

FIRST REPORT OF *IDIOPTERUS NEPHRELEPIDIS* (HEMIPTERA: APHIDIDAE) IN CENTRAL AMERICA

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Ferns are the second largest group of vascular plants in Costa Rica composing of approximately 12% of the flora (Moran 2003). Fern cultivation and exportation is one of the most important economic activities in Central America, and especially in Costa Rica (Ocampo Sánchez 2007). Costa Rica has 31 companies dedicated to fern cultivation; they export 1,800 containers of ferns per year to 20 destinations, accounting for approximately 25.3 million dollars (El Financiero 2008).

Blackman & Eastop (2006) document 62 species of aphids that potentially can feed on ferns, although none of them have been reported as pests of ferns in Central America. However, they have the potential to become future pests considering their capacity to directly damage foliage or to transmit virus.

A fern aphid, *Idiopterus nephrolepidis* Davis, 1909 (Aphidinae: Macrosiphini), was collected in Cariblanco (10°16.192'N, 84°10.922'W) on 27 Mar 2009 from *Nephrolepis cordifolia* (L.) C. Presl. (Oleandraceae), and again in Coronado (10°00.784'N 83°57.101'W) on 12 Jul 2009 from *Blechnum schiedeianum* (Schltd. ex C. Presl) Hieron (Blechnaceae). In both samples, wingless and winged individuals were abundant in the colonies located on the abaxial side of the fern fronds and petioles. The specimens are deposited in the aphid collection (samples: MZUCRcra 24 and MZUCRcra 87) at the Zoology Museum of The University of Costa Rica and in the aphidological collection of the University of León, Spain (samples: CRI-666 and CRI-751).

The apterous viviparous females are small (1.2-1.6 mm) and are characterized by their natural dark coloration, white capitate setae, dark cauda, and the bicolored siphunculi (Figs. 1F and 1G). Cleared specimens have pale coloration on the front of the head and strongly pigmented antennal segments I and II (Figs. 1A and 1B). The head is covered by spinules, and antennomeres I and II are strongly imbricated (Fig. 1B).

The dorsal setae are pale with widened apices and are located on small prominences or warts (Fig. 1E). The dorsal abdominal cuticle is wrinkled (Figs. 1A and 1E) and has marked reticulation formed by small spinule rows. The antennae are pale with dark apical segments; the terminal process is 4.5–5.0 times the length of the base of antennal segment VI; there are only secondary sensoria (1-5) on antennal segment III (Fig. 1C). The ultimate rostral segment is: elongated (Fig. 1D), approximately 2 times the length of the second segment of the posterior tarsi and has 6 sec-

ondary setae. The siphunculi are cylindrical, with the apical ridge well developed, pale on approximately the apical 2/3 of their length (Fig. 1F) and approximately 0.20 times the body length and 2 times the caudal length. The cauda is dark and triangular or oblong with 5 setae (Fig. 1G).

Alate viviparous females are similar to the apterous females (Figs. 2A, 2D, 2F and 2G), with dorsal setae located on small pigmented sclerites (Fig. 2A) and with secondary sensoria on antennal segments III to V: 7-14, 1-5 and 0-3 respectively (Fig. 2C). Wings have a characteristic pigmentation pattern (Fig. 2E). Wing veins are strongly pigmented and the pterostigma has an area without pigmentation; the radial sector and the medial vein approach each other without actually merging and the hind wings are small.

Idiopterus nephrolepidis form colonies on the abaxial side of fronds and petioles mainly on indoor ferns (Blackman & Eastop 2006). It is a monoic anholocyclic species that does not establish mutualistic relationships with ants. It has been collected extensively on ferns (Peronti & Sousa-Silva 2002; Ortego et al. 2004; Blackman & Eastop 2006) and from other plants (Sousa-Silva & Ilharco 1995; Tavares 1996) although the latter is probably due to straying individuals (Blackman & Eastop 2006).

According to Holman (1974) *I. nephrolepidis* is a species of neotropical origin that currently has a cosmopolitan distribution due to anthropic dispersion (Blackman & Eastop 2006). It has a preference for greenhouse or ornamental plants in northern temperate regions (Blackman & Eastop 2006). In the Neotropics there are previous reports of this species from Cuba (Holman 1974), Colombia (Bustillo 1986), Venezuela (Cermeli 1986), Brazil (Peronti & Sousa-Silva 2002) and Argentina (Ortego et al. 2004).

