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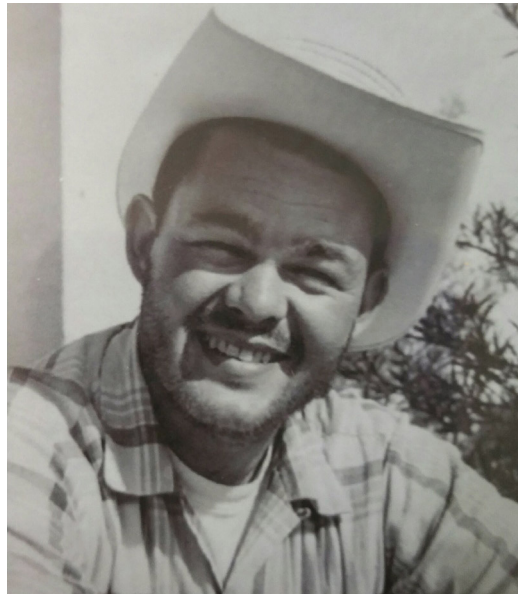
In Memoriam: Robert E. Woodruff,
July 20, 1933–July 8, 2021

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Cover. We have few pictures of Bob. After retirement, we asked him for a good picture to post on the wall at the FSCA. Bob brought us this picture of him taken during a trip to Mexico in the 1970s. He indicated it was about the only one that he liked.

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Abstract. We honor the life and accomplishments of Robert E. Woodruff with a short narrative of his professional career along with appendices listing his scientific bibliography, proposed species names and patronyms. This paper is the first of a Festschrift with separate contributed papers honoring him.

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Introduction

This and the following set of papers published in *Insecta Mundi* are dedicated to Robert E. Woodruff, as tribute and thanks from those he mentored or assisted throughout his life. Bob's many contributions to the study of beetles, being a founding member and first president of the Center for Systematic Entomology (CSE), co-creating *Insecta Mundi* with Ross H. Arnett, Jr., and having served in various capacities for 30 years on the CSE board of directors and the editorial board of *Insecta Mundi*, were deemed significant enough to allow this paper outside our normal guidelines. The following pages highlight the life and accomplishments of Robert E. Woodruff.

Robert Eugene Woodruff, PhD

July 20, 1933–July 8, 2021

Bob, as everyone knew him, was born July 20, 1933, in Kennard, Ohio, USA, and died in Gainesville, FL, USA on July 8, 2021. He lived and worked most of his life in Florida, with his wife, Evelyn, and family.

Bob was a naturalist from an early age, knowing from childhood he wanted to be an entomologist. He graduated from Urbana High School in Ohio in 1951. He moved to Wabash College, Crawfordsville, Indiana, taking classes and acting as Curator of the insect collection under Dr. E. C. Williams.

In 1952, he moved to Columbus, Ohio, to attend Ohio State University, receiving his BS in entomology in 1956. While there, he worked as an assistant to Dr. E. S. Thomas in the Department of Natural History of the Ohio State Museum from 1952–1955. Then, as a graduate assistant to Prof. J. N. Knull in the Department of Entomology at Ohio State University from 1955–1957.

From 1957–1958, Bob was an entomologist at the Kentucky State Health Department working on St. Louis Encephalitis and related mosquito projects. During this time, he attended special courses on insects of medical importance from the U.S. Public Health Service, Communicable Disease Center, Atlanta, Georgia, and from the Tennessee Valley Authority, Wilson Dam, Alabama.

In 1958, Bob was employed as a survey entomologist with the Florida State Plant Board (now Florida Department of Agriculture and Consumer Services, Division of Plant Industry; FDACS-DPI), coordinating the

federal-state Cooperative Economic Insect Survey until 1963. Responsibilities included field surveys, identifications, and reports for pests of turf, field crops, vegetables, fruit, pastures, and ornamental plants.

From 1963, his duties began to focus more on detection of foreign pests and their identification. He was specifically assigned beetles (Coleoptera) and grasshoppers (Orthoptera). He was also involved with biological control projects and investigating management of pests introduced from Latin America. With his new job responsibilities, in 1964, he was admitted into the University of Florida, Gainesville, Florida, earning his Ph.D. in 1967 with a major in Entomology and a minor in Botany.

Throughout his career, Bob published numerous papers on insect taxonomy and agriculturally important insects (see Appendix 1), assisted many scientists, was an Adjunct Professor serving on student committees at the University of Florida, Gainesville, and Florida A&M University, Tallahassee, and helped establish and build several organizations, some outlined in the following sections. Retiring August 1, 1988, after 30 years of service to the State, he continued to serve the public, agricultural and scientific communities as an Emeritus Taxonomist and consultant until his passing on July 8, 2021.

Highlighted Accomplishments

Coleoptera Publications

Bob's career in agriculture as a taxonomist identifying unknowns, led to numerous reports on exotic insects new to Florida, pests or not, as well as publications on native Florida curiosities. Most were published in the FDACS-DPI Entomology Circular series and are listed in Appendix 1. Bob's favorites were scarab beetles, for which he ran large series of baited pitfall traps (Fig. 1). Although he would likely argue, we feel his most important work was "The scarab beetles of Florida (Coleoptera: Scarabaeidae). Part I. The Laparosticti" (Woodruff 1973) which



Figures 1–2. Bob Woodruff. 1) Bob setting pitfall traps baited with fermented malt at Cove Mountain, Pennsylvania in 1965. 2) Paul Skelley presenting Bob with the CSE Lifetime Achievement Award after the annual meeting in January 2020.

inspired a generation of scarab researchers nationwide and is still used by students in Florida to identify these beetles in their class collections. He was specifically interested in June beetles (*Phyllophaga* spp.) having worked with Milt Sanderson, who donated his old projects and extensive research notes to Bob and the FSCA. Bob published two major works on June beetles, one for Florida (Woodruff and Beck 1989) and one for the island of Hispaniola (Woodruff and Sanderson 2005).

Other publications of note include his work on scarabs, alone or with other researchers (Woodruff 1960, 1980, 1982, 1994b, 2006a,b, 2008, 2009; Cartwright and Woodruff 1967; Woodruff and Cartwright 1969; Woodruff and Fincher 1975; Fincher and Woodruff 1979; Deyrup and Woodruff 1991; Skelley and Woodruff 1991; Deloya and Woodruff 1995; Crocker et al. 1999; Harpootlian et al. 2000; Moron and Woodruff 2008; Robbins et al. 2011, Woodruff and Steiner 2011), his study on arthropods in gopher tortoise burrows (Woodruff 1983), and the checklist of the insects of Grenada and the Grenadines (Woodruff et al. 1998). His scientific publications on Coleoptera led to descriptions naming 47 new species in three families (Appendix 2).

Florida State Collection of Arthropods (FSCA)

Bob was employed by the State Plant Board (SPB) in 1958 and started adding to the SPB insect collection. In 1959, the Florida State Museum (now Florida Museum of Natural History) transferred all of its insects to the SPB. In the 1960s, the University of Florida Agricultural Research Station collections from around the state were transferred to the FSCA. In 1962, Howard Weems initiated the Research Associate Program which encouraged donations of specimens but also greatly increased communications and relations with other entomologists nationwide. In 1965, the FSCA was officially established by Florida Statutes.

Bob was part of the staff team that worked to establish the FSCA, developing relationships and resources at hand and elsewhere. Bob oversaw development and growth of the DPI library, which houses numerous items that are rare or are the only available copies in the US. In association with the library of the University of Florida, Gainesville boasts the best entomological library south of the Smithsonian Institution with the National Library. In 1977, Bob received National Science Foundation (NSF) funds to build an amber fossil insect collection for the FSCA. In addition to his own extensive efforts to collect extant insects, he worked to acquire collections of world-renowned taxonomists. Bob also built and curated the alcohol collections. In 1982, he spearheaded the initiative which received an NSF grant for compactor systems (high density shelving) to house the alcohol-preserved collections of the FSCA, which are still used today.

