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New state records for Coniopterygidae (Neuroptera) with an updated list of species in North America north of Mexico

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Abstract. Coniopterygidae are the smallest members of the order Neuroptera and are often overlooked by collectors. Consequently, distribution of many species within North America north of Mexico is poorly known, even at the state level. Currently 57 species (five adventive) are recognized from North America. Of those, 30 are reported from a single state or province. Conversely, 12 states and provinces have no published records of Coniopterygidae. More than 600 specimens of adult coniopterygids were identified and numerous new state records were determined. An updated list of species state-level distribution is provided.

Key words. Dustywings, biocontrol, conservation.

Resumen. Los Coniopterygidae son los miembros más pequeños del orden Neuroptera y con frecuencia son ignorados por los recolectores. Por tanto, la distribución de muchas especies en Norteamérica al norte de México es escasamente conocida, aún al nivel estatal. Actualmente 57 especies (cinco adventicias) se reconocen de Norteamérica. De estas, 30 se reportan de un solo estado o provincia. A la inversa, 12 estados y provincias no tienen registros publicados de Coniopterygidae. Más de 600 ejemplares de coniopterígidos adultos fueron identificados y numerosos nuevos registros de estado fueron determinados. Una lista actualizada de especies con distribución por estado es proporcionada.

Palabras clave. Coniopterígidos, control biológico, conservación.

Introduction

Members of the family Coniopterygidae (Neuroptera) are often overlooked or misidentified. They are small, rarely more than 5 mm long (hard to see), have four well-developed wings (not a fly), but reduced wing venation compared to other members of their order. The typical reaction of most students is shocked disbelief when they find out it's a lacewing. Adults and larvae are predacious on mites and aphids found on the surface of leaves of trees and bushes (Meinander 1972). Some species appear to be associated with particular plant species, indicating a preference for prey items (Meinander 1972).

Several regional and worldwide revisions, complete with keys and illustrations, have resulted in a good understanding of the species found in North America north of Mexico (North America) (see references below). However, coniopterygids still warrant further research: females and larvae of most species have not been described and many that have cannot be differentiated due to conserved morphology; the predatory behavior of adults and larvae may be useful for biological control; undescribed species may linger; adventive species may appear; their position as predators on leaf surfaces makes them especially vulnerable to air pollution and may place species with limited distribution in peril; their phylogenetic position as sister to the rest of the Neuroptera is of interest (Winterton et al. 2010, 2018); and finally they are a fascinating group in their own right (what does *Coniopteryx westwoodi* (Fitch) use the horn on its frons for?).

Recently, numerous specimens from across the United States were made available to the author and several new state records were discovered. It has been more than 20 years since the last significant treatment of the family for North America (Penny et al. 1997). While not much has happened since then, it seems relevant to compile the appropriate literature and provide an updated list of species and distributions.

The following is a brief history of literature concerning the family in North America with an emphasis on identification. Banks (1906) first revised the family for North America listing five genera and eight species. The group was largely abandoned until Meinander (1972) did a family-level world-wide revision

and described an additional 20 North American species. Later he described 13 new species, nine from western North America (Meinander 1974a) and four from across the continent (Meinander 1975). Johnson described a new genus from New Mexico (Johnson 1976), added five new species to *Aleuropteryx* Low in his revision of that genus (Johnson 1980b), and described an additional six new species in various genera (1980a). Meinander (1981) reviewed the genus *Coniopteryx* and provided a world-wide checklist. Later he reviewed the state of the family in the New World and provided a checklist, enumerating 46 species from the United States and Canada (Meinander 1986). Meinander (1990) provided an updated world-wide checklist and described two new species from North America, the most recently described species in the area. A catalog from Penny et al. (1997) listed eight genera and 55 species in the United States and Canada. Sziráki (2005) proposed new species groupings for genera and subgenera. Five adventive species to North America have been reported: *Aleuropteryx juniperi* Ohm (Henry 1976; Wheeler 1981); *Conwentzia psociformis* (Curtis) (Meinander 1972); *Helicoconis lutea* (Wallengren) (Meinander 1972); *Heteroconis picticornis* (Banks) (Meinander 1972); and *Semidalis pseudouncinata* Meinander (Meinander et al. 2009). The most recent world-wide checklist of the family (Sziráki 2011) lists 55 species in North America, and two additional adventive species are included in the present list (*Helicoconis lutea* and *Semidalis pseudouncinata*), bringing the total number of species reported from North America to 57 (Table 1).

Additional literature relevant to Coniopterygidae in North America includes the description of larvae of two species (Meinander 1974b) and description of mating behavior of three species (Johnson and Morrison 1979). Greve (1989) first reported *Semidalis arnaudi* Meinander from the United States. Several state-level checklists exist: Florida, five species (Stange 1981); Indiana, seven species (Lawson and McCafferty 1984); Missouri, three species (Froeschner 1947); Virginia, nine species (Flint 2015), and Wisconsin, six species (Thorn 1972).

Materials and Methods

Adult specimens were obtained from five sources: 1) Clemson University Arthropod Collection, Clemson University, Clemson, South Carolina (CUAC) (M. L. Ferro, collection manager); 2) University of Alaska Museum (UAM) (D. S. Sikes, curator); 3) Enns Entomology Museum, University of Missouri, Columbia (UMRM) (K. B. Simpson, collection manager); 4) the author's personal collection, now deposited at CUAC; and 5) a large donation of specimens from Dr. David Bowles, now deposited at CUAC. Full data for CUAC specimens are available through Symbiota Collections of Arthropods Network (SCAN 2018) and for UAM specimens through Arctos (2018).

Results and Discussion

In total, 667 specimens were examined representing six genera and 11 species (Appendix 1). Several specimens could not be identified to species, but represent the first record of their genus within a state. Two genera are reported from Alaska for the first time, *Aleuropteryx* Low and *Conwentzia* Enderlein. The specimen of *Aleuropteryx* was a male but could not be identified further because it was missing genitalia. However, it represents a substantial range extension for the genus. The *Conwentzia* specimen could not be identified further because it was a female. It does represent a new state record for the genus, but the discovery is not surprising considering *Conwentzia* spp. have been collected from Washington, USA, and British Columbia, Canada (Table 1). Female specimens of *Semidalis* Enderlein were collected from Louisiana and New Mexico, two new state-level records for the genus, but again, not surprising considering known distributions of species in the genus (Table 1).

Numerous new state records at the species-level are reported (Table 1). *Coniopteryx diversicornis* Meinander is reported from Missouri, Oklahoma, and South Carolina for the first time, **new state records**. *Coniopteryx simplicior* Meinander is reported from Missouri and South Carolina for the first time, **new state records**. *Coniopteryx tineiformis* Curtis is reported from Arkansas, Missouri, Mississippi, North Carolina, and Oklahoma for the first time, **new state records**. *Coniopteryx westwoodi* (Fitch) is reported from Arkansas, Oklahoma, and South Carolina for the first time, **new state records**.

Table 1. State- and province-level distribution for all species of Coniopterygidae known from North America north of Mexico. Distributions were taken from Froescher (1947); Henry (1976); Johnson (1976, 1980a, 1980b); Lawson and McCafferty (1984); Meinander (1972, 1974a, 1975, 1990); Meinander et al. (2009); Penny et al. (1997); Stange (1981); Sziráki (2011); Thorn (1972); and Wheeler (1981). States and provinces in bold indicate new records.

Subfamily ALEUROPTERYGINAE		
***Aleuropteryx* Low**		
1	*arceuthobii* Meinander, 1975: 28. USA.	CA, CO, TX
2	*arizonica* Johnson, 1980b: 272. USA.	AZ
3	*cupressi* Meinander, 1974a: 218. USA.	CA
4	*dragoonica* Johnson, 1980b: 275. USA.	AZ
5	*juniperi* Ohm, 1968: 14. N. Africa, Europe, USA.	MD, NJ, NY, PA, VA, WV (adventive)
6	*knowltoni* Johnson, 1980b: 278. USA.	UT
7	*longipennis* Meinander, 1974a: 218. Mexico, USA.	CA, NM, UT
8	*maculipennis* Meinander, 1972: 45. USA.	AZ, CA, NM, TX
9	*megacornis* Johnson, 1980b: 284. USA.	AZ, NM, TX
10	*punctata* Meinander, 1974a: 220. Mexico, USA.	AZ, NM
11	*simillima* Meinander, 1972: 46. Mexico, USA.	AZ, TX
12	*unicolor* Meinander, 1972: 48. Mexico, USA.	AZ, CA
13	*vulgaris* Meinander, 1972: 51. USA.	AZ, CA, NM, TX, UT
14	*werneri* Johnson, 1980b: 294. USA.	NM
***Bidesmia* Johnson**		
15	*morrisoni* Johnson, 1976: 193. USA.	NM
***Helicoconis* Enderlein**		
16	*californica* Meinander, 1972: 119. USA.	CA. Canada: AB, BC, YT
17	*lutea* (Wallengren, 1871: 55). Europe, China, Siberia, USA*.	PA (adventive)
18	*similis* Meinander, 1972: 124. Canada, USA.	**AK**, CA, OR. Canada: BC
19	*walshi* (Banks, 1906: 83). Canada**, USA.	CA, IN, ME, MI, VA, WI
***Heteroconis* Enderlein**		
20	*picticornis* (Banks, 1939: 473). China, USA.	CA (adventive)
***Neoconis* Enderlein**		
21	*bifurcata* Meinander, 1974a: 223. USA.	AZ
22	*inexpectata* Meinander, 1972: 155. Mexico, USA.	AZ
23	*marginata* Meinander, 1972: 156. Mexico, Nicaragua, USA.	AZ, CA, TX
Subfamily CONIOPTERYGINAE		
***Coniopteryx* Curtis**		
subgenus ***Coniopteryx* Curtis**		
24	*californica* Meinander, 1974a: 225. USA.	CA, TX
25	*dorsicornis* Johnson, 1980a: 183. USA.	FL
26	*fitchi* Banks, 1895: 315. Mexico, USA.	AZ, CA, NV, TX
27	*forcipata* Johnson, 1980a: 185. USA.	AZ
28	*latipalpis* Meinander, 1972: 257. USA.	AZ, CA, CO
29	*mexicana* Meinander, 1974a: 226. Honduras, Mexico, Nicaragua, USA.	TX
30	*minuta* Meinander, 1972: 259. Mexico, USA.	CA
31	*palpalis* Meinander, 1972: 260. Mexico, USA.	CA
32	*quadricephala* Johnson, 1980a: 188. USA.	UT
33	*simplex* Meinander, 1974a: 228. USA.	CA
34	*simplicior* Meinander, 1972: 261. Bolivia, Brazil, Costa Rica, Jamaica, Mexico, Venezuela, USA.	AR, CA, FL, GA, IN, MD, **MO**, NY, **SC**, TN, TX, VA
35	*tineiformis* Curtis, 1834: 528. Canada, Europe, Asia Minor, USA.	AK, **AR**, CA, ID, IN, MI, **MO**, **MS**, **NC**, **OK**, TN, VA. Canada: BC, MB, NL, QC, YT

