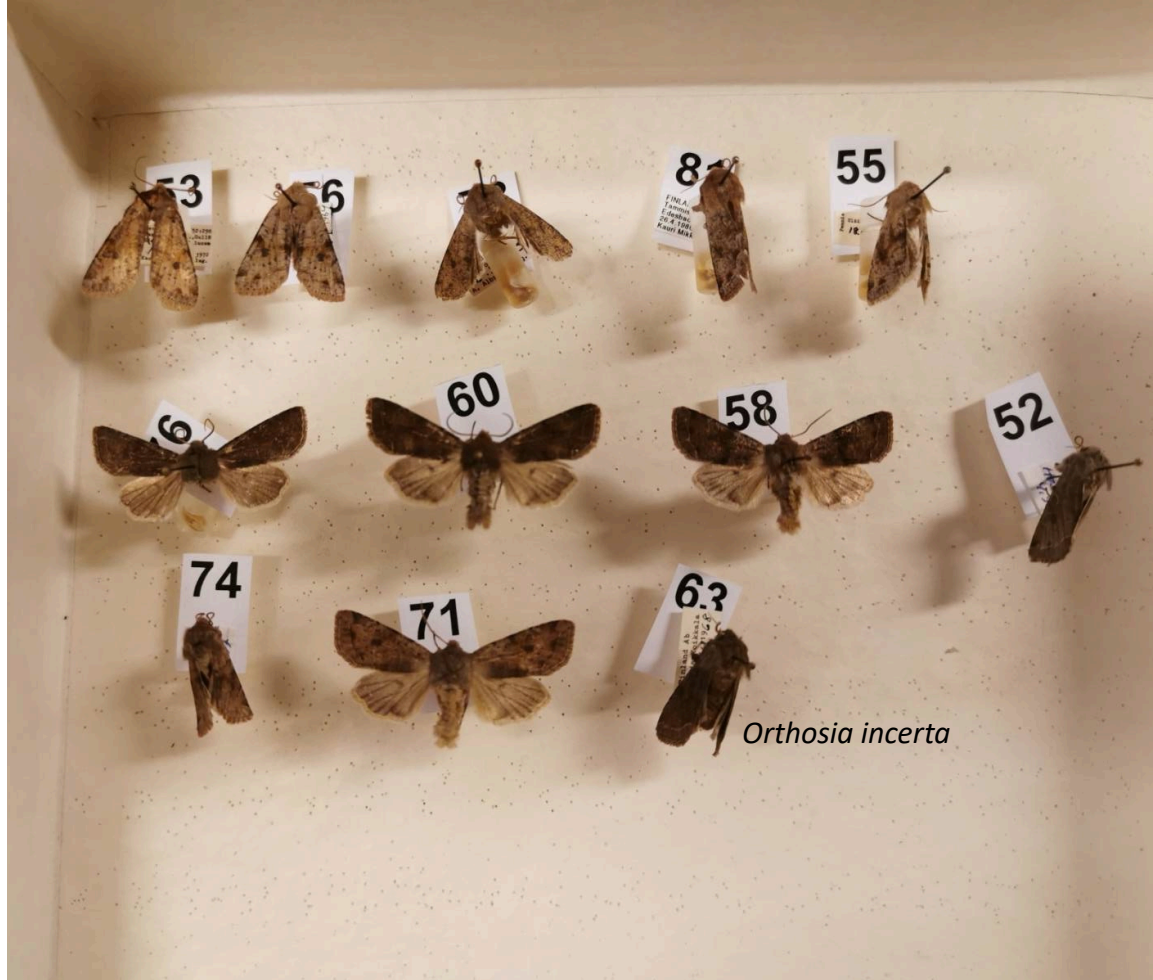
Orthosia moths

- Family: Noctuidea
- Owlet moths
- 8 species in Finland, 5 of them are common
- All of them can be identified using external characters or general appearance

Identification based on external features

- Wings: pattern, colour, size
- Antennas: structure
- Legs: absence or presence of hairtufts, number of spurs and thorns

External features





Hungaria s/w Veszprem
TÜP Ürkút n Nagyvazsony
295m 47°01' N 17°42' E
29.03.2010 a.L.
E. Friedrich

Bild 10263

36 mm
Orthosia opima



Germania cent. Jena / Thür.
Am Landgrafen Berghoffsweg
180m QNN 50°56'11" N
11°35'04" O 14.2011 a.L.
E. Friedrich

Bild 10232

39 mm
Orthosia incerta



Germania cent. - Thür.
Umg. Jena, Remderoda
50°56'24" N 11°32'08" E
285m QNN 24.3.2011 a.L.
E. Friedrich