In 2004, the Florida Museum of Natural History opened the McGuire Center for Lepidoptera and Biodiversity, merging various Lepidoptera collections in Florida. With a 2005 joint Memorandum of Understanding, the FSCA Lepidoptera were transferred to be housed in that facility, literally next door to the FSCA. With the McGuire Center's continuing their own acquisition program, the Lepidoptera collections now rank as one of the largest and most diverse collections in the world.

Thanks in part to Bob's early efforts to establish the FSCA, build special collections, and work with fellow entomologists towards common goals, the FSCA easily ranks in the top 10 largest entomological research collections in the US. The McGuire Center, Gainesville is recognized internationally as a focal point for systematic entomology research. With the University of Florida's Entomology and Nematology Department, neighboring both institutions, Gainesville is a world center for any type of entomological research and education, in which Bob played a part.

Center for Systematic Entomology (CSE)

With Ross H. Arnett, Jr., Bob and others established the CSE (<https://centerforsystematicentomology.org/>) as an independent non-profit organization whose function is supporting systematic entomology and the collections of the FSCA. Over the years, the CSE supported numerous students and researcher visits, published two books in the Memoir Series (Kuznetsov 1997; Woodruff et al. 1998) as well as the journal *Insecta Mundi*, and supported the FSCA by funding many small projects or purchases of equipment. Bob served as its first president from 1985–1986 and again from 1995–1996, and remained active on the Board of Directors from 1994–2019. In 2019, he was presented the first CSE Lifetime Achievement Award (Fig. 2), becoming a lifetime member and permanent *ex officio* member of the Board of Directors.

Insecta Mundi

Ross Arnett and Bob founded the systematic journal *Insecta Mundi* in 1985. Originally published by Ross's publishing company, Flora and Fauna Publications, then in collaboration with E. J. Brill, and later Ross's Sandhill Crane Press. In 1991, *Insecta Mundi* was donated to the CSE, who established an Editorial Board and volunteer staff to produce it. The journal proved to be a life-force for the CSE, which started increasing membership significantly at that time. Bob helped edit and build the journal, serving on the Editorial Board from 1985–2012. In 2006, when the CSE and *Insecta Mundi* made the decision to move away from print-only publication (Skelley and Thomas 2007), Bob was a strong proponent of moving into the new electronic world. This proved very successful and, with the growing number of submissions to our new electronic openly-accessible format still being managed by a few members of the Editorial Board, Bob was overwhelmed with the responsibilities and resigned in 2012. He remained supportive of the journal and was always eager to discuss it and our changing processes.

Societies and Editing

In addition to his work with the CSE and *Insecta Mundi*, Bob was a member of numerous scientific societies, several of which he served as a reviewer, editor or editorial board member. These included: the Coleopterists Society (President in 1978), Editor of *The Coleopterists Bulletin* 1971–1975, Associate Editor 1975–1982; and the Florida Entomological Society, Associate Editor of the *Florida Entomologist* 1969–1977. He wrote numerous book reviews as space fillers for these various journals during his tenures.

Artwork

Bob was a creative person, talented in many ways. He prided himself as an artist and illustrated many of his publications. Some of his artwork is reproduced in this Memoriam (Fig. 4–24, 27). He created the ladybird beetle emblem for the XV International Congress of Entomology (Fig. 6) and also enjoyed creating artwork as a hobby, some of which were never published (Fig. 4, 14–15).

Foreign Travel and Consultancies

While employed, Bob was able to travel widely for agriculturally based work and always managed to arrange extra field time to collect insects. After retiring, he continued to consult on agricultural issues with the United Nations Food and Agriculture Organization (FAO), other countries, universities and institutions throughout the Caribbean and Central America. The FAO consulting led to his insect checklist of Grenada and the Grenadines (Woodruff et al. 1998). All of this resulted in his working and collecting in over 30 countries and overseas regions, some multiple times, like his 48 trips to the Dominican Republic. This list includes: Antigua and Barbuda, Argentina, Australia, Barbados, Bolivia, Brazil, Canada, Colombia, Costa Rica, Cuba, Dominican Republic, El Salvador, Fiji, Grenada, Guadeloupe, Guatemala, Haiti, Honduras, Jamaica, Mexico, Montserrat, Nicaragua, Paraguay, Peru, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, Uruguay, and Venezuela. Each trip produced specimens of many insect orders which he shared widely with experts. This generosity led to many patronyms and this Festschrift with additional patronyms (Appendix 3) and a paper dedicated to him (Szadziewski et al. 2022).

Other Passions: Gemstones and Amber

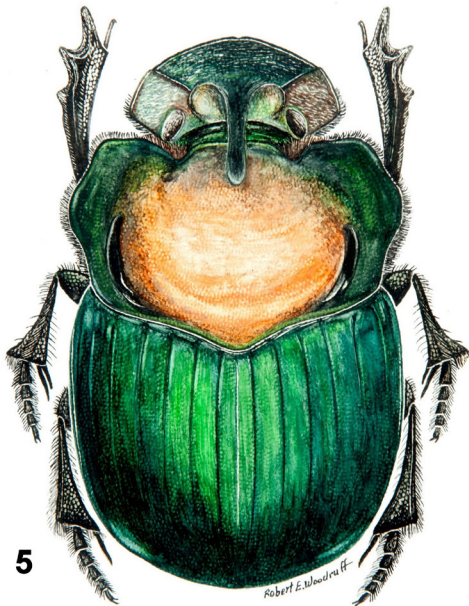
Bob had passions outside of entomology. He collected nearly everything imaginable, being a self-professed pack rat. He also was an avid University of Florida – Gator supporter, and musically he played a washtub bass. But he was largely a rock-hound (Fig. 3) and served as president of the Gainesville Gem & Mineral Society for 30 years. He turned the hobby into a side business, Bob's Gems, and enjoyed lapidary. One of his favorite materials was larimar from the Dominican Republic (Fig. 3), which he promoted and published on (Woodruff 1986, 1987; Woodruff and Fritsch 1989). Bob merged three of his passions (Entomology, gemstones and the Dominican Republic) into one in his work with Dominican amber dealers. Bob would purchase and identify fossils to get them into the hands of the appropriate scientist. His vendor booth at the Entomological Society of America's annual meetings was a favorite of most hardened insect taxonomists. Bob often had real gems for sale to help with their research.



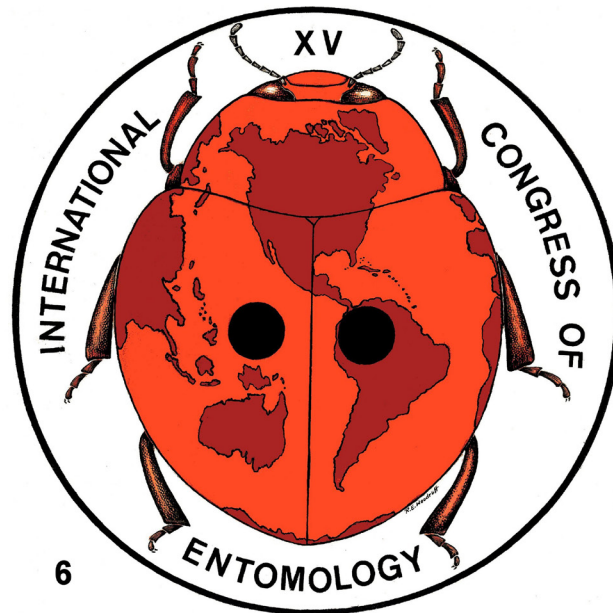
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Figure 3–6. Bob Woodruff and some of his illustrations. 3) Bob in a Hong Kong jade shop, 2018. He is wearing his favorite larimar bolo tie. 4) *Hylophora cecropia* (Linnaeus) (Saturniidae). 5) *Phanaeus igneus* Macleay (Scarabaeidae), cover illustration from Woodruff (1973). 6) Original design of the cover logo for the Proceedings of the XV International Congress of Entomology, 1976. The final version had no signature or circular spots on the elytra.

