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OEDIPODIUM GRIFFITHIANUM (OEDIPODIOPSIDA, BRYOPHYTA) – NEW SPECIES AND NEW CLASS FOR RUSSIAN FLORA

OEDIPODIUM GRIFFITHIANUM (OEDIPODIOPSIDA, BRYOPHYTA) – НОВЫЙ ВИД И НОВЫЙ КЛАСС ДЛЯ ФЛОРЫ РОССИИ

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Abstract

В горах Южного Сихоте-Алиня выявлен *Oedipodium griffithianum*, новый вид для России. Вид встречается в расщелинах скал метаморфизированных в целом б.м. кислых пород, на высотах 1450-1640 м. Согласно современным представлениям данный вид является единственным представителем отдельного семейства, порядка и класса, занимающего промежуточно положение между сфагновыми и политриховыми мхами.

Резюме

В горах Южного Сихоте-Алиня выявлен *Oedipodium griffithianum*, новый вид для России. Вид встречается в расщелинах скал метаморфизированных, в целом б.м. кислых пород, на высотах 1450-1640 м. Согласно современным представлениям данный вид является единственным представителем отдельного семейства, порядка и класса, занимающего промежуточно положение между сфагновыми и политриховыми мхами.

Oedipodium griffithianum (Dicks.) Schwägr. is a moss with highly disjunct localities restricted to oceanic climates. Schofield (1980) referred it to the group of circumalpine species, that have many highly disjunctive species in alpine, but not essentially arctic regions. It occurs in Europe (Great Britain, Ireland, Norway, Sweden, Finland), Greenland, Pacific North America (southern Alaska, British Columbia and Washington), Japan (Hokkaido, Honshu, Shikoku), China (Inner Mongol, Khingan Mountains and Sichuan), and in southern South America, in Argentina and Falkland Islands (Fig. 1). The habitats and distribution of *Oedipodium* in Scandinavia is excellently discribed by Stoermer (1969).

Lazarenko (1936) included *Oedipodium* as "possible in the Arctic regions of the Russian Far East" in his "Brief Handbook of mosses of Far East". It seems likely that this note was transformed later in the record for Russian Far East by Savicz-Lyubitskaya & Smirnova (1970), and some authors cited this as Siberia (e.g. Smith, 2004). Ignatov & Afonina (1992) reported this species for USSR with the questionmark, because no evidence for its occurrence in the country was found, except the cited above very indefinite data.

In the course of the expedition to the Sikhote-Alin we undertook extensive collecting at Olkhovaya Peak, 1642 m, the second highest mountain in the southern part of Sikhote-Alin.

The top is not high enough to exceed the climatic tree-line, although flat rocky areas near the peak are tree-less, providing a space for a tundra-like vegetation with lichens, dwarf shrubs of Ericaceae s.l. (incl. Vacciniaceae) and some northern mosses like *Aulacomnium turgidum, Racomitrium lanuginosum*, in addition to widespread *Hylocomium, Pleurozium, Rhytidium,* etc.

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Fig. 1. World distribution of *Oedipodium griffithianum* (Dicks.) Schwägr., based on publications (see Literature Cited) and specimens cited in http://mobot.mobot.org/W3T/Search/mbib.html.

Oedipodium was found on a rock field immediately below the top, at about 1620 m, in three big niches among huge boulders. Associated species include *Pohlia cruda, P. cf. nutans, Diplophyllum taxifolium, Schististega pennata, Sanionia uncinata.* Somewhat apart from the top, *Oedipodium* was found in cliff crevice at 1450 m, but in this place we saw just three plants strongly compressed by surrounded mosses.

Systematic position of this species is interesting. According to Brotherus (1924), *Oedipodium* belongs to its own family, which is close to Splachnaceae; the strong similarity in overall habit with some *Tayloria* species was obviously the main reason for this placement. This systemtic position was accepted by most bryologists, and some of them even included *Oedipodium* in Splachnaceae (e.g. Nyholm, 1989, Lawton, 1971). Recent molecular phylogenetic studies overturned the traditional view of relationship of this species: it was found in phylogenetic tree between *Sphagnum* and *Polytrichum*, thus its absence of peristome can be considered not secondary, but primary. Goffinet & Buck (2004) segregated *Oedipodium* to its own class, which meet an acceptance in recent checklists, e.g. Hill & al. (2006) and floras (Crum, 2006).

