

LIVERWORTS FROM THE LARGEST OF THE UNITED STATES:
A CHECKLIST FOR MAINLAND ALASKA

ЧЕКЛИСТ ПЕЧЕНОЧНИКОВ КОНТИНЕНТАЛЬНОЙ АЛЯСКИ,
КРУПНЕЙШЕГО ШТАТА США

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Abstract

We report 294 liverwort taxa in 267 species for the State of Alaska, excluding the Aleutian Islands, 15 taxa are listed as doubtful and an additional 17 of the previous reports are rejected as erroneous. The checklist is based on 417 literature references, including monographs, regional studies, and molecular investigations. The list represents the first compilation of liverworts from the region for over three decades. It is likely that a number of new records remain to be reported, based on regionally widespread species that have been recorded elsewhere. On the other hand, it is envisaged that a number of the taxa presented here may be synonyms of other taxa as they are taxonomically insufficiently known.

Резюме

Чеклист включает 294 таксонов печеночников, относящихся к 267 видам, известным с Аляски, не включая Алеутские острова. 15 таксонов отнесены к сомнительным, а еще 17 исключены из флоры, поскольку выяснилась ошибочность определений. Чеклист основывается на 417 литературных источниках, в том числе систематических обработках, региональных флорах и заметках, а также образцах, цитированных в молекулярно-филогенетических работах. Список представляет собой первое за последние 30 лет обобщение по региону. Новые находки здесь вполне вероятны, учитывая, что не все распространенные на сопредельных территориях виды уже найдены в штате. С другой стороны, нельзя исключать что дальнейшие таксономические исследования приведут к сведению части таксонов в синонимы.

KEYWORDS: Alaska, liverworts, checklist.

INTRODUCTION

Bryophytes are a major component of Alaska's ecosystems, as in many northern landscapes, dominating plant biomass and production (Wielgolaski *et al.*, 1981). Bryophytes, together with other cryptogams generally, play critical roles in the functioning of many northern ecosystems of high latitude (Longton, 1997; Cornelissen *et al.*, 2007) such as regulation of hydrology (Beringer *et al.*, 2001), carbon balance (Rydin & Jeglum, 2006), nitrogen fixation (Solheim *et al.*, 1996), soil drainage (Vitt & Pakarinen, 1977) and preservation of permafrost (Dyrness, 1982; Yoshikawa *et al.*, 2002). Given their importance, changes in abundance and species composition of cryptogams in northern landscapes have significant impacts on regional biogeochemistry and feedbacks to global climate (Lang *et al.*, 2011). Around the world, including Alaska, oil and gas exploration and development are moving into areas previously undisturbed by industrial development (Wilson *et al.*, 2013). Yet, despite the ecological significance of bryophytes in northern land-

scapes, the bryophyte flora remains relatively poorly known in comparison to the vascular flora and wildlife generally. This is especially the case for liverworts.

We here present a checklist of liverworts for the State of Alaska (excluding the Aleutians) to summarize the current knowledge and further promote and encourage bryological research in the region. The significance of checklists was summarized by Söderström *et al.* (2007, 2008), outlining the utility of checklists as powerful and important tools, and their applicability to taxonomy, systematics, and conservation.

As with many other regions in the world, given the relatively poor historical focus on liverworts in Alaska, it is likely that a vast number of new records are yet to be reported. In this checklist we report 294 taxa in 267 species, with another 14 taxa questioned. Seventeen taxa are rejected as erroneously reported from Alaska.

Alaska is the largest of the United States. The continental part covers 16 degrees of latitude stretching from Lake and Peninsula Borough at 55°N to Point Barrow at

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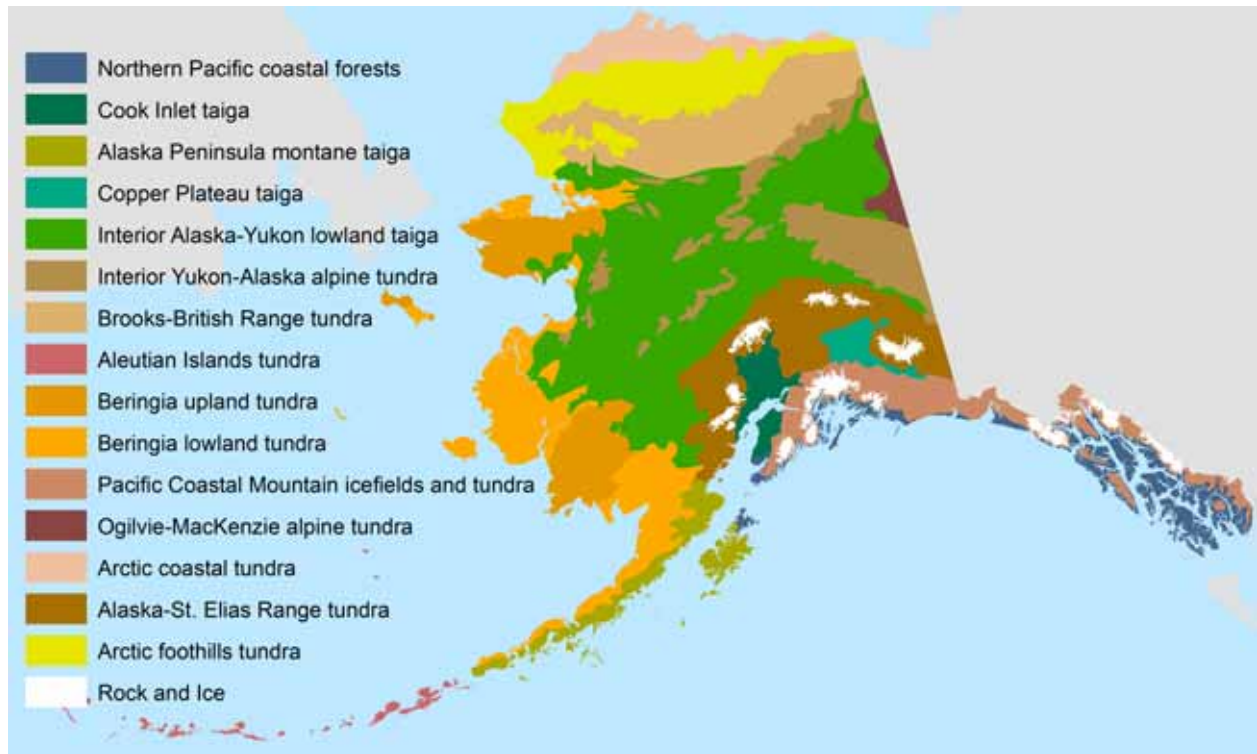


Fig. 1. Terrestrial ecoregions of Alaska following Olson *et al.* (2001).

71°N. It covers 38 degrees of longitude from Ketchikan Gateway at 130°W to Nome census area at 168°W. Alaska is ecologically diverse ranging from coastal to upland tundra, coastal to boreal forests, to vast ice fields (Fig. 1). Wahrhaftig (1965) reported the great topographic diversity of Alaska in detail and divided it into 12 physiographic provinces and 60 smaller divisions.

Hultén (1940) provided a detailed history of early botanical exploration in the Alaska and Yukon territories from the time of their discovery by Europeans in 1741 to the year 1940. Hultén provided a comprehensive list of early collectors, including details of their exploration and voyages, collections, herbaria housed, and resulting publications. Steere (1978), Steere & Inoue (1978) and Davison (1993) provided historical accounts of bryology in Alaska, including the North American Arctic in general. Steere (1978), focusing on the Arctic, remarked that the bryophytes of Arctic Alaska remained almost totally unknown until the 1950's, in stark contrast to Siberia, Arctic Canada and Greenland that were relatively well known. The historically poor knowledge of liverworts from Alaska had its roots in 18th and 19th century explorations and is summarized by an example offered by Steere & Inoue (1978). They noted that despite significant collections of plants, including bryophytes, made by several important voyages of exploration in the first half of the 19th century relating to a search for a Northwest Passage through the seas north of North America, only one species of liverwort was collected and recorded – the cosmopolitan *Marchantia polymorpha*. One major challenge in areas

such as Alaska and elsewhere in the Arctic, is the vastness and the inaccessibility of many or most regions (Gillespie *et al.*, 2012). Despite this, there have been many avid collectors and an active interest in liverworts, especially since the 1950's. Interestingly, Alaska is the type locality for 23 described taxa, eight of which are recognized by current taxonomy. It remains very evident that Alaska, in general, remains under-explored for liverworts and much yet is to be discovered. It is interesting that no hornworts seem to have been reported from Alaska, or any other area of the American arctic.

MATERIALS AND METHODS

Nomenclature and taxonomy follows the forthcoming world checklist of hornworts and liverworts (Söderström *et al.* 2015). Sources include 417 publications found through the work with Early Land Plants Today (ELPT) database of liverwort taxonomy and distribution, and with some consultation with taxonomic experts. The checklist follows a similar format of previous liverwort and hornwort checklists by the authors, *e.g.*, Java (Söderström *et al.*, 2010), Fiji (Söderström *et al.*, 2011a), and Jamaica (Söderström *et al.*, 2011b). The checklist distinguishes between records that are based on specimens (reference in bold) and second-hand reports, *e.g.*, citations of earlier publications (reference in normal type). All names used for the references are given in brackets after the taxon name with spelling variants/errors within quotation marks. Taxa are arranged in alphabetic order. Significantly, each accepted taxon is qualified using a four level ranking system that indicates our level of knowl-

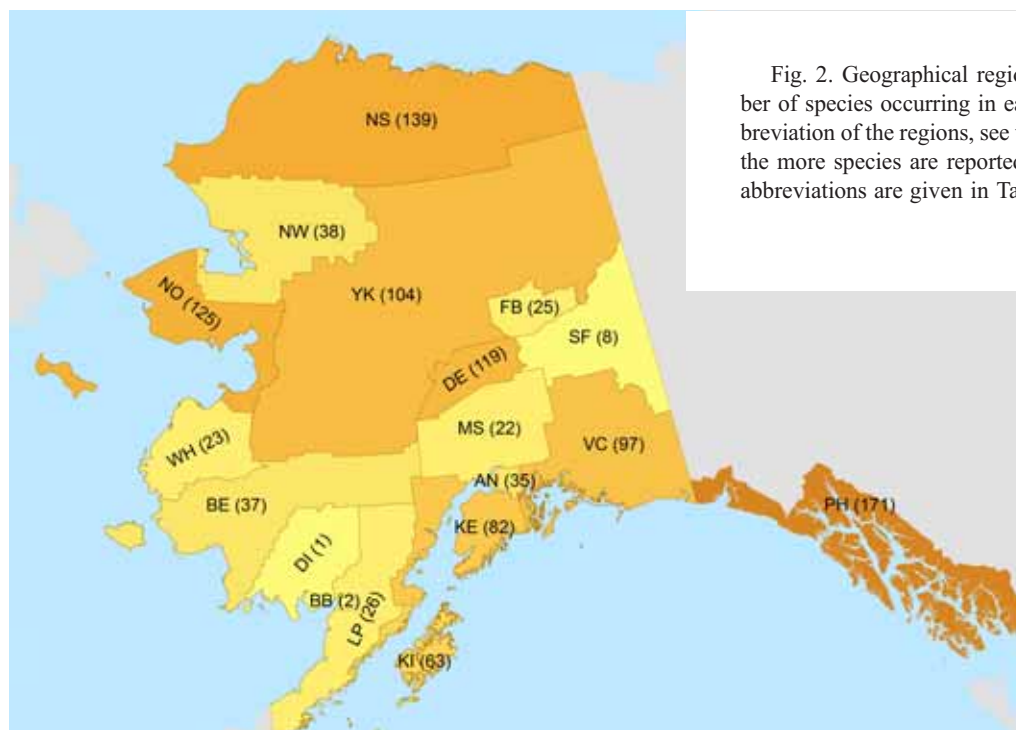


Fig. 2. Geographical regions used and the number of species occurring in each region. For the abbreviation of the regions, see text. The darker brown, the more species are reported from the region. The abbreviations are given in Table 1.

Table 1. Abbreviations of regions of Alaska (see also Fig. 2)

AN	Anchorage Borough
BB	Bristol Bay Borough
BE	Bethel census area
DE	Denali Borough
DI	Dillingham census area
FB	Fairbanks North Star Borough
KE	Kenai Peninsula
KI	Kodiak Island Borough
LP	Lake and Peninsula Borough
MS	Matanuska-Susitna Borough
NO	Nome census area
NS	North Slope Borough
NW	Northwest Arctic Borough
PH	Panhandle – this is a combination of ten boroughs and census areas in the southeast of Alaska
SF	Southeast Fairbanks census area
VC	Valdez-Cordova census area
WH	Wade Hampton census area
YK	Yukon-Koyukuk census area

edge about a taxon. The coding convention is outlined in detail by von Konrat *et al.* (2010). Briefly, ? = Problem with the taxon name; * = Serious doubts about the value of the taxon; ** = Knowledge problem; *** = Accepted, a good taxon as currently understood.

This checklist covers the state of Alaska, excluding the Aleutians Islands. The abbreviations are given in Table 1. Figure 2 indicates the boundaries applied in this paper as well as the number of species recorded in each area.

ACCEPTED TAXA

Acrobolbus

*** *A. ciliatus* (Mitt.) Schiffn. **ASK:** Worley 1970, Hattori 1975, Sharp 1987, Long & Grolle 1990. **PH:** Schofield 1988.

Anastrepta

*** *A. orcadensis* (Hook.) Schiffn. **ASK:** Brinkman 1934, Frye & Clark 1945, Müller 1954b, Grolle 1966b, Hattori 1966, 1968, 1971, 1975, Schofield 1968, Worley 1970, Schofield & Crum 1972, Damsholt 2002. **KI:** Persson 1946. **PH:** Evans 1915b, Persson 1946, **Worley 1972.** **VC:** Persson 1946, **Eyerdam 1952,** Worley 1972.

Anastrophyllum

*** *A. assimile* (Mitt.) Steph. (*Anastrophyllum reichardtii* “*reichardtii*”). **ASK:** Stephani 1901c, Evans 1915b, Herzog 1926, Arnell 1928, Brinkman 1934, Evans & Nichols 1935, Frye & Clark 1945, Arnell 1950, 1956, Müller 1954b, Grolle 1964b, 1966b, Hattori 1966, 1968, 1975, Hong 1966, 1996, Worley 1970, Schuster & Damsholt 1974, Godfrey 1977b, Long & Grolle 1990, Vána 1991, Bapna & Kachroo 2000b, Konstantinova 2000, Damsholt 2002, 2013, Schill & Long 2003. **DE:** Stehn *et al.* 2013. **NO:** Persson 1946, 1963, **Schuster 1969.** **NS:** Steere & Inoue 1978. **PH:** Persson 1963, **Worley 1972.** **VC:** Evans 1900, **Macoun 1902,** Müller 1910a, **Persson 1946,** **Schuster 1969.** **YK:** Steere & Inoue 1978.

