A NEW SPECIES OF THE GENUS *FANNIA* ROBINEAU-DESVOIDY (DIPTERA: FANNIIDAE) COLLECTED ON PIG CARRION IN MENDOZA, ARGENTINA

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Abstract.—The aim of this study is to describe *Fannia sanihue* sp. nov., a new species of Fanniidae that was captured in the proximity of a pig carcass in the province of Mendoza, Argentina. This contribution is a part of the first study to be undertaken into forensic entomology in the biogeographical province of the Monte, which is a warm shrub desert extending between Puna and Patagonia at the east of the Andes Mountains.

Key words.—Fanniidae, *Fannia*, new species, forensic entomology, pig carcass.

INTRODUCTION

The genus *Fannia* Robineau-Desvoidy, 1830 (Diptera: Fanniidae) contains approximately 260 species, of which 66 occur in the Neotropical Region (Carvalho et al. 2003). Recently seven further Neotropical species have been described (Couri 2004, Couri 2005, Couri and Winagraski 2005, Domínguez 2007).

The medical and hygienic importance of widely distributed *Fannia* species such as *Fannia canicularis* (Linnaeus, 1761), *F. femoralis* (Stein, 1898), *F. incisura* (Zetterstedt, 1838), *F. pusio* (Wiedemann, 1830), *F. scalaris* (Fabricius, 1794) is well known. *Fannia canicularis* and *F. scalaris* have been reared from various decaying materials in gardens (Rozkošný et al. 1997). Moreover, the larvae of *F. scalaris* are frequent in cesspools, latrines and dunghills, having also been reared, accompanied by *F. canicularis* from human faeces (Rozkošný et al. 1997). Some of the most abundant species occur regularly in agricultural pens used for breeding pigs, cattle, horses or poultry, and in fur farms (Rozkošný et al. 1997). The larvae apparently develop in animal droppings and dung (Rozkošný et al. 1997). Nevertheless the medical and hygienic importance of most southern South American species is unknown. *Fannia albitarsis* Stein, 1911 is found to be an important nuisance in poultry farms in the south of the province of Buenos Aires (Pérotti 1998). *Fannia fusconotata* Rondani, 1868 as well as *F. canicularis* and *F. scalaris* are believed to cause myiasis in man and in cattle (Mazza and Oribe 1939, Oliva 1997).

The importance of the family Fanniidae in forensic investigations is well known (Smith 1986). In the Neotropical Region there are several studies that report the presence of *Fannia* species in corpses (Marchiori et al. 2000, Souza and Linhares 1997, Carvalho et al. 2000, Centeno et al. 2002). The most commonly found species of *Fannia* in experiments with pig carcasses in Brazil are *F. pusio* and *F. canicularis* (Marchiori et al. 2000, Souza and Linhares 1997, Carvalho et al. 2000). In Argentina, *F. fusconotata* has been found in an experiment in the province of Buenos Aires (Centeno et al. 2002).

This contribution is a part of the first study of forensic entomology studies to be undertaken in the province of Mendoza, in Argentina. Mendoza is located in the biogeographical province of the Monte, which is a warm shrub desert extending between Puna and Patagonia to the east of the Andes Mountains, from the province of Salta (24°35’S) to the province of Chubut (43°26’S) (Morello 1958). The Monte Desert lies...
between the Neotropical and Antarctic regions. The flora and fauna of the Monte are more closely related to those of the Pampa and Chaco biogeographical provinces, although some Patagonian elements also occur in the central and southern parts of the Monte (Roig et al. 1980, Roig Junent et al. 2000).

The purpose of this study is to describe a new species of the genus Fannia from the province of Mendoza, Argentina. Specimens of F. sanihue sp. n. were captured in the proximity of pig carcasses (Fig. 1). Both sexes in about the same ratio were found, whereas for the remaining species of Fannia captured during this experiment [F. fusconotata, F. heydenii (Wiedemann, 1830), F. albitarsis and F. femoralis] females were always collected in higher number than males. Only 12 larvae were captured during the experiment, probably because of the presence of Chrysomya albiceps (Wiedemann, 1830) (Calliphoridae), which is predacious during the larval stage (Oliva 1997), and these were identified as belonging to F. fusconotata.

**MATERIAL AND METHODS**

The specimens were collected using modified Malaise traps located above three pig carcasses during the autumn and winter of 2007 (Fig. 1).

