

# Observation of swarming behaviour in *Selysiotthemis nigra* on the island of Évia, Greece (Odonata: Libellulidae)

Otakar Holuša

Department of Forest Protection and Wildlife Management,  
Faculty of Forestry and Wood Technology, Mendel University in Brno, Zemědělská 3,  
CZ-613 00 Brno, <holusao@email.cz>

## Abstract

On 10-vii-2009 a group of about 80 adults of *Selysiotthemis nigra* was observed near Kalyvia in northern Évia. The group consisted of both sexes and flew in a space of 80 x 30 m over the road and in adjacent non-forest areas. It is suggested that the aggregation was part of a migrating swarm.

## Zusammenfassung

Eine Beobachtung von Schwarmverhalten bei *Selysiotthemis nigra* auf der Insel Évia, Griechenland (Odonata: Libellulidae) – Am 10. Juli 2009 wurde nahe der Ortschaft Kalyvia im Norden von Évia (= Euböa) eine Ansammlung von 80 permanent hin- und herfliegenden Imagines beobachtet. Die Gruppe bestand aus beiden Geschlechtern und befand sich in einem Raum von 80 x 30 m über der Straße und in angrenzenden waldfreien Bereichen. Es wird davon ausgegangen, dass diese Ansammlung zu einem rastenden Wanderschwarm gehörte.

## Introduction

*Selysiotthemis nigra* occurs in the whole Mediterranean (BOUDOT et al. 2009), the area extends from northern Morocco through Syria and Jordan as well as through Iraq to central Asia (BORISOV 2005). In Europe, the species is known from southern Portugal, southern and south-eastern Spain, central and southern Italy (especially Sicily), from Dalmatia in Croatia, and rarely from Albania, eastern Bulgaria, and Greece (BOUDOT et al. 2009). In recent years, the species was recorded as new for some areas in the Mediterranean and adjacent regions (GRAND 1995; LOHR 2005; TAILLY & TABARRONI 2006; MATUSHKINA 2007; BOUDOT 2008). In Greece, records derive mainly from coastal areas like the Aegean Islands and the western and eastern coasts of the mainland (LOPAU 2010a). On Évia, the species

has been recorded in 2004 in the southern half of the island, 10 km southeast of Alivéri (LOPAU 2010b).

Habitats of this species are temporary standing waters in river lowlands or in coastal areas. The species inhabits semi-desert and desert areas (BORISOV 2005). Due to the character of their habitats and their drying, larvae are able to tolerate a high salt concentration caused by gradual desiccation. The temporary character of these waters determines their ecological strategy, which also includes migration of adults. Generally, the species is considered to be a migrant (BOUDOT et al. 2009).

Migration is a typical character within the life cycle of some odonate species, which is due to their flight capabilities. Whereas migration predominantly takes place very inconspicuously, in some species and under certain conditions it can become a very striking phenomenon by 'aggregation', i.e., grouping in swarms numbering sometimes up to millions of individuals (CORBET 1999: 395). *Selysiothemis nigra* is considered to be one of the migratory species, though the number of observations of migrating swarms is very low when compared with *Libellula quadrimaculata* or *Pantala flavescens* (cf. DUMONT & HINNEKINT 1973).

This article presents an observation of swarming behaviour in *S. nigra* in Europe.

## Observation

On 10-vii-2009 at 12:30 h EEST (ambient temperature 32°C, no wind, clear), a group of *Selysiothemis nigra* was observed containing approx. 80 individuals near Kalyvia in the northern part of Évia Island, Greece (38°44'15"N, 23°26'21"E; 107 m a.s.l.). The group, which was composed of both sexes, was observed in a space of 80 x 30 m over the road and in adjacent forest-free areas (Fig. 1). Eight males and seven females were caught; all these individuals were mature. The specimens are stored in coll. OH. Additionally, two individuals of *Sympetrum fonscolombii* were recorded here.

The group of *S. nigra* was observed for two hours flying at a height of 0.5 to 2.5 m (predominantly 1.0 to 2.0 m) above the ground. During the flight the dragonflies showed no tendency to alight on the ground or vegetation, they only hunted in the air.

## Discussion

*Selysiothemis nigra* is considered to be a strong migrant, however the knowledge of this trait is very small, since there are only reports of FRASER (1936), ASAHINA (1973), and SCHNEIDER (1981). The most detailed description of migrations derives from the desert areas of southern and central Jordan by SCHNEIDER (1981). On two days he observed several swarms, numbering tens of individuals of both sexes, migrating under windy and calm conditions as well, with some groups roosting on bushes or on the ground; in one case the author describes a group composed of *S. nigra* and *Lindenia tetraphylla*.

