**The implementation of the integrative taxonomy yielded some resolution of *Rhizoplaca subdiscrepans* cryptic diversity**

Katarzyna Szczepańska1\*; Pamela Rodriguez-Flakus2; Jacek Urbaniak1; Lucyna Śliwa2

1Department of Botany and Plant Ecology, Wroclaw University of Environmental and Life Sciences, pl. Grunwaldzki 24a, PL-50-363 Wrocław, Poland; 2W. Szafer Institute of Botany, Polish Academy of Sciences, Lubicz 46, PL-31-512 Kraków, Poland; \*E-mail: [katarzyna.szczepanska@upwr.edu.pl](mailto:katarzyna.szczepanska@upwr.edu.pl)

The discovery of a mysterious saxicolous lichen on the small basalt rock in the Polish Sudety Mts initiated research on placodioid taxa representing critical species complexes in the genera *Protoparmeliopsis* and *Rhizoplaca*. Our study was based on a range of analyses, including molecular as well as classical taxonomic methods. We conducted detailed morphological, anatomical and chemical examinations of reference material from Asia, Europe and North and South America focused primarily on a few related species with placodioid thallus. This was in addition to a phylogeny based on available (in GenBank) and newly generated ITS sequences. We have discovered occurrence of three different species in a population of placodioid lecanoroid lichens at the Polish site – *Rhizoplaca chrysoleuca* s. lato, *R. subdiscrepans* s. str. and *Protoparmeliopsis garovaglii.* The latter two were newly recorded in the country. As result of our research we have proposed also names for three putative cryptic species within *Rhizoplaca subdiscrepans* ‒ genetic lineages ’subd A, D and E’, which we have recognized as *R. phaedrophthalma, R. opiniconensis* and *R. subdiscrepans* s. str. respectively. Naming of *R. opiniconensis* clade was supported by placement of the type sequence in our phylogeny. Furthermore, we suggested to transfer  *Lecanora pseudomellea* to the genus *Rhizoplaca* with a proposal for a new combination – *R. pseudomellea*. Interesting biogeographical conclusions were also drawn: *R. subdiscrepans* s. str. should be consider as a European taxon, extending its range to West Asia, while *R. opiniconensis* has wider range than previously thought, and it occurs not only in North America but also in Asia. In addition we provided the first molecular evidence of *Protoparmeliopsis garovaglii* occurrence in South America (Bolivia and Peru) and the second one in Central Europe (Poland). What is more we neotypifyed *P. garovaglii* what should be useful for further circumscription of related taxa.