Oedipodium griffithianum (Dicks.) Schwägr., Spec. Musc. Frond., suppl. 2 (1,1): 15. 1823. – *Bryum griffithianum* Dicks., Fasc. Pl. Crypt. Brit. 4: 8, Pl. 10, fig. 10. 1801.

Plants in small groups or moderately dense tufts, succulent, pale green when wet, dark green when dry, although youngest parts remaining pale green, with glossy spots corresponding big cells. Stems erect or adscending, short in sporophyte-bearing plants, ca. 3 mm long, in plants with gametangia and terminal gemmae 3-12 mm long; in transverse section formed by uniform cells. Branching by innovations in places where leaves are not dense; the former easily broken off the stem. Leaves small below, larger and crowded in rosette distally, to 4.8 mm long, 3.2 mm wide; in lower part of stem look remote, but the leaf bases sometimes tightly appressed to stem, so the latter is hidden in continuous stocking of leaf bases, which however is usually unseen, as lower leaves lack chlorophyll. Leaves broadly obovate to spatulate, and often somewhat irregular in shape, rounded-obtuse, broadest at about 2/3 of leaf length in upper leaves and even more distally in lower leaves; margin plane to shallowly undulate, not recurved, entire except long, flexuose cilia; cilia mostly in proximal 1/5 of leaf, but in

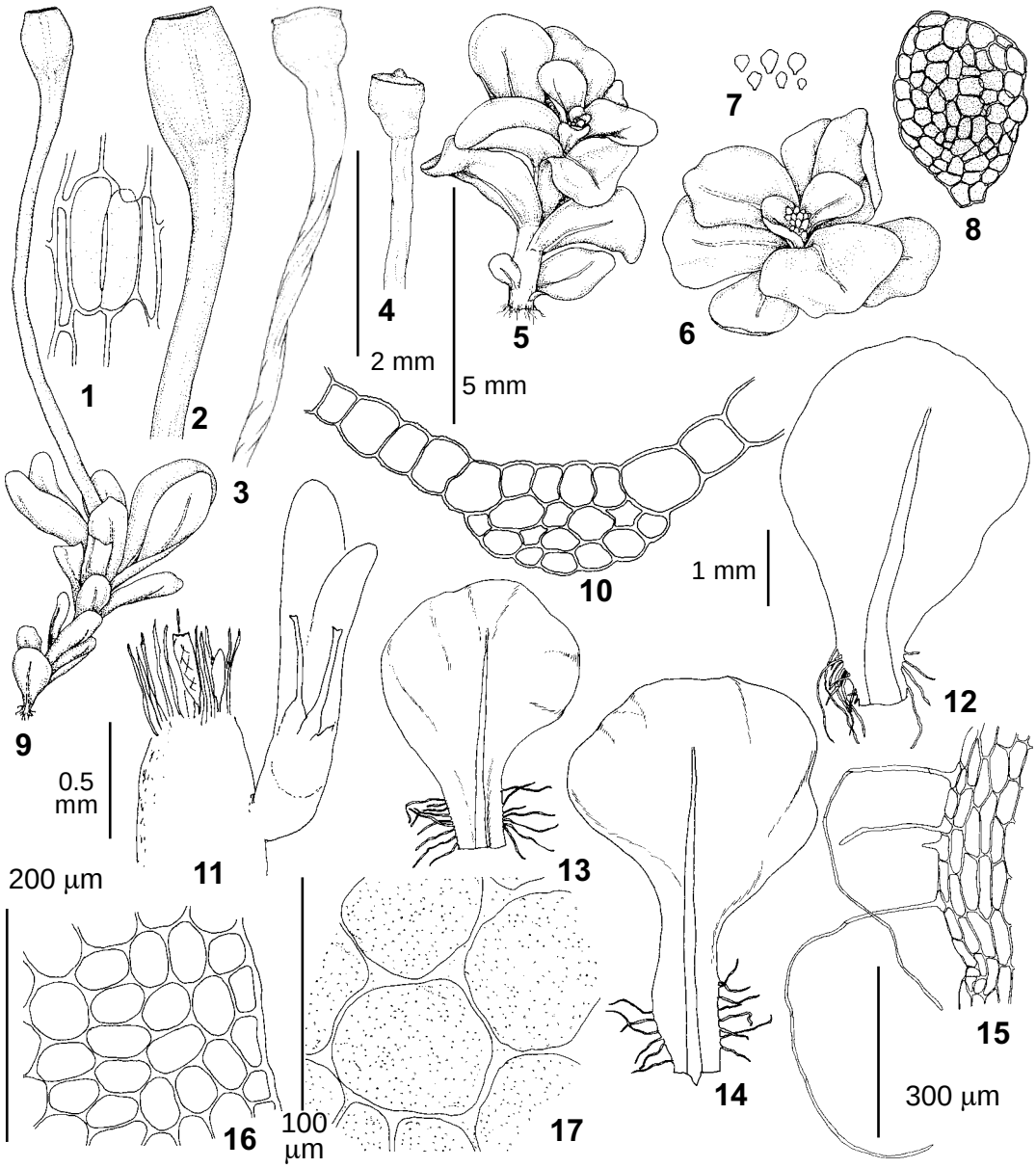

Fig. 2. *Oedipodium griffithianum* (Dicks.) Schwägr. (from Primorsky Territory, Ignatov, Ignatova & Cherdantseva # 06-2700, MHA); 1 – stoma; 2 – capsule, wet; 3-4 – capsules, dry; 5-6 – habit; 7-8 – gemmae; 9 – plan with sporophyte, wet; 10 – leaf transverse section; 11 – stem with young subterminal shoot, leaves mostly remove; 12-14 – leaves; 15 – basal lead cells with ciliae; 16-17 – median laminal cells. Scale bars: 5 mm – for 5-7, 9; 2 mm – for 2-4; 1 mm – for 12-14; 0.5 mm – for 11; 300 μm – for 15; 200 μm – for 8, 10, 16; 100 μm – for 1, 17.

small leaves they are scattered all around the margin; also cilia are usually present on abaxial costa at leaf base; cilia one cell wide, with transverse and oblique partitions between cells, unbranched, up to 8-10 μm wide, 0.3-0.7(-1.0) mm long. Costa single, reaching usually the level slightly above the braodest place in leaf, broader to base, filling 1/4-1/2 in basal portion. Laminal cells thin but firm-walled, round to ovate, 35-65 mm, covered by very small granulose papillae, distincltly collenchimatous, marginal cells quadrate to short rectangular, towards the base elongate-rectangular.

Discoid gemmae in rosettes of upper leaves, about 300 μm in diameter.

Main stem ending with antheridia and numerous paraphyses. Archaegonia on top of short lateral branches. Developed sporophytes terminal in plants with leaves of normal size. Seta fleshy, white or slightly greenesh along most of its length, slightly pinkish below, up to 1 cm long, strongly twisted when dry. Capsule with subglobose urn and long neck very gradually transiting to seta; stomata few on neck; peristome and annulus absent; exothecial cells moderately thick-walled, irregularly polygonal, in 2-5 rows below mouth transversely elongate; operculum almost plane and apiculate; columella conspicuous. Calyptra cucullate, naked. Spores tetrahedral, papillose, 30-35 μm.

Specimen examined: Primorsky Territory, Olkhovaya Peak, 1620 m, 43° 21' N – 133° 39' E, Ignatov, Ignatova & Cherdantseva # 06-2700, 2.X.2007 (MHA, MW, VLA).

The most unusual character of *Oedipodium* is its sexual condition. With considerable hesitation we describe our one-plant observation, which however, would be very intereting to check in places where plant material is not so limited. We were able to find both sexes on just one stem (others have terminal gemmae or sporophytes with remains of archaegonia on vaginula). The stem was termineted by paraphyses with few antheridia, and subterminal branchlets shortly below had terminal archaegonia, that were already fertilized (late autumn). What was unusual is that these branchlets looked so easily detachable, that they could be called "dwarf females". The more likely is that in spring these female branches quickly develop bigger leaves and sporophyte, but during this develop-men they are falling off the maternal stem (this may explain why sporophyte-bearing plants are so short-stemmed).

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