New host record for *Entylia carinata* (Forster)  
(Hemiptera: Membracidae)

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**Abstract.** Yacon, *Smallanthus sonchifolius* (Poepp.) H. Rob (Asteraceae), is recorded as a new host plant for *Entylia carinata* (Forster) (Hemiptera: Membracidae) in Mt. Holly, NC. Adults, nymphs, and attending ants were found on numerous plants.

**Key words.** Treehopper, new host plant.

**Introduction**

Treehoppers (Hemiptera: Membracidae) are sap-sucking insects found all over the world except the polar ice caps and Madagascar. There are approximately 3,500 species (Deitz et al. 2011). They usually feed on new growth of various herbaceous and woody plants. Most species have host plant preferences either at the species level or genus level. Some treehoppers are of economic importance (including the buffalo treehopper, *Stictocephala bisonia* Kopp and Yonke, and the three-cornered alfalfa hopper, *Spissistilus festinus* (Say)) but few species aggregate on plants in numbers harmful to the plant. *Entylia carinata* (Forster) is a common species found throughout the United States. It is polyphagous, recorded on numerous host plants in several families. This paper records a new host plant, yacon (*Smallanthus sonchifolius* Poepp.) H. Rob (Asteraceae) for this ubiquitous species.

**Materials and Methods**

Adult and nymph specimens of *E. carinata* were observed in the garden of one of the junior authors, Allein Stanley. Photographs of adults, nymphs, and ants were taken by junior author Todd Elliott (Fig. 1). Specimens of adults, nymphs, and ants were collected, killed in 80% EtOH, brought back to the Schiele Museum lab, dried, and mounted (ants and adult treehoppers pinned; nymphs glued to punched points). The specimens were identified by examination through an AmScope SM-1TZ Professional Trinocular Stereo Zoom Microscope, WH10× Eyepieces, 3.5–90× Magnification, 0.7–4.5× Zoom Objective, Ambient Lighting, Large Pillar-Style Table Stand with 0.5× and 2.0× Barlow Lenses.

Voucher specimens (nine ♀♀, six ♂♂, eight nymphs and two *Formica subsericea* (Say) workers) were all identified by the senior author and were deposited in the Arthropod Collection at the Schiele Museum of Natural History, Gastonia, NC, USA. Since the Schiele Museum of Natural History does
Results and Discussion

Observations of *E. carinata* and attending ants were recorded on October 10, 2017 on numerous plants of yacon, *Smallanthus sonchifolius* (Poepp.) H. Rob (Asteraceae/Compositae) by the junior author Allein Stanley at her garden in Mt. Holly, NC (35.308611, -81.081667, 236’ elevation). Table 1 includes previously recorded host plants, their families and cited references. Plant names and families used in Table 1 coincide with those in the PLANTS Database (USDA 2018). Yacon has not been recorded previously as a host plant of *E. carinata*.

Yacon, also known as Peruvian ground apple, is traditionally grown in the northern and central Andes from Colombia to northern Argentina. It has recently been introduced into the United States, is available at farmer’s markets, and is grown for its sweet tasting tuberous roots (Caetano et al. 2016).

Both adults and nymphs of *E. carinata* are commonly attended by ants for their honeydew secretions. In addition to *Formica subsericea* (Say) (Wood 1977; Olmstead and Wood 1990), which was found attending the adults and nymphs on yacon, the following ant species are also recorded as attending *E. carinata*: *Camponotus ferrugineus* (Fabricius) (Olmstead and Wood 1990), *Prenolepis imparis* (Say) (Olmstead and Wood 1990), *Tapinoma sessile* (Say) (Olmstead and Wood 1990), and *Camponotus pennsylvanicus* (DeGeer) (Wood 1977).
Table 1. Previously recorded host plants of *Entylia carinata* (Forster).