*** *A. donnianum* (Hook.) Steph. (“*donianum*”). **ASK:** Grolle 1966b, Schofield 1968, Worley 1970, Hattori 1975, Long & Grolle 1990, Hong 1996, Paton 1999, Bapna & Kachroo 2000b, Schill & Long 2003. **PH:** Persson 1963, **Worley 1972.**

Aneura

*** *A. pinguis* (L.) Dumort. (*Riccardia pinguis*, *Aneura pinguis* var. *angustior*). **ASK:** Evans & Nichols 1908, Frye & Clark 1937, Ammons 1940, Worley 1970, Steere 1976, 1978, Miller *et al.* 1983, Schuster 1992a, Damsholt 2002, 2013,

Preussing *et al.* 2010. **DE:** Sherrard 1957, Persson & Weber 1958, Hermann 1973a, 1973b, Stehn *et al.* 2013. **FB:** Clark 1958b. **NO:** Potemkin 1995. **NS:** Persson 1962a, Rastorfer *et al.* 1973, Smith 1974, Murray & Murray 1975, 1978, 1982, Inoue 1976, Steere & Inoue 1978. **PH:** Clark & Frye 1948, Worley 1972. **VC:** Eyerdam 1952. **WH:** Potemkin 1995. **YK:** Persson & Gjaerevoll 1957, Murray & Murray 1978, Steere & Inoue 1978.

Anthelia

*** *A. julacea* (L.) Dumort. **ASK:** Bryhn 1906, Müller 1914a, 1954a, Brinkman 1934, Steere 1954, Worley 1970, Schuster 1974, 1984, Damsholt 2002, 2013. **BE:** Evans 1900, Macoun 1902. **DE:** Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **KE:** Schofield *et al.* 2002. **KI:** Griggs 1933. **MS:** Schuster & Konstantinova 1996. **NO:** Evans 1900, Macoun 1902. **NS:** Inoue 1976, Steere & Inoue 1978. **PH:** Evans 1915b, Frye & Clark 1943, Eyerdam 1952, Worley 1972. **VC:** Evans 1900, Macoun 1902, Clark & Frye 1942, Eyerdam 1952.

** *A. juratzkana* (Limpr.) Trevis. (*Anthelia nivalis*). **ASK:** Evans 1902, 1915b, Müller 1914a, 1954a, Brinkman 1934, Steere 1934, 1954, Frye & Clark 1943, Schuster 1958b, Worley 1970, Damsholt 2002, 2013. **BE:** Evans 1900, Macoun 1902, Persson & Gjaerevoll 1957, Schuster 1974. **DE:** Persson & Weber 1958, Persson & Viereck 1983, Stehn *et al.* 2013. **KE:** Schofield *et al.* 2002. **NO:** Arnell 1917, Persson & Gjaerevoll 1957, Schuster 1958a, Potemkin 1995. **NS:** Persson 1962a, Johnson *et al.* 1966, Smith 1974, Murray & Murray 1975, 1978, 1982, Steere & Inoue 1978. **PH:** Worley 1972. **YK:** Persson & Gjaerevoll 1957, Murray & Murray 1978, Steere & Inoue 1978.

Apotreubia

** *A. hortoniae* Konstant. (“*hortonae*”). **ASK:** Higuchi 1998, Konstantinova 2000. **MS:** HOLOTYPE, Schuster & Konstantinova 1995, 1996, Steh *et al.* 2002, Crosby & Engel 2006, Konstantinova *et al.* 2013.

Arnellia

*** *A. fennica* (Gottsche) Lindb. (“*hennica*”). **ASK:** Steere 1954, 1978, Müller 1956a, Worley 1970, Steere & Scotter 1978, Schuster 1980, Damsholt 2002, . **NS:** Steere & Schuster 1960, Persson 1962a, Murray & Murray 1975, 1978, Inoue 1976, Steere & Inoue 1978.

Ascidiota

*** *A. blepharophylla* C.Massal. **ASK:** Schofield & Crum 1972, Steere 1978, Schljakov 1982, Konstantinova 2000. **NS:** Schuster & Steere 1958, Steere 1969, Steere & Inoue 1978.

** — subsp. *alaskana* Steere et R.M.Schust. **ASK:** Worley 1970, Hattori 1978, Schuster 1980, 1984, Hong 1987, Hentschel *et al.* 2007. **NS:** HOLOTYPE, Steere & Schuster 1960, Persson 1962a.

Asterella

*** *A. lindenberiana* (Corda ex Nees) Lindb. ex Arnell (*Fimbraria lindenberiana* [“*Fimbriaria*”]). **ASK:** Evans 1919b, Haynes *et al.* 1923, Brinkman 1934, Frye & Clark 1937, Müller 1940, 1952, Flowers 1961, Worley 1970, Damsholt 2002, Long 2006. **DE:** Stehn *et al.* 2013. **MS:** Persson 1963. **NO:** Potemkin 1995. **PH:** Evans 1920, Worley 1972.

*** *A. saccata* (Wahlenb.) A.Evans (*Asterella fragrans*, *Fimbraria saccata* [“*Fimbriaria*”]). **ASK:** Howe 1899, Clark & Frye 1937, Frye & Clark 1937, Brinkman 1938, Müller 1940,

1952, Schuster 1958b, 1992b, Worley 1970, Long 2006, Damsholt 2013. **SE:** Murray 1992. **YK:** Murray 1992, Long 1999.

Barbilophozia

*** *B. barbata* (Schmidel ex Schreb.) Loeske (*Jungermannia barbata*, *Lophozia barbata*). **ASK:** Evans 1919b, Blomquist 1939, Frye & Clark 1945, Müller 1954a, Schuster 1969, Worley 1970, Steere & Scotter 1978, Hong & Matthews 2001, Damsholt 2002, 2013. **DE:** Persson & Weber 1958, Stehn *et al.* 2013. **KE:** Persson 1962a. **KI:** Clark & Frye 1942, Persson 1952. **LP:** Persson 1952. **MS:** Persson 1962a. **NO:** Arnell 1917, Persson 1952. **NS:** Persson 1952, 1962a, Inoue 1976, Steere & Inoue 1978. **PH:** Stair 1947, Persson 1952, Worley 1972. **VC:** Persson 1952. **YK:** Persson & Gjaerevoll 1957, Persson & Gjaerevoll 1961, Steere & Inoue 1978.

*** *B. hatcheri* (A.Evans) Loeske (*Lophozia hatcheri*). **ASK:** Müller 1954a, Schuster 1969, Worley 1970, Hong & Matthews 2001. **DE:** Persson & Weber 1958, Stehn *et al.* 2013. **KE:** Schofield *et al.* 2002. **LP:** Hasselbach 1995. **NO:** Persson 1947. **NS:** Steere & Inoue 1978, Murray & Murray 1982. **PH:** Persson 1947, Worley 1972. **YK:** Persson 1947, Steere & Inoue 1978, Murray & Murray 1982, Cooper 1986.

*** *B. lycopodioides* (Wallr.) Loeske (*Lophozia lycopodioides* [“*lycopodioides*”]). **ASK:** Evans 1915b [refers to Howe 1901 which reports it as new to Alaska, but the locality may actually be in Yukon], Brinkman 1934, Evans & Nichols 1935, Frye & Clark 1945, Persson 1947, Müller 1954a, Worley 1970, Zhang & Guo 1998, Hong & Matthews 2001, Damsholt 2002, 2013. **AN:** Persson 1952. **BE:** Persson 1952. **DE:** Persson & Weber 1958, Persson & Viereck 1983, Stehn *et al.* 2013. **KE:** Persson 1962a, Schofield *et al.* 2002. **KI:** Persson 1952, 1969. **MS:** Persson 1952. **NO:** Persson 1952. **NS:** Persson 1962a, Steere & Inoue 1978. **PH:** Stair 1947, Persson 1952, Clark & Frye 1949, Schuster 1969, Worley 1972. **VC:** Persson 1952, Persson & Gjaerevoll 1957. **WH:** Persson 1962b. **YK:** Persson & Gjaerevoll 1957, Persson 1962a, Murray & Murray 1978, Steere & Inoue 1978.

*** *B. sudetica* (Nees ex Huebener) L.Söderstr., De Roo et Hedd. (*Jungermannia alpestris* auct., *Lophozia alpestris* auct., *Lophozia sudetica*, *Lophozia debiliformis*, *Protolophozia debiliformis*, *Lophozia rufescens*). **ASK:** Brinkman 1934, Frye & Clark 1945, Clark & Frye 1948, Persson 1949, Müller 1954b, Schuster 1969, Worley 1970, Konstantinova & Czernjadieva 1995, Schuster & Konstantinova 1996, Grolle & Long 2000, Konstantinova 2000, Damsholt 2002, 2013, Hong 2002a, Bakalin 2004, 2011. **AN:** Persson 1952. **BE:** Persson 1952. **DE:** Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **KI:** Griggs 1933, Persson 1952. **LP:** Hasselbach 1995. **NO:** Arnell 1917, Potemkin 1995, Potemkin 1995. **NS:** Persson 1952, Smith 1974, Inoue 1976, Murray & Murray 1978. **PH:** Clark & Frye 1942, Persson 1952. Worley 1972. **VC:** Clark & Frye 1942, Eyerdam 1952, Persson 1952.

Bazzania

** *B. ambigua* (Lindenb.) Trevis. **ASK:** Fulford 1936, Brinkman 1938, Worley 1970, Hong 1987, 1988a. **FB:** Evans 1923. **PH:** Evans 1923, Frye & Clark 1946a, Eyerdam 1952, Persson 1963, Worley 1972.

** *B. denudata* (Lindenb. et Gottsche) Trevis. **ASK:** Brinkman 1938, Ammons 1940, Müller 1956c, Schuster 1969,

Worley 1970, Hong 1988a. **PH**: Fulford 1936, Clark & Frye 1942, Frye & Clark 1946a, Eyerdam 1952, Worley 1972.

** *B. pearsonii* Steph. ("pearsoni", *Pleuroschisma pearsonii*). **ASK**: Brinkman 1934, Arnell 1956, Hattori & Mizutani 1958, Grolle 1964b, Hattori 1966, Kitagawa 1967, Mizutani 1967, Schofield 1968, Worley 1970, Kitagawa 1978, Miller *et al.* 1983, Mizutani & Chang 1986, Hong 1988a, Long & Grolle 1990, Sharma & Srivastava 1993, Paton 1999, Bapna & Kachroo 2000a. **PH**: Evans 1915b, Fulford 1936, Frye & Clark 1946a, Müller 1956c, Worley 1972.

*** *B. tricrenata* (Wahlenb.) Lindb. **ASK**: Evans & Nichols 1908, Brinkman 1934, Ammons 1940, Müller 1956c, Fulford 1959, Schuster 1969, Worley 1970, Hong 1988a, Sharma & Srivastava 1993, Damsholt 2002. **PH**: Evans 1915b, 1923, Fulford 1936, Clark & Frye 1942, Frye & Clark 1946a, Worley 1972. **VC**: Evans 1915b, 1923, Clark & Frye 1942, 1949, Frye & Clark 1946a, Eyerdam 1952. **YK**: Persson & Gjaerevoll 1957, Worley 1972.

** — var. *tricrenata* (*Bazzania deflexa*, *Bazzania triangularis*, *Bazzania tricrenata* f. *vittii*). **ASK**: Pearson 1890, Bryhn 1906. **FB**: Macoun 1902. **PH**: Stephani 1886, Cooley 1892, Evans 1900, Macoun 1902. **VC**: HOLOTYPE of *Bazzania tricrenata* f. *vittii*, Evans 1900, Macoun 1902, Hong 1988a, Crosby & Engel 2006.

*** *B. trilobata* (L.) Gray **ASK**: Brinkman 1934, Fulford 1936, Ammons 1940, Schofield 1968, Breil 1970, Worley 1970, Hong 1988a, Damsholt 2002. **PH**: Evans 1915b, Frye & Clark 1946a, Schuster 1969, Worley 1972.

Blasia

*** *B. pusilla* L. **ASK**: Evans & Nichols 1908, Evans 1915b, Brinkman 1934, Frye & Clark 1937, Ammons 1940, Flowers 1961, Worley 1970, Damsholt 2002, 2013. **DE**: Sherrard 1957, Persson & Weber 1958, Worley 1972, Schuster 1992a, Stehn *et al.* 2013. **KE**: Schofield *et al.* 2002. **NS**: Steere & Inoue 1978. **PH**: Evans 1900, Macoun 1902, Clark & Frye 1948, Worley 1972, Schuster 1992a, Potemkin 1995. **YK**: Steere & Inoue 1978, Murray & Murray 1982.

Blepharostoma

*** *B. trichophyllum* (L.) Dumort. ([*"Blepharostoma"*], *Jungermannia trichophylla*). **ASK**: Rothrock 1867, Evans & Nichols 1908, Müller 1914a, 1954a, Brinkman 1934, Ammons 1940, Worley 1970, Miller *et al.* 1983, Damsholt 2002, 2013, Seppelt *et al.* 2008, Lichvar *et al.* 2009. **AN**: Clark & Frye 1949, Wagner 2011. **BE**: Evans 1900, Macoun 1902, Clark & Frye 1948. **DE**: Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **KE**: Persson 1962a, Schofield *et al.* 2002. **KI**: Wagner 2011. **MS**: Schuster & Konstantinova 1995. **NO**: Arnell 1917, Steere 1938, Potemkin 1995. **NS**: Persson 1962a, Johnson *et al.* 1966, Rastorfer *et al.* 1973, Smith 1974, Murray & Murray 1975, 1978, 1982, Inoue 1976, Steere & Inoue 1978. **NW**: Steere & Inoue 1978. **PH**: Coville 1895, Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Stair 1947, Eyerdam 1952, Worley 1972. **VC**: Evans 1900, Macoun 1902, Clark & Frye 1942, Eyerdam 1952. **WH**: Persson 1962b. **YK**: Persson & Gjaerevoll 1957, 1961, Persson 1962a, Murray & Murray 1978, 1982, Steere & Inoue 1978, Cooper 1986.

** — subsp. *brevirete* (Bryhn et Kaal.) R.M.Schust. (var. *brevirete*). **ASK**: Damsholt 2002, 2013. **DE**: Persson & Vi-

ereck 1983. **NO**: Arnell 1951, Schuster 1966, Persson & Viereck 1983, Potemkin 1995. **NS**: Rastorfer *et al.* 1973, Murray & Murray 1975, 1978, Inoue 1976.

** — subsp. *trichophyllum* **ASK**: **DE**: Stehn *et al.* 2013. **PH**: Frye & Clark 1943.

Bucegia

*** *B. romanica* Radian **ASK**: Konstantinova 2000. **DE**: Stehn *et al.* 2013. **NO**: Potemkin 1995.

Calycularia

*** *C. laxa* Lindb. et Arnell (*Calycularia crispula* auct. [cf. Konstantinova & Mamontov (2011)]). **ASK**: Schuster 1984, Hong 1987, Konstantinova 2000. **KE**: Konstantinova & Mamontov 2011. **MS**: Schuster & Konstantinova 1995, 1996, Konstantinova & Mamontov 2011. **NO**: Konstantinova & Mamontov 2011. **NS**: Murray & Murray 1978, Steere & Inoue 1978. **PH**: Davison & Smith 1992.

Calypogeia

*** *C. azurea* Stotler et Crotz (*Calypogeia trichomanis* auct. [at least majority reports after 1950]). **ASK**: Müller 1956c, Worley 1970, Allorge 1974, Hong 1990. **DE**: Stehn *et al.* 2013. **NO**: Persson 1952. **PH**: Frye & Clark 1946a, Eyerdam 1952, Persson 1952, Worley 1972.