Bild 10269

32 mm
Orthosia populeti



Germania cent.
Sudl. Kyffhäuser
Umg. Rottleben
10.04.1996 a.L.
E. Friedrich

Bild 10237

36 mm
Orthosia gothica



Germania cent.
Umg. Jena / Thur.
Oelknitz
7.4.1936 a.L.
E. Friedrich

Bild 10278

32 mm
Orthosia cerasi



Germania cent.
Umg. Jena / Thur.
Leutratal
18.4.1936 a.L.
E. Friedrich

Bild 10292

37 mm
Orthosia gracilis



Germ. c. Westth
Wandersleben
28.3.1933 a.L.
R. Bellstedt

Bild 10246

29 mm
Orthosia cruda



Germania cent.
Wic Dessau
Eibanc
25.4.2006 a.L.
E. Friedrich

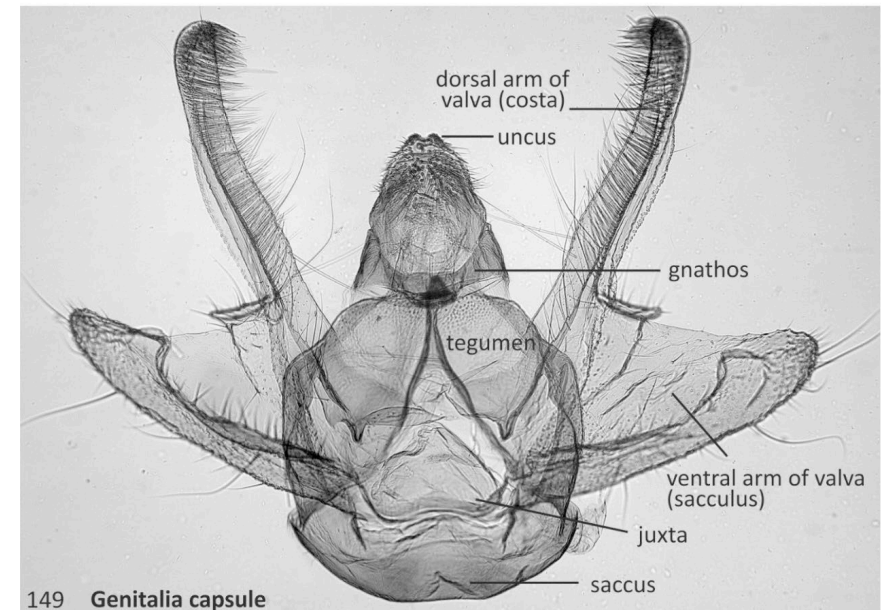
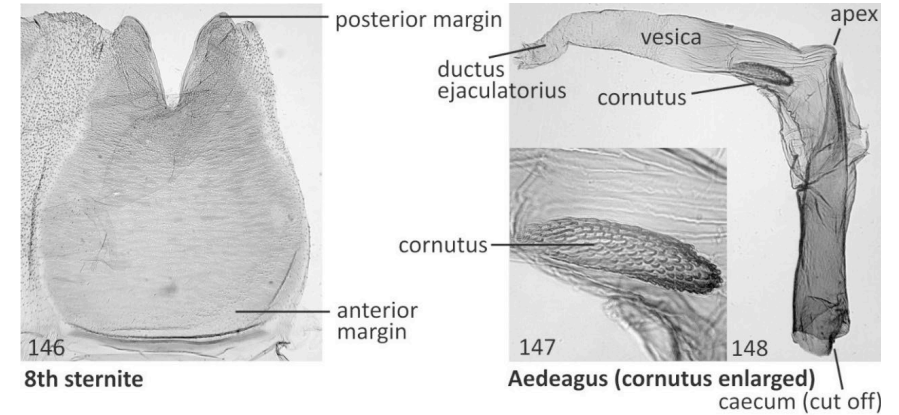
Bild 10254