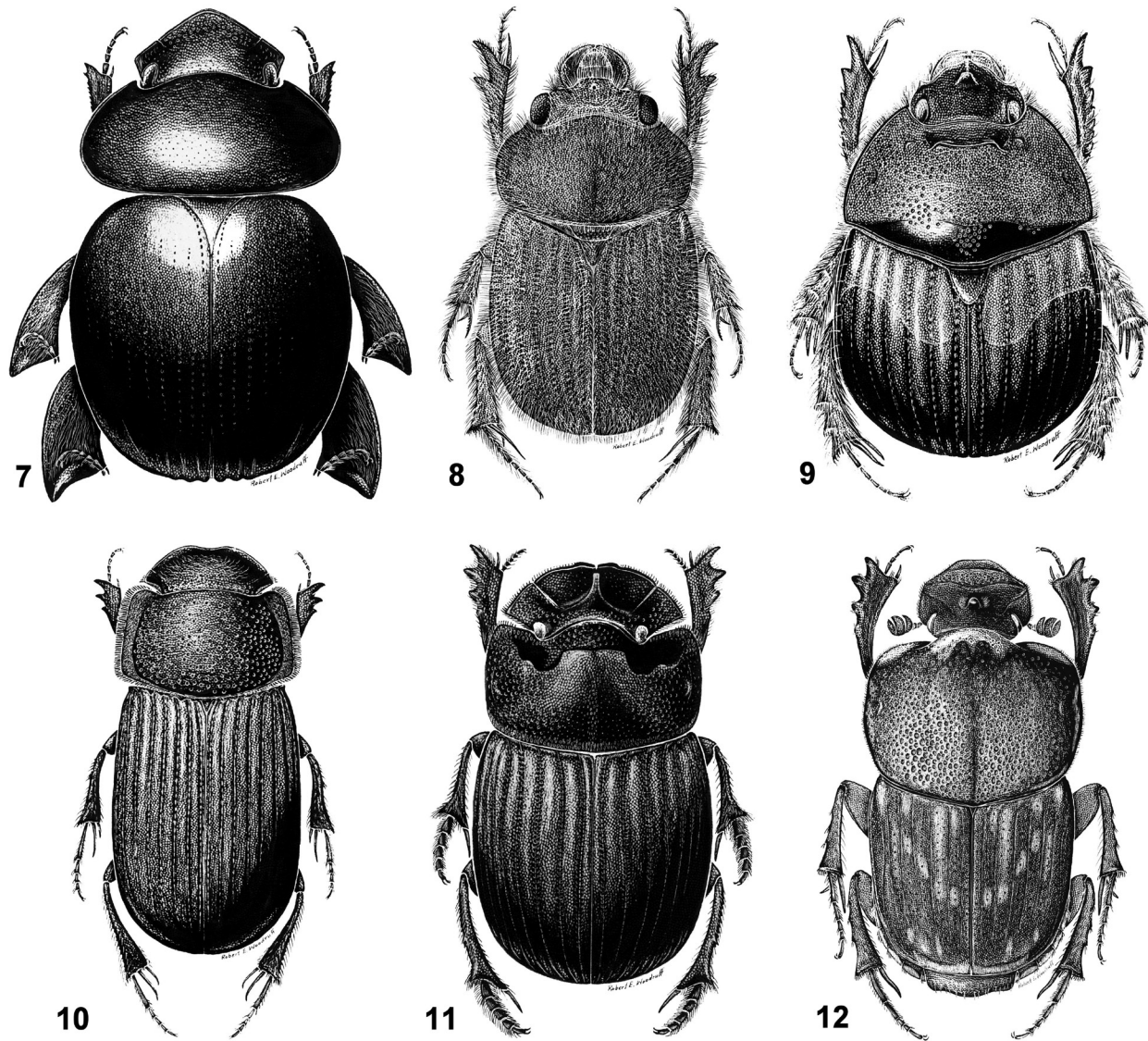


Figure 7–12. Habitus illustrations of some lapaerostic scarabs in Florida from Woodruff (1973). **7** *Ceratocanthus aeneus* (MacLeay) (Hybosoridae: Ceratocanthinae) published as *Acanthocerus aeneus* MacLeay. **8** *Neochodaeus frontalis* (LeConte) (Ochodaeidae: Ochodaeinae) published as *Ochodaeus frontalis* LeConte. **9** *Bolbocerosoma hamatum* Brown (Bolboceratidae: Boboceratinae). **10** *Martineziana dutertrei* (Chalumeau) (Scarabaeidae: Aphodiinae) published as *Myrmecaphodius excavaticollis* (Blanchard). **11** *Copris minutus* (Drury) (Scarabaeidae: Scarabaeinae). **12** *Euoniticellus cubiensis* (Castelnau) (Scarabaeidae: Scarabaeinae) published as *Oniticellus cubiensis* Castelnau.