*** *C. fissa* (L.) Raddi **ASK**: **DE**: Stehn *et al.* 2013.

*** *C. integristipula* Steph. (*Calypogeia meylanii*) **ASK**: Buch & Tuomikoski 1955, Schuster 1969, Worley 1970, Hong 1990, Damsholt 2002, 2013. **DE**: Stehn *et al.* 2013. **NO**: Persson & Gjaerevoll 1957. **NS**: Inoue 1976, Steere & Inoue 1978. **PH**: Persson 1952, Eyerdam 1952, Worley 1972, Hermann 1973a. **VC**: Persson 1952. **YK**: Persson & Gjaerevoll 1957, Steere & Inoue 1978.

*** *C. muelleriana* (Schiffn.) Müll.Frib. ("*mulleriana*"). **ASK**: Müller 1956c, Worley 1970, Hong 1990, Damsholt 2002, 2013. **DE**: Stehn *et al.* 2013. **KE**: Schofield *et al.* 2002. **NO**: Potemkin 1995. **NS**: Steere & Inoue 1978. **NW**: Steere & Inoue 1978. **PH**: Worley 1972. **VC**: Eyerdam 1952, Persson 1952, Shacklette 1961.

*** *C. neesiana* (C.Massal. et Carestia) Müll.Frib. **ASK**: Brinkman 1934, Clark & Frye 1937, Ammons 1940, Müller 1956c, Worley 1970, Hong 1990. **DE**: Stehn *et al.* 2013. **KE**: Clark 1958b. **KI**: Clark & Frye 1942. **NS**: Steere & Inoue 1978. **PH**: Evans 1915b, Frye & Clark 1946a, Eyerdam 1952, Worley 1972, Hermann 1973a. **YK**: Steere & Inoue 1978.

*** *C. sphagnicola* (Arnell et J.Perss.) Warnst. et Loeske **ASK**: Müller 1956c, Schuster 1969, Worley 1970, Johnson 1989, Hong 1990, Damsholt 2002, 2013, Seppelt *et al.* 2008, Lichvar *et al.* 2009. **DE**: Persson 1952, Persson & Weber 1958, Stehn *et al.* 2013. **NO**: Persson 1946, Potemkin 1995. **NS**: Persson 1952, 1962a, Inoue 1976, Steere & Inoue 1978, Murray & Murray 1982. **PH**: Worley 1972. **VC**: Persson 1952. **YK**: Persson & Gjaerevoll 1957, Steere & Inoue 1978.

*** *C. suecica* (Arnell et J.Perss.) Müll.Frib. **ASK**: **DE**: Stehn *et al.* 2013.

Cephalozia

*** *C. ambigua* C.Massal. (*Cephalozia bicuspidata* subsp. *ambigua*). **ASK**: Müller 1956c, Worley 1970, Damsholt 2002, 2013. **DE**: Sherrard 1957, Persson & Weber 1958, Worley 1972, Schuster 1974, Stehn *et al.* 2013. **KE**: Schofield *et al.* 2002. **KI**: Persson 1946, Worley 1972, Schuster 1974.

- NO:** Potemkin 1995, Potemkin & Sofronova 2013. **NS:** Murray & Murray 1978, Steere & Inoue 1978. **PH:** Persson 1946, Schuster 1950, 1974, Worley 1972. **VC:** Eyerdam 1952.
- *** *C. bicuspidata* (L.) Dumort. **ASK:** Evans & Nichols 1908, Stephani 1908a, Müller 1912, 1956c, Brinkman 1934, Ammons 1940. **BE:** Persson & Gjaerevoll 1961. **DE:** Persson & Weber 1958, Stehn *et al.* 2013. **KE:** Schofield *et al.* 2002. **KI:** Evans 1900, Macoun 1902, Griggs 1933, Clark & Frye 1948. **NO:** Arnell 1917, Potemkin 1995. **NS:** Persson 1963, Smith 1974, Murray & Murray 1978, Steere & Inoue 1978. **PH:** Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Stair 1947, Eyerdam 1952, Worley 1972. **VC:** Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Eyerdam 1952, Shacklette 1961. **YK:** Steere & Inoue 1978.
- ** — subsp. *bicuspidata* **ASK:** Worley 1970, Allorge 1974, Schuster 1974, Damsholt 2002, 2013. **DE:** Stehn *et al.* 2013. **PH:** Frye & Clark 1945.
- * — subsp. *lammersiana* (Huebener) R.M.Schust. (*Cephalozia lammersiana*). **ASK:** Worley 1970. **KE:** Clark 1958b. **LP:** Thomas 1952.
- Cephaloziella**
- *** *C. arctogena* (R.M.Schust.) Konstant. (*Cephaloziella rubella* subsp. *arctogena*). **ASK:** Schuster & Konstantinova 1996, Grolle & Long 2000, Konstantinova 2000, Damsholt 2013. **NO:** Potemkin 1995.
- *** *C. aspericaulis* Jörg. **ASK:** Grolle & Long 2000, Konstantinova 2000, Damsholt 2013. **NO:** Potemkin 1995.
- *** *C. divaricata* (Sm.) Schiffn. (*Cephalozia divaricata*, *Cephaloziella byssacea* auct., *Cephaloziella starkei*). **ASK:** Evans & Nichols 1908, Brinkman 1934, Ammons 1940, Müller 1956b, Damsholt 2013. **DE:** Persson & Weber 1958, Hong 1986, Stehn *et al.* 2013. **FB:** Clark 1958b. **KI:** Griggs 1933, 1935, Clark & Frye 1942. **NS:** Persson 1962a, Steere & Inoue 1978, Hong 1986. **NW:** Hong 1986. **PH:** Coville 1895, Evans 1915b, Clark & Frye 1942, Stair 1947, Hermann 1973a. **VC:** Clark & Frye 1942, Eyerdam 1952. **YK:** Steere & Inoue 1978.
- ** — var. *divaricata* **ASK:** Frye & Clark 1945, Worley 1970, Damsholt 2002. **DE:** Schuster 1980, Stehn *et al.* 2013. **PH:** Worley 1972.
- ** — var. *scabra* (M.Howe) Haynes (*Cephaloziella papillosa*). **ASK:** Worley 1970. **KI:** Hong 1986. **PH:** Eyerdam 1952, Worley 1972, Hong 1986.
- ** *C. elegans* (Heeg) Schiffn. **ASK:** **NO:** Potemkin 1995.
- *** *C. grimsulana* (J.B.Jack ex Gottsche et Rabenh.) Lacout. (*Cephaloziella grimsulana* var. *angustiloba*). **ASK:** Damsholt 2013. **NO:** Potemkin 1995.
- *** *C. hampeana* (Nees) Schiffn. ex Loeske **ASK:** Damsholt 2002, 2013. **KE:** Clark 1958b. **YK:** Schuster 1980.
- *** *C. integerrima* (Lindb.) Warnst. **ASK:** Damsholt 2013. **NO:** Potemkin 1995. **PH:** Potemkin 1995.
- *** *C. rubella* (Nees) Warnst. **ASK:** Müller 1956b, Worley 1970, Schuster 1980, Damsholt 2002, 2013. **PH:** Worley 1972. **VC:** Persson 1946, Eyerdam 1952, Hong 1986. **YK:** Persson 1963.
- *** *C. spinigera* (Lindb.) Jörg. (*Cephaloziella striatula*, *Prianolobus striatulus*, *Cephaloziella subdentata*). **ASK:** Evans 1919b, Brinkman 1934, Frye & Clark 1945, Müller 1956b, Worley 1970, Damsholt 2002, 2013. **AN:** Hong 1986. **DE:** Persson & Weber 1958, Hong 1986, Stehn *et al.* 2013. **NO:** Arnell 1917, Persson 1946, 1947, Schuster 1958b, 1980, Potemkin 1995. **NS:** Persson 1962a, Steere & Inoue 1978, Hong 1986. **VC:** Persson 1946.
- *** *C. uncinata* R.M.Schust. **ASK:** Schuster & Konstantinova 1996, Grolle & Long 2000, Konstantinova 2000, Damsholt 2002, 2013. **NO:** Potemkin 1995.
- *** *C. varians* (Gottsche) Steph. (*Cephaloziella arctica*). **ASK:** Worley 1970, Steere 1978, Schuster 1980, Damsholt 2002, 2013, Newsham 2010. **DE:** Persson & Weber 1958, Hong 1986, Stehn *et al.* 2013. **NO:** Potemkin 1995. **NS:** Persson 1962a, Johnson *et al.* 1966, Rastorfer *et al.* 1973, Smith 1974, Murray & Murray 1975, 1978, 1982, Inoue 1976, Steere & Inoue 1978, Hong 1986. **NW:** Hong 1986. **YK:** Persson & Gjaerevoll 1961, Steere & Inoue 1978, Murray & Murray 1982, Hong 1986.
- Chiloscyphus**
- *** *C. pallescens* (Ehrh.) Dumort. **ASK:** Brinkman 1934, Müller 1954a, Flowers 1961, Worley 1970, Steere 1976, Hong 1993, Damsholt 2002, Ellis *et al.* 2011. **DE:** Stehn *et al.* 2013. **KI:** Persson 1969. **NS:** Persson 1952, 1962a [rejected as *C. polyanthos* by Steere & Inoue 1978], Smith 1974, Murray & Murray 1978, Steere & Inoue 1978, Steere & Scotter 1978. **PH:** Evans 1915b, Frye & Clark 1943, Stair 1947, Clark & Frye 1948, 1949, Worley 1972.
- * — var. *fragilis* (Roth) Müll.Frib. (*Chiloscyphus fragilis*, *Chiloscyphus polyanthos* var. *fragilis*). **ASK:** Ammons 1940. **AN:** Järvinen 1983. **KI:** Clark & Frye 1942, Frye & Clark 1946b. **NS:** Murray & Murray 1978, Steere & Inoue 1978, Järvinen 1983. **PH:** Hermann 1973a, Järvinen 1983. **VC:** Järvinen 1983.
- * — var. *pallescens* **ASK:** Schuster 1980.
- *** *C. polyanthos* (L.) Corda (“*polyanthus*”). **ASK:** Evans & Nichols 1908, Ammons 1940, Schnoberger & Wynne 1945, Müller 1954a, Hong 1993, Damsholt 2002, 2013. **KE:** Clark 1958b, Schofield *et al.* 2002. **KI:** Clark & Frye 1942, Persson 1952. **NS:** Inoue 1976, Murray & Murray 1978, Steere & Inoue 1978. **PH:** Evans 1900, Macoun 1902.
- * — var. *polyanthos* **ASK:** Schuster 1980.
- * — var. *rivularis* (Schrad.) Lindb. et Arnell (*Chiloscyphus rivularis*). **ASK:** Schuster 1980. **PH:** Cooley 1892, Evans 1900, 1915b, Macoun 1902, Frye & Clark 1943. **VC:** Clark & Frye 1942, Frye & Clark 1943.
- Clevea**
- *** *C. hyalina* (Sommerf.) Lindb. (*Athalamia hyalina*). **ASK:** Worley 1970, Steere 1976, 1978, Steere & Scotter 1978, 1979, Schuster 1992b, Damsholt 2002, 2013. **NO:** Potemkin 1995. **NS:** Persson 1962a, Worley 1972, Murray & Murray 1975, 1978, 1982, Steere & Inoue 1978. **NW:** Steere & Inoue 1978. **PH:** Worley 1972. **SF:** Persson 1963. **YK:** Murray & Murray 1978, 1982.
- Cololejeunea**
- *** *C. macounii* (Spruce) A.Evans **ASK:** **PH:** Godfrey & Godfrey 1980b.
- Conocephalum**
- *** *C. salebrosum* Szwedk., Buczk. et Odrzyk. (*Fegatella conica* auct., *Hepatica conica* auct., *Conocephalum conicum* auct. “*Conocephalus conicus*” [we interpret all reports of *Conocephalum conicum* from Alaska as *C. salebrosum*; cf. Szwedkowski *et al.* 2005]). **ASK:** Stephani 1886, 1899a, Pearson 1890, Underwood 1891, 1895, Müller 1907, 1940, 1952, Evans & Nichols 1908, Casares-Gil 1919, Haynes *et al.* 1923, Brinkman 1934, Worley 1970, Schuster 1992b,

Bapna & Kachroo 2000b, Damsholt 2002. **DE:** Stehn *et al.* 2013. **KE:** Schofield *et al.* 2002. **KI:** Clark & Frye 1942. **NO:** Rothrock 1867, Evans 1900, Potemkin 1995. **PH:** Rothrock 1867, Cooley 1892, Evans 1900, 1915b, Macoun 1902, Frye & Clark 1937, Clark & Frye 1942, Eyerdam 1952. **VC:** Evans 1900, Clark & Frye 1942, Eyerdam 1952. **YK:** Szwedkowski *et al.* 2005.

Crossocalyx

*** *C. hellerianus* (Nees ex Lindenb.) Meyl. (*Isopaches hellerianus*, *Anastrophyllum hellerianum*). **ASK:** Müller 1954b, Worley 1970, Hong 1996, Damsholt 2002. **NS:** Steere & Inoue 1978. **VC:** Clark & Frye 1942, Eyerdam 1952, Schuster 1969. **YK:** Steere & Inoue 1978.

Cryptocolea

*** *C. imbricata* R.M.Schust. **ASK:** Schuster 1984, Grolle & Long 2000, Damsholt 2002, 2013. **AN:** Schuster & Konstantinova 1996. **NS:** Steere & Inoue 1978, Murray & Murray 1982.

Diplophyllum

*** *D. albicans* (L.) Dumort. (*Jungermannia albicans*, *Diplophyllia albicans*). **ASK:** Rothrock 1867, Müller 1914b, 1956a, Buch 1928, Brinkman 1934, Persson 1949, Hong 1966, 1980a, Worley 1970, Schuster 1974, Miller *et al.* 1983, Engel & Smith Merrill 1998, Damsholt 2002, 2013. **FB:** Macoun 1902. **KE:** Schofield *et al.* 2002. **KI:** Evans 1915b, Clark & Frye 1942, Persson 1969. **LP:** Hasselbach 1995. **NO:** Arnell 1917, Potemkin 1995. **PH:** Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Frye & Clark 1946a, Eyerdam 1952, Worley 1972, Schofield 1988. **VC:** Evans 1900, Macoun 1902, Clark & Frye 1942, Frye & Clark 1946a, Clark & Frye 1949, Eyerdam 1952. **WH:** Persson 1962b.

*** *D. obtusifolium* (Hook.) Dumort. **ASK:** Worley 1970, Godfrey 1977b, Hong 1980a, Schuster & Konstantinova 1996, Engel & Smith Merrill 1998, Damsholt 2002. **KE:** Damsholt 2013. **KI:** Persson 1952, Worley 1972. **NO:** Potemkin 1995. **PH:** Persson 1952, Worley 1972.

*** *D. taxifolium* (Wahlenb.) Dumort. (*Diplophyllia taxifolia*, *Diplophyllum taxifolium* var. *macrostictum* ["*macrosticta*"]). **ASK:** Underwood 1891, Evans & Nichols 1908, Müller 1914b, 1956a, Brinkman 1934, Ammons 1940, Persson 1949, Hong 1966, Worley 1970, Schuster & Damsholt 1974, Engel & Smith Merrill 1998, Damsholt 2002, 2013. **AN:** Clark & Frye 1949. **BE:** Evans 1900, Macoun 1902, Frye & Clark 1946b, Schuster 1974. **DE:** Persson & Weber 1958, Stehn *et al.* 2013. **KE:** Evans 1915b, Persson & Gjaerevoll 1961, Schofield *et al.* 2002. **KI:** Clark & Frye 1942, Frye & Clark 1946a, Persson 1969, Schuster 1974. **LP:** Hasselbach 1995. **NO:** Evans 1901b, Macoun 1902, Arnell 1917, Potemkin 1995. **NS:** Persson 1962a, 1963, Johnson *et al.* 1966, Smith 1974, Murray & Murray 1978, 1982, Steere & Inoue 1978, Hong 1980a. **NW:** Hong 1980a. **PH:** Evans 1900, 1915b, Howe 1901, Macoun 1902, Clark & Frye 1942, Frye & Clark 1946a, Eyerdam 1952, Worley 1972. **SF:** Persson & Gjaerevoll 1957. **VC:** Eyerdam 1952. **WH:** Persson 1962b. **YK:** Persson & Gjaerevoll 1957, Schuster 1974, Murray & Murray 1978, Steere & Inoue 1978.

