ISSN 0373-5680 (impresa), ISSN 1851-7471 (en línea) Revista de la Sociedad Entomológica Argentina 74 (1-2): 37-46, 2015

Preliminary survey and inventory of Calliphoridae and Sarcophagidae (Diptera) in the province of Corrientes, Argentina, with new records of species with forensic importance

DUFEK, Matias I.[1], Elena B. OSCHEROV[1] & Pablo R. MULIERI[2]

[1]Universidad Nacional del Nordeste, Facultad de Ciencias Exactas y Naturales y Agrimensura, Biología de los Artrópodos, Av. Libertad 5470, Corrientes, Argentina. E-mail: matias.dufek@gmail.com, eboscherov@yahoo.com.ar
[2]Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Buenos Aires, Argentina. Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (MACN) Av. Ángel Gallardo 470, Buenos Aires, Argentina. E-mail: mulierii@yahoo.com

Estudio preliminar e inventario de Calliphoridae y Sarcophagidae (Diptera) en la provincia de Corrientes, Argentina, con nuevos registros de especies con importancia forense

RESUMEN. Este es el primer estudio que presenta un inventario faunístico de Calliphoridae y Sarcophagidae (Diptera) de la provincia de Corrientes, Argentina. El trabajo se basó en muestreos realizados en diferentes lugares dentro de los Esteros del Iberá y el Parque Nacional Mburucuyá, en registros bibliográficos, y en el examen de material depositado en varias colecciones entomológicas. Se enumeran 17 especies de Calliphoridae y 27 de Sarcophagidae de la provincia de Corrientes. Veinticinco especies son registradas por primera vez de Corrientes. Cuatro de estas, *Argoravinia brasiliana* (Lopes, 1988), *Chrysomya putoria* (Wiedemann, 1830), *Oxyvinia excisa* (Lopes, 1950) y *Peckia (Euboettcheria) pascoensis* (Lopes, 1990), se registran por primera vez de la Argentina. Además se destaca la relevancia forense y sanitaria de las especies registradas de la provincia.

PALABRAS CLAVE. Calyptratae. Diversidad. Entomología forense. Nuevos registros. Oestroidea.

ABSTRACT. This is the first study dealing with the diversity and distribution of Calliphoridae and Sarcophagidae (Diptera) inhabiting the province of Corrientes, Argentina. The work was based on samplings at different locations within the Iberá Marshes and Mburucuyá National Park, bibliographic records, and the examination of materials deposited in several entomological collections. Seventeen species of Calliphoridae and 27 of Sarcophagidae were listed. Twenty five species are recorded for the first time from Corrientes. Four species, *Argoravinia brasiliana* (Lopes, 1988), *Chrysomya putoria* (Wiedemann, 1830), *Oxyvinia excisa* (Lopes, 1950) and *Peckia (Euboettcheria) pascoensis* (Lopes, 1990), are cited for the first time in Argentina. A list of species recorded with forensic importance is also presented.

KEY WORDS. Calyptratae. Diversity. Forensic entomology. New records. Oestroidea.

INTRODUCTION

Among Oestroidea, families Calliphoridae and Sarcophagidae contain numerous species of medical and veterinary importance. The Calliphoridae, which is comprised of approximately 150 genera, with over 1000 species described worldwide (Shewell, 1987), is represented by less than 100 spe-

Recibido: 23-II-2015; aceptado: 21-IV-2015

cies in the Neotropical region, most of them having necrophagous habits (Mulieri *et al*., 2014). Sarcophagidae is a biologically diverse group, including more than 3100 species in 173 genera, with a rich Neotropical fauna comprised of more than 800 species (Mello-Patiu *et al.,* 2014). Both families are among the most important groups as forensic indicators (Carvalho & Mello-Patiu, 2008; Aballay *et al*., 2011; Mulieri *et al*., 2012; Alves *et al*., 2014); and include the existence of species causing myiasis (Mariluis, 2002a; Olea *et al*., 2014).

In the last decades, the knowledge of the diversity of Calliphoridae and Sarcophagidae has steadily increased in Argentina (e.g. Buenos Aires or the Patagonian provinces) (Mello-Patiu *et al*., 2014; Mulieri *et al*., 2014), but there are still large areas of the country that remains unexplored. One of these areas is the province of Corrientes, located in the northeast of Argentina (27° 08' S, 58° 50' W). This province has an area of 88,199 km^2, and four ecoregions are represented in it: Paranaense Province, Humid Chaco, Espinal and Paraná flooded savanna (Olson *et al*., 2001). These biogeographic convergences make of this area an interesting site for the study of Calyptratae due to its diversified landscape structure (Cabrera, 1976).

The available information regarding the distribution of Calliphoridae and Sarcophagidae is uneven in Argentina, although in the case of the province of Corrientes there are very few data. Garcia (1959) listed the species of Calliphoridae in Argentina, but only one of them was recorded form Corrientes. Mariluis (1982) increased to four species the records of this province. Later, Mariluis & Mulieri (2003) recorded a total of 25 calliphorid species for the country, nine of which were recorded from Corrientes. Early researches on Sarcophagidae from Argentina were made by Bréthes (1916, 1920), Blanchard (1939, 1942, 1955) and Mariluis (2002b, 2002c, 2004, 2005, 2006) but the family remains poorly known. New contributions on systematic and biology of this family have been recently published by Mulieri *et al.* 2010; Mulieri & Mariluis, 2011; Mulieri & Mello-Patiu, 2013. Recently, Mello-Patiu *et al*. (2014) published a check list of 131 species present in Argentina, of which only 10 are recorded in Corrientes.