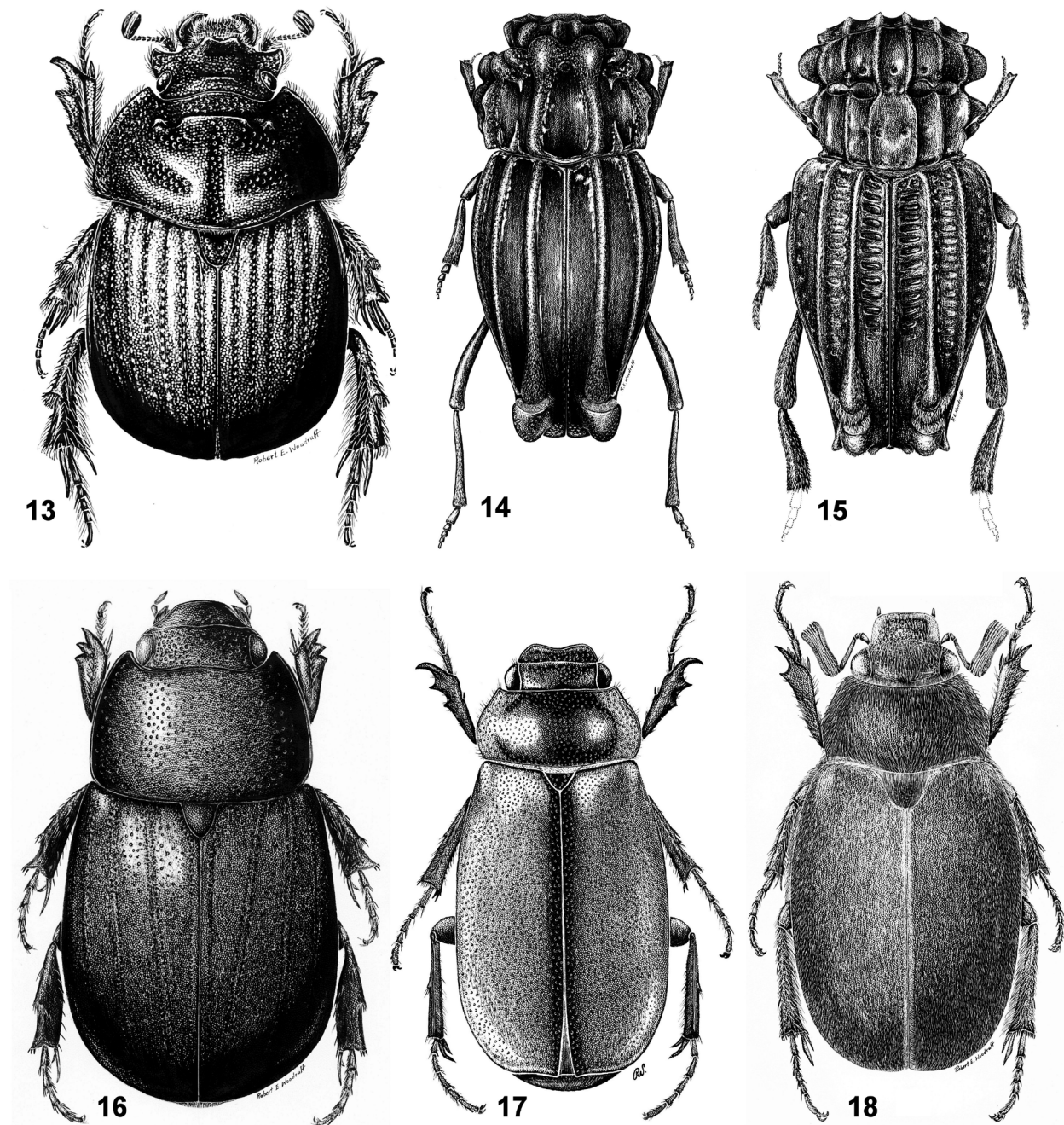


Figure 13–18. Habitus illustrations of other scarabs published and unpublished. **13** *Eucanthus subtropicus* Howden (Bolboceratidae: Bolboceratinae) in Woodruff (1973). **14** *Termitodius coronatus* Wasmann (Scarabaeidae: Aphodiinae) previously unpublished. **15** *Aschnarhyparus peregrinus* (Hinton) (Scarabaeidae: Aphodiinae) previously unpublished. **16** *Dyscinetus morator* (Fabricius) (Scarabaeidae: Dynastinae) in Woodruff (1971a). **17** *Phyllophaga bruneri* Chapin (Scarabaeidae: Melolonthinae) in Woodruff (1961a). **18** *Polyphylla woodruffi* Skelley (Scarabaeidae: Melolonthinae) published as *Polylamina pubescens* (Cartwright) in Woodruff (1982).

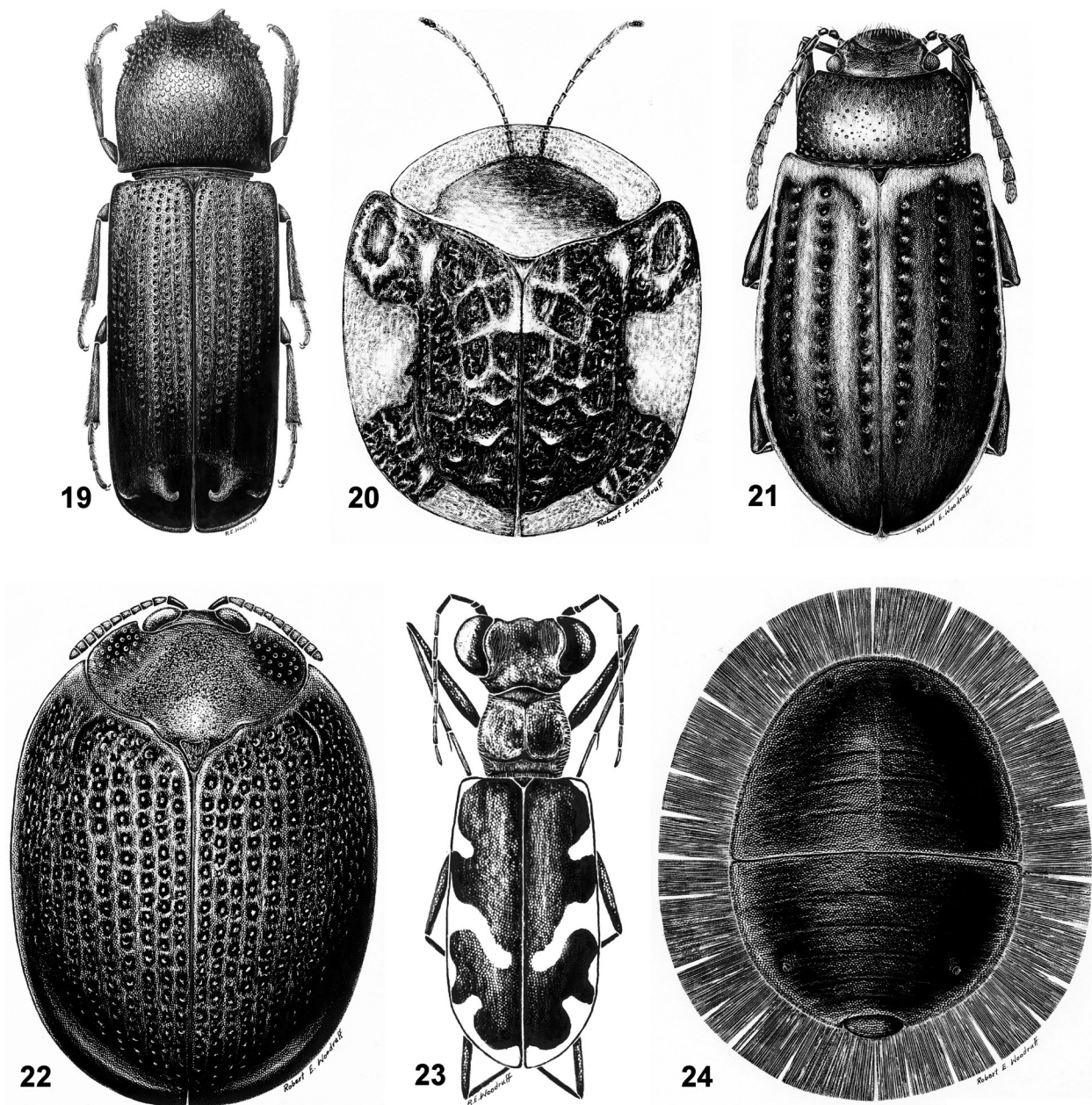


Figure 19–24. Habitus illustrations of other beetles and a whitefly, mostly published as part of his regulatory responsibilities. **19** *Heterobostrychus aequalis* (Waterhouse) (Bostrichidae) in Woodruff (1967a). **20** *Helocassis clavata* (Fabricius) (Chrysomelidae) in Woodruff (1975) published as *Plagiometriona clavata* (Fabricius). **21** *Microtheca ochroloma* Stål (Chrysomelidae) in Woodruff (1974b). **22** *Hemisphaerota cyanea* (Say) (Chrysomelidae) in Woodruff (1965a). **23** *Microthylax olivaceus* (Chaudoir) (Carabidae) in Woodruff and Graves (1963) published as *Cicindela olivacea* Chaudoir. **24** *Cerataphis brasiliensis* (Hempel) (Hemiptera: Aphididae) in Denmark (1965) published as *Cerataphis variabilis* Hille Ris Lambers and as a partial negative image to look more lifelike.