Douinia

*** *D. imbricata* (M.Howe) Konstant. et Vilnet (*Diplophyllum imbricatum*, *Macrodiplphyllum imbricatum*). **ASK:** Evans 1915b, Brinkman 1934, Worley 1970, Hong 1987,

Vilnet *et al.* 2011, 2012, Heinrichs *et al.* 2012. **AN:** Persson 1949, Hong 1980a. **KE:** Persson 1946. **KI:** Persson 1946, 1947, Eyerdam 1952, Persson 1969, Hong 1980a. **MS:** Persson 1962a. **NS:** Steere & Inoue 1978. **NW:** Hong 1980a. **PH:** Macoun 1902, Persson 1946, 1949, Worley 1972, Hong 1980a. **VC:** Persson 1947, 1949, Eyerdam 1952, Hong 1980a. **YK:** Persson 1947, 1962a.

*** *D. ovata* (Dicks.) H.Buch (*Diplophyllum argenteum*, *Lo-phozia ovata*, *Diplophyllum ovatum*, *Sphenolobus ovatus*). **ASK:** Underwood 1891, Evans 1900, 1915b, Stephani 1910, Evans 1915b, Arnell 1928, Buch 1928, Brinkman 1934, 1940, Buch & Tuomikoski 1955, Müller 1956a, Worley 1970, Schuster 1984, Damsholt 2002, 2013. **KE:** Persson 1946. **PH:** Evans 1900, 1915b, Macoun 1902, Müller 1914b, Frye & Clark 1946a, Stair 1947, Eyerdam 1952, Persson 1952, Worley 1972, Godfrey & Godfrey 1980b. **VC:** Persson 1946, Eyerdam 1952, Persson 1952.

*** *D. plicata* (Lindb.) Konstant. et Vilnet (*Diplophyllia plicata*, *Diplophyllum plicatum*, *Macrodiplphyllum plicatum*, *Scapania plicata*). **ASK:** Stephani 1910, Buch 1928, Brinkman 1934, 1940, Clark & Frye 1942, Persson 1949, Hattori 1952, Schuster 1956, Hong 1966, 1980a, 1987, Worley 1970, Schofield & Crum 1972, Christy & Wagner 1996, Engel & Smith Merrill 1998, Doyle & Stotler 2006. **BE:** Evans 1900, Macoun 1902. **DE:** Persson & Weber 1958, Worley 1972, Stehn *et al.* 2013. **KE:** Schofield *et al.* 2002. **KI:** Clark & Frye 1942, Frye & Clark 1946a, 1946b, Persson 1947, Eyerdam 1952. **NO:** Arnell 1917, Persson 1947, Potemkin 1995. **NS:** Steere & Inoue 1978. **PH:** Evans 1900, 1915b, Macoun 1902, Frye & Clark 1946a, Worley 1972. **VC:** Evans 1900, Macoun 1902, Persson 1947, Eyerdam 1952. **WH:** Persson 1962b. **YK:** Murray & Murray 1978, Steere & Inoue 1978.

Endogemma

*** *E. caespiticia* (Lindenb.) Konstant., Vilnet et A.V.Troitsky (*Jungermannia caespiticia*, *Aplozia caespiticia* "Haplozia", *Solenostoma caespiticium*). **ASK:** Evans 1901a, 1915b, Brinkman 1934, Arnell 1956, Müller 1956a, Worley 1970, Konstantinova 2000, Bakalin 2012a, Faubert *et al.* 2012, Bakalin 2014c. **NO:** Evans 1901b, Macoun 1902, Müller 1909b, Frye & Clark 1943, Persson 1952, Schuster 1969, Váña 1974, Potemkin 1995, Váña & Hong 1999, Damsholt 2002.

Eocalypogeia

** *E. schusterana* (S.Hatt. et Mizut.) R.M.Schust. (*Metacalypogeia schusterana*). **ASK:** Worley 1970, Schuster & Damsholt 1974, Steere & Scotter 1978, Schuster 1984, Schuster & Konstantinova 1996, Konstantinova 2000, Damsholt 2013. **NS:** Schuster 1969, Steere & Inoue 1978, Hong 1990. **YK:** Steere & Inoue 1978, Hong 1990.

Fossombronina

*** *F. alaskana* Steere et Inoue **ASK:** Schljakov 1976, Steere 1976, 1978, Mogensen & Brassard 1978, Potemkin 1993, Schuster & Konstantinova 1996, Konstantinova 2000. **NO:** Potemkin 1995. **NS:** HOLOTYPE, Steere & Inoue 1974, 1978, Inoue 1976, Engel 1978a, Ireland & Ley 1984, Schuster 1992a, Kravesky *et al.* 2005, Crosby & Engel 2006, Damsholt 2013. **YK:** Steere & Inoue 1978, Murray & Murray 1982.

*** *F. foveolata* Lindb. ("faveolata"). **ASK:** Schuster 1992a, Damsholt 2002. **DE:** Hermann 1973a, 1973b [both reject-

ed as *Lophozia incisa* by Steere 1975b], **Steere & Inoue 1974**, Steere 1975, Stehn *et al.* 2013. **YK: Hermann 1973a** [rejected as *Lophozia incisa* by Steere 1975b], Steere 1975.

Frullania

*** *F. bolanderi* Austin **ASK: Ladyzhenskaja & Zinovjeva 1964** [questionable report as there is no first hand report and Hong 1989 reports it as “new to Alaska”]. **VC: Hong 1989**.

* *F. chilcootensis* Steph. **ASK: Pearson 1890**, Underwood 1891, Evans 1915b, Brinkman 1934, Worley 1970, Hong 1987. **PH: LECTOTYPE, Stephani 1886, 1911, Evans 1899, 1900, Macoun 1902, Frye & Clark 1947, Bonner 1965, Worley 1972, Godfrey & Godfrey 1980a**.

*** *F. eboracensis* Lehm. **ASK: Steere 1978, Godfrey & Godfrey 1980a, Schuster 1984, 1992a. NS: Steere & Inoue 1978, Hong 1989**.

*** *F. franciscana* M.Howe **ASK: Brinkman 1934, Iverson 1963, Worley 1970, Hattori 1972, Godfrey 1977b, Schuster 1984, Hong 1987. FB: Macoun 1902. PH: Evans 1900, 1915b, Macoun 1902, Frye & Clark 1947, Worley 1972, Hong 1989**.

*** *F. nisquallensis* Sull. (*Frullania tamarisci* subsp. *nisquallensis*). **ASK: Evans 1899, Stephani 1911, Brinkman 1934, Iverson 1963, Worley 1970, Steere 1976, 1978, Godfrey 1977b, Steere 1978, Schuster 1984, 1992a, Hong 1987, Konstantinova 2000, Damsholt 2002. DE: Stehn *et al.* 2013. FB: Evans 1900, Macoun 1902. KI: Persson 1952. NS: Inoue 1976, Steere & Inoue 1978, Hong 1989. NW: Hong 1989. PH: Stephani 1886, Coville 1895, Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Frye & Clark 1947, Stair 1947, Eyerdam 1952, Persson 1952, Worley 1972, Worley 1972, Godfrey & Godfrey 1980b. VC: Evans 1900, Macoun 1902, Clark & Frye 1942, Frye & Clark 1947, Eyerdam 1952, Persson 1952**.

Fuscocephaloziopsis

*** *F. albescens* (Hook.) Váňa et L.Söderstr. (*Cephalozia albescens*, *Pleuroclada albescens*, *Pleurocladula albescens*). **ASK: Evans 1919b, Brinkman 1934, Steere 1954, Worley 1970, Schofield & Crum 1972, Hong 1988b, Damsholt 2002, 2013, Vilnet *et al.* 2012. DE: Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. KE: Schofield *et al.* 2002. KI: Persson 1952. LP: Hasselbach 1995. MS: Persson 1952. NO: Arnell 1917, Persson 1952, Potemkin 1995, Potemkin & Sofronova 2013. PH: Eyerdam 1952, Persson 1952, Worley 1972. VC: Clark & Frye 1942, Eyerdam 1952, Persson 1952, Shacklette 1961. YK: Persson & Gjaerevoll 1957**.

* — var. *albescens* (*Pleuroclada albescens* f. *albescens*, *Pleuroclada albescens* var. *albescens*). **ASK: Schuster 1974. PH: Frye & Clark 1943** [rejected by Schuster 1974].

*** *F. catenulata* (Huebener) Váňa et L.Söderstr. (*Cephalozia catenulata*). **ASK: Hong 1988b. KE: Schofield *et al.* 2002. VC: Eyerdam 1952**.

*** *F. connivens* (Dicks.) Váňa et L.Söderstr. (*Cephalozia connivens*). **ASK: Müller 1956c, Worley 1970, Hong 1988b, Johnson 1989, Long & Grolle 1990, Bapna & Kachroo 2000a, Damsholt 2002. DE: Sherrard 1957, Persson & Weber 1958, Worley 1972, Stehn *et al.* 2013. PH: Clark & Frye 1942** [rejected as *Cephalozia media* (= *Fuscocephaloziopsis lunulifolia*) by Person 1952], **Worley 1972. VC: Clark & Frye 1942, Eyerdam 1952**.

*** — subsp. *connivens* (*Cephalozia multiflora*). **ASK: Schuster 1974. PH: Cooley 1892**.

*** *F. leucantha* (Spruce) Váňa et L.Söderstr. (*Cephalozia leucantha*, *Cephalozia leucantha*). **ASK: Stephani 1908b, Müller 1912, Lorenz 1915, Verdoorn 1933, Brinkman 1934, Brown 1936, Müller 1956c, Schuster 1958a, 1974, Bonner 1963a, Worley 1970, Hong 1988b, Damsholt 2002, 2013. BE: Persson & Gjaerevoll 1961. KE: Evans 1915a, 1915b, Frye & Clark 1945, Schuster 1950, Clark 1958b. NO: Persson 1952, Potemkin 1995, Potemkin & Sofronova 2013. NW: Steere & Inoue 1978. PH: Evans 1915a, Schuster 1950, Persson 1952, Worley 1972. VC: Evans 1900, 1915a, Macoun 1902, Evans 1915a, Persson 1952. WH: Persson 1962b. YK: Steere & Inoue 1978**.

*** *F. loitlesbergeri* (Schiffn.) Váňa et L.Söderstr. (*Cephalozia loitlesbergeri*). **ASK: PH: Worley 1972**.

*** *F. lunulifolia* (Dumort.) Váňa et L.Söderstr. (*Cephalozia multiflora*, *Cephalozia media*, *Cephalozia lunulifolia* “*lunulaefolia*”). **ASK: Evans & Nichols 1908, Müller 1912, Brinkman 1934, Ammons 1940, Müller 1956c, Breil 1970, Worley 1970, Steere & Scotter 1978, Johnson 1989, Damsholt 2002, 2013. DE: Stehn *et al.* 2013. FB: Clark 1958b. KE: Clark 1958b, Persson 1962a, Schofield *et al.* 2002. NO: Potemkin 1995, Potemkin & Sofronova 2013. NS: Persson 1962a, Steere & Inoue 1978. PH: Coville 1895, Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Frye & Clark 1945, Stair 1947, Eyerdam 1952, Persson 1952, Worley 1972, Schuster 1974. VC: Evans 1900, Macoun 1902, Clark & Frye 1942, Clark & Frye 1949, Eyerdam 1952. YK: Persson 1962a**.

*** *F. monticola* (J.D.Godfrey) Váňa et L.Söderstr. (*Schofieldia monticola*). **ASK: Hong 1988b, Vilnet *et al.* 2012. AN: Schuster 1995a. KE: Schofield *et al.* 2002. PH: Godfrey & Godfrey 1980b**.

*** *F. pachycaulis* (R.M.Schust.) Váňa et L.Söderstr. (*Cephalozia pachycaulis*). **ASK: Konstantinova 2000, Vilnet *et al.* 2012, Potemkin & Sofronova 2013. MS: HOLOTYPE, Schuster 1993, Schuster & Konstantinova 1996, Crosby & Engel 2006, Váňa *et al.* 2013**.

*** *F. pleniceps* (Austin) Váňa et L.Söderstr. (*Cephalozia pleniceps*). **ASK: Stephani 1908a, Müller 1912, 1956c, Evans 1919b, Brinkman 1934, Frye & Clark 1945, Worley 1970, Johnson 1989. DE: Persson 1952, Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. LP: Thomas 1952. NO: Arnell 1917, Persson 1952, Potemkin 1995. NS: Persson 1952, 1962a, Smith 1974, Inoue 1976, Murray & Murray 1978, 1982, Steere & Inoue 1978. PH: Persson 1952, Worley 1972. SE: Persson 1952. VC: Clark & Frye 1942, Eyerdam 1952. YK: Persson 1952, Persson & Gjaerevoll 1957, Murray & Murray 1978, Steere & Inoue 1978**.

** — var. *pleniceps* **ASK: Schuster 1974, Damsholt 2002, 2013**.

Geocalyx

*** *G. graveolens* (Schrad.) Nees **ASK: Brinkman 1934, Worley 1970, Schuster 1980, Miller *et al.* 1983, Johnson 1989, Hong 1993, Damsholt 2002. PH: Stair 1947, Worley 1972. VC: Evans 1915b**.

Gymnocolea

** *G. fascinifera* Potemkin **ASK: Konstantinova 2000. NO: HOLOTYPE, Potemkin 1993, 1995, Schuster & Konstantinova 1996, Crosby & Engel 2006. NW: Potemkin 1993, 1995**.

*** *G. inflata* (Huds.) Dumort. (*Lophozia inflata*). **ASK: Stephani 1902a, Evans & Nichols 1908, Müller 1910c**,

1954b, Brinkman 1934. **DE:** Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **KI:** Evans 1900, Macoun 1902. **NO:** Evans 1901b, Macoun 1902. **NS:** Smith 1974, Inoue 1976, Murray & Murray 1978, Steere & Inoue 1978. **NW:** Steere & Inoue 1978. **PH:** Evans 1915b, Worley 1972. **VC:** Clark & Frye 1942, Eyerdam 1952. **YK:** Drury 1956, Steere & Inoue 1978, Murray & Murray 1982, Cooper 1986.

* — subsp. *acutiloba* (Schiffn.) L.Söderstr. et Vána (*Gymnocolea acutiloba*, *Gymnocolea inflata* var. *acutiloba*). **ASK:** Schuster 1969, Worley 1970, Paton 1999, Damsholt 2002, 2013. **NO:** Potemkin 1995. **VC:** Shacklette 1961.

