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## Odonata from the Lower Delta of the Paraná River, Argentina

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Argentina, one of the biggest countries in South America, is characterized by complex regions and landscapes, which include a great variety of freshwater ecosystems. The odonatological knowledge of this complexity is far from complete. Considering the great extent of the country, few regions have been properly covered, as for example northern Patagonia, Iberá wetlands and Yungas forest (Muzón *et al.*, 2008, 2014; von Ellenrieder & Garrison, 2007; von Ellenrieder, 2009).

The first Argentine area surveyed for odonates was the Lower Delta of the Paraná River (DP) (Ris, 1904; Navás, 1920, 1927), a large wetland area of between Buenos Aires and Entre Ríos provinces, close to Buenos Aires city (Figure 1). This area has a typical delta landscape including plenty of riverine and pond habitats and is encompassed by two main rivers (Paraná de las Palmas and Paraná Guazú). It belongs to the Delta and Paraná Islands eco-region, which is represented by a narrow corridor of riparian forests following the Paraná River from the northern limit of Corrientes Province to DP. Delta and Paraná Islands eco-region is biogeographically more related to the northern eco-regions i.e. humid Chaco and Paranaense Forest rather than southern Pampas grasslands.

At the end of the 19<sup>th</sup> century and the first half of the 20<sup>th</sup>, the human population increased in DP to occupy large areas dedicated mainly to timber production and tourism. From the second half of the 20<sup>th</sup> century to now, land use has changed to low intensity tourism leaving large areas unexploited.

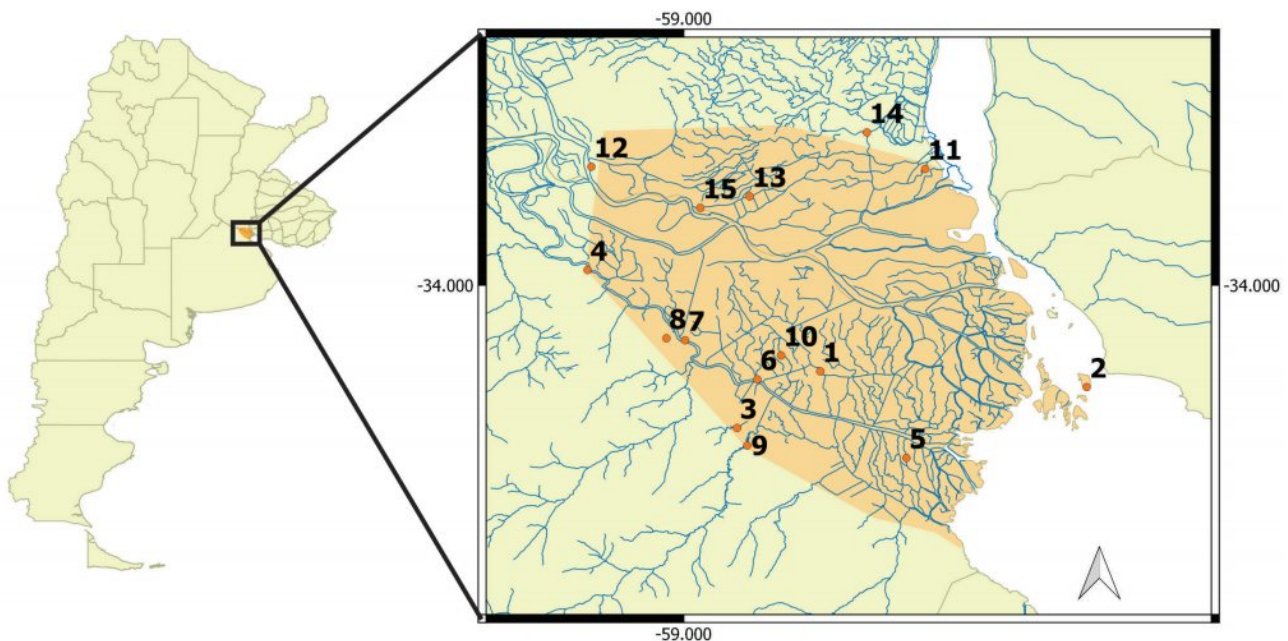


Figure 1: Map of the Lower Delta of the Paraná river showing recently surveyed localities (see Table 3 for details).