This species has not been previously reported (Smith & Cermeli 1979; Saunders et al. 1983), nor detected in recent investigations in Costa Rica, Honduras or Panama (Voegtlin et al. 2003; Evans & Halbert 2007; Quirós et al. 2009) but there was an interception (Florida Department of Agriculture and Consumer Services, Division of Plant Industry Accession number E2002-989) of this species in Florida (USA) on ferns from Costa Rica in 2002 (Susan Halbert, personal communication). This collection represents the first record of *I. nephrolepidis* in Central America. However, considering its presence in Cuba, and extensive indoor fern cultivation, it is most likely present elsewhere in Central America and the Caribbean.

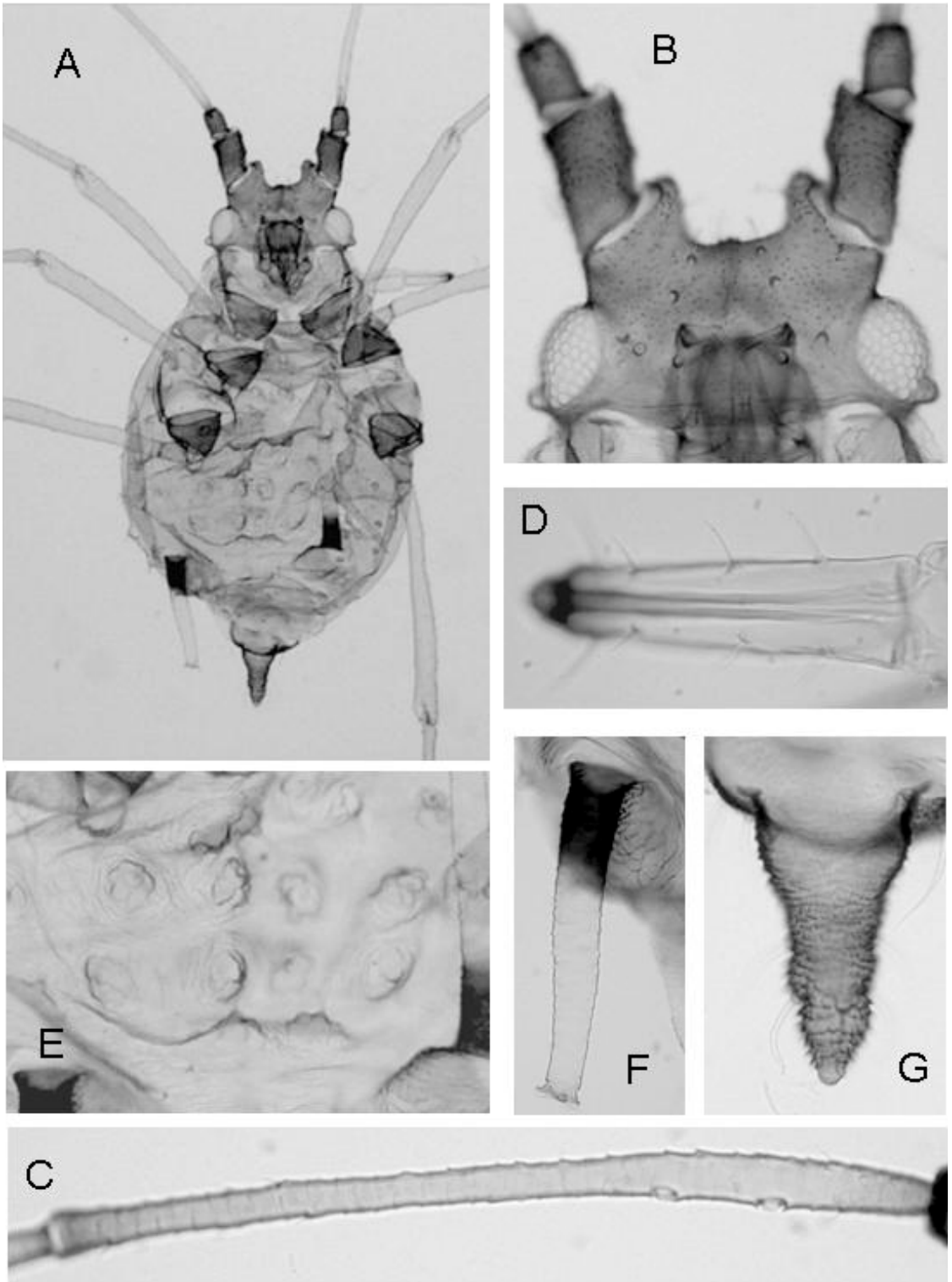


Fig. 1. *Idiopterus nephrolepidis* apterous. A, body. B, head. C, antennal segment III. D, rostral segment V. E, dorsal cuticula. F, siphunculus. G, cauda.

