

## The genus *Calliphora* (Diptera: Calliphoridae) in Argentina, with the first records of *C. lopesi* Mello 1962

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### El género *Calliphora* (Diptera: Calliphoridae) en Argentina y primer registro de *C. lopesi* Mello 1962

■ **ABSTRACT.** The genus *Calliphora* Robineau-Desvoidy 1830 is currently represented by only 6 species in the Neotropical Region of which 3 are present in Argentina. In this work, we report for the first time the presence of *Calliphora lopesi* Mello 1962 in Argentina, and we present an updated distribution of the species of the genus. We provide a key to the identification of the species present in the country.

**KEYS WORDS.** Taxonomy. Distribution. New report.

■ **RESUMEN.** El género *Calliphora* Robineau-Desvoidy 1830 se encuentra representado por sólo 6 especies en la Región Neotropical, de las cuales 3 se encuentran en la Argentina. En el presente trabajo se reporta por primera vez la presencia de *Calliphora lopesi* Mello 1962 en Argentina, además, se realiza una actualización de la distribución de las especies del género. Se provee una clave para la identificación de las especies presentes en el país.

**PALABRAS CLAVES.** Taxonomía. Distribución. Nuevo reporte.

#### INTRODUCTION

The genus *Calliphora* Robineau-Desvoidy 1830 contains six species in the Neotropical region: *C. vicina* Robineau-Desvoidy 1830, *C. nigribasis* Macquart 1851, *C. irazuana* Townsend 1908, *C. lopesi* Mello 1962, *C. maestrica* Peris, Gonzalez-Mora, Fernandez & Peris, 1998 and *C. trisetata* Whitworth, 2012 (Whitworth, 2012). This genus is known from all zoogeographical regions, but is best represented in the Holarctic and Australian Regions (Rognes, 1991). *Calliphora* can be distinguished from other Neotropical calliphorid genera by the following characters: bare stem vein, lower

calypter setose above, bare suprasquamal ridge, thorax dull grey with whitish microtomentum, and abdomen subshining metallic blue with more or less whitish microtomentum (Whitworth, 2012).

In Argentina, previous works reported the presence of two species, *C. vicina* and *C. nigribasis* (Mariluis & Schnack, 1986; Mariluis & Schnack, 2002; Centeno *et al.*, 2002; Mariluis & Mulieri, 2003; Centeno *et al.*, 2004; Mulieri *et al.*, 2006; Patitucci *et al.*, 2011; Whitworth, 2012). The first one is a cosmopolitan species, which probably has a Holarctic origin (Zumpt, 1965); the other species, *C. nigribasis* is native (Mariluis & Peris, 1984; Whitworth, 2012).

The aim of this work is to record for the first time the presence of *C. lopesi* in Argentina, to update the distributional record of the *Calliphora* species in the country. Finally, we provide a key to permit identification of these species.

## MATERIAL AND METHODS

This work is based on the examination of specimens from entomological collections and newly collected material. In addition, we re-examined the specimens studied by previous authors, Schnack *et al.* (1995), Mulieri *et al.* (2011) in order to confirm their identity. With this information and previous published geographical records of the species (e.g. Mariluis & Mulieri, 2003), we compile the geographical distribution of the species. The acronyms of collections cited in this work are as follows:

- MACN Museo Argentino de Ciencias Naturales "Bernardino Rivadavia"
- FML Fundación Miguel Lillo
- MLP Museo La Plata
- MNRJ Universidade Federal de Rio de Janeiro, Museu Nacional do Rio de Janeiro, Brasil.

The identification of flies was established using the key provided by Whitworth (2012). In order to confirm the identity of these species, we dissected and examined the genitalia of *C. nigribasis* and *C. lopesi*. For the study of the genitalia, the structures were extracted and cleared in 90% lactic acid at ambient temperature for 10 days and then mounted on a concave slide. After the study, the dissected parts were placed in a plastic microvial with glycerine and pinned under the specimen. Both male and female genitalia of the species were prepared for microscopic examination. The structures obtained were compared to descriptions and illustrations provided by Whitworth (2012).

The terminology used in the identification key follows McAlpine (1981). Specimen counts by sex, collection dates and locations are given for all specimens examined.

Labels of type specimens are cited verbatim, lines separated by a slash, different labels by semicolon and comments are given in brackets. For a complete list of synonymies of species see Whitworth (2012).

