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Contribution to a supraspecific structure of *Ranunculus* sect. *Ranunculus*

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ABSTRACT: *Ranunculus* sect. *Ranunculus* (= sect. *Auricomus* (SPACH) A. NYÁRÁDY) is divided into two subsections: Subsect. *Ranunculus* (provisionally in a wider sense) and subsect. *Cassubici* G. H. LOOS, subsect. nov., a relatively well-defined taxon. The traditional concept of MARKLUND (four elementary species with apomictic subspecies) cannot be accepted and has recently been rejected. Within the sect. *Ranunculus*, some of the „informal groups" may be regarded as series (analogically to the conditions in *Rubus* subgen. *Rubus*). The first series described are ser. *Indecori* G. H. LOOS, ser. nov. and ser. *Phragmitetori* G. H. LOOS, ser. nov.

KEYWORDS: *Ranunculus* sect. *Ranunculus*, taxonomy, supraspecific taxa, subsections, series.

Introduction

Grouping of species in supraspecific taxa is a very important procedure, especially in problematic apomictic complexes in the genera *Rubus, Taraxacum, Alchemilla, Hieracium* and also in *Ranunculus* sect. *Ranunculus,* the Goldilocks, treated in the present paper. The institution of such superior groups or „minor aggregates" (within a „major aggregate") is not only a great help for beginners, but also an aid to compare undescribed taxa with phenotypically related, already described species.

Results

In *Ranunculus* sect. *Ranunculus* (= sect. *Auricomus* (SPACH) A. NYÁRÁDY = *Ranunculus auricomus* agg.), some attempts to subdivide this complex group have been made till now. These attempts, however, almost failed to develop to useful concepts. The concept, almost generally accepted nowadays and also used in Flora Europaea (even in the second edition by TUTIN & AKEYROD 1993: 279 f.), is the subdivision of the section published by MARKLUND (1961 and 1965). The former Scandinavian concept based on the latter point of view, which states that all the elementary taxa are apomictic subspecies of four species, *Ranunculus auricomus* L., *R. fallax* (WIMM. & GRAB.) SLOBODA, *R. cassubicus* L. and *R. monophyllus* OVCZ. ERICSSON (1992) showed the shortcomings of this view and rejected the old concept by treating all *Auricomus* taxa of the „Flora Nordica" area (and the other European areas) as species. In addition, at least two of the above four „complex species" are not applicable as supraspecific taxa, because, for instance, no line can be drawn beetwen *R. auricomus* and *R. fallax* s. lat. and it seems likely that *R. fallax* s. lat. is a highly polyphyletic complex.

JULIN (1965) distinguished a *R. marklundii* group within *Ranunculus auricomus* s. lat. (sensu MARKLUND), and MARKLUND (1967) mentioned a *R. gyratidens* complex. FAGERSTRÖM (1967) established a *R. inops* group, FAGERSTRÖM & KVIST (1980) a *R. calvescens* group. Finally, JULIN (1980) published 22 mostly very narrowly defined groups and called his treatment a „preliminary attempt at taxonomic grouping".

In Central Europe, a progress in supraspecific grouping was achieved by the (unfortunately not published) work of GRÖBNER (1968), considerably extended and completed by BORCHERS-KOLB (1983 and 1985). BORCHERS-KOLB distinguishes three superior groups and, within these higher units, 15 groups of species. Although this concept was seen as a purely informal subdivision that need not imply any taxonomic conclusion (no subsections or series, but only superior groups and groups), the above studies prove that some of the groups are obviously well-defined (at least phenotypically) and distinct from other groups. Population and herbarium studies by the author - within the framework of a long-term, thorough evaluation of the *Auricomus* species of Central Europe and Germany in particular - support this conclusion.

The situation is similar to the conditions in *Rubus* subgen. *Rubus* (cf. WEBER 1973: 50): it could be discussed if it is adequate to evaluate Goldilock informal groups as taxonomic units. In the author's opinion, a uniform procedure in all apomictic complexes should be reached, so in the long run it would be necessary to constitute appropriate subsections and series. However, much work remains to be done to reach a somewhat complete concept - the gaps in the present knowledge are too large (cf. ERICSSON 1992: 128). This essay should therefore be seen as a first contribution to a supraspecific subdivision of the Goldilock complex.

While some of the informal groups by BORCHERS-KOLB (1983, 1985) could be accepted as well-defined series, some other groups are very problematic (if the entire area of the section *Ranunculus* is taken into consideration) and require further investigation. In particular, the separation of the *R. puberulus* group from the *R. stricticaulis* group is problematic in some cases.

BORCHERS-KOLB (l. c.) placed her groups in three superior groups: The *R. cassubicus* - „Großgruppe" including four groups, the *R. leptomeris* - „Großgruppe" including three groups and the *R. puberulus* - „Großgruppe" including eight groups. At the moment only two subsections are sufficiently justified - primarily the typical and more complex subsect. *Ranunculus* (which therefore eventually has to be divided in future); on the other side it is the relatively well-defined group of the allies of *R. cassubicus* with a more easterly distribution:

Subsectio *Ranunculus*

(incl. *R. leptomeris* - „Großgruppe" et. *R. puberulus* - „Großgruppe" sensu BORCHERS-KOLB).
Type species: *Ranunculus auricomus* L. (lectotypified by BENSON 1945, not KVIST 1987).

Plant medium sized to delicate. Basal leaves at least temporarily shallowly to deeply disected, with a flat (180°) to closed (0°) base. Cauline leaves few, rather narrow. Torus densely pilose to glabrous.

Representative species: *Ranunculus acuistylus* (RASCH) ERICSSON, *R. biformis* W. KOCH, *R. borchers-kolbiae* ERICSSON, *R. juratensis* BRODTBECK, *R. kochii* JASIEWICZ, *R. mergenthaleri* BORCHERS-KOLB, *R. puberulus* W. KOCH, *R. vertumnalis* O. SCHWARZ, etc.

Subsectio *Cassubici* G. H. LOOS, subsectio nova

Type species: *Ranunculus cassubicus* L. (lectotypifield by KVIST 1987)

Planta valde robusta et ramosa. Folia basalia plerumque integra, non divisa nec dissecta, conspicue magna, maxime 1-2 segmento medio contracto, rhomboideo praedita, sinui basali „v" - formi, angusto vel lobi se tegentibus. Folia caulina lata, elliptica, dentata. Torus ± semper dense pilous.

Plant very robust and ramose. Basal leaves mostly not divided or dissected, remarkably large, not more than 1-2 with a short, rhomboid main incision, with a „v" - shaped (90°) to nearly closed (0°) base. Cauline leaves broad, elliptic, dentate. Torus almost always densely pilose.

Representative species: *Ranunculus carpaticola* SOÓ, *R. cassubicifolius* W. KOCH, *R. cassubiciformis* SOÓ, *R. cassubicus* L., *R. elatior* (FRIES) ERICSSON, *R. hungaricus* SOÓ, *R. pseudocassubicus* (CHRIST) W. KOCH.

There are two papers with fundamental explantions and definitions that are essential for every beginner in observing *Ranunculus* sect. *Ranunculus*: BORCHERS-KOLB (1983) and BRODTECK (1988). In the present paper, the terminology follows that used in the above articles.

The delimitation of the *Cassubici* from the subsection *Ranunculus* is not absolutely clear-cut. SOÓ (1964, 1965) presented some species from Hungary which cannot be

assigned to either of the two subsections, but the variability of the leaf cycle of many of the mentioned species were studied unsatisfactorily. Natural relationships (because of the conspicous similitary of known species) can be presumed in the first instance only within the *R. cassubicus* group sensu BORCHERS-KOLB. On the other hand, there is an astonishing phenotypic distance between this group and all other groups, that is manifested by the combination of the characteristics (especially the from of the basal leaves is of a great importance) and the more easterly distribution.

It is unclear whether the *R. megacarpus, R. monophyllus* and *R. latisectus* groups which were placed in the *R. cassubicus* - „Großgruppe" by BORCHERS-KOLB (1985), should be classifield as members of subsection *Cassubici.* Some of the species of these groups show obvious relationships to described and undescribed species of subsection *Ranunculus*. Moreover, ERICSSON (1992: 128) points out that the *monophyllus* group, which is mainly distributed in Siberia, is not known satisfactorily.

According to BORCHERS-KOLB (1985: 55) the tori of **all species** of her *R. cassubicus* - „Großgruppe" should be pilose. But SOÓ (1964 and 1965) described species from Hungary which are related to the *R. cassubicus* - „Großgruppe", but these species have glabrous tori - a typical characteristic of the greater part of the Hungarian members of the whole section; especially *R. rapaicsianus* SOÓ could be considered as a species of subsection *Cassubici.* It is obvious, that pilosity of tori has only minor importance if the whole area of the section is taken into consideration. Because of the unsatisfactory knowledge of the concerned species, it was stated in the diagnosis of the subsection, that the torus is **almost** always densely pilose.

Within subsection *Ranunculus* some complexes of phenotypically closely allied species can be found. However, without a more detailed study of the variability of the groups or the described and hitherto undescribed species within the whole distribution area, it is not possible to transfer the groups by BORCHERS-KOLB (1983, 1985) to series. Especially the complicated conditions in Scandinavia and in eastern Europe require special attention.

The first groups that were intensively investigated are three species complexes placed in the *R. leptomeris*-„Großgruppe" by BORCHERS-KOLB (together with some aberrant Scandinavian relatives). The studies of the *R. leptomeris* group have not been finished yet, and this group is excluded from our considerations. The first series to be described here are:

Series *Indecori* G. H. LOOS, series nov.

Type species: *Ranunculus indecorus* W. KOCH

Planta ± gracilis, ex parte rubescens. Folia basalia (minimum 1) lobis angustis oblaceolatis, incisura tertiae ordinis ad 1/2 laminae vel ultra incisa, incisura quartae ordinis brevia vel absunt, sinu basali „v" - formi vel amplo vel late aperto. Folia caulina angustiora.

Plant ± delicate, partially reddish tarnished. Basal leaves (at least 1) with narrow, oblanceolate segments (lobes), incisions of the third order few reach beyond the middle

part of the blade, incisions of the fourth order short or absent, the base of the basal leaves „v" - shaped (90°) to flat (180°). Cauline leaves narrow.

Representative species: *Ranunculus afzelii* (RASCH) ERICSSON, *R. agynophorus* (JULIN) ERICSSON, *R. baeckii* (FAGERSTRÖM & KVIST) ERICSSON, *R. basitruncatus* BORCHERS-KOLB, *R. haasii* SOÓ, *R. hallstaensis* (JULIN) ERICSSON, *R. indecorus* W. KOCH, *R. integerrimus* (JULIN) BORCHERS-KOLB, *R. obliquifolius* (JULIN) ERICSSON, *R. palmularis* O. SCHWARZ, *R. parviflorifer* (JULIN) ERICSSON, *R. parvulifactus* (JULIN) ERICSSON, *R. ponticus* BORCHERS-KOLB, *R. singularis* (FAGERSTRÖM & KVIST) ERICSSON, *R. tutus* (FAGERSTRÖM & KVIST) ERICSSON.

Series *Phragmitetori* G. H. LOOS, series nov.

Type species: *Ranunculus phragmiteti* HAAS

Planta ± gracilis, ex parte rubescens. Folia basalia (minimum 1) lobis angustis oblanceolatis, incisura tertiae ordinis fere usque ad basin laminae incisa, incisura quartae ordinis usque ad 1/2 laminae incisa, sinu basali „v" - formi vel amplo vel late aperto. Folia caulina angustiora.

Plant ± delicate, partially reddish tarnished. Basal leaves (at least 1) with narrow, oblaceolate segments (lobes), incisions of the third order nearly reach the ground of the blade, incisions of the fourth order reach the middle of the blade, the base of the basal leaves „v" - shaped (90°) to flat (180°). Cauline leaves narrow.

Representative species: *Ranunculus altus* (JULIN) ERICSSON, *R. bottnicus* ERICSSON, *R. brunnescens* (MARKLUND) ERICSSON, *R. collanderi* (MARKLUND) ERICSSON, *R. feripes* (RASCH) ERICSSON, *R. incompletus* (FAGERSTRÖM) ERICSSON, *R. lepidus* (MARKLUND) ERICSSON, *R. longisectus* (JULIN) ERICSSON, *R. mancus* (FAGERSTRÖM) ERICSSON, *R. patulidens* (JULIN) ERICSSON, *R. phragmiteti* HAAS, *R. rostratulus* BORCHERS-KOLB, *R. trivialis* (JULIN) ERICSSON.

Both series are closely related and could be united to one series but the characteristics of the basal leaves make it possible to differentiate both taxa almost always (at least in grouping the hitherto described species). In addition, there is a tendency in losing the pilosity of tori in ser. *Phragmitetori*, while in ser. *Indecori* all species seem to have pilose tori. Besides, the Central European species of ser. *Phragmitetori* are almost confined to wet meadows, but the situation in Scandinavia is apparently different.

The centre of distribution of both series seems to be in Scandinavia because the number of species is considerably higher than in Central Europe. In North Germany the number of populations (and eventually the number of species) is also higher than in southern Germany. The southermost species is probably *R. indecorus.* But a lot of species of both series are known imperfectly or absolutely unknown - even from northern Central Europe (a few of them will be described next time by the present author and his colleagues).

Ranunculus altus, R. longisectus and *R. patulidens* were placed by JULIN (1980: 144) in his *Patulidens* group - together with *R. dysanthus* (JULIN) ERICSSON, *R. inaequalis* (JULIN) ERICSSON and *R. patulidentiformis* (JULIN) ERICSSON, three species which were

not studied adequately by the author. However, the author is not convinced that *R. inaequalis* and *R. patulidentiformis* are well placed together with the former three species which are clear members of ser. *Phragmitetori.* At least *R. inaequalis* should be compared with BORCHERS - KOLBS *R. leptomeris* and *R. argoviensis* groups .

Finally, BORCHERS - KOLB (1985: 275) points out that in Scandinavia some species exist which do not show all characteristics of her *R. indecorus* and *R. phragmiteti* groups. Observations by the author show that these taxa should be placed in (at least) one additional group (probably series), but the studies have not been finished yet.

It would be a great merit, if this essay would stimulate more botanists to work in taxonomy of *Ranunculus* sect. *Ranunculus* particulary cytotaxonomic and genetical studies are welcome to corroborate hypotheses based on phenotypic characters to clear up problematic cases.

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