

**A NEW SPECIES OF *CRYPTASPASMA* WALSINGHAM (LEPIDOPTERA:
TORTRICIDAE: OLETHREUTINAE) FROM CENTRAL AMERICA, THE
CARIBBEAN, AND SOUTHEASTERN UNITED STATES, WITH A CATALOG
OF THE WORLD FAUNA OF MICROCOR SINI**

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Abstract.—*Cryptasasma bipenicilla*, new species, is described and illustrated from Central America, the Caribbean, and southeastern United States. The earliest record of this species in the U.S. is a specimen collected in Pensacola, Florida, in 1962. We consider the species to now be established in the U.S. based on its widespread occurrence (on the Atlantic and Gulf coasts from North Carolina to Texas) and the duration of its presence in the region. The new species has been reared from avocado seed (*Persea americana* L.; Lauraceae) in Puerto Rico and from fruits of aceitunillo (*Belschmiedia pendula* (Sw.); Lauraceae) in Cuba. Potential hosts in the U.S. include *Persea borbonia* (L.) (red bay) and *P. palustris* Sarg. (swamp bay). We also provide a taxonomic catalog of the world fauna of the tribe Microcorsini.

Key Words: new species, new U.S. record, host plant, Caribbean, Central America, catalog

The tribe Microcorsini includes a single genus, *Cryptasasma* Walsingham, and is considered to be one of the most primitive tribes of the subfamily Olethreutinae (Kuznetsov and Stekolnikov 1984, Horak and Brown 1991, Horak 1999). Diakonoff (1959) treated 26 species in the most recent revision of *Cryptasasma*, dividing them among five subgenera. Subsequent authors (Kuznetsov 1970, Clarke 1976, Bradley 1982, Diakonoff 1983, Razowski 1995, Horak et al. 1996) have described new species or proposed new combinations that have resulted in a total of 33 species in the genus (see Appendix).

Four of the five subgenera of *Cryptasasma* occur in different zoogeographic re-

gions of the world. The subgenera *Cryptasasma* s. str. and *Anaphorodes* Diakonoff in the Neotropical Region appear to be the sister group of *Microcorses* Walsingham in Japan and eastern Russia. *Metasasma* Diakonoff in Africa and Madagascar appears to be most closely related to *Allobrachygonia* Fernald in the Oriental and Australian regions (Horak and Brown 1991).

Food plants of the group are poorly known. *Cryptasasma* (*Microcorses*) *trigonana* Walsingham feeds in acorns of *Quercus mongolica* Fisch. ex Ledeb. (Fagaceae) (Kuznetsov 1970, Kuznetsov and Stekolnikov 1984); *Cryptasasma* (*Microcorses*) *marginifasciata* (Walsingham) has been reared from acorns of *Quercus* sp. in

Korea (Oh et al. 2001); *Cryptasasma* (*Allobrachygonia*) *querula* (Meyrick) has been reared from kernels of stone fruits in New Zealand; and an unidentified species of *Cryptasasma* (*Allobrachygonia*) has been reared from nuts of macadamia (*Macadamia integrifolia* Maiden & Betcke; Proteaceae) in Australia (Horak and Brown 1991). Hosts for the Neotropical subgenera have not been reported previously.

The purposes of this paper are to describe a new species of *Cryptasasma*, present brief comments on its potential host plants, and provide a catalog of the described species of the tribe Microcorsini.

MATERIALS AND METHODS

Dissection methodology follows that summarized in J. Brown and Powell (1991). Genitalia were illustrated with the use of a Leica MZ 12.5 stereomicroscope and a drawing tube. Forewing measurements were made with the aid of an ocular micrometer mounted in a Wild M3Z dissecting microscope under low power ($\times 10$ – 16). Terminology for wing venation and genitalic structures follows Horak (1984). Terminology for forewing patterns and strigulae follows R. Brown and Powell (1991) as modified by Baixeras (2002). Abbreviations and symbols are as follows: FW = forewing; HW = hindwing; n = number of specimens examined; r.f. = reared from; \bar{x} = mean; ca. = circa (approximately). In the Appendix, names are presented in their original orthography, and the following abbreviations are used: TL = type locality; HT = holotype; LT = lectotype.

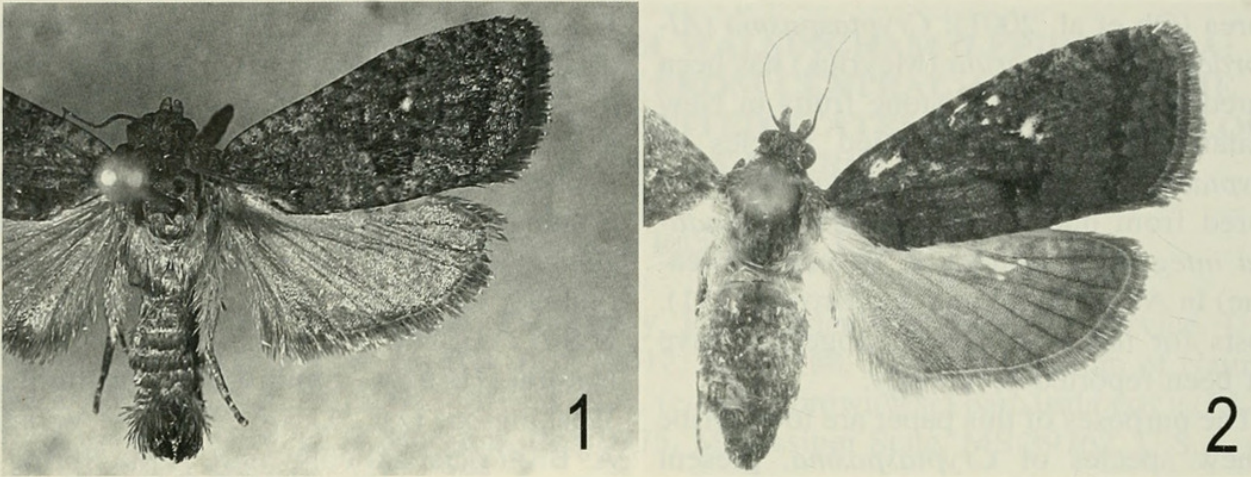
Abbreviations for depositories listed in the text and in the appendix are as follows: ANIC = Australian National Insect Collection, CSIRO, Canberra, Australia; BMNH = The Natural History Museum, London, United Kingdom; FSCA = Florida State Collection of Arthropods, Gainesville, Florida, U.S.A.; JBSC = J. Bolling Sullivan personal collection, Beauford, North Carolina, U.S.A.; MEM = Mississippi Entomological Museum, Mississippi State,