### *Calliphora lopesi* Mello, 1962

**Type material examined:** Male paratype (MNRJ). "Coleção / Campos Seabra"; "Campos do Jordão / S. Paulo Brasil / 8.VII.1957 / K. Lenko leg."; "Paratypus [red label]"; "N 8692 A / Diptera / Inst. Oswaldo Cruz". Specimen with abdomen extracted, genitalia in a plastic microvial pinned below.

Female paratype (MNRJ). "Terezopolis VII-61 / E. do Rio-Brasil / R. Mello [collector]"; "N 8690 A / Diptera / Inst. Oswaldo Cruz". Specimen with abdomen extracted.

Female paratype (MNRJ). "Terezopolis VII-61 / E. do Rio-Brasil / R. Mello [collector]". Both female paratypes in good condition.

**Other material examined. Buenos Aires:** Capital Federal, X-XI/2007, Patitucci leg., 4 males, 11 females (MACN); Ministro Rivadavia, IX-05, Mulieri leg., 1 female (MACN); same data except IX-06, Mulieri leg., 1 female (MACN); Lavallol, X-XII/1992, Centeno leg., 256 males, 202 females (MACN); Villa Elisa, 29-IX-1986, Mariluis leg., 45 males, 37 females (MACN).

**Distribution in Argentina:** Buenos Aires (new record). Fig.1.

### *Calliphora nigribasis* Macquart, 1851

**Type material examined:** Female paratype (MACN). "Argentina-Córdoba / Pampa de Achala / Mariluis col. / 2/75"; "*Calliphora antojuanae* / n. sp. / Mariluis det. 1978"; "Paratypus [red label]"; "*Calliphora antojuanae* / Mariluis, 1982"; "Paratypus *Calliphora/antojuanae* [red label]". Specimen with abdomen extracted, genitalia in a plastic microvial pinned below.

Female holotype (MACN). "Argentina-Córdoba / Pampa de Achala / Mariluis col. / 2/75 /"; "Holotypus [red label]"; "*Calliphora antojuanae*" / "Mariluis det. 1978"; "*Calliphora antojuanae*"; "*Calliphora / nigribasis* Maq / Mariluis det. 84"; "*Calliphora antojuanae* / Mariluis, 1982"; "Holotypus [red label]".

Specimen with abdomen extracted, genitalia in a plastic microvial pinned below.

Female paratype (MACN). "Argentina-Córdoba / Pampa de Achala / Mariluis col. / 2/75 /"; "Paratypus [red label]"; "*Calliphora antojuanae* / n. sp./ Mariluis det. 1978"; "*Calliphora antojuanae*"; "*Calliphora nigribasis* Mq / Mariluis det 84"; "*Calliphora antojuanae* / Mariluis, 1982"; "Paratypus [red label]".

**Other material examined. ARGENTINA.**

**Córdoba:** Pampa de Achala, 24-III-1982, Avalos leg., 9 females (MACN); same data except; XII-1981, 4 females (MACN); Capilla del Monte, 1000 m. a. s. l., I-2001, Mariluis leg., 6 males, 4 females (MACN). **Salta:** Alturas de Amblayo, 3600 m. a. s. l., VII-1986, Mariluis leg., 8 males, 12 females (MACN); El Maray, 2000 m. a. s. l., VII-1986, Mariluis leg., 2 males, 7 females (MACN); Tastil, 3000 m. a. s. l., VII-1986, Mariluis leg., 1 male, 1 females (MACN). **Tucumán:** Hualinchay, 1700 m. a. s. l., III-1979, Mariluis leg., 11 males, 3 females (MACN); Cerro San Javier, IX-2005, Mulieri leg., 1 male (MACN); Taficillo, 780 m. a. s. l., VIII-2010, Olea leg., 1 female (MACN); same data except; IX-2010, 1 male, 2 females (MACN);

