A Preliminary Checklist, Classification, and Four New Country Records for the Elateridae (Coleoptera) of Ecuador

María P. Aguirre-Tapiero
Departamento de Biología
Sección de Entomología
Universidad del Valle
Calle 13 No. 100-00, A.A. 25623
Ciudad Universitaria Meléndez
Cali, Colombia

Paul J. Johnson
Insect Biodiversity Lab.
Box 2207A
South Dakota State University
Brookings, SD 57007, U.S.A.

Date of Issue: February 14, 2014
A Preliminary Checklist, Classification, and Four New Country Records for the Elateridae (Coleoptera) of Ecuador

María P. Aguirre-Tapiero
Departamento de Biología
Sección de Entomología
Universidad del Valle
Calle 13 No. 100-00, A.A. 25623
Ciudad Universitaria Meléndez
Cali, Colombia
aguirrepilar@gmail.com

Paul J. Johnson
Insect Biodiversity Lab.
Box 2207A
South Dakota State University
Brookings, SD 57007, U.S.A.
paul.johnson@sdstate.edu

Abstract. A checklist and classification of the species of Elateridae reported from mainland Ecuador are given. Anchastus boulardi Chassain, Cardiorhinus apicalis Golbach, Physorhinus marginatus Candèze, and P. sexnotatus Steinheil are reported from Ecuador for the first time. The recorded elaterid fauna of Ecuador is now represented by 140 species, 38 genera, and 9 subfamilies, which are low taxon richness numbers when compared to those of neighboring countries.

Key words: Coleoptera, distribution, new country records, classification, checklist.

Introduction

The Elateridae of Ecuador are a very poorly studied faunal fragment based on political boundaries. Here, we provide a checklist of the genera and species of click beetles recorded in the literature from mainland Ecuador and report four species not previously known. This study was stimulated by the results of a recent limited study of canopy-occurring elaterids from sampling by T. Erwin, Smithsonian Institution, between January 1994 and July 1996, at Yasuni National Park in Departamento de Orellana (Aquirre-Tapiero 2013). The elaterids of the Galapagos Islands are not included as this small fauna is being treated separately. Information provided here demonstrates an opportunity for naturalists, taxonomists, ecologists, and students to add considerably and fruitfully to the body of knowledge on the biodiversity of Andean countries, at least with regard to the ninth most speciose family of Coleoptera. This information is presented with the anticipation that it will assist improved documentation of Ecuadorian elaterids.

Materials and Methods

Itemization of the Ecuadorian Elateridae was done from an unpublished digital catalogue of the species from the entire Americas, compiled and maintained by the second author. This database is founded
on the catalogues of (Schenkling 1925, 1927) and checklist of Blackwelder (1944, 1956), with taxonomic corrections and additions through Zoological Record, and the original and more recent literature.

New records reported here are from Aguirre-Tapiera (2013), a study conducted in the Yasuní National Park in Ecuador, Department of Orellana. The samples were obtained using canopy fogging as described by Erwin (1989), all samples and determined specimens are deposited in the National Museum of Natural History (USNM) in Washington, D.C., USA, with duplicates held in trust for the National Polytechnic University, Quito, Ecuador.

Locality data are presented as for materials from the Yasuní National Park canopy inventory. The classification follows Johnson (2002) as modified for South American taxa.

New Country Records

Anchastus LeConte, 1853

Candèze (1859) and Champion (1895) provided the most recent synopses of Anchastus LeConte for South and Mesoamerica, respectively. Neither author reported any species from Ecuador, nor did Blackwelder (1944). Here, we provide the first Ecuadorian record for any species of the genus.