<table>
<thead>
<tr>
<th>Host Plant</th>
<th>Family</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ambrosia artemisiifolia</em> L.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Ambrosia trifida</em> L.</td>
<td>Asteraceae</td>
<td>Funkhouser 1917, Dennis 1952, Wood 1977</td>
</tr>
<tr>
<td><em>Ambrosia</em> sp.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Aster</em> sp.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Bidens bipinnata</em> L.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Bidens coronata</em> (L.) Britton</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Bidens</em> sp.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Carya ovata</em> (Mill) K.Koch</td>
<td>Juglandaceae</td>
<td>Dennis 1952</td>
</tr>
<tr>
<td><em>Cercis canadensis</em> L.</td>
<td>Fabaceae</td>
<td>Osborn 1940</td>
</tr>
<tr>
<td><em>Cirsium arvense</em> (L.) Scop.</td>
<td>Asteraceae</td>
<td>Wood 1977</td>
</tr>
<tr>
<td><em>Cirsium vulgare</em> (Savî) Ten.</td>
<td>Asteraceae</td>
<td>Dennis 1952, Wood 1977</td>
</tr>
<tr>
<td><em>Cirsium altissimum</em> (L.) Hill</td>
<td>Asteraceae</td>
<td>as <em>Cnicus altissimus</em> in Branch 1913</td>
</tr>
<tr>
<td><em>Conyza canadensis</em> (L.) Cronquist</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Dahlia</em> sp.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Erechtites hieraciifolia</em> (L.) Raf. ex DC.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Erigeron</em> sp.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Eupatorium capillifolium</em> (Lam.) Small</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Eupatorium pilosum</em> Walter</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Eupatorium</em> sp.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Eutrochium maculatum</em> (L.) E.E. Lamont</td>
<td>Asteraceae</td>
<td>as <em>Epatorium maculatum</em> in Funkhouser 1917</td>
</tr>
<tr>
<td><em>Glycine max</em> (L.) Merr.</td>
<td>Fabaceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Helianthus annuus</em> L.</td>
<td>Asteraceae</td>
<td>Branch 1913, Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Helianthus tuberosus</em> L.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Helianthus</em> sp.</td>
<td>Asteraceae</td>
<td>Wood 1977</td>
</tr>
<tr>
<td><em>Medicago sativa</em> L.</td>
<td>Fabaceae</td>
<td>Branch 1913</td>
</tr>
<tr>
<td><em>Meliolus officinalis</em> (L.) Lam.</td>
<td>Fabaceae</td>
<td>as <em>Meliolus alba</em> in Branch 1913</td>
</tr>
<tr>
<td><em>Panicum dichotomiflorum</em> Michx.</td>
<td>Poaceae</td>
<td>Funkhouser 1923</td>
</tr>
<tr>
<td><em>Phleum alpinum</em> L.</td>
<td>Poaceae</td>
<td>Branch 1913</td>
</tr>
<tr>
<td><em>Quercus macrocarpa</em> Michx.</td>
<td>Fagaceae</td>
<td>Dennis 1952</td>
</tr>
<tr>
<td><em>Quercus palustris</em> Münchh.</td>
<td>Fagaceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Quercus rubra</em> L.</td>
<td>Fagaceae</td>
<td>Dennis 1952</td>
</tr>
<tr>
<td><em>Silphium perfoliatum</em> L.</td>
<td>Asteraceae</td>
<td>Kopp and Yonke 1973</td>
</tr>
<tr>
<td><em>Silphium</em> sp.</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Solanum tuberosum</em> L.</td>
<td>Solanaceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Solidago</em> sp.</td>
<td>Asteraceae</td>
<td>Kopp and Yonke 1973</td>
</tr>
<tr>
<td><em>Verbesina alternifolia</em> (L.) Britton ex Kearney</td>
<td>Asteraceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Vitis rotundifolia</em> Michx.</td>
<td>Vitaceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Vitis</em> sp.</td>
<td>Vitaceae</td>
<td>Dietrich et al. 1999</td>
</tr>
<tr>
<td><em>Zanthoxylum americanum</em> Mill.</td>
<td>Rutaceae</td>
<td>Dennis 1952</td>
</tr>
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Literature Cited


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