** — subsp. *inflata* **ASK:** Schuster 1969, Worley 1970, Damsholt 2002, 2013. **PH:** Frye & Clark 1945.

Gymnomitrium

*** *G. alpinum* (Gottsche ex Husn.) Schiffn. (*Marsupella alpina*). **ASK:** Arnell 1956, Müller 1956a, Schofield 1968, Worley 1970, Schuster 1974, Hattori 1975, Paton 1999, Konstantinova 2000, Damsholt 2002, Blockeel *et al.* 2005. **KE:** Schofield *et al.* 2002. **LP:** Hasselbach 1995. **NO:** Potemkin 1995. **PH:** Persson 1950, Eyerdam 1952, Worley 1972. **VC:** Persson 1968, Hong 1982.

*** *G. brevissimum* (Dumort.) Warnst. (“*Gymnomitrium*”, *Gymnomitrium varians*, *Marsupella varians*, *Marsupella brevissima*). **ASK:** Müller 1956a, Konstantinova 2000, Bakalin & Cherdantseva 2007, Damsholt 2013. **KE:** Schofield *et al.* 2002. **LP:** Thomas 1952. **NO:** Potemkin 1995. **VC:** Clark & Frye 1948.

*** *G. commutatum* (Limpr.) Schiffn. (*Marsupella commutata*). **ASK:** Grolle 1966b, Hong 1966, Hattori 1968, Kachroo 1970, Worley 1970, Bapna & Kachroo 2000b, Konstantinova 2000, Damsholt 2002, 2013. **DE:** Persson & Weber 1958, Schuster 1974, Hong 1982, Stehn *et al.* 2013. **NO:** Potemkin 1995.

*** *G. concinnatum* (Lightf.) Corda (“*Gymnomitrium*”, *Acolea concinnata*, *Cesius concinnatus* “*Cesia concinnata*”). **ASK:** Stephani 1886, Pearson 1890, Underwood 1891, Evans 1900, 1915b, Stephani 1901a, Müller 1909a, 1956a, Frye & Clark 1943, Worley 1970, Schuster 1974, Damsholt 2002, 2013. **AN:** Persson & Weber 1958, Hong 1984. **BE:** Persson & Weber 1958. **DE:** Persson & Weber 1958, Worley 1972, Hong 1984, Stehn *et al.* 2013. **KE:** Schofield *et al.* 2002. **NO:** Hong 1984, Potemkin 1995. **NS:** Steere & Inoue 1978, Hong 1984. **NW:** Hong 1984. **PH:** Macoun 1902, Persson & Weber 1958, Worley 1972, Hong 1984. **VC:** Hong 1984. **WH:** Persson 1962b, Hong 1984. **YK:** Steere & Inoue 1978, Hong 1984, Cooper 1986.

*** *G. coralloides* Nees (“*Gymnomitrium coralloides*”, “*G. coralloides*”, *Cesius coralloides* “*Cesia*”, *Acolea coralloides*). **ASK:** Stephani 1886, Pearson 1890, Underwood 1891, Pearson 1901, Stephani 1901a, Evans 1902, 1915b, Müller 1909a, Brinkman 1934, Steere 1954, 1978, Worley 1970, Damsholt 2002, 2013, Weber 2003. **AN:** Hong 1984. **BE:** Hong 1984. **DE:** Persson & Weber 1958, Worley 1972, Hong 1984, Stehn *et al.* 2013. **KI:** Clark & Frye 1942. **LP:** Hong 1984. **MS:** Hong 1984. **NO:** Hong 1984. **NS:** Smith 1974, Murray & Murray 1978, 1982, Steere & Inoue 1978, Hong 1984. **NW:** Hong 1984. **PH:** Worley 1972, Hong 1984. **SE:** Persson & Viereck 1983. **YK:** Steere & Inoue 1978, Hong 1984.

** *G. microphorum* R.M.Schust. **ASK:** Konstantinova 2000. **MS:** HOLOTYPE, Schuster 1995b, Schuster & Konstan-

tinova 1996, Crosby & Engel 2006, Damsholt 2013.

*** *G. obtusum* Lindb. (“*Gymnomitrium*”, *Acolea obtusa*). **ASK:** Stephani 1901a, Müller 1909a, 1956a, Lorenz 1915, Brinkman 1934, Bonner 1962b, Worley 1970, Schuster 1974, Damsholt 2002. **KE:** Frye & Clark 1943, Schofield *et al.* 2002. **KI:** Clark & Frye 1942, 1949, Hong 1984. **LP:** Hasselbach 1995. **NS:** Hong 1984. **PH:** Evans 1915b, Frye & Clark 1943, Persson 1963, Worley 1972, Hong 1984. **VC:** Evans 1900, Macoun 1902, Clark & Frye 1942, 1949, Eyerdam 1952, Persson 1963, Hong 1984.

*** *G. pacificum* Grolle (*Gymnomitrium crenulatum* auct. [cf. Schuster 1974]). **ASK:** Arnell 1956, Worley 1970, Schuster 1974, Hong 1987, Fulford & Sharp 1990, Konstantinova 2000, Damsholt 2002, Vána 2003. **NO:** Hong 1984, Potemkin 1995. **PH:** Grolle 1966a, Worley 1972, Hong 1984. **VC:** HOLOTYPE, Grolle 1966a.

*** *G. revolutum* (Nees) H.Philib. (*Apomarsupella revoluta*). **ASK** [all reports prior to 2013 seems to be based on the report by Smith (1978) from the Aleutians that Davison (1993) rejected as *Marsupella commutata*]: Schuster & Konstantinova 1996, Konstantinova 2000, Damsholt 2013. **DE:** Stehn *et al.* 2013.

Gyrothyra

*** *G. underwoodiana* M.Howe **ASK:** Brinkman 1934, Worley 1970, Godfrey 1977b, Schuster 1984, Hong 1987, Doyle & Stotler 2006. **KE:** Clark 1958b. **PH:** Evans 1915b, Frye & Clark 1943, Persson 1946, Worley 1972. **VC:** Clark & Frye 1942, Persson 1946, Eyerdam 1952, Clark 1958b, Worley 1972.

Haplomitrium

*** *H. hookeri* (Lyell ex Sm.) Nees **ASK:** Worley 1970, Schofield & Crum 1972, Schuster & Damsholt 1974, Godfrey 1977b, Schumacker *et al.* 1999b, Duckett & Slack 2013. **PH:** Worley 1969, 1972.

Harpanthus

*** *H. flotovianus* (Nees) Nees (“*flotowianus*”). **ASK:** Stephani 1907, Müller 1911b, 1956b, Lorenz 1915, Evans 1919b, Brinkman 1934, Worley 1970, Talbot 1987, Hong 1993, Damsholt 2002, 2013. **FB:** Macoun 1902, Evans 1917c. **KI:** Persson 1952. **NS:** Persson 1962a, Steere & Inoue 1978, Schuster 1980. **PH:** Evans 1900, 1917c, Macoun 1902, Stair 1947, Worley 1972. **VC:** Evans 1900, 1917c, Macoun 1902, Persson 1952. **WH:** Persson 1962b.

Herbertus

*** *H. aduncus* (Dicks.) Gray (“*Herberta adunca*”, *Schisma aduncum*, *Herbertus aduncus* subsp. *schusteri*, *Herbertus hutchinsiae* auct.). **ASK:** Underwood 1891, Müller 1914a, 1954a, Lorenz 1915, Arnell 1928, Hong 1966, Schuster 1966, Worley 1970, Godfrey 1977b, Bapna & Kachroo 2000a, Damsholt 2002. **BE:** Macoun 1902. **NS:** Steere 1969, Juslén 2004. **PH:** Evans 1900, 1915b, Macoun 1902 Frye & Clark 1943, Worley 1972, Schofield 1988, Hong *et al.* 1993, Juslén 2006. **YK:** Juslén 2004.

** *H. arcticus* (Inoue et Steere) Schljakov (*Herbertus sakuraii* subsp. *arcticus*). **ASK:** Schljakov 1982, Hong 1987, Forrest *et al.* 2006, Fedosov *et al.* 2015. **NS:** HOLOTYPE, Steere & Inoue 1978, Engel 1984, Hong *et al.* 1993, Crosby & Engel 2006. **NW:** Steere & Inoue 1978. **YK:** Steere & Inoue 1978.

*** *H. dicranus* (Gottsche, Lindenb. et Nees) Trevis. (*Herbertus sakuraii* “*Herberta*”, as *Herbertus himalayanus* ‘Her-

- berta himalayana*). **ASK**: Steere 1976, 1978, Schuster 1984, Piippo *et al.* 1997, Konstantinova 2000, Vána *et al.* 2014. **DE**: Stehn *et al.* 2013. **NS**: Inoue 1976. **PH**: Worley 1972, Hong *et al.* 1993, Juslén 2006.
- *** *H. sendtneri* (Nees) Lindb. **ASK**: Vána & Engel 2013. **PH**: Hong *et al.* 1993.
- Heterogemma**
- *** *H. laxa* (Lindb.) Konstant. et Vilnet (*Lophozia marchica*, *Lophozia laxa*, *Schistochilopsis laxa*). **ASK**: Hong 2002a, Bakalin 2011. **NS**: Inoue 1976, Murray & Murray 1978, Steere & Inoue 1978.
- Hygrobrella**
- *** *H. laxifolia* (Hook.) Spruce **ASK**: Worley 1970, Godfrey 1977b. **PH**: Worley 1972.
- Isopaches**
- *** *I. albobiridis* (R.M.Schust.) Schljakov (*Lophozia albobiridis*). **ASK**: Schuster & Konstantinova 1996, Konstantinova 2000, Bakalin 2011, Damsholt 2013. **NO**: Potemkin 1995.
- *** *I. bicrenatus* (Schmidel ex Hoffm.) H.Buch (*Lophozia bicrenata*). **ASK**: Frye & Clark 1945, Müller 1954b, Schuster 1969, Worley 1970, Damsholt 2002, Hong 2002a, Bakalin 2011, Damsholt 2013. **AN**: Persson 1952. **BE**: Persson 1963. **DE**: Stehn *et al.* 2013. **KE**: Schofield *et al.* 2002. **KI**: Griggs 1933, 1935. **LP**: Thomas 1952.
- Jungermannia**
- *** *J. atrovirens* Dumort. (*Aplozia atrovirens*, *Solenostoma atrovirens*, *Jungermannia tristis*, *Solenostoma triste*). **ASK**: Brinkman 1934, Clark & Frye 1937, Frye & Clark 1943, Müller 1956a, Amakawa 1960, Schuster 1969, Worley 1970, Worley 1970. **AN**: Persson 1952, Vána 1973, Vána & Hong 1999. **DE**: Stehn *et al.* 2013. **KE**: Vána & Hong 1999. **KI**: Persson 1952, Vána 1973, Vána & Hong 1999. **PH**: Evans 1915b, Clark & Frye 1948, Worley 1972, Vána & Hong 1999. **VC**: Evans 1900, Macoun 1902, Clark & Frye 1948, Vána & Hong 1999.
- *** *J. borealis* Damsh. et Vána **ASK**: Konstantinova 2000, Bakalin 2014c. **NO**: Potemkin 1995, Vána & Hong 1999, Damsholt 2013. **PH**: Vána & Hong 1999.
- *** *J. exsertifolia* Steph. **ASK**: Godfrey 1977b. **KE**: Schofield *et al.* 2002.
- ** — subsp. *cordifolia* (Dumort.) Vána (*Aplozia cordifolia*, *Jungermannia cordifolia*, *Solenostoma cordifolium* “*cordifolia*”, *Jungermannia exsertifolia* var. *cordifolia*, *Jungermannia eucordifolia*). **ASK**: Stephani 1886, Pearson 1890, Underwood 1891, Evans 1900, Stephani 1901b, Macoun 1902, Evans & Nichols 1908, Brinkman 1934, Clark & Frye 1937, 1948, Müller 1956a, Schuster 1969, Worley 1970, Vána & Hong 1999, Damsholt 2002, Damsholt 2013. **AN**: Persson 1952. **DE**: Stehn *et al.* 2013. **KE**: Clark 1958b. **MS**: Persson 1963. **PH**: Evans 1915b, Frye & Clark 1943, Worley 1972, Vána 1973. **VC**: Eyerdam 1952, Persson 1952, Vána 1973. **WH**: Persson 1962b.
- *** *J. polaris* Lindb. (*Solenostoma polare* “*polaris*”, *Solenostoma pumilum* subsp. *polaris*). **ASK**: Steere 1978, Bakalin 2014c. **NO**: Potemkin 1995, Vána & Hong 1999. **NS**: Murray & Murray 1978, 1982, Steere & Inoue 1978. **YK**: Vána & Hong 1999.
- *** *J. pumila* With. (*Solenostoma pumilum*). **ASK**: Bakalin 2014c. **NS**: Smith 1974, Steere & Inoue 1978, Vána & Hong 1999. **PH**: Worley 1972, Vána & Hong 1999. **YK**: Murray & Murray 1982.
- Kurzia**
- *** *K. pauciflora* (Dicks.) Grolle (*Lepidozia setacea*, *Microlepidozia setacea*) **ASK**: Frye & Clark 1946a, Grolle 1964a, Schuster 1969, Worley 1970, Sharma & Srivastava 1993, Bisang *et al.* 1998, Damsholt 2002. **KI**: Clark & Frye 1942, Persson 1952. **NS**: Hong 1988a. **PH**: Clark & Frye 1942, Persson 1952, Worley 1972. **VC**: Evans 1900 as *Lepidozia setacea*, Macoun 1902.
- ** *K. sylvatica* (A.Evans) Grolle **ASK**: **PH**: **KG**: Hong 1988a.
- Lejeunea**
- ** *L. alaskana* (R.M.Schust. et Steere) Inoue et Steere (*Hygrolejeunea alaskana*). **ASK**: Worley 1970, Steere 1976, 1978, Schuster 1984, Thiers 1986, Hong 1987, Konstantinova 2000. **NS**: HOLOTYPE, Schuster & Steere 1958, Bonner 1966, Steere & Inoue 1978, Steere & Scotter 1978. **VC**: Steere & Inoue 1978.
- Lepidozia**
- ** *L. filamentosa* (Lehm. et Lindenb.) Lehm. et Lindenb. (*Herpetium filamentosum*). **ASK**: Brinkman 1934, Arnell 1956, Hattori & Mizutani 1958, Bonner 1966, Hong 1966, 1987, 1988a, Schofield 1968, Worley 1970, Engel 1978b, Choi & Bakalin 2012. **PH**: Howe 1899, Evans 1900, 1915b, Macoun 1902, Frye & Clark 1946a, Persson 1952, Worley 1972. **VC**: Evans 1900, Macoun 1902, Eyerdam 1952, Worley 1972.
- *** *L. reptans* (L.) Dumort. **ASK**: Evans & Nichols 1908, Müller 1913, 1956c, Brinkman 1934, Ammons 1940, Schuster 1969, Worley 1970, Hong 1988a, Damsholt 2002. **DE**: Stehn *et al.* 2013. **PH**: Cooley 1892, Coville 1895, Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Frye & Clark 1946a, Stair 1947, Persson 1952, Worley 1972. **VC**: Evans 1900, Macoun 1902, Clark & Frye 1942, Eyerdam 1952, Persson 1952.
- ** *L. sandvicensis* Lindenb. **ASK**: Brinkman 1934, Persson 1949, Schofield 1968, Worley 1970, Miller *et al.* 1983, Hong 1988a. **PH**: Evans 1915b, Frye & Clark 1946a, Worley 1972.
- Liochlaena**
- *** *L. lanceolata* Nees (*Jungermannia lanceolata* auct.). **ASK**: Evans 1915b, Brinkman 1934, Frye & Clark 1944, Schuster 1969, Worley 1970, Johnson 1989, Vána & Hong 1999, Damsholt 2002. **PH**: Evans 1900, Worley 1972.
- Lophocolea**
- *** *L. bidentata* (L.) Dumort. (*Lophocolea cuspidata*). **ASK** [it is difficult to judge which reports belongs to *L. bidentata* and to *L. coadunata* due to the complicated synonymy and frequent misapplication of names. In addition, they are not always separated]: Stephani 1907, Arnell 1928, Brinkman 1934, Ammons 1940, Müller 1954a, Arnell 1956, Worley 1970, Hong 1993, Damsholt 2002 [as *Chiloscyphus coadunatus* but “autoicous”]. **KI**: Persson 1952. **PH**: Evans 1900, 1915b, Macoun 1902, Müller 1911a, Frye & Clark 1943, Persson 1952, Schuster 1980.
- * *L. coadunata* (Sw.) Mont. (*Chiloscyphus coadunatus*). **ASK**: Damsholt 2002 [as *Chiloscyphus coadunatus* but “autoicous” so it must be *Lophocolea bidentata*]. **PH**: Worley 1972.