Anchastus boulardi Chassain, 2010
(Figure 1)

Chassain (2010) described A. boulardi from Montagne des Chevaux, French Guiana. However, this species is apparently widespread through northern South America and southern Central America (unpubl. data). This species is easily confused with A. moratus Candèze with yellow elytral apices, but can be immediately separated by the black apex of each elytron. Specimens examined (1): ECUADOR, Department Orellana., Trans. Ent. 1 Km S. Gare Onkone Camp, Waorani Ethnic Reserve, Onkone Gare Camp, 216.3m, Date: 21-Jun-96/00 ° 39′25.7″S, 076 ° 27′10.8″W, TL Erwin et al., Transect 3 Season 9, Capture Method: Fogging, Elat 041 male.

Cardiorhinus Eschscholtz, 1829

Golbach (1983) provided a synopsis of Cardiorhinus Eschscholtz in a summary of his revision of the genus through a series of papers, but did not report any species from Ecuador. Previously, Schwarz (1902) described C. bimaculatus from Archidona, Ecuador, and Fleutiaux (1940) described C. politus from an unspecified Ecuadorian locality. Here, we provide an Ecuadorian record for a third species of the genus.

Cardiorhinus apicalis Golbach, 1979
(Figure 2)

Golbach (1979) described C. apicalis from Nigrillani, Nor Yungas, Bolivia. The records below are the first for Ecuador and outside of Bolivia. The combination of distinct basal sulci on the posterior margin of the pronotum and the mesosternal sides at an inclined angle associate this species with C. frenatus and C. piciventris in his “Group 2” within the genus. Cardiorhinus apicalis is immediately distinguished within this group by having the pronotum infuscate and bimaculate or a bivittate pronotal disc, elytra black in the apical half, antennomeres 3 and 4 similar, and the third elytral interstria not elevated. Specimens examined (6): ECUADOR. Department Orellana., Transect Ent. 1 km S. Gare Onkone Camp, Waorani Ethnic Reserve, Onkone Gare Camp, 216.3m, Date: 08-Oct-95/00 ° 39′25.7″S, 076 ° 27′10.8″W, TL Erwin et al., Transect 9 - Season 2, Method of collection: Fogging, Habitat: Forest land, Lot # 1252; same , 01-Oct-96/ Transect 3 - Season 9, Lot # 1689; same, 02-Oct-96/ Transect 6 - station 10, Lot # 1720; same, 08-Oct-95, Transect 9 – Season 2, Habitat: Bosque terra firme, Lot # 1252.; same, 01-Oct-96, Transect 3 – season 9, Habitat: Bosque terra firme, Lot # 1689; same, 02-Oct-96, Transect 6 – season 10, Habitat: Bosque terra firme, Lot # 1720.
Figures 1–4. Dorsal aspects of adults of four species of Elateridae new to Ecuador. 1) Anchastus boulardi Chassain from Ecuador. 2) Cardiorhinus apicalis Golbach. 3) Physorhinus marginatus Candèze. 4) Physorhinus sexnotatus Steinheil.
Physorhinus Eschscholtz, 1829

Schaaf (1970, 1971) revised Physorhinus Eschscholtz and reported *P. distigma* Candèze, *P. erythrocephalus* (Fabricius), and *P. stellatus* Candèze from Ecuador. We report two additional species.

**Physorhinus marginatus** Candèze, 1859

(Figure 3)

*Physorhinus marginatus* is separated from other species by the yellow-orange side margins of the pronotum. This species closely resembles *P. erythrocephalus* Eschscholtz by the presence of four orange yellow maculae on the elytra, but these are subequal, and the basal maculae are distinctly larger in *P. erythrocephalus*. Specimens examined: ECUADOR. Department Orellana., Transect Ent. 1 Km S. Gare Onkone Camp, Waorani Ethnic Reserve, 216.3m, Date: 04-Oct-96, 00 ° 39 '25.7" S, 076 ° 27' 10.8" W, TL Erwin et al., Transect 10 - Season 3, Method of collection: Fogging, Lot # 1753, Elat, 112.

Distribution: *Physorhinus marginatus* was previously known only from French Guiana and Brazil (Schaaf 1971).

