

Odonata of Sicilian southeast swamp lakes “Pantano Cuba” and “Pantano Longarini” (SE-Sicily, Italy)

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ABSTRACT

From March 2015 to December 2019 a focused study on Odonata, funded by the German foundation “Stiftung Pro Artenvielfalt ®” (Foundation Pro Biodiversity), was conducted at the swamp lakes named “Pantano Cuba” and “Pantano Longarini”, in the southeast coast of Sicily (Italy), near Pachino, Siracusa. A total of 27 different species were recorded in Pantano Cuba and Longarini, including *Brachytron pratense* (Müller, 1764), found for the first time in Sicily during this study and *Pantala flavescens* (Fabricius, 1798), never seen before in Italy excluding the islands of Linosa and Lampedusa, Sicilian Channel.

KEY WORDS

Odonata; dragonflies; Sicily; Pantano Longarini; Stiftung Pro Artenvielfalt.

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INTRODUCTION

Up to date, 165 species of Odonata are so far reported for the Mediterranean basin area (Boudot et al., 2009; Boudot & Kalkman, 2015; Galliani et al., 2017), 144 in Europe and 96 of them recorded in Italy, of which about 56 occurring in Sicily (Riservato et al., 2014; Surdo, 2017; Viganò et al., 2017). The relatively low number of species in Sicily (Italy) is probably due to the scarcity of aquatic habitats on the island or, partially, for lack of knowledge. This short note is a small contribute to the information on Sicilian dragonflies. A focused study on Odonata was conducted at the swamp lakes named “Pantano Longarini” and “Pantano Cuba”, in the southeast coast of Sicily, near Pachino and Ispica, respectively in the Siracusa and Ragusa province.

MATERIAL AND METHODS

Study area

This study area, Pantano Longarini and Pantano Cuba (southeastern Sicily, Italy), that extends for no less than 300 ha, represents the southernmost Italian wetland complex and one of the most important coastal wetland of southern Europe (Figs. 1–3). Together with seven smaller swamp wetlands along the southern coastline (named, from East to West, Ponterio, Ciaramiraro, Baronello, Auruca, Cannone, Bruno, Gorgo Salato), the whole wetland-complex is included in the Natura 2000 network, a network of nature protection areas in the territory of the European Union, as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated respectively under the Habitats Directive and Birds Directive. Due to their great relevance for the Mediterranean biodiversity protection, Pantano Cuba and Pantano Longarini were

bought, starting from 2013, by the German foundation “Stiftung Pro Artenvielfalt ®” - Foundation Pro Biodiversity, which is specialized on biodiversity conservation and management, the same foundation that has promoted and funded the here published survey. Pantano Cuba and Pantano Longarini are dynamic habitats characterized by shallow, brackish and standing waters, surrounded by a variable and diversified vegetation. Here we report the results of our researches in the mentioned area.

Samples

The method of capture-identification-release was used walking through transects in the five most representative habitats of the monitored area of Pantano Cuba and Pantano Longarini (ponds and canals, open meadows, edge of reed beds, Mediterranean scrub, ecotonal habitats and uncultivated fields). The length of each of the 5 transects was fixed at 1 kilometer to go through in 30 minutes, always during the morning and with good weather conditions (no rain and no wind), when the dragonflies activity is more intense. They were executed

once for week, from March 2015 to December 2019. The identification was made mainly collecting and releasing the specimens with entomological nets, or, in other cases, through direct observation with binocular and collection of photographic material. Alongside with the new data collected during this study, unpublished data collected during previous years are also reported, in order to have, for the first time, a complete picture about the Odonata found in this important area.

RESULTS

Systematics

Ordo ODONATA Fabricius, 1793

Subordo ZYGOPTERA de Sélys Longchamps, 1854

Familia CALOPTERYGIDAE Sélys, 1850

Genus *Calopteryx* Leach, 1815

Calopteryx haemorrhoidalis (Vander Linden, 1825)

Despite being pretty common in the southeast



Figure 1. Geographical location of the study area: Pantano Cuba and Pantano Longarini (southeastern Sicily, Italy).