### Table 1 (right). Inventory of odonates from Lower Delta of the Paraná river.

<sup>1</sup> Navás (1920; 1927; 1929; 1930; 1932). <sup>2</sup> Includes Belle (1972, 1992), Pessacq (2007) and new records (NR)..  
<sup>3</sup> Seen only. <sup>4</sup> Recorded from Corrientes province by Muzón & von Ellenrieder (1998) and von Ellenrieder & Muzón (2008). <sup>5</sup> Recorded only from Misiones province by Muzón & von Ellenrieder (1998) and von Ellenrieder & Muzón (2008). <sup>6</sup> Recorded from Misiones and Corrientes provinces by Muzón & von Ellenrieder (1998) and von Ellenrieder & Muzón (2008). <sup>7</sup> Belle (1992) stated that all the specimens cited by Navás under *A. dentata* Selys probably belongs to *A. distinguenda* (Campion).

Family	Species	Source of record		
		Ris (1904)	L. Navás <sup>1</sup>	XXI century <sup>2</sup>
Coenagrionidae	<i>Acanthagrion lancea</i> Selys	X	-	X
	<i>Andinagrion saliceti</i> (Ris)	X	-	-
	<i>Argentagrion ambiguum</i> (Ris)	X	-	X
	<i>Cyanallagma bonariense</i> (Ris)	X (as <i>Acanthagrion interruptum</i> )	-	X
	<i>Homeoura chelifera</i> (Selys)	X	-	X
	<i>Ischnura capreolus</i> (Hagen)	-	-	NR
	<i>Ischnura fluviatilis</i> Selys	X	X (1929)	X
	<i>Oxyagrion terminale</i> Selys	X	X (1929)	X
	<i>Telebasis willinki</i> Fraser	-	-	NR
Lestidae	<i>Lestes spatula</i> Fraser	-	-	NR
	<i>Lestes undulatus</i> Say	-	-	NR
Protoneuridae	<i>Peristicta forceps</i> Hagen in Selys	-	-	X
Aeshnidae	<i>Rhionaeschna bonariensis</i> (Rambur)	X (as <i>Aeshna</i> )	X (1927a)	X
	<i>Rhionaeschna confusa</i> (Rambur)	-	-	NR
	<i>Rhionaeschna planaltica</i> (Calvert)	-	-	NR
	<i>Staurophlebia bosqui</i> Navás	-	X (1927b)	X
	<i>Triacanthagyna nympa</i> (Navás)	-	-	NR
Gomphidae	<i>Aphylla distinguenda</i> (Campion)	X (as <i>Aphylla dentata</i> )	X (1927b; 1930 as <i>Gomphoides dentata</i> ) <sup>7</sup>	X
	<i>Phyllocycla argentina</i> (Hagen in Selys)	X	X (1927a as <i>Gomphoides</i> )	X
	<i>Phyllocycla vesta</i> Belle	-	-	NR
	<i>Progomphus</i> sp.	-	-	NR
Libellulidae	<i>Diastatops</i> sp. <sup>3</sup>	-	-	NR
	<i>Erythemis attala</i> (Selys in Sagra)	-	-	NR
	<i>Erythemis plebeja</i> (Burmeister)	-	-	NR
	<i>Erythemis vesiculosa</i> (Fabricius)	-	X (1927a as <i>Lepthemis</i> )	X
	<i>Erythrodiplax corallina</i> (Brauer)	X (as <i>E. plebeia</i> )	X (1927a)	-
	<i>Erythrodiplax media</i> Borrer	-	-	NR
	<i>Erythrodiplax melanorubra</i> Borrer	X (as <i>E. fusca</i> )	X (1927a; 1929; 1932 as <i>E. fusca</i> )	X
	<i>Erythrodiplax nigricans</i> (Rambur)	X (as <i>E. choloropleura</i> )	X (1927a; 1929)	X
	<i>Erythrodiplax</i> cf <i>pallida</i> Needham	-	-	NR
	<i>Miathyria marcella</i> (Selys in Sagra)	X	-	X
	<i>Micrathyria eximia</i> Kirby <sup>4</sup>	-	X (1932)	-
	<i>Micrathyria hypodidyma</i> Calvert	X (as <i>M. didyma</i> )	X (1932 as <i>M. didyma</i> )	X
	<i>Micrathyria ungulata</i> Förster	-	-	NR
	<i>Nephepeltia flavifrons</i> (Karsch)	-	-	NR
	<i>Oligoclada laetitia</i> Ris	-	-	NR
	<i>Orthemis ambinigra</i> Calvert	-	-	NR
	<i>Orthemis cultriformis</i> Calvert <sup>5</sup>	X	-	-
	<i>Orthemis nodiplaga</i> Karsch,	X	X (1927a)	X
	<i>Perithemis icteroptera</i> (Selys in Sagra)	-	X (1927a, b)	X
	<i>Perithemis mooma</i> Kirby	X (as <i>P. domitia</i> )	X (1927a as <i>P. domitia</i> var. <i>cloe</i> ), (1932 as <i>P. domitia</i> )	X
	<i>Tauriphila argo</i> (Hagen) <sup>6</sup>	-	X (1930)	-
	<i>Tauriphila risi</i> Martin	X	X (1927a)	X