**Physorhinus sexnotatus** Steinheil, 1875

(Figure 4)

*Physorhinus sexnotatus* is immediately recognized by the four yellow, discrete oval and two vague maculae on the elytral bases. Specimens examined (10): ECUADOR. Department Orellana., Transect Ent. 1 km S. Gare Onkone Camp, Waorani Ethnic Reserve, 216.3m, Date: 16-Jan-94, 00 ° 39 '25.7" S, 76 ° 27' 10.8" W, TL Erwin et al., Transect 4 - Season 8, Method of collection: Fogging, Lot # 587; same, 20-Jun-94, Transect 2 - Station 8, Lot # 687; same, 6-Oct-94, Transect 9 - Season 1, Lot # 870; same, 5-Feb-96, Transect 4 - Season 7, Lot # 1437; same, 21-Jun-96, Transect 4 - Season 7, Lot # 1557.; same, 21-Jun-96, Transect 4 - Season 8, Lot # 1558.; same, 22-Jun-96, Transect 6 - Season 3, Lot # 1573.; same, 22-Jun-96, Transect 6 - Season 4, Lot # 1574; same, 26-Jun-96, Transect 8 - Season 6, Lot # 1596; same, 23-Jun-96, Transect 9 - Season 3, Lot # 1603.

Distribution: This species is widely distributed, being reported in Central America from Costa Rica and Panama, and South America from Colombia, French Guiana, Brazil, Peru, and Bolivia (Schaaf 1971). The present discovery expands its distribution to Ecuador.

### A Preliminary Checklist of the Species of Elateridae of Ecuador

<table>
<thead>
<tr>
<th>Species</th>
<th>Recorded Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achrestus onorei Golbach, 1988</td>
<td>Ecuador; Venezuela</td>
</tr>
<tr>
<td>Achrestus ruficollis Fleutiaux, 1902</td>
<td>Brazil; Ecuador; French Guiana</td>
</tr>
<tr>
<td>Aeolus aequinoctialis Candèze, 1859</td>
<td>Ecuador; Brazil</td>
</tr>
<tr>
<td>Agelasinus aeneus Fleutiaux, 1920</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Alampoides submaculatus (Schwarz, 1902)</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Alampoides tessellatus (Candèze, 1863)</td>
<td>Peru; Ecuador</td>
</tr>
<tr>
<td>Anaissus anandra Calder, 1978</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Anaissus franciscoloi Reise, 2007</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Anaissus fuscipes Calder, 1978</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Anaissus marialuisae Reise, 2007</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Anaissus porioni Reise, 2007</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Anaissus tarsalis Candèze, 1857</td>
<td>Ecuador; Peru; Colombia; Bolivia; Brazil</td>
</tr>
<tr>
<td>Anchastus boulardi Chassain, 2010</td>
<td>Ecuador; French Guiana</td>
</tr>
<tr>
<td>Anoplischius diplotrichus Schwarz, 1902</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Anoplischius laticollis (Eschscholtz, 1829)</td>
<td>Panama; Colombia; French Guiana; Brazil; Ecuador</td>
</tr>
</tbody>
</table>
### Elateridae of Ecuador