31 mm
Orthosia miniosa

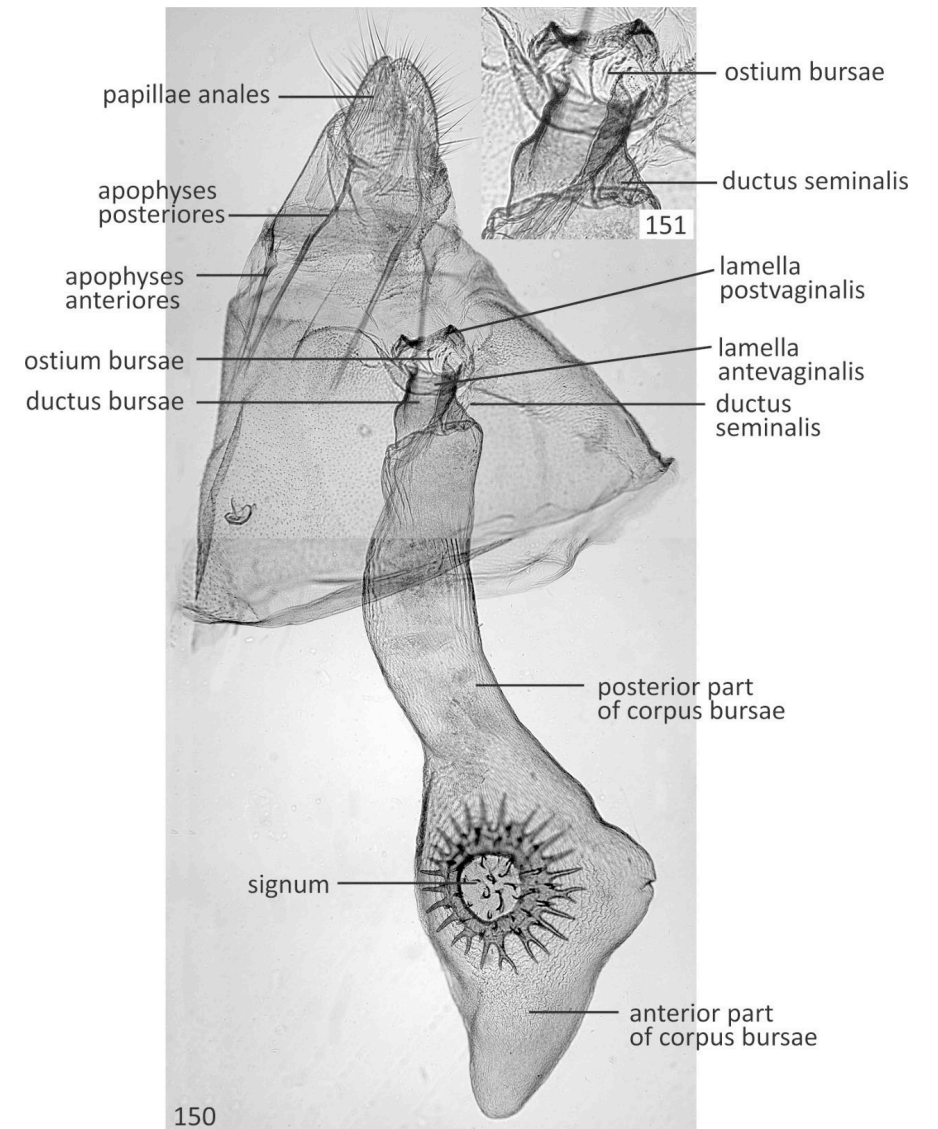
Identification based on internal morphology: Genitalia

- Genital capsule can be used for identification
- Penis can have hooks
- it is usually detached for examination

Male genitalia



Female genitalia structures



Preparation of male genitalia

1. Abdomen is removed with forceps
2. KOH-treatment (about 10min in 92°C or over night in room temperature) to soften the structures
3. KOH-treated abdomen is transferred to water where KOH is diluted in water