*** *L. heterophylla* (Schrad.) Dumort. **ASK:** **KE:** Schofield et al. 2002. **PH:** Worley 1972, Hong 1993.

*** *L. minor* Nees (*Chiloscyphus minor*). **ASK:** Worley 1970, Steere & Scotter 1978, Schuster 1980, Hong 1993, Damsholt 2002. **DE:** Persson & Weber 1958, Stehn et al. 2013. **NS:** Steere & Inoue 1978. **YK:** Steere & Inoue 1978.

Lophozia

*** *L. guttulata* (Lindb. et Arnell) A.Evans (“*guttata*”, *Lophozia longiflora* auct., *Lophozia ventricosa* var. *longiflora* auct., *Jungermannia porphyroleuca*, *Lophozia porphyroleuca*, *Lophozia porphyroleuca* var. *guttulata*). **ASK:** Stephani 1902a, Evans 1915b, Brinkman 1934, Müller 1954b, Schuster 1969, Worley 1970, Vitt et al. 1971, Damsholt 2002, Hong 2002a, Bakalin 2011. **BE:** Persson & Gjaerevoll 1961. **DE:** Stehn et al. 2013. **KE:** Evans 1915b, Clark 1958b. **KI:** Evans 1900, Macoun 1902, Eyerdam 1952. **LP:** Thomas 1952. **NO:** Arnell 1917, Persson 1952, Potemkin 1995. **NS:** Steere & Inoue 1978. **PH:** Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Frye & Clark 1945, Stair 1947, Worley 1972. **VC:** Evans 1900, Macoun 1902, Clark & Frye 1942, Eyerdam 1952.

** *L. murmanica* Kaal. (*Lophozia groenlandica*, *Lophozia wenzelii* var. *groenlandica*, *Lophozia heteromorpha*). **ASK:** Worley 1970, Hong 2002a. **KE:** Bakalin 2004, Kalinauskaitė & von Cräutlein 2010, Bakalin 2011. **NO:** Bakalin 2004. **NS:** Persson 1962a, Murray & Murray 1978, Steere & Inoue 1978.

** *L. savicziae* Schljakov **ASK:** Schuster & Konstantinova 1996, Grolle & Long 2000. **NS:** Bakalin 2011.

* *L. schusterana* Schljakov (“*schusteriana*”, *Lophozia groenlandica* auct.). **ASK:** Schuster 1969, Bakalin 2011.

*** *L. silvicola* H.Buch (*Lophozia ventricosa* var. *silvicola*). **ASK:** Schuster 1969, Worley 1970, Godfrey 1977a, Hong 2002a, Bakalin 2011. **DE:** Hermann 1973b, Stehn et al. 2013. **KE:** Persson 1962a. **NO:** Potemkin 1995.

*** *L. silvicoloides* N.Kitag. **ASK:** Konstantinova & Savchenko 2008, Bakalin 2011, Fedosov et al. 2015. **AN:** Bakalin 2004. **KE:** Bakalin 2004.

*** *L. ventricosa* (Dicks.) Dumort. (*Jungermannia ventricosa*, *Lophozia ehrhartiana*). **ASK:** Stephani 1886, 1902a, Pearson 1890, Underwood 1891, Macoun 1902, Evans & Nichols 1908, Evans 1915b, Brinkman 1934, Müller 1954b, Worley 1970, Hong 2002a. **DE:** Sherrard 1957, Persson & Weber 1958, Stehn et al. 2013. **KE:** Clark 1958b, Schofield et al. 2002. **KI:** Evans 1900, Clark & Frye 1942, Persson 1969. **NO:** Evans 1900, Macoun 1902, Potemkin 1995. **NS:** Persson 1962a, Smith 1974, Inoue 1976, Murray & Murray 1978, 1982, Steere & Inoue 1978. **PH:** Evans 1900, Macoun 1902, Clark & Frye 1942, Worley 1972. **VC:** Evans 1900, Macoun 1902, Clark & Frye 1942, Frye & Clark 1945. **WH:** Persson 1962b. **YK:** Persson & Gjaerevoll 1961, Murray & Murray 1978, 1982, Steere & Inoue 1978.

* — var. *confusa* R.M.Schust. **ASK:** Damsholt 2013. **NO:** Potemkin 1995, Hong 2002a.

* — var. *uliginosa* Bridl. ex Schiffl. (*Lophozia ventricosa* var. *longiflora*). **ASK:** **NO:** Bakalin 2004.

* — var. *ventricosa* **ASK:** Schuster 1969 [with doubt]. **DE:** Stehn et al. 2013. **NO:** Bakalin 2004.

* *L. wenzelii* (Nees) Steph. (“*wenzelii*”). **ASK:** Hattori 1966, Worley 1970, Talbot 1987, Hong 2002a, Damsholt 2013. **DE:** Persson & Weber 1958, Stehn et al. 2013. **KE:** Arnell & Persson 1961, Persson 1962a, Schofield et al. 2002. **NS:**

Murray & Murray 1978, Steere & Inoue 1978. **NW:** Steere & Inoue 1978. **PH:** Eyerdam 1952, Worley 1972. **VC:** Shacklette 1961. **YK:** Persson & Gjaerevoll 1957, Murray & Murray 1978, Steere & Inoue 1978.

* — var. *wenzelii* **ASK:** Damsholt 2002, Bakalin 2011. **DE:** Schuster 1969.

Lophozopsis

*** *L. excisa* (Dicks.) Konstant. et Vilnet (*Lophozia excisa*). **ASK:** Worley 1970, Damsholt 2002, 2013, Hong 2002a. **DE:** Persson 1952, Persson & Weber 1958, Stehn et al. 2013. **NO:** Potemkin 1995. **NS:** Steere & Inoue 1978. **PH:** Persson 1952, Worley 1972. **VC:** Eyerdam 1952. **YK:** Steere & Inoue 1978.

** — var. *excisa* (*Lophozia jurensis*). **ASK:** Schuster 1969. **NO:** Potemkin 1995.

** — var. *infusata* (R.M.Schust. et Damsh.) Konstant. et Vilnet (*Lophozia excisa* var. *infusata*). **ASK:** **NO:** Potemkin 1995, Damsholt 2013.

** — var. *succulenta* (R.M.Schust. et Damsh.) Konstant. et Vilnet (*Lophozia excisa* var. *succulenta*). **ASK:** **NO:** Potemkin 1995, Damsholt 2013.

*** *L. longidens* (Lindb.) Konstant. et Vilnet (*Lophozia longidens*). **ASK:** Worley 1970, Hong 2002a. **AN:** Persson 1949, Lepage 1951, Persson & Gjaerevoll 1957. **DE:** Persson & Weber 1958, Stehn et al. 2013. **NS:** Steere & Inoue 1978. **YK:** Persson & Gjaerevoll 1957, Murray & Murray 1978, 1982, Steere & Inoue 1978.

*** *L. pellucida* (R.M.Schust.) Konstant. et Vilnet (*Lophozia pellucida*). **ASK:** Worley 1970, Grolle & Long 2000, Konstantinova 2000, Damsholt 2002, Bakalin 2011, Ellis et al. 2013. **DE:** Persson 1963, Stehn et al. 2013. **KE:** Arnell & Persson 1961, Persson 1962a. **NS:** Arnell & Persson 1961, Persson 1962a, Murray & Murray 1978.

** — var. *minor* (R.M.Schust.) L.Söderstr. et Våña (*Lophozia pellucida* var. *minor*). **ASK:** Hong 2002a. **NO:** Potemkin 1995. **NS:** Murray & Murray 1978, Steere & Inoue 1978.

** — var. *pellucida* (*Lophozia pellucida* var. *pellucida*). **ASK:** Schuster & Konstantinova 1996, Hong 2002a. **NO:** Potemkin 1995, Bakalin 2004. **NS:** Steere & Inoue 1978.

*** *L. polaris* (R.M.Schust.) Konstant. et Vilnet (*Lophozia polaris*, *Lophozia major* auct., *Lophozia alpestris* subsp. *polaris* auct.). **ASK:** Konstantinova 2000, Hong 2002a. **DE:** Stehn et al. 2013. **NO:** Potemkin 1995. **NS:** Inoue 1976, Murray & Murray 1978, Steere & Inoue 1978.

** — var. *polaris* **ASK:** Bakalin 2011.

** — var. *sphagnorum* (R.M.Schust.) Konstant. et Vilnet (*Lophozia polaris* var. *sphagnorum*). **ASK:** Bakalin 2011. **AN:** Bakalin 2004.

* *L. propagulifera* (Gottsche) Konstant. et Vilnet (*Lophozia latifolia*, *Lophozia propagulifera*). **ASK:** Schuster 1969, Worley 1970, Steere 1978, Damsholt 2002, Hong 2002a, Bakalin 2011, Damsholt 2013. **DE:** Stehn et al. 2013. **KE:** Arnell & Persson 1961, Persson 1962a. **NO:** Persson 1963. **NS:** Persson 1962a, Steere & Inoue 1978. **NW:** Persson & Gjaerevoll 1957, Persson 1963, Steere & Inoue 1978. **YK:** Persson & Gjaerevoll 1957.

** *L. rubrigemma* (R.M.Schust.) Konstant. et Vilnet (*Lophozia rubrigemma*). **ASK:** Bakalin 2011. **MS:** Bakalin 2004.

Mannia

*** *M. fragrans* (Balb.) Frye et L.Clark (*Fimbraria fragrans* “*Fimbriaria*”, *Grimaldia fragrans*). **ASK:** Stephani 1899a,

- Evans & Nichols 1908, Evans 1915b, Brinkman 1934. **FB:** Murray 1992, Schill 2006. **NS:** Murray & Murray 1982, Schill 2006. **YK:** Evans 1900, Schill 2006.
- *** *M. gracilis* (F.Weber) D.B.Schill et D.G.Long (*Fimbraria tenella* auct., *Fimbraria ludwigii* auct. “*Fimbriaria*”, *Asterella ludwigii* auct., *Asterella gracilis*). **ASK:** Rothrock 1867, Frye & Clark 1937, Müller 1952, Schuster 1958b, Flowers 1961, Worley 1970, Schljakov 1982, Long 2006. **NS:** Steere & Inoue 1978. **PH:** Worley 1972.
- *** *M. pilosa* (Hornem.) Frye et L.Clark (*Grimaldia pilosa*). **ASK:** Haynes *et al.* 1923, Brinkman 1934, Frye & Clark 1937, Müller 1940, 1952, Schuster 1958b, 1992b, Worley 1970, Schuster & Damsholt 1974, Damsholt 2002, 2013, Katagiri *et al.* 2010. **DE:** Persson & Weber 1958, Stehn *et al.* 2013. **NO:** Schill 2006. **NS:** Steere & Inoue 1978, Murray & Murray 1982, Murray 1992, Schill 2006. **NW:** Steere & Inoue 1978, Schill 2006. **SE:** Persson 1963. **YK:** Evans 1919b, Persson & Gjaerevoll 1957, Murray & Murray 1982.
- *** *M. sibirica* (Müll.Frib.) Frye et L.Clark (*Grimaldia sibirica*, *Mannia pilosa* var. *sibirica*). **ASK:** Schuster 1958a, 1958b, 1992b [“doubtful”], Worley 1970, Schuster & Damsholt 1974 [with a ? mark], Schljakov 1982 [with a ? mark], Damsholt 2002, 2013. **NS:** Schill 2006. **NW:** Clark & Frye 1942, Müller 1952.
- Marchantia**
- *** *M. polymorpha* L. **ASK:** Rothrock 1867, Pearson 1890, Underwood 1891, 1895, Stephani 1899b, Evans & Nichols 1908, Evans 1917a, Haynes *et al.* 1923, Brinkman 1934, Müller 1940, Steere 1976, Bapna & Kachroo 2000b. **AN:** Clark & Frye 1949. **BE:** Evans 1900, Macoun 1902. **DE:** Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **FB:** Clark & Frye 1949, Clark 1958b. **KI:** Clark & Frye 1942. **LP:** Thomas 1952. **NO:** Arnell 1917, Clark & Frye 1942. **NS:** Seemann 1852, Johnson *et al.* 1966, Rastorfer *et al.* 1973, Smith 1974, Murray & Murray 1975, 1978, 1982. **NW:** Hooker & Arnott 1832, Seemann 1852. **PH:** Cooley 1892, Evans 1900, 1915b, Macoun 1902, Frye & Clark 1937, Clark & Frye 1942, Stair 1947, Eyerdam 1952, Worley 1972. **VC:** Evans 1900, Macoun 1902, Clark & Frye 1942, Eyerdam 1952. **YK:** Drury 1956.
- *** — subsp. *montivagans* Bischl. et Boissel.-Dub. (*Marchantia alpestris*, *Marchantia polymorpha* var. *alpestris*). **ASK:** Worley 1970, Schuster & Damsholt 1974, Steere 1978, Schuster 1992b, Damsholt 2002, 2013. **KI:** Persson 1969. **NO:** Arnell 1917, Potemkin 1995. **NS:** Persson 1962a, Murray & Murray 1975, 1978 as, Steere & Inoue 1978. **WH:** Persson 1962b. **YK:** Persson 1962a, Steere & Inoue 1978.
- *** — subsp. *polymorpha* (*Marchantia aquatica*, *Marchantia polymorpha* var. *polymorpha*). **ASK:** **LP:** Hasselbach 1995. **NO:** Potemkin 1995.
- *** — subsp. *ruderalis* Bischl. et Boissel.-Dub. (*Marchantia polymorpha* var. *polymorpha* auct.). **ASK:** Müller 1952, Worley 1970, Schuster 1992b. **NS:** Persson 1962a, Steere & Inoue 1978. **NW:** Steere & Inoue 1978. **YK:** Persson 1962a, Steere & Inoue 1978.
- Marsupella**
- *** *M. apiculata* Schiffn. (*Gymnomitrium apiculatum*). **ASK:** Worley 1970, Schuster & Damsholt 1974, Godfrey & Schofield 1979, Schljakov 1981, Paton 1999, Damsholt 2002, 2013. **DE:** Persson & Weber 1958, Worley 1972, Schuster 1974, Hong 1984, Persson & Viereck 1983, Stehn *et al.* 2013. **MS:** Schuster & Konstantinova 1996. **PH:** Persson & Weber 1958, Worley 1972. **YK:** Hermann 1973a, Murray & Murray 1978.
- *** *M. aquatica* (Lindenb.) Schiffn. (*Marsupella emarginata* var. *aquatica*). **ASK:** Müller 1956a, Worley 1970, Damsholt 2002, 2013. **LP:** Clark & Frye 1949. **NO:** Potemkin 1995. **NS:** Steere & Inoue 1978, Hong 1982. **PH:** Hong 1982. **VC:** Clark & Frye 1942, Clark & Frye 1949, Eyerdam 1952, Hong 1982.
- *** *M. arctica* (Berggr.) Bryhn et Kaal. (*Marsupella groenlandica*). **ASK:** Worley 1970, Schuster & Damsholt 1974, Schuster 1974, Steere 1978, Vitt *et al.* 1987, Paton 1999, Konstantinova 2000, Damsholt 2002, 2013. **FB:** Hong 1982. **NO:** Potemkin 1995. **NS:** Persson 1962a, Johnson *et al.* 1966, Steere & Inoue 1978, Hong 1982, Murray & Murray 1982. **NW:** Hong 1982. **YK:** Persson & Gjaerevoll 1961, Steere & Inoue 1978.
- *** *M. boeckii* (Austin) Lindb. ex Kaal. **ASK:** Konstantinova 2000, Damsholt 2002, 2013. **DE:** Stehn *et al.* 2013. **MS:** Schuster & Konstantinova 1996. **NO:** Potemkin 1995. **NW:** Hong 1982.
- *** *M. condensata* (Ångstr. ex C.Hartm.) Lindb. ex Kaal. **ASK:** Godfrey 1977a, Godfrey & Schofield 1979, Konstantinova 2000, Damsholt 2002, 2013. **DE:** Váňa 1976b, Godfrey 1977b, Hong 1982.
- *** *M. emarginata* (Ehrh.) Dumort. **ASK:** Stephani 1901a, Evans & Nichols 1908, Brinkman 1934, Ammons 1940, Müller 1956a, Worley 1970, Talbot 1987, Fulford & Sharp 1990. **BE:** Persson & Gjaerevoll 1961. **DE:** Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **KE:** Schofield *et al.* 2002. **LP:** Thomas 1952. **NS:** Steere & Inoue 1978. **PH:** Evans 1900, 1915b, Macoun 1902, Eyerdam 1952, Worley 1972. **VC:** Evans 1900, Macoun 1902, Clark & Frye 1942, Eyerdam 1952. **YK:** Steere & Inoue 1978.
- ** — subsp. *emarginata* (*Marsupella emarginata* var. *emarginata*, *Marsupella emarginata* f. *juventes*). **ASK:** Frye & Clark 1943, Schuster 1974, Hong 1982, Damsholt 2002, 2013. **VC:** Eyerdam 1952.
- *** *M. sparsifolia* (Lindb.) Dumort. **ASK:** **KE:** Schofield *et al.* 2002.
- *** *M. sphaelata* (Giesecke ex Lindenb.) Dumort. (*Sarcocyphos sphaelatus* “*Sarcocyphus*”, *Marsupella sphaelata* f. *media*). **ASK:** Stephani 1886, Pearson 1890, Underwood 1891, Evans 1900, 1915b, Stephani 1901a, Brinkman 1934, Ammons 1940, Frye & Clark 1943, Clark & Frye 1948, Müller 1956a, Worley 1970, Schuster 1974, Godfrey 1977b, Damsholt 2002, 2013. **KE:** Schofield *et al.* 2002. **LP:** Clark & Frye 1949. **PH:** Macoun 1902, Persson 1963, Worley 1972. **VC:** Clark & Frye 1949, Eyerdam 1952, Persson 1952, Hong 1982.
- *** *M. spiniloba* R.M.Schust. et Damsh. **ASK:** Grolle & Long 2000, Konstantinova 2000, Damsholt 2002, 2013. **NO:** Potemkin 1995.
- *** *M. sprucei* (Limpr.) Bernet (*Marsupella ustulata*). **ASK:** Müller 1956a, Worley 1970, Hong 1982, Damsholt 2002. **LP:** Hasselbach 1995. **NO:** Potemkin 1995. **VC:** Persson 1949, Eyerdam 1952.
- Mesoptychia**
- *** *M. badensis* (Gottsche ex Rabenh.) L.Söderstr. et Váňa (*Lophozia badensis*, *Leiocolea badensis*, *Lophozia badensis* var. *apiculata*). **ASK:** Worley 1970, Hong 2002b, Weber & Wittmann 2007, Damsholt 2013. **DE:** Stehn *et al.* 2013. **KE:**

