Ceratothripoides brunneus (Thysanoptera: Thripidae) Recorded from Florida

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Ceratothripoides brunneus (Thysanoptera: Thripidae) recorded from Florida

Thomas Skarlinsky¹*, Joe Funderburk², and Felipe Soto-Adames³

The African thrips Ceratothripoides brunneus Bagnall (Thysanoptera: Thripidae) is widely distributed throughout Sub-Saharan Africa, where it is an important pest of tomatoes, eggplant, peppers, and other Solanaceae (Moritz et al. 2016). Historical specimens from various museum collections examined by Mound & Nickle (2009) suggested that the original range of C. brunneus was confined to the Afrotropical region. However, more recent reports include specimens collected from Puerto Rico (Mound & Nickle 2009), Malaysia (Mound & Azidah 2009), Cuba (Suris & Rodriguez-Romero 2011), Indonesia (Sartiami & Mound 2013), and Guadeloupe (Etienne et al. 2015), indicating that C. brunneus has moved beyond its native range, presumably transported by the horticultural trade (Mound & Azidah 2009). In North America, C. brunneus was intercepted at U.S. ports of entry (Nickle 2003, 2009) but has not been reported outside of quarantine environs. Here we report for the first time the collection of C. brunneus from vegetation in North America.

Little is published about the biology of C. brunneus (Macharia et al. 2015). The species was identified as a likely pollinator of Napoleonaea vogelli Hook. & Planch. (Napoleonaceae) trees in Gabon, Africa (Frame & Durou 2001). Adults of C. brunneus were collected from a variety of plant species, including cultivated crops and weeds (Table 1). Macharia et al. (2015) recorded C. brunneus as the most abundant thrips species in 4 major tomato production areas in Kenya. There are no reports of larvae collected in association with adults on host plants that would demonstrate a host-plant relationship (sensu Mound 2013: a plant on which an insect rears its young), but according to Moritz et al. (2016), C. brunneus breeds mostly on leaves. Identification of host plants not only provides a quantitative measure of a plant’s suitability for completion of the insect’s life cycle but also indicates the source of the pest population (Terry 1997). Ceratothripoides brunneus is not known to transmit tospoviruses but, given that the congener C. claratris (Shumshersky) (Thysanoptera: Thripidae) is a vector of Capsicum chlorosis virus in tomatoes (Premachandra et al. 2005), the potential of C. brunneus as a vector should be investigated in more detail (Macharia et al. 2015).

Mound & Nickle (2009) provided a complete morphological diagnosis of the genus Ceratothripoides and the 5 species currently included, all of which previously were confined to the Old World tropics (ThripsWiki 2016). Four Neotropical species originally placed in Ceratothripoides were re-assigned to the genus Retanathrips, based on 3 synapomorphies not shared with the Old World forms. Other morphologically similar genera include Pezothrips, Megalurothrips, Odontothrips, and Odontothripiella (Mound & Nickle 2009).

Females and males of C. brunneus were collected in Miami-Dade County, Florida (25.63955°N, 80.29462°W), from the flowers of Asystasia gangetica (L.) T. Anderson (Acanthaceae) [Chinese violet, ganges primrose], an invasive and widely distributed weed in south Florida (Langland et al. 2008). Specimens were slide prepared, identified using dichotomous keys (Mound & Marullo 1996; Mound & Nickle 2009; Masumoto 2010), and compared with voucher specimens from

Table 1. Plant taxa with collected adults of Ceratothripoides brunneus from published reports.

