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Santhomyza biseta sp. n. (Diptera, Anthomyzidae) from the Canary Islands

ABSTRACT

Santhomyza biseta sp. n. from the Canary Is. (La Gomera, Tenerife) is described and its male and female genitalia are figured. The diagnosis of the genus *Santhomyza* Roháček, 1984 is supplemented and all of three its species are keyed. First data about egg morphology, adult phenology and habitat of *S. biseta* sp. n. are given and the interspecific relationships within the genus *Santhomyza* are discussed along with notes on its zoogeography.

The genus *Santhomyza* Roháček, 1984 was described to include two anthomyzid species from the Mediterranean: *S. inermis* Roháček, 1984 (Greece: Santorini I.) and *S. bezzii* (Czerny, 1902) (Italy: nr. Modena), the former being designated as its type species. However, *S. bezzii* is only known from the poor descriptions of Czerny (1902, 1928) based on the unique female holotype, which is apparently now lost (see Roháček 1984). Consequently, the diagnosis of the genus *Santhomyza* has been based mainly on the type species *S. inermis*.

This discovery of a third species of *Santhomyza* in the Canary Islands proved to be a highly valuable addition to the knowledge of the genus, which makes it possible not only to be more precise as to its diagnosis and distribution but also to obtain first data about the egg morphology, habitat and phenology. The new species is described below with detailed figures of the male genitalia and female postabdomen. Mature eggs, prepared from the abdomen of a gravid female, were examined with emphasis upon the surface microsculpture of the chorion and compared with those of *Anthomyza* species. The original generic diagnosis and the key to *Santhomyza* species (see Roháček 1984) are corrected and extended to cover the new species and the general distribution of the genus is discussed.

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A SUPPLEMENT TO THE DIAGNOSIS OF THE GENUS *SANTHOMYZA* ROHÁČEK

Acrostichal setulae in 6-S rows at suture. Periandrium with fine or strong setas, 2 dorsal of which sometimes distinctly enlarged. Setae of gonostylus relatively robust (*S. biseta* sp. n.) or reduced (*S. inermis*). Basal membrane of internal genitalia with or without setulae. Saccus of distiphallus without sclerotized spines but sometimes covered with fine setulae (*S. biseta* sp. n.). Distal part of aedeagal apodeme simply wrinkled to finely tuberculate or spinulose. Female postabdomen with disparate 7th tergum and sternum, the latter being sometimes narrowed. 8th and 10th (= 9th of Roháček 1984, supraanal plate) terga transverse to about as long as wide. 10th sternum (= 9th of Roháček 1984, subanal plate) longer or shorter than wide. Spermathecae small and their surface simple or with several minute tubercles.

Key to the identification of the *Santhomyza* species

- 1 — Mesonotum ochreous or pale brownish, without dark lateral stripes, at most slightly darker medially or in posterior half. Scutellum concolorous with mesonotum, pale brown. Abdomen dark brown, with pale ochreous spots on preabdominal terga (sometimes poorly visible in dried specimens). Wing uniformly pale yellowish brown. Male genitalia (Figs. 2-7), female postabdomen (Figs. 8-10) *S. biseta* sp. n.
- Mesonotum bicolorous, with dark brown or blackish lateral stripes. Scutellum also striped laterally, or dark as stripes on mesonotum. Abdominal terga without spots, completely dark brown to black. Wing at least with darker bordered C and R2+3 2
- 2 — Ocellar triangle with tripartite brown pattern (Roháček 1984: Fig. 1). Dark stripes on mesonotum prolonged posteriorly on lateral margins of scutellum and not fused in front of it (Roháček 1984: Fig. 3); metanotum unicolorous, without paler spot. Male genitalia (see Roháček 1984: Figs. 6-11), female postabdomen (Roháček 1984: Figs. 12-15) *S. inermis* Roháček, 1984
- Ocellar triangle brown. Dark stripes on mesonotum anteriorly shortened and posteriorly fused in front of the completely black scutellum. Metanotum black, with a yellow central spot. Male and female postabdomen unknown *S. bezzii* (Czerny, 1902)

