

# The Odonata fauna of Nákos and Iraklia Islands, Greece

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## Abstract

The Odonata fauna of the islands Nákos and Iraklia was inventoried from 2011 to 2018, resulting in 22 species for Nákos and five for Iraklia. Two species are added as new to Nákos and all records for Iraklia are new. An updated species list for both islands is presented.

## Zusammenfassung

**Die Libellenfauna der Kykladeninseln Nákos und Iraklia (Odonata)** – Von 2011 bis 2018 wurde die Libellenfauna der Inseln Nákos und Iraklia untersucht. Es gelang der Nachweis von 22 Arten für Nákos und fünf für Iraklia. Zwei Arten wurden erstmals für Nákos nachgewiesen, alle fünf Arten für Iraklia sind Erstnachweise.

## Introduction

Nákos and Iraklia are situated in the central Kiklades (Cyclades) Islands. The climate of Kiklades is typically insular Mediterranean, characterized by calm and dry winters and cool summers.

Nákos is the largest and highest of the Kiklades archipelagos, with Mt Zas reaching 1.004 m a.s.l. More than that, it has an overall hilly relief. Surface water exists on Nákos in adequate quantities, mainly in the form of coastal wetlands, small rivers, streams and ravines, as well as in reservoirs serving the substantial agricultural production of the island.

Iraklia is situated ca 5 km south of Nákos and belongs to the Lesser Eastern Kiklades island group. It has a maximum altitude of 418 m. Surface water is scarce, with no permanent stream or lake. A small seasonal wetland exists on the north coast, forming only in winter and early spring. Several papers have been published in recent years on the flora and fauna of this small island, largely based on the research of I.G. (ANTONOPOULOS et al. 2010; GAVALAS 2013, 2014; GAVALAS & ALEXIOU 2015; ALEXIOU et al. 2017).

The Odonata fauna of Greece is rather well investigated and numbers a total of 78 species (LOPAU 2010). 21 species have been documented from Nákos (SCHNEIDER 2013), while no record exists for Iraklia. This paper aims to update the odonate species checklist for Nákos and document for the first time the species found on Iraklia.

## Material and methods

The records presented in this paper are based on photographs and observations and no voucher specimen was needed to be collected. Only adults were investigated. Taxonomy and nomenclature follows GALLIANI et al. (2017). The first author, resident of Iraklia, has had the opportunity to study the Odonata fauna of his island since 2011, as well as make records on the much larger, nearby island of Nákos. The second author, resident of Nákos, has made observations on Nákos. Localities surveyed on Nákos from 2011 to 2018:

- Loc. 1. Alikí wetland, the largest water reservoir of the island, containing brackish water for 8–10 months every year, receiving water from seasonal streams. Main plant species are *Tamarix* sp., *Arundo donax* and *Phragmites australis*.
- Loc. 2. Potamia. Seasonal river with *Platanus orientalis*, never drying out completely in the summer months.
- Loc. 3. Amitis. Estuary of seasonal river with brackish water all year round. Main plant species *Arundo donax*, *Typha* sp., *Tamarix* sp. and *Juncus acutus*.
- Loc. 4. Keramoti. Shaded ravine with *Platanus orientalis*, with running water.
- Loc. 5. Komiaki. Shaded ravine with *Platanus orientalis*, with running water.
- Loc. 6. Chalki. Olive grove with a network of seasonal streams.
- Loc. 7. Phaneromeni. Small coastal marsh and estuary.
- Loc. 8. Agios Prokopios. Small coastal marsh and estuary.

Iraklia was surveyed in a more random way, focusing on the small seasonal wetland on the north coast (Livadi), forming only in winter and early spring but also in small artificial livestock tanks, gardens as well as places far from water.

## Results

In total, we recorded from the two islands 22 species, belonging to eight families and 15 genera (Table 1).