U.S.A.; MNHN = Muséum National d'Histoire Naturelle, Paris, France; NHMV = Naturhistorisches Museum Wien, Austria; RMNH = Rijksmuseum Natuurhistorisches, Leiden, The Netherlands; SAMC = South African Museum, Cape Town, South Africa; UCB = Essig Museum of Entomology, University of California, Berkeley, U.S.A.; USNM = National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.; VBC = Vernon A. Brou personal collection, Abita Springs, Louisiana, U.S.A.; and ZIRA = Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

DESCRIPTION

Cryptasasma (*Cryptasasma*) *bipenicilla* J. Brown & R. Brown, new species (Figs. 1–5)

Diagnosis.—*Cryptasasma bipenicilla* is assigned to the subgenus *Cryptasasma* on the basis of the following characters: costal fold absent in the male; pulvinus a huge, free flap from the median portion of the base of the valva, densely clothed in long, rhopaloid scales (sensu Diakonoff 1959); valva somewhat lanceolate-triangular, with rounded apex and several rows of truncate setae; and coremata of two dense brushes of long scales, one on each side of eighth abdominal segment in the male. *Cryptasasma bipenicilla* is most similar to *C. lugubris* (Felder & Rogenhofer) in the absence of a pouch of androconial scales near the base of the hindwing (variably developed in all other species of the subgenus we examined), a strongly and finely reticulated, densely spiculate sterigma in the female, and the overall shape of the valva, tegumen, and uncus (see Diakonoff 1959 for comparison). The female genitalia of *C. bipenicilla*, *C. lugubris*, and at least one undescribed species from Central America are nearly indistinguishable. *Cryptasasma bipenicilla* can be separated easily from morphologically similar species by the configuration of the coremata of the eighth ab-

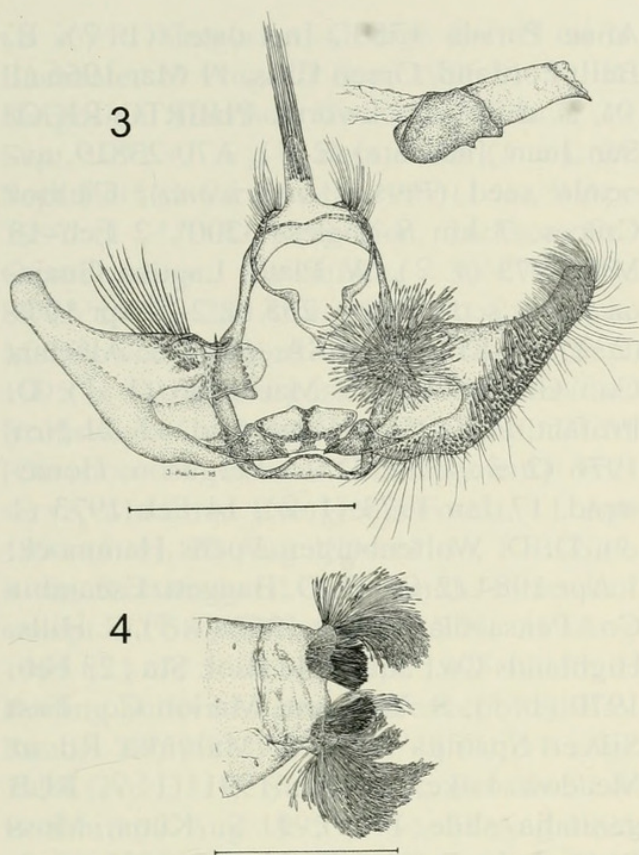


Figs. 1–2. *Cryptaspasma bipenicilla* adults. 1, Male. 2, Female.

dominal segment in the male: a broad, long, dense brush on each side of the abdomen in *C. lugubris* and other species in the subgenus; a long, dense brush and a second shorter, darker brush on each side (Fig. 4) in *C. bipenicilla*. A single male specimen from Trinidad has a similar arrangement of the coremata, but has the gnathos nearly atrophied; hence it is assumed to represent a different species.