The aim of this paper is to update the knowledge on the diversity of Calliphoridae and Sarcophagidae inhabiting the province of Corrientes, and to discuss medical and veterinary potential impact of these species.

MATERIALS AND METHODS

This work is based on specimens collected in different locations of the Ibera Marshes and Mburucuyá National Park. This information was supplemented by two additional sources of data: bibliographic records and the examination of materials deposited in entomological collections.

The bibliographical information was obtained from the following works: Aldrich (1930), Blanchard (1938, 1939, 1942), Bréthes (1907), Buenaventura & Pape (2013), García (1959), Mariluis & Mulieri (2003), Mello-Patiu *et al.* (2014), Mulieri *et al*. (2010), Olea *et al.* (2011), Pape (1996), Vairo *et al.* (2011), Whitworth (2014).

The entomological collections studied were from: Universidad Nacional del Nordeste, Corrientes, Argentina (UNNE); Fundación de Historia Natural Félix de Azara, Buenos Aires, Argentina (CFA); Facultad de Agronomía, Universidad de Buenos Aires, Buenos Aires, Argentina (FAUBA); Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina (MACN); Museo de la Plata, La Plata, Argentina (MLP).

Study Area (Fig. 1)

The Ibera Marshes are located in the north-central province of Corrientes covering an area of over 12000 km^2. It is one of the largest wetlands in South America (Bonetto & Hurtado, 1998; De Neiff & Neiff, 2006). Its extension is framed by three Biogeographical districts: the Humid Chaco, the Paranaense province and the Espinal (Morrone, 2014). The experimental samples were taken at different locations within the Ibera Marshes: Cambyretá (27º 52´ 6.3" S, 56º 52´ 49.6" W), Capitá Miní (28º 56´ 23" S, 58º 22´ 22.6" W), Estancia El Dorado (28º 44´ 25.4" S, 58º 7´ 36.4" W), Galarza (28º 6´ 7.5" S, 56º 40´ 46.6" W), San Miguel (27º 59' 42.7" S, 57º 35' 25.9" W) and San Nicolás (28º 10´ 40.6" S, 57º 26´ 50.9" W).

The Mburucuyá National Park is located in the Humid Chaco Province, northwest of Corrientes province, between latitudes 57° 59´ and 58° 08´ W and 27° 58´ and 26° 05´ S, about 11 kilometres from the town of Mburucuyá.

Methodology used

Flies were collected using Van Someren-Rydon canopy traps (Rydon, 1964) with two dif-

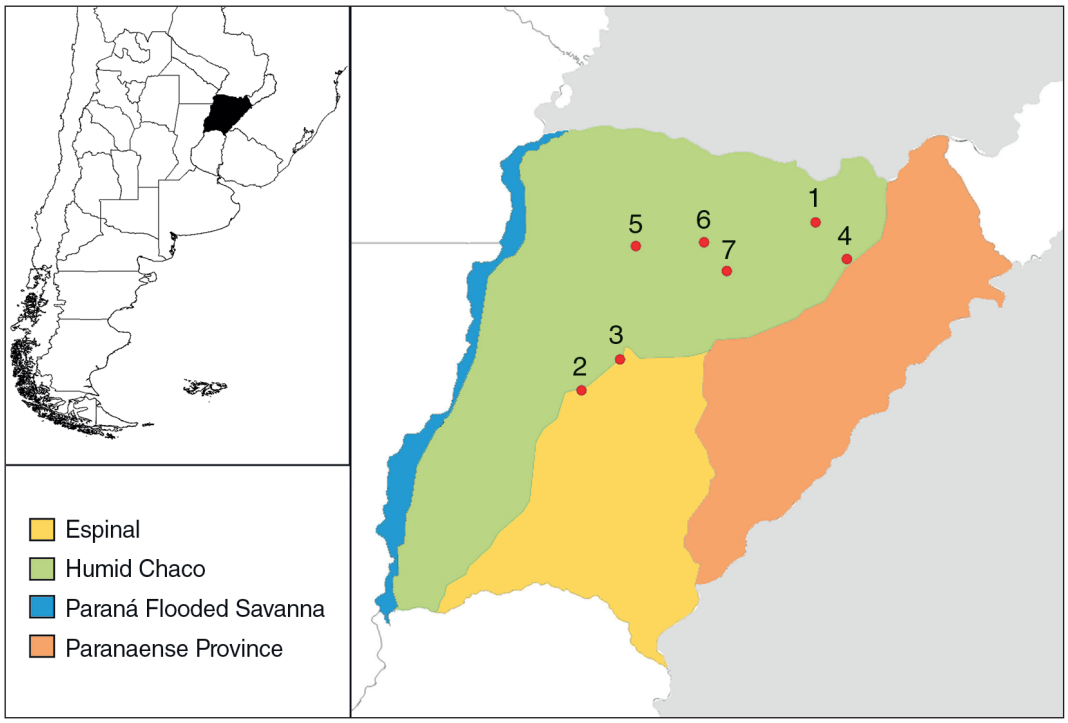

Fig. 1. Map of Argentina illustrating Corrientes province and its ecoregions. Locations of experimental samples: 1, Cambyretá; 2, Capitá Miní; 3, Estancia El Dorado; 4, Galarza; 5, Mburucuyá National Park; 6, San Miguel; 7, San Nicolás.

ferent baits: rotten squid or bananas fermented with yeast. The traps were placed in forests and were suspended 2 m from ground level. At each collection localities, six traps were used, three with each bait type for 48 hours. Sampling was conducted during summer months, from November 2012 to October 2014. We sorted and pinned the specimens and, in the case of Sarcophagidae, the male terminalia was exposed with entomology pins according to the technique described by Dahlem & Naczi (2006).

