

# Green lacewings (of Florida) (Insecta: Neuroptera: Chrysopidae)<sup>1</sup>

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## Introduction

The Chrysopidae are one of the largest and economically most important families of the order Neuroptera. There are about 1,300 currently recognized species included in about 87 genera and three subfamilies (Brooks and Bernard 1990) in the world. In Florida, there are 22 species in nine genera, all placed in the subfamily Chrysopinae (Penny et al. 1997). The larvae are voracious predators of small, comparatively soft-bodied arthropods, such as aphids, scale insects, whiteflies, thrips, insect eggs, and other prey (Muma 1959; Canard et al. 1984). For this reason, they are used widely in biological control. The adults (Figures 1–4) are usually predacious, but a few species only feed on pollen.

## Identification

The members of this family are usually greenish in color when alive, but often turn yellowish after death. Certain groups are brownish in color. Nearly all members of this family have a tympanic organ located ventrally on the base of the radial vein (except species of Nothochrysinæ), which is unique among insects. Adult green lacewings have biting mouthparts: the mandibles can be symmetrical or asymmetrical; they have long, filamentous antennae; and the wings have abundant and characteristic venation including usually the intramedian cell (im), the shape of which has generic value (Figures 5a–5c, 5e). In contrast to many Neuroptera, the chrysopid wing membrane is transparent and without microtrichia.

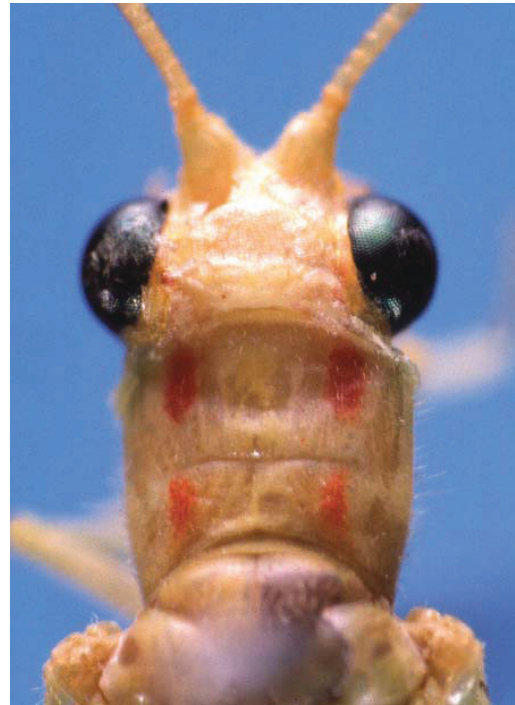


Figure 1. Dorsal view of head and pronotum, *Plesiochrysa brasiliensis* (Schneider).

Credits: Jeffrey Lotz, Florida Department of Agriculture and Consumer Services, Division of Plant Industry

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Figure 2. Frontal view of head, *Chrysopodes collaris*.  
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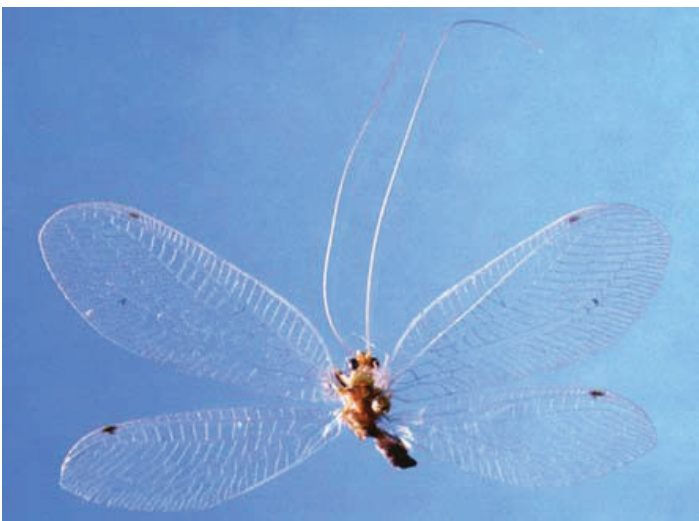