- Schofield *et al.* 2002. **NO**: Potemkin 1995. **NS**: Inoue 1976, Steere & Inoue 1978. **PH**: Worley 1972. **YK**: Persson 1962a, Steere & Inoue 1978.
- *** *M. bantriensis* (Hook.) L.Söderstr. et Vána (*Lophozia bantriensis*, *Leiocolea bantriensis*). **ASK**: Müller 1954b, Worley 1970, Hong 2002b, Damsholt 2013. **DE**: Stehn *et al.* 2013. **NS**: Steere & Inoue 1978. **PH**: Worley 1972. **YC**: Clark & Frye 1942, Eyerdam 1952, Schuster 1969, Worley 1972.
- ** — subsp. *bantriensis* **ASK**: Damsholt 2002.
- * *M. collaris* (Nees) L.Söderstr. et Vána (*Lophozia collaris*, *Leiocolea collaris*). **ASK**: Hong 2002b. **DE**: Stehn *et al.* 2013. **NO**: Potemkin 1995. **YK**: Steere & Inoue 1978.
- *** *M. gillmanii* (Austin) L.Söderstr. et Vána (*Jungermania kaurinii*, *Lophozia kaurinii* “*kaurini*”, *Leiocolea gillmanii* “*gillmani*”). **ASK**: Evans 1919b, Brinkman 1934, Steere 1937, Frye & Clark 1945, Müller 1954b, Schuster 1958a, 1958b, 1969, Worley 1970, Steere & Scotter 1978, Damsholt 2002, 2013, Hong 2002b. **AN**: Persson 1952. **DE**: Persson & Weber 1958, Persson & Gjaerevoll 1961, Persson 1963, Stehn *et al.* 2013. **NO**: Arnell 1917, Potemkin 1995. **NS**: Inoue 1976, Steere & Inoue 1978. **PH**: Persson 1952, Worley 1972. **YK**: Persson & Gjaerevoll 1957, Steere & Inoue 1978.
- *** *M. heterocolpos* (Thed. ex Hartm.) L.Söderstr. et Vána (*Lophozia heterocolpos* “*heterocolpa*”, *Leiocolea heterocolpos*). **ASK**: Stephani 1901c, Müller 1910c, Evans 1915b, Brinkman 1934, Müller 1954b, Hicks 1976, Hong 2002b, Damsholt 2013. **AN**: Persson 1952. **DE**: Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **FB**: Clark 1958b. **NO**: Potemkin 1995. **NS**: Smith 1974, Inoue 1976, Murray & Murray 1978, Steere & Inoue 1978, Murray & Murray 1982. **NW**: Persson 1963, Steere & Inoue 1978. **PH**: Persson 1952, Worley 1972. **YC**: Evans 1900, Macoun 1902, Persson 1952. **YK**: Steere & Inoue 1978, Murray & Murray 1982.
- ** — var. *arctica* (S.W.Arnell) L.Söderstr. et Vána (*Lophozia heterocolpos* var. *arctica*). **ASK**: Damsholt 2013. **NO**: Potemkin 1995.
- ** — var. *harpanthoides* (Bryhn et Kaal.) L.Söderstr. et Vána (*Lophozia heterocolpos* var. *harpanthoides*, *Leiocolea heterocolpos* var. *harpanthoides*, *Lophozia holmeniana* “*holmenianum*”, *Mesoptychia holmeniana*). **ASK**: Schuster 1969, Worley 1970, Hong 1987, Konstantinova 2000, Damsholt 2002, Hong 2002b, Hong 2002b, Damsholt 2013. **NS**: HOLOTYPE of *Lophozia holmeniana*, Persson 1962a, Murray & Murray 1978, Steere & Inoue 1978, Steere & Inoue 1978, Engel 1984, Crosby & Engel 2006, Vána *et al.* 2012.
- ** — var. *heterocolpos* (*Lophozia heterocolpos* var. *heterocolpos*, *Leiocolea heterocolpos* var. *heterocolpos*) **ASK**: Evans 1912b, Frye & Clark 1945, Schuster 1969, Worley 1970, Damsholt 2002.
- *** *M. rutheana* (Limpr.) L.Söderstr. et Vána (*Lophozia schultzei*, *Leiocolea schultzei*, *Lophozia rutheana*, *Leiocolea rutheana*). **ASK**: Lorenz 1915, Müller 1954b, Buch & Tuomikoski 1955, Schuster 1958a, 1958b, Brassard 1968, Worley 1970, Steere 1976, 1978, Damsholt 2002, 2013, Hong 2002b. **AN**: Persson 1952. **DE**: Persson 1952, Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **NS**: Persson 1949, Persson 1952, Murray & Murray 1978, Steere & Inoue 1978. **YK**: Steere & Inoue 1978.
- *** *M. sahlbergii* (Lindb. et Arnell) A.Evans **ASK**: Bryhn 1906, Frye & Clark 1943, Steere 1954, 1976, 1978, Worley 1970, Steere & Inoue 1975, Schuster 1984, Schuster & Konstantinova 1996, Grolle & Long 2000, Konstantinova 2000, Damsholt 2002. **DE**: Hermann 1973b, Stehn *et al.* 2013. **NS**: Persson 1949, 1962a, Lepage 1951, Persson & Gjaerevoll 1957, Schuster & Steere 1958, Murray & Murray 1975, 1978, Inoue 1976, Steere & Inoue 1978. **YK**: Persson & Gjaerevoll 1957, Steere & Inoue 1978.

Metzgeria

- *** *M. americana* Masuzaki **ASK**: **PH**: Masuzaki *et al.* 2010.
- *** *M. conjugata* Lindb. **ASK**: Evans & Nichols 1908 [we know of no older first hand report and Evans 1915b reports it as new to Alaska], Brinkman 1934, Ammons 1940, Müller 1954a, Worley 1970, Miller *et al.* 1983, Schuster 1992a, Damsholt 2002, Fuselier *et al.* 2009. **KI**: Persson 1952. **PH**: Evans 1915b, Frye & Clark 1937, Clark & Frye 1942, Stair 1947, Eyerdam 1952, Persson 1952, Worley 1972.
- *** *M. leptoneura* Spruce (*Metzgeria hamata* auct., *Metzgeria procera* auct.). **ASK**: Reimers 1926, Frye & Clark 1937, Worley 1970, Miller *et al.* 1983, Schuster 1984, Damsholt 2002. **PH**: Cooley 1892, Evans 1900, Macoun 1902, Worley 1972.
- ** — var. *leptoneura* **ASK**: Brinkman 1934, Schofield 1968, Schuster 1992a.
- *** *M. pubescens* (Schrank) Raddi (*Apometzgeria pubescens*). **ASK**: Pearson 1890, Underwood 1891, Stephani 1899c, Macoun 1902, Evans 1908, Brinkman 1934, Kuwahara 1965, Worley 1970, Schuster 1984, 1992a, Hallingbäck 1994, Konstantinova 2000, Fuselier *et al.* 2011. **KE**: Masuzaki *et al.* 2010. **NW**: Steere & Scotter 1978. **PH**: Stephani 1886, Cooley 1892, Evans 1900, 1915b, Howe 1901, Macoun 1902, Frye & Clark 1937, Clark & Frye 1942, Persson 1952, Worley 1972, Steere & Inoue 1978, Masuzaki *et al.* 2010. **YK**: Steere & Inoue 1978.
- ** *M. temperata* Kuwah. **ASK**: Godfrey 1977b. **PH**: Kuwahara 1976, Schuster 1992a.
- *** *M. violacea* (Ach.) Dumort. (*Metzgeria fruticulosa*). **ASK**: **PH**: Worley 1972, Hermann 1973a.

Moerckia

- *** *M. blyttii* (Mørch) Brockm. (“*Moerckia*”). **ASK**: Worley 1970, Steere & Scotter 1978, Konstantinova 2000. **DE**: Stehn *et al.* 2013. **KE**: Schofield *et al.* 2002. **LP**: Hasselbach 1995. **PH**: Persson 1963, Worley 1972.
- *** *M. flotoviana* (Nees) Schiffn. (“*flotowiana*”, *Pallavicinia flotoviana* “*flotowiana*”, *Moerckia hibernica* f. *flotoviana*, *Cordaea flotoviana*). **ASK**: Andrews 1904, Brinkman 1934, Müller 1954a, Worley 1970, Schuster 1992a, Mamontov *et al.* 2015. **KE**: Evans 1915b, Frye & Clark 1937. **NS**: Smith 1974, Murray & Murray 1978, Steere & Inoue 1978. **PH**: Evans 1904, Clark & Frye 1942, Persson 1963, Worley 1972. **YK**: Persson 1962a, Murray & Murray 1978, Steere & Inoue 1978.
- *** *M. hibernica* (Hook.) Gottsche (*Pallavicinia hibernica*). **ASK**: Frye & Clark 1937, Müller 1954a, Worley 1970, Konstantinova 2000, Damsholt 2002 [incl. *M. flotoviana*]. **NS**: Murray & Murray 1978 [may be *M. flotoviana* fide Damsholt in litt.]. **PH**: Evans 1900, Macoun 1902, Evans 1912c, Worley 1972, Crandall-Stotler & Stotler 2007.

Mylia

*** *M. anomala* (Hook.) Gray **ASK**: Brinkman 1934, Müller 1956a, Schuster 1969, Damsholt 2002, Seppelt *et al.* 2008, Lichvar *et al.* 2009. **DE**: Persson & Weber 1958, Stehn *et al.* 2013. **KE**: Schofield *et al.* 2002. **NO**: Potemkin 1995. **NS**: Persson & Weber 1958, Persson 1962a, Smith 1974, Inoue 1976, Murray & Murray 1978, Steere & Inoue 1978. **NW**: Steere & Inoue 1978. **PH**: Evans 1915b, Frye & Clark 1943, Schuster 1959a, Worley 1972. **VC**: Clark & Frye 1942. **WH**: Persson 1962b. **YK**: Drury 1956, Persson 1962a, Steere & Inoue 1978.

*** *M. taylorii* (Hook.) Gray (“*taylori*”, *Leptoscyphus taylorii*). **ASK**: Müller 1911a, Brinkman 1934, Müller 1956a, Schuster 1969, Damsholt 2002, 2013. **BE**: Persson & Gjaerevoll 1961. **FB**: Macoun 1902. **KE**: Evans 1915b, Frye & Clark 1943, Schuster 1959a. **KI**: Schuster 1959a. **NS**: Steere & Inoue 1978. **PH**: Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Frye & Clark 1943, Stair 1947, Eyerdam 1952, Schuster 1959a, Worley 1972, Potemkin & Kazanovsky 1993. **VC**: Evans 1900, Macoun 1902, Clark & Frye 1942, Eyerdam 1952, Persson 1952, Schuster 1959a.