Taxa recorded in DP (Delta and Paraná Islands eco-region)		Also recorded in Pampas eco-region	Also recorded in humid Chaco, Paranaense forest or in northern areas
Coenagrionidae	<i>Acanthagrion lancea</i>	X	X
	<i>Andinagrion saliceti</i>	X	-
	<i>Argentagrion ambiguum</i>	X	X
	<i>Cyanallagma bonariense</i>	X	X
	<i>Homeoura chelifera</i>	X	X
	<i>Ischnura capreolus</i>	X	X
	<i>Ischnura fluviatilis</i>	X	X
	<i>Oxyagrion terminale</i>	X	X
	<i>Telebasis willinki</i>	-	X
Lestidae	<i>Lestes spatula</i>	X	X
	<i>Lestes undulatus</i>	X	X
Protoneuridae	<i>Peristicta forceps</i>	-	X
	<i>Aeshnidae</i>	X	X
	<i>Rhionaeschna confusa</i>	X	X
	<i>Rhionaeschna planaltica</i>	-	X
	<i>Staurophlebia bosqui</i> <sup>1</sup>	-	-
	<i>Triacanthagyna nympa</i>	-	X
Gomphidae	<i>Aphylla distinguenda</i>	-	X
	<i>Phyllocycla argentina</i>	X	X
	<i>Phyllocycla vesta</i>	X	-
	<i>Progomphus</i> sp.	-	X
Libellulidae	<i>Diastatops</i> sp.	-	X
	<i>Erythemis attala</i>	X	X
	<i>Erythemis plebeja</i>	-	X
	<i>Erythemis vesiculosa</i>	-	X
	<i>Erythrodiplax corallina</i>	X	X
	<i>Erythrodiplax media</i>	-	X
	<i>Erythrodiplax melanorubra</i>	X	X
	<i>Erythrodiplax nigricans</i>	X	X
	<i>Erythrodiplax cf pallida</i>	X	X
	<i>Miathyria marcella</i>	X	X
	<i>Micrathyria hypodidyma</i>	X	X
	<i>Micrathyria unguolata</i>	X	X
	<i>Nephepeltia flavifrons</i>	-	X
	<i>Oligoclada laetitia</i>	-	X
	<i>Orthemis ambinigra</i>	-	X
	<i>Orthemis cultriformis</i>	-	X
	<i>Orthemis nodiplaga</i>	X	X
	<i>Perithemis icteroptera</i>	X	X
	<i>Pertithemis mooma</i>	X	X
	<i>Tauriphila risi</i>	X	X
Total species by eco-regions		26 (63%)	38 (92%)
Total species in both eco-regions		21 (51%)	