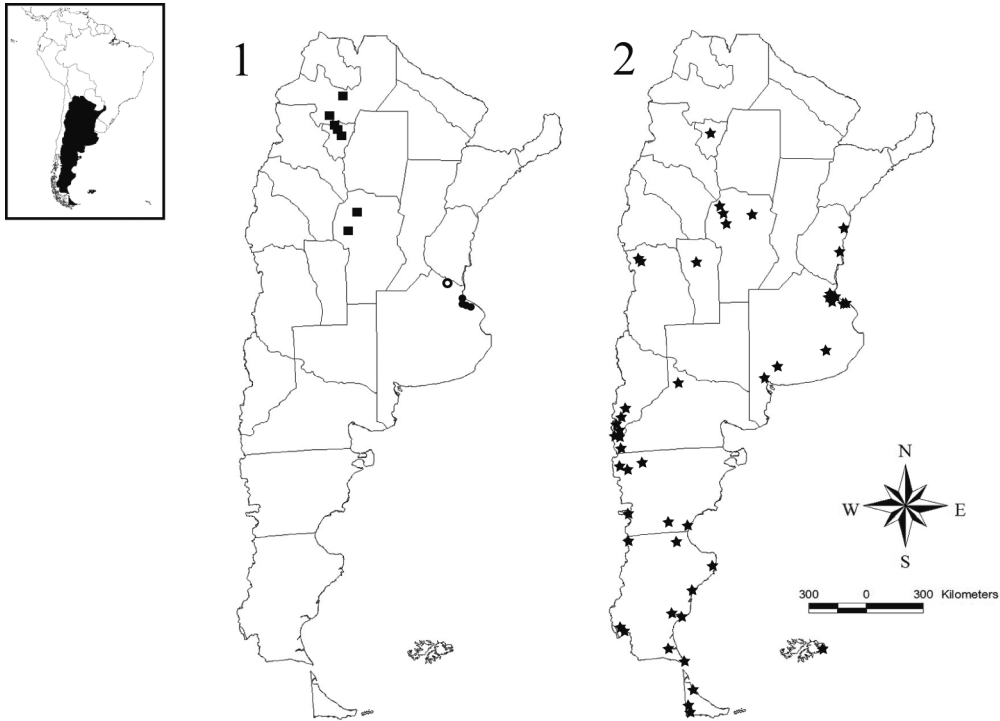
**Distribution in Argentina:** Córdoba, Salta (new record), Tucumán. Fig.1.

**Remark.** The synonymic list provided by Whitworth (2012) states *C. antojuanae* as a new junior synonym of *C. nigribasis*. However, this nomenclatural act was previously proposed in the work of Mariluis & Peris (1984: 82).

***Calliphora vicina* Robineau-Desvoidy, 1830**

**Material examined. Buenos Aires:** Buenos Aires, 28-IX-1925, 1 male, 1 female (MACN); same data except., 25-IX-1925, 1 male (MACN); Buenos Aires, 3-X-1937, Pereira leg., 1 female (MACN); Buenos Aires, 30-IX-1925, Brethes leg., 1 female (MACN); Buenos Aires, 10-V-1949, J. Foerster leg., 1 male (FML); Capital Federal I-1940, 1 female (MACN); Capital Federal XII-1940, 1 male, 1 female (MACN); Capital Federal, 19-XI-1924, Riva leg., 1 female (MACN); Devoto, 22-XI-1925, Bridarolli S. I. leg., 1 female

