

## A Note on the Classification of *Botrychium* Sw. s. l.

Poznámka ke klasifikaci rodu *Botrychium* Sw. s. l.

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HOLUB J. (1973): A note on the classification of *Botrychium* Sw. s. l. — Preslia, Praha, 45 : 276—277.

The subdivision of *Botrychium* s. l. into three genera — *Botrypus* MICHX., *Sceptridium* LYONS and *Botrychium* L. s. s. — is accepted, based especially on the characters of the leaf (shape and structure of the sterile part of the leaf, hairiness of the bud, morphology of the sheathing base of the leaf) and of the prothallium. Twelve new nomenclatural combinations are proposed, eight in *Botrypus*, four in *Sceptridium*.

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Several years ago an account of the group *Ophioglossidae* was prepared by the present author for the „Flóra ČSSR“ project. The account remained in manuscript, the project having been postponed. At that time the Czechoslovak representatives of *Botrychium* were referred to three genera: *Botrychium* Sw., *Sceptridium* LYONS and *Japanobotrychium* MASAMUNE. The original description of the latter generic name was not accessible to me at that time and neither was that of *Botrypus* MICHX. Therefore it was decided to refrain from any changes. Most recently PICHI-SERMOLLI (*Webbia* 26 : 497, 1971), in the critical study of the generic names of Pteridophytes, revised both these names from the nomenclatural point of view. Following his typification, *Botrypus* MICHX. 1803 has to be accepted instead of *Japanobotrychium* MASAMUNE 1931 as the correct name for the group of species related to *Botrychium virginianum* (L.) Sw.

*Botrychium* Sw. s. l. (= *Botrychiaceae*) consists of three very natural groups, defined primarily by the characters of the sterile part of the leaf, of the buds, of the sheathing base of the leaf and of the gametophyte. In *Botrychium* Sw. s. s. the sterile part of the leaf is pinnate, longer than wide; the buds are glabrous, as is the entire plant body; the leaf bud for the next year is completely enclosed in the sheathing base of the leaf; the prothallium is somewhat flattened, the primary root developing above and on the side of the prothallium; the embryo has no suspensor. Of the Czechoslovak taxa following species belong here: *Botrychium lunaria* (L.) Sw., *B. matricariaefolium* A. BR. and *B. simplex* HITCHC.

In *Sceptridium* LYONS the sterile part of the leaf is ternately decomposed, usually wider than long, attached as a rule towards the base of the plant and relatively long-stalked; the buds are usually hairy; the leaf bud for the next year is completely enclosed in the sheathing base of the leaf; the prothallium is flattened dorsiventrally, the primary root emerging from the lower surface of the prothallium, the embryo has a suspensor. Only one species of the genus — *Sceptridium multifidum* (S. G. GMELIN) TAGAWA — occurs in Czechoslovakia.

Species of *Botrypus* MICHX. have the sterile part of the leaf much dissected, ± sessile, wider than long; the buds are hairy; the sheathing base of the leaf

is open on one side and the bud is partly exposed; the prothallium is short-cylindrical, primary root developing above and on the side of the prothallium; embryo has no suspensor. In Czechoslovakia, only *Botrypus virginianus* (L.) HOLUB subsp. *europaeus* (ANGSTR.) HOLUB was found in one locality many years ago.

In addition to the morphological differences given above, the three genera seem to differ also in cytological respect. The available evidence would suggest that the basic chromosome number of *Botrychium* and *Sceptridium* is  $x = 45$ , that of *Botrypus* —  $x = 46$ .

When the above classification is accepted, no correct names exist for some taxa of *Botrychium* Sw. s. l. referred to separate genera. Therefore following new nomenclatural combinations have to be proposed, including eight for *Botrypus* (6 species, 2 subspecies) and four for *Sceptridium* (all for species).

### *Botrypus* MICHX.:

- Botrypus chamaeciconium* (BITTER et HIERONYM. ap. BITTER) HOLUB, comb. nova. — Bas.: *Botrychium chamaeciconium* BITTER et HIERONYMUS apud BITTER in ENGLER Nat. Pflanzenfam. 1/4 : 471, Leipzig 1900.
- Botrypus cicutaria* (SAVIGNY ap. LAM.) HOLUB, comb. nova. — Bas.: *Botrychium cicutaria* SAVIGNY apud LAMARCK Encycl. Méthod., Bot., 4 : 650, Paris 1797.
- Botrypus lanuginosus* (HOOKER et GREVILLE) HOLUB, comb. nova. — Bas.: *Botrychium lanuginosum* WALL. ex HOOKER et GREVILLE Icon. Filicium I, tab. 79, Londini 1829.
- Botrypus lanuginosus* (HOOKER et GREVILLE) HOLUB subsp. *leptostachyum* (HAYATA) HOLUB, status novus et comb. nova. — Bas.: *Botrychium leptostachyum* HAYATA Icon. Plant. Formos. 4 : 134, Taihoku 1914.
- Botrypus parvus* (CHING) HOLUB, comb. nova. — Bas.: *Botrychium parvum* CHING in CHIEN et CHUN Fl. Republ. Popul. Sinic. 2 : 330, Peking 1959.
- Botrypus striatum* (UNDERWOOD) HOLUB, comb. nova. — Bas.: *Botrychium striatum* UNDERWOOD Bull. Torrey Bot. Club 30 : 52, New York 1903.
- Botrypus virginianus* (L.) HOLUB, comb. nova. — Bas.: *Osmunda virginiana* LINNAEUS Spec. Plant., 1064, Holmiae 1753.
- Botrypus virginianus* (L.) HOLUB subsp. *europaeus* (ANGSTR.) HOLUB, comb. nova. — Bas.: *Botrychium virginianum* var. *europaeum* ANGSTR. Bot. Notiser 1854 : 68, Lund 1854. — Syn.: *Botrychium virginianum* subsp. *europaeum* (ANGSTR.) JÁVORKA Magyar Fl., 18, 1924.

### *Sceptridium* LYONS:

- Sceptridium alabamense* (MAXON) HOLUB, comb. nova. — Bas.: *Botrychium alabamense* MAXON Proceed. Biol. Soc. Washington 19 : 23, 1906.
- Sceptridium formosanum* (TAGAWA) HOLUB, comb. nova. — Bas.: *Botrychium formosanum* TAGAWA Acta Phytotax. Geobot. 9 : 87, Kyoto 1940.
- Sceptridium negerii* (CHRIST) HOLUB, comb. nova. — Bas.: *Botrychium negerii* CHRIST Ark. Bot. 6 : 2, Stockholm 1906.
- Sceptridium nipponicum* (MAKINO) HOLUB, comb. nova. — Bas.: *Botrychium nipponicum* MAKINO Journ. Jap. Bot. 1 : 5, Tokyo 1916.

Most of the new species of *Botrychium* described by CHING (in CHIEN et CHUN Fl. Republ. Popul. Sinic., 2, 1959) are not very clear to the present author from the taxonomic point of view and no new nomenclatural combinations (except for *B. parvum*) for them are proposed here.

### Souhrn

Rod *Botrychium* Sw. se rozpadá na 3 přirozené skupiny druhů, lišící se navzájem tvarem a složením sterilní části listové čepele, oděním pupenů, uzavřeností pochvovitě base listu a znaky na prothalliu. Uvedené 3 skupiny druhů lze taxonomicky hodnotit jako rody, jejichž správná jména jsou *Botrychium* Sw., *Sceptridium* LYONS a *Botrypus* MICHX. Pro některé druhy rodů *Botrypus* a *Sceptridium* jsou navrženy nové nomenklatorické kombinace.

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