

DRAGONFLIES OF LAKE GLUBOKOE NEAR MOSCOW, RUSSIA

H.J. DUMONT

Institute of Animal Ecology, University of Gent, Ledeganckstraat 35, B-9000 Gent, Belgium

Abstract – 25 spp. have so far been recorded from the lake. Most of these are typical of mesotrophic environments in central Europe. It is noteworthy that the lake's fauna changed little since the beginning of the 20th century.

Introduction

Glubokoe lake (55°45'N, 36°31'E) is a mesotrophic waterbody, situated some 90 km W of Moscow. Its maximum depth is 33 m, and surface area 58 ha (SMIRNOV, 1986a). It has a rounded shape, except for a shallow bay in the NNE, from which the outflow of the lake, the Malaya Istra river originates. This, in turn, leads to the Bolshoya Istra river, which is part of the Volga basin and is responsible for the appearance, from time to time, of isolated specimens of riverine odonate species on the lake. The lake itself is draining a surrounding swamp, partly through some rivulets and small canals, partly in a diffuse manner. Its water has a rather neutral pH (YANIN et al., 1986), but the marginal swamps are a source of brown humic material, and have pH values of 5.0-5.5.

Glubokoe lake is significant as the site of one of the first limnological field stations in Russia and in the world. Established in 1891, this institution has continued to function to the present, and generated its own scientific journal, *Trudy Gidrobiologicheskoi stantsii na Glubokom ozere*, published at irregular intervals since 1900, mostly in Russian. However, in 1986 a useful monograph on the lake was produced by N.N. Smirnov and co-workers (SMIRNOV, 1986b). It contains, inter alia, a list of animal taxa recorded from the lake in the 1980ies. Three Odonata are cited, extracted from a study on lake benthos (thus, based on larvae) by SOKOLOVA & IZVEKOVA (1983). An earlier list, representing 11 species recorded in the first years of the 20th century, had been published by ZOGRAF (1907).

The objective of the present contribution is to extend the species list for Lake Glubokoe and immediate surroundings, in order to bring it up to a more reasonable standard in terms of species richness. The relatively unpolluted nature of the area (the only immediate human influence being some forestry in the 19th century, and some wa-

ter drainage in the current century) also invites a comparison of the fauna present at the turn of the century and today.

Material and methods

Specimens have been recorded since July 1992, when the author first visited the Glubokoe field station, and were continued by Dr H. Segers and Mrs S. Dinakis in August 1992. This collecting effort was extended in 1993 and 1995, between the months of May and September (the ice-free period of the lake being between late April and October, on average) by Dr N.N. Smirnov, Dr N. Korovchinsky, Dr M. Orlova, and Mr A. Bienkowski. All records were net catches of adults, which are partly in the author's collection, partly in the collection of the Instituut voor Natuurwetenschappen, Brussels. In 1995, there were no additions to the cumulative species list, which was hence assumed to approach the total species richness of the lake although, inevitably, some rare species may have been missed.

Comments

On balance, it is remarkable that today's species list is so well congruent with that of ZOGRAF (1907): – cf. Table I. Save for the inconspicuous spring species *Nehalennia speciosa*, which was not seen in current years, but may well have been overlooked, almost all species present in the early 20th century are still abundant (cf. Tab. I) today. The record of *Onychogomphus forcipatus* by Zograf may have represented a stray specimen, having come in through the Malaya Istra, like *Calopteryx splendens* is seen doing today. *O. forcipatus* was not recorded by us in the river in 1992, but *Ophiogomphus cecilia* was common here.

A matter of some concern is the fact that the two species identified by SOKOLOVA & IZVEKO-

VA (1983) from larval material are of genera not recorded by other investigators; yet, such occurrences are not uncommon, and the two species (*Ischnura pumilio*, *Epithea bimaculata*) fit well into the general picture of the fauna of Glubokoe, which may be described as typical of a wooded swamp environment of continental Europe.

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References – SMIRNOV, N.N., 1986a, *Hydrobiologia* 141: 1-6; – SMIRNOV, N.N., [Ed.], 1986b, *Devs Hydrobiol.* 36: 1-164; – SOKOLOVA, N.Y. & E.I. IZVEKOVA, 1983, in: *Biotsenozy mezotrofnogo ozera Glubokogo*, pp. 138-149 [see also *Hydrobiologia* 141(1986): 89-93]; – YANIN, E.P., L.I. KASHINA & Y.E. SAYET, 1986, *Devs Hydrobiol.* 36: 11-23; – ZOGRAF, I.N., 1907, *Trudy gidrobiol. Sta. glubok. Ozere* 2: 400.

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Table I – List of the recorded species – [A: species present in the early 20th century and now still abundant]

Species	This paper	SOKOLOVA & IZVEKOVA (1983)	ZOGRAF (1907)	Notes
<i>Calopteryx splendens</i>	x			stray specimens
<i>Lestes sponsa</i>	x		x	
<i>Coenagrion hastulatum</i>	x			A
<i>C. puella</i>	x			
<i>C. pulchellum</i>	x			A
<i>Enallagma cyathigerum</i>	x			
<i>Erythromma najas</i>	x			A
<i>Ischnura pumilio</i>		x		
<i>Nehalennia speciosa</i>			x	
<i>Onychogomphus forcipatus</i>			x	
<i>Aeshna cyanea</i>	x			
<i>A. grandis</i>	x		x	A
<i>A. juncea</i>	x		x	
<i>Anax imperator</i>	x			
<i>Cordulia aenea</i>	x		x	A
<i>Epithea bimaculata</i>		x		
<i>Somaatochlora flavomaculata</i>			x	
<i>Libellula depressa</i>			x	
<i>L. quadrimaculata</i>	x		x	A
<i>Sympetrum danae</i>	x			
<i>S. flaveolum</i>	x		x	A
<i>S. sanguineum</i>	x			
<i>S. vulgatum</i>	x			
<i>Leucorrhinia caudalis</i>	x			seen only over water
<i>L. pectoralis</i>	x		x	