<table>
<thead>
<tr>
<th>Species</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aptopus pichinchae</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Atractosomus oertzeni</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Cardiorhinus apicalis</td>
<td>Bolivia; Ecuador</td>
</tr>
<tr>
<td>Cardiorhinus bimaculatus</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Cardiorhinus politus</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Chalcolepidius albisetosus</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Chalcolepidius aurulentus</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Chalcolepidius chalcontheus</td>
<td>Colombia; Brazil; Argentina; Guatemala; Costa Rica</td>
</tr>
<tr>
<td>Chalcolepidius erythroloma</td>
<td>Ecuador; Chile; Peru; USA: Hawaii</td>
</tr>
<tr>
<td>Chalcolepidius fabricii</td>
<td>Colombia; Venezuela; Ecuador</td>
</tr>
<tr>
<td>Chalcolepidius ferratuvittatus</td>
<td>Colombia; Ecuador</td>
</tr>
<tr>
<td>Chalcolepidius gossipiatus</td>
<td>Guatemala; Costa Rica; Panama; Venezuela; Ecuador; Brazil; Argentina; French Guiana; Suriname; French Guiana; Ecuador; Peru; Bolivia; Paraguay; Uruguay</td>
</tr>
<tr>
<td>Chalcolepidius jansoni</td>
<td>Nicaragua; Costa Rica; Panama; Colombia; Ecuador; Peru</td>
</tr>
<tr>
<td>Chalcolepidius limburges</td>
<td>Mexico; Honduras; Colombia; Venezuela; Brazil; Uruguay; Virgin Islands; Trinidad; Peru; Ecuador; French Guiana; Guyana; Bolivia; Suriname</td>
</tr>
<tr>
<td>Chalcolepidius porculus</td>
<td>Venezuela; Colombia; Guyana; Suriname; French Guinea; Brazil; Guadeloupe; Grenada; Ecuador; Peru</td>
</tr>
<tr>
<td>Chalcolepidius simile</td>
<td>Costa Rica; Panama; Trinidad; Venezuela; Brazil; Ecuador; Argentina</td>
</tr>
<tr>
<td>Conoderus abbreviatus</td>
<td>Brazil; Barbados; Grenada; Trinidad; Tobago; Venezuela; Colombia; Guyana; Suriname; Ecuador; Peru; Bolivia</td>
</tr>
<tr>
<td>Conoderus apiator</td>
<td>Colombia; French Guiana; Ecuador; Brazil; Bolivia</td>
</tr>
<tr>
<td>Conoderus diffims</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Conoderus laterarius</td>
<td>Mexico; Guatemala; Costa Rica; Panama; Colombia; Ecuador; Brazil</td>
</tr>
<tr>
<td>Conoderus nocturnus</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Conoderus nubeculosus</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Conoderus opacous</td>
<td>Mexico; Guatemala; Nicaragua; Costa Rica; Panama; Ecuador</td>
</tr>
</tbody>
</table>
Cyathodera lanuginicollis Candèze, 1859  Nicaragua; Costa Rica; Panama; French Guiana; Brazil; Ecuador

Dilobitarsus subsulcatus Candèze, 1874  Ecuador

Dipropus fulvicollis (Schwarz, 1902)  Ecuador

Dipropus fulvus (Fleutiaux, 1920)  Ecuador

Esthesopus morio Candèze, 1878  Ecuador; Argentina

Horistonotus riveti Fleutiaux, 1920  Ecuador

Lacon palliatus (Latreille, 1811)  Mexico; Nicaragua; Colombia; Peru; Ecuador

Lissomus gibbosus Cobos, 1972  Colombia; Costa Rica; Panama; Venezuela; Suriname; French Guiana; Ecuador

Lygelater fulgidus (Germar, 1841)  Colombia; French Guiana; Ecuador; Peru

Lygelater indicus (Herbst, 1783)  Colombia; Bolivia; Argentina; Ecuador

Lygelater piceus Schwarz, 1902  Ecuador

Madadicus quadrinotatus Steinheil, 1875  Costa Rica; Panama; Colombia; Venezuela; Argentina; Antigua; St. Eustatius

Octinodes ruflcollis (Schwarz, 1902)  Colombia; Peru; Ecuador; Brazil; Paraguay; Argentina; Paraguay; Mustique; Grenada; Trinidad

Oistus riveti Fleutiaux, 1920  Ecuador

Oistus subaeneus Fleutiaux, 1920  USA: Texas; Mexico; Belize; Honduras; Guatemala; Nicaragua; Costa Rica; Panama; Colombia; Peru; Brazil; Paraguay; Argentina; French Guiana; Ecuador; Brazil; Bolivia; Mustique; Grenada; Trinidad

Physorhinus distigma Candèze, 1859  Ecuador

Physorhinus erythrocephalus (Fabricius, 1801)  Costa Rica; Panama; Colombia; Ecuador

Physorhinus marginatus Candèze, 1859  French Guiana; Brazil, Ecuador;

Physorhinus sexnotatus Steinheil, 1875  Colombia, French Guiana; Brazil; Peru; Bolivia; Costa Rica; Panama; Ecuador

Physorhinus stellatus Candèze, 1859  Ecuador

Platycrepidius castus (Janson, 1882)  Ecuador

Platycrepis prodigus (Janson, 1882)  Ecuador

Pomachilius filiformis Candèze, 1889  Ecuador

Pomachilius flavus (Fleutiaux, 1920)  Ecuador

Pomachilius marginicollis Schwarz, 1903  Ecuador

Pomachilius pullus Schwarz, 1900  Ecuador

Pomachilius pusillus Schwarz, 1900  Ecuador

Probothrium crinitum Candèze, 1878  Ecuador

Propalaeus haroldi (Candèze, 1878)  Colombia; Venezuela; Peru; Ecuador

Psiloniscus apicalis (Chevrolat, 1835)  Mexico; Guatemala; Panama; Ecuador

Pyrearinus basalis (Schwarz, 1902)  Ecuador; French Guiana

Pyrearinus vesculus Costa, 1978  French Guiana; Ecuador; Brazil

Pyrischius biplagiatus (Janson, 1882)  Ecuador; Peru; Bolivia

Pyrophorus angustus Blanchard, 1843  Costa Rica; Panama; Colombia; Venezuela; Ecuador; Bolivia

Pyrophorus clarus Germar, 1841  Ecuador; Peru

Pyrophorus dulcifer Costa, 1972  Mexico; Guatemala; Nicaragua; Honduras; Belize; Costa Rica; Panama; Colombia; Venezuela; Ecuador; Peru

Pyrophorus luscus Candèze, 1889  Ecuador

Pyrophorus magnus Costa, 1972  Ecuador

Pyrophorus noctilucus (Linnaeus, 1758)  Ecuador; Brazil; Guadeloupe; Jamaica;
**Elateridae of Ecuador**

- *Pyrophorus pisticus* Costa, 1972  
  San Domingo; Cuba  
  Ecuador
- *Pyrophorus validus* Costa, 1972  
  Ecuador
- *Semiotus acutus* Candèze, 1874  
  Ecuador; Bolivia; Colombia; Peru  
  Ecuador
- *Semiotus aeneovittatus* Kirsch, 1884  
  Bolivia; Brazil; Ecuador; Perú; French Guiana  
  Colombia; Ecuador
- *Semiotus affinis* Guérin-Méneville, 1855  
  Ecuador; Argentina; Bolivia; Brazil; Colombia  
  Colombia; Brazil
- *Semiotus antennalis* Candèze, 1895  
  Ecuador
- *Semiotus antennatus* Schwarz, 1900  
  Ecuador
- *Semiotus bilineatus* Candèze, 1857  
  Colombia; Ecuador
- *Semiotus bispinus* Candèze, 1874  
  Ecuador
- *Semiotus buckleyi* Candèze, 1874  
  Ecuador
- *Semiotus carus* Janson, 1882  
  Ecuador; Peru
- *Semiotus colombianus* Wells, 2007  
  Colombia; Ecuador
- *Semiotus convexicollis* Blanchard, 1843  
  Colombia; Ecuador
- *Semiotus cuspideratus splendidus* Candèze, 1881  
  Brazil; Costa Rica; Honduras; Panama; Peru;  
  Colombia; Ecuador
- *Semiotus diptychus* Candèze, 1874  
  Ecuador
- *Semiotus formosus* Janson, 1882  
  Ecuador
- *Semiotus fryi* Candèze, 1874  
  Bolivia; Brazil; Ecuador; Peru; French Guiana
- *Semiotus fulvicollis* Blanchard, 1843  
  Bolívia; Brazil; Ecuador; French Guiana; Panama;  
  Peru
- *Semiotus furcatus* (Fabricius, 1792)  
  French Guiana; Suriname; Brazil; Peru; Ecuador;  
  Colombia; Bolivia; Guyana; Panama
- *Semiotus girardi* Chassain, 2002  
  Ecuador
- *Semiotus illigeri* Guérin-Méneville, 1844  
  Colombia; Venezuela; Ecuador; Costa Rica;  
  Panama
- *Semiotus imperialis* (Guérin-Méneville, 1844)  
  Colombia; Venezuela; Peru; Argentina; Brazil;  
  Bolivia; Ecuador; Guyana; Venezuela
- *Semiotus insignis* Candèze, 1857  
  Mexico; Guatemala; Nicaragua; Costa Rica;  
  Panama; Beliz; Colombia; Ecuador; Guatemala;  
  Honduras; Venezuela
- *Semiotus intermedius* (Herbst, 1806)  
  Brazil; Mexico; Ecuador; Colombia; Guatemala;  
  Nicaragua; Costa Rica; Panama; Argentina;  
  Paraguay
- *Semiotus jansoni* Candèze, 1874  
  Ecuador; Peru
- *Semiotus ligatus* Candèze, 1889  
  Colombia; Ecuador
- *Semiotus ligneus* (Linnaeus, 1767)  
  Mexico; Nicaragua; Panama; Colombia;  
  Venezuela; Suriname; French Guiana; Brazil;  
  Argentina; Bolivia; Costa Rica; Ecuador;  
  Guatemala; Guyana; Honduras; Paraguay; Peru;  
  Suriname; Trinidad
- *Semiotus linnei* Guérin-Méneville, 1844  
  Colombia; Ecuador; Venezuela
- *Semiotus matilei* Chassain, 2001  
  Ecuador
- *Semiotus nigriceps* Candèze, 1857  
  Brazil; Argentina; Ecuador; Paraguay; Peru  
  Bolivia; Ecuador
- *Semiotus perangustus* Wells, 2007  
  Ecuador
- *Semiotus pilosus* Wells, 2007  
  Mexico; Colombia; Ecuador; Venezuela
- *Semiotus punctatostriatus* Candèze, 1857  
  Colombia; Ecuador; Peru
- *Semiotus regalis* Guérin-Méneville, 1844  
  Ecuador
- *Semiotus ruber* Pjatakowa, 1941  
  Ecuador
- *Semiotus rubricollis* Wells, 2007  
  Colombia; Ecuador; Peru
- *Semiotus schaumi* Guérin-Méneville, 1844  
  Ecuador
- *Semiotus scitulus* Candèze, 1864  
  Ecuador
Discussion

The most recent published regional checklist that included historical country records for Ecuador was published almost 70 years ago (Blackwelder 1944, 1956). The low faunal number, 140 species, in the checklist above demonstrates inadequate documentation of the elaterid fauna in Ecuador. Even with corrections and updates the present list for the country is a mere 3% of the nearly 3600 described species for the Americas, and 5% of the approximately 2400 species recorded from South America. Neighboring Colombia and Peru share comparable montane and Amazonian transition ecozones, yet have more documented elaterid species, showing clearly that extensive opportunities exist for biotic documentation in Ecuador.

A comparison from neighboring and other South American countries is illustrated in Table 1. Notably, as a reflection of historical effort and possibly geographic area in bordering countries, Brazil has 799 species and the numbers are quickly increasing (e.g., Casari 2012a–b, 2013), Colombia with 327
species (Aguirre-Tapiero 2009; unpubl. data), and Peru with 157 species (unpubl. data). An examination of the checklist reveals a distinct proportional absence of small, dull-colored, and potentially habitat-restricted and ecologically informative species that dominate click beetle diversity. For example, the present checklist includes 47 species of *Semiotus*, representing 33% of the reported species! Given the dominance in favor of large and conspicuous elaterids in the checklist, such as *Chalcolepidius* Eschscholtz, *Pyrophorus* Billberg, and *Semiotus* Eschscholtz species, it can be hoped that attention will turn toward the greater numbers of undocumented ‘small brown’ click beetles as part of the charismatic microfauna that dominates biodiversity. Many undescribed species from Ecuador and neighboring countries are known to us, thus many study opportunities exist to enlarge the species list through documentation. And, taxonomic revisions are needed, especially for several rather large and probably polyphyletic genera such as *Aeolus* Eschscholtz, *Anoplischius* Candèze and *Dipropus* Eschscholtz.

Most Ecuadorian click beetles are reported from Amazonian lowlands or adjacent transition ecozones, likely due to the popularity of and modern development threats to lowland rainforest environments. The montane and western upland regions are not well represented in the click beetle fauna despite these being areas of historically high anthropogenic occupation and perturbation. As with many other organisms, satisfactory biodiversity documentation and reference specimen collections essential to working with Neotropical click beetles are lacking in Andean countries. This lack of resources tangibly impacts research methods, target taxa selected, analysis of environmental correlations, ecological habits, and conservation planning as demonstrated by Erwin et al. (2005). For example, we suggest that mosaics of occurrence due to habitat history and vegetation associations are reflected in the floral visitation and invertebrate predation preferences by adult click beetles, and microhabitat adaptation by the largely predatory larvae, such as those in aged decadent and decaying wood, bromeliad leaf axils, epiphyte root zones, or riparian communities.

Sixty-five (65) species, or 48% of the fauna, are recorded solely from Ecuador to date. However, assertions of endemicity are premature as with the other taxa there is a general pattern of Ecuadorian species of elaterids demonstrating broader distributions throughout Andean and Amazonian transition ecozones. The species reported only from Ecuador are members of genera that are mostly from Amazonian lowland ecozones that are shared with other Andean countries. Specialized or narrow habitats have not been adequately explored in Ecuador and may yield endemic species.

**Acknowledgments**

We thank T.L. Erwin who has been an important advisor; his support, scientific knowledge, and allowing the senior author to be part of the canopy arthropod project. Nancy S. Carrejo was an invaluable mentor to the senior author during many years at the Universidad del Valle and provided continual guidance and insightful advice leading to the present paper. The United States National Museum of Natural History project supported visits under their NLRP, BSI Program, and Short-Term Visitor programs, through the Department of Entomology field support was provided by Ecumbiente, SA, in Quito, Ecuador, that allowed participation of several Ecuadorian students at the Onkone-Gare station, as well as logistics at the Universidad del Valle. We gratefully acknowledge all foggers for their assistance in the field and in sorting arthropod samples. Wills Flowers and Dan Young are thanked for reviewing the manuscript and providing valuable corrections and comments for its improvement.

**Literature Cited**


Received January 16, 2014; Accepted February 7, 2014
Table 1. Selected South American Elateridae Taxa by Country.

<table>
<thead>
<tr>
<th>Country</th>
<th>Species</th>
<th>Genera</th>
<th>Subfamilies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>376</td>
<td>89</td>
<td>10</td>
</tr>
<tr>
<td>Bolivia</td>
<td>123</td>
<td>41</td>
<td>8</td>
</tr>
<tr>
<td>Brazil</td>
<td>799</td>
<td>90</td>
<td>9</td>
</tr>
<tr>
<td>Chile</td>
<td>168</td>
<td>55</td>
<td>9</td>
</tr>
<tr>
<td>Colombia</td>
<td>328</td>
<td>59</td>
<td>8</td>
</tr>
<tr>
<td>Ecuador</td>
<td>140</td>
<td>38</td>
<td>9</td>
</tr>
<tr>
<td>French Guiana</td>
<td>183</td>
<td>56</td>
<td>7</td>
</tr>
<tr>
<td>Guyana</td>
<td>56</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>Paraguay</td>
<td>57</td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>Peru</td>
<td>157</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>Suriname</td>
<td>22</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Uruguay</td>
<td>41</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td>Venezuela</td>
<td>149</td>
<td>41</td>
<td>8</td>
</tr>
</tbody>
</table>