***Santhomyza biseta* sp. n.**
(Figs. 1-11)

TYPE MATERIAL: Holotype ♂ Canary Is., La Gomera: Hermigua, 9-4-74, M. Báez leg. Allotype ♀ and 1♂ 2♀ paratypes with same data as for holotype. Further paratypes: 2♂ La Gomera: V. Gran Rey, 8-4-74, M. Báez leg.; 1♂ Tenerife: Puerto La Cruz, 7-5-85, M. Báez leg.; 4♂ 2♀ Tenerife: Playa de las Aguas, 6-4-1973, maritime vegetation, P. J. Chandler & C. H. Jackson leg. Holotype, allotype and most of paratypes are deposited in the collection of M. Báez, Universidad de La Laguna; remaining paratypes in the Silesian Museum (Opava), Museo Regionale di Scienze Naturali (Torino) and in the collection of Dr. P. J. Chandler (Maidenhead, England).

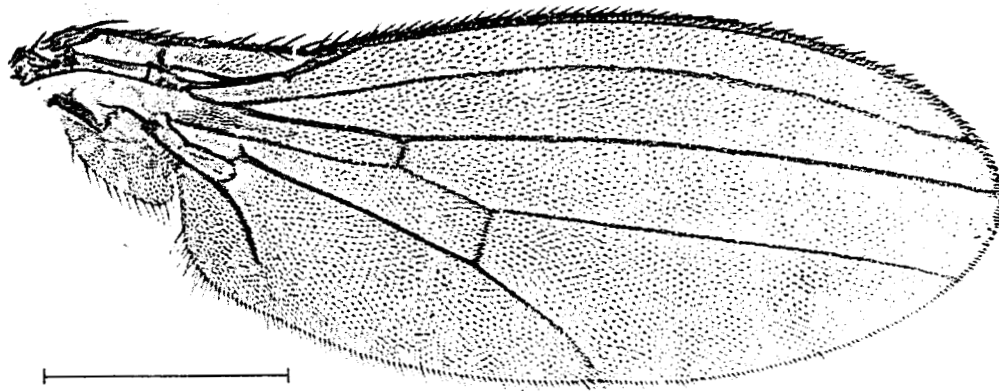
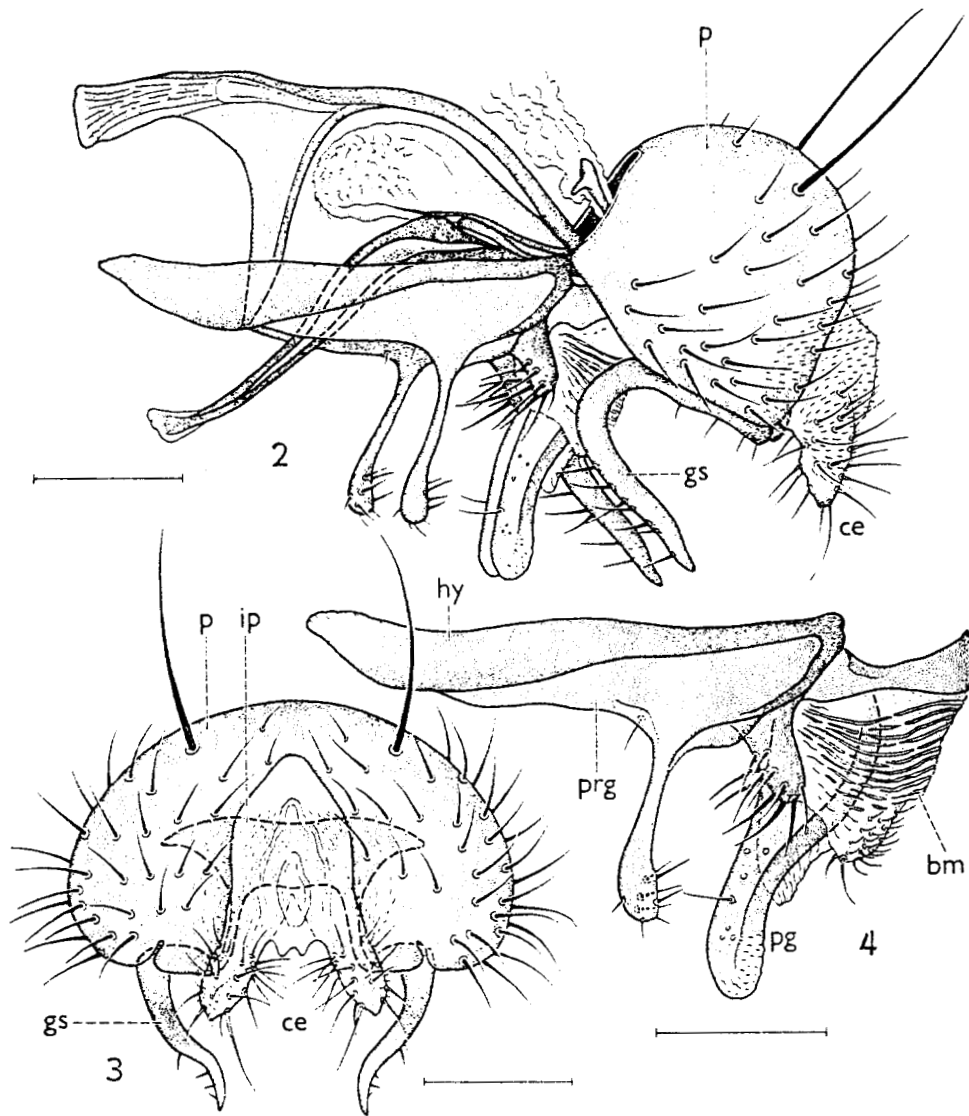


Fig. 1 — *Santhomyza biseta* sp. n., holotype, wing. Scale = 0.5 mm

ETYMOLOGY: The name refers to two strikingly enlarged setae on the male periandrium.

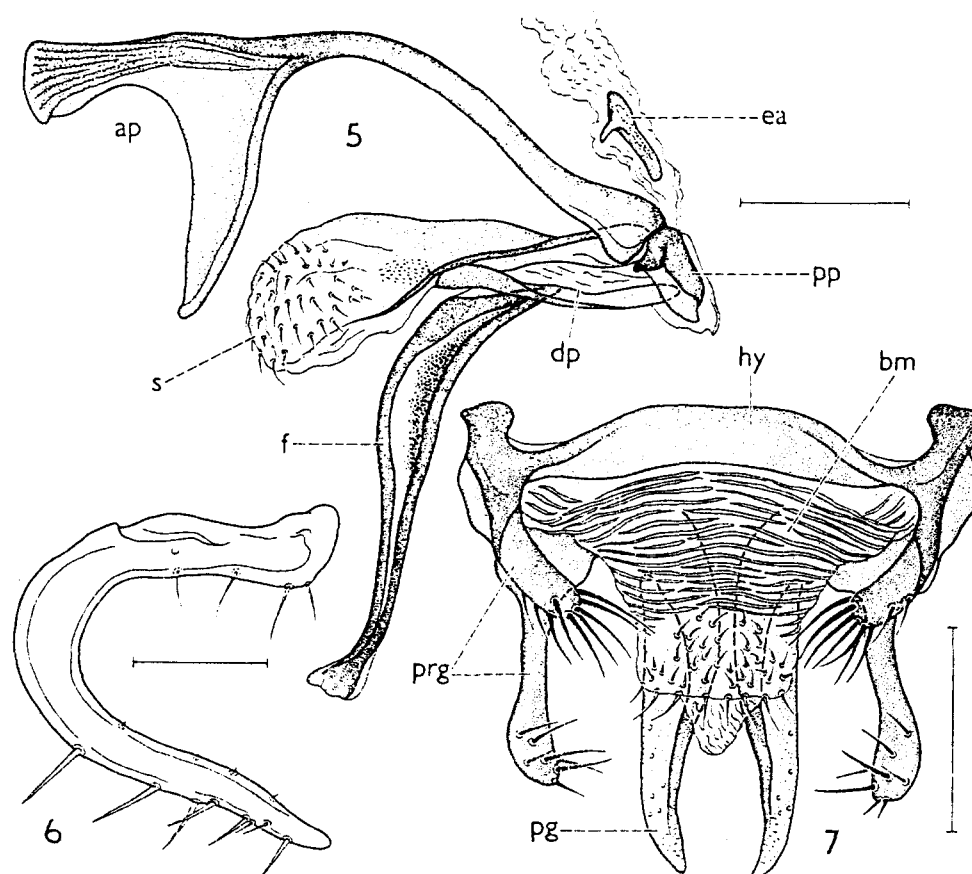
DESCRIPTION: Male. Total body length 2.1-2.5 mm; body pale brownish to ochreous with yellow extremities and dark but pale spotted abdomen. Head higher than long, ochreous, dull. Frons with yellowish, narrow frontal triangle, whitish yellow orbits and brown ocellar triangle. Frontal lunule and anterior margin of frons paler yellowish. Frontal triangle reaching to anterior third of frons. Gena with yellowish white microtomentum except for its narrow brown margin. Praefrons (= face) ochreous. Cephalic chaetotaxy typical for *Santhomyza*: postverticals well developed, crossed; external and internal verticals long and a small proclinate seta behind them present; 3 strong (but becoming shorter anteriorly) and 1 minute, hair-like orbitals; 2-7 minute hairs on each side of the middle of frons; postocular setae in a dense row behind eye; 2 vibrissae and peristomal setae well developed. Palpi slender, pale yellow, each with a black subapical seta and several shorter setulae in basal half. Eye large, oval, its longest diameter about 1.4 times as long as the shortest one. Gena very narrow, its smallest height only one-eighth to one-ninth of the shortest eye diameter. Antennae orange to ochreous, usually with darker 3rd segment. Arista about 1.8 times as long as antenna, brown, shortly ciliate.

Thorax yellowish ochreous to pale brown. Mesonotum without distinct spots or stripes, greyish microtomentose, hardly shining. Scutellum and posterior half of mesonotum usually slightly darker. Humeral callus and notopleural margin of mesonotum yellow and contrasting with darker brown diffuse band on dorsal part of pleura. Ventral part of pleura (from about half of mesopleuron) pale ochreous to whitish yellow (mainly ventrally). Thoracic chaetotaxy: 3 dorso-central bristles, the anterior short, the posterior as long as



Figs. 2-4 — *Santhomyza biseta* sp. n., ♂ paratype. 2 — genitalia laterally; 3 — external genitalia caudally; 4 — hypandrium and associated structures laterally. All scales = 0.1 mm. Abbreviations: bm - basal membrane, ce - cercus, gs - gonostylus, hy - hypandrium, ip - intraperiandrial sclerite, p - periandrium, pg - postgonite, prg - pregonite.

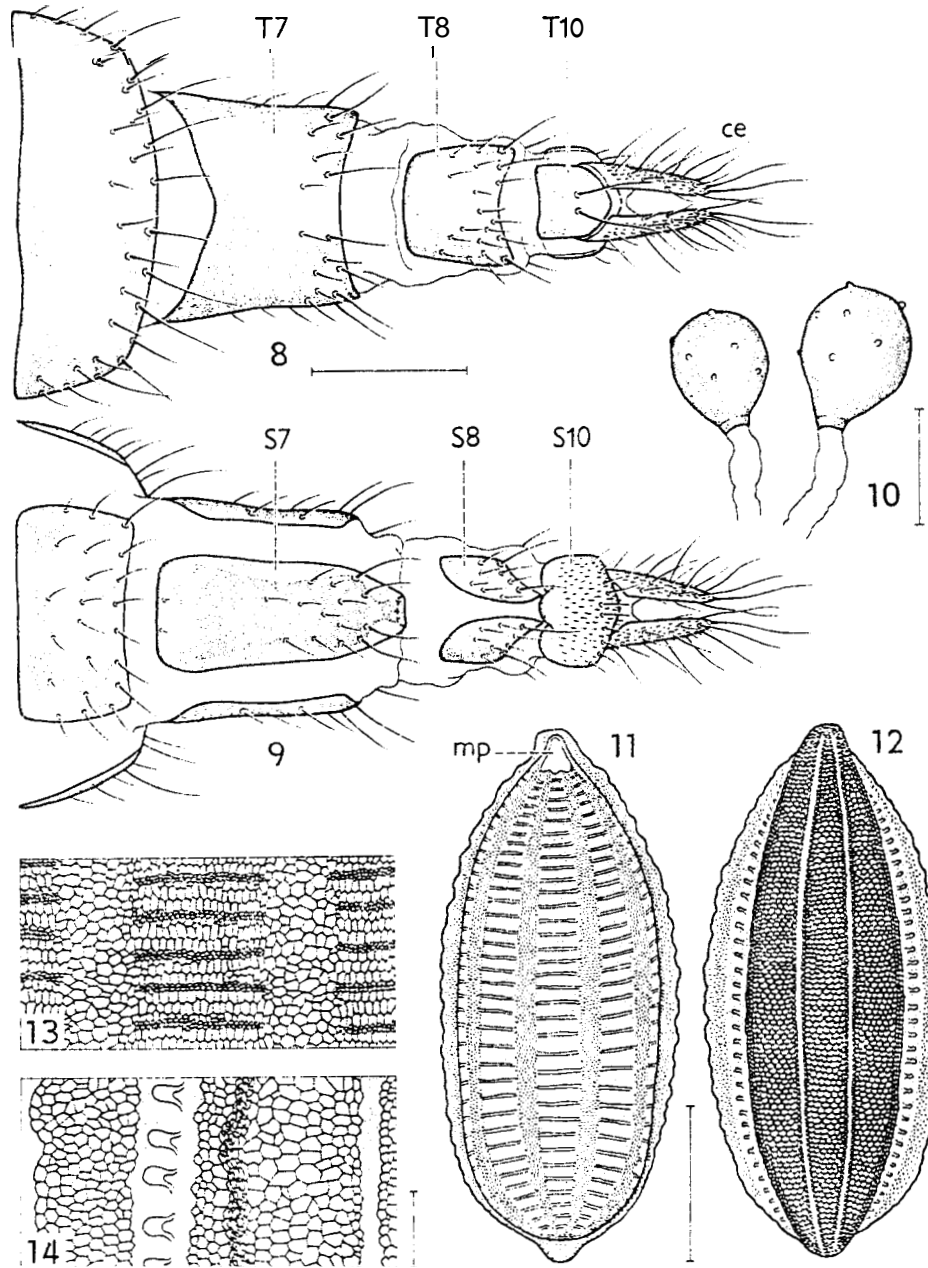
apical scutellars; 6-8 rows of acrostichal microsetulae between dorsocentrals at suture; scutellar bristles long, the laterals being distinctly longer than those of *S. inermis* and about as long as scutellum; 2 sternopleural setae (the posterior longer) and several other small setulae on sternopleuron; propleuron with a distinct seta above fore coxa.



Figs. 5-7—*Santhomyza biseta* sp. n., Oparatype. 5— aedeagus and aedeagal apodeme laterally; 6— gonostylus laterally; 7— hypandrium and associated structures caudally. Scales: Fig. 6 = 0.05 nini, others = 0.1 nini. Abbreviations: ap - aedeagal apodeme, bm - basal membrane, dp - distiphallus, ea - ejaculatory apodeme, f - slender branch of distiphallus, hy - hypandrium, pg - postgonite, pp - phnllophore, prg - pregonite, s - saccus of distiphallus.

Legs pale yellow to ochreous (hind pair), with similar chaetotaxy as described for *S. inermis*. Wing (Fig. 1) with uniformly pale yellowish brown membrane and thick brownish veins. C very shortly spinulose between apices of R1 and R2+3. R2+3 very long, parallelly curved to C and apically slightly upcurving to it. R4+5 and M1+2 very slightly bent or indistinctly sinuate. Discal cell not very long, completely separated from basal cell. M3+4 almost reaching to wing margin but A1 shortened. Alula well developed. Wing measurements: length 2.10-2.58 mm, width 0.77-0.91 mm, $Cs_3:Cs_4 = 0.59-0.89$, $ta-tp:tp = 1.50-2.00$. Halteres yellow to orange, stem often darker than knob.

Abdomen with terga extended laterally. Sterna narrow (but wider than in female) and pale yellowish brown. Preabdominal terga (2nd to 5th) dark



Figs. 8-14 — *Santhomyza biseta* sp. n., ♀ paratype. 8 — postabdomen dorsally; 9 — ditto ventrally; 10 — spermathecae; 11 — egg dorsally; 12 — egg ventrally; 13 — dorsal sculpture of egg chorion; 14 — ventral sculpture of egg chorion. Scales: Figs. 10, 13, 14 = 0.03 mm, others = 0.2 mm. Abbreviations: ce - cercus, mp - micropyle, S - sternum, T - tergum.

brown, with mediobasal, large, pale ochreous spot, in 2nd and 3rd terga often almost reaching to posterior margin, *ora* pale basal stripe (5th tergum). Setae on terga relatively strong, on sterna much finer, and 1st sternum almost bare. 5th tergum undivided and 5th sternum also simple. 6th and 7th terga asymmetrical, partly fused together, the former with 2-3 setae, the latter with more bristles, particularly posteriorly.

Genitalia (Fig. 2) with low and wide periandrium having relatively small anal fissure (Fig. 3) and, in contrast to *S. inermis*, overlaid with dense setae plus 2 very long dorsal bristles. Intraperiandrial sclerite (Fig. 3, ip) wide, wing-shaped. Cercus large, pale, projecting from anal fissure and densely setulose. Gonostylus (Figs. 2, 3, 6) unusually slender and long, strongly curved to a horseshoe-shaped form and bearing relatively thick setae at anterior margin of its distal half. Pregonite (Figs. 4, 7, prg) fused with hypandrium and posteroventrally projecting into two heavily sclerotized processes, one long and rod-like with a clubbed apex, the other short and stump-like (but more robust than in *S. inermis*). Both these processes with rich setosity on their tips, unlike to those of *S. inermis*. Postgonite (Figs. 4, 8, pg) very robust, projecting below basal membrane, with a single anterior seta, characteristic, darkly pigmented longitudinal stripe at posterior margin and rounded apex. Basal membrane (Figs. 4, 7, bm) without sclerotized internal structures but externally striated in dorsal half (also posteriorly) and in its ventral half posteriorly densely finely setulose. Aedeagus (Fig. 5) with short phallosome; epiphallus not developed. Distiphallus bifid, formed by membranous saccus (Fig. 5, s) covered by small setulae (in contrast to that of *S. inermis*) and by slender, dark, heavily sclerotized slender branch (Fig. 5, f) being composed of two long, band-like sclerites which are apically connected, flattened and dilated. Aedeagal apodeme (Fig. 5, ap) of usual form, apically only finely wrinkled and basally very slender. Ejaculatory apodeme (Fig. 5, ea) well developed, with a finger-like projection more slender than that of *S. inermis*.

Female. Head, thorax, legs and wing as in the male unless mentioned otherwise. Total body length 2.6-2.9 mm. Wing measurements: length 2.69-2.98 mm, width 0.98-1.09 mm, $Cs_3 : Cs_4 = 0.59-0.81$, $ta-tp : tp = 1.35-1.86$. Abdomen with large terga and narrow, pale yellowish ochreous sterna. 2nd tergum with a narrow mediobasal pale pigmented spot (sometimes reduced), 3rd to 5th terga also basally pale pigmented, usually in form of 2 mediobasally connected semicircular yellowish or ochreous spots, otherwise blackish brown. 1st to 4th terga with some greyish microtomentum, 5th and postabdominal terga hardly tomentose and thus more shining.

Postabdomen (Figs. 8, 9) telescopic and retractible. 6th tergum broad, transverse; 6th sternum much narrower, pale, similar to preabdominal sternum. 7th tergum long, about as long as wide, but extended ventrolaterally and with a pale pigmented posteromedial narrow area. 7th sternum distinctive, much

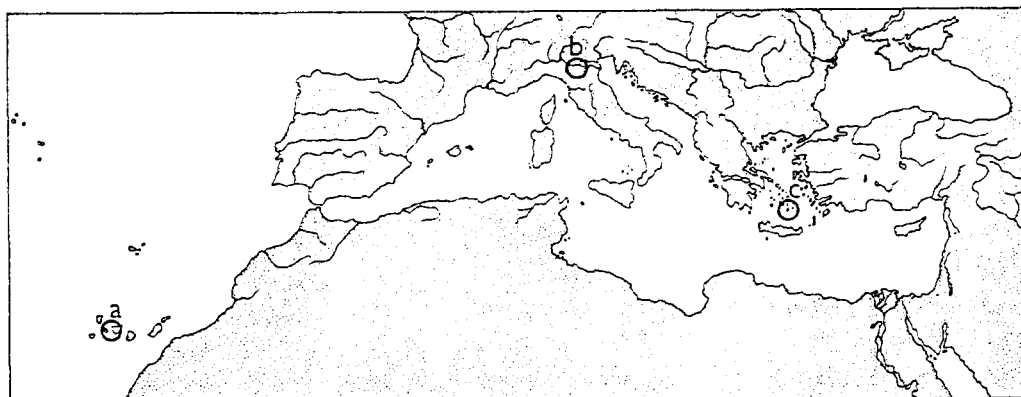


Fig. 15 – Distribution of the *Santhomyza* species. a - *S. biseta* sp. n.; b - *S. bezzii* (Czerny); c - *S. inermis* Roháček.

longer and narrower than that of *S. inermis*, with paler side margins and its tapered posterior lobe bent dorsally. 8th tergum distinctly longer than in *S. inermis*, darkly pigmented and finely setulose. 8th sternum longitudinally divided into 2 small plates being also longer than those of *S. inermis*. 10th tergum (supraanal plate) as long as wide but posteriorly pale pigmented and with a pair of long setae arising near its centre. 10th sternum (subanal plate), on the contrary, shorter and wider than in *S. inermis*, anteriorly with a small medial rounded lobe. Secondary internal sclerites in 8th segment not developed. Spermathecae 1+1 (Fig. 10). small, only 0.030-0.035 mm long, pear-shaped but wider than in *S. inermis*, and their surface with several small tubercles. Cerci long, slender, each with numerous fine, hair-like setae.

Egg. Ten mature eggs were found in the abdomen of one gravid female. They are rather voluminous compared to postabdomen (see Figs. 8, 9 and 11, 12 – made under the same magnification!). Measurements: length 0.68-0.71 mm, width 0.26-0.29 mm. The egg (Figs. 11, 12) is of casket-like form, tapered and slightly projecting at both ends. Chorion whitish hyaline, but the yolk gives the egg a yellowish to pale ochreous appearance. Micropyle (Fig. 11, mp) situated on dorsal side of the projecting front of egg. Chorion differently sculptured on dorsal and ventral sides. Dorsally the reticulate microsculptures of various densities form 3 rows of transversely situated stripes (Figs. 11, 13). Ventrally (Fig. 12) there are 4 distinct longitudinal fringes (lateral and ventrolateral ones), 2 ventrolateral rows composed of short finger-like projections (Fig. 14) having probably respiratory function and 3 broad longitudinal bands of rough reticulate structure separated by 2 finely dotted narrow stripes.

DISCUSSION: *Santhomyza biseta* sp. n. is easily distinguishable from both other members of the genus by the external characters given in the above key. However, there are numerous species-specific features also in its male and female terminalia, although they could only be compared with those of *S. inermis* Roháček, 1984. The most diagnostic seem to be two long bristles on male periandrium, horseshoe-shaped gonostylus with robust setulas, apically ciliated rod-like projection of pregonite and its rich setosity, posteriorly dark postgonite, finely setulose basal membrane and saccus of distiphallus, long and narrow female 7th sternum, form of 10th tergum, fine tubercles on spermathecae etc.

The egg of *S. biseta* sp. n. displays rather significant differences against those of the *Anthomyza* species. It is essentially more robust, with much more complex microsculpture of chorion both on dorsal and ventral surfaces including 2 rows of respiratory finger-like projections being unknown in eggs of *Anthomyza* (see Roháček 1986). Despite the fact that the study of eggs of the anthomyzid flies is in its infancy, it is believed that at least some of the differences discussed above will appear to be genus-specific and, consequently, diagnostic for the genus *Santhomyza* as a whole.

BIOLOGY: About half of specimens of *S. biseta* sp. n. were collected by sweeping vegetation along a stream in low altitudes (La Gomera I.), the other near sea coast on maritime vegetation (Tenerife I.). The known flight period ranges from 6th April to 7th May but the bulk of specimens was caught in the first ten days of April. A gravid female with mature eggs in its abdomen (see above) originates from a series obtained at La Gomera on April 9th, 1974.

DISTRIBUTION: Canary Islands (Tenerife, La Gomera).

NOTES ON THE RELATIONSHIPS AND ZOOGEOGRAPHY OF *SANTHOMYZA* SPECIES

The extremely poor knowledge of *S. bezzii* (Czerny, 1902) makes it impossible to discuss the phylogenetic relationships within the genus *Santhomyza* in the whole complexity. Nevertheless, the comparison of *S. inermis* Roháček, 1984, and *S. biseta* sp. n. clearly showed that *S. inermis* is the more primitive of this pair, see e.g. its simpler setosity of periandrium, form of gonostylus, form and setosity of pregonite, armature of basal membrane and distiphallus, form of female 7th sternum, surface of spermathecae.

Considering the poor knowledge of the Anthomyzidae of the Mediterranean area and adjacent regions (Near East, Iranian and Pontic areas in particular) it would be premature to discuss the origin of the genus *Santhomyza*. The known distribution of *Santhomyza* is restricted to Mediterranean and Macaro-

nesian areas (see Fig. 15) but as *S. biseta* sp. n. proved to be more derived than its relatives, it seems better to presume that the genus originates from the East Mediterranean or neighbouring areas.

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RIASSUNTO

Viene descritta *Santhomyza biseta* n. sp. delle Isole Canarie (La Gomera, Tenerife). La diagnosi del gen. *Santhomyza* Roháček, 1984 è integrata e si fornisce una tabella di identificazione delle tre specie no? del genere. Vengono inoltre forniti i primi dati biologici su *S. biseta* n. sp., e commenti sulla filogenesi e la zoogeografia del genere in questione.

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