Description.—Male (Fig. 1). *Head*: Frons dark brown, distinct transverse ridge of scales near middle to accommodate labial palpus; vertex low, not extending greatly above eyes, mostly concolorous with frons, intermixed with variable amounts of orange and light brown; labial palpus short, blunt, all segments combined 1.1–1.2 times horizontal diameter of compound eye, dark brown on inner and outer surface; segment III short, 0.3 length of segment II, nearly concealed by distal scaling of segment II; antenna with scales restricted to less than half of segment circumference, cilia extremely short, inconspicuous; ocellus large, base black. *Thorax*: Foreleg with large, conspicuous brush of scales on anterior surface of femur and long scales on ventral surface of tibia, midleg with long scales on ventral surface of femur and tibia, hindleg with long scales on ventral surface of femur and dorsal and vental surfaces of tibia. Forewing length 6.5–10 mm (\bar{x} = 8.0; n = 42); ground color brown, with scattered or-

ange and pale brown scales giving a superficial reticulated pattern; costal strigulae forming pale brown marks in pairs or singly, separated by dark brown, pairs of strigulae 1–4 variable in position and division, usually distinguishable as 8 separate marks between wing base and Sc, strigulae 5 and 6 unpaired with each forming single mark or with one strigula unpaired and one paired to form three marks between Sc and R_1 , strigulae 7–9 paired, strigula 7 between R_1 and R_2 , strigula 8 between R_2 and R_3 , strigula 9 between R_3 and R_4 , strigula 10 single, between R_4 and R_5 at apex, inconspicuous in most specimens; a conspicuous orange white dot between bases of M_1 and M_2 ; fasciae dark brown intermixed with variable amounts of orange brown, subbasal fascia represented by line of scales from midwing to dorsum, often bordered by orange brown, median fascia represented by spot on costa basal to strigula 5, variable amount of dark scales basal to orange white dot, and larger, variably developed subtriangular spot extending from broad base on cubitus to point at middorsum; postmedian fascia represented by elongate spot on costa between strigulae 6 and 7, some specimens with discontinuous striae extending from costal spot to midwing; preterminal fascia extending from between strigulae 8 and 9 to tornus between CuA_2 and $1A$, often confluent with dark spot between strigulae 7 and 8; marginal scales between R_4 and



Figs. 3–4. *Cryptaspasma bipenicilla*. 3, Male genitalia, setal group of outer wall shown on left valva only; scale bar = 1 mm; aedeagus, upper right. 4, Abdominal segment 8 and hair pencils of male; scale bar = 3 mm.

CuA₂ often orange brown between veins; fringe dark gray brown; underside mostly dark gray brown with faint trace of some pattern elements, especially costal strigulae. Hindwing pale gray brown to cream gray; underside nearly uniform gray brown with darker mottling in costal region. *Abdomen*: Cream, with two paired patches of coremata at posterior edge of segment 8: one pair composed of a dense brush of long brown scales, second pair a shorter, more compact brush of darker brown scales. Genitalia (Fig. 3) with uncus relatively long, broad, parallel-sided basally, tapered from mid-length to rounded apex, dorsally with long setae on distal half, setae extending beyond apex for twice length of uncus; socii represented by pair of setose, dorsally arched lobes immediately basolaterad of uncus; gnathos a narrow band, angulate near middle, with triangular subscaphium; tegumen

narrowed near middle, with ventromedial triangular projection; valva broadest at base, attenuate distally, somewhat lanceolate-triangular, with rounded apex; pulvinus forming large, free, semicircular flap in basomedial area of valva, densely covered with long, rhopaloid scales; sacculus with several rows of blunt spinelike setae ca. 0.15–0.85 distance from base to apex of valva; outer wall of valva weakly sclerotized medially, with patch of moderately long, deciduous, flattened setae arising from rounded lobe at base of weakly sclerotized area. Aedeagus moderately large, broad, basally straight, curved and attenuate distoventrally; phallobase rounded with ductus ejaculatoris entering dorsally; cornuti absent.

Female (Fig. 2). Head, thorax, and abdomen similar to male, except fore- and midlegs smooth and short scaled, hindleg with long scales on dorsal and ventral sides of tibia only. Forewing length 7.1–11.5 (\bar{x} = 8.7, n = 52); FW with ground color more uniform, dark brown markings less conspicuous, median fascia spot more reduced, often subquadrate, and reaching dorsum as narrow line. Genitalia (Fig. 5) with tergite VIII setose on posterior border, scales absent; papillae anales broad, several lateral setae with papillose bases; apophyses anteriores and posteriores relatively long, slender, anteriores ca 1.2 times as long as posteriores; sterigma composed of a pair of ventrolateral, slightly convex, triangular processes separated posteriorly by ventromedial gap, each process strongly and finely reticulated with cellular spaces bordered by walls with spicules detectable at high magnifications, posteromedial corners of processes setose; antrum short, conical, sclerotized dorsally, membranous ventrally, with 3–4 setae on inside of posterior dorsal lip; colliculum not detectable as separate sclerite; ductus bursae long, widened asymmetrically at middle, sclerotization restricted to ventral side of ductus from antrum to middle, forming ring encircling ductus at middle posterior to inception of ductus