Nardia

*** *N. breidleri* (Limpr.) Lindb. **ASK**: Bakalin 2012b. **NO**: Potemkin 1995. **NS**: Steere & Inoue 1978, Hong & Vána 2000.

*** *N. compressa* (Hook.) Gray (*Alicularia compressa*). **ASK**: Evans 1915b, Herzog 1926, Arnell 1928, Brinkman 1934, Arnell 1956, Müller 1956a, Amakawa 1959, Bonner 1962b, Schofield 1968, Worley 1970, Godfrey 1977b, Gao & Bai 2001, Bakalin 2012b. **DE**: Persson & Weber 1958, Worley 1972, Stehn *et al.* 2013. **PH**: Persson 1946, Eyerdam 1952, Persson & Weber 1958, Shacklette 1965, Schuster 1969, Worley 1972, Vána 1976a, Hong & Vána 2000. **VC**: Persson 1946, Eyerdam 1952, Schuster 1969, Vána 1976a.

*** *N. geoscyphus* (De Not.) Lindb. (*Nardia haematosticta*, *Alicularia geoscyphus* “*geoscypha*”). **ASK**: Müller 1909b, Evans 1912c, Evans 1915b, Clark & Frye 1937, Frye & Clark 1943, Schuster 1950, Müller 1956a, Flowers 1961, Schuster 1969, Worley 1970, Vána 1976a, Damsholt 2002, 2013. **BE**: Persson 1963. **DE**: Stehn *et al.* 2013. **KE**: Clark 1958b. **KI**: Eyerdam 1952, Vána 1976a. **NO**: Evans 1900, 1901b, Macoun 1902, Vána 1976a, Potemkin 1995, Hong & Vána 2000. **NS**: Persson 1962a, Steere & Inoue 1978. **PH**: Evans 1900, Macoun 1902, Worley 1972.

* — var. *geoscyphus* **ASK**: Bakalin 2012b.

*** *N. insecta* Lindb. (*Nardia geoscyphus* f. *insecta*). **ASK**: Konstantinova 2000, Bakalin 2012b. **NO**: Persson 1952, Potemkin 1995. **PH**: Hermann 1973a, Hong & Vána 2000.

*** *N. japonica* Steph. **ASK**: Hong 1987, Konstantinova & Czernjadieva 1995, Schuster & Konstantinova 1996, Grolle & Long 2000, Konstantinova 2000, Bakalin 2012b. **NO**: Potemkin 1995. **PH**: Godfrey & Godfrey 1980b, Hong & Vána 2000.

*** *N. scalaris* Gray (*Alicularia scalaris*). **ASK**: Stephani 1901b, Müller 1909b, 1956a, Brinkman 1934, Frye & Clark 1943, Buch & Tuomikoski 1955, Kachroo 1970, Worley 1970, Godfrey 1977b, Bapna & Kachroo 2000a, Hong & Vána 2000. **DE**: Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **KE**: Clark 1958b, Schofield *et al.* 2002. **KI**: Evans 1915b, Griggs 1933, Clark & Frye 1942. **LP**: Hasselbach 1995. **NO**: Potemkin 1995. **PH**: Evans 1900, 1912a, 1915b,

Macoun 1902, Clark & Frye 1942, Worley 1972. **VC**: Clark & Frye 1942, Eyerdam 1952, Shacklette 1961. **YK**: Persson & Gjaerevoll 1957.

* — var. *scalaris* (*Nardia scalaris* subsp. *scalaris*). **ASK**: Bakalin 2012b. **DE**: Stehn *et al.* 2013. **PH**: **KG**: Vána 1976a. **VC**: Vána 1976a.

Neoorthocaulis

*** *N. attenuatus* (Mart.) L.Söderstr., De Roo et Hedd. (*Lophozia gracilis*, *Orthocaulis gracilis*, *Barbilophozia gracilis*, *Lophozia attenuata*, *Barbilophozia attenuata*). **ASK**: Stephani 1902a, Evans & Nichols 1908, Evans 1915b, Brinkman 1934, Müller 1954a, Schuster 1969 [with doubt], Worley 1970, Zhang & Guo 1998, Hong & Matthews 2001, Damsholt 2002. **DE**: Stehn *et al.* 2013. **NS**: Steere & Inoue 1978. **PH**: **PE**: Worley 1972. **VC**: Evans 1900, Macoun 1902, Persson 1952. **YK**: Steere & Inoue 1978.

*** *N. binsteadii* (Kaal.) L.Söderstr., De Roo et Hedd. (*Jungermannia binsteadii*, *Lophozia binsteadii*, *Orthocaulis binsteadii*, *Barbilophozia binsteadii*). **ASK**: Evans 1919b, Brinkman 1934, Frye & Clark 1945, Müller 1954b, Schuster 1969, Worley 1970, Steere 1978, Hong & Matthews 2001, Damsholt 2002, 2013. **BE**: Persson 1952, 1963. **DE**: Persson 1963, Stehn *et al.* 2013. **LP**: Persson 1952. **NO**: Arnell 1917, Persson 1952, Persson 1963, Potemkin 1995. **NS**: Persson 1952, Persson 1962a, Smith 1974, Murray & Murray 1978, 1982, Steere & Inoue 1978. **WH**: Persson 1962b. **YK**: Persson & Gjaerevoll 1957.

*** *N. floerkei* (F.Weber et D.Mohr) L.Söderstr., De Roo et Hedd. (*Lophozia floerkei* “*floerkii*”, *Orthocaulis floerkei* “*floerkii*”, *Barbilophozia floerkei*). **ASK**: Stephani 1902b, Brinkman 1934, Frye & Clark 1945, Persson 1949, Müller 1954a, Grolle 1960, Schuster 1969, Worley 1970, Konstantinova 2000, Hong & Matthews 2001, Damsholt 2002, 2013. **BE**: Persson 1952. **DE**: Stehn *et al.* 2013. **KE**: Persson 1962a, Schofield *et al.* 2002. **KI**: Persson 1947, 1952, 1969, Eyerdam 1952. **LP**: Persson 1947, 1952. **MS**: Persson 1963. **NS**: Steere & Inoue 1978. **PH**: Evans 1915b, Persson 1947, 1952, Worley 1972. **VC**: Evans 1900, Macoun 1902, Eyerdam 1952, Persson 1952. **YK**: Steere & Inoue 1978, Cooper 1986 [with a “cf.”].

** *N. hyperboreus* (R.M.Schust.) L.Söderstr., De Roo et Hedd. (*Lophozia hyperborea*, *Orthocaulis hyperboreus*, *Barbilophozia hyperborea*, *Lophozia hyperborea* f. *paradoxa*, *Barbilophozia hyperborea* f. *paradoxa*). **ASK**: Schuster & Konstantinova 1996, Konstantinova 2000, Damsholt 2013. **DE**: Stehn *et al.* 2013. **NO**: Potemkin 1995, Potemkin 1995, Potemkin 1995.

Obtusifolium

*** *O. obtusum* (Lindb.) S.W.Arnell (*Lophozia obtusa*, *Leiocolea obtusa*). **ASK**: Stephani 1902a, Bryhn 1906, Evans 1912b, Evans 1915b, Brinkman 1934, Frye & Clark 1945, Müller 1954b, Buch & Tuomikoski 1955, Schuster 1969, Worley 1970, Bisang 1999, Damsholt 2002, Hong 2002a, Damsholt 2013. **DE**: Stehn *et al.* 2013. **KI**: Persson 1952. **PH**: Evans 1900, Macoun 1902, Müller 1910b, Steere 1937, Persson 1952, Worley 1972. **VC**: Eyerdam 1952, Persson 1952.

Odontoschisma

*** *O. elongatum* (Lindb.) A.Evans (“*elongata*”, *Odontoschisma denudatum* subsp. *elongatum*). **ASK**: Buch & Tuomikoski 1955, Müller 1956c, Schuster 1958b, Worley 1970, God-

frey 1977b, Vitt & Horton 1979, Hong 1988b, Damsholt 2002, 2013, **Aranda et al. 2014**. **NO:** Potemkin 1998. **NS:** Persson 1962a, Johnson et al. 1966, Smith 1974, Murray & Murray 1978, Steere & Inoue 1978, Gradstein & Ilkiu-Borges 2015. **PH:** Persson 1946, Worley 1972, Schuster 1974. **VC:** Persson 1946, Eyerdam 1952, Schuster 1974. **YK:** Persson 1946, Steere & Inoue 1978.

*** *O. fluitans* (Nees) L.Söderstr. et Vána (*Cladopodiella fluitans*). **ASK:** Worley 1970, Hong 1988b. **KE:** Schofield et al. 2002. **NS:** Murray & Murray 1978, Steere & Inoue 1978. **PH:** Eyerdam 1952, Worley 1972. **VC:** Persson 1952. **YK:** Steere & Inoue 1978.

*** *O. macounii* (Austin) Underw. (“*macouni*”). **ASK:** Bryhn 1906, Frye & Clark 1945, Steere 1954, 1976, 1978, Worley 1970, Godfrey & Schofield 1979, Hong 1988b, Damsholt 2002, 2013. **BE:** Persson 1952, Schuster 1958b. **DE:** Persson & Weber 1958, Persson 1963, Schuster 1974, Stehn et al. 2013. **NO:** Potemkin 1995. **NS:** Rastorfer et al. 1973, Smith 1974, Murray & Murray 1975, Inoue 1976, Steere & Inoue 1978. **SE:** Persson 1963. **YK:** Persson & Gjaerevoll 1957, Steere & Inoue 1978, Gradstein & Ilkiu-Borges 2015.

Oleophozia

*** *O. perssonii* (H.Buch et S.W.Arnell) L.Söderstr., De Roo et Hedd. (*Lophozia perssonii*). **ASK:** Bakalin 2011, Damsholt 2013. **DE:** Stehn et al. 2013. **NO:** Potemkin 1995, Bakalin 2004.

Orthocaulis

*** *O. atlanticus* (Kaal.) H.Buch (*Lophozia atlantica*, *Barbilophozia atlantica*). **ASK:** Worley 1970, Hong & Matthews 2001. **DE:** Stehn et al. 2013. **NS:** Persson 1962a, Steere & Inoue 1978. **YK:** Cooper 1986 [with a “cf.”].

* *O. cavifolius* H.Buch et S.W.Arnell (*Lophozia cavifolia*, *Sphenolobus cavifolius*, *Anastrophyllum cavifolium*). **ASK:** Steere 1978, Talbot 1987, Hong 1996, Konstantinova 2000. **NS:** Steere & Inoue 1978. **YK:** Steere & Inoue 1978.

Pellia

*** *P. endiviifolia* (Dicks.) Dumort. (“*endiviaefolia*”, *Pellia fabbroniana* “*Fabroniana*”). **ASK:** Evans 1915b, Brinkman 1934, Frye & Clark 1937, Müller 1954a, Worley 1970, Vitt et al. 1971, Steere & Scotter 1978. **DE:** Persson & Weber 1958, Worley 1972, Stehn et al. 2013. **KE:** Schofield et al. 2002. **NO:** Potemkin 1995. **NS:** Steere & Inoue 1978. **PH:** Evans 1900, Macoun 1902, Clark & Frye 1942, Frye & Clark 1946b, Stair 1947, Clark & Frye 1949, Eyerdam 1952, Worley 1972. **YK:** Steere & Inoue 1978, Murray & Murray 1982.

*** *P. epiphylla* (L.) Corda **ASK:** Evans & Nichols 1908, Evans 1915b, Brinkman 1934, Clark & Frye 1937, Frye & Clark 1937, Ammons 1940, Flowers 1961, Breil 1970, Worley 1970, Damsholt 2002. **DE:** Stehn et al. 2013. **PH:** Cooley 1892, Macoun 1902, Clark & Frye 1948, Worley 1972.

*** *P. neesiana* (Gottsche) Limpr. **ASK:** Brinkman 1934, Frye & Clark 1937, Ammons 1940, Müller 1954a, Flowers 1961, Worley 1970, Bapna & Kachroo 2000b, Damsholt 2002, 2013. **DE:** Persson & Weber 1958, Stehn et al. 2013. **KE:** Schofield et al. 2002. **PH:** Evans 1900, 1915b, Macoun 1902, Eyerdam 1952, Worley 1972. **VC:** Evans 1900, Macoun 1902. **WH:** Persson 1962b. **YK:** Persson & Gjaerevoll 1957, 1961, Murray & Murray 1978.

Peltolepis

*** *P. quadrata* (Saut.) Müll.Frib. (*Peltolepis grandis*). **ASK:** Steere 1976, Steere 1978, Damsholt 2002, 2013. **NS:** Steere & Inoue 1978, Schuster 1992b.

Plagiochila

** *P. arctica* Bryhn et Kaal. (*Plagiochila asplenioides* subsp. *arctica*). **ASK:** Steere 1954, Steere & Scotter 1978, Steere 1978, Schuster 1980, Hong 1992, Konstantinova 2000, Damsholt 2002, 2013. **KE:** Persson 1962a. **KI:** Persson 1946. **NO:** Persson 1962a. **NS:** Persson 1962a, Johnson et al. 1966, Smith 1974, Murray & Murray 1975, 1978, Inoue 1976, Steere & Inoue 1978. **PH:** Persson 1946, Stair 1947, Clark & Frye 1949, Eyerdam 1952, Worley 1972. **YK:** Persson & Gjaerevoll 1961, Murray & Murray 1978.

* — var. *arctica* **ASK:** **NS:** Schuster 1959a. **PH:** Schuster 1959a. **YK:** Schuster 1959a.

* — var. *intermedia* R.M.Schust. **ASK:** **NS:** TYPE, Schuster 1959a, Geissler & Bischler 1989.

*** *P. asplenioides* (L.) Dumort. (*Plagiochila major*). **ASK:** Evans & Nichols 1908, Müller 1910c, Brinkman 1934 [s.lat.], Ammons 1940, Müller 1956a [s.lat.], Flowers 1961, Schofield 1968, Worley 1970, Hong 1992. **LP:** Evans 1915b [s.lat.]. **NO:** Persson & Gjaerevoll 1961. **NS:** Schuster 1959a, Persson 1962a. **PH:** Coville 1895, Evans 1900 [s.lat.], 1915b [s.lat.], Macoun 1902 [s.lat.], Clark & Frye 1942 [s.lat.], 1949, Frye & Clark 1945 [s.lat.], Eyerdam 1952, Schuster 1959a, Worley 1972. **YK:** Schuster 1974 [s. lat.].

*** *P. porelloides* (Torr. ex Nees) Lindenb. (*Plagiochila asplenioides* auct., *Plagiochila asplenioides* subsp. *porelloides*, *Plagiochila satoi*, *Plagiochila satoi* var. *magna* “*magnum*”, *Plagiochila asplenioides* var. *grandiretis*). **ASK:** Hong 1966, Schofield 1968, Worley 1970, Hong 1980c, 1987, 1992, Schuster 1980, Damsholt 2002, 2013. **DE:** Stehn et al. 2013. **KE:** Schofield et al. 2002. **LP:** Schuster 1959a as. **NO:** Potemkin 1995. **NS:** Schuster 1959a, Steere & Inoue 1978. **PH:** TYPE of *Plagiochila asplenioides* var. *grandiretis*, Schuster 1959a, 1980, Worley 1972, Engel 1989, Hong 1992. **YK:** Schuster 1959a.

** — var. *porelloides* **ASK:** Worley 1970, Schuster 1980, Hong 1992.

** — var. *subarctica* (Jørg.) Lammes (*Plagiochila asