Taxonomy of hybridogenous rowans *(Sorbus)* in Slovakia and Hungary

(with attention to hybridogenous species coming from hybridization of species of the subgenera *Aria* and *Torminaria*)

By Vlastimil MIKOLÁŠ

The genus *Sorbus* includes 5–6 evolutionary lines, recently often evaluated as independent genera (e.g. ROBERTSON et al. 1991). Four of these groups are connected secondarily by hybridogenous species which could be defined in new hybridogenous genera including threefold hybridogenous genera.

Hybridogenous representatives coming from hybridization *Aria* x *Torminaria, Aria* x *Sorbus, Aria* x *Chamaemespilus*, perhaps also *Aria* x *Sorbus* x *Torminaria* and *Aria* x *Chamaemespilus* x *Sorbus* occur in Slovakia, while in Hungary only two former hybridogenous groups are present (KÁRPÁTI 1960, MÁJOVSKÝ, 1992).

9 hybridogenous species of *Aria* x *Torminaria* group were described in Slovakia, 21 ones from the territory of Hungary. As it was proved in papers of JANKUN et KOVANDA (1987, 1988), JANKUN (1993) at least two hybridogenous species of this parent combination analysed by them, are aposporous apomicts with occurrence of diplospory, pseudogamy, proper polyembryony, chromosome summation and haploid parthenogenesis. In these apomicts it is more or less facultative apomixis allowing their participation in further active evolution.

Several described Slovak species (e. g. *S. joannis* KÁRP.) can be primary hybrids even in the case of bringing fruits (deformed and not functional, MIKOLÁŠ, unpubl. data). The occurrence of hybrids spreading by vegetative reproduction and forming rather large, but locally very limited populations (which can be important in evolutionary processes and ecosystems, MIKOLÁŠ, unpubl. data) remains an unsolved problem. However, many Slovak taxa (e.g. *S. slovenica* KOVANDA, *S. futakiana* KÁRP., *S. magocsyana* KÁRP.) undisputably represent well differentiated units, which can be evaluated as apomictic microspecies. In several described microspecies (including *S. dolomiticola* MIKOLÁŠ, MIKOLÁŠ 1995) certain variability of leaves and life formes, which is perhaps only the manifestation of plasticity, is present.

21 hybridogenous Hungarian species of the given combination were described from the area approximately between Budapest and NW margin of Balaton lake. Several Hungarian species are widely distributed (*S. semiincisa* BORBÁS, *S. bakonyensis* JÁV. em. KÁRP.) and as well as many local species represent indisputably real taxa. On the other hand the species *S. latissima* KÁRP. and *S. decipientiformis* KÁRP. from Keszthely Mts. as well as some species from Vértes Mts. call for further research and lectotypification.

Another problem is the occurrence of very similar taxa in different areas. Thus e.g. *S. dolomiticola* MIKOLÁŠ is the species morphologically very similar, but not identical with Czech species *S. bohemica* KOVANDA. While polytopic origin of many polyploid species is generally accepted, in apomicts polytopic origin of species is a priori being excluded resulting from different population-gene-

tic structure in comparison with sexual polyploids. But apomictic *Taraxacum vindobonense* van SOEST (in the study using 8 isozyme loci) comprises many different lines, occurring in no more than 1 locality (BATTJES et al. 1992). Similarly, in apomictic species *Chondrilla juncea* L., using 6 polymorphic enzyme systems studied in populations from central Turkey, 91 different clones were found (CHABOUDEZ 1994). Evaluation of these different clones is a general problem. In the latter case these clones may arise by mutations (op. cit.) and thus they could be evaluated as intraspecific variability. In the case of the genus *Sorbus* and in *Taraxacum vindobonense* these different types can be as well the result of original hybridization of different genetypes of original parent species, as the processes of autosegregation, chromosome rearrangement (RICHARDS 1989), evolutionary processes following from residual sexuality and only partly result of mutations (cf. KIRSCHNER et ŠTĚPÁNEK 1994, MIKOLÁŠ 1994). When apomictic species arises from the hybridization of apomict and sexual species (often with high variability), number of different microtypes, which could be evaluated within the limits of variability of the newly developed hybridogenous species, comes into being. Because of hybridizations of different apomictic types or different sexual taxonomical formes their distinguishing is not unequivocal (for more detail cf. MIKOLÁŠ 1996, in prep.). After all, similar problems exist also in the genus *Alchemilla* (cf. op. cit.), *Taraxacum* and *Rubus* and undisputably in many others.

Problems of taxonomy of hybridogenous species of *Sorbus* (s. l.) thus cannot be resolved in short time and only gradual approximation to understanding of reality among others by molecular systematic methods will allow to decide better also their taxonomic evaluation.

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Botanische Auswertungsmöglichkeiten der Biotopkartierung Salzburg

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Zusammenfassung Die Biotopkartierung wird seit 1991 im Bundesland Salzburg (Österreich) vorwiegend nach vegetationskundlichen Aspekten durchgeführt. Sie ermöglicht daher verschiedene Auswertungen für botanische Fragestellungen.

Summary: In the Province of Salzburg (Austria) since 1991 biotope mapping is done primarily due to aspects of vegetation. Therefore it enables to carry out different evaluations for botanical questions.

Einleitung

Das Projekt der Biotopkartierung wurde im Bundesland Salzburg 1991 begonnen. Nach der Entwicklung der fachlichen Grundlagen, die in der Kartierungsanleitung (NOWOTNY & HINTERSTOISSER 1994) niedergelegt sind, und der für eine effiziente Verwaltung und Nutzung der Daten notwendigen EDV-technischen Voraussetzungen (FÖLSCHE & NOWOTNY 1992) wurde das Konzept zunächst in Polotprojekten kleineren Umfanges erprobt. Durch die gesetzliche Verankerung von Biotopschutz und -kartierung im neuen Salzburger Naturschutzgesetz 1993 und eine entsprechende Dotation konnte die Biotopkartierung ab 1993 in größerem Maßstab durchgeführt werden, wobei der Schwerpunkt im Salzburger Zentralraum lag.

Die wesentlichen Zielsetzungen sind neben der Erarbeitung von Grundlagendaten für den hoheitlichen und vertraglichen Naturschutz die Erfassung der für Landschaft und Naturhaushalt wesentlichen Strukturen und die Dokumentation der Biotopausstattung des Landes und seiner Teilräume im Sinne einer wissenschaftlichen Bestandsaufnahme (vgl. NOWOTNY 1995). Damit dient sie besonders auch dem Artenschutz.

Methodik und Datenstruktur

Im Bundesland Salzburg wird die Biotopkartierung als systematische, jedoch qualitativ selektive Inventarisierung und Dokumentation von Lebensraumflächen durchgeführt (NOWOTNY & HINTERSTOISSER 1994). Das bedeutet