	Locality	Coordinates
1	Buenos Aires, San Fernando, Delta del Paraná, Camping Cielo	34° 09' 37.00" S - 58° 44' 45.00" W
2	Buenos Aires, Isla Martín García	34° 11' 22.93" S - 58° 15' 00.14" W
3	Buenos Aires, Arroyo Pescado sobre RN 9	34° 15' 56.56" S - 58° 54' 02.38" W
4	Buenos Aires, Lima, Club de Pesca	33° 58' 18.68" S - 59° 10' 44.41" W
5	Buenos Aires, Tigre, arroyo Antequera	34° 19' 16.50" S - 58° 35' 07.76" W
6	Buenos Aires, Otamendi, Estación Experimental INTA - Delta	34° 10' 30.92" S - 58° 51' 47.35" W
7	Buenos Aires, Isla Talavera	34° 06' 09.00" S - 58° 59' 51.00" W
8	Buenos Aires, Zárate	34° 05' 55.71" S - 59° 01' 56.25" W
9	Buenos Aires, Arroyo s/n, RN 9, km 64	34° 17' 54.06" S - 58° 52' 54.96" W
10	Buenos Aires, Campana, Delta del Paraná, entre Otamendi y Partido de San Fernando (e/ 2da y 3ra balsas)	34° 07' 51.00" S - 58° 49' 08.00" W
11	Buenos Aires, Delta del Paraná, arroyo El Brasilerero, Quinta Arco Iris	33° 47' 02.68" S - 58° 33' 01.87" W
12	Entre Ríos, Ibicuy, Camping Islas Malvinas	33° 46' 47.45" S - 59° 10' 19.58" W
13	Entre Ríos, Ibicucito	33° 50' 06.31" S - 58° 52' 38.27" W
14	Entre Ríos, Villa Paranacito	33° 42' 57.96" S - 58° 39' 33.14" W
15	Entre Ríos, Arroyo Ibicucito y RN 12 (traza vieja)	33° 51' 22.90" S - 58° 58' 09.37" W

**Table 3. List of recently surveyed localities.**

One of the first papers on Argentine odonates was written by Friedrich Ris in 1904, in which a total of 18 species were recorded for DP (Table 1), two of these were new to science, *Oxyagrion saliceti* (= *Andinagrion saliceti*) and *Acanthagrion ambiguum* (= *Argentagrion ambiguum*). Later, the Jesuitical priest Longino Navás published a series of records on Argentine odonates (1927; 1929; 1930; 1932), which include five new records for DP and the description of *Staurophlebia bosqui* (Navás, 1927).

Navás (1920) described *Persictia lizeria*, from Buenos Aires province without further information on locality, nevertheless, taking into account that most localities from Buenos Aires province, cited in Navás papers, correspond to DP or towns close to the delta front, it is likely that the type specimens of this species were collected near DP. According to Pessacq (2007) the taxonomic status of *P. lizeria* is doubtful due to the incomplete original description and the unavailability of its holotype. On the other hand, Pessacq (2007) recorded *P. forceps* for DP.

During the past 20 years several field trips to DP has increased the species inventory for this area to 43 (Figure 1, Table 1); the Libellulidae family with most new records. The biogeographical relationship of DP with Humid Chaco and Paranaense Forest is validated with these additions. In fact, except for six species, *Andinagrion saliceti*, *Cyanallagma bonariense*, *Staurophlebia bosqui*, *Phyllocycla vesta*, *Erythrodiplax corallina* and *Erythrodiplax cf pallida*, the remaining 37 (90%) species have also been recorded from Paranaense Forest (Table 2). Out of 25 genera recorded from DP (36%) *Telebasis*, *Persictia*, *Staurophlebia*, *Triacanthagyna*, *Aphylla*, *Progomphus*, *Diastatops*, *Nephepeltia*, and *Oligoclada* have not been recorded from the Pampas.

There are several species that have not been recorded since Ris and Navás' papers, some probably due to chance (e.g., *Phyllocycla argentina*, *Erythrodiplax corallina*, and *Orthemis cultriformis*) or misidentifications (e.g. *Tauriphila argo*). *Andinagrion saliceti*, is a rare species known from very few records mainly from the Pampas eco-region; it was originally described by Ris from San Isidro, an area closely related to DP, but it has not been collected or seen in DP since Ris' description.

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**Table 2 (left). Species recorded in DP and its presence in eco-regions.**

<sup>1</sup> Recorded only in Delta and Paraná Islands eco-region

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