

Notes on the Historical Occurrence of *Aphrissa neleis* in Southern Florida, USA (Lepidoptera: Pieridae: Coliadinae)

Andrew D. Warren¹ and John V. Calhoun²

McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida,
SW 34th Street and Hull Road, P. O. Box 112710, Gainesville, Florida 32611-2710 U.S.A.

andy@butterfliesofamerica.com¹

977 Wicks Dr., Palm Harbor, Florida 34684-4656 U.S.A.

Research Associate: McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History,
University of Florida bretcal1@verizon.net²

Aphrissa Butler, 1873 is a Neotropical genus of large, bright pierids, or sulphur butterflies, comprised of about eight species (Lamas 2004). The genus is highly diverse in the Caribbean (including central and south Florida), where four species and nine subspecies-level taxa occur (Smith et al. 1994, Warren et al. 2011). Hispaniola hosts the greatest number of endemic *Aphrissa* taxa, with *A. g. godartiana* (Swainson, 1821), *A. orbis browni* (Munroe, 1947) and *A. statira hispaniolae* (Munroe, 1947). The other endemic Caribbean *Aphrissa* are shared variably between Cuba, Isla de Juventud, Jamaica, The Cayman Islands, some Bahaman Islands and southern Florida, except for *A. statira floridensis* (Neumogen, 1891), which is endemic to central and southern Florida, with strays and temporary colonists northward (Smith et al. 1994).

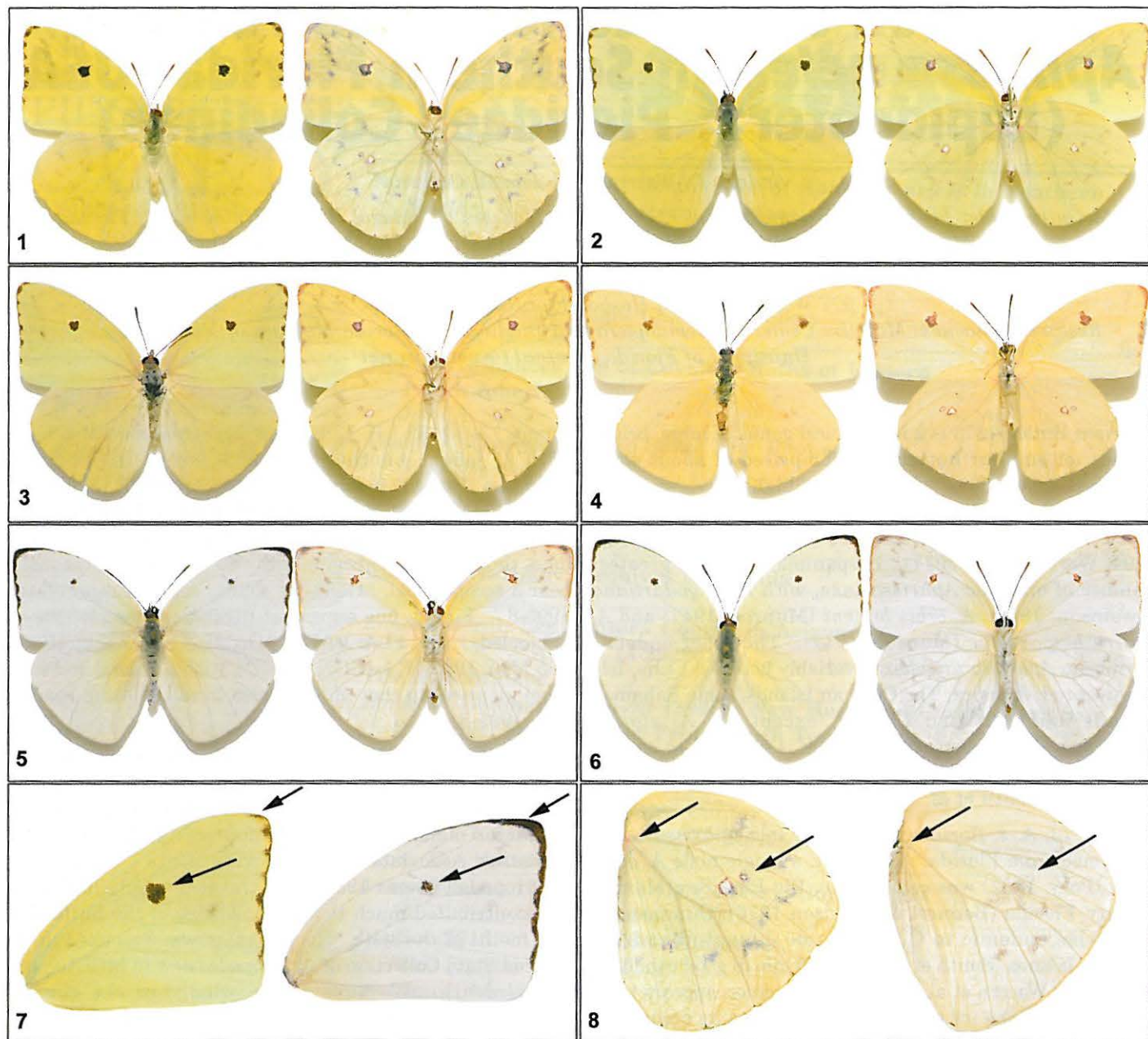
Until 1973, *A. s. floridensis* was the sole *Aphrissa* taxon confirmed from Florida. That year, a single male *A. orbis orbis* (Poey, 1832) was collected on Big Pine Key, Monroe County, Florida (Bennett & Knudson 1976); this taxon is otherwise endemic to Cuba, Isla de Juventud and the Cayman Islands (Smith et al. 1994). While in good condition (figured by Warren et al. 2011), this specimen appears to be a stray from Cuba (or offspring from one), as its occurrence in the Florida Keys or elsewhere in Florida has not subsequently been documented (Calhoun 1997).

While curating specimens of *Aphrissa* in early March 2011 in the McGuire Center for Lepidoptera and Biodiversity (Florida Museum of Natural History, University of Florida, Gainesville [MGCL]), ADW discovered five specimens of *Aphrissa neleis* (Boisduval, 1836) labeled from southern Florida (Figs. 3, 4, 10-12). All of these specimens were intermixed within series of *A. statira floridensis* originating from the Allyn Museum of Entomology (now MGCL) and the Florida State Collection of Arthropods [FSCA]. The oldest known specimen from Florida is a female in very good condition (Fig. 3), labeled, / Dade Co., Fla. / Oct. 1 1959 /. No collector's name is indicated, although the specimen bears a second "FSCA" label. The next oldest specimen is a male (Fig. 10) in good condition, labeled, / FLORIDA: S.

Miami / 5-5-1982 / H. L. King /. This specimen also has a "FSCA" label. Another male of *A. neleis* in very good condition (Fig. 11) is labeled, / 68. FLA: DADE COUNTY / MIAMI: HAVEN SCHOOL / 19 MAY 1985 / F. L. GONZALEZ /. A third male in good condition (Fig. 12) bears the same data, though its label begins with "66." Both of these males bear a second label, / Gonzalez colln. / Allyn Museum / Acc. 1995-8 /. Finally, one somewhat flight-worn female (Fig. 4) is labeled, / 139. FLA: DADE: MIAMI: / HAVEN SCHOOL / 25 MAY 1985 / F. L. GONZALEZ /, with a second accession label identical to that of the males from the same locality, Acc. 1995-8.

Harold (Harry) L. King (1900-1985) (collector of the male in Fig. 10), a commercial artist in Sarasota, Florida, was an avid collector of Lepidoptera for much of his life. He was a charter member of the Lepidopterists' Society and a Research Associate of the Florida State Collection of Arthropods (Weems 1985). He traveled widely in Florida and contributed much to our knowledge of the butterflies and moths of the state. His collection was deposited in the Florida State Collection of Arthropods (now in MGCL) prior to his death. We have no knowledge of the current whereabouts of Fernando L. Gonzalez. When he donated his collection to the Allyn Museum of Entomology in 1995, he was a teacher in the Miami area. We don't know for certain, but Fernando may have been employed at the former Haven School for mentally disabled children, which was located in the Sunset district of southern Miami. At that time, he was a member of the Lepidopterists' Society and lived in Hialeah, Florida (Donahue 1986). Other specimens from the F. L. Gonzalez collection at MGCL labeled from Haven School are common southern Florida species (e.g., *Phoebis agarithe maxima* (Neumogen, 1891)).

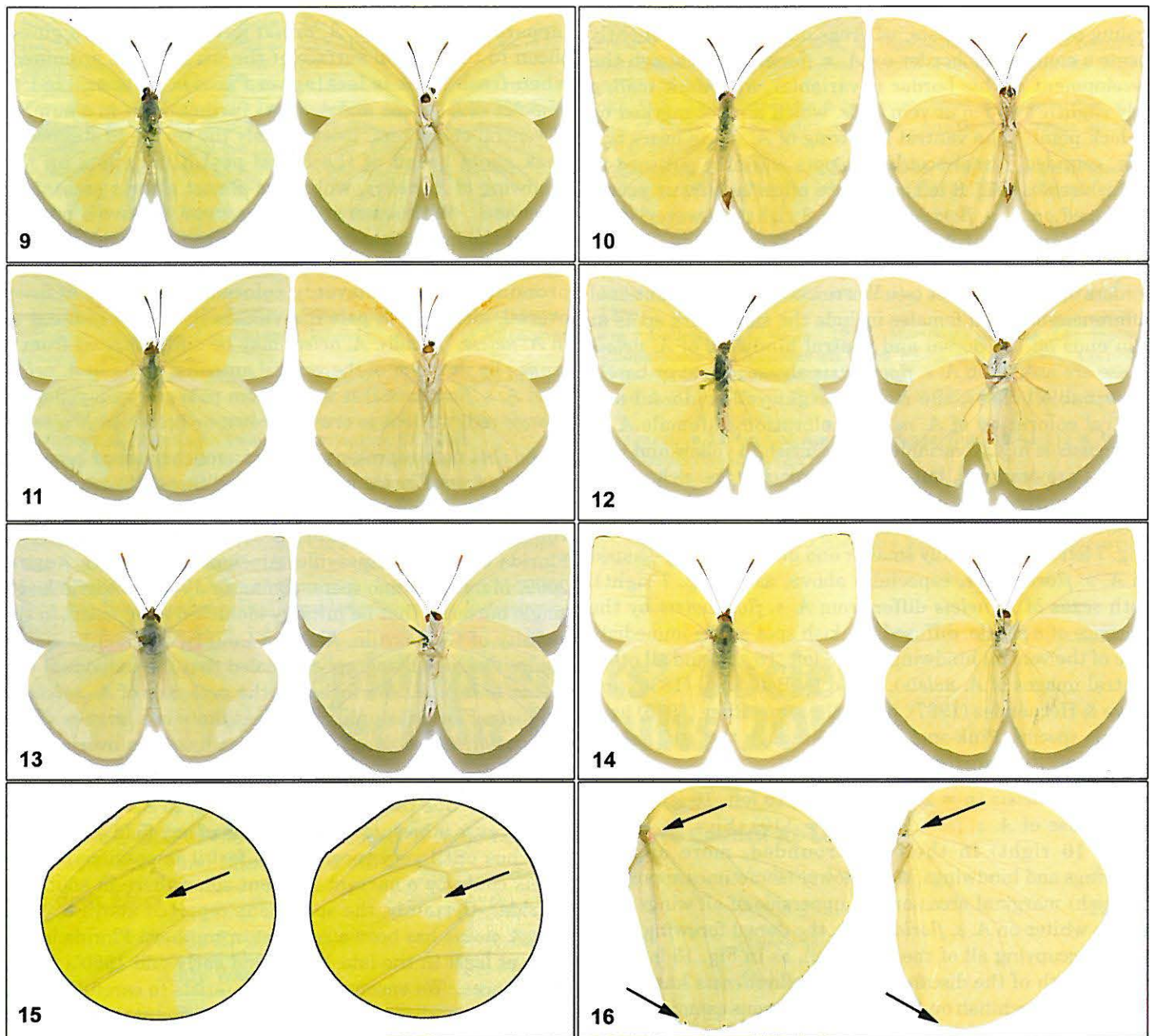
Aphrissa neleis is a rare species in collections, and is relatively unknown to most butterfly enthusiasts. Its documented distribution includes Cuba, Isla de Juventud, North and South Andros, and New Providence Islands in The Bahamas (reports of *A. neleis* from the Cayman Islands, e.g., Carpenter & Lewis 1943, Askew 1980, and Schwartz



Figs. 1-8. Females (dorsal left, ventral right for Figs. 1-6) of *Aphrissa neleis* and *A. statira floridensis* (all MGCL). 1. *A. neleis*, Bahamas, N. Andros Is., Small Hope Bay, 24.v.1994. 2. *A. neleis*, Bahamas, N. Andros Is., Davis Ck., vi.2004. 3. *A. neleis*, USA, Florida, Miami-Dade Co., 1.x.1959. 4. *A. neleis*, USA, Florida, Miami-Dade Co., Haven School, 25.v.1985. 5. *A. s. floridensis*, USA, Florida, Broward Co., Hugh Taylor Birch S.P., 28.v.79. 6. *A. s. floridensis*, USA, Florida, Collier Co., Marco Is., 29.x.1999. 7. Forewing comparison of *A. neleis* (left) and *A. s. floridensis* (right), showing size of cell-end spot and extent of darkening at apex. 8. Hindwing comparison of *A. neleis* (left) and *A. s. floridensis* (right), showing pink basal spot and well-developed discal-postdisical spots of the former.

et al. 1987, refer to *A. statira*; see Askew 1994, Askew & Stafford 2008). Boisduval (1836) described the species from Cuba. Brown (1931) revised *Aphrissa*, and considered *A. neleis* to be a "form" of *A. statira* (Cramer, 1777). However, Bates (1935) continued to treat *A. neleis* as a separate species, as did Torre y Callejas (1954), based on differences in the male genitalia between *A. neleis* and *A. statira cubana* d'Almeida, 1939. Subsequent to Torre y Callejas (1954), *A. neleis* was mentioned in a number of faunal studies (e.g.,

Torre y Callejas 1971, Riley 1975, Alayo & Hernández 1987, Smith et al. 1994, 1998, Hernández 2004, Fernández-Hernández 2007). Nothing is known about its early stages, but *Lysiloma sabieu* (Benth.) (Fabaceae) was reported as a larval foodplant for *A. neleis* in the Bahamas (Emmel 2007). This plant is an exotic, which occurs rarely in disturbed hammock forest in Miami-Dade County, Florida (Wunderlin & Hansen 2003). Hernández (2004) suggested that *A. neleis* possibly also feeds on *Cassia* sp. (Fabaceae) or species of



Figs. 9-16. Males (dorsal left, ventral right for Figs. 9-14) of *Aphrissa neleis* and *A. statira floridensis* (all MGCL). **9.** *A. neleis*, Bahamas, N. Andros Is., Davis Ck, vi.2004. **10.** *A. neleis*, USA, Florida, Miami-Dade Co., South Miami, 5.v.1982. **11.** *A. neleis*, USA, Florida, Miami-Dade Co., Haven School, 19.v.1985. **12.** *A. neleis*, USA, Florida, Miami-Dade Co., Haven School, 19.v.1985. **13.** *A. s. floridensis*, USA, Florida, Broward Co., Hollywood, 2.x.1966. **14.** *A. s. floridensis*, USA, Florida, Lee Co., Bonita Springs, ex-larva emerged 20.vii.1997. **15.** Forewing detail, *A. neleis* (left) and *A. s. floridensis* (right), showing pale coloration invading into the discal cell on the latter. **16.** Hindwing comparison of *A. neleis* (left) and *A. s. floridensis* (right), showing pink basal spot and black marginal spots of the former.

Caesalpinaceae, several of which are available in southern Florida. The overall highly restricted geographic distribution of *A. neleis*, combined with the scarcity of specimens in collections and the general lack of knowledge about this taxon argue against mislabeling of the Florida specimens.

While subtle, there are a number of wing characters that separate *A. neleis* from *A. s. floridensis*. Females of the two taxa are perhaps most easily separated (Figs. 1-8). The

forewing of *A. neleis* ($n = 11$) (Figs. 1-4, 7 left, 8 left) is more angular (apex more rounded on *A. s. floridensis* ($n = 90$), Figs. 5-6, 7 right, 8 right), and the forewing costa of *A. neleis* is yellow to the apex, with a slight trace of black scaling at most, near the apex (the forewing costa of *A. s. floridensis* often has extensive blackish distad, especially at the apex). Dark scaling at vein ends, along the outer forewing margin above (black) and below (black point surrounded by violet and/or ochreous scaling), is developed into distinct,

prominent spots on *A. neleis*, only rarely conjoined by dark scaling between the spots, whereas dark scaling frequently forms a continuous border on *A. s. floridensis* (though the development of this border is variable), with dark scaling only slightly swollen at vein ends, which are not marked by a black point. The ventral hindwing of *A. neleis* bears two pale, rounded, discal-postdiscal spots, variably outlined in pinkish scales (Fig. 8 left), that are often lacking or poorly developed on *A. s. floridensis* (Fig. 8 right); however, rare, tawnier females of *A. s. floridensis* tend to have better developed discal-postdiscal spots with partial or complete borders of pinkish scales (see Warren et al. 2011). Additional differences between females include the small dark spots at vein ends on the dorsal and ventral hindwing of *A. neleis* (these are absent on *A. s. floridensis* above, absent or barely discernable below), the richer, bright yellow dorsal and ventral coloration of *A. neleis* (coloration of female *A. s. floridensis* is highly variable from whitish to yellow and rare females are orangish, but rarely approaches the rich yellow of fresh individuals of *A. neleis*), the generally swollen forewing black spot at the end of the discal cell on *A. neleis* (Fig. 7 left; this is usually smaller and more regularly-shaped on *A. s. floridensis*, especially above, as in Fig. 7 right). Both sexes of *A. neleis* differ from *A. s. floridensis* by the presence of a subtle, diffused, pinkish spot at the immediate base of the ventral hindwing (Fig. 8 left, 16 left, and all other ventral images of *A. neleis*), noted by Boisduval (1836) and Alayo & Hernández (1987), hence the name Riley (1975) used for this species, Pink-spot Sulphur (though this spot is also present on *A. godartiana* and *A. orbis*).

Males of *A. neleis* ($n = 23$) (Figs. 9-12, 15 left, 16 left) differ from those of *A. s. floridensis* ($n = 110$) (Figs. 13-14, 15 right, 16 right) in their less rounded, more angular forewings and hindwings, the yellower (sometimes appearing greenish) marginal areas on the upperside of all wings (this area is whiter on *A. s. floridensis*), the dorsal forewing basal yellow occupying all of the discal cell, as in Fig. 15 left (the distal fourth of the discal cell in *A. s. floridensis* has yellow replaced with whitish on 108 of 110 specimens examined (Fig. 15 right), although the extent of whitish scaling within the cell is highly variable), and the small black spots at vein ends on the ventral hindwing, as in Fig. 16 left (these are absent on *A. s. floridensis*, Fig. 16 right). No males of *A. neleis* were found with black scaling along the costa, apex, or outer margin of the dorsal forewing, while many individuals of *A. s. floridensis* have some black scaling in these areas, especially at the forewing apex.