36	*westwoodi* (Fitch, 1856: 98). Canada, USA.	**AR**, FL, IN, MD, ME, MI, MN, MO, NJ, NY, **OK**, **SC**, TN, TX, VA, WI. Canada: MB
subgenus ***Xeroconiopteryx*** **Meinander**		
37	*canadensis* Meinander, 1972: 211. Canada, USA.	AK, WI. Canada: BC, SK
38	*diversicornis* Meinander, 1972: 213. Mexico, USA.	AZ, CA, FL, **MO**, **OK**, **SC**, TX
39	*meinanderi* Johnson, 1980a: 186. Mexico, USA.	AZ, CA
40	*texana* Meinander, 1972: 214. Mexico, USA.	AZ, CA, TX
Conwentzia **Enderlein**		
41	*barretti* (Banks, 1899: 202). Mexico, USA.	CA
42	*californica* Meinander, 1972: 297. Canada, Mexico, USA.	AZ, CA, CO, NM, OR, UT, WA, WY. Canada: BC
43	*pineticola* Enderlein, 1905: 10. N. Africa, N. Asia, Canada, Europe, USA.	AR, DC, FL, IA, IN, MA, MD, ME, MI, MN, MO, NC, NH, NJ, NY, OH, PA, **SC**, VA, WI. Canada: BC, MB, NL, NS, ON
44	*psociformis* (Curtis, 1834: pl. 528). N. Africa, Sw. Asia, Canada, Europe, New Zealand, USA.	MD, NJ, OH, VA. Canada: BC (adventive)
Parasemidalis **Enderlein**		
45	*fuscipennis* (Reuter, 1894: 13). Europe, Mexico, Mongolia, USA.	AZ, **AR**, CA, FL, MI
Semidalis **Enderlein**		
46	*angusta* (Banks, 1906: 81). Mexico, Nicaragua, USA.	AR, AZ, CA, MT, TX, **UT**. Canada: BC
47	*arnaudi* Meinander, 1972: 328. Mexico, Nicaragua, USA.	AZ
48	*bituberculata* Meinander, 1990: 79. USA.	CA
49	*deserta* Meinander, 1974a: 230. USA.	CA
50	*flinti* Meinander, 1972: 335. Mexico, USA.	AZ, CA, TX
51	*frommeri* Meinander, 1974b: 231. USA [see Sziráki 2011: 99].	CA
52	*inconspicua* Meinander, 1972: 336. USA.	AR, AZ, CA, IN, MD, **MO**, OK, **SC**, TX, VA, WI
53	*pseudouncinata* Meinander, 1963: 103. N. Africa, Canada, Europe, USA*.	Canada: BC (adventive)
54	*tricornis* Johnson, 1980a: 191. Mexico, USA.	AZ
55	*vicina* (Hagen, 1861: 197). N. Africa, Canada, Europe, USA.	**AR**, CT, DC, FL, GA, IN, KS, **KY**, MA, MD, ME, MI, MO, MN, MS, NC, NH, NY, OH, PA, SC, TN, VA, WI. Canada: AB, QC
56	*wallacei* Meinander, 1972: 337. USA.	PA
57	*xerophila* Meinander, 1990: 84. USA.	CA

*Not included in Sziráki (2011).

**Meinander (1972: 126) listed "Females possibly belonging to *H. walshi*…" from Canada, but no confirmed records of the species in Canada could be found.

Conwentzia pineticola Enderlein is reported from South Carolina for the first time, **new state record**. *Helicoconis similis* Meinander, is reported from Alaska for the first time, **new state record**. *Parasemidalis fuscipennis* (Reuter) is reported from Arkansas for the first time, **new state record**. *Semidalis angusta* (Banks) is reported from Utah for the first time, **new state record**. *Semidalis inconspicua* Meinander is reported from Missouri and South Carolina for the first time, **new state records**. *Semidalis vicina* (Hagen) is reported from Arkansas and Kentucky for the first time, **new state records**.

Currently 30 species are known from only a single state or province (Table 1). Several possible reasons apply. One species, *Semidalis pseudouncinata* Meinander, is adventive and only reported from British Columbia. Some species may have a wider but undocumented distribution, and others may be at the northern extent of their range, for example *Semidalis arnaudi* Meinander which occurs from Central America north into Arizona. Finally, some species may have truly small ranges and, as most are found

in the western states—an area suffering from a profound amount of anthropomorphic abuse at multiple spatial and temporal scales—may be of conservation concern. Conversely, 12 states and provinces have no published records of Coniopterygidae (Fig. 1), including Louisiana, a state the author lived in for more than a decade, but apparently didn't collect any specimens from (much to his embarrassment).

Based on described species, in general, 40 species are limited to western North America (extending east as far as and including Texas), four species are limited to eastern North America, and 12 species are transcontinental (Table 1, Maps 1–57). Based on known and estimated ranges, most eastern states could have 8–12 species with a maximum around 15–16. Other noticeable gaps (Fig. 1) occur in New Mexico with only eight species, sandwiched between Texas (16 spp.) and Arizona (24 spp.), and Washington and Oregon with one species each between California (33 spp.) and British Columbia (9 spp.). The central plains appear depauperate, but based on known distributions (Maps 1–57) it's not unreasonable to expect South Dakota, for example, to have up to eight species.

The author only surveyed five specimen holdings. Certainly, many new distributional records, and possibly new species, will be found in material already in museums. However, additional specimens should be obtained, especially along the southern border of the United States, to document species' northward range expansion due to global climate change.

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Appendix 1. Specimens examined. Label data are not verbatim but were stylized for clarity and brevity. All specimens are deposited in the Clemson University Arthropod Museum (CUAC), except those in the Enns Entomology Museum (indicated [UMRM]), and those in the University of Alaska Museum (indicated [UAM]). Only the first day of a trapping date range and only the last name of the first collector are reported. Unique identifiers physically associated with specimens (labels) are included, those that begin with the prefix "UAM" originated at the University of Alaska Museum and those with the prefix "CUAC" originated at the Clemson University Arthropod Museum. Records are separated by a bullet [•]. F = female, M = male.

Aleuropteryginae

***Aleuropteryx* sp.**

ALASKA: Yukon-Koyukuk Census Area: Livengood; N 65.508566, W -148.605766; 12 August 2013; pruned tree branch of Salix; Progar; 1 M; UAM100116918 [UAM] [missing genitalia]

***Helicoconis similis* Meinander**

ALASKA: Fairbanks North Star Borough: Fairbanks/North Pole, Richardson Highway; N 64.77985, W -147.55917; 3 June 2014; hanging Malaise, 6.9 m in mixed black & white spruce forest with open/boggy areas plus dry zones, >100m from Tanana River; Hagelin; 1 M; UAM100183578 [UAM]

***Helicoconis* spp.**

ALASKA: Anchorage (Borough): Anchorage, JBER, Fish Lake; N 61.27446, W -149.80235; 12 June 2015; hanging Malaise, 5.0m, boggy and flat, black spruce; Hagelin; 1 F; UAM100139395 [UAM]• **Fairbanks North Star Borough:** Fairbanks, Cripple Creek; N 64.81309, W -148.02905; 16 June 2014; hanging Malaise, 5.3 m, boggy black spruce; Hagelin; 1 F; UAM100183468 [UAM]• Fairbanks, Cripple Creek; N 64.81309, W -148.02905; 30 June 2014; hanging Malaise, 5.3 m, boggy black spruce; Hagelin; 1 F; UAM100183501 [UAM]• Fairbanks, Goldstream Road, Silver Creek; N 64.958283, W -147.70325; 16 June 2014; hanging Malaise, 4.4 m, Boggy Black Spruce, mixed with White spruce, Larch, multiple standing dead, running water (creek), ~100m away; Hagelin; 1 F; UAM100183516 [UAM]

Coniopteryginae

***Coniopteryx diversicornis* Meinander**

MISSOURI: Christian Co.: Wilson's Creek Nat. Blfd.; Terrell Creek; N 37.081, W -93.418; 12 June 2011; Bowles; 1 M; CUAC000044964 [UMRM]

OKLAHOMA: Latimer Co.: N 34.87, W -95.24; 12 June 1988; UV light; Stephan; 1 M; CUAC000045050

SOUTH CAROLINA: Chesterfield Co.: Carolina Sandhills NWR; N 34.5758, W -80.1784; 13 July 2016; Sweeping; Ferro; 2 M; CUAC000044756

***Coniopteryx fitchi* Banks**

ARIZONA: Cochise Co.: Chiricahua Mountains, South Fork Road; N 31.8832, W -109.1749; 19 August 2015; UV light; Ferro; 1 M; CUAC000044749

***Coniopteryx simplicior* Meinander**

ARKANSAS: Benton Co.: Bella Vista; N 36.476, W -94.263; 29 June 2012; UV light; Bowles; 2 M; CUAC000044985• **Logan Co.:** E. slank(?) of Magazine; Mt. at Workman Cabin; Barber's Ridge; N 35.16, W -93.64; 1 September 1990; UV light; 1 M; CUAC000045018• **Newton Co.:** Buffalo National River; Cecil Creek, Off Co Rd 19; (Erbie road); N 36.0877, W -93.2231; 6 June 2012; SLAM trap; Edwards; 1 M; CUAC000044969

MISSOURI: Barry Co.: Roaring River State Park, Off Davis Hollow; N 36.586, W -93.835; 5 August 2002; UV light; Ferro; 1 M; CUAC000044728• **Boone Co.:** Columbia; N 38.95, W -92.32; 14 August 1982; Craig; 1 M [UMRM]• Columbia, Capen Park; N 38.9295, W -92.3212; 26 August 2004; Sweeping Oak; Ferro; 3 M; CUAC000044700• Columbia, Capen Park; N 38.9295, W -92.3212; 28 August 2004; Sweeping Oak; Ferro; 1 M; CUAC000044706• **Dallas Co.:** 8.5 km NW Fair Grove; 0.3 mi. E County Rd O; N 37.455, W -93.1007; 23 June 2012; Malaise trap; Bowles; 1 M; CUAC000044953• **Greene Co.:** Wilson's Creek Nat. Blfd.; Wilson's Creek; N 37.086, W -93.403; 12 June 2011; UV light; Bowles; 1 M;

CUAC000044967• **Henry Co.:** 10 Km NW Clinton, Ferro Farm; N 38.423, W -93.807; 28 May 2006; UV/MV light; Ferro; 1 M [UMRM]• 10 km NW Clinton, Ferro Farm; N 38.423, W -93.807; 1 July 2014; UV/MV light; Ferro; 1 M; CUAC000044729• 10 km NW Clinton, Ferro Farm; N 38.423, W -93.807; 29 July 2017; UV/MV light; Ferro; 3 M; CUAC000044732• **Johnson Co.:** Whiteman AFB; N 38.73, W -93.558; 15 June; Bowles; 1 M; CUAC000044962• Warrensburg, Pertle Springs; N 38.7425, W -93.7436; 3 September 2004; Sweeping oak, cedar, hickory; Ferro; 1 M; CUAC000044719• **Taney Co.:** Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 31 May 2012; Malaise trap; Bowles; 1 M; CUAC000045057• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 15 June 2012; Malaise trap; Bowles; 1 M; CUAC000044989• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 22 June 2012; Malaise trap; Bowles; 1 M; CUAC000045015• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 21 July 2012; Malaise trap; Bowles; 1 M; CUAC000045006• **Wayne Co.:** Sam A. Baker State Park, Big Creek; N 37.259, W -90.508; 7 July 2002; UV light; Ferro; 1 M; CUAC000044730

SOUTH CAROLINA: Anderson Co.: Simpson Exp. Sta., Peach S3; N 34.60, W -82.88; 15 June 1978; Lee; 20 M; CUAC000044831• Pendleton, 104 Periwinkle Ct.; N 34.6273, W -82.76324; 22 June 2007; UV light; Stocks; 1 M; CUAC000044829• Simpson Exp. Sta., Peach U3; N 34.60, W -82.88; 29 July 1979; Lee; 1 M; CUAC000015678• **Barnwell Co.:** T Savannah R plant, Site G, Lower Three Runs Cr., T nr SRP Rds 8 & 8-8; N 33.28, W -81.62; 30 July 1984; Morse; 4 M; CUAC000044845• **Chesterfield Co.:** Carolina Sandhills NWR; N 34.6238, W -80.2593; 13 July 2016; UV light; Ferro; 1 M; CUAC000044766• **Oconee Co.:** Thompson R. at NC border, Duke location #583.2; N 35.027, W -82.982; 20 July 1987; UV light; Hamilton; 4 M; CUAC000044855• Thompson R. at NC border, Duke location #583.2; N 35.027, W -82.982; 24 August 1987; UV light; Hoffman; 2 M; CUAC000044853• **Pickens Co**.: Central, 118 Hedge St.; N 34.7193, W -82.7731; 9 July 2016; MV blacklight; Ferro; 4 M; CUAC000044758• Clemson; N 34.67, W -82.84; 20 July 1977; light trap; Lee; 6 CUAC000044842• Clemson; N 34.67, W -82.84; 20 June 1977; light trap; Lee; 4 M; CUAC000015679

***Coniopteryx tineiformis* Curtis**

ARKANSAS: Benton Co.: Pea Ridge Natl. Mil. Pk.; Winton Spring Branch; N 36.45, W -94.03; 6 July 2011; UV light; Bowles; 1 M; CUAC000045007

MISSISSIPPI: Clay Co.: Columbus AFB; N 33.64, W -88.44; 19 June 1991; UV light; Bowles; 1 M; CUAC000045039

MISSOURI: Taney Co.: Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 22 June 2012; Malaise trap; Bowles; 2 M; CUAC000045016

NORTH CAROLINA: Haywood Co.: Purchase Knob; N 35.5865, W -83.0771; 21 June 2008; Sweeping Rhododendron; Ferro; 5 M; CUAC000044737• Purchase Knob; N 35.5865, W -83.0771; 22 June 2016; Sweeping Acer, Quercus; Ferro; 2 M; CUAC000044761

OKLAHOMA: Latimer Co.: N 34.87, W -95.24; July 1988; UV light; Stephan; 2 M; CUAC000045009• N 34.87, W -95.24; 11 July 1988; UV light; Stephan; 1 M; CUAC000045042• N 34.87, W -95.24; 25 July 1988; UV light; Stephan; 1 M; CUAC000045037

***Coniopteryx westwoodi* (Fitch)**

ARKANSAS: Newton Co.: Buffalo National River; Mill Creek, Off Co Rd 472; N 36.0617, W -93.1354; 13 June 2012; SLAM trap; Edwards; 2 M; CUAC000044971• Buffalo National River; Whiteley Creek; Off AR-43N; N 35.9911, W -93.3992; 27 June 2012; SLAM trap; Edwards; 2 M; CUAC000045022• Buffalo National River; Whiteley Creek; Off AR-43N; N 35.9911, W -93.3992; 11 July 2012; SLAM trap; Edwards; 4 M; CUAC000045024• **Washington Co.:** Westfork, 2 mi. SW; N 35.85, W -94.17; 20 August 1988; UV light; Carlton; 1 M; CUAC000045064

MISSOURI: Boone Co.: Columbia, Capen Park; N 38.9295, W -92.3212; 27 July 2004; Sweeping Oak; Ferro; 2 M; CUAC000044703• Columbia; N 38.95, W -92.32; 14 August 1982; Craig; 2 M [UMRM]• Columbia, Capen Park; N 38.9295, W -92.3212; 26 August 2004; Sweeping Oak; Ferro; 1 M; CUAC000044695 [UMRM]• Ashland Lake; N 38.7626, W -92.2062; 30 August 2004; Sweeping; Ferro; 1 M; CUAC000044723• **Dallas Co.:** 8.5 km NW Fair Grove; 0.3 mi. E County Rd O; N 37.455, W -93.1007; 23 June 2012; Malaise trap; Bowles; 2 M; CUAC000044956• **Greene Co.:** Wilson's Creek Nat. Bld.; Wilson's Creek; N 37.086, W -93.403; 24 August 2011; UV light; Bowles; 2 M; CUAC000045061• **Taney**

Co.: Bull Shoals Field Station; Drury House, woodland; N 36.5725, W -93.058; 3 May 2011; Malaise trap; Bowles; 4 M; CUAC000045028• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 3 May 2011; Malaise trap; Bowles; 1 M; CUAC000044968• Bull Shoals Field Sta.; Drury House; N 36.5725, W -93.058; 26 May 2011; Malaise trap; Bowles; 1 M; CUAC000045060 [UMRM]• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 24 May 2012; Malaise trap; Bowles; 1 M; CUAC000044991• Bull Shoals Field Station; Near pond #1, woodland; N 36.5659, W -93.0687; 7 June 2012; Malaise trap; Bowles; 2 M; CUAC000044978• Bull Shoals Field Station; Near pond #1, woodland; N 36.5659, W -93.0687; 15 June 2012; Malaise trap; Bowles; 1 M; CUAC000044997• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 22 June 2012; Malaise trap; Bowles; 1 M; CUAC000045046

OKLAHOMA: Latimer Co.: N 34.87, W -95.24; 12 June 1988; UV light; Stephan; 1 M; CUAC000045049

SOUTH CAROLINA: Anderson Co.: Simpson Exp. Sta., Peach 52; N 34.60, W -82.88; 31 May 1978; Lee; 14 M; CUAC000044822• Simpson Exp. Sta., Peach U4; N 34.60, W -82.88; 19 June 1978; Lee; 1 M; CUAC000044816• Pendleton, 104 Periwinkle Ct.; N 34.6273, W -82.76324; 22 June 2007; UV light; Stocks; 1 M; CUAC000044830• Simpson Exp. Sta., Peach U1; N 34.60, W -82.88; 10 July 1978; Lee; 2 M; CUAC000044835• Simpson Exp. Sta., Peach U2; N 34.60, W -82.88; 10 July 1978; Lee; 8 M; CUAC000044837• Simpson Exp. Sta., Peach U3; N 34.60, W -82.88; 10 July 1978; Lee; 14 M; CUAC000044844• Simpson Exp. Sta., Peach S2; N 34.60, W -82.88; 31 July 1978; Lee; 1 M; CUAC000044832• Simpson Exp. Sta., Peach U2; N 34.60, W -82.88; 30 August 1978; Lee; 3 M; CUAC000044817• **Oconee Co.:** Coley Cr., Duke loc. #584.4; N 34.75, W -83.07; 18 May 1987; UV light; Hamilton; 1 M; CUAC000044851• Thompson R. at NC border, Duke location #583.2; N 35.027, W -82.982; 20 July 1987; UV light; Hamilton; 2 M; CUAC000044857• **Pickens Co.:** Central, 118 Hedge St.; N 34.7193, W -82.7731; 10 April 2017; emergent brush pile; Ferro; 1 M; CUAC000044750• W. tribe. of Six mile creek; N 34.8, W -82.85; 24 April 1988; Malaise trap; Hoffman; 1 M; CUAC000044847• Clemson; N 34.67, W -82.84; 1 August 1977; light trap; Lee; 6 M; CUAC000044843• Clemson; wooden fence E 2, Westbank Apts.; N 34.67, W -82.84; 18 August 1984; wooden fence; Brushwein; 1 M; CUAC000044848

***Coniopteryx* spp.**

ALASKA: Anchorage (Borough): Girdwood; N 60.96908333, W -149.1157167; 2 July 2012; pruned branch tip of *Populus*; Progar; 1 F; UAM100113373 [UAM]• **Fairbanks North Star Borough:** Fairbanks, 930 Fitz Ct; N 64.9013, W -147.52861; 1 June 2013; panel trap; Sikes; 1 F; UAM100184776 [UAM]• University of Alaska Fairbanks campus; N 64.858438; W -147.85502; 25 June 2016; beating spruce; Field Ent Class; 1 F; UAM100139536 [UAM]• **Yukon-Koyukuk Borough:** Nenana; N 64.57415, W -149.1149; 8 June 2015; pruned branch tips of *Alnus*; Progar; 1 F; UAM100119485 [UAM]

ARIZONA: Cochise Co.: Chiricahua Mountains, South Fork Road; N 31.8832, W -109.1749; 19 August 2015; UV light; Ferro; 1 F; CUAC000044751

ARKANSAS: Benton Co.: Bella Vista; N 36.476, W -94.263; 29 June 2012; UV light; Bowles; 6 F; CUAC000044982• Bella Vista; N 36.476, W -94.263; 25 August 2012; UV light; Bowles; 1 F; CUAC000045052• **Logan Co.:** E. slank(?) of Magazine; Mt. at Workman Cabin; Barber's Ridge; N 35.16, W -93.64; 1 September 1990; UV light; 1 F; CUAC000045019• **Newton Co.:** Buffalo National River; Mill Creek, Off Co Rd 472; N 36.0617, W -93.1354; 13 June 2012; SLAM trap; Edwards; 1 F; CUAC000044972• Buffalo National River; Cecil Creek, Off Co Rd 19; (Erbie road); N 36.0877, W -93.2231; 27 June 2012; SLAM trap; Edwards; 1 F; CUAC000044973• Buffalo National River; Whiteley Creek; Off AR-43N; N 35.9911, W -93.3992; 27 June 2012; SLAM trap; Edwards; 2 F; CUAC000045020• Buffalo National River; Whiteley Creek; Off AR-43N; N 35.9911, W -93.3992; 11 July 2012; SLAM trap; Edwards; 6 F; CUAC000045023• Buffalo National River; Whiteley Creek; Off AR-43N; N 35.9911, W -93.3992; 9 August 2012; SLAM trap; Edwards; 3 F; CUAC000045034• **Washington Co.:** 1.0 Km ENE Durham; near White River; Cedar Forest, west exposure; N 35.959, W -93.979; 25 July 1985; Wallis; 1 F; CUAC000044995• 1.0 Km ENE Durham near White River; Cedar Forest, west exposure; N 35.959, W -93.979; 25 July 1985; Wallis; 1 F; CUAC000045044

