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## A contribution to a revision of the genus *Azana* WALKER, 1856 (Insecta: Diptera: Mycetophilidae: Sciophilinae)

With 3 Plates

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**Abstract.** The present study reviews 9 species of the genus *Azana* including one fossil species. *Jugazana*, a new subgenus, is erected for the Palaearctic *A. nigricoxa* which is removed from synonymy with *A. anomala*. Two new Palaearctic species, *A. bulgarensis* and *A. corsicana* and one new eastern Nearctic species, *A. sinusa* are described.

### Introduction

The identity of some species of *Azana* presents problems, thus a preliminary review of the genus is useful at this time. In 1856, WALKER described this monotypic Palaearctic genus from 2 male specimens of a British species, *A. scatopsoides*. WINNERTZ (1863) tentatively synonymized this species under *A. anomala* (STAEGER, 1840), originally described as a *Boletina* from Denmark. HUTTON et al. (1980) figured the male terminalia of British specimens and noted that there are "two species of *Azana* in Europe and single species in the Canary Islands, North America, Africa and Ceylon". The second European species to which they refer is from Corsica, taken by EDWARDS (1928) and reported as *anomala*. It is now described as a new species. SANTOS-ABREU (1920) described *A. palmensis* from the Canary Islands. The BECKER (1907) species, *A. altera*, from Algeria will probably prove to be either a valid species or *anomala*; it is not likely that it is one of the new species described below.

In the Nearctic Region, JOHANNSEN (1912) reported a single "defective specimen" of *Azana* from Maine. FISHER (1937) in an unpublished thesis, briefly described what is undoubtedly the same species from Cape Breton I., Nova Scotia; she labelled these *A. isabellae* and she figured a wing and a sketch of the male terminalia. SHAW & FISHER (1952) cited this record, using the name *isabellae*, a nomen nudum. LAFFOON (1965) catalogued only an "unnamed species" citing FISHER's record as well as distribution from Minnesota.

A series of specimens taken in Massachusetts plus specimens from Maine and several from New Hampshire are described below as a new species, *Azana (A.) sinusa*. Doubtless, all prior Nearctic records refer to this species.

In the Asian subregion, SENIOR-WHITE (1922) described *A. asiatica* from Ceylon. The male terminalia are figured below. EDWARDS (1914) noted that one *Azana* had been described from Assam; I am unable to verify that statement.

An Afrotropical species is recorded from Nigeria (MATILE, 1980: 225) as "unidentified"; it will be of great interest to determine its subgeneric relationship.

EDWARDS (1925) proposed that the Australian-New Zealand genera, *Trizygia* SKUSE, 1888 and *Aphelomera* SKUSE, 1888 "appear to be related" to *Azana*. These southern forms along with *Neotrizygia* TONNOIR & EDWARDS, 1927 and *Paratrizygia* TONNOIR, 1929 need to be examined carefully to determine whether they form a natural group with *Azana*. If so, all southern azanines exhibit a moderately long Sc which may be branched; in *Azana* Sc is strongly reduced. The vestiture of the pleural sclerites of these forms is not documented; *Azana* bears setae on the anepisternite and pleurotergite and *Neotrizygia* is described as having anepisternal and hypotergite (metapleural) setae. *Azana* and *Neotrizygia* exhibit 7 abdominal segments while *Aphelomera* and *Trizygia* are described as having 6 abdominal segments; there is no data available on the condition of *Paratrizygia*. As the distribution and characteristics of 'azanines' becomes better understood, a monophyletic hypothesis with the ancestral stock developing vicariant forms seems to be evolving. Thus, the azanines may include the important Australasian and Neotropical (Chilean and Brazilian) component *Aphelomera* and *Paratrizygia*; an Australasian component *Trizygia* and *Neotrizygia* and finally *Azana* (s.l.), a component of the northern hemisphere and possibly the African fungus gnat fauna.

#### *Azana* WALKER, 1856

Insecta Britannica, Diptera, 3: 26

Type-species: *Azana scatopsoides* WALKER, 1856: 26, monotypic. – WINNERTZ (1863) = *A. anomala* (STAEGER, 1840)

The genus is characterized by the following combination of characters: Head: narrow in lateral view, occipital foramen nearly dorsal; mouthparts flabellate; 3 median ocelli, middle one smallest and slightly anterior; vertex, frons and parietal region with a mixture of long and short setae; clypeus bare, posterior clypeus broadly lunate or rectangular, anterior clypeus elliptical or subtriangular; antenna 2+14, segments subcylindrical, distal dorsal scape with several setae as long as longest on vertex; distal dorsal pedicel with a single long seta and several shorter ones; segments subequal with apical segment 6:4; palpus 4-segmented, apical segment longest. Thorax: arched, mesonotum variably setiferous; pronotum setiferous; pleura bare except pleurotergite and anepisternum setiferous *A. (Azana)*, anepisternite bare *A. (Jugazana)*; postnotum with setae posteriorly. Legs: stout; forecoxa setose; hind coxa with distal lateral setae; femora compressed; tibiae expanded distally and without ranges of setae; mid and hind tibiae with 2 ranges of delicate setae; tibial spurs 1–2–2. Wing: oval with macrotrichiae over entire surface; C projects beyond tip of  $R_3$ ; Sc shorter than humeral x-vein and ending free; r–m long, longitudinal; M simple with base obsolete; Cu simple; 1A short and parallel to Cu; 2A represented by a sinuous fold of the posterior lobe or a row of macrotrichiae. Halter: with an elongate pilose knob. Abdomen: subcylindrical, seven (7) apparent segments with sternites longitudinally divided into a median and a pair of lateral sclerites, sternites folded within tergites; strongly setaceous along the edge of the abdominal sternites; 8th tergite reduced and boomerang-shaped. Male terminalia: non-rotated; tergal portion with apex of dististyle (*Azana* s.str.), segmented, subtriangular and also with a subapical rectangular process bearing a row of flattened apical setae (*Azana* s.str.), dististyle simple in *A. (Jugazana)*; a pair of hairbrush-like median styles (absent in *A. (Jugazana)*); aedeagus T-shaped, absent in *A. (Jugazana)*; SIX subrectangular with lateral, posterior projections (*Azana* s.str.), but *A. (Jugazana)* with SIX subtriangular and larger than tergal portion. Characteristics of the male terminalia and the clypeus appear to be of primary value to separate species. The form of the male terminalia and the absence of setae on the anepisternite appear to be the most useful characteristic to separate *A. (Jugazana)* from *A. (Azana)*.

Nothing is known of the biology of this genus. However, it seems probable that the adults will be taken feeding either on an exudate or at flowers, since their mouthparts are admirably constructed for such a feeding habit.

1. *A. (Azana) anomala* (STAEGER, 1840)

- 1840: *Boletina*. In: KRÖJER, Naturhist. Tidsskr. 3: 238.  
 1840: VON ROSER, Correspondenzbl. Württemberg. land. Ver. 1: 51, pro parte as *Leia fuscipes*.  
 1856: WALKER, *scatopsoides*, Insecta Britannica, Diptera, 3: 26. Monotypic.  
 1863: WINNERTZ, Verh. Zool.-Bot. Ges. Wien 13: 802. *A. scatopsoides* = *anomala*.  
 1907: BECKER, *altera*, Zeitschr. Hym. u. Diptera Teschendorf 7: 234. In a personal communication, Dr. DELY-DRASKOVITS of the Hungarian Natural History Museum has informed me that the museum suffered a fire in 1956 and that the type of this species no longer exists.  
 1909: JOHANNSEN, Genera Insectorum, Fasc. 93: 64. *A. altera* and *nigricoxa* = *anomala*.  
 1909: STROBL, var. *flavohalterata*, Verh. Zool.-Bot. Ges. Wien 59: 129.  
 1917: LANDROCK, Wiener Ent. Zeit. 36: 39. *Leia fuscipes* VON ROSER, 1840: 51, pro parte.  
 1925: EDWARDS, Trans. Ent. Soc. London, Pt. 3, 4: 565.  
 1927: LANDROCK, Fliegen Palaearkt. Reg. 2 (8): 69. Key to known forms. *A. flavohalterata* = *anomala*.  
 1928: EDWARDS, Diptera 4: 160.  
 1980: HUTSON et al., Handbk. Ident. British Insects 9 (3): 50.

This species is dark, sometimes referred to as "black", but, actually all specimens which I have examined are fuscous. In some lights, the abdomen of the female type appears to have a blackish posterior band on segments 2 to 5 with 6 and 7 somewhat darker. Clypeus bare, mouthparts short; postnotum with several large lateral setae; III-VI chestnut; median sclerite of SV very broad; posterior margin of SVII setiferous; male terminalia slightly enlarged.

Discussion: Through the courtesy of Mr. BRUCE TOWNSEND (BMNH) I have been able to examine the type of *scatopsoides*. There are two males glued to a cardboard rectangle. Labels on the pin designate one of these as the lectotype and the other as the paralectotype. The lectotype specimen has an inked 'L. T.' next to it, and on one of the labels is noted as being the specimen on the right, which it is, if the pin is nearest the examiner and the cardboard rectangle is facing away. I have made preparations of the two male terminalia. They are conspecific and as illustrated by HUTSON et al. (1980). Minor variations do not appear to separate the island population from the continental. Examination of material studied by EDWARDS (1925) confirms a widespread distribution in Great Britain and northwest Europe.

Material examined: FINLAND: Sotkamo Aarreniemi, 19/6/64, RT; Inari, Laanila, 2/7/64, RT; Jomala, Ramsholm, 12/5/62, RT; Lemland, Flaka, 11/6/62, RT; Vichtis, RF; Finnström, RF; Sund, RF; Kangasala (2); Kantalaks. (RT - R. TUOMIKOSKI; RF - R. FREY).

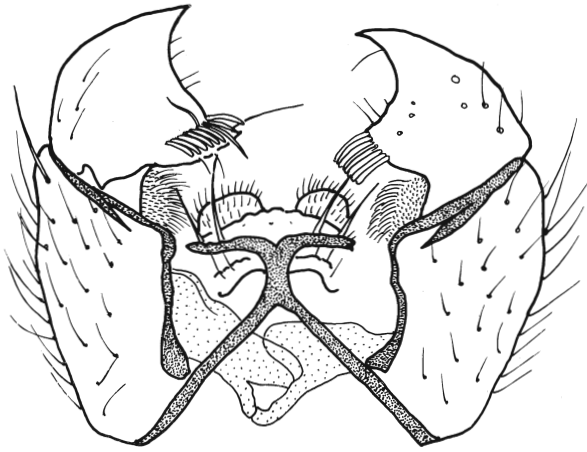
2. *A. (Azana) sinusa* COHER nov. spec.

I have a series of male *Azana* taken in Massachusetts whose identity has escaped me for a number of years. I am now able to describe these as a light-colored form of a new species from the northeastern Nearctic Region. It undoubtedly encompasses all the unnamed forms from boreal North America which have been noted in the literature and which are discussed in the opening portion of this paper.

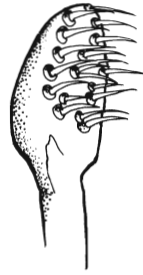
Male. Golden brown (Massachusetts) to fuscous with the characteristics of the genus modified in the following manner: mouthparts short; clypeus bare, posterior clypeus broadly lunate, anterior clypeus elongate subtriangular; palpus with terminal segment about 2x basal segments; mesonotum evenly covered with long, dense pale setae; anepisternal setae in an anterior row and decumbent; single large lateral postnotal seta and row of smaller setae between; abdomen chestnut (Massachusetts). Male terminalia (Pl. 1).

Female. Similar to the males from New Hampshire.

Discussion: The JOHANNSEN and FISHER specimens are not available for this study; FISHER's specimen is on loan elsewhere from the collection at Cornell University, but cannot be located. Specimens reported from Minnesota by LAFFOON (1965) have proven to be unobtainable by correspondence and will require the visit of a specialist to uncover their whereabouts.



dorsal aspect

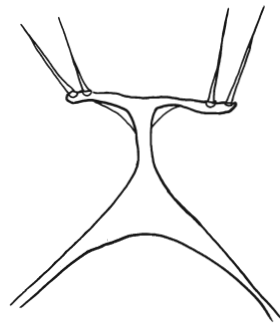


inner style

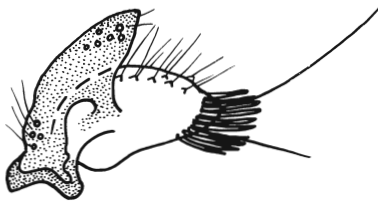


clypeus

**A. sinusa**



aedeagus



dististyle

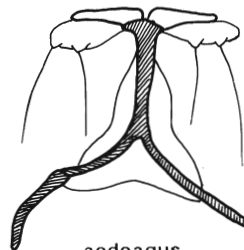


inner style



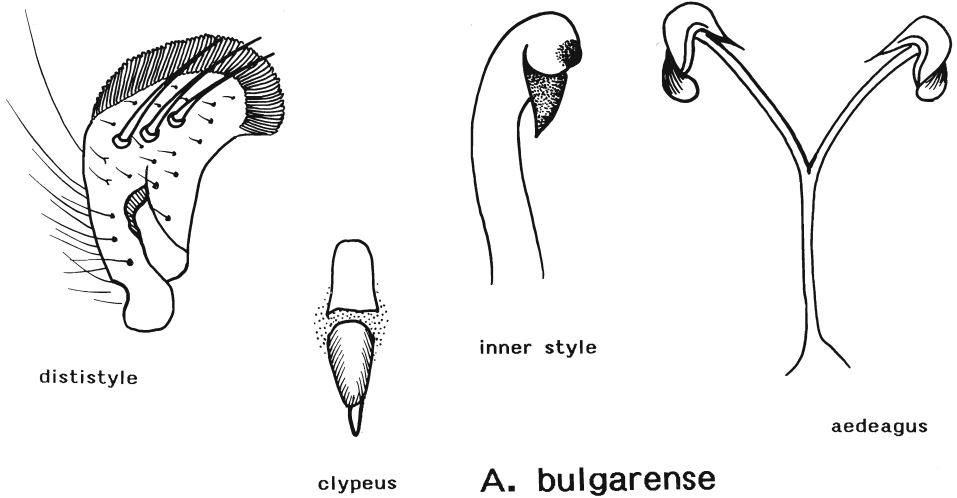
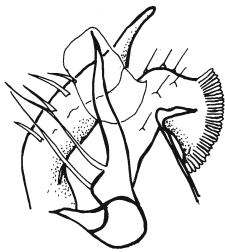
clypeus

**A. corsicana**

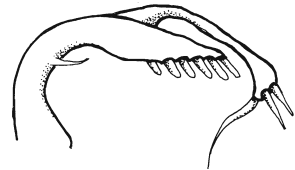


aedeagus

Plate 1: *Azana (Azana) sinusa* COHER nov. spec.; *Azana (Azana) corsicana* COHER nov. spec.

***A. bulgarensis***

dististyle

***A. asiatica***

inner style

Plate 2: *Azana (Azana) bulgarensis* COHER nov. spec.; *Azana (Azana) asiatica* SENIOR-WHITE.

*A. sinusa* is clearly most closely related to the Palearctic *anomala*. The name '*sinusa*' is derived from the Greek for bay, in reference to Massachusetts, the Bay State.

Holotype, male. USA: Mass.: Leverett, 26/9/52, E.I. COHER. In my personal collection. – Allotype: female. USA: N.H.: Durham, 11/10/54, R.L. BLICKLE. In the collection of the University of New Hampshire. – Paratopotypes. USA: Mass.: Leverett, 13(4), 16, 17(2), 20, 22, 26(4)/9/52, E.I. COHER. All males. – Paratypes: USA: N.H.: White Mts., Galehead Tr., 2000', 31/8/51, O.S.Fj, f; Rockingham Co., Odiorne Point, 14–15/9, 5–13, 14–20/10/83, D.S.C, mt; Me.: York Co., West Lebanon, 16–29/10/90, D.W. BARRY, mt. All males. Other record: USA: – N.H.: Mt. Washington, Tuckerman's Ravine, 2100', 4/9/40, V. LAFLEUR. Male.

3. *A. (Azana) bulgarensis* COHER nov. spec. = *A. flavohalictidis*

Male: Fuscous species with the characteristics of the genus modified in the following manner: mouthparts short; posterior clypeus U-shaped, its sides folded under, finely setose, anterior clypeus elongate subtriangular, a little longer than postclypeus; palpus with terminal segment about 2× basal segments; mesonotum evenly covered with long, dense pale setae; anepisternal setae anterior in a single row, decumbent; large pair of lateral postnotal setae with smaller setae between; male terminalia (Pl. 2).

Holotype, male. Bulgaria: Strandzha Mt., Voden, 27/7/89, D. BECHEV.

Discussion: Dr. BECHEV kindly consented to include the specimen in this review. The type is in the collection of the Department of Zoology, University of Plovdiv, Bulgaria.

#### 4. *A. (Azana) corsicana* COHER **nov. spec.**

1928: EDWARDS, Diptera 4: 160, as *anomala*.

1977: MATILE, Bull. Mus. Natl. Hist. Nat. 3e Ser., no. 456, 319: 636, as *anomala*.

Male: A dark brown-black species with the characteristics of the genus modified in the following manner: mouthparts elongate; clypeus appearing pilose, posterior clypeus elongate, triangular, slightly shorter than anterior clypeus, anterior clypeus elliptical; anepisternum with more abundant and scattered setae than other species; lateral postnotal setae single; male terminalia (Pl. 1).

Female: Similar to the male, distinctly larger.

Holotype, male. CORSICA: R. Porto, nr. Evisa, 10–25/4/28, F.W. EDWARDS. Allotype: female. CORSICA: R. Porto, nr. Evisa, 10–25/4/28, F.W. EDWARDS. Both type-specimens in the collection of the British Museum of Natural History.

Discussion: EDWARDS (loc. cit.) reported these as “rather common”. The form of the male terminalia indicates a close relationship with *asiatica*.

#### 5. *A. (Azana) asiatica* SENIOR-WHITE, 1922

1922: Mem. Dept. Agric. India (Ent. Ser.) 7 (9): 116.

The type, which is a male from Sri Lanka in the collection of the British Museum of Natural History, has suffered the ravages of time and now has only one wing and a couple of femora attached to the remainder. Head: with apical four flagellar segments of antenna dark brown; anterior clypeus subtriangular, pilose. Thorax: with postnotal setae apparently limited to a single fine, long seta laterally just above abdomen. Abdomen: orange-yellowish; TIV–VI with median dorsal and lateral anterior brownish markings (originally described as a connected transverse band); TVII slightly reduced from TVI. Terminalia: (Pl. 2); complex dististyle; inner style.

A female specimen from Sarawak closely resembles *asiatica*, but almost certainly represents a different species.

#### *Azana (Jugazana)* COHER **nov. subgen.**

Adult with the characteristics of *Azana* s.str. except for the male terminalia which have the following structure. Dististyle of synsclerite simple and tapering; inner styles absent; aedeagus pear-shaped; TIX greatly enlarged, subtriangular.

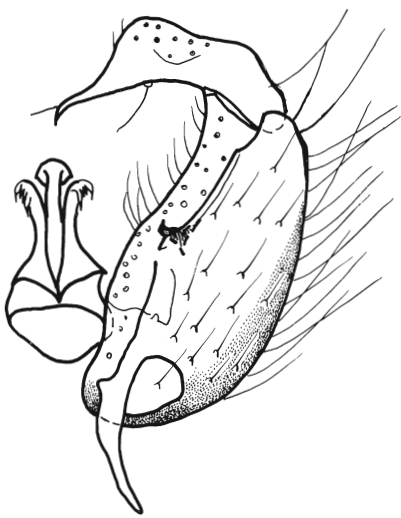
#### 6. *A. (Jugazana) nigricoxa* STROBL, 1898

1898: var. *nigricoxa* STROBL, Zem. Mus. Bosni i Hercegovina Glas. 10: 600.

1909: JOHANNSEN, Genera Insectorum Fasc. 93: 64 = *anomala*.

It is reasonable to suggest that these specimens represent the STROBL species and that *anomala* is probably not present in southeastern Europe. Dr. F. MENZEL has made these specimens available for this study. Mouthparts short. Male terminalia (Pl. 3).

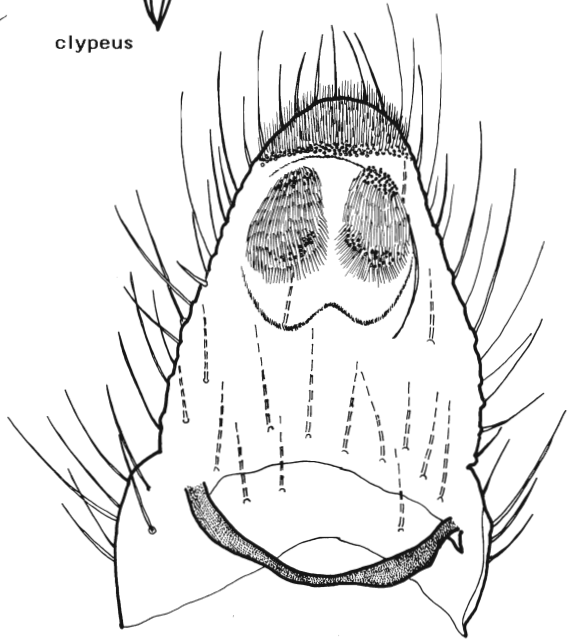
Records: JUGOSLAVIA (Croatia): Ragusa (= Dubrovnik), 20/10/03, Lichtwardt, ♂; 20/10/03, Oldenberg, 3 ♂♂, 2 ♀♀.



dorsal aspect



clypeus



synsclerite

### **A. nigricoxa**

Plate 3: *Azana (Jugazana) nigricoxa* STROBL.

#### 7. *Azana palmensis* SANTOS-ABREU, 1920

1920: Mems. R. Acad. Cienc. Artes Barcelona 16 (1): 45, fig. 7.

1927: LANDROCK, Fliegen Palaearkt. Reg. 2: 51.

1989: MATILE, Cat. Palaearctic Diptera 3: 233.

Nothing other than the original description is known of this species from the Canary Islands. This is the only species of the genus reported to have a yellow cast to any portion of the abdomen. A request to borrow the type proved unavailing.

#### 8. *Azana rarissima* MEUNIER, 1904

1904: Monographie Mycetophilidae de l'ambre de la Baltique. Ann. Soc. Bruxelles 28: 173, Pl. 14.

#### 9. *Azana* spec. (MATILE, 1980)

1980: Cat. Dipt. Afrotropical Region: 225.

Reported from Nigeria, this species is highly unlikely to be any of the species presently known in this genus.

## Acknowledgements

To all who have gone before me, but with particular thanks to Mr. BRUCE TOWNSEND of the British Museum who made type material and a number of specimens available. To Dr. E.R. HOEBECKE of Cornell University, Dr. D. CHANDLER, Univ. New Hampshire, Dr. F. MENZEL, Deutsches Entomologisches Institut Eberswalde, and Dr. Gunnilda STÅHTS, Lund Univ. who have made critical material available for this study. Dr. A. DELY-DRASKOVHS of the Hungarian Natural History Museum has supplied information on the type of *A. altera*. Finally, and not least, to Ms. ANNETTE VOLLERS for her patient attention to the illustrations and plates.

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