## Discussion

LOPAU (2010) lists 19 species of Odonata from Nákos. SCHNEIDER (2013) recorded 17 species, two of them new for the island, *Aeshna affinis* and *Trithemis annulata*. In the present paper all those previous records are confirmed by us except for

**Table 1.** List of species recorded at Naxos and Iraklia islands. – **Tabelle 1:** Nachgewiesene Libellenarten auf Naxos und Iraklia. \* new record for Naxos, Erstnachweis von Naxos; \*\* new record for Iraklia, Erstnachweis für Iraklia; \*\*\* Not in this study. SCHNEIDER (2013), Nachweis durch SCHNEIDER (2013), nicht durch uns bestätigt.

No. Species name	Náxos	Iraklia	No. Species name	Náxos	Iraklia
CALOPTERYGIDAE			GOMPHIDAE		
1. <i>Calopteryx splendens</i>	•		14. <i>Onychogomphus forcipatus</i>	•	
2. <i>Calopteryx virgo</i>	•		CORDULEGASTRIDAE		
LESTIDAE			15. <i>Cordulegaster helladica</i>	•	
3. <i>Sympecma fusca</i>	•		LIBELLULIDAE		
4. <i>Chalcolestes parvidens</i>	•		16. <i>Orthetrum brunneum</i> **	•	•
5. <i>Lestes macrostigma</i>	•		17. <i>Orthetrum cancellatum</i>	•	
PLATYCNEMIDIDAE			18. <i>Orthetrum coerulescens</i>	•	
6. <i>Platycnemis pennipes</i>	•		19. <i>Crocothemis erythraea</i>	•	
COENAGRIONIDAE			20. <i>Sympetrum fonscolombii</i> **	•	•
7. <i>Ischnura elegans</i> **	•	•	21. <i>Sympetrum meridionale</i> *	•	
AESHNIDAE			22. <i>Sympetrum striolatum</i> *	•	
8. <i>Aeshna affinis</i> ***	(•)		23. <i>Trithemis annulata</i>	•	
9. <i>Aeshna mixta</i>	•				
10. <i>Anax imperator</i> **	•	•			
11. <i>Anax parthenope</i>	•				
12. <i>Anax ephippiger</i> **	•	•			
13. <i>Caliaeschna microstigma</i>	•				
				23	5

*Aeshna affinis*, while two more species are added as new; *Sympetrum meridionale* and *Sympetrum striolatum*. Thus the recorded odonata fauna of Naxos is increased to a total of 23 species. This number represents approximately 28% of the odonata occurring in Greece and should be considered relatively significant. Phenology and localities of the 22 species recorded by us on Naxos are given at Table 2.

The two species added to Naxos represent rather common and widespread species in the Mediterranean area.

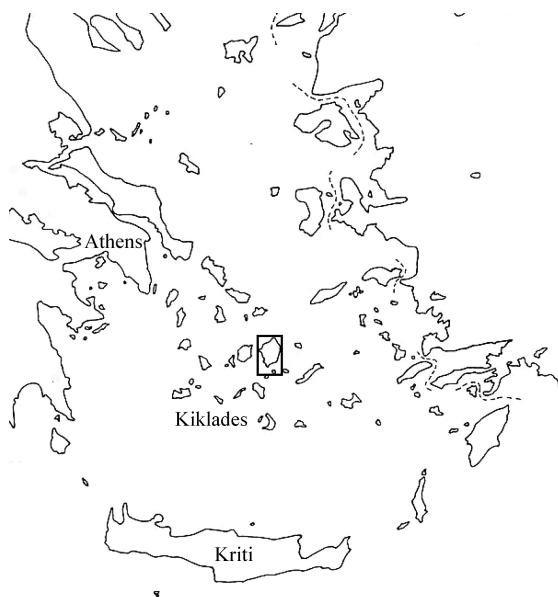
The genus *Sympetrum* was represented in Naxos with the widespread *S. fonscolombii* (LOPAU 2010). We increase the species of that genus to three. The record of *S. striolatum* is not a surprise as it is a widespread species already observed in several other Kikladic islands. It has been recorded from January to November. *Sympetrum meridionale* on the other hand, although a common Mediterranean species, has rarely been recorded from Kiklades. Naxos represents only the sec-

**Table 2.** Localities and phenology of the Odonata species of Naxos. – **Tabelle 2:** Fundpunkte und Phänologie der nachgewiesenen Libellenarten auf Naxos.