Orthosia populeti

<https://laji.fi/taxon/MX.62967/images>

Preparation of male genitalia

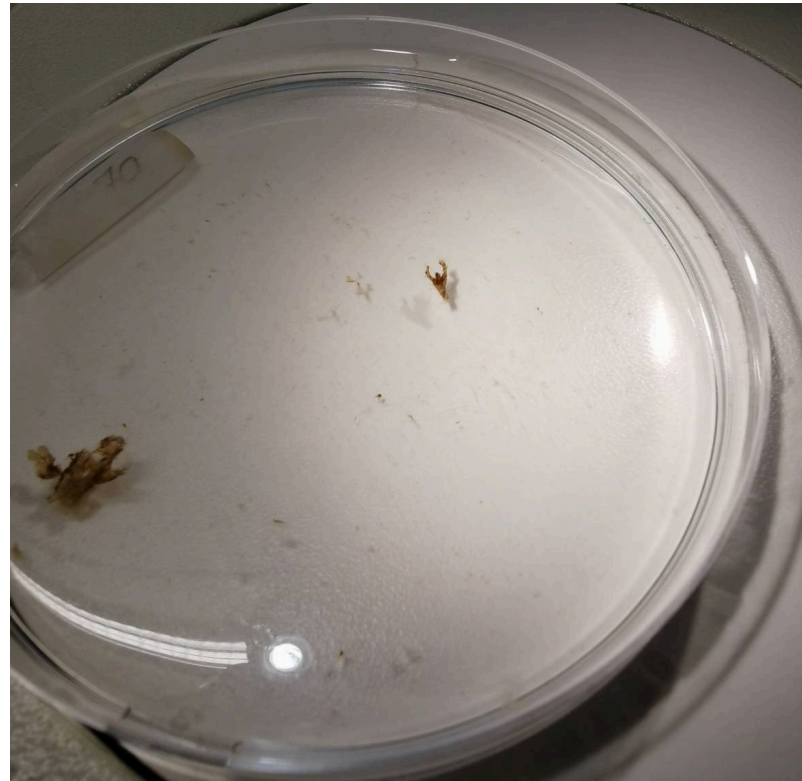


4.Genitalia capsule is detached with forceps