MISSOURI: Boone Co.: Ashland Wildlife Area; 38.752, -92.199; 1 F [UMRM]• Columbia, Capen Park; N 38.9295, W -92.3212; 15 July 2004; Sweeping Oak; Ferro; 2 F; CUAC000044696• Columbia, Capen Park; N 38.9295, W -92.3212; 27 July 2004; Sweeping Oak; Ferro; 5 F; CUAC000044704• Columbia, Capen Park; N 38.9295, W -92.3212; 15 August 2004; Sweeping Oak; Ferro; 1 F; CUAC000044707• Columbia, Capen Park; N 38.9295, W -92.3212; 25 August 2004; Sweeping Oak; Ferro; 1 F;

CUAC000044692• Columbia, Capen Park; N 38.9295, W -92.3212; 26 August 2004; Sweeping Oak; Ferro; 5 F; CUAC000044701• Columbia, Capen Park; N 38.9295, W -92.3212; 28 August 2004; Sweeping Oak; Ferro; 3 F; CUAC000044708• Columbia, Cosmo Park; N 38.9711, W -92.3652; 31 August 2004; Sweeping cedar, oak; Ferro; 2 F; CUAC000044726• Columbia, Three Creeks Conservation Area; N 38.8398, W -92.3045; 1 September 2004; Sweeping oak, cedar, hickory; Ferro; 2 F; CUAC000044720• Columbia, Capen Park; N 38.9295, W -92.3212; 6 September 2004; Sweeping Oak; Ferro; 6 F; CUAC000044709• **Dallas Co.:** 8.5 km NW Fair Grove; 0.3 mi. E Country Rd O; N 37.455, W -93.1007; 9 June 2012; Malaise trap; Bowles; 2 F; CUAC000044961• 8.5 km NW Fair Grove; 0.3 mi. E County Rd O; N 37.455, W -93.1007; 23 June 2012; Malaise trap; Bowles; 2 F; CUAC000044954• **Henry Co.:** 10 km NW Clinton, Ferro Farm; N 38.423, W -93.807; 1 July 2014; Malaise trap; Ferro; 1 F; CUAC000044731• **Johnson Co.:** Warrensburg, Pertle Springs; N 38.7425, W -93.7436; 3 September 2004; Sweeping oak, cedar, hickory; Ferro; 3 F; CUAC000044718• **Taney Co.:** Bull Shoals Field Station; Drury House, woodland; N 36.5725, W -93.058; 3 May 2011; Malaise trap; Bowles; 1 F; CUAC000045027• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 24 May 2012; Malaise trap; Bowles; 1 F; CUAC000044992• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 31 May 2012; Malaise trap; Bowles; 1 F; CUAC000045056• Bull Shoals Field Station; Near pond #1, woodland; N 36.5659, W -93.0687; 15 June 2012; Malaise trap; Bowles; 1 F; CUAC000044998• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 22 June 2012; Malaise trap; Bowles; 2 F; CUAC000045014

NORTH CAROLINA: Haywood Co.: Purchase Knob; N 35.5865, W -83.0771; 21 June 2008; Sweeping Rhododendron; Ferro; 3 F; CUAC000044738

OKLAHOMA: Latimer Co.: N 34.87, W -95.24; 25 July 1988; UV light; Stephan; 1 F; CUAC000044996• N 34.87, W -95.24; 1 August 1989; UV light; Stephan; 1 F; CUAC000045043

SOUTH CAROLINA: Aiken Co.: Savannah River Site; Lost Lake; N 33.28, W -81.62; 26 August 1994; Jones; 1 F; CUAC000044819• **Anderson Co.:** Simpson Exp. Sta., Peach U2; N 34.60, W -82.88; 31 May 1978; Lee; 5 F; CUAC000044810• Simpson Exp. Sta., Peach U1; N 34.60, W -82.88; 31 May 1978; Lee; 9 F; CUAC000044820• Simpson Exp. Sta., Peach U3; N 34.60, W -82.88; 31 May 1978; Lee; 6 F; CUAC000044821• Simpson Exp. Sta., Peach U2; N 34.60, W -82.88; 31 May 1978; Lee; 1 F; CUAC000044839• Simpson Exp. Sta., Peach 52; N 34.60, W -82.88; 1 June 1978; Lee; 8 F; CUAC000044814• Simpson Exp. Sta., Peach S2; N 34.60, W -82.88; 15 June 1978; Lee; 3 F; CUAC000044834• Simpson Exp. Sta., Peach U2; N 34.60, W -82.88; 16 June 1978; Lee; 2 F; CUAC000044838• Simpson Exp. Sta., Peach U1; N 34.60, W -82.88; 16 June 1978; Lee; 5 F; CUAC000044841• Simpson Exp. Sta., Peach U3; N 34.60, W -82.88; 19 June 1979; Lee; 13 F; CUAC000044811• Pendleton, 104 Periwinkle Ct.; N 34.6273, W -82.76324; 22 June 2007; UV light; Stocks; 1 F; CUAC000044828• Simpson Exp. Sta., Peach U1; N 34.60, W -82.88; 10 July 1978; Lee; 13 F; CUAC000044836• Simpson Exp. Sta.; N 34.60, W -82.88; 14 July 1978; Lee; 22 F; CUAC000044808• Simpson Exp. Sta., Peach S2; N 34.60, W -82.88; 31 July 1978; Lee; 3 F; CUAC000044833• Simpson Exp. Sta., Peach 53; N 34.60, W -82.88; 2 August 1978; Lee; 2 F; CUAC000044818• Simpson Exp. Sta., Peach U1; N 34.60, W -82.88; 30 August 1978; Lee; 8 F; CUAC000044824• **Barnwell Co.:** T Savannah R plant, Site G, Lower Three Runs Cr., T nr SRP Rds 8 & 8-8; N 33.28, W -81.62; 30 July 1984; Morse; 1 F; CUAC000044846• **Chesterfield Co.:** Carolina Sandhills NWR; N 34.5758, W -80.1784; 13 July 2016; Sweeping; Ferro; 1 F; CUAC000044754• **Oconee Co.:** Thompson R. at NC border, Duke location #583.2; N 35.027, W -82.982; 20 July 1987; UV light; Hamilton; 2 F; CUAC000044856• Thompson R. at NC border, Duke location #583.2; N 35.027, W -82.982; 24 August 1987; UV light; Hoffman; 8 F; CUAC000044852• Coley Cr., Duke loc. #584.4; N 34.75, W -83.07; 24 August 1987; UV light; Hoffman; 1 F; CUAC000044854• **Pickens Co.:** N. fork of creek at Holly Springs picnic area; N 34.748, W -82.865; 19 April 1988; Malaise trap; Hoffman; 1 F; CUAC000044849• Clemson University Campus, Long Hall; N 34.67, W -82.84; 17 June 2016; at lights; Ferro; 1 F; CUAC000044752• Central, 118 Hedge St.; N 34.7193, W -82.7731; 9 July 2016; MV blacklight; Ferro; 7 F; CUAC000044760• Cherry Farm Insectary; N 34.653, W -82.833; 15 August 1984; UV light; Brushwein; 1 F; CUAC000044850

TENNESSEE: Cumberland Co.: Catoosa WMA; N 36.1151, W -84.974; 18 June 2016; Sweeping; Ferro; 1 F; CUAC000044765

***Conwentzia pineticola* Enderlein**

ARKANSAS: Benton Co.: Pea Ridge Natl. Mil. Pk.; Pratt Creek; N 36.44, W -94.036; 6 July 2011;

UV light; Bowles; 2 M; CUAC000045011• **Washington Co.:** 2 mi E. of Durham; N. of Hwy 16; Oak tree canopy; N 35.928, W -93.957; 12 August 1985; Oak tree canopy; Wallis; 1 CUAC000045008• 2 mi E. of Durham; N. of Hwy 16; Cedar tree; N 35.928, W -93.957; 12 August 1985; Cedar tree; Wallis; 1 M; CUAC000045010• 1.0 Km ENE Durham; near White River; Cedar Forest West exposure; N 35.959, W -93.979; 25 July 1985; Wallis; 1 M; CUAC000044994

MISSOURI: Dallas Co.: 8.5 km NW Fair Grove; 0.3 mi. E County Rd O; N 37.455, W -93.1007; 23 June 2012; Malaise trap; Bowles; 1 M; CUAC000044958• **Taney Co.:** Bull Shoals Field Station; Drury House, woodland; N 36.5725, W -93.058; 12 June 2011; Malaise trap; Bowles; 1 M; CUAC000045040• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 10 May 2011; sweeping; Bowles; 1 M; CUAC000045030 [UMRM]

SOUTH CAROLINA: Oconee Co.: Coley Cr., Duke loc. #584.4; N 34.75, W -83.07; 12 October 1987; UV light; Hoffman; 1 M; CUAC000044858• **Pickens Co.:** Clemson; N 34.67, W -82.84; 15 June 1991; Hoffman; 2 M; CUAC000044812

***Conwentzia* sp.**

ALASKA: Fairbanks North Star Borough: Fairbanks, UAF; N 64.866733; W -147.842967; 3 June 2014; hanging Malaise, 4.9 m in Black Spruce, some white spruce; Hagelin; 1 F; UAM100183486 [UAM]

***Parasemidalis fuscipennis* (Reuter)**

ARIZONA: Cochise Co.: Coronado NF: Chiricahua Mts.; N 31.91753, W 109.27584; 30 July 2013; FIT; LSAM team; 1 M; CUAC000045063

ARKANSAS: Montgomery Co.: Relay tower 2 mi; SW Collier Spring; N 34.472, W -93.605; 6 October 1990; UV light; Bowles; 1 M; CUAC000045004

***Semidalis augusta* (Banks)**

UTAH: Wasatch/Summit Co.: Provo R. @ Pine Val Cmpgrnd.; N 40.592, W -111.1128; 28 June 2003; Geraci; 1 M; CUAC000044825

***Semidalis inconspicua* Meinander**

ARKANSAS: Benton Co.: Bella Vista; N 36.476, W -94.263; 29 June 2012; UV light; Bowles; 2 M; CUAC000044986

MISSOURI: Boone Co.: Columbia; N 38.95, W -92.32; 14 August 1982; Craig; 1 M [UMRM]• Ashland Lake; N 38.7626, W -92.2062; 25 August 2004; UV light; Ferro; 1 M; CUAC000044724• Columbia, Capen Park; N 38.9295, W -92.3212; 6 September 2004; Sweeping Oak; Ferro; 1 M; CUAC000044694 [UMRM]• Columbia, Capen Park; N 38.9295, W -92.3212; 6 September 2004; Sweeping Oak; Ferro; 1 M; CUAC000044733• **Dallas Co.:** 8.5 km NW Fair Grove; 0.3 mi. E County Rd O; N 37.455, W -93.1007; 2 June 2012; Malaise trap; Bowles; 1 M; CUAC000044966• 8.5 km NW Fair Grove; 0.3 mi. E County Rd O; N 37.455, W -93.1007; 23 June 2012; Malaise trap; Bowles; 1 M; CUAC000044955• **Greene Co.:** Wilson's Creek Nat. Bld.; Wilson's Creek; N 37.086, W -93.403; 24 August 2011; UV light; Bowles; 1 M; CUAC000045062• **Henry Co.:** 10 km NW Clinton, Ferro Farm; N 38.423, W -93.807; 28 May 2006; UV/MV light; Ferro; 2 M; CUAC000045066• **Taney Co.:** Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 24 May 2012; Malaise trap; Bowles; 1 M; CUAC000044993

SOUTH CAROLINA: Anderson Co.: Pendleton, 104 Periwinkle Ct.; N 34.6273, W -82.76324; 22 June 2007; UV light; Stocks; 1 M; CUAC000044827• **Barnwell Co.:** T Savannah R. plant, Site G, Lower three runs cr. T nr SRP Rds. 8 & 8-8; N 33.28, W -81.62; 30 July 1984; Morse; 1 M; CUAC000044799• **Chesterfield Co.:** Carolina Sandhills NWR; N 34.6089, W -80.2194; 17 April 2017; Sweeping oaks; Ferro; 1 M; CUAC000044763• Carolina Sandhills NWR; N 34.5758, W -80.1784; 13 July 2016; Sweeping; Ferro; 1 M; CUAC000044753• **Pickens Co.:** Clemson; N 34.67, W -82.84; 1 August 1977; light trap; Lee; 14 F; CUAC000044790

***Semidalis vicina* (Hagen)**

ARKANSAS: Benton Co.: Bella Vista; N 36.476, W -94.263; 29 June 2012; UV light; Bowles; 2 M; CUAC000044984• **Newton Co.:** Buffalo National River; Whiteley Creek; Off AR -43N; N 35.9911, W -93.3992; 27 June 2012; SLAM trap; Edwards; 1 M; CUAC000044951• Buffalo National River; Whiteley Creek; Off AR-43N; N 35.9911, W -93.3992; 27 June 2012; SLAM trap; Edwards; 1 M; CUAC000045021• Buffalo National River; Whiteley Creek; Off AR-43N; N 35.9911, W -93.3992; 11 July 2012; SLAM trap;

Edwards; 3 M; CUAC000045025• Buffalo National River; Mill Creek, Off Co Rd 472; N 36.0617, W -93.1354; 29 July 2012; SLAM trap; Edwards; 1 M; CUAC000045033

KENTUCKY: Madison Co.: Madison Co., Berea, Coll. For. Horse Cove Rd.; N 37.57165, W -84.21799; 15 July 2013; MT trap; Chapman; 2 M; CUAC000045068

MISSOURI: Boone Co.: Columbia, Capen Park; N 38.9295, W -92.3212; 26 August 2004; Sweeping Oak; Ferro; 1 M; CUAC000044697 [UMRM]• Columbia, Three Creeks Conservation Area; N 38.8398, W -92.3045; 1 September 2004; Sweeping oak, cedar, hickory; Ferro; 1 M; CUAC000044721• **Taney Co.:** Bull Shoals Field Station; Drury House, woodland; N 36.5725, W -93.058; 3 May 2011; Malaise trap; Bowles; 1 M; CUAC000045026• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 10 May 2011; Malaise trap; Bowles; 7 M; CUAC000045000• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 10 May 2011; sweeping; Bowles; 1 M; CUAC000045029• Bull Shoals Field Station; Drury House, woodland; N 36.5725, W -93.058; 10 May 2011; Malaise trap; Bowles; 3 M; CUAC000045031 [UMRM]• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 26 May 2011; Malaise trap; Bowles; 8 M; CUAC000044981• Bull Shoals Field Sta.; Drury House; N 36.5725, W -93.058; 26 May 2011; Malaise trap; Bowles; 1 M; CUAC000045059• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 7 June 2012; Malaise trap; Bowles; 1 M; CUAC000044965• Bull Shoals Field Station; Near pond #1, woodland; N 36.5659, W -93.0687; 7 June 2012; Malaise trap; Bowles; 5 M; CUAC000044979• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 15 June 2012; Malaise trap; Bowles; 3 M; CUAC000044987• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 22 June 2012; Malaise trap; Bowles; 7 M; CUAC000045012• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 22 June 2012; Malaise trap; Bowles; 3 M; CUAC000045048• Bull Shoals Field Station; Drury House, woodland; N 36.5725, W -93.058; 3 July 2011; Malaise trap; Bowles; 1 M; CUAC000045045• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 7 July 2012; Malaise trap; Bowles; 1 M; CUAC000044975• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 7 July 2012; Malaise trap; Bowles; 1 M; CUAC000045003• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 12 July 2012; Malaise trap; Bowles; 1 M; CUAC000045054• Bull Shoals Field Station; Drury House, woodland; N 36.5725, W -93.058; 5 August 2011; Malaise trap; Bowles; 1 M; CUAC000044976• Bull Shoals Field Station; Drury House, woodland; N 36.5725, W -93.058; 24 August 2011; Malaise trap; Bowles; 1 M; CUAC000044959

NORTH CAROLINA: Haywood Co.: Purchase Knob; N 35.5865, W -83.0771; 21 June 2008; Sweeping Rhododendron; Ferro; 17 M; CUAC000044736• Purchase Knob; N 35.5865, W -83.0771; 23 June 2008; Sweeping Rhododendron; Ferro; 15 M; CUAC000044734

SOUTH CAROLINA: Aiken Co.: Tortoise Preserve; N 33.4923, W -81.4227; 8 June 2016; Sweeping; Ferro; 1 M; CUAC000044764• **Oconee Co.:** Thompson R. at NC border, Duke location; N 35.027, W -82.982; 18 May 1987; UV light; Hamilton; 1 M; CUAC000044806• Thompson R. at NC border, Duke location; N 35.027, W -82.982; 20 July 1987; UV light; Hoffman; 3 F, 1 M; CUAC000044786• **Pickens Co.:** N. trib. of Indian Creek; N 34.748, W -82.865; 19 April 1988; Malaise trap; Hoffman; 1 M; CUAC000044795• N. fork of creek at Holly Springs picnic area; N 34.748, W -82.865; 24 April 1988; Malaise trap; Hoffman; 3 M, 2 F; CUAC000044793• W. tribe. of Six mile creek, 1.4 miles N of access road; N 34.8, W -82.85; 24 April 1988; Malaise trap; Hoffman; 2 M, 1 F; CUAC000044798• Wildcat Creek; N 34.756, W -82.856; 24 April 1988; Malaise trap; Hoffman; 1 M; CUAC000044800• N. fork of creek at Holly Springs picnic area; N 34.748, W -82.865; 1 May 1988; Malaise trap; Hoffman; 4 M; CUAC000044788• W. tribe. of Six mile creek; N 34.8, W -82.85; 8 May 1988; Malaise trap; Hoffman; 3 M, 2 F; CUAC000044787• N. fork of creek at Holly Springs picnic area; N 34.748, W -82.865; 8 May 1988; Malaise trap; Hoffman; 1 M; CUAC000044804• W. tribe. of Six mile creek; N 34.8, W -82.85; 27 June 1988; Hoffman; 2 M, 4 F; CUAC000044792• Central, 118 Hedge St.; N 34.7193, W -82.7731; 9 July 2016; MV blacklight; Ferro; 1 M; CUAC000044759

***Semidalis* spp.**

ARKANSAS: Benton Co.: Bella Vista; N 36.476, W -94.263; 29 June 2012; UV light; Bowles; 1 F; CUAC000044983• Bella Vista; N 36.476, W -94.263; 25 August 2012; UV light; Bowles; 1 F; CUAC000045051• **Newton Co.:** Buffalo National River; Nr. Mt. Hershey Rd.; Mill Branch; N 36.0111, W -92.952; 30 May 2012; SLAM trap; Edwards; 1 F; CUAC000044960• Buffalo National River; Whiteley

Creek; Off AR -43N; N 35.9911, W -93.3992; 27 June 2012; SLAM trap; Edwards; 1 F; CUAC000044952• Buffalo National River; Cecil Creek, Off Co Rd 19; (Erbie road); N 36.0877, W -93.2231; 27 June 2012; SLAM trap; Edwards; 1 F; CUAC000045035• **Washington Co.:** 1.0 Km ENE of Durham near White River. Cedar Forest, west esp.; N 35.959, W -93.979; 25 July 1985; UV light; Wallis; 1 F; CUAC000045041

LOUISIANA: West Feliciana Par.: Feliciana Preserve; N 30.795, W -91.254; 8 April 2005; UV light; Ferro; 1 F; CUAC000044739

MISSOURI: Boone Co.: Ashland Wildlife Area; 38.752, -92.199; 1 F [UMRM]• Columbia, Capen Park; N 38.9295, W -92.3212; 16 July 2004; Sweeping Oak; Ferro; 1 F; CUAC000044691• Columbia, Capen Park; N 38.9295, W -92.3212; 27 July 2004; Sweeping Oak; Ferro; 1 F; CUAC000044705• Columbia, Capen Park; N 38.9295, W -92.3212; 25 August 2004; Sweeping Oak; Ferro; 9 F; CUAC000044693• Columbia, Capen Park; N 38.9295, W -92.3212; 26 August 2004; Sweeping Oak; Ferro; 2 F; CUAC000044702• Columbia, Capen Park; N 38.9295, W -92.3212; 28 August 2004; Sweeping Oak; Ferro; 1 F; CUAC000044699• Columbia, Kiwanas Park; N 38.9441, W -92.3632; 29 August 2004; Hand caught in flight; Ferro; 1 F; CUAC000044727• Columbia, Cosmo Park; N 38.9711, W -92.3652; 31 August 2004; Sweeping cedar, oak; Ferro; 2 F; CUAC000044725• Columbia, Three Creeks Conservation Area; N 38.8398, W -92.3045; 1 September 2004; Sweeping oak, cedar, hickory; Ferro; 3 F; CUAC000044722• Columbia, Capen Park; N 38.9295, W -92.3212; 6 September 2004; Sweeping Oak; Ferro; 4 F; CUAC000044698• **Dallas Co.:** 8.5 km NW Fair Grove; 0.3 mi. E County Rd O; N 37.455, W -93.1007; 23 June 2012; Malaise trap; Bowles; 3 F; CUAC000044957• **Henry Co.:** 10 km NW Clinton, Ferro Farm; N 38.423, W -93.807; 28 May 2006; UV/MV light; Ferro; 2 F; CUAC000045065• **Johnson Co.:** Whiteman AFB; N 38.73, W -93.558; 15 June; Bowles; 1 F; CUAC000044963• Warrensburg, Pertle Springs; N 38.7425, W -93.7436; 3 September 2004; Sweeping oak, cedar, hickory; Ferro; 1 F; CUAC000044710• **Taney Co.:** Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 10 May 2011; Malaise trap; Bowles; 1 F; CUAC000045001• Bull Shoals Field Station; Drury House, woodland; N 36.5725, W -93.058; 10 May 2011; Malaise trap; Bowles; 3 F; CUAC000045032• Drury-Mincy Cons. area; spring-fed pond; N 36.5663, W -93.0944; 15 May 2012; Malaise trap; Bowles; 1 F; CUAC000045038• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 24 May 2012; Malaise trap; Bowles; 2 F; CUAC000044990• Drury-Mincy Cons. area; spring-fed pond; N 36.5663, W -93.0944; 26 May 2011; Malaise trap; Bowles; 6 F; CUAC000044980• Bull Shoals Field Sta.; Drury House; N 36.5725, W -93.058; 26 May 2011; Malaise trap; Bowles; 1 F; CUAC000045058• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 31 May 2012; Malaise trap; Bowles; 1 F; CUAC000045055• Drury-Mincy Cons. area; spring-fed pond; N 36.5664, W -93.0944; 3 June 2011; Malaise trap; Bowles; 1 F; CUAC000045017• Bull Shoals Field Station; Drury House, woodland; N 36.5725, W -93.058; 3 June 2011; Malaise trap; Bowles; 1 F; CUAC000045036• Bull Shoals Field Station; Near pond #1, woodland; N 36.5659, W -93.0687; 7 June 2012; Malaise trap; Bowles; 2 F; CUAC000044977• Drury-Mincy Cons. Area; spring-fed pond; N 36.5663, W -93.0944; 15 June 2012; Malaise trap; Bowles; 3 F; CUAC000044988• Bull Shoals Field Station; Near pond #1, woodland; N 36.5659, W -93.0687; 15 June 2012; Malaise trap; Bowles; 4 F; CUAC000044999• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 22 June 2012; Malaise trap; Bowles; 3 F; CUAC000045013• Drury-Mincy Cons. area; spring-fed pond; N 36.5663, W -93.0944; 22 June 2012; Malaise trap; Bowles; 2 F; CUAC000045047• Drury-Mincy Cons. area; spring-fed pond; N 36.5663, W -93.0944; 30 June 2012; Malaise trap; Bowles; 1 F; CUAC000044970• Bull Shoals Field Station; Near Pond #1, woodland; N 36.5659, W -93.0687; 7 July 2012; Malaise trap; Bowles; 1 F; CUAC000044974• Drury-Mincy Cons. area; spring-fed pond; N 36.5663, W -93.0944; 12 July 2012; Malaise trap; Bowles; 1 F; CUAC000045053• Drury-Mincy Cons. area; spring-fed pond; N 36.5663, W -93.0944; 21 July 2012; Malaise trap; Bowles; 2 F; CUAC000045005

NEW MEXICO: Hidalgo Co.: Painted Pony Resort; N 31.904, W -109.009; 2 August 2013; UV light; Ferro; 1 F; CUAC000045067

NORTH CAROLINA: Haywood Co.: Purchase Knob; N 35.5865, W -83.0771; 21 June 2008; Sweeping Rhododendron; Ferro; 14 F; CUAC000044735• Purchase Knob; N 35.5865, W -83.0771; 22 June 2016; Sweeping *Acer*, *Quercus*; Ferro; 9 F; CUAC000044762• **Swain Co.:** Tunnel Bypass Trail; N 35.4602, W -83.5439; 19 June 2008; Sweeping; Ferro; 1 F; CUAC000044740• **Transylvania Co.:** Coley Cr., at NC-SC border, Duke loc.; N 35.03, W -82.96; 24 August 1987; UV light; Hoffman; 1 F; CUAC000044805

OKLAHOMA: Latimer Co.: N 34.87, W -95.24; 24 April 1989; UV light; Stephan; 1 F; CUAC000045002

SOUTH CAROLINA: Aiken Co.: Savannah R plant, upper three runs Cr. @ SRP 8-1; N 33.28, W -81.62; 29 March 1977; Herlong; 1 CUAC000044807• Savannah R plant, upper three runs Cr. @ SRP 8-1; N 33.28, W -81.62; 4 September 1976; Herlong; 1 F; CUAC000044803• **Anderson Co.:** Pendleton, 104 Periwinkle Ct.; N 34.6273, W -82.76324; 22 June 2007; UV light; Stocks; 1 F; CUAC000044826• **Chesterfield Co.:** Carolina Sandhills NWR; N 34.5758, W -80.1784; 13 July 2016; Sweeping; Ferro; 2 F; CUAC000044755• **Oconee Co.:** Thompson R. at NC border, Duke location; N 35.027, W -82.982; 24 August 1987; UV light; Hoffman; 4 F; CUAC000044791• Coley Cr., Duke loc.; N 34.75, W -83.07; 24 August 1987; UV light; Hoffman; 1 F; CUAC000044794• **Pickens Co.:** W. tribe. of Six mile creek; N 34.8, W -82.85; 1 May 1988; Malaise trap; Hoffman; 2 F; CUAC000044789• W. tribe. of Six mile creek, 1.4 miles N of access road; N 34.8, W -82.85; 4 May 1988; Malaise trap; Hoffman; 1 F; CUAC000044797• Wildcat Creek; N 34.756, W -82.856; 8 May 1988; Malaise trap; Hoffman; 1 F; CUAC000044796• Central, 118 Hedge St.; N 34.7193, W -82.7731; 9 July 2016; MV blacklight; Ferro; 2 F; CUAC000044757

TENNESSEE: Sevier Co.: Sugarlands Quiet Walkway; N 35.6629, W -83.5231; 6 June 2005; Sweeping; Ferro; 1 F; CUAC000044748