Species	Locality	Phenology
1 <i>Calopteryx splendens</i>	2	V
2 <i>Calopteryx virgo</i>	5	VI
3 <i>Sympecma fusca</i>	1,3	IV
4 <i>Chalcolestes parvidens</i>	2, 4, 6	V, VII, VII, VIII, IX, X
5 <i>Lestes macrostigma</i>	1, 4, 5	VI
6 <i>Platycnemis pennipes</i>	2, 4, 5	V, VI, VII
7 <i>Ischnura elegans</i>	1, 2, 3	III, IV, V, VII, VIII, IX, X
8 <i>Aeshna mixta</i>	1	XI
9 <i>Anax imperator</i>	1, 2	IV, V, VI, VII
10 <i>Anax parthenope</i>	1, 3	IV, VI, IX
11 <i>Anax ephippiger</i>	2	VIII
12 <i>Caliaeschna microstigma</i>	1	VI
13 <i>Onychogomphus forcipatus</i>	2	VII
14 <i>Cordulegaster helladica</i>	4, 5	VI, VII
15 <i>Orthetrum brunneum</i>	1, 4	VI, VII, IX
16 <i>Orthetrum cancellatum</i>	1, 3	VII, VIII, IX
17 <i>Orthetrum coerulescens</i>	1, 2, 3,7	V, VI, VII, VIII, IX, X
18 <i>Crocothemis erythraea</i>	1, 2, 3	IV, VI, VII, VIII, IX
19 <i>Sympetrum fonscolombii</i>	1, 2, 3, 4, 5, 6, 8	IV, V, VI, VII, VIII, IX, X
20 <i>Sympetrum meridionale</i>	1	V, VII, IX
21 <i>Sympetrum striolatum</i>	2	I, V, VIII, X, XI
22 <i>Trithemis annulata</i>	3, 7	IV, V, VI, VII, VIII, IX

ond record, after Andros (LOPAU 2010). It has been recorded successively at 2015 and 2016, only from one locality, Alikí (Loc. 1), from May to September. *Aeshna affinis* was first reported from Naxos by SCHNEIDER (2013) with three males, but was never seen since then. But due to its migrant behavior it should be expected in suitable years.

All five species documented from Iraklia are new records for the island. The presence of these five species should not be considered a surprise, since all have a widespread distribution in Greece, are already known from Naxos and are strong flyers and migrants. *Orthetrum brunneum*, a common and widespread species in Europe (BOUDOT et al. 2009), was recorded several times but only from Livadi, the small seasonal wetland. We recorded *Ischnura elegans*, one of the most common and most widespread species in Europe (BOUDOT et al. 2009), but only twice, in two disjunct localities. The two *Anax* species are either common and widespread



**Figure 1.** Location of the islands of Naxos and Iraklia in the central Aegean. – **Abbildung 1:** Lage der Inseln Naxos und Iraklia in der Ägäis.



**Figure 2.** Recording sites of Odonata in this study. – **Abbildung 2:** Fundpunkte der Libellen auf der Insel Naxos.

in Europe (*A. imperator*) or migrants (*A. ephippiger*) (BOUDOT et al. 2009). Both have been recorded regularly from the island. *Sympetrum fonscolombii* is another widespread species (BOUDOT et al. 2009) not unexpectedly found in Iraklia due to its known migratory behavior. The almost complete absence of any surface water makes the small island of Iraklia unfavourable for Odonata. Therefore the low number of species recorded was expected.

## Acknowledgments

Vincent J. Kalkman (Leiden) offered valuable suggestions on the available literature on Odonata of Greece and André Günther offered helpful remarks and corrections on an earlier version of the manuscript. They are both greatly acknowledged.

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Manuskripteingang: 24. September 2018

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Autor(en)/Author(s): Gavalas Giannis [Ioannis], Salteri Aggeliki, Alexiou Sotiris

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