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Appendix 1. Bibliography for Robert E. Woodruff

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- Woodruff RE. 1969b.** The banana root borer (*Cosmopolites sordidus* (Germ.)) in Florida. Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Entomology Circular 88: 1–2; 4 fig.
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- Woodruff RE. 1976a.** The tortoise beetles of Florida. III. *Eurypepla calochroma floridensis* Blake (Coleoptera: Chrysomelidae). Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Entomology Circular 163: 1–2.
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- Woodruff RE. 1976c.** Another click beetle of the genus *Alaus* in Florida (Coleoptera: Elateridae). Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Entomology Circular 170: 1–2.
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Gemology Publications

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- Woodruff RE. 1987.** The new Caribbean gem. Aboard 11(2): 6–7, 35, 58–59.
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Appendix 2. List of Coleoptera taxa described or co-described by Robert E. Woodruff

References are listed in Appendix 1. Total (47).

Brachypsectridae: (1)

Brachypsectra vivafosile Woodruff, 2002 [amber fossil]

Lucanidae: (1)

Syndesus ambericus Woodruff, 2009 [amber fossil]

Scarabaeidae: (45)

Aphodius dyspistus Skelley and Woodruff, 1991

Aphodius hubbelli Skelley and Woodruff, 1991

Aphodius pholetus Skelley and Woodruff, 1991

Aphodius platypleurus Skelley and Woodruff, 1991

Aphodius tanytarsus Skelley and Woodruff, 1991

Cotinis aliena Woodruff, 2008

Euparixia moseri Woodruff and Cartwright, 1967

Leiopsammodius acei Harpootlian, Gordon, Woodruff, 2000

Leiopsammodius deyrupi Harpootlian, Gordon, Woodruff, 2000

Leiopsammodius ocmulgeei Harpootlian, Gordon, Woodruff, 2000

Phyllophaga aceitillar Woodruff, 2005

Phyllophaga alcoa Woodruff, 2005

Phyllophaga androw Woodruff, 2005

Phyllophaga approxima Woodruff and Sanderson, 2005

Phyllophaga (Phytalus) balli Morón and Woodruff, 2008

Phyllophaga baoruco Woodruff, 2005

Phyllophaga bonfils Woodruff and Sanderson, 2005

Phyllophaga carnegie Woodruff, 2005

Phyllophaga davidsoni Woodruff, 2005

Phyllophaga eladio Woodruff, 2005

Phyllophaga haitiensis Woodruff, 2005

Phyllophaga jaragua Woodruff, 2005

Phyllophaga jimenezi Woodruff and Sanderson, 2005
Phyllophaga larimar Woodruff, 2005
Phyllophaga marcano Woodruff, 2005
Phyllophaga navassa Woodruff and Steiner, 2011
Phyllophaga (Phyllophaga) navidad Morón and Woodruff, 2008
Phyllophaga nunezi Woodruff, 2005
Phyllophaga ortizi Woodruff, 2005
Phyllophaga pedernales Woodruff, 2005
Phyllophaga (Phyllophaga) potosisalta Morón and Woodruff, 2008
Phyllophaga rawlinsi Woodruff, 2005
Phyllophaga rex Woodruff and Sanderson, 2005
Phyllophaga rustica Woodruff, 2005
Phyllophaga santachloe Woodruff, 2005
Phyllophaga toni Woodruff, 2005
Rhyparus blantoni Cartwright and Woodruff, 1969
Rhyparus costaricensis Cartwright and Woodruff, 1969
Rhyparus isidro Cartwright and Woodruff, 1969
Rhyparus mexicanus Cartwright and Woodruff, 1969
Rhyparus opacus Cartwright and Woodruff, 1969
Rhyparus sculpturatus Cartwright and Woodruff, 1969
Rhyparus spangleri Cartwright and Woodruff, 1969
Rhyparus suspiciosus Cartwright and Woodruff, 1969
Rhyparus zayasi Cartwright and Woodruff, 1969

Appendix 3. Known patronyms for Robert E. Woodruff

This list was compiled from multiple sources and may not be complete. Other patronyms will be published in the future. Patronyms in papers following this Memoriam paper are being published as a collective work at the same time. All names below are valid, or otherwise noted, with authors as noted. References are presented in the Literature Cited.

Specific Patronyms (52 total)

Arachnida: Solifugae

Eremobatidae: *Eremobates woodruffi* Brookhart and Muma, 1981, USA (TX)

Diplopoda: Polydesmida

Rhachodesmidae: *Chromodesmus woodruffi* Loomis, 1976, Mexico

Diplopoda: Spirobola

Spirobolidae: *Narceus woodruffi* Causey, 1959, USA (FL)

Insecta: Coleoptera

Cantharidae: *Malthinus occipitalis woodruffi* Wittmer, 1980, USA (FL)

Carabidae: *Amblygnathus woodruffi* Ball and Maddison, 1987, Honduras

Carabidae: *Selenophorus woodruffi* Ball and Shepeley, 1992, Grenada

Cerambycidae: *Caraphia woodruffi* Wappes and Santos-Silva, 2018, Guatemala

Cleridae: *Pelonium woodruffi* Opitz, 2018, Dominican Republic

Cleridae: *Onychotillus woodruffi* Opitz, 2022, Dominican Republic

Curculionidae: *Chaetophloeus woodruffi* Bright, 2019, Dominican Republic

Curculionidae: *Erebaces woodruffi* Anderson, 2022, Philippines

Curculionidae: *Sicoderus woodruffi* Anderson, 2018, Grenada

Curculionidae: *Sternochetus woodruffi* Sleeper, 1955, USA, (OH) (now a synonym of *Cryptorhynchus helvus* LeConte)

Dytiscidae: *Neobidessus woodruffi* Young, 1982, Bolivia

- Elateridae: *Lissomus woodruffi* Johnson, 2022, Dominican Republic
 Elmidae: *Holcelmis woodruffi* Hinton, 1973, Bolivia
 Erotylidae: *Pharaxonotha woodruffi* Skelley, Tang and Pérez-Farrera, 2022, Mexico
 Eucnemidae: *Thambus woodruffi* Muona, 2022, Dominican Republic [amber fossil]
 Heteroceridae: *Efflagitatus woodruffi* Pacheco, 1975, Bolivia (now in *Heterocerus* Fabricius)
 Laemophloeidae: *Laemophloeus woodruffi* Thomas, 1993, USA (FL) (now a synonym of *Laemophloeus fervidus* Casey)
 Malachiidae: *Ablechrus woodruffi* Wittmer, 1999, Dominican Republic
 Scarabaeidae: *Ataenius woodruffi* Cartwright, 1974, USA (FL) (now a synonym of *Ataenius opatrinus* Harold)
 Scarabaeidae: *Chrysinia woodruffi* Monzón, 2017, Guatemala
 Scarabaeidae: *Dichotomius (Luederwaldtinia) woodruffi* Solís and Kohlmann, 2022, Costa Rica, Nicaragua
 Scarabaeidae: *Feeridium woodruffi* Vaz-de-Mello, 2008, Brazil
 Scarabaeidae: *Haroldiellus woodruffi* Skelley and Keller, 2022, Costa Rica, Guatemala, Mexico, Panama
 Scarabaeidae: *Phyllophaga woodruffi* Warner and Morón, 1992, Mexico (now in *Triodonyx* Saylor)
 Scarabaeidae: *Phyllophaga bobevlynorum* Schnepf, 2022, Puerto Rico
 Scarabaeidae: *Polyphylla woodruffi* Skelley, 2004, USA (FL)
 Scarabaeidae: *Termitodius woodruffi* Skelley, Clavijo-Bustos, and Keller, 2022, Colombia [extant and copal fossil]
 Tenebrionidae: *Strongylium woodruffi* Garrido and de Armas, 2012, Dominican Republic