Identification of specimens

The determination of the specimens was carried out following keys Rognes & Paterson (2005), Silva *et al.* (2012), Olea & Mariluis (2013), Whitworth (2014), Irish *et al.* (2014) and Mulieri *et al.* (2014) for Calliphoridae. For the classification of Sarcophagidae the following keys are used Lopes & Tibana (1987), Mulieri *et al.* (2010), Vairo *et al.* (2011), Buenaventura & Pape (2013) and Mello-Patiu *et al.* (2014). The identification is also supported by comparison with reference specimens deposited in the MACN.

The work of Alves *et al.* (2014) was used for the classification of forensically important insects. Additional references on medical importance of species are cited in text.

RESULTS

Nine species of Calliphoridae and 10 of Sarcophagidae were previously cited in the province of Corrientes. Through this work the number of species is increased to 17 and 27 respectively. Twenty-five species are recorded for the first time in the province of Corrientes, four of which are new records form Argentina. A total of 270 specimens were analyzed, 221 collected with traps and 49 specimens studied from entomological collections.

The number of species only recorded from bibliographical sources (i.e. not obtained in samples and entomological collections) was five Calliphoridae and six Sarcophagidae. On the other hand, 32 of the 44 species listed for Corrientes in this work were previously associated to carcasses and corpses, and consequently considered important from a forensic point of view (Table I).

Table I. List of species recorded in Corrientes (from samples, bibliography and entomological collections) with references to forensic and medical importance.

Species	Source			Forensic importance	Sanitary potential
	Samples	Bibliography	Museum		
CALLIPHORIDAE					
Calliphora lopesi	x			x	
Lucilia cuprina	x		x	x	
Lucilia eximia	x	x		x	
Lucilia ochricornis	x		x		
Lucilia sericata		x		x	x
Cochliomyia hominivorax	x	x	x	x	x
Cochliomyia macellaria	x	x		x	
Compsomyiops fulvicrura		x		x	
Chloroprocta idioidea	x			x	
Chrysomya albiceps	x			x	
Chrysomya chloropyga		x		x	
Chrysomya megacephala	x			x	
Chrysomya putoria	x		x	x	
Chrysomya rufifacies	x			x	
Hemilucilia segmentaria		x		x	
Paralucilia pseudolyrcea		x		x	
Sarconesia chlorogaster		x	x	x	
SARCOPHAGIDAE					
Argoravinia brasiliana			x		
Argoravinia rufiventris			x	x	
Blaesoxipha (Acridiophaga) caridei		x			
Dexosarcophaga (Dexosarcophaga) chaetosa		x			
Dexosarcophaga (Dexosarcophaga) lenkoi		x		x	
Helicobia aurescens		x		x	
Helicobia rapax		x		x	
Lepidodexia (Gymnocamptops) rubriventris		x			
Oxysarcodexia admixta	x			x	
Oxysarcodexia avuncula	x		x	x	
Oxysarcodexia confusa	x				
Oxysarcodexia culmiforceps	x		x	x	
Oxysarcodexia marina			x		
Oxysarcodexia paulistanensis			x	x	
Oxysarcodexia thornax	x	x	x	x	
Oxysarcodexia varia			x		
Oxivinia excisa	x			x	
Peckia (Euboettcheria) australis	x			x	
Peckia (Euboettcheria) collusor			x	x	
Peckia (Euboettcheria) pascoensis	x				
Peckia (Pattonella) resona	x	x		x	
Peckia (Peckia) enderleini	x		x		
Ravinia advena			x	x	
Ravinia aureopyga			x		
Ravinia belforti		x	x	x	
Tricharaea (Sarcophagula) occidua		x	x	x	
Udamopyga setigena			x		

Material examined

Family Calliphoridae

Subfamily Calliphorinae

***Calliphora lopesi* Mello, 1962**

Specimen examined: Corrientes. Cambyretá, 06-XI-2013, 1 female, trap baited with squid, M. I. Dufek (UNNE).

Distribution in Argentina: Buenos Aires, Corrientes **(new record).**

***Lucilia cuprina* (Wiedemann, 1830)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 1 female, trap baited with squid, M. I. Dufek (UNNE); Corrientes City, III-2006, 1 female, E. B. Oscherov (UNNE); San Miguel, 26-X-2014, 4 males, 3 females, trap baited with squid, M. I. Dufek (UNNE).

Distribution in Argentina: Buenos Aires, Corrientes **(new record)**, Entre Ríos, Salta.

***Lucilia eximia* (Wiedemann, 1819)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 2 females, 1 male, trap baited with squid, M. I. Dufek (UNNE); Galarza, 22-XI-2012, 2 females, 1 male, trap baited with banana, E. B. Oscherov (UNNE); San Nicolás, 20-XI-2012, 1 female, 2 males, trap baited with squid, E. B. Oscherov (UNNE).

Distribution in Argentina: Buenos Aires, Catamarca, Corrientes, Entre Ríos, Misiones, Tucumán.

***Lucilia ochricornis* (Wiedemann, 1830)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 4 females, 3 males, trap baited with squid, M. I. Dufek (UNNE); Corrientes City, IV-2006, 1 male, E. B. Oscherov (UNNE); Estancia El Dorado, 13-XII-2013, 1 female, trap baited with squid, M. I. Dufek (UNNE); Galarza, 22-XI-2012, 3 females, 2 males, trap baited with squid, 2 females, trap baited with banana, E. B. Oscherov (UNNE); San Nicolás, 20-XI-2012, 2 females, 2 males, trap baited with squid, E. B. Oscherov (UNNE).

