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***Waynea stoechadiana* (Lichenes: Bacidiaceae) – a Mediterranean element at the Caucasian Black Sea coast**

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Abstract

Waynea stoechadiana, hitherto known from Tenerife and from the thermomediterranean and the lower mesomediterranean belt of the Mediterranean, is reported here from Mediterranean vegetation outposts on the Abrau peninsula at the northern Caucasian Black Sea coast. Its ecogeographical behaviour there matches very well that known from the actual Mediterranean. A provisional areal formula of this species is given.

Zusammenfassung

***Waynea stoechadiana* (Lichenes: Bacidiaceae) – ein mediterranes Element an der kaukasischen Schwarzmeerküste** – *Waynea stoechadiana* war bisher von Teneriffa und aus der thermo- und unteren mesomediterranen Stufe der Mediterraneis bekannt. Sie konnte jetzt in Vorposten mediterraner Vegetation auf der Halbinsel Abrau an der nördlichen kaukasischen Schwarzmeerküste nachgewiesen werden. Ihr ökogeographisches Verhalten dort stimmt sehr gut mit dem aus der eigentlichen Mediterraneis bekannten überein, so dass eine vorläufige Arealformel für die Art gegeben werden kann.

Keywords: Abrau peninsula, lichen flora, Mediterranean outpost

1. Introduction

Due to its climatic heterogeneity, Caucasia holds a remarkable number of floristic provinces and subprovinces within a relatively small geographical range and is therefore rich in floristic elements (see, e. g., MEUSEL & JÄGER 1992). That is also true for lichens, where it is often particularly obvious (e.g., BARKHALOV 1983, KRIVOROTOV 1995, OTTE 2004). The Mediterranean element is restricted to a rather small area in Caucasia of which the lichen flora has as yet been poorly studied. However, during a short visit to the Abrau peninsula (north of Novorossiysk, northern Caucasian Black sea coast) in 2001, a number of Mediterranean and Mediterranean-Atlantic lichens could be found, as for instance *Diploicia canescens* (J. Dicks.) A. Massal., *Physconia grisea* (Lam.) Poelt ssp. *algeriensis* (Flag.) Poelt, *Roccella fucoides* (J. Dicks.) Vain., and *Teloschistes chrysophthalmus* (L.) Th. Fr. (see OTTE 2006). Most of them are rather widespread species that even extend more or less beyond the actual Mediterranean, e.g. in climatically mild regions along the coasts of western Europe.

Here data can be added on a species, the known distribution of which is much more restricted.

2. Materials and methods

During a visit at the Utrish Sea Station of the Institute of Problems of Ecology and Evolution of the Russian Academy of Sciences near Maly Utrish on 10–11 May 2004, lichens were collected on the territory of the station and in neighbouring Mediterranean vegetation outposts on coastal slopes. The collected material was deposited in GLM.

Among the material, a blue-green squamulose lichen was present with two specimens. It could not be determined until H. Sipman (Berlin) referred the author to the recently described *Waynea stoechadiana* (Abbassi Maaf & Cl. Roux) Cl. Roux & Clerc. This presumption was confirmed by the key and description in ROUX et al. (1995), considering morphology and chemistry. Specimen No. 15992 (see below) was examined for presence of lichen substances by thin layer chromatography (TLC) according to the method of CULBERSON & AMMANN (1979) in solvent systems A, B, and C (only acetone was used for extraction).

3. Results

3.1. Collecting sites

Waynea stoechadiana was found twice, at two neighbouring sites:

- Russian Federation: Krasnodar region, District of the City of Novorossiysk, area of Utrish Sea Station near Maly Utrish, on *Pistacia mutica*, about 20 m a.s.l., GPS (Potsdam): 44°42'22.6"N – 37°28'26"E, 10 May 2004, leg. V. Otte; GLM-L-16196
- Russian Federation: Krasnodar region, District of the City of Novorossiysk, coppice on sea-facing slope above lighthouse of Maly Utrish, on *Juniperus*, about 100 m a.s.l., approx. 44°43'N – 37°27'30"E, 10 May 2004, leg. V. Otte; GLM-L-15992

3.2. Lichen substances detected by TLC

One substance was detected by TLC. In solvent systems A and B its spot was situated somewhat above atranorin of the control sample (Rf class 7-8). In solvent system C the spot was more markedly above atranorin (Rf class 8). This is in accordance with the TLC characteristics of the unknown substance »stoech« that was found in specimens of *W. stoechadiana* from France by ROUX et al. (1995). No further substances were detected, whereas ROUX et al. (1995) additionally found traces of lecanoric acid in a part of the French specimens.

4. Discussion

Waynea stoechadiana has hitherto been known from the the thermomediterranean and the lower mesomediterranean belts of the Mediterranean (meridional and submeridional zones), up to 250 m a.s.l. and not more than 30 km from the coast, from the bark of several trees. Furthermore it has been recorded from Tenerife between 1200 and 1300 m a.s.l. on basaltic rocks (ROUX et al. 1995; see also for distribution map). Recently, it could be found also on the island of Ikaria in the Aegean Sea (SIPMAN et al. 2005). Thus, according to present knowledge, it can be estimated as a Mediterranean element, with a relatively restricted known distribution. Records are lacking not only from the southeastern Mediterranean, but also from

the most oceanic parts of the Mediterranean; all known stands are located in regions of levels III or IV of absolute oceanicity (level 2 of relative oceanicity) according to JÄGER (1968).

The collections communicated here were also made at low elevations close to the coast, as is the case in the Mediterranean records mentioned above. They are the more remarkable, as the Mediterranean vegetation outposts at Caucasian Black sea coast are restricted as a whole to a narrow stripe along the northern part of the Caucasian shore (that continues to the southern Crimea). On the Abrau peninsula, the association with the highest proportion of Mediterranean species of vascular plants is a coppice of *Pistacia mutica* Fisch. & C. A. Mey. and *Juniperus excelsa* M. Bieb. (SUSLOVA 2000). It is restricted to southern slopes up to 200 m a.s.l. and not more than 1.5 – 2 km from the coast (KUZNETSOVA 2000). In this association, *Waynea stoechadiana* was found.

Thus, the growing conditions of this species at its newly found Caucasian stands widely coincide with that from Southern Europe (see ROUX et al. 1995). A provisional zonal areal formula can be given now as follows:

m-sm · oz₂ EUR + CAUC + Canary Islands

Compared with the other species of *Waynea* Moberg (*W. californica* Moberg from California, *W. adscendens* Rico from the western Mediterranean, see ROUX et al. 1995, and *W. hirsuta* Tretiach from the Siberian lake Baykal region, see KOTLOV 2003), *W. stoechadiana* has by far the widest known distribution now among the species of this genus. Nevertheless, this distribution is ecogeographically not very ample or well circumscribed, as stated above.

5. Acknowledgements

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