Insecta: Diptera

- Ceratopogonidae: *Artrichopogon (Psilokempia) woodruffi* Spinelli, Marino and Huerta, 2015, Dominican Republic
 Ceratopogonidae: *Bezzia (Bezzia) woodruffi* Spinelli and Wirth, 1989, Jamaica
 Ceratopogonidae: *Brachypogon (Brachypogon) woodruffi* Spinelli and Grogan, 1998, Dominican Republic
 Ceratopogonidae: *Culicoides woodruffi* Spinelli and Huerta, 2015, Mexico
 Ceratopogonidae: *Forcipomyia (Lasiohelea) woodruffi* Szadziewski and Grogan, 1998, Dominican Republic [amber fossil]
 Stratiomyidae: *Nothomyia woodruffi* James, 1976, Jamaica
 Tabanidae: *Stenotabanus woodruffi* Fairchild and Lane, 1989, Dominican Republic

Insecta: Hemiptera

- Cicadellidae: *Erythroneura woodruffi* Hepner, 1967, USA (MS) (now a synonym of *Erythroneura aculeata* (Beamer))
 Cicadellidae: *Gypona (Marganalana) woodruffi* Freytag, 2005, Dominican Republic
 Cicadellidae: *Ponana woodruffi* DeLong and Martinson, 1980, Mexico
 Lygaeidae: *Ninyas woodruffi* Baranowski in Baranowski and Slater, 2005, Dominican Republic
 Lygaeidae: *Ozophora woodruffi* Slater in Woodruff and Slater, 2012, Dominican Republic
 Pentatomidae: *Brachycerocoris woodruffi* Eger, 2022, Philippines
 Pentatomidae: *Mediocampus woodruffi* Thomas in Perez-Gelabert and Thomas, 2005, Dominican Republic

Insecta: Hymenoptera

- Torymidae: *Zophedetus woodruffi* Grissel, 1980, Dominican Republic
 Vespidae: *Zethus woodruffi* Stange, 2004, St. Vincent

Insecta: Neuroptera

- Myrmeleontidae: *Purenleon woodruffi* Miller and Stange, 2011, Dominican Republic

Insecta: Orthoptera

- Gryllidae: *Anaxipha woodruffi* Otte and Perez-Gelabert, 2009, St. Vincent

Insecta: Phasmida

- Phasmatidae: *Haplopus woodruffi* Hennemann, Conle and Perez-Gelabert, 2016, Cayman Islands

Insecta: Trichoptera

- Hydroptilidae: *Alisotrichia woodruffi* Flint and Sykora, 2004, Dominican Republic
 Leptoceridae: *Amphoropsyche woodruffi woodruffi* Flint and Sykora, 1993, Grenada

Appendix 4. Additional memories, short stories, facts or notes from colleagues

These are presented in alphabetical order by contributor.

J. Howard Frank, Emeritus Professor, University of Florida, Entomology and Nematology Department, Gainesville, FL, USA

In appreciation of Robert E. Woodruff

From 1969 to April 1972, I lived in Jamaica. My employer was the Sugar Manufacturers' Association of Jamaica; and I worked as the entomologist to the sugar industry. The laboratory buildings were on the outskirts of the town of Mandeville, more-or-less in the center of the island. Why there? It had been reasoned that because the 16 sugar-producing estates (those that had a factory and were members) were scattered about the island, and it was necessary to visit them all in an extension role, then the ideal place for the laboratories was in the center, about 60 miles west of Kingston by road.

One Saturday morning, early in 1969, I saw a stranger walk through the front door of the main building. As I was on-telephone duty at the reception desk, I asked him whether I might help. He answered that he was Bob Woodruff from Florida, and he was looking for the entomologist reputed to work there (me!). It turned out that we had mutual friends at the University of Alberta.

As a result of that meeting and discussion, he offered me an ultraviolet light trap. I had never used one, and this was too attractive to pass up, so I accepted. The payoff for him was most of the catch anywhere I ran the trap in the West Indies. The next time he came to Mandeville, he would be a guest at my house. It could not happen that first time because I had no way of forewarning my wife because I did not have a telephone (yes, I was on the waiting list for a phone, but I met people who had been on the waiting list for a year). I was lucky to get one after a few months and after my boss had explained to the phone company that I was on call 7 days per week to sugar producers, and that would not work without a phone.

Perhaps the next time Bob visited Mandeville, he brought with him a light trap and two University of Florida graduate students (they too became guests at my house). They were Ed Farnworth (fireflies) and Pete Drummond (isopods). Most of Jamaica except for the Blue Mountains is limestone, and in many places there had been limestone rocks for the taking. Many people built limestone walls around their property. It is considered quite normal for firefly collectors to wield insect nets to catch fireflies at night, only in Jamaica they might have to jump over drystone walls. Ed tried that and distinguished himself by breaking an arm. It healed, and he decided that Jamaica would be a pleasant place to live for a time. He found a job in an agricultural college and brought his wife and children too. Pete rented a vehicle to get to promising collecting sites, and took me with him on one such trip. Meanwhile, Bob who was a dedicated collector of scarab beetles, asked me about all-black adults of a *Phanaeus* MacLeay that spend most of their time in cattle dung. I lent him a garden fork and advised him to climb over the fence at the foot of my yard into a pasture and help himself. He did so and was delighted with the *Sulcophanaeus carnifex* (Linnaeus) there.

The first Jamaican cave I visited was with Bob, who knew the way. It was an easy cave, demanding no climbing or ladders or swimming, and it had a good population of bats. They, of course, produce guano which is home to a small fauna of moths and mites and rove beetles. It is called Oxford Cave and its entrance is conveniently located within a few feet of a paved road. We then drove on to a village called Troy in the Cockpit Country and lunched on Easter bun and Red Stripe beer. The Cockpit Country is a limestone karst area similar to others in Cuba and Puerto Rico. A couple of years later (with Bob's wife Evelyn), we both tried to remember the way to Windsor Cave on the northern edge of the Cockpit Country. We did, finally, get to the cave but did not venture far inside because of my recollection of a group of cavers (I was one of them) getting temporarily lost in it. After Oxford Cave with Bob, I joined the Jamaica Caving Club (JCC) which was dedicated to exploring and mapping the island's caves. JCC used ladders made of steel cable and duralumin rungs (so could be rolled up) in 15-ft sections that could be linked together. I seemed for a while to be exploring caves on a Saturday or Sunday every weekend. Most of the JCC members lived in Kingston and were associated with the University of the West Indies.

In 1977, its most active member Alan Fincham finished a compilation (Fincham 1977) all in block capitals on a mainframe computer because at that time there were no desk-top computers. Mainframes were used for arithmetical computation. An edition with limited circulation was published by the Geological Society of Jamaica.

Three years after I left Jamaica, I was encouraged to organize a field trip there by members of the Coleopterists' Society (which Bob in 1969 had persuaded me to join). It would immediately follow the annual meeting (with ESA) in New Orleans. I reserved space at the Forestry Department facility at Clydesdale and urged everyone to book a specified flight from New Orleans to Kingston. I reserved three rental cars and found volunteer drivers for two of them (I drove the third). To my great surprise, Bob did not participate (perhaps because he had used up his leave at the Florida Department of Agriculture and Consumer Services for the year 1975). We had the pleasure of a visit one day and night from Dr. Thomas Farr, entomologist of the Institute of Jamaica. His local knowledge far exceeded mine. My wife, Audrey, organized menus and shopping lists based on her knowledge of local ingredients. I flew from Florida to Kingston in advance and bought food and transported it to Clydesdale. Cooking meals was done expertly by Kathleen Ball, Milada Dybas, and Lois O'Brien. Frank et al. (1976) gave an account.