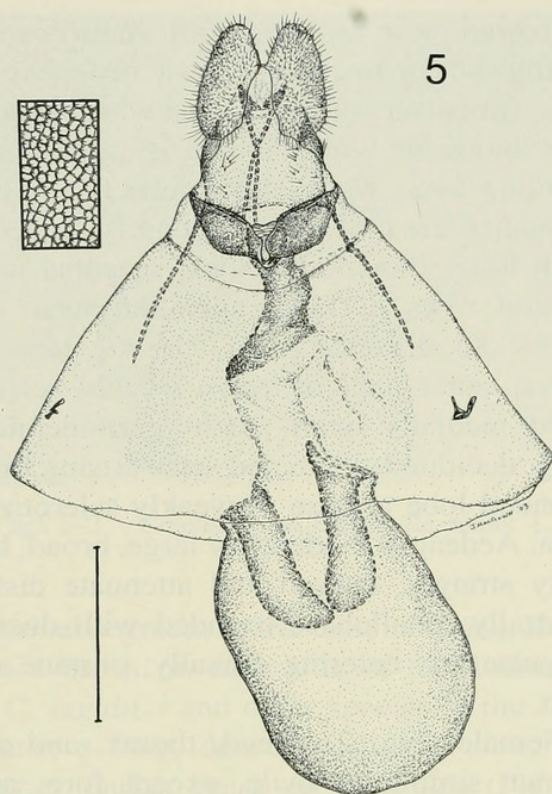


Fig. 5. *Cryptasasma bipenicilla*, female genitalia with enlargement of sterigma to show sculpturing; scale bar = 1 mm.

seminalis on left side; corpus bursae relatively large, pear-shaped, with finely dimpled wall; a pair of huge, hollow, paddle-shaped signa, nearly equal in size, with base of right signum arising more posterad than that of left.

Holotype.—Male. USA: Florida: Putnam Co., Palatka, MV/UV light, 13 Sep 1992, H. David Baggett. Deposited in USNM:

Paratypes.—CUBA: San Cristobal, P.R., E.E.A., 22 Dec 1936 (2 ♂, 2 ♀), r.f. aceitunillo, A. Fors. DOMINICA: Clarke Hall, 26 Jan 1966 (1 ♂), J. & T. Clarke; Sylvania, Mt. Trois Pitons, 1800', 9 Feb 1964 (1 ♂), D. Bray. DOMINICAN REPUBLIC: La Estrelleta Province, 4 km SW Rio Limpo, 760 m, 24–25 May 1973 (2 ♂, 1 ♀), D. & M. Davis; Pedernales Province, Rio Mulito, 21 km N Pedernales, 270 m, 20 Mar 1999 (1 ♂), O. Flint. JAMAICA: St. Catherine Parish: Mount Diablo, Hollymount, 2754', 21–24 Apr 1973 (4 ♀), D. & M. Davis; St. Anne Parish, near Runaway Bay Cave, 50', 1–2 May 1973 (2 ♂), D. & M. Davis; St.

Anne Parish, 1750', [no date] (1 ♀), E. Bell; Portland, Green Hills, 11 Mar 1966 (1 ♀), S. & W. Duckworth. PUERTO RICO: San Juan, [no date] (2 ♂), A70-23819, avocado seed (*Persea americana*); Cialitos Cruces, 7 km S Ciales, 3200', 2 Feb–13 Mar 1973 (1 ♀), W. Plath; Laguna Guajataca, boy scout camp, 205 m, 2–5 Apr 1971 (2 ♀), C. Kimball. USA: *Florida*: Alachua Co.: Gainesville, 19 Mar 1986 (1 ♂), D. Profant. Dade Co.: Homestead, 17–21 Nov 1976 (2 ♂, 4 ♀), D. C. Ferguson; Homestead, 17 Jan 1973 (1 ♀), 14 Feb 1973 (1 ♂), D. D. Wolfenbarger; Fuchs Hammock, 1 Apr 1984 (2 ♀), H. D. Baggett. Escambia Co.: Pensacola, 19 Oct 1962 (1 ♂), S. Hills. Highlands Co.: Archbold Biol. Sta., 23 Feb. 1970 (1 ♂), S. W. Frost. Marion Co.: East Silver Springs Shores, Malauka Rd nr Meadow Lake, 11 Jun 1991 (1 ♀, RLB genitalia slide 1775), J. S. Kutis; Moss Bluff, Lake Pendarvis, 29 Apr 1991 (1 ♂, RLB genitalia slide 1776), J. S. Kutis. Putnam Co.: Palatka, 14 Jan 1993 (1 ♂), 29 Mar 1993 (1 ♂), H. D. Baggett. *Louisiana*: St. Tammany Parish: 4.2 mi NE Abita Springs, T6S, R12E, Sec 24, 8 Sept 1983 (1 ♀), 29 Sept 1983 (1 ♂), 4 Nov 1983 (1 ♂), 6 Jun 1984 (1 ♂), 16 Sept 1984 (1 ♀), 29 Sept 1984 (1 ♀), 15 Sept 1985 (2 ♀), 18 Nov 1985 (1 ♀), 10 Aug 1986 (1 ♀), 9 Sept 1986 (1 ♀), 14 Sept 1986 (1 ♀), 18 Sept 1986 (1 ♀), 24 Sept 1986 (1 ♀), 8 Oct 1986 (1 ♀), 11 Nov 1986 (3 ♀), 30 Aug 1987 (1 ♀), 22 Sept 1987 (2 ♀), 29 Sept 1987 (1 ♂), 17 Oct 1987 (1 ♀), 20 Oct 1987 (1 ♂), 17 Feb 1989 (1 ♂), 25 May 1989 (2 ♂), 27 Sept 1989 (1 ♂), 30 Sept 1989 (1 ♀), 7 Sept 1990 (1 ♂), 3 Oct 1990 (1 ♀), 2 Oct 1992 (1 ♀), 24 Sept 1995 (1 ♀), 26 Sept 1995 (1 ♀, 1 ♂), 28 Sept 1995 (1 ♀), 29 Sept 1995 (1 ♀), 1 Oct 1995 (1 ♀), 3 Oct 1995 (1 ♀), 13 Oct 1995 (1 ♂, 1 ♀), 17 Oct 1995 (1 ♂), 18 Oct 1995 (1 ♂), 19 Oct 1995 (1 ♂), 8 Oct 1996 (4 ♀), 22 Oct 1996 (1 ♂), 9 Mar 1997 (1 ♂), 10 Mar 1997 (1 ♂), 18 Aug 1997 (1 ♀), 12 Sept 1998 (1 ♀), all V. A. Brou. *Mississippi*: Forrest Co.: Brooklyn, 11–31 Oct 1996

(1 ♀), R. Kergosien. George Co.: 3 mi N Lucedale, 19 Aug–17 Sept 1996 (1 ♀), R. Kergosien. Harrison Co.: Long Beach, 30 Sept 1991 (1 ♀), 2 Sept 1995 (1 ♀), 26 Sept 1995 (1 ♀), 26 Mar 1997 (1 ♀), 9 Apr 1997 (1 ♂), R. Kergosien. Jackson Co.: Grand Bay Savannah, 30°27'31"N, 88°25'14"W, 28 Aug 1995 (1 ♀), J. A. MacGown; Shepard St Pk, 12–18 Sept 1995 (1 ♀), R. Kergosien. *North Carolina*: Brunswick Co.: Bald Head Island, DCM [Division of Coastal Management] Preserve, Maritime Evergreen Forest, 11 Apr 1994 (1 ♂), 25 Aug 1994 (1 ♂), J. B. Sullivan, R. Broadwell & B. Smith, same data except 77°58'40"W, 33°51'15"N, 31 Aug 1995 (11 ♂, 1 ♀), 14 Sept 1995 (2 ♂), J. Bolling Sullivan, same data except Red Bay Road, 77°59'28"W, 33°51'48"N, 11 Apr 1994 (1 ♂), J. B. Sullivan, R. Broadwell & B. Smith, 3 Aug 1995 (1 ♂), 31 Aug 1995 (1 ♂), J. B. Sullivan & R. Broadwell. Craven Co.: North Harlowe, 27 May 1990 (1 ♀), 21 Aug 1990 (1 ♀), 12 Sept 1990 (2 ♀), J. B. Sullivan. Onslow Co.: Camp Lejune, GSR [Great Sandy Run], White Cedar [habitat], 16 Jun 1995 (1 ♂), J. B. Sullivan. Pender Co.: Holly Shelter gamelands, pine savannah, 9 Oct 1995 (1 ♀), J. B. Sullivan; Lanier Quarry, Maple Hill, 2 Oct 1992 (1 ♀), J. B. Sullivan. *Texas*: Hidalgo Co.: Santa Ana Refuge, 28 Nov 1975 (1 ♂), A. & M. Blanchard. Montgomery Co.: Conroe, 12 Mar 1967 (1 ♂), 8 Apr 1969 (1 ♂), 22 Apr 1969 (2 ♂), 9 Mar 1971 (1 ♂), 28 Mar 1974 (1 ♂), all A. & M. Blanchard; Camp Strake, Conroe, 10 Apr 1983 (1 ♂), E. Knudson. Paratypes deposited in BMNH, FSCA, MEM, UCB, USNM, VBC, and JBSC.

Additional specimens examined.—*COSTA RICA*: Sixola River, Sep (1 ♂) (W. Schaus, USNM). J. Bolling Sullivan has examined additional specimens from the preceding and additional localities in North Carolina and Carteret Co. (Walker Mill Pond; Roosevelt Natural Area, Bogue Bank; Fort Macon State Park), Jones Co. (Croatan Natl. Forest, Haywood Landing),

and New Hanover Co. (UNC Wilmington campus, Conservation Trail).

Distribution.—*Cryptaspasma bipenicilla* has been recorded from the Caribbean (Cuba, Dominica, Dominican Republic, Jamaica, and Puerto Rico), Central America (Costa Rica), and southeastern United States (Florida, Louisiana, Mississippi, North Carolina, and Texas). It is most likely a Caribbean species that has expanded its range northward into the U.S. during the past 50 years. The earliest record of *C. bipenicilla* in the U.S. is a specimen collected in Pensacola, Florida, by Ms. Shirley Hills in 1962. We consider this species to be resident in the U.S. based on its occurrence on the Atlantic and Gulf coasts from North Carolina to Texas and the number of specimens examined by us (56 ♂, 57 ♀) and others from the U.S.

Etymology.—The specific epithet, *bipenicilla*, refers to the presence of a hairpencil of two distinct lengths at the posterior end of the abdomen in the male.

Hosts.—Two specimens of *C. bipenicilla* from Puerto Rico (USNM) were reared from avocado seed (*Persea americana* Mill.; Lauraceae). Two additional specimens are labeled "S. Cristobal, P.R., XII-22-36, A. J. Fors. col.; reared from aceitunillo; E.E.A. [probably Estación Experimental Agronómica de Santiago de las Vegas (John Rawlins, personal communication)], Cuba Ent. No. 10891"; [genitalia slide] "AB 27 March 1937." Both sexes are on the same slide that bears a J. F. G. Clarke determination label of "*Cryptaspasma lugubris*" on top of Busck's original label, which reads faintly as "(*Olethreutes*) near *anaphorana* Wlsm; from fruit of 'aceitunillo' *Hupelandia pendula*." These two specimens are undoubtedly the same as those recorded as feeding on fruits of *Belschmiedia pendula* (Sw.) (Lauraceae) in Cuba and reported as being collected by "A. Fors" in November 1936 and subsequently identified by Busck in 1937 as *Olethreutes* sp. n. "afin a *aeropharana* Walsingham" (Bruner et al. 1975).