Distribution in Argentina: Buenos Aires, Catamarca, Corrientes **(new record)**, Entre Ríos, Jujuy, Misiones, Tucumán.

Note: According to the distribution provided by Whitworth (2014) for *L. cluvia* (Walker, 1849) the presence of this species in the province of Corrientes would be due to misidentification of *L. ochricornis* by Mariluis & Mulieri (2003). In this work *L. ochricornis* is registered for the first time in the province of Corrientes.

Subfamily Chrysomyinae

***Cochliomyia hominivorax* (Coquerel, 1858)**

Specimens examined: Corrientes. Corrientes City, III-2006, 1 female, E. B. Oscherov (UNNE); Galarza, 22-XI-2012, 1 female, trap baited with squid, E. B. Oscherov (UNNE); San Nicolás, 20-XI.2012, 1 female, trap baited with squid, E. B. Oscherov (UNNE).

Distribution in Argentina: Buenos Aires, Chaco, Córdoba, Corrientes, Formosa, Jujuy, Misiones, Santa Fe.

***Cochliomyia macellaria* (Fabricius, 1775)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 6 males, trap baited with squid, M. I. Dufek (UNNE); Estancia El Dorado, 13-XII-2013, 6 females, 1 male, trap baited with squid, M. I. Dufek (UNNE); Galarza, 22-XI-2012, 6 females, 2 males, trap baited with squid, E. B. Oscherov (UNNE); San Miguel, 26-X-2014, 1 female, 1 male, trap baited with squid, M. I. Dufek (UNNE); San Nicolás, 20-XI-2012, 5 females, 2 males, trap baited with squid, E. B. Oscherov (UNNE).

Distribution in Argentina: Buenos Aires, Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Misiones, Río Negro, Salta, Santa Cruz, Santa Fe, Santiago del Estero, Tucumán.

***Chrysomya albiceps* (Wiedemann, 1819)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 7 females, 1 male, trap baited with squid, M. I. Dufek (UNNE); Estancia El Dorado, 13-XII-2013, 5 females, 1 male, trap baited with squid, M. I. Dufek (UNNE); Galarza, 22-XI-2012, 8 females, trap baited with squid, E. B. Oscherov (UNNE); San Miguel, 26-X-2014, 5 females, 1 male, trap baited with squid, M. I. Dufek (UNNE); San Nicolás, 20-XI-2012, 6 females, trap baited with squid, E. B. Oscherov (UNNE); Mburucuyá National Park, 01-V-2010, 3 females, trap baited with squid, V. Fernández (UNNE).

Distribution in Argentina: Buenos Aires, Córdoba, Corrientes **(new record)**, Misiones, Río Negro, Salta, Santa Fe, Tucumán.

***Chrysomya megacephala* (Fabricius, 1794)**

Specimens examined: Corrientes. Camb-

yretá, 06-XI-2013, 1 female, 3 males, trap baited with squid, M. I. Dufek (UNNE); Galarza, 22-XI-2012, 2 males, trap baited with squid, E. B. Oscherov (UNNE); San Miguel, 26-X-2014, 11 females, 8 males, trap baited with squid, M. I. Dufek (UNNE).

Distribution in Argentina: Buenos Aires, Corrientes **(new record)**, Misiones, Santa Fe, Tucumán.

***Chrysomya putoria* (Wiedemann, 1830)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 1 female, trap baited with squid, M. I. Dufek (UNNE); Corrientes City, III-2006, 2 females, E. B. Oscherov (UNNE); Galarza, 22-XI-2012, 3 females, trap baited with squid, E. B. Oscherov (UNNE); San Miguel, 26-X-2014, 6 females, 3 males, trap baited with squid, M. I. Dufek (UNNE); San Nicolás, 20-XI-2012, 4 females, trap baited with squid, E. B. Oscherov (UNNE).

Distribution in Argentina: Corrientes **(new record)**.

***Chrysomya rufifacies* (Macquart, 1843)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 2 females, trap baited with squid, M. I. Dufek (UNNE); Galarza, 22-XI-2012, 1 female, trap baited with squid, E. B. Oscherov (UNNE).

Distribution in Argentina: Corrientes **(new record)**.

***Chloroprocta idioidea* (Robineau Desvoidy, 1830)**

Specimens examined: Corrientes. Estancia El Dorado, 13-XII-2013, 2 females, trap baited with squid, M. I. Dufek (UNNE); Galarza, 22-XI-2012, 9 females, 2 males, trap baited with banana, E. B. Oscherov (UNNE); San Nicolás, 20-XI-2012, 6 females, 4 males, trap baited with squid, E. B. Oscherov (UNNE).

Distribution in Argentina: Corrientes **(new record)**, Misiones.

Subfamily Toxotarsinae

***Sarconesia chlorogaster* (Wiedemann, 1830)**

Specimens examined: Corrientes. Corrientes City, III-2006, 2 females, E. B. Oscherov (UNNE).

Distribution in Argentina: Buenos Aires, Chubut, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, La Pampa, Mendoza, Río Negro, San Luis, Santa Cruz, Santa Fe, Tucumán.

Family Sarcophagidae

Subfamily Sarcophaginae

***Argoravinia brasiliana* (Lopes, 1988)**

Specimen examined: Corrientes. San Cayetano, 13-II-2009, 1 male, L. Patitucci (MACN).

Distribution in Argentina: Corrientes **(new record)**.

***Argoravinia rufiventris* (Wiedemann, 1830)**

Specimens examined: Corrientes. I-1939, 2 males (MACN).

Distribution in Argentina: Corrientes **(new record)**, Misiones.