In "A Guide to the Winged Aphids of Costa Rica" (Voegtlin et al. 2003) this species would be included in Key F as it has dark wing veins, a character also shared by *Lizerius (Paralizerius) cermelii* Quednau, 1974, *Microparsus (Picturaphis) brasiliensis* (Moreira 1925), *Microparsus olivei* Smith & Tuatay 1960, *Microparsus (Picturaphis) pojanii* (Cermeli & Smith 1979), *Neotoxoptera oliveri* (Essig 1935) and *Pentalonia nigronervosa* (Coquerel 1859).

KEY F

- 7(8) Secondary sensoria on antennomeres: III (6-12), IV (4-9) and V (2-6)
 - a(b) Anterior branch of median vein fused with radial sector for short distance *Pentalonia nigronervosa* Coquerel
 - b(a) Anterior branch of median vein never fused at any distance (Fig. 2C) although it may approach the radial sector. Siphunculi are pale with dark base (Fig. 1A) *Idiopterus nephrolepidis* Davis
- 8(7) Secondary sensoria only on antennomere III. Although some specimens may show a short cross-vein between median and radial sector, the veins are never fused for any distance.
- 9(10) Terminal process 3-4 times the base of antennomere VI. Cauda triangular-shape with 5-6 setae. Ultimate rostral segment with 5-6 accessory setae *Picturaphis pojanii* Cermeli & Smith
- 10(9) Terminal process 5.5-7 times the base of antennomere VI. Cauda finger-shaped with 4-5 setae. Ultimate rostral segment with 1-2 accessory setae *Picturaphis brasiliensis* Moreira

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SUMMARY

Idiopterus nephrolepidis (Aphididae: Aphidinae: Macrosiphini) is reported for the first time in Costa Rica and Central America. This aphid species has been extensively collected on ferns throughout the world. The specimens were collected in Cariblanco on *Nephrolepis cordifolia* (Oleandraceae) and in Coronado on *Blechnum schiedeanum* (Blechnaceae).

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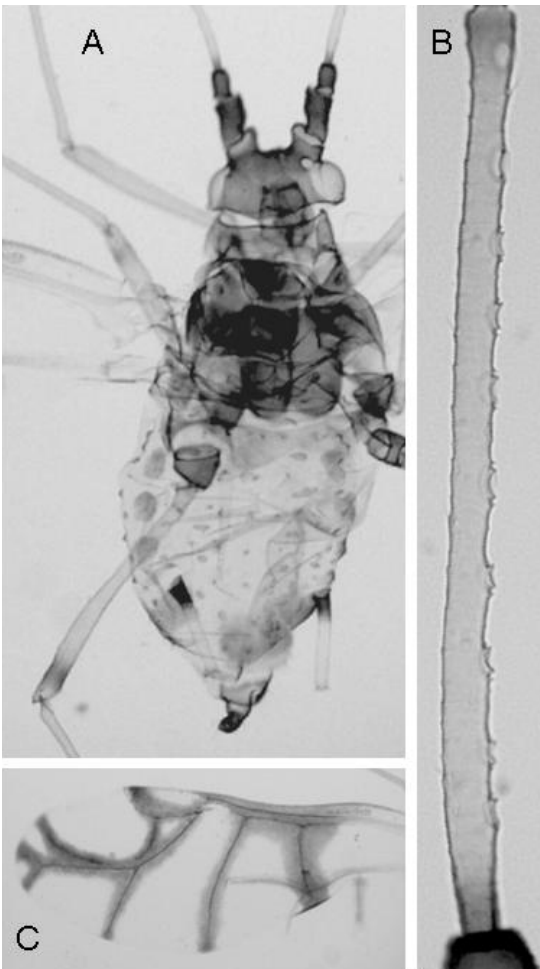


Fig. 2. *Idiopterus nephrolepidis* alate. A, body. B, antennal segment III. C, wings.

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