Figure 2. Pantano Cuba, southeastern Sicily, Italy (photo ©SPA_IT).



Figure 3. Pantano Longarini, southeastern Sicily, Italy (photo ©SPA_IT).

of Sicily due to the lack of habitat with fresh and running water in the area, only 3 specimens of this species were observed: 2 females in Pantano Cuba, 1 at the end of March 2018 and 1 in October 2018 and 1 male in the northside of Pantano Longarini in October 2019. Reproduction of this species in the area is possible but not confirmed.

Familia LESTIDAE Calvert, 1901
Genus *Sympecma* Burmeister, 1839

Sympecma fusca (Vander Linden, 1820)

Only 4 specimens observed in Pantano Cuba: 1 male in March 2015 that probably wintered in the area, 2 females in April 2016, 1 male in late March 2017. Reproduction of this species in the area is probable but has not been confirmed.

Genus *Chalcolestes* Kennedy, 1920

Chalcolestes viridis (Vander Linden, 1825)

First report in Pantano Cuba on 13.X.2019. (Cappuzzello & Gambino, pers. obs.). Subsequently, observed exclusively throughout the month of October 2019, with no less than 6–10 specimens at a time, males and females, also during the mating and oviposition.

Genus *Lestes* Leach, 1815

Lestes barbarus (Fabricius, 1798)

The commonest Lestidae in the area; many subjects observed all years of the study, in Pantano Cuba and Longarini, mainly in April/May and in August/September in wooden habitat close to the water represented by *Acacia saligna* or *Tamarix* sp., often associated to *Limbarda crithmoides*. Ascertained reproduction on the study area.

Lestes virens (Charpentier, 1825)

Frequently observed in late May/June 2015 in Pantano Cuba and Longarini as well, and in late August/September 2019 in Cuba in different habitat, mostly close to the water with vegetation including *Limbarda crithmoides* associated to *Limonium* sp. or in ecotonal habitat as shaded edges of fruit gar-

dens. Only few subjects observed in the 2016 and no one during 2017–18. Reproduction of this species in the area is highly probable but has not been confirmed.

Familia COENAGRIONIDAE Kirby, 1890
Genus *Ceriagrion* Selys, 1876

Ceriagrion tenellum (de Villers, 1789)

Males, females and specimens just emerged were observed in Pantano Cuba, all years of the study, exclusively in the fresh water canals transept, where the reproduction has been ascertained.

Coenagrion scitulum (Rambur, 1842)

Species recorded only in May 2015 in Pantano Cuba (but pretty common in similar habitat and areas with fresh water) with few subjects (5–7), adult males and females, observed in open habitat far enough from the water.

Genus *Erythromma* Charpentier, 1840

Erythromma viridulum (Charpentier, 1840)

Only 1 male observed and photographed at Pantano Cuba in an open meadow on 2.V.2015. This is an interesting data, given the fact that in very similar habitat in Southern Sicily, the species is very common (pers. obs.).

Genus *Ischnura* Charpentier, 1840

Ischnura genei (Rambur, 1842)

The most common Coenagrionidae in the area; observed almost throughout the years of the study (including months of December and February) in different habitats, with peaks in May/June. Ascertained reproduction on the study area.

Subordo ANISOPTERA de Sélys Longchamps, 1854
Familia AESHNIDAE Rambur, 1842
Genus *Aeshna* Fabricius, 1775

Aeshna affinis (Vander Linden, 1820)

Only a few recorded in Pantano Cuba and Lon-

garini during the seasons 2009–2011 (Corso, pers. obs.) and in August 2017 and 2019 in Pantano Cuba, always with single specimens and without any signs of reproduction in the area.