(MACN); Devoto, 22- XI-1925, Gomez, S. J. leg., 1 female (MACN); Villa Elisa, II-1976, Mariluis leg., 4 males, 4 females (MACN); Burzaco, 23-VI-2002, Mulieri leg., 2 males, 1 female (MACN); Avellaneda, IX-1973, Mariluis leg., 2 females (MACN); San Miguel, XI-1973, Mariluis leg., 1 male, 10 females (MACN); Tandil, V-1998, Mariluis leg., 1 female (MACN); José C. Paz, J. A. Rosas costa leg., 1 female (MLP); La Plata, VII-1982, Allevatto leg., 18 males, 16 females (MLP); Buenos Aires, J. Boso leg., 3 males, 2 females (MLP); Buenos Aires, 1935, M. Viana leg., 1 female (MPL); Buenos Aires, I-1943, 2 males, 1 female (MLP); Sierra de la Ventana, 15-IX-1925, 1 female (MLP); Villa Ballester, I-1952, Juan Foerster leg., 5 males (FML); San Isidro, IX-1954, 2 females (MACN); Sierra de la Ventana, 15-IX-1926, 1 female (MACN); **Chubut:** Piedra Parada, 8-III-1945, Castellanos leg., 1 female (MACN); Comodoro Rivadavia, XII-1938, I. Santoro leg., 1 female (MACN); Comodoro Rivadavia, XII-1938, I. Santoro leg., 1 female (MLP); Futalaufquen, 22-III-1994, Mariluis leg., 7 males, 4 females (MACN); Sarmiento, Ballespin leg., 1 female (FML); Alto Rio Senguer near to Lago Fontana, 05-XI-1980, Dominguez, Claps, Willink & Fidalgo leg., 1 male (FML). **Córdoba:** Capital, 20-VI-1981, Avalos leg., 1 male, 2 females (MACN); same data except., 29-VI-1981, 3 male (MACN); same data except., 11-VII-1981, 3 females (MACN); 15-VII-1981, 3 females (MACN); same data except., 30-IX-1981, 1 female (MACN); same data except., 24-VII-82, 1 male, 4 females (MACN); Los Cocos, VIII-97, Korob leg., 1 female (MACN). **Islas Malvinas:** Puerto Stanley, 8-XII-1974, Coscaron leg., 2 males (MACN). **Mendoza:** Godoy Cruz, 23-IX-1993, Tognelli, M.leg, 1 female (MACN). **Neuquén:** Neuquén, X-1952, Bernasconi leg., 1 female (MACN); San Martin de los Andes, IX-1949, Schajovkoi, 1 male (MACN); San Martin de los Andes, 27-XI-1987, Gentili leg., 27-XI-1987, 1 female (FML); Isla Victoria, XI-1989, Mariluis leg., 8 males, 8 females (MACN); P.de Quettrihue, XI-89, Mariluis leg., 3 males, 10 females (MACN). **Río Negro:** El Bolsón, II-1965, García leg., 1 female (MACN); Lago Nahuel Huapi, 1



**Figs. 1-2.** 1, Geographic distribution of *Calliphora nigribasis* (black square) and *C. lopesi* (black circle) in Argentina, and a possible misidentification of *C. lopesi* as *C. nigribasis* (white circle) [from Patitucci *et al.* 2011]; 2, Geographic distributions in Argentina of *C. vicina* (black star).

female (MACN); San Carlos de Bariloche, 1 female (MACN); San Carlos de Bariloche, 12-II-1977, L. Stange leg., 1 female (FML); same data except., 12-II-1977, L. Stange., 1 female (FML); Puerto Bles, XI-1989, Mariluis leg., 3 males, 8 females (MACN); Cerro Catedral, XI-1989, Mariluis leg., 3 males, 10 females (MACN). **San Luis:** Carolina, I-1950, Squadroni, S. I. leg., 1 female (MACN). **Santa Cruz:** Puerto Deseado, IX-1961, Zapata leg., 1 female (MACN); Puerto Deseado, 16-I-1967, Willink leg., 1 female (FML); Estancia El Negro, II-1976, J. Daciuk leg., 3 males (MACN); Punta Quilla, I-1976, J. Daciuk leg., 5 males, 6 females (MACN); Piedra Buena, I-1976, J. Daciuk leg., 3 males, 5 females (MACN); Río Gallegos, I-1976, J. Daciuk leg., 5 males, 4 females (MACN); Río Gallegos, I-1967, M. Hiller leg., 2 females (FML); Río Gallegos, 22-I-1967, A & E. Willink Garcia leg., 1 male (FML); Estancia. La Matilde, II- 1976, J. Daciuk leg., 1 male, 2 females (MACN); Cabo Virgenes, I-1976,

J. Daciuk leg., 3 males, 5 females (MACN); Puerto San Julián, I-1976, J. Daciuk leg., 2 females (MACN); Glaciar Perito Moreno, XI-1994, Mariluis leg., 1 male, 1 female (MACN); Puerto San Julián, 25-V-1924, P. Saggtzo leg., 1 female (MLP); same data except., 21-V-1924, 1 female (MLP); same data except., 23-V-1924, 4 females (MLP); Lago Argentino Brazo Onelli 25-II-1953, Willink leg., 3 males, 3 females (FML); Lago Argentino, La Cristina, 21-I-1953, Willink leg., 1 male (FML); same data except., 30-I-1953, Willink leg., 1 female (FML). **Tierra del Fuego:** Ushuaia, Lago Roca, 18-XI-1967, Williner, S. J. leg., 1 female (MACN); same data except., 16–17-XI-1967, 2 males (MACN); Natural Park de Tierra Fuego, XI-95, Mariluis leg., 6 males, 13 females (MACN); same data except., XII-95, 7 males, 8 females (MACN); same data except, I-96, 3 males, 4 females (MACN); Usuahia, 07-VII-1983, LSS leg., 1 female (FML); Usuahia, 23-IV-1984, APS Leg., 1 male, 1 female (FML). **Tucumán:**