***Oxysarcodexia admixta* (Lopes, 1933)**

Specimens examined: Corrientes. Estancia El Dorado, 13-XII-2013, 3 males, trap baited with squid, M. I. Dufek (UNNE); Mburucuyá National Park, 1-V-2010, 2 males, trap baited with banana, V. Fernández (UNNE); San Miguel, 28-X-2014, 1 male, trap baited with squid, M. I. Dufek (UNNE).

Distribution in Argentina: Corrientes **(new record)**, Misiones.

***Oxysarcodexia avuncula* (Lopes, 1933)**

Specimens examined: Corrientes. Galarza, 22-XI-2012, 3 males, trap baited with squid, E. B. Oscherov (UNNE); Mburucuyá National Park, 1-V-2010, 1 male, trap baited with banana, V. Fernández (UNNE); III-1938, 1 male D'Angelo (MACN).

Distribution in Argentina: Corrientes **(new record)**, Misiones.

***Oxysarcodexia confusa* Lopes, 1946**

Specimen examined: Corrientes. Estancia El Dorado, 13-XII-2013, 1 male, trap baited with squid, M. I. Dufek (UNNE).

Distribution in Argentina: Corrientes **(new record)**, Misiones.

***Oxysarcodexia culmiforceps* Dodge, 1966**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 1 male, trap baited with squid, M. I. Dufek (UNNE); Galarza, 22-XI-2012, 1 male, trap baited with squid, E. B. Oscherov (UNNE); Iberá Marshes, VIII-1997, 3 males, Korob (MACN).

Distribution in Argentina: Buenos Aires, Corrientes **(new record)**, Entre Ríos, Misiones.

***Oxysarcodexia marina* (Hall, 1938)**

Specimen examined: Corrientes. X-1938, 1 male (MACN).

Distribution in Argentina: Buenos Aires, Corrientes **(new record)**, Mendoza.

***Oxysarcodexia paulistanensis* (Mattos, 1919)**

Specimens examined: Corrientes. Iberá Marshes, VIII-1997, 1 male, Korob (MACN); San Miguel, 28-X-2014, 2 males, trap baited with squid, M. I. Dufek (UNNE).

Distribution in Argentina: Buenos Aires, Córdoba, Corrientes **(new record)**, Entre Ríos, Mendoza, Tucumán.

***Oxysarcodexia thornax* (Walker, 1849)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 1 male, trap baited with squid, M. I. Dufek (UNNE); Estancia El Dorado, 13-XII-2013, 1 male, trap baited with squid, M. I. Dufek (UNNE); Ituzaingó, XII-1976, 1 male, J. C. Mariluis (MACN); Mburucuyá National Park, 1-V-2010, 1 male, trap baited with banana, V. Fernández (UNNE); San Cayetano, 13-II-2009, 1 male, L. Patitucci (MACN); San Miguel, 28-X-2014, 6 males, trap baited with squid, M. I. Dufek (UNNE); IV-1942, 1 male (MACN).

Distribution in Argentina: Buenos Aires, Catamarca, Corrientes, Jujuy, Misiones, Tucumán.

***Oxysarcodexia varia* (Walker, 1836)**

Specimens examined: Corrientes. Goya, III-1974, 1 female (CFA); Ituzaingó, 10-X-1978, 1 female, 1 male, J. C. Mariluis (MACN); Parada Pucheta, 13-VI-1927, 1 female (MACN).

Distribution in Argentina: Buenos Aires, Corrientes **(new record)**, Mendoza, Neuquén, Tucumán.

***Oxivinia excisa* (Lopes, 1950)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 1 male, trap baited with squid, M. I. Dufek (UNNE); Galarza, 22-XI-2012, 1 male, trap baited with squid, E. B. Oscherov (UNNE).

Distribution in Argentina: Corrientes **(new record)**.

***Peckia (Euboettcheria) australis* (Townsend, 1927)**

Specimens examined: Corrientes. Capitá Miní, 06-III-2014, 1 male, trap baited with squid, M. I. Dufek (UNNE); Estancia El Dorado, 13-XII-2013, 1 male, trap baited with squid, M. I. Dufek (UNNE); San Miguel, 28-X-2014, 1 male, trap baited with squid, M. I. Dufek (UNNE).

Distribution in Argentina: Corrientes **(new record)**, Misiones.

***Peckia (Euboettcheria) collusor* (Curran & Walley, 1934)**

Specimen examined: Corrientes. Ituzaingó, 2-V-1977, 1 male, Crouzel (MLP).

Distribution in Argentina: Corrientes **(new record)**, Misiones.

***Peckia (Euboettcheria) pascoensis* (Lopes, 1990)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 1 male, trap baited with squid, M. I. Dufek (UNNE); Estancia El Dorado, 13-XII-2013, 1 male, trap baited with squid, M. I. Dufek (UNNE).

Distribution in Argentina: Corrientes **(new record)**.

***Peckia (Pattonella) resona* (Lopes, 1935)**

Specimens examined: Corrientes. Estancia El Dorado, 13-XII-2013, 4 males, trap baited with squid, M. I. Dufek (UNNE).

Distribution in Argentina: Buenos Aires, Corrientes, Misiones.

***Peckia (Peckia) enderleini* (Engel, 1931)**

Specimens examined: Corrientes. Cambyretá, 06-XI-2013, 7 males, trap baited with squid, M. I. Dufek (UNNE); Estancia El Dorado, 13-XII-2013, 1 male, trap baited with squid, M. I. Dufek (UNNE); Ituzaingó, XII-1976, 2 females, 10 males, J. C. Mariluis (MACN); San Cayetano, 13-II-2009, 1 female, L. Patitucci (MACN); San Miguel, 28-X-2014, 3 males, trap baited with squid, M I. Dufek (UNNE); Mburucuyá National Park, 01-V-2010, 1 male, trap baited with squid, V. Fernández (UNNE).

Distribution in Argentina: Chaco, Corrientes **(new record)**, Misiones, Tucumán.

***Ravinia advena* (Walker, 1853)**

Specimens examined: Corrientes. Ituzaingó, XII-1976, 1 male, J. C. Mariluis (MACN); X-1938, 1 male (MACN).

Distribution in Argentina: Buenos Aires, Corrientes **(new record)**, Misiones, Salta.

***Ravinia aureopyga* (Hall, 1928)**

Specimens examined: Corrientes. San Roque,

II-1920, 1 female (MACN); I-1939, 2 females, 4 males (MACN).

Distribution in Argentina: Buenos Aires, Córdoba, Corrientes **(new record)**, Chaco, Entre Ríos, Santa Fe.

***Ravinia belforti* (Prado & Fonseca, 1932)**

Specimen examined: Corrientes. San Cayetano, 13-II-2009, 1 male, L. Patitucci (MACN).

Distribution in Argentina: Corrientes, Misiones.

Note: Blanchard (1939) records *R. sueta* (Wulp, 1895) of material from Corrientes. However, Lopes & Leite (1991) indicate that Blanchard's record attributed to that species corresponds to *R. belforti.*

***Tricharaea (Sarcophagula) occidua* (Fabricius, 1794).**

Specimen examined: Corrientes. Mercedes, Paraje Boquerón, 1 male (FAUBA).

Distribution in Argentina: Buenos Aires, Corrientes, Entre Ríos.

***Udamopyga setigena* (Enderlein, 1928)**

Specimen examined: Corrientes. X-1938, 1 male (MACN).

Distribution in Argentina: Corrientes **(new record)**, Misiones.

DISCUSSION

Northeastern Argentina has some of the most biodiverse and threatened ecoregions of the country due to land conversion for agriculture, logging, industrialization and urban growth (Dinerstein *et al*., 1995). Calyptratae flies are one of the most diverse insect groups, however, there is little information regarding the Calliphoridae and Sarcophagidae fauna of the studied area. The results of this study will help to better understand the regional diversity and distribution of Calliphoridae and Sarcophagidae. This is the first study that deals exclusively with species of both families focusing in the province of Corrientes, Argentina.

In large parts of the world and for the majority of species, data describing distributions are scarce. Museums, biological collections and the historical literature offer a vast source of information on distributions (Newbold, 2010). For the purpose of this study, the information exclusively obtained from natural history museums added nine species. These results highlight the importance of collections and museums of natural history to supplement information from sampling, allowing a better description of diversity of a particular area.

Regarding the forensic importance of both families, the use of Calliphoridae as forensic indicators is well known in Argentina (Oliva, 1997; Centeno *et al*., 2002; Battán-Horenstein *et al*., 2005; Aballay *et al*., 2008). By contrast, the Sarcophagidae associated to cadavers were identified to genus-level (Battán-Horenstein *et al*., 2005; Aballay *et al*., 2008), with the exception of a few works dealing with *Microcerella* spp Macquart, 1851 and *Sarcophaga* spp Meigen, 1826 (Oliva, 1997; Mulieri *et al*., 2012). In addition, myiasis-causing species have been previously cited in the province of Corrientes, as *L. sericata* and *C. hominivorax* (Del Ponte, 1958; Mariluis & Guarnera, 1983), however, to date there are no studies that refer to the damage they can cause to humans and cattle at a local scale.

Data collected on both families can be used to develop forensic applications at a regional scale or to control recognize pest species.

ACKNOWLEDGEMENTS

Part of this research was funded by the Secretaría General de Ciencia y Técnica, Programa Iberá + 10 (12IF04) Universidad Nacional del Nordeste, and FONCyT (Grant PICT 2012 Nº 0231). We are grateful to Luciano D. Patitucci for his valuable help during the work in MACN.

LITERATURE CITED

ABALLAY, F. H., A. F. MURÚA, J. C. ACOSTA & N. CENTENO. 2008. Primer registro de artropodofauna cadavérica en sustratos humanos y animales en San Juan, Argentina. *Revista de la Sociedad Entomológica Argentina* 67: 157-163.

ABALLAY, F. H., F. FERNÁNDEZ CAMPÓN, P. R. MULIERI & S. V. URQUIZA. 2011. Sarcophagidae (Diptera) de importancia forense en la puna de Catamarca, Argentina: la ovoviviparidad como ventaja en condiciones de extrema aridez. *Revista de la Sociedad Entomológica Argentina* 70: 255-266.

ALDRICH, J. M. 1930. Notes on the Types of American two-winged Flies of the Genus *Sarcophaga* and a few related Forms described by the early Authors. *Proceedings of the United States National Museum* 78: 1-39.

ALVES, A. C. F., W. E. DOS SANTOS & A. J. CREÃO-DUARTE. 2014. Diptera (Insecta) de importância forense da região Neotropical. *Entomotropica* 29: 77-94.

BATTÁN-HORENSTEIN, M., M. I. ARNALDOS, B. ROSSO & M. D. GARCÍA. 2005. Estudio preliminar de la comunidad sarcosaprófaga en Córdoba (Argentina): aplicación a la entomología forense. *Anales de Biología* 27: 191-201.

BLANCHARD, E. E. 1938. Descripciones y anotaciones de dípteros argentinos. *Anales de la Sociedad Científica Argentina* 126: 345-386.

BLANCHARD, E. E. 1939. Los sarcofágidos argentinos, contribución a su conocimiento. *Physis* 17: 791–856.

BLANCHARD, E. E. 1942. Los sarcofágidos argentinos, segunda contribución a su conocimiento. *Physis* 19: 133–172.

BLANCHARD, E. E. 1955. Nuevos sarcofágidos argentinos (Diptera). *Revista de la Sociedad Entomológica Argentina* 18: 27-34.

BONETTO, A. A. & S. HURTADO. 1998. Cuenca del plata. Los Humedales de la Argentina. Clasificación, situación actual, conservación y legislación. *Wetlands Internacional* 46: 31-72.

BRÉTHES, J. 1907. Catálogo de los Dípteros de las Repúblicas del Plata. *Anales del Museo Nacional de Buenos Aires* 16: 277-305.

BRÉTHES, J. 1916. Descripción de una nueva mosca langosticida. *Anales del Museo Nacional de Buenos Aires* 28: 141-144.

BRÉTHES, J. 1920. Insectos útiles y dañinos de Rio Grande do Sul y de la Plata. *Anales Sociedad Rural Argentina* 2: 281-291.

BUENAVENTURA, E., & T. PAPE. 2013. Revision of the New World genus *Peckia* Robineau-Desvoidy (Diptera: Sarcophagidae). *Zootaxa* 3622: 1-87.

CABRERA, A. L. 1976. Regiones fitogeográficas argentinas. *In*: Kugler, W. F. (ed.), *Enciclopedia Argentina de Agricultura y Jardinería*, II, ACME, Buenos Aires, pp. 1-85.

CARVALHO, C. J. B. & C. A. MELLO-PATIU. 2008. Key to the adults of the most common forensic species of Diptera in South America. *Revista Brasileira de Entomologia* 52: 390–406.

CENTENO, N., M. MALDONADO & A. OLIVA. 2002. Seasonal patterns of arthropods occurring on sheltered and unsheltered pig carcasses in Buenos Aires Province (Argentina). *Forensic Science International* 126: 63-70.

DAHLEM, G. A. & R. F. C. NACZI. 2006. Flesh flies (Diptera: Sarcophagidae) associated with North American pitcher plants (Sarraceniaceae), with descriptions of three new species. *Annals of the Entomological Society of America* 99: 218-240.

DE NEIFF, A. P. & J. J. NEIFF. 2006. Riqueza de especies y similaridad de los invertebrados que viven en plantas flotantes de la planicie de inundación del río Paraná (Argentina). *Interciencia* 31: 220-225.

DEL PONTE, E. 1958. *Manual de Entomología Médica y Veterinaria Argentina.* Librería del Colegio, Buenos Aires.

DINERSTEIN, E., D. M. OLSON, D. J. GRAHAM, A. L. WEBSTER, S. A. PRIMM, M. P. BOOKBINDER & G. LEDEC. 1995. *A conservation assessment of the terrestrial ecoregions of Latin America and the Caribbean.* The World Bank, Washington, DC.

GARCIA, M. 1959. Diptera Calliphoridae. *Primera Jornada Entomoepidemiológica Argentina* 2: 577-578.

IRISH, S., T. LINDSAY & N. WYATT. 2014. Key to adults of Afrotropical species of the genus *Chrysomya* Robineau-Desvoidy (Diptera: Calliphoridae). *African Entomology* 22: 297-306.

LOPES, H. D. S. & A. C. R. LEITE. 1991. Notes on the male genitalia of species of *Ravinia and Chaetoravinia* (Diptera: Sarcophagidae). *Memórias do Instituto Oswaldo Cruz* 86: 95-101.

LOPES, H. D. S. & R. TIBANA. 1987. On *Oxysarcodexia* (Diptera, Sarcophagidae), with descriptions of five new species, key, list and geographic distribution of the species. *Revista Brasileira de Biología* 47: 329-347.

MARILUIS, J. C. 1982. Contribución al conocimiento de los Calliphoridae en la Argentina. *Opera Lilloana* 23: 1-59.

MARILUIS, J. C. 2002a. Key to the common adult blowflies of South America. *In*: Greenberg, B. & J. C. Kunich (eds), Entomology and the Law, Flies and Forensic Indicators, Cambridge University Press, Cambridge, pp. 94-100.

MARILUIS, J. C. 2002b. Redescription of the female of *Microcerella chilensis* (Diptera: Sarcophagidae). *Revista de la Sociedad Entomológica Argentina* 61: 43-47.

MARILUIS, J. C. 2002c. A new species and new records of *Microcerella* Macquart (Diptera: Sarcophagidae) from Argentinean Patagonia. *Proceedings of the Entomological Society of Washington* 104(1): 91-96.

MARILUIS, J. C. 2004. *Microcerella* (Diptera: Sarcophagidae) from Argentinean Patagonia: new records and new species. *Revista de la Sociedad Entomológica Argentina* 63: 41-44.

MARILUIS, J. C. 2005. Redescripción de la hembra de *Microcerella acrydiorum* (Diptera: Sarcophagidae) y nuevos registros para la Argentina. *Revista de la Sociedad Entomológica Argentina* 64(1-2): 17-22.

MARILUIS, J. C. 2006. Description of a new species of *Microcerella* (Diptera: Sarcophagidae) from Argentinean Patagonia. *Zootaxa* 1124: 47-53.

MARILUIS, J. C. & E. A. GUARNERA. 1983. Miasis producida por *Phaenicia sericata* (Meigen, 1826) (Calliphoridae, Luciliini). *Revista de la Sociedad Entomológica Argentina* 42: 143-147.

MARILUIS, J. C. & P. R. MULIERI. 2003. The distribution of the Calliphoridae in Argentina (Diptera). *Revista de la Sociedad Entomológica Argentina* 62: 85-97.