The most popular beaches in Jamaica are on the north and west coasts. My family lived in Mandeville, much closer to the south coast. The closest beach is at Alligator Pond named for the crocodiles that live there (mistakenly called alligators). Farther west is Treasure Beach. So, we would typically visit one or the other when we wanted a beach. At Treasure Beach, I would rummage in the seaweed washed up on the shore in hope of finding Staphylinidae. When I found tiny beetles that seemed to be scarabs, I filed that information in my head, and at some point relayed it to Bob. He suggested that we meet there on a Sunday during his latest visit. As I had to work in sugarcane fields during the morning, I agreed to meet him in mid- afternoon. I had never before driven there from the west, and I underestimated the time it would take. I was late, getting to Treasure Beach and Bob told me about it. I was also wrong about the beetles' identity – they were not scarabs but tenebrionids.

In late 1970, I flew to Miami to attend the annual meeting of the Entomological Society of America on Miami Beach. There, I had planned to meet Bob and did so. He invited me to drive with him to Gainesville after the meeting and stay at his house for a few days. The library at the Division of Plant Industry was better than any I had seen for more than two years in terms of entomological books and journals. Gainesville seemed a pleasant city. I flew back to Miami from Gainesville, and then to Jamaica. How easy life seemed in Gainesville.

In 1971, I realized that with a wife and three small daughters and a local salary, I could no longer afford to live in Jamaica. Although I hated to leave, I had to search for an alternative. A friend in Mandeville was an American herpetologist living on a postdoctoral fellowship with his family. His aunt in Vero Beach told him of a laboratory there in Vero Beach offering a position as a mosquito researcher. That was of no interest to him, but he told me, and I applied. Very luckily for me, Bob was a friend of the director of this laboratory, and I was hired.

In 1988, Bob retired from the Florida Department of Agriculture. That same year, he and I journeyed to the Dominican Republic where he had friends. One of these friends was Carmelo Nuñez with whom Bob and I published our results on mole crickets (Frank et al. 1987). My motives were to collect and observe mole crickets as by then I had moved to a job on the University of Florida campus, and my job was biological control, especially of mole crickets. He undertook some trips to Grenada and then was hired as consultant in a joint effort by the Ministry of Agriculture of Grenada, the Food and Agriculture Organization of the United Nations, and the Florida Department of Agriculture. He was determined to bring entomological knowledge in Grenada up-to-date, at least taxonomically. His activities in Grenada included operating a UV light trap for many months during which he captured many *Neocurtilla hexadactyla* (Perty) mole crickets but very few *Neoscapteriscus didactylus* (Latreille) which is generally believed to be the major pest mole cricket there, so Mike Thomas and I went there to investigate and we published the results together with Bob (Frank et al. 2002). Bob, however, with much help from his taxonomist friends, wrote a book on Grenada and its insect fauna (Woodruff et al. 1998).

Bob's wife, Evelyn, died in 2013 in Gainesville and he lived alone for the rest of his life. By 2021 he looked the worse for wear and had issues with his heart and his mobility. I called him by phone early that summer and asked whether I could help him. He accepted help to get to his bank(s) and for a medical appointment, but no more; he was not short of friends and was always an entertaining conversationalist. I last saw him several times in June 2021. He died on the 8th of July.

Paul E. Skelley. Assistant Bureau Chief of Entomology, Nematology and Plant Pathology [Diagnostics Bureau] and Chief Entomologist, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Florida State Collection of Arthropods, Gainesville, FL, USA.

Bob was one of those able to inspire people by example, but his approach to help often took the unintended result of pushing people away. A personal example happened when I was a beginning Masters student under Bob at the University of Florida. I was impressed by his beetle illustrations and wanted to learn his technique. He used a special textured scratchboard, known as Ross Board, which was no longer available because the only known maker died years previously. The way Ross Board works is to blacken a silhouette of the subject with India ink, then to scratch the black away revealing white. The harder you scratch more of the white clay will be exposed on the textured surface, and the brighter an area becomes. Thus, with careful work, you can create structure, highlights and color patterns. Bob had a supply of Ross Board, but refused to share any, saying I needed to use the regular smooth scratch board. “Go attempt a habitus drawing, bring it to me and we’ll discuss it.” I selected my beetle subject and worked for many hours on multiple versions of the drawing but reached a point where it was not as good as I had hoped, and I was stuck (Fig. 25). I presented it to Bob, whose only comment was “That looks like *garbage* [only using a 4-letter word that was slang for excrement], go try again.” He had no words of encouragement, no suggestions on what bits of the illustration were good or bad, nor any helpful hints on how to improve it. After my initial disapproval of his lack of help, I thought “I’ll show him”. I rethought the entire processes using a smooth scratch board, then tried again. The technique I eventually developed, and used for most of my subsequent illustrations, was to create shading, contour, and color patterns using a diluted India ink wash. But, to apply it to the board with a tissue paper blotter, slowly building up the darkness and blending the grey as needed. Applied this way, the India ink could later be moved on the surface with a damp brush, almost like carbon dust, to create smaller structures, textural patterns, and some highlights. Very abrupt highlights and edges were easily cleaned by scraping the black away exposing the white clay underneath. The results were obviously a great improvement from my first attempt with scratchboard (Fig. 26). I continued to illustrate other beetles this way,

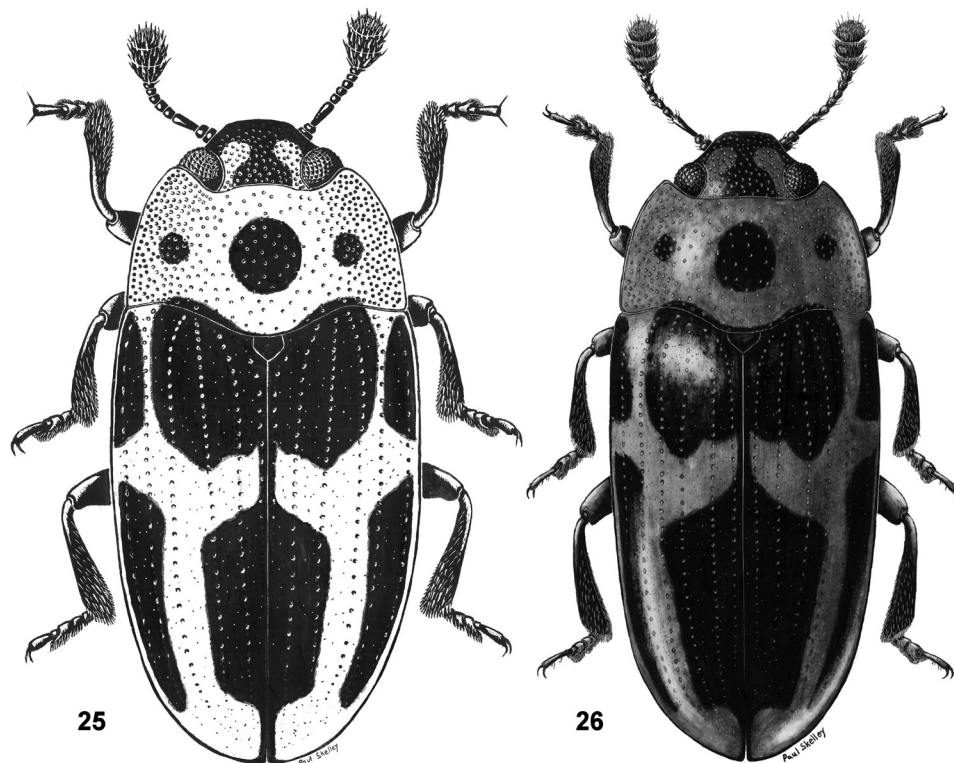


Figure 25–26. *Ischyryus dunedinensis* Blatchley. 25) First attempt. 26) Final attempt using the new technique. Final version published in Skelley and Goodrich (1989) and on the cover of *The Coleopterists Bulletin* 44(2) in 1990.

later even taking a Scientific Illustration class, until digital imaging techniques became readily available. I also assisted Bob with a scanning electron microscope to photograph genitalia in both of his main *Phyllophaga* works (Woodruff and Beck 1989; Woodruff and Sanderson 2005). However, manually creating these illustrations taught me more than drawing skills. To illustrate something required a deep understanding of body shapes, details of minute structures, and the way light reflected off them. Then to learn how to recreate the visual effects on paper to show highlights vs. shadows in such a way to represent overall shapes down to the more minute details. This is not always straightforward. This illustrative process forced me to study the subjects in greater detail than I would have normally and how to put that on paper in a way that others would interpret correctly. Photography by any methods does not force this detailed study. By illustrating them, I became a much better observer of those structures and translator of what I observed in both illustrations and in descriptions. In fact, this training is exactly what any person working in descriptive taxonomy needs to do: observe something then communicate it clearly. Bob's criticism drove me to talents I continue to use as an insect identifier, museum taxonomist, and systematic entomologist.