Tucumán, 20-VIII-1996, Weyrauch leg., 1 male, 2 females (FML); same data except., 10-VIII-1996, 3 females (FML); same data except., 12-VIII-1996, 2 females (FML); same data except., 20-VIII-1996, 2 females (FML); same data except., 24-VIII-1996, 1 female (FML); San Miguel de Tucumán, X-2001, A. G. Ramallo leg., 2 males, 4 females (FML).

**Distribution in Argentina:** Buenos Aires, Chubut, Córdoba, Entre Ríos (Mariluis, 2003), Islas Malvinas, Mendoza, Neuquén, Río Negro, San Luis (**new record**), Santa Cruz, Tierra de Fuego, Tucumán. Fig.2.

**Key to the Argentinean species of the genus *Calliphora* (Modified from Whitworth 2012)**

1-Basicosta yellow; gena reddish, at least on anterior half..... *C. vicina*  
 .-Basicosta and gena black.....2  
 2-Rim and fringe of lower calypter brown with brownish setae; male surstylus broader in lateral view; cerci broad in posterior view (see Whitworth 2012, figs. 12, 13)..... *C. nigribasis*  
 .-Rim and fringe of lower calypter white with whitish setae; male surstylus slender in lateral view; cerci slender in posterior view (see Whitworth 2012, figs. 10, 11)..... *C. lopesi*

**DISCUSSION**

The species of *Calliphora* exhibit different patterns of distribution in Argentina. *Calliphora vicina* is widely distributed (Mariluis & Mulieri, 2003), but based on the locations where the specimens were found, and the data obtained from literature (Mariluis & Mulieri, 2003), there were no records of this species from the highlands (above 800 m.a.s.l.). *Calliphora nigribasis* is eurythermal, able to tolerate a wide range of temperatures and it lives in a wide range of habitats (Baumgartner & Greenberg, 1985). According to our records, we observed that *C. nigribasis* is distributed in the northwestern region of the country inhabiting highland areas (780 to 3600 m.a.s.l.). *Calliphora*

*lopesi* is distributed in the central-east of Argentina, on the western shore of the Río de la Plata, this finding agrees with the distribution suggested by Whitworth (2012). We found the specimens determined by Schnack *et al.* (1995) as *C. nigribasis* were misidentifications, and we confirm their identity as *C. lopesi*. In addition, we identified as *C. lopesi* those specimens captured by Mulieri *et al.* (2011) in Buenos Aires province. These findings suggest that all identifications of *C. nigribasis* made by (Mariluis & Schnack, 1986; Mariluis & Mulieri, 2003; Centeno *et al.*, 2002; Centeno *et al.*, 2004; Mulieri *et al.*, 2006; Patitucci *et al.*, 2011) for Buenos Aires province are presumably misidentifications of *C. lopesi*.

The three species of *Calliphora* occur in different environments along urban-rural gradients (Baumgartner & Greenberg, 1985; Mariluis & Schnack, 1989; Schnack *et al.*, 1995). *Calliphora vicina* is a cosmopolitan species and is frequently associated to urbanized areas, adults were found frequently in areas of markets and houses (Guimaraes *et al.*, 1983; Mariluis & Schnack, 1989; Schnack *et al.*, 1995). *Calliphora nigribasis* is a hemisynanthropic species (species associated to mid urbanized sites), and was found in suburban areas (Baumgartner & Greenberg, 1985). According to Schnack *et al.*, (1995) and Centeno *et al.*, (2004), *C. lopesi* is an asinanthropic species (species associated to wild sites).

In the present work we extend the geographical range of *C. lopesi* to Argentina. Knowledge of the distribution of species of *Calliphora* has a great impact because of their potential as forensic indicators (Carvalho & Mello-Patiu, 2008).

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