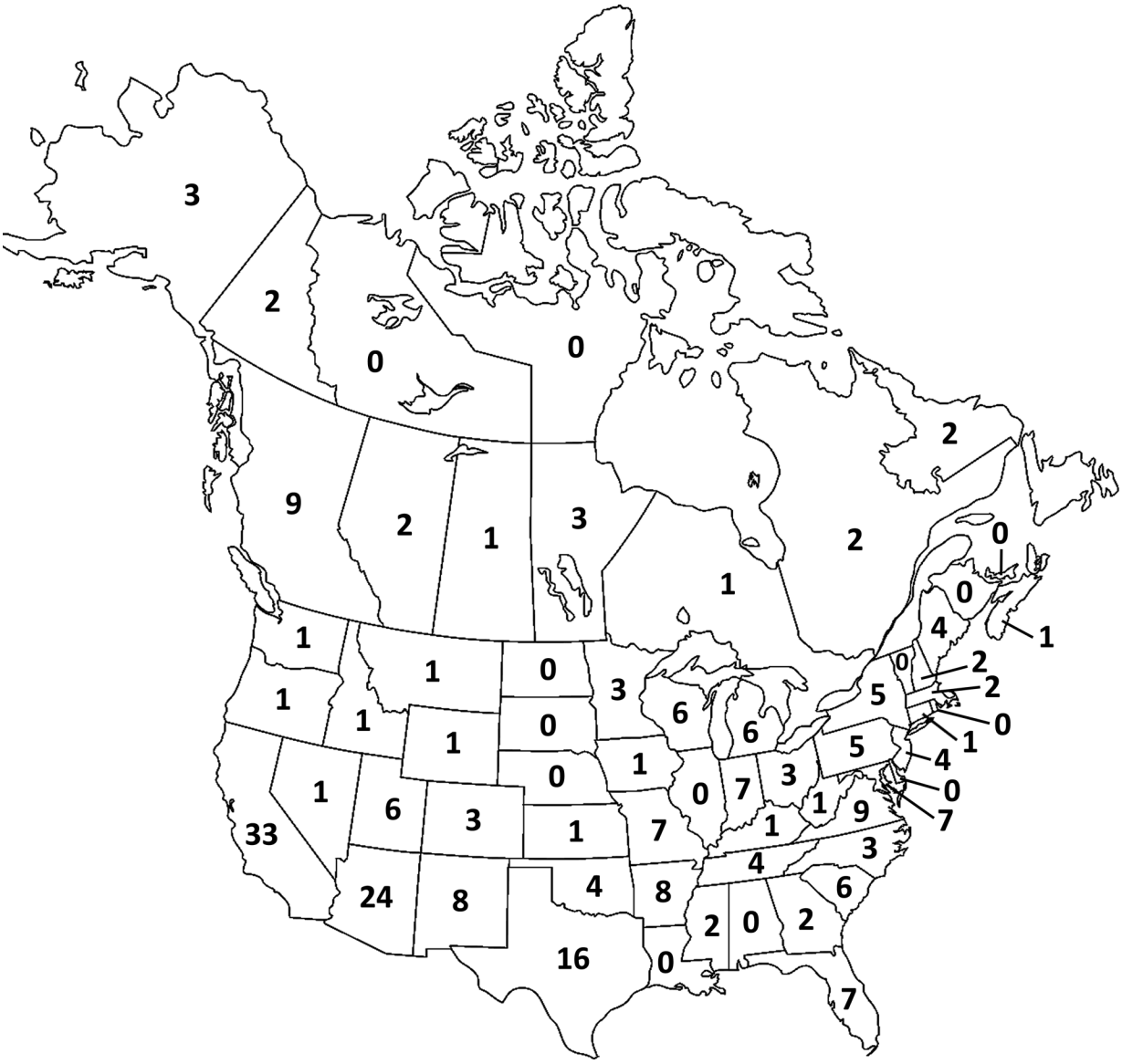
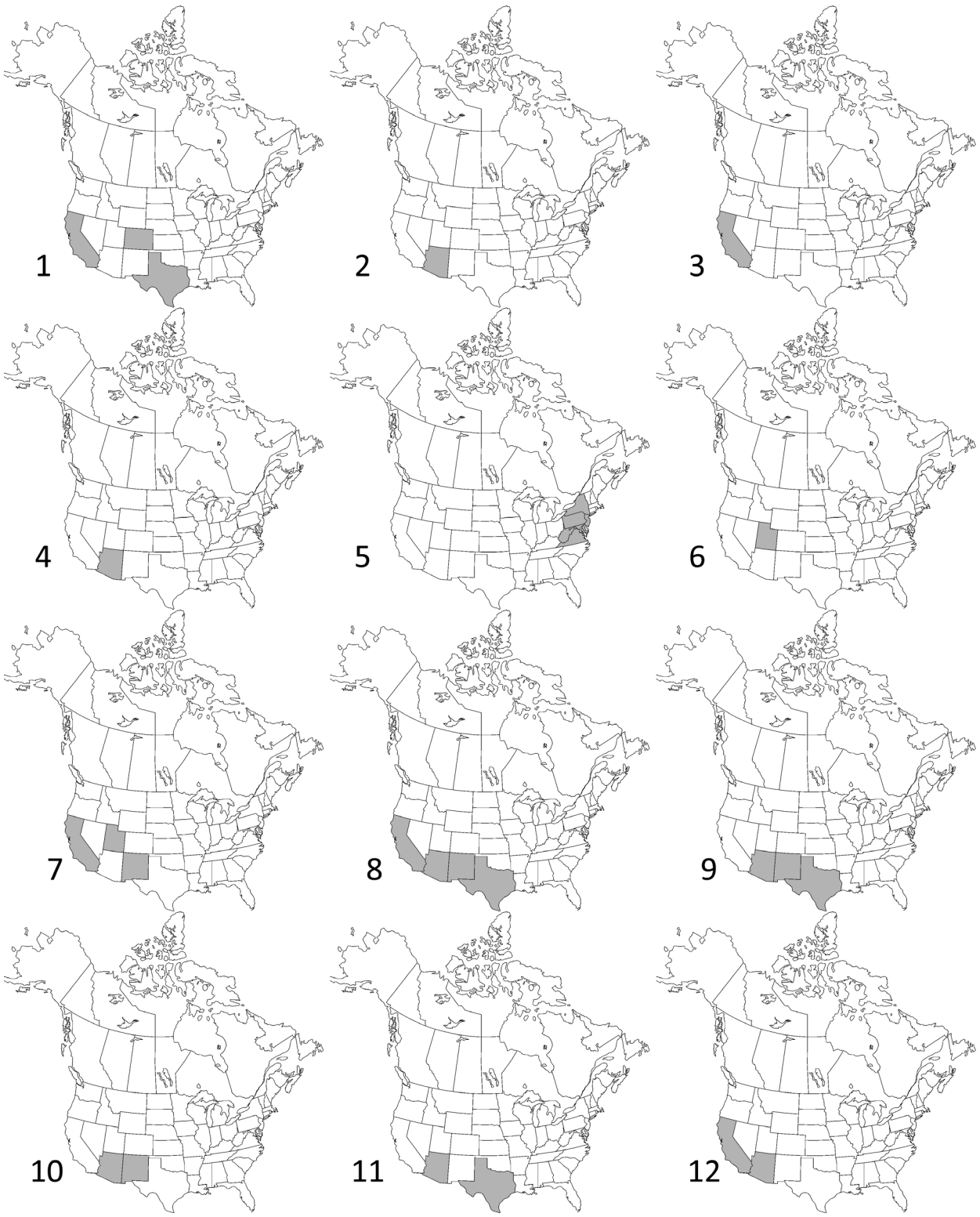
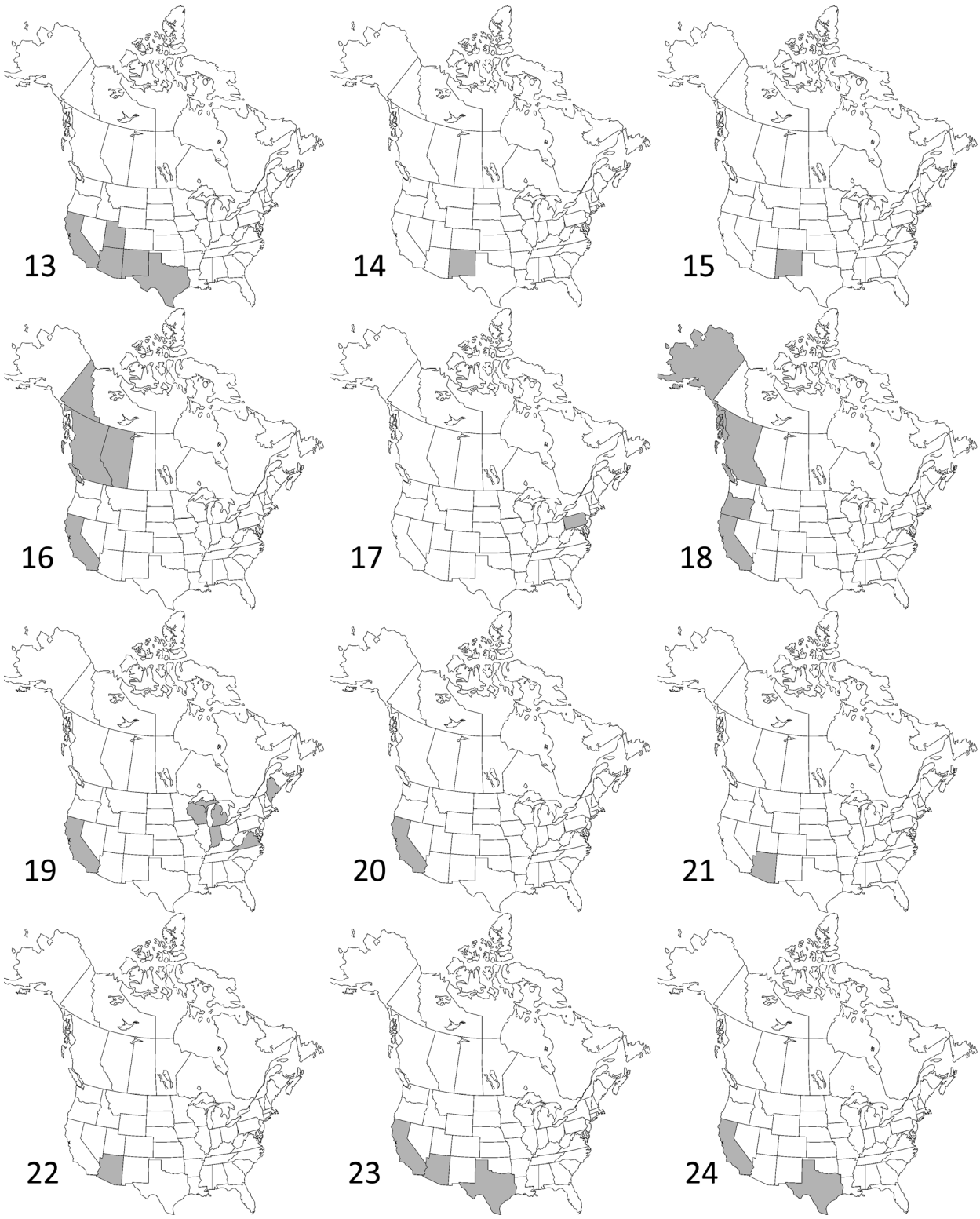


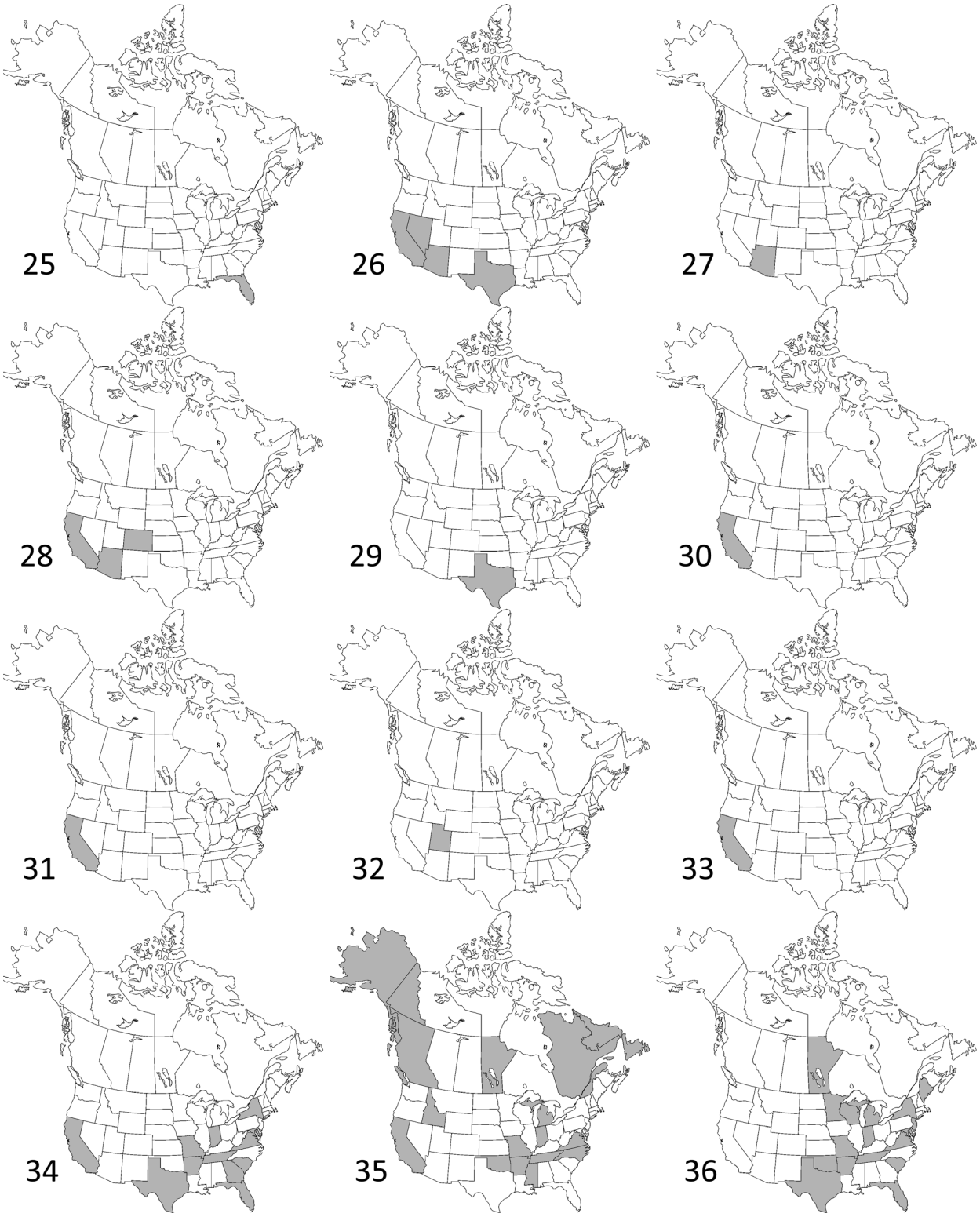
Figure 1. Number of species of Coniopterygidae reported from each state and province in North America north of Mexico.