5.Cleaning in water and removing soft tissues and scales

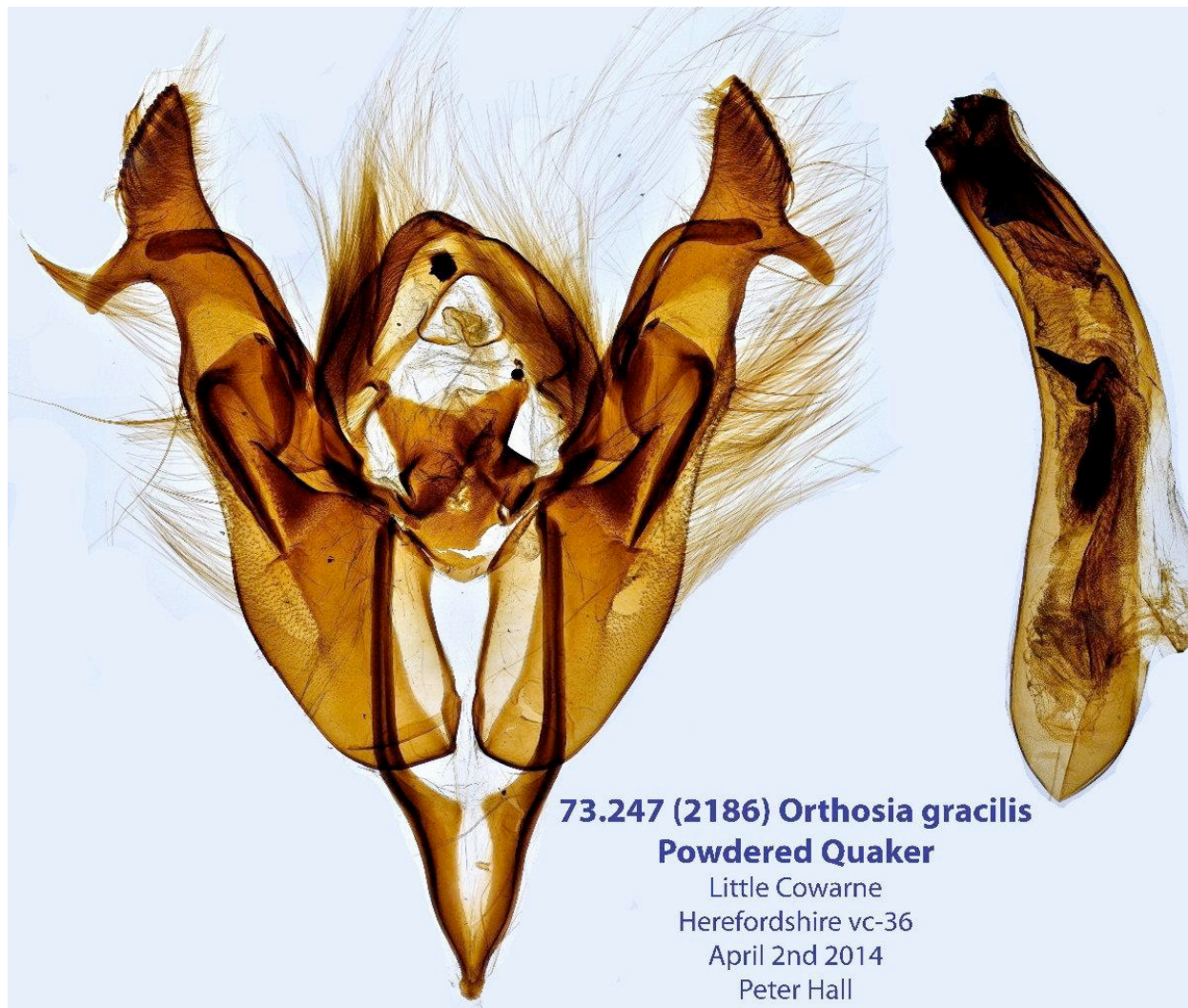
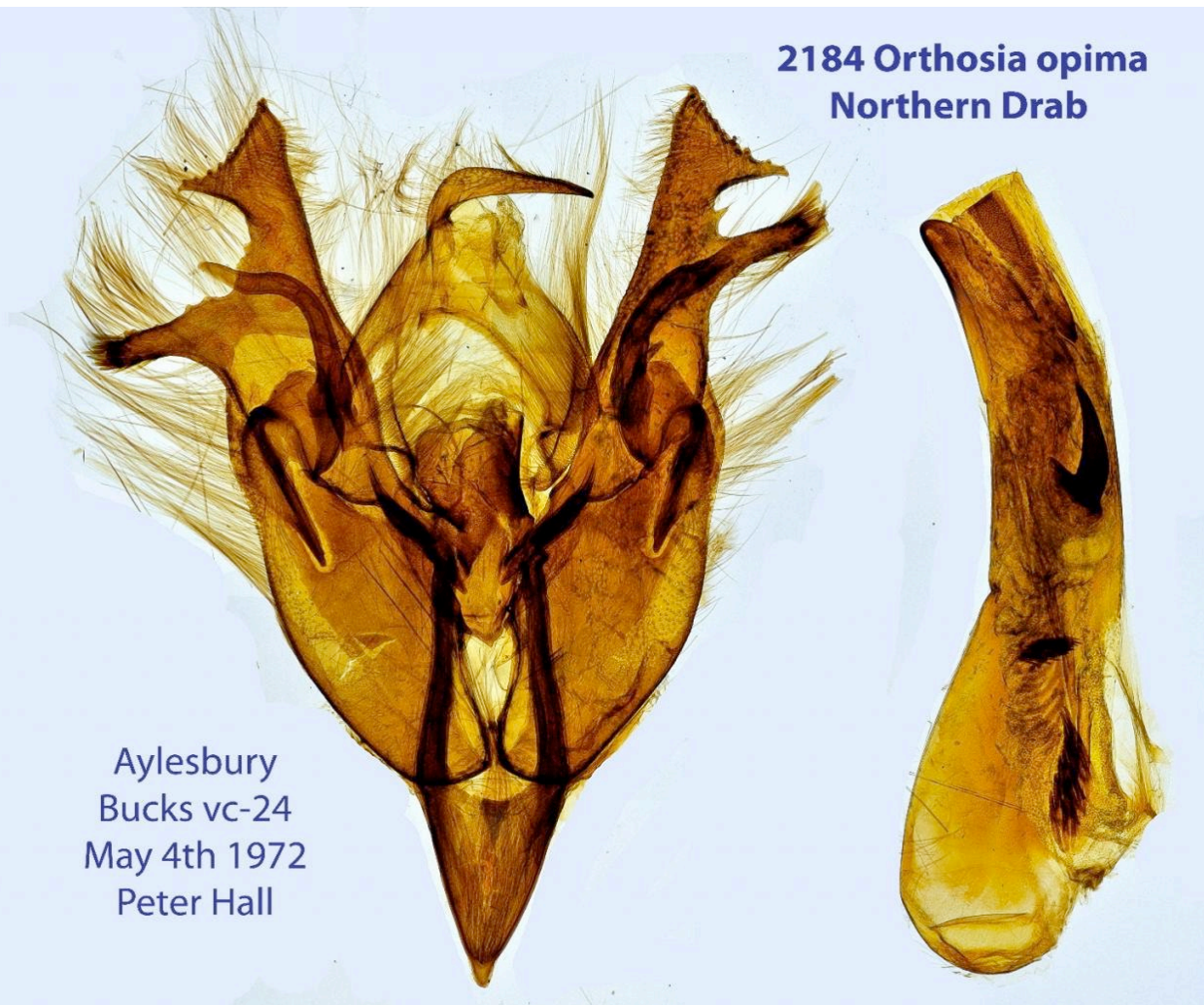
6.Identification