Aeshna isosceles (Müller, 1767)

Regularly observed, mostly in May/June, in different types of habitats but mainly close to fresh water pools and canals. Ascertained reproduction on the study area.

Aeshna mixta (Latreille, 1805)

Observed in the whole study period in the area, from late July to November with huge peaks in October. Mostly observed close to the water in habitat with *Bolboschoenus maritimus*. Ascertained reproduction on the study area.

Genus *Anax* Leach, 1815

Anax imperator (Leach, 1815)

Common species, observed almost throughout the years of the study in different habitats, with peaks in August/September until to October. Ascertained reproduction on the study area.

Anax parthenope (Selys, 1839)

Quite common species, observed all the years of the study in different habitats, from March to November, with peaks in September/October. Ascertained reproduction on the study area.

Anax ephippiger (Burmeister, 1839)

Few specimens regularly observed every year in October/November without any signs of reproduction in the area, mostly in open meadow, both in Pantano Cuba and Longarini.

Genus *Brachytron* Evans, 1845

Brachytron pratense (Müller, 1764)

Species recorded for the first time in Sicily during this study (Galasso et al, 2016). Regularly observed in every single year of the study, from March to June, mostly in May, often in habitat with *Lim-*

barda crithmoides (Fig. 4) associated to *Limonium* sp. Ascertained reproduction on the study area.

Familia LIBELLULIDAE Rambur, 1842

Genus *Orthetrum* Newman, 1833

Orthetrum cancellatum (Linnaeus, 1758)

Quite common species in the area regularly observed all the years of the study, from May to September but mostly in June, in different habitats. Ascertained reproduction on the study area.

Orthetrum coerulescens (Fabricius, 1798)

Regularly observed all the years of the study, from April to September mainly close to fresh water pools and canals in Pantano Cuba. Ascertained reproduction on the study area.

Orthetrum brunneum (Fonscolombe, 1837)

Despite less common than *Orthetrum coerulescens* and *O. cancellatum* in the study area, few specimens have been observed all the years of the study in Cuba and Longarini, from May to September, mainly close to fresh water pools and canals. Ascertained reproduction on the study area.

Orthetrum trinacria (Selys, 1841)

Observed from late May to November of 2015 and 2016 in Pantano Cuba and Longarini (but not during 2017–19) in open habitats as meadow and uncultivated fields. Ascertained reproduction on the study area.

Genus *Pantala* Hagen, 1861

Pantala flavescens (Fabricius, 1798)

The first confirmed record concern 1 male in Pantano Cuba (36°42'27.10"N 15°1'30.40"E) on 2.XII.2012 (Corso et al., 2017); few specimens were observed in late October/November 2018 in Pantano Cuba and Longarini as well (see also Corso et al., 2012).

Genus *Crocothemis* Brauer, 1868

Crocothemis erythraea (Brullè, 1832)

Very common species regularly observed in both Pantano Cuba and Pantano Longarini all the years of the study, from April to October but mostly in late June/July, in every type of habitat close to the water. Ascertained reproduction on the study area.

Genus *Sympetrum* Newman, 1833

Sympetrum fonscolombii (Selys, 1840)

Very common Libellulidae in the area. Observed regularly every year from late March to December (first observations of the year starting from mid February in Pantano Longarini), with peaks in late April/May and September/October in Pantano Cuba and Longarini. Observed in different habitats, usually open meadow and uncultivated fields, also quite far from water. Ascertained reproduction on the study area.

Sympetrum meridionale (Selys, 1841)

The commonest Libellulidae in this area. Ob-

served regularly every year in different habitats starting from late June-July, with maximum peaks of thousands and thousands, (probably millions), of pairs in late October. Observed also a mating pair in December 2016 and January 2019. A few adults overwinter, with specimens observed into January and February.

Genus *Trithemis* Brauer, 1868

Trithemis annulata (Palisot de Beauvois, 1807)

Despite this species being really common in the surroundings of Ragusa and Siracusa's province, only three observations were made in Pantano Cuba, all regarding mature males, 2 recorded in July 2017 and 1 recorded in early November 2019.

Genus *Selysiothemis* Ris, 1897

Selysiothemis nigra (Vander Linden, 1825)

Only 4 subjects, all adults, reported for Pantano Cuba: 2 females in May 2017, and 1 male and 1 fe-



Figure 4. *Brachytron pratense*, adult male on *Limbarda crithmoides* (photo P. Galasso)

male in July 2017; all of them have been observed in open meadow and uncultivated fields, with presence of cereals. No signs of reproduction in the area.

Genus *Brachytemis* Brauer, 1868

Brachytemis impartita (Karsch, 1890)

This species has been reported for different places along the south-east sicilian coast, from Gela to Catania, but only 1 male adult was observed in the area, at the mouth of Pantano Longarini on 6.VIII.2016.

DISCUSSION AND CONCLUSIONS

A total of 27 different species were recorded in Pantano Cuba and Longarini during this study (Table 1). *Brachytron pratense* was found for the first time in Sicily and *Pantala flavescens* (Fabricius, 1798), never seen before in Italy excluding the islands of Linosa and Lampedusa, Sicilian Channel.

This survey represents a first, short but considerable contribute to the information on Sicilian dragonflies and a starting point for a such important area for the biodiversity in the middle of the Mediterranean Basin, never deeply studied until now for this taxa. The management of the German foundation "Stiftung Pro Artenvielfalt ®" - Foundation Pro Biodiversity, owner of this wetland from 2013, has been certainly improving the quality of water and habitats by restoration activities of habitat restoring, water management, invasive plants eradication and native species planting, greenhouses and garbage removal, creation of new ecological niches, etc. The result also involves an improvement of the Odonata community living in the area.

For example, *Chalcolestes viridis* was observed for the first time in 2019, exclusively along one of the water pool specially created by the foundation for the breeding of amphibia and odonata.

After the expiration time of this study, the monitoring of the Odonata population in Pantano Cuba and Longarini has been going on without interruption with the same methods, in order to have an ever more definite picture of these fascinating insects in the next years, and monitoring the effects of the

FAMILY	SPECIES
Zygoptera: Calopterygidae	<i>Calopteryx haemorrhoidalis</i>
Lestidae	<i>Sympecma fusca</i>
	<i>Chalcolestes viridis</i>
	<i>Lestes barbarus</i>
	<i>Lestes virens</i>
Coenagrionidae	<i>Ceriagrion tenellum</i>
	<i>Coenagrion scitulum</i>
	<i>Erythromma viridulum</i>
	<i>Ischnura genei</i>
Sub-total of families: 2	Sub-total of species: 9
Anisoptera: Aeshnidae	<i>Aeshna affinis</i>
	<i>Aeshna isocetes</i>
	<i>Aeshna mixta</i>
	<i>Anax imperator</i>
	<i>Anax parthenope</i>
	<i>Anax ephippiger</i>
	<i>Brachytron pratense</i>
Libellulidae	<i>Orthetrum brunneum</i>
	<i>Orthetrum cancellatum</i>
	<i>Orthetrum coerulescens</i>
	<i>Orthetrum trinacria</i>
	<i>Pantala flavescens</i>
	<i>Crocothemis erythraea</i>
	<i>Sympetrum fonscolombii</i>
	<i>Sympetrum meridionale</i>
	<i>Trithemis annulata</i>
	<i>Selysiothemis nigra</i>
	<i>Brachytemis impartita</i>
Sub-total of families: 2	Sub-total of species: 18
Families: 4	Number of species: 27

Table 1. List of all the species recorded up to December 2019 in the studied area: Pantano Longarini and Pantano Cuba (southeastern Sicily, Italy).

habitat managing and restoring on the Odonata community of this so important area of the southeast coast of Sicily.

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