Aphrissa neleis is less likely to be confused with *Phoebis sennae* (Linnaeus, 1758). All but the palest males of *P. sennae* have prominent discal cell spots on the ventral forewings and hindwings. In extreme male examples of *P. sennae*, these discal spots may be highly reduced, but are still more prominent than they are on males of *Aphrissa*, where they are indicated only by a pale white dot, if at all.

In addition, males and (especially) females of *Aphrissa* (apparently all except *A. orbis*) have a distinctive glossy sheen to the ventral surface of the wings, most prominent when fresh, that is lacking on *Phoebis* Hübner, [1819]. Females of *P. sennae* and *A. neleis* further differ in a number of ventral characters, most notably the complete absence of dark spots basad of the discal-postdiscal spots on the hindwing of *A. neleis*, which are almost always present on *P. sennae*. Both sexes of *P. sennae* tend to have a pinkish spot at the immediate base of the ventral hindwing, as in *A. neleis*. However, in *P. sennae* this spot tends to be more prominent, often unevenly colored, and better-defined overall, although in pale individuals it may be reduced as in *A. neleis*. Finally, *A. neleis* may be differentiated from *P. sennae* by the color of the ventral antennal club. In *A. neleis* (and *A. s. floridensis*) it varies from pale greenish-yellow to orange-red, while it is orange-brown or brown in *P. sennae*.

While this note represents the first voucher-based report of *A. neleis* from Florida and the United States, Emmel (2007) reported a sight record (with no physical or photographic voucher) of a fresh female in 2002 on the University of Florida campus, Gainesville, Alachua County. In August 2009, Marc C. Minno (pers. comm. to JVC) photographed a single butterfly that he initially identified as *A. neleis* in the vicinity of Gainesville, Alachua County, but a subsequent analysis of his photographs revealed that the individual was a pale *P. sennae*. We feel that the presence of *A. neleis* in northern Florida is unlikely, unless there is a large resident population in southern Florida that has been overlooked.

The current status of *A. neleis* in southern Florida is unknown. Due to its close resemblance to *A. s. floridensis*, and because it has not been the focus of any field or museum searches until very recently, we feel it is possible that *A. neleis* could be a current resident somewhere in southern Florida. Certainly, the specimens reported above suggest that *A. neleis* has been a resident in southern Florida in the past, at least in the late 1950's and early-mid 1980's in the Miami area. We encourage Lepidopterists to carefully study all Florida specimens of *Aphrissa* they encounter, in an effort to better understand the status and distribution of *A. neleis* in southern Florida and the United States.

Acknowledgments

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Lepidopterists' Society Election Results 2010

Compiled by Michael Toliver miktol@eureka.edu

There were a total of 456 ballots included in these results. The results are (* indicates elected officials):

President Elect

Andy Brower	154
Andy Warren	227*
(write in) Carla Penz	1

Vice-Presidents

Giovanny Fagua	237*
Dave McCorkle	190
Paul Opler	330*
Thomas Simonsen	228
Mamoru Watanabe	230*
(write in) Dan Janzen	1

Executive Council At-Large

Michelle DaCosta	317*
David James	290*
Harry Pavulaan	302*
Stephen M. Spomer	273
(write in) Tom Emmel	1
Jeff Harcus	1

Amendments

A	Yes: 387	No: 21
B part 1	Yes: 403	No: 6
B part 2	Yes: 405	No: 5
B part 3	Yes: 409	No: 8
C	Yes: 391	No: 13
D	Yes: 382	No: 24