Figure 3. *Leucochrysa insularis* (Walker).  
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Figure 4. Larva of *Ceraeochrysa valida* (Banks).  
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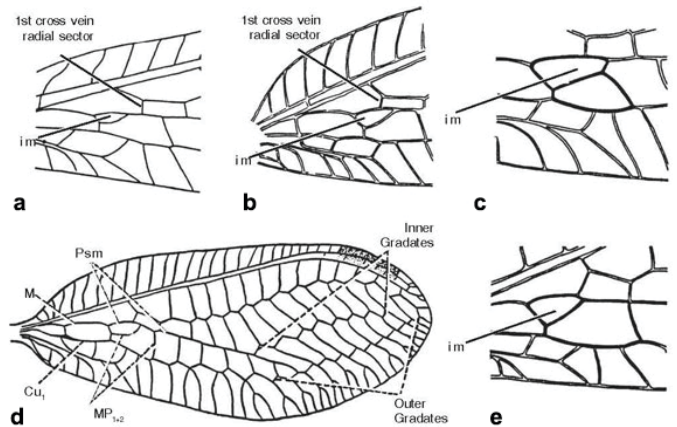


Figure 5. a. Base of forewing and intramedian cell (im) of *Chrysoperla* sp.; b. Base of forewing of *Chrysopa* sp.; c. Base of forewing of *Leucochrysa insularis*; d. Forewing of *Chrysopa* sp.; e. Base of forewing of *Nodita* sp. (after Bickly and MacLeod 1956).

## Key to Genera of Green Lacewings of Florida

### Adults

1. Flagellomeres 6–10 very broad, at most 1.1 times longer than broad; pretarsal claws simple; eyes large, greatest diameter nearly as much as interocular diameter; larvae associated with ants (Belanopterygini) .....2

1'. Flagellomeres 6–10 narrower, at least 1.25, usually more than 1.5, times longer than broad; pretarsal claws often with subbasal tooth; eyes usually smaller, greatest diameter much less than interocular diameter; larvae not associated with ants.....3

2. Pronotum twice as broad as long, with 8 large dark brown spots; antennal flagellum black at base .....  
*Abachrysa* Banks

(*Abachrysa eureka* Banks 1931, only species in the genus, is found in the southeastern USA [AL, AR, FL, GA, MS, TX])

2'. Pronotum about 1.5 times as broad as long, lacking spots but with broad dark red or purplish marginal or submarginal band; antennal flagellum completely pale brown .....  
*Nacarina* Návas

(Only one species in Florida, *Nacarina robusta* (Banks) 1905; known from the Panhandle and Highlands County.)

3. Hind wing pterostigma with dark brown spot (Figure 3); antenna longer than forewing (Leucochrysiini); forewing intramedian cell (im) quadrangular or foot of basal sectoral cross vein of forewing about same level as origin of radial sector; larvae are trash-carriers ..... 4

3'. Hind wing pterostigma without dark brown spot; antenna usually shorter than forewing; forewing intramedian cell (im) triangular, basal sectoral cross vein distal to origin of radial sector; larvae not trash-carriers (except *Ceraeochrysa*).....5

4. Forewing intramedian cell (im) quadrangular (Figure 5c).....*Leucochrysa* McLachlan

(Only one Florida species, *Leucochrysa insularis* (Walker) 1853; widespread in eastern United States and the Caribbean.)

4'. Forewing intramedian cell (im) triangular (Figure 5e).....*Nodita* Návas

(There are three species in Florida: *Nodita callota* Banks 1915, *Nodita floridana* (Banks) 1897, and *Nodita pavida* (Hagen) 1861.)

5. Hind wing lacking inner gradate cross veins.....*Eremochrysa* Banks

(There is one unconfirmed record from the Florida Panhandle of *Eremochrysa punctinervis* (McLachlan) 1869.)