In editing and reviewing manuscripts, Bob was not afraid to point out anything he felt was incorrect or could be presented better. He was usually right. As an example of his attention to details and editing style, read his review of a publication on amber (Woodruff 1994a). He wanted and expected perfection and when given the chance, he made the effort to review anyone's manuscripts in detail. I soon learned that my manuscripts, no matter how hard I've worked on them, had many errors or things that needed clarification. Using a red ink pen, Bob would return them covered with red marks. They literally looked butchered. I always felt bad and some of the comments were upsetting as presented. But, taken constructively, they always improved the manuscript's quality. To this day, I expect reviewers and editors to tear up my papers. If my manuscripts are returned with a few comments or a simple "looks good", I know the reviewer did not do the job asked of them and I never ask them to look at another paper. After becoming a reviewer and editor, I learned that most submitted manuscripts need much better review efforts. Reviewers need to do the job asked of them and scientists need to be able to take and give constructive criticism to grow. If they can't, they should not be publishing.

Bob intended the criticism to be constructive and educational. For those of us who could handle Bob's "tough love", he was a talented and positive force that influenced many. For me, he proved to be a life-long friend. We argued often, as he did with many of his old friends. But, we saw eye-to-eye on many things, having similar professional goals, and worked together on many projects.

As Bob grew older, he used his talents less and less. I am thankful for having been his student and friend. I am the product of the experiences and teachings of two noteworthy coleopterists: Robert E. Woodruff and Michael C. Thomas (Skelley and Frank 2020). I will never forget all they taught me and hope I can pass that knowledge and talents to younger students who I have the privilege of working with.

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My first contact with Bob Woodruff was when he was a senior at Urbana, Ohio High School and I was a graduate student at The Ohio State University and a judge for the Junior Ohio Academy of Science competition. Bob was entered in the competition and was awarded first place with his fine insect collection.

The next time I heard from him, he was a student at Wabash College and not doing very well in his studies which was because he was involved in too many extracurricular activities. So, he transferred to The Ohio State University where he did much better and earned his BS and MS degrees. Later, he was hired as an insect curator at the Florida State Collection of Arthropods in Gainesville, Florida where he spent his entire career with an enviable record of publications on scarab beetles.

I visited him several times, staying at Bob's house while studying the insect collection at the museum. We had many more visits and I often saw him at ESA meetings tending his booth selling insect jewelry and amber fossils. Bob certainly was active in entomological affairs. He was President of the Coleopterists Society and Editor of the *Coleopterists Bulletin* (Fig. 27) and did a commendable job in both. I, for one, have said goodbye to a great friend and colleague.

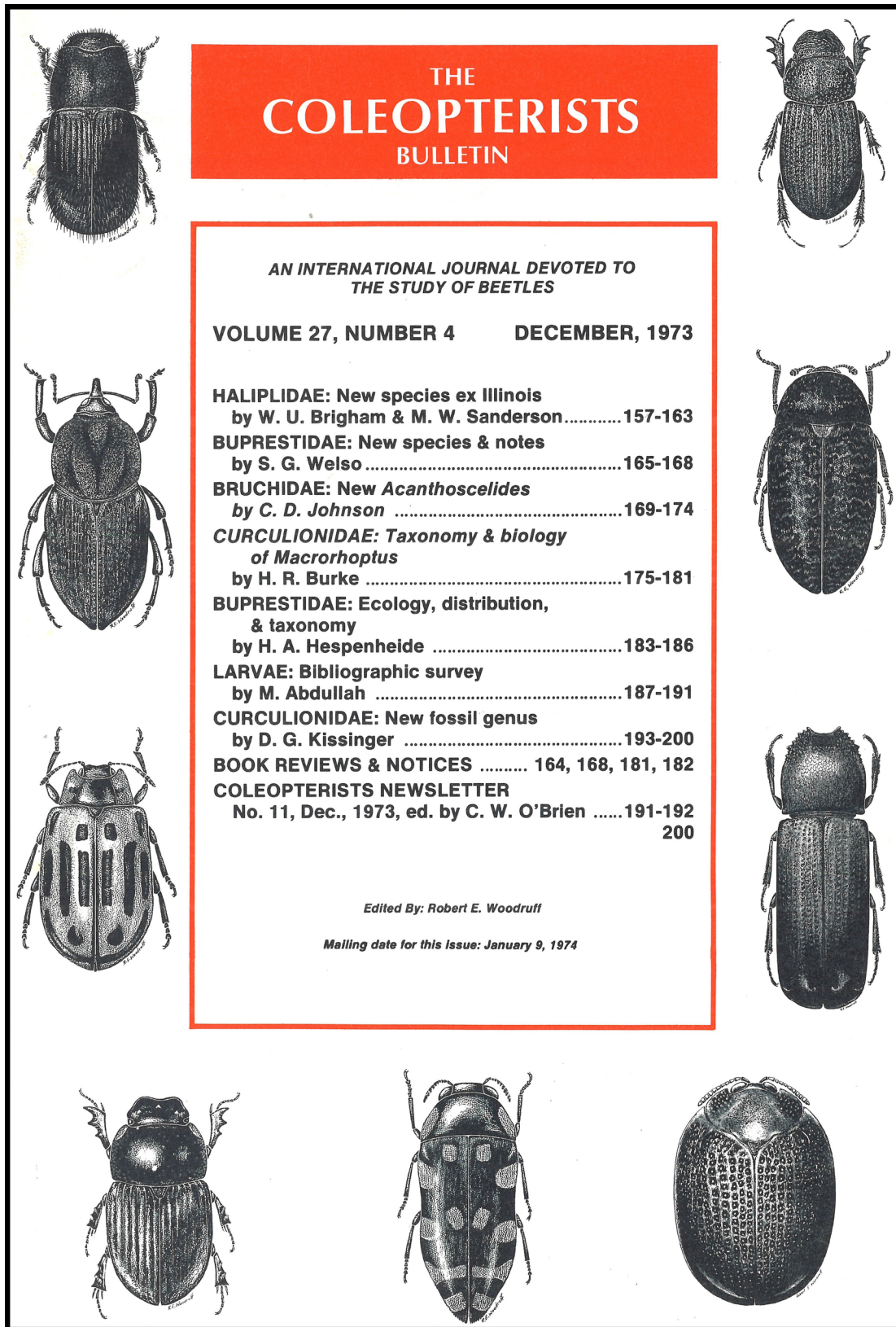


Figure 27. Example cover of *The Coleopterists Bulletin* (Editor 1971–1975 and Associate Editor 1975–1982); decorated with Bob's artwork.