7. Storing:Plastic strip, Cardboard or glyserol



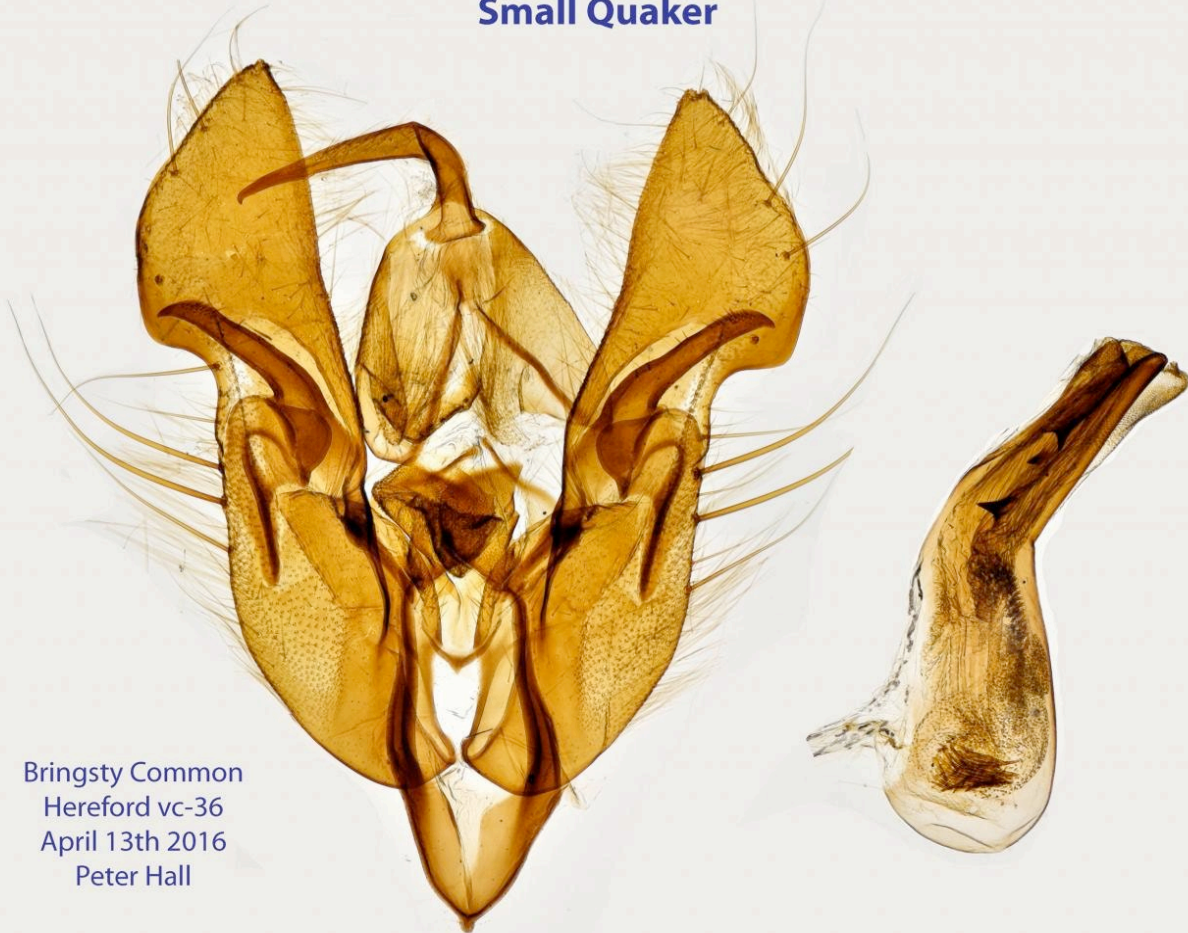
Orthosia opima genitalia

Male genitalia of *Orthosia* moths



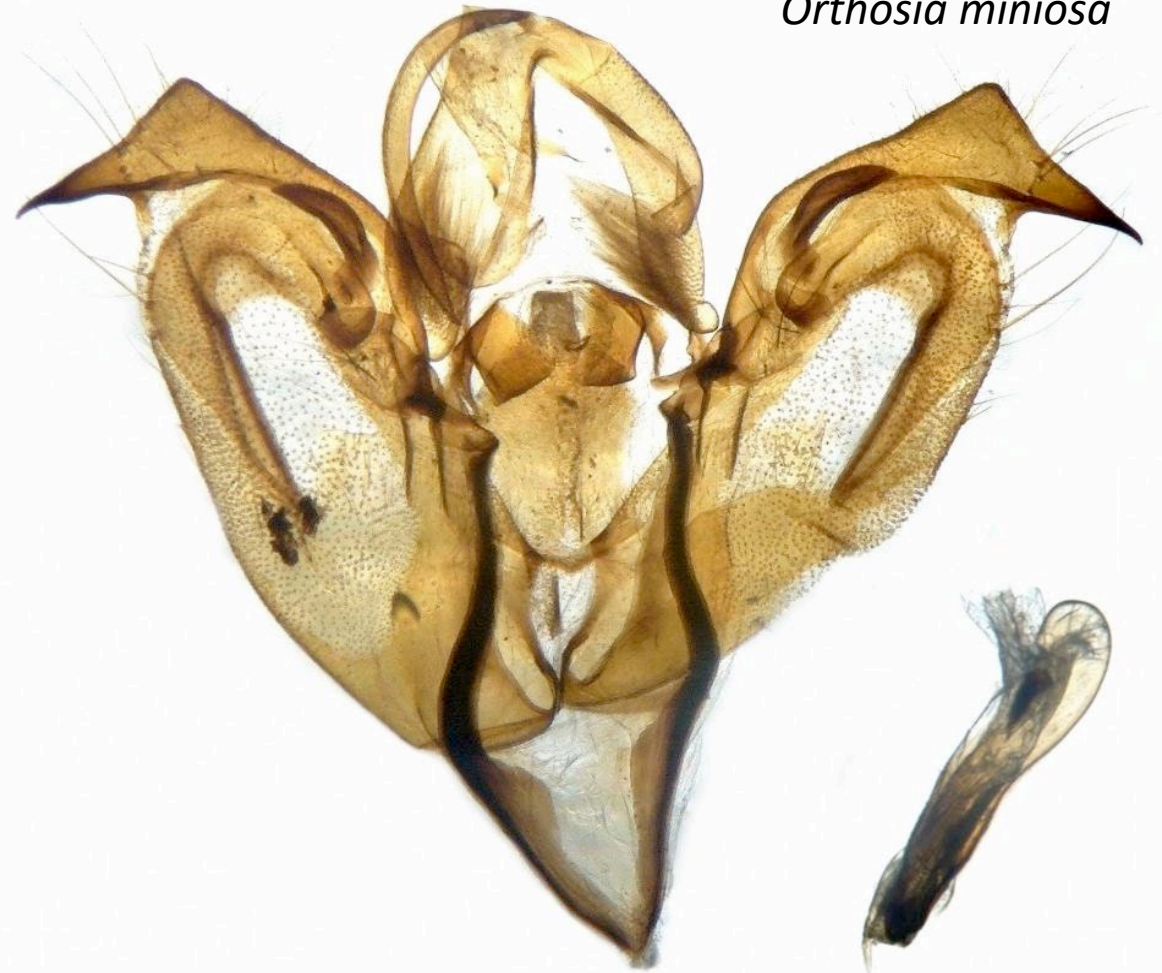
Male genitalia of *Orthosia* moths

73.245 (2182) *Orthosia cruda*
Small Quaker



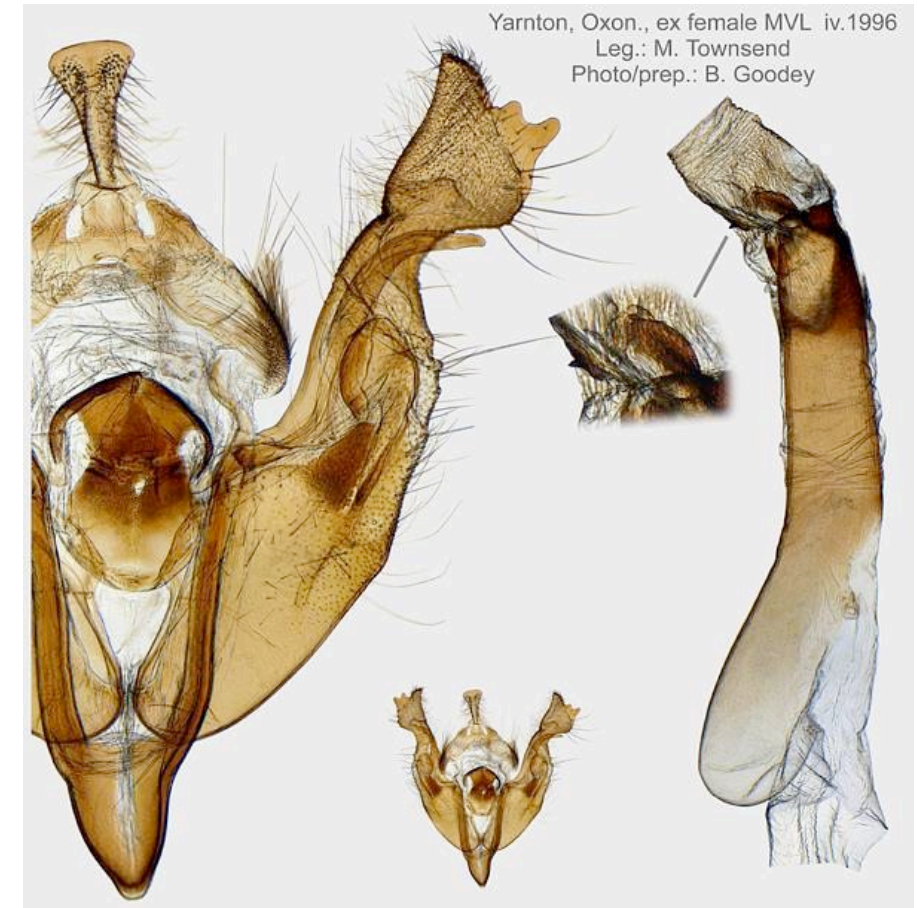
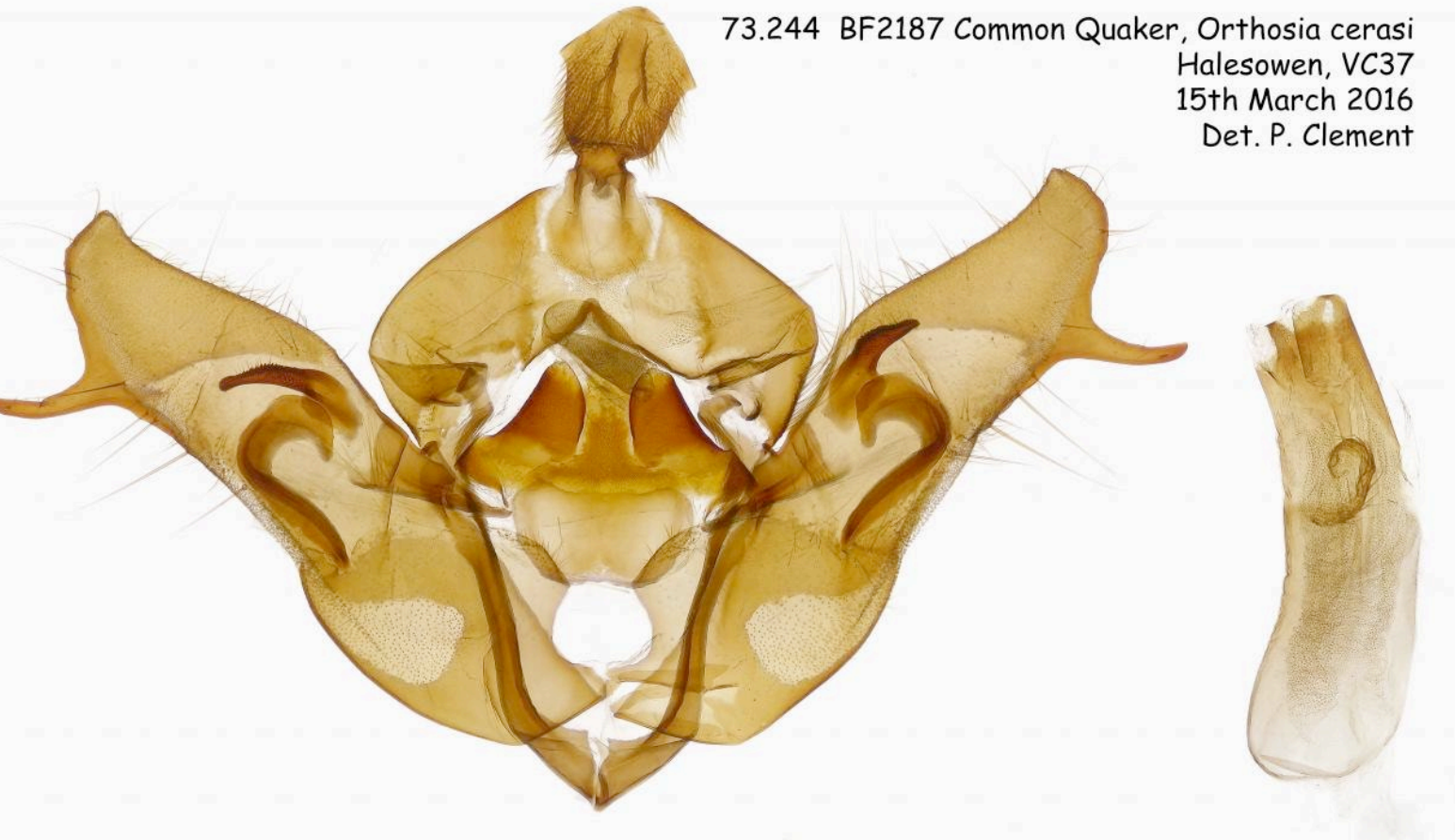
Bringsty Common
Hereford vc-36
April 13th 2016
Peter Hall

Orthosia miniosa



source: <https://mothdissection.co.uk>

Male genitalia of *Orthosia* moths



DNA barcode

- Dna-based identification
- a short section of DNA from a specific gene or genes
- Can be used to identify different life stages
- Reference library is needed
- <https://v4.boldsystems.org/>
- Specimen -> tissue sample -> extract DNA ->PCR-> sequence->DNA barcode -> bold database