<table>
<thead>
<tr>
<th>Plant</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salvia farinacea Benth.</td>
<td>Azidah 2011</td>
</tr>
<tr>
<td>Laurus melanogena L.</td>
<td>Sartiami &amp; Mound 2013</td>
</tr>
<tr>
<td>Tabernaemontana coronaria (L.)</td>
<td></td>
</tr>
<tr>
<td>Willd. (Apocynaceae), Thunbergia erecta (Benth.) T. Anderson (Acanthaceae), Thunbergia laurifolia Lindl. (Acanthaceae), Vigna unguiculata L. (Fabaceae)</td>
<td></td>
</tr>
<tr>
<td>Lycopersicon esculentum Miller (Solanaceae)</td>
<td>Etienne et al. 2015</td>
</tr>
<tr>
<td>Solanum lycopersicum L.</td>
<td>Macharia et al. 2015</td>
</tr>
<tr>
<td>Datura stramonium L. (Solanaceae), Tithonia diversifolia (Hemsl.) A. Gray (Asteraceae), Bidens pilosa L. (Asteraceae), Acanthuspermum hispidum D. C. (Asteraceae), Galinsoga parviflora Cau. (Asteraceae), Amaranthus hybridus L. (Amaranthaceae), Brassica oleracea var. capitata L. (Brassicaceae), B. oleracea var. acephala D. C.(Brassicaceae), Phaseolus vulgaris L. (Fabaceae), Cleome gynandra L. (Cleomeaceae), Zea mays L. (Poaceae)</td>
<td></td>
</tr>
<tr>
<td>Asystasia sp. (Acanthaceae), Hibiscus sp. (Malvaceae), Impatiens sp. (Balsaminaceae), Ocimum sp. (Lamiaceae), Orthosiphon sp. (Lamiaceae), Rhodomyrtus sp. (Myrtaceae), Soliva sp. (Lamiaceae), Solanum sp. (Solanaceae), Tabernaemontana sp. (Apocynaceae), Thunbergia sp.</td>
<td>Mound &amp; Nickle 2009</td>
</tr>
<tr>
<td>Citrus sp. (Rutaceae)</td>
<td>Sartiami &amp; Mound 2013</td>
</tr>
<tr>
<td>Rosa spp. (Rosaceae)</td>
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</tbody>
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Figs. 1–5. *Ceratothripoides brunneus*: 1. female habitus; 2. female forewing scale; 3. female head; 4. male habitus; 5. male abdominal sternites II–VIII.
quarantine inspections of the United States Department of Agriculture-Animal and Plant Health Inspection Service-Plant Protection and Quarantine. Voucher specimens were deposited in the Florida State Collection of Arthropods (FSCA), Gainesville, Florida. An abbreviated morphological description and diagnosis relative to co-occurring species in Florida is provided.

A combination of characters and states distinguish females of *C. brunneus* from those of other common flower-inhabiting Thripidae in Florida. Body brown, forewings and scale shaded brown (Fig. 1). Forewing scale with 6–8 marginal setae and discal setae absent (Fig. 2). Antenna 8-segmented. Head with 3 pairs of ocellar setae. Ocellar setae pair I usually arranged longitudinally (Fig. 3). Metanotal campaniform sensilla absent. Abdominal tergal ctenidia absent, but tergite VIII possesses scattered microtrichia sublaterally that may be interpreted as ctenidia. Posterior marginal comb tergite VIII complete and composed of long, evenly spaced microtrichia.

The male, similar in color to the female (Fig. 4), is differentiated from other Thripidae males encountered in Florida by the presence of irregular transverse rows of round to oval pore plates on sternites III–VII (Fig. 5). The pore plates are visible on alcohol preserved specimens under the dissecting microscope.

### Summary

The African thrips *Ceratothripoides brunneus* Bagnall (Thysanoptera: Thripidae) is reported for the first time from North America, collected from flowers of *Asystasia gangetica* (L.) T. Anderson (Acanthaceae) in Miami-Dade County, Florida. The affinity of *C. brunneus* for solanaceous plants in other regions of the world suggests that future detection in Florida commercial tomato, pepper, and eggplant production areas is possible. A literature summary of geographic distribution and biology and a morphological description of adults are provided.

Key Words: African thrips; description; distribution; Solanaceae; Miami-Dade County; first record

### Sumario

Se reporta por primera vez el trips africano *Ceratothripoides brunneus* Bagnall (Thysanoptera: Thripidae) en América del Norte, recolectados sobre flores de *Asystasia gangetica* (L.) T. Anderson (Acanthaceae) en el condado de Miami-Dade, Florida. La afinidad de *C. brunneus* por las plantas solanáceas en otras regiones del mundo sugiere la posible detección de esta especie sobre las áreas comerciales de tomate, pimiento y berenjena de la Florida en el futuro. Se provee un resumen de la literatura de su distribución geográfica y biología y una descripción morfológica de los adultos.

Palabras Clave: trips de africanos; descripción; distribución; Solanaceae; Condado de Miami-Date; primer registro

### References Cited