If this species was first introduced into

Florida, it may have fed initially on avocado, which is naturalized in the southern part of the state. The present distribution of *Cryptaspasma bipenicilla* from North Carolina to Texas excludes avocado as a host. Potential hosts of this species in the U.S. include *Persea borbonia* (L.) (red bay) and *P. palustris* Sarg. (swamp bay). Both species of bay occur from North Carolina to Texas; their fruits are small, ranging 0.7–1.2 cm in diameter, and only slightly fleshy (Elias 1987). Red bay is common at the sites where *Cryptaspasma bipenicilla* has been collected in North Carolina (J. B. Sullivan, personal communication).

During field work in Michoacán, Mexico in November 2002, we observed larvae of a closely related species of *Cryptaspasma* (probably *C. lugubris* Felder & Rogenhofer) feeding internally in the hard seeds of cultivated avocado (*Persea americana*). This feeding habitat is typical of the avocado moth, *Stenoma catenifer* Walsingham (Elachistidae: Stenomatinae), with which the larvae were initially confused. However, the larvae of the *Cryptaspasma* species were typical of Olethreutinae (e.g., chaetotaxy), with last instars 23–25 mm in length, pinkish, with small, pale pinacula (darker in early instars) and no anal fork. The most unusual feature of the larvae was the position of SD1 on A8, which was situated considerably further anterad than in other tortricids. Larvae were found only in bare seeds (i.e., fleshy part absent) that were on the ground. A brief survey of fruit still on trees revealed no signs of larval feeding. A few larvae were taken into the laboratory and placed in a small box with vermiculite, where they pupated in tough silken cocoons incorporating the substrate. The cocoons were oval, somewhat inflated bean-shaped, about 1.0–1.5 cm in length, and about 0.75 in width. Adults emerged about 20–25 days following pupation.

These observations are consistent with previous reports of avocado and other Lauraceae hosts for *Cryptaspasma bipenicilla*. Coupled with previous host records for oth-

er species of *Cryptaspasma* worldwide, we suspect that all species of *Cryptaspasma* may be specialists on the hard seeds of fallen fruit.

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LITERATURE CITED

- Baixeras, J. 2002. An overview of genus-level taxonomic problems surrounding *Argyroploce* Hübner (Lepidoptera: Tortricidae), with description of a new species. *Annals of the Entomological Society of America* 95: 422–431.
- Bradley, J. D. 1982. New species of Microlepidoptera from Norfolk Island. *Journal of Natural History* 16: 367–379.
- Brown, J. W. and J. A. Powell. 1991. Systematics of the *Chrysoxena* group of genera (Lepidoptera: Tortricidae: Euliini). *University of California Publications in Entomology* 111, 87 pp. + figs.
- Brown, R. L. and J. A. Powell. 1991. Description of a

- new species of *Epiblema* (Lepidoptera: Tortricidae: Olethreutinae) from coastal redwood forests in California with an analysis of the forewing pattern. *Pan-Pacific Entomologist* 67: 107–114.
- Bruner, S. C., L. C. Scaramuzza, and A. R. Otero. 1975. *Catálogo de los Insectos que Atacan a las Plantas Economicas de Cuba. Segunda Edición Revisada y Aumentada*. Academia de Ciencias de Cuba, Instituto de Zoología, Havana, Cuba, 401 pp.
- Byun, B. K., Y. S. Bae, and K. T. Park. 1998. Illustrated catalogue of Tortricidae in Korea (Lepidoptera). *Insects of Korea*, series 2. Korea Research Institute of Bioscience and Biotechnology and Center for Insect Systematics, Korea, 317 pp.
- Clarke, J. F. C. 1976. *Insects of Micronesia*, Vol. 9, 144 pp. Microlepidoptera: Tortricoidea. Bishop Museum, Honolulu.
- Diakonoff, A. 1959. Revision of *Cryptaspa* Walsingham, 1900 (Lepidoptera, Tortricidae). *Zoologische Verhandelingen*, Leiden 42, 60 pp.
- . 1983. Tortricidae from the Comoro Islands (Lepidoptera). *Annals Société Entomologique Française* (new series) 19: 55–68.
- Elias, T. S. 1987. *The complete trees of North America—Field guide and natural history*. Gramercy Publ. Co., New York, 948 pp.
- Horak, M. 1984. Assessment of taxonomically significant structures in Tortricinae (Lep., Tortricidae). *Mitteilungen der Schweizerischen Entomologischen Gesellschaft* 57: 3–64.
- . 1999. The Tortricoidea, pp. 199–213. *In* Kristensen, N., ed., *Handbook of Zoology*, Vol. IV, Arthropoda: Insecta, Part 35, Lepidoptera, Moths and Butterflies, Vol. 1: Evolution, Systematics, and Biogeography. Walter de Gruyter, Berlin & New York.
- Horak, M. and R. Brown. 1991. 1.2 Taxonomy and phylogeny, pp. 23–50. *In* van der Geest, L. P. S. and H. H. Evenhuis, eds., *Tortricid Pests, their Biology, Natural Enemies and Control*. Elsevier Science Publishers B. V., Amsterdam.
- Horak, M., I. F. B. Common, and F. Komai. 1996. Tortricidae, pp. 123–136. *In* Nielsen, E. S., E. D. Edwards, and T. V. Rangsai, eds. *Monographs on Australian Lepidoptera Vol. 4, Checklist of the Lepidoptera of Australia*. CSIRO, Canberra, Australia.
- Kuznetsov, V. I. 1970. New and distinctive tortricid moths (Lepidoptera, Tortricidae) from the Soviet Far East. *Entomologicheskoe Obozrenie* 49: 434–451.
- Kuznetsov, V. I. and A. A. Stekolnikov. 1984. The evolution and system of higher taxa of tortricid moths (Lepidoptera, Tortricidae) of the world fauna with reference to the comparative morphology of the genitalia. (36th Holodkovosky Memorial Lecture, 1 April 1983). *Nauk*, Leningrad, pp. 51–91.
- Oh, K. S., Y. S. Bae, and J. D. Park. 2001. Moth pests of *Quercus* (Fagaceae) cone. *Korean Journal of Entomology* 31: 221–224.
- Razowski, J. 1995. Catalogue of the species of Tortricidae (Lepidoptera). Part IV: Palaearctic Olethreutinae: Microcorsini, Bactrini, Endotheniini and Olethreutini. *Acta Zoologica Cracoviensia* 38: 285–324.

APPENDIX

Catalog of the World Fauna of
Microcorsini

Tribe Microcorsini

Genus *Cryptaspa* WalsinghamSubgenus *Anaphorodes* Diakonoff

Cryptaspa subg. *Anaphorodes* Diakonoff 1959, *Zool. Verh. (Leiden)* 43: 6. Type species: *Olethreutes anaphorana* Walsingham 1914, by original designation.

anaphorana Walsingham 1914 (*Olethreutes*), *Biologia Centrali-Americana*, Lepid. Heter. 4: 249. TL: Panama (Volcan de Chiriqui). HT (♂): BMNH.

anisopis Diakonoff 1959 (*Cryptaspa* (*Anaphorodes*)), *Zool. Verh. (Leiden)* 43: 7. TL: Brazil (Santa Catarina, Neu-Bremen). HT (♂): NHMV.

Subgenus *Cryptaspa* Walsingham

Cryptaspa Walsingham 1900, *Ann. Mag. Nat. Hist. (7)* 5: 462. Type species: *Penthina? lugubris* Felder & Rogenhofer 1875, by original designation.

acrolophoides (Meyrick 1931) (*Acharneodes*), *Exotic Microlepid.* 4: 128. TL: Brazil (Santa Catarina, Jaraguá). LT (♂): NHMV.

athymopis Diakonoff 1959 (*Cryptaspa* (*Cryptaspa*)), *Zool. Verh. (Leiden)* 43: 11. TL: Peru (Carabaya, Oconeque). HT (♀): BMNH.

bipenicilla Brown & Brown 2003 (*Cryptaspa*), *Proc. Entomol. Soc. Washington* 106: 289. TL: USA (Florida, Putnam Co., Palatka). HT (♂): USNM.

lugubris (Felder & Rogenhofer 1875) (*Penthina?*), *Reise Freg. Novara*, Lepid. 5: pl. 138, fig. 32. TL: Brazil (Amazonas). HT (♀): BMNH.

microloga Diakonoff 1959 (*Cryptaspasma* (*Cryptaspasma*)), Zool. Verh. (Leiden) 43: 12. TL: Brazil (Santa Catarina, Neubremen). HT (♀): NHMV.

Subgenus *Allobrachygonia* Fernald

Brachygonia Walsingham 1900, Ann. Mag. Nat. Hist. (7) 5: 464. Type species: *Brachygonia angulicostana* Walsingham 1900, by original designation [preoccupied].

Allobrachygonia Fernald 1908, Tortricidae Genera & Type: 62 [replacement name for *Brachygonia*].

Acharneodes Meyrick 1926, Ann. South. African Mus. 23: 327. Type species: *Notocelia helota* Meyrick, 1905, by original designation.

Idiomorpha Turner 1946, Trans. Roy. Entomol. Soc. South Austral. 70: 213. Type species: *Idiomorpha reticulata* Turner, 1946, by original designation [preoccupied].

Bakia Koçak 1981, Priamus 1: 117 [replacement name for *Idiomorpha*].

achlyoptera Clarke 1976 (*Cryptaspasma*), Insects of Micronesia 9 (1): 58. TL: Micronesia (Guam, Ritidian). HT (♀): USNM.

angulicostana (Walsingham 1900) (*Brachygonia*), Ann. Mag. Nat. Hist. (7) 5: 464. TL: Japan. HT (♂): BMNH.

brachyptycha (Meyrick 1911) (*Eucosma*), Proc. Linnean Soc. N. S. Wales 36: 246. TL: Sri Lanka (Kegalla). LT (♂): BMNH.

debeauforti Diakonoff 1959 (*Cryptaspasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 26. TL: British New Guinea (Papua, Maneau Range, Mount Dayman). HT (♂): RMNH.

brachyptera Diakonoff 1959 (*Cryptaspasma* (*Allobrachygonia*) *debeauforti* ssp.), Zool. Verh. (Leiden) 43: 26. TL: Netherlands Central New Guinea (Mount Goliath). HT (♂): BMNH.

geina Diakonoff 1959 (*Cryptaspasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 27. TL: South Celebes (Mount Lom-

pobattang., Parang-bobo Goa). HT (♂): BMNH.

glebaecolor Diakonoff 1959 (*Cryptaspasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 21. TL: India (Assam, Darjeeling). HT (♂): BMNH.

haplophyes Diakonoff 1959 (*Cryptaspasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 33. TL: Eastern British New Guinea (Upper Waria River, Bubu River, Saiko). HT (♂): BMNH.

helota (Meyrick 1905) (*Notocelia*), J. Bombay Nat. Hist. Soc. 16: 586. TL: Ceylon (Badulla). LT (♀): BMNH.

hesyca Diakonoff 1959 (*Cryptaspasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 24. TL: Philippine Islands (Luzon, Benguet, Panai, Hights Place). HT (♂): BMNH.

lasiura (Meyrick 1912) (*Eucosma*), J. Bombay Nat. Hist. Soc. 21: 868. TL: India (North Coorg, Dibidi). LT (♂): BMNH.

ochrotricha Diakonoff 1959 (*Cryptaspasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 31. TL: West Java (Mount Gede-Panggrango, Tjibodas). HT (♂): RMNH.

orphnina Diakonoff 1959 (*Cryptaspasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 36. TL: New Guinea (Dampier Island). HT (♀): BMNH.

pelagia Diakonoff 1959 (*Cryptaspasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 37. TL: New Hebrides (Red Crest, Aneityum, 3 mi NE Anelganhat). HT (♀): BMNH.

peratra Diakonoff 1959 (*Cryptaspasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 35. TL: New Guinea (Rossel Island, Mount Rossel). HT (♀): BMNH.

polysticta Clarke 1976 (*Cryptaspasma*), Insects of Micronesia 9 (1): 63. TL: Micronesia (Kusaie, Mt. Matante). HT (♀): USNM.

pullatana Bradley 1982 (*Cryptaspasma*), J. Nat. Hist. 16: 377. TL: Norfolk Island (Ball Bay). HT (♂): BMNH.

querula (Meyrick 1912) (*Eucosma*), Trans.

New Zealand Inst. 44: 125. TL: New Zealand (Wellington). LT (♂): BMNH.

sordida (Turner 1945) (*Tortrix*), Trans. Roy. Soc. South Austral. 69: 65. TL: Australia (Queensland, Macpherson Range). HT (♂): ANIC.

reticulata (Turner 1946) (*Idiomorpha*), Trans. Roy. Soc. South Austral. 70: 213. TL: Australia (Queensland, Too-woomba). HT (♂): ANIC.

syostoma Diakonoff 1959 (*Cryptasasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 18. TL: West Java (Mount Gede-Panggrango, Tjibodas). HT (♂): RMNH.

bellicosa Diakonoff 1983 (*Cryptasasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 204: 42. TL: Indonesia (Northern Sumatra, Acheen, Mt. Bandahara). HT (♂): RMNH.

triopis Diakonoff 1959 (*Cryptasasma* (*Allobrachygonia*)), Zool. Verh. (Leiden) 43: 32. TL: Guam (Commander Marianas' Hill). HT (♂): BMNH.

zophocosma (Meyrick 1931) (*Hysterosia*), Exotic Microlepid. 4: 159. TL: Formosa (Ranrun). HT (♂): BMNH.

Subgenus *METASPASMA* Diakonoff

Cryptasasma subg. *Metasasma* Diakonoff 1959, Zool. Verh. (Leiden) 43: 37. Type species: *Acharneodes atrinodis* Meyrick, 1926, by original designation.

caryothicta (Meyrick 1920) (*Argyroploce*), Voyage de Ch. Alluaud et R. Jeannel en

Afrique Oriental, II, Microlepid.: 65. TL: Kenya. HT: MNHN.

atrinodis (Meyrick 1926) (*Archarneodes*), Ann. South African Mus. 23: 327. TL: South Africa (Cape Town, Rondebosch). HT (♂): SAMC.

subtilis Diakonoff 1959 (*Cryptasasma* (*Metasasma*)), Zool. Verh. (Leiden) 43: 38. TL: Northern Madagascar (Diego Suarez). HT (♂): BMNH.

zigzag Diakonoff 1983 (*Cryptasasma*), Ann. Soc. Entomol. Fr. 19: 59. TL: Comoro Islands (Grand Comore, 0.8 km E Nioumbadjou, Bandalamadji). HT (♀): MNHN.

Subgenus *MICROCORSES* Walsingham

Microcorses Walsingham 1900, Ann. Mag. Nat. Hist. (7) 5: 465. Type species: *Microcorses marginifasciatus* Walsingham 1900, by original designation.

marginifasciatus (Walsingham 1900) (*Microcorses*), Ann. Mag. Nat. Hist. (7) 5: 466. TL: Japan. HT (♂): BMNH.

mirabilis (Kuznetsov 1964) (*Microcorses*), Entomol. Obozr. 43: 875. TL: Russia (Primorsk, Okeanskaya). HT (♂): ZIRA. [probably a synonym of *marginifasciatus* according to Razowski (1995); treated as a synonym of *angulicostana* by Byun et al. (1998)]

trigonana (Walsingham 1900) (*Tortrix*), Ann. Mag. Nat. Hist. (7) 5: 443. TL: Japan. HT: BMNH.



Brown, John W. and Brown, Richard L. 2004. "A new species of *Cryptaspasma walsingham* (Lepidoptera: Tortricidae: Olethreutinae) from Central America, the Caribbean, and southeastern United States, with a catalog of the world fauna of microcorsini." *Proceedings of the Entomological Society of Washington* 106, 288–297.

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