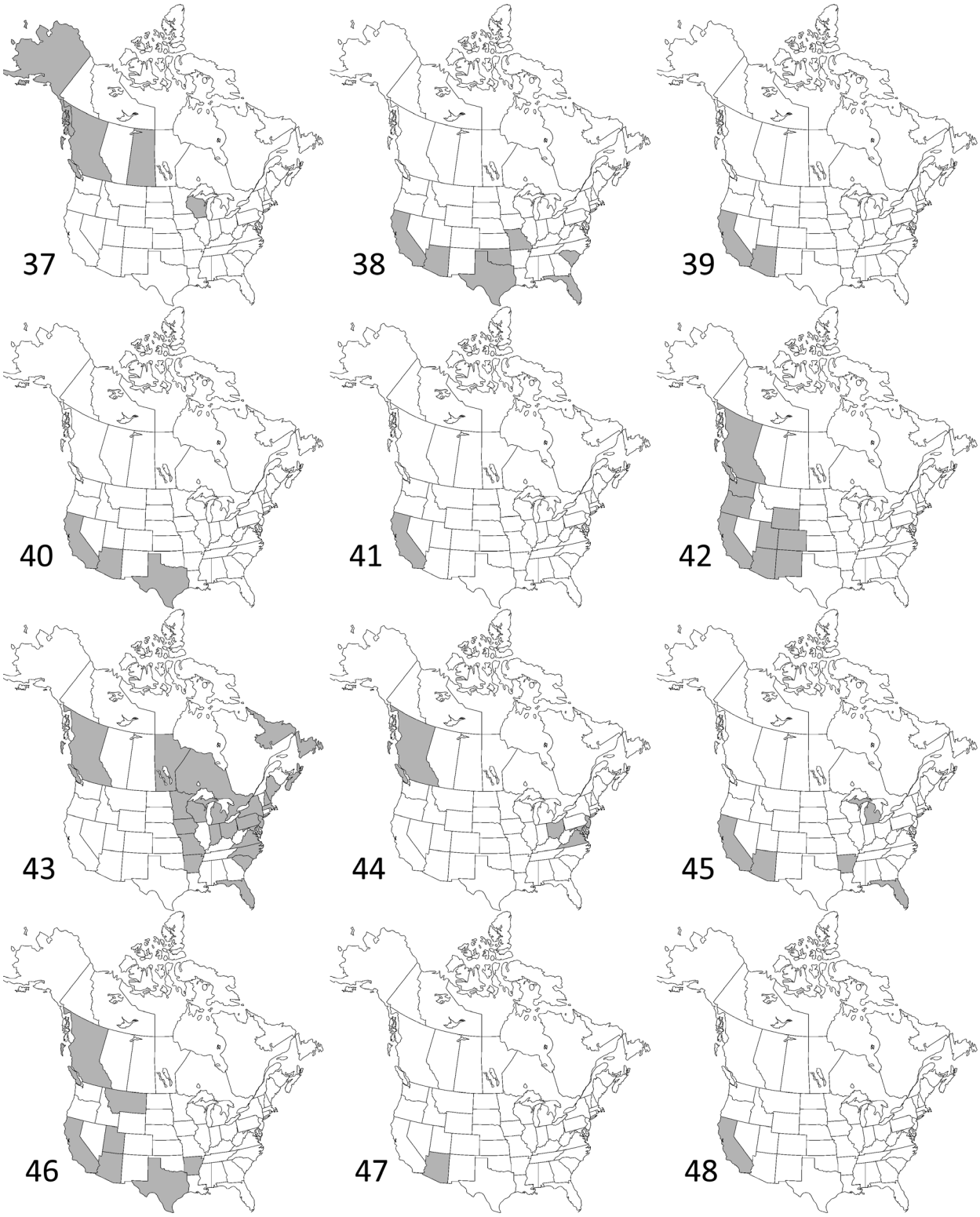
Maps 1–12. State-level distribution of Coniopterygidae spp. **1)** *Aleuropteryx arceuthobii*. **2)** *Aleuropteryx arizonica*. **3)** *Aleuropteryx cupressi*. **4)** *Aleuropteryx dragoonica*. **5)** *Aleuropteryx juniperi*. **6)** *Aleuropteryx knowltoni*. **7)** *Aleuropteryx longipennis*. **8)** *Aleuropteryx maculipennis*. **9)** *Aleuropteryx megacornis*. **10)** *Aleuropteryx punctata*. **11)** *Aleuropteryx simillima*. **12)** *Aleuropteryx unicolor*.



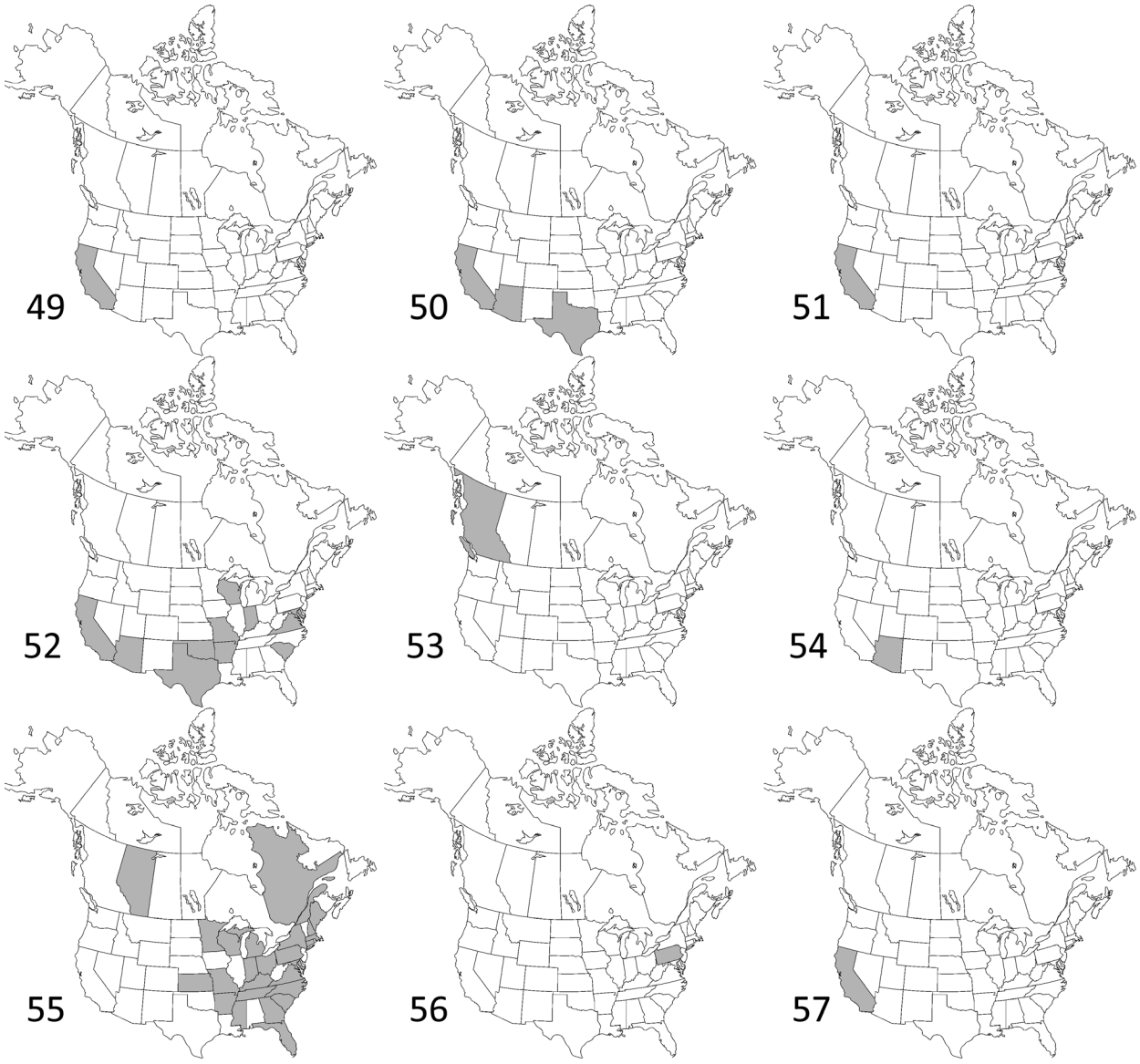
Maps 13–24. State-level distribution of Coniopterygidae spp. **13)** *Aleuropteryx vulgaris*. **14)** *Bidesmia werneri*. **15)** *Helicoconis morrisoni*. **16)** *Helicoconis californica*. **17)** *Helicoconis lutea*. **18)** *Helicoconis similis*. **19)** *Helicoconis walshi*. **20)** *Heteroconis picticornis*. **21)** *Neoconis bifurcata*. **22)** *Neoconis inexpectata*. **23)** *Neoconis marginata*. **24)** *Coniopteryx californica*.



Maps 25–36. State-level distribution of Coniopterygidae spp. **25)** *Coniopteryx dorsicornis*. **26)** *Coniopteryx fitchi*. **27)** *Coniopteryx forcipata*. **28)** *Coniopteryx latipalpis*. **29)** *Coniopteryx mexicana*. **30)** *Coniopteryx minuta*. **31)** *Coniopteryx palpalis*. **32)** *Coniopteryx quadricephala*. **33)** *Coniopteryx simplex*. **34)** *Coniopteryx simplicior*. **35)** *Coniopteryx tineiformis*. **36)** *Coniopteryx westwoodi*.



Maps 37–48. State-level distribution of Coniopterygidae spp. **37)** *Coniopteryx canadensis*. **38)** *Coniopteryx diversicornis*. **39)** *Coniopteryx meinanderi*. **40)** *Conwentzia texana*. **41)** *Conwentzia barretti*. **42)** *Conwentzia californica*. **43)** *Conwentzia pineticola*. **44)** *Conwentzia psociformis*. **45)** *Parasemidalis fuscipennis*. **46)** *Semidalis angusta*. **47)** *Semidalis arnaudi*. **48)** *Semidalis bituberculata*.



Maps 49–57. State-level distribution of Coniopterygidae spp. **49)** *Semidalis deserta*. **50)** *Semidalis flinti*. **51)** *Semidalis frommeri*. **52)** *Semidalis inconspicua*. **53)** *Semidalis pseudouncinata*. **54)** *Semidalis tricornis*. **55)** *Semidalis vicina*. **56)** *Semidalis wallacei*. **57)** *Semidalis xerophila*.