The observation of the swirling swarm in the present case can be interpreted as a swarm's stop on its migration, since there was apparently no water in the vicinity suitable for reproduction and no reproductive behaviour was recorded. It can be suggested that the swarm used the road leading from north to south as a guideline for migration, a phenomenon described formerly in the literature (cf. CORBET 1999: 396; SCHNEIDER 1981).

This case seems to be the first report of swarming of *S. nigra* from a habitat outside desert or semi-desert biomes. Additionally, this is the first record of a migration or aggregation of the species in Europe.

### Acknowledgement

This paper was put together under the framework of the research project "Strategy for the management of territories with a special protection status" MSM 6215648902-04 of Faculty Forestry and Wood Technology of Mendel University in Brno.



Figure 1: Place where a group of *Selysiothermis nigra* was observed on 10-vii-2009 near the village of Kalyvia, northern part of the island of Évia, Greece. – Abbildung 1: Lokalität, an dem eine Gruppe von *Selysiothermis nigra* am 10.07.2009 nahe der Ortschaft Kalyvia, im Norden von Évia, Griechenland, beobachtet wurde.

## References

- ASAHINA S. (1973) The Odonata of Iraq. *Japanese Journal of Zoology* 17: 17-36
- BORISOV S.N. (2005) Ecology of *Selysiothemis nigra* (Vander Linden, 1825) (Odonata, Libellulidae) under desert conditions. *Euroasian Entomological Journal* 4: 95-100 [In Russian, English abstract]
- BOUDOT J.-P. (2008) *Selysiothemis nigra* (Vander Linden, 1825), nouveau pour le Maroc, et autres observations sur les Odonates du Maghreb nord-occidental (Odonata: Anisoptera: Libellulidae). *Martinia* 24: 3-29
- BOUDOT J.-P., V.J. KALKMAN, M.A. AMORÍN, T. BOGDANOVIĆ, A. CORDERO RIVERA, G. DE GABRIELE, J.-L. DOMMANGET, S. FEIRREIRA, B. GARRIGÓS, M. JOVIĆ, M. KOTARAC, W. LOPAU, M. MARINOV, N. MIHOKOVIĆ, E. RISERVATO, B. SAMARAOUI & W. SCHNEIDER (2009) Atlas of the Odonata of the Mediterranean and North Africa. *Libellula Supplement* 9: 1-256
- CORBET P.S. (1999) Dragonflies: Behaviour and ecology of Odonata. Harley, Colchester
- DUMONT H.J. & B.O.N. HINNEKINT (1973) Mass migration in dragonflies, especially in *Libellula quadrimaculata* L.: A review, a new ecological approach and a new hypothesis. *Odonatologica* 2: 1-20
- FRASER F.C. (1936) The Fauna of British India, including Ceylon and Burma. Odonata, Vol. 3, Taylor & Francis, London
- GRAND D. (1995) Sur la présence de *Selysiothemis nigra* (Vander L.) en Aragon, Espagne (Anisoptera: Libellulidae). *Notulae Odonatologicae* 4: 91
- LOHR M. (2005) *Selysiothemis nigra* (Vander Linden, 1825) new for Portugal (Anisoptera: Libellulidae). *Notulae Odonatologicae* 6: 57-58
- LOPAU W. (2010a) Verbreitungsatlas der Libellen in Griechenland (Odonata). *Libellula Supplement* 10: 5-153
- LOPAU W. (2010b) Bisher unveröffentlichte Libellenbeobachtungen aus Griechenland IV (Odonata). *Libellula Supplement* 10: 155-260
- MATUSHKINA N.A. (2007) *Selysiothemis nigra* Vander L. new for the fauna of the Ukraine (Anisoptera: Libellulidae). *Notulae Odonatologicae* 6: 118-119
- SCHNEIDER W. (1981) Eine Massenwanderung von *Selysiothemis nigra* (van der Linden, 1825) (Odonata: Macrodiplactidae) und *Lindenia tetraphylla* (van der Linden, 1825) (Odonata: Gomphidae) in SüdJordanien. *Entomologische Zeitschrift* 91: 97-102
- TAILLY M. & A. TABARRONI (2006) *Crocothemis servilia* (Dru.) added to the Armenian fauna and new records of *Lindenia tetraphylla* (Vander L.) and *Selysiothemis nigra* (Vander L.) from Azerbaijan (Anisoptera: Gomphidae, Libellulidae). *Notulae Odonatologicae* 6: 93-95

Manuskripteingang: 23. Oktober 2011