5'. Hind wing with many inner gradate cross veins (Figure 5d).....6

6. Forewing with first RS cross vein meeting vein MA distal to apex of intramedian cell (im) (Figure 5a); pronotum without red or orange marginal or submarginal bands (often yellow median band); antennal flagellum pale, gradate cross veins usually green; male sternites VIII and IX fused, apex with distinct lip..... *Chrysoperla* Steinmann

(The four Florida species are *Chrysoperla externa* (Hagen) 1861, *Chrysoperla harrisii* (Fitch) 1855, *Chrysoperla plorabunda* (Fitch) 1855, and *Chrysoperla rufilabris* (Burmeister) 1839. All species are probably widespread in Florida because they are used for biological control.)

6'. Forewing with first RS cross vein meeting vein MA before apex of intramedian cell (im) (Figure 5b); pronotum usually with red or orange marginal or submarginal bands; antennal flagellum sometimes dark brown, gradate cross veins often dark brown; male sternites VIII and IX not fused, without distinct lip .....7

7. Forewing with radial gradates oblique; pronotum with four reddish spots (Figure 1)..... *Plesiochrysa* Adams

(The widespread Neotropical species, *Plesiochrysa brasiliensis* (Schneider), has been reported for Florida.)

7'. Forewing with gradates straight; pronotum marked differently..... 8

8. Gena unmarked; antennal scape with one or more red, brown, or black lines or else colored with homogeneous reddish pigment ..... *Ceraeochrysa* Adams

(Most speciose genus in the New World with six species in Florida: *Ceraeochrysa cincta* (Schneider) 1851, *Ceraeochrysa claveri* (Návas), *Ceraeochrysa cubana* (Hagen) 1861, *Ceraeochrysa lineaticornis* (Fitch) 1855, *Ceraeochrysa smithi* (Návas), and *Ceraeochrysa valida* (Banks) 1895. Both the adults and trash-carrying larvae have been keyed by Tauber et al. (2000).)

8'. Gena marked with red or antennal scape completely unmarked..... 9

9. Face marked with red or pink transverse lines between the anterior tentorial pits and below the antennal fossae (Figure 2); eyes relatively large; wings narrow ..... *Chrysopodes* Návas

(*Chrysopodes collaris* (Schneider) 1851 is found in south and central Florida.)

9'. Face without such lines or if lines present, colored dark brown; eyes small; wings broad.....*Chrysopa* Leach

(Penny et al. [2000] have keyed the US species including the Florida species *Chrysopa incompleta* Banks, *Chrysopa nigricornis* Burmeister 1839, *Chrysopa oculata* Say, *Chrysopa quadripunctata* Burmeister 1839, and *Chrysopa slossonae* Banks.)

## Key to Genera of Green Lacewings of Florida

### Larvae (unknown: *Abachrysa*; *Nacarina*; *Chrysopodes*; *Plesiochrysa*)

1. Non-trash carriers; abdomen long and slender, longer than head and thorax together, without hooked setae; thorax with scoli no longer than wide .....2



1. Trash-carriers; abdomen short and broad (not much longer than head and thorax together), with many hooked setae (Figure 4); thorax with scoli at least twice as long as wide, bearing elongate setae.....3

2. Head capsule with two prominent, black, elongated spots.....*Chrysoperla*

(Larvae are described by Tauber (1974).)

2'. Head capsule with three or four black or reddish spots.....*Chrysopa*

3. Prothoracic scolus over five times longer than wide, extending beyond head (third instar) (Figure 4).....*Leucochrysa*; *Nodita*

(Notes on larvae by Muma (1959).)

3'. Prothoracic scolus less than four times longer than wide, not extending forward beyond head..... 4

4. Hooked setae on abdomen very long; scolus short, setae not fan shaped; thorax with purplish-red color pattern.....*Eremochrysa*

(Larva described by Smith (1922, 1926).)

4'. Hooked setae on abdomen shorter, inconspicuous; scolus longer with setae arranged fan-like.....*Ceraeochrysa*

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