MELLO-PATIU, C. A., J. C. MARILUIS, K. P. SILVA, L. D. PATITUCCI & P. R. MULIERI. 2014. Sarcophagidae. *In:* Roig-Juñent, S., L.E. Claps and J. J. Morrone (eds.), *Biodiversidad de Artrópodos Argentinos*, vol 4, Editorial INSUE - Universidad Nacional de Tucumán, San Miguel de Tucumán, pp. 475-490.

MORRONE, J. J. 2014. Biogeographical regionalisation of the Neotropical region. *Zootaxa* 3782: 1-110.

MULIERI, P. R. & J. C. MARILUIS. 2011. Description of a new species of *Macronychia* Rondani (Diptera: Sarcophagidae: Miltogramminae), with a key to the New World species of the genus. *Zootaxa* 2832: 51-55.

MULIERI, P. R. & C. A. MELLO-PATIU. 2013. Revision of the Neotropical genus *Malacophagomyia* (Diptera: Sarcophagidae) with description of a new species. *Zootaxa* 3736: 368-378.

MULIERI P. R., J. C. MARILUIS & F. H. ABALLAY. 2012. Two species of *Microcerella* (Diptera: Sarcophagidae) found in highland arid landscapes of Argentina, during forensic studies. *Journal of Medical Entomology* 49: 183-191.

MULIERI, P. R., J. C. MARILUIS & L. D. PATITUCCI. 2014. Calliphoridae. *In:* Roig-Juñent, S., L.E. Claps and J. J. Morrone (eds.), *Biodiversidad de Artrópodos Argentinos*, vol 4, Editorial INSUE - Universidad Nacional de Tucumán, San Miguel de Tucumán, pp. 463-474.

MULIERI, P. R., L. D. PATITUCCI & J. C. MARILUIS. 2010. Los ejemplares tipo de Sarcophagidae (Diptera) depositados en el Museo Argentino de Ciencias Naturales" Bernardino Rivadavia". *Revista de la Sociedad Entomológica Argentina* 69: 157-166.

NEWBOLD, T. 2010. Applications and limitations of museum data for conservation and ecology, with particular attention to species distribution models. *Progress in Physical Geography* 34: 3-22.

OLEA, M. S. & J. C. MARILUIS. 2013. The genus *Calliphora* (Diptera: Calliphoridae) in Argentina, with the first records of *C. lopesi* Mello 1962. *Revista de la Sociedad Entomológica Argentina* 72: 99-104.

OLEA, M. S., M. J. D. JURI & N. CENTENO. 2011. First Report of *Chrysomya megacephala* (Diptera: Calliphoridae) in Northwestern Argentina. *Florida Entomologist* 94: 345-346.

OLEA, M. S., N. CENTENO, C. A. V. AYBAR, E. S. ORTEGA, G. B. GALANTE, L. OLEA & M. J. D. JURI. 2014. First Report of Myiasis Caused by *Cochliomyia hominivorax* (Diptera: Calliphoridae) in a Diabetic Foot Ulcer Patient in Argentina. *The Korean journal of parasitology* 52: 89-92.

OLIVA, A. 1997. Insectos de interés forense de Buenos Aires (Argentina): Primera lista ilustrada y datos bionómicos. *Revista del Museo Argentino de Ciencias Naturales" Bernardino Rivadavia" e Instituto Nacional de Investigación de las Ciencias Naturales* 7: 13-59.

OLSON, D.M., E. DINERSTEIN, E. D. WIKRAMANAYAKE, N. D. BURGESS, G. V. N. POWELL, E. C. UNDERWOOD, J. A. D'AMICO, H. E. STRAND, J. C. MORRISON, C. J. LOUCKS, T. F. ALLNUTT, J. F. LAMOREUX, T. H. RICKETTS, I. ITOUA, W. W. WETTENGEL, Y. KURA, P. HEDAO & K. KASSEM. 2001. Terrestrial ecoregions of the world: A new map of life on Earth. *BioScience* 51: 933–938. Shapefile available from:

http://worldwildlife.org/publications/terrestrial-ecoregions-of-the-world

PAPE, T. 1996. Catalogue of Sarcophagidae of the World (Insecta, Diptera). *Memoirs on Entomology, International* 8: 1–558.

ROGNES, K. & H. E. H. PATERSON. 2005. *Chrysomya chloropyga* (Wiedemann, 1818) and *C. putoria* (Wiedemann, 1830) (Diptera: Calliphoridae) are two different species. *African Entomology* 13: 49-70.

RYDON, A. 1964. Notes on the use of butterfly traps in East Africa. *Journal of the Lepidopterists' Society* 18: 51-58.

SHEWELL, G. 1987. Calliphoridae. *In:* J. F. McAlpine, (ed.), *Manual of Nearctic Diptera. Vol. 2.* pp. 1133–1145.

SILVA, J. O., F. D. S. CARVALHO-FILHO, M. C. ESPOSITO & G. A. REIS. 2012. First record of *Chrysomya rufifacies* (Macquart) (Diptera, Calliphoridae) from Brazil. *Revista Brasileira de Entomologia* 56: 115-118.

VAIRO, K. P., C. A. D. MELLO-PATIU & C. J. DE CARVALHO. 2011. Pictorial identification key for species of Sarcophagidae (Diptera) of potential forensic importance in southern Brazil. *Revista Brasileira de Entomologia* 55: 333-347.

WHITWORTH, T. 2014. A revision of the Neotropical species of *Lucilia* Robineau-Desvoidy (Diptera: Calliphoridae). *Zootaxa* 3810: 1-76.