Measurements are expressed as follows: body length: anterior margin of head (frons), excluding antennae, to apex of abdomen; frons width: narrowest distance between eye margins; vitta width: measured at uppermost pair of frontal setae; frontal setae length: relative to length of flagellum, parafacial width: relative to width of flagellum at its base, shape of flagellum: length/width; palpus shape: basal width relative to apical width; shape of fore-femur: length/width; length of ventral pubescence of mid tibia: relative to tibial width; shape of hind femur: length/width.

Morphological terminology mainly follows McAlpine (1981) with the exception of the following genitalic terms: pregonite and postgonite (paramere and gonopod of McAlpine). For genitalic examination, the abdomen was removed from a dry specimen and heated in 10% (OH) K for 10–15 minutes. The abdomen was then transferred to acetic acid, and then to glycerine. The postabdominal structures were separated from the rest of the abdomen. Examination and illustration of genitalic structures were done using a compound microscope equipped with a drawing tube. After examination, the genitalia and the rest of the abdomen were placed in glycerine in a plastic microvial and pinned directly under the specimen. Illustrations were made using a stereomicroscope. Scales are indicated in each drawing, except when scales were absent in the original illustration. The following abbreviations are used in the descriptions: Head: fr: frontal seta; pocl: postocular seta; orb: orbital seta. Thorax: acr: rows of acrostichal setulae; acr s: acrostichal seta; de: dorsocentral seta; prepm: proepimeral seta; pral: prealar seta; prpn: postpronotal seta. Legs: C: coxa; F: femur; T: tibia; a: anterior seta; ad: anterodorsal seta; av: anteroventral seta; d: dorsal seta; p: posterior seta; pv: posteroventral seta; pd: posterodorsal seta; v: ventral seta.

**TAXONOMY**

*Fannia sanihue* sp. nov.  
(Figs 2–3)

**Etymology.** The species name is a derivation of “sańhue” which means “pig” in the indigenous Mapuche language, and it refers to the pig carcasses where this species was collected.

**Type material.** Holotype ♂, Argentina: Mendoza city: Parque General San Martin, predio CCT CONICET-Mendoza (32°53’53.86”S, 68°52’27.06”W) 700 m.a.s.l. Paratypes: 300 ♂♀ same data as Holotype. IADIZA.

**Distribution.** The species is only known from the type locality. The original vegetation belonged to the Monte Biogeographical province, but it has been modified by the presence of introduced cactus and trees (Fig. 1).

**Diagnosis.** Males with frontal vitta grey, at narrowest point 1.1 × width of anterior ocellus. Palpi

![Figure 1. Modified Malaise trap with the pig carcass.](image-url)
Figure 2. *Fannia sanhue* sp. nov. Male in lateral view.
black, slightly clavate. Thorax mostly black, except for apex of scutum, pleura and scutellum that are grey. Legs black, C3 with two setae at apex of posterior surface; F3 on posteroventral surface with a weak preapical tubercle, that is not visible in anterior view and with 1 row of hair-like pv that form a long preapical tuft as long as femoral width at the preapical protuberance. T3 with 1 long submedian d, lacking the dorsal apical d. Wings smoky. Abdomen black. Abdomen black with yellow lateral markings on tergites 2–4. Females with abdomen black with yellow lateral markings on tergite 2, and grey lateral markings on remaining abdominal tergites.

**Description. Male:** body length 4.6–5.5 mm.

Head. Frontal vitta grey, at narrowest point 1.1 × width of anterior ocellus. Fronto-orbital plate grey, heavily pruinose, at uppermost pair of fr slightly narrower than anterior ocellus. Twelve to thirteen long fr as long as flagellum. Eyes bare, antero-internal facets larger than remaining; pocl of regular length in first quarter. Face and parafacial silvery-grey; parafacial at base of flagellum 0.5× width of same and bare. Facial carina dark grey. Scape and pedicel black, flagellum 2.1 times as long as broad and covered with silvery-grey pruinosity. Arista black and aristal pubescence shorter than aristal width at base. Palpi black, slightly clavate, the apex 1.5× the width of the base. Lower oral margin is straight and without groove.

Thorax. Scutum mostly black; apex (posterior part) of scutum, pleura and scutellum grey; 3+3 acrs, with one pair of strong prescutellar av; 2+3 dav; ppnr with few setulae; pral absent, prealar area with short setulae; two prepn surrounded by four hair-like setulae.

Legs. Black. F1: normal (length/width = 7.1), with 1 row of pd as long as femoral width, two rows of p; 1 row of pv slightly longer than femoral width, only present in apical half. T1 with 1 subapical pd; 1 apical v and 1 apical pv; 1 apical and 1 submedian ad, lacking medial row of ad. Fore tarsi cylindrical. F2 with 1 complete row of ad and 1 row of a; 1 row of av that forms a ctenidium at apex; 1 row of pv that is doubled and stouter at apex; 1 row of p, hair-like at base, stouter and ventrally directed at apex. T2 constricted at base, with a strong subbasal protuberance; ventral pubescence long, as long as tibial width; with 1 submedian and 3 apical a; 1 subapical ad; 1 strong, apical av; 1 submedian and 1 weaker apical pd; 1 short and stout apical p. Mid tarsomere 1 with two short and stout basal ventral setae. C3 with two setae at apex of posterior surface. F3 normal (length/width = 8); posteroventral surface with a weak preapical tubercle, that is not visible in anterior view (Fig. 3A); 1 row of ad, longer and dorsally directed towards apex; 1 row of av half femoral width, interrupted preapically and with 1 or 2 long apical av; 1 row of hair-like pv that form a long preapical tuft as long as femoral width at the preapical protuberance. T3 with 1 long submedian d lacking the dorsal apical d, 5 ad; 3 median and 1 apical av; ventral and posteroventral surfaces with a weak apical ctenidium at apex (Fig. 3A).

Wings. Smoky. Lower calypter slightly oval, upper one rounded, both smoky; halteres yellow.

Abdomen. Elongated, tergite 2 slightly broader than tergite 4. Shiny black with yellow triangular markings on lateral margins of tergites 2, 3 and 4 (Fig. 2). Hypopygium not protruding (Fig. 2).

**Female.** Body length 4.3–5 mm. Differs from male as follows:

Head. Ocellar triangle extending up to second fronto-orbital seta. Frons and vitta broad, the distance between eye margins wider than 0.35× of head width. Four to five strong fr, slightly shorter than flagellum. With upper and lower orb, and two rows of fronto-orbital setae.

Legs. F2 with row of av not forming a ctenidium at apex and posterior surface covered with setulae that do not form rows. Mid tarsomere lacking the short and stout basal ventral setae. T3 with 1 submedian and 1 apical d of almost equal length.

Abdomen. Elongated, tergite 2 slightly broader than tergite 4. Shiny black with yellow triangular markings on lateral margins of tergite 2, and grey markings on tergite 3 and 4.

Postabdomen. Cerci short; anal plate longer than broad and uniformly covered with setulae; sternite 8 reduced to an anterior pair of circular plates bearing two setae; postabdominal spiracles 7 and 9 on tergite 6 (Fig. 3F). Two pear-shaped spermathecae, slightly grooved, with partially sclerotized ducts (Fig. 3G).

**Discussion**

This species can be easily separated from the remaining species of *Fannia* known in Argentina by the dark colour of the legs in combination with the yellow markings in the first segments of the abdomen and by the absence of the subapical dorsal setae on the hind tibia.

The very long and semicircular bacilliform process and the simple and long surstyli of the male genitalia of *F. sanilhue* are also found in *Fannia carvalhoi* Couri (2005), *Fannia losgateados* Domínguez (2007) and in *Fannia roigi* Domínguez (2007). According to Domínguez & Roig (in press) *F. roigi* and *F. losgateados*
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Figure 3. *Fannia sanihue* sp. nov. (A) Male hind leg in anterior view; (B) male sternite 5 in ventral view; (C) male hypandrium in ventral view; (D) male genitalia external structures in ventral view; (E) male genitalia external structures in lateral view; (F) female genitalia, external structures in ventral view; (G) spermathecae.

along with *Fannia grandis* Malloch, 1912 and *Fannia hermani* Domínguez (2007) are sister group to the *anthracina* species group. The clade containing *F. roigi* could also include *F. carvalhoi*, and it may conform a new species group.

The male of *Fannia sanihue* keys to couplet 15 (in the key to males) and the female to couplet 8 (in the key to females) in the most recent keys for southern South American *Fannia* (Domínguez 2007). These keys can be modified as follows to include *F. sanihue*:
Key to males

15. Wing clear. Abdomen yellow on lateral margins of tergites 1–3 ............................. 16
– Wing smoky Abdomen yellow on lateral margins of tergites or not ........................... 15a

15a. Abdomen completely black, with darker markings on central longitudinal line and apex of tergites. T3 with two d: one submedian and one apical .... 22
– Abdomen yellow on lateral margins of tergites. T3 only with 1 dorsal seta (the submedian d), lacking subapical dorsal ............ F. sanhuiue sp. nov.

Key to females

8. Wing smoky. T two or three spermathecae .... 8a
– Wing never smoky. Two spermathecae ......... 9

8a. Three spermathecae: two normal in size, third reduced ...................... obscurinervis group
– Two spermathecae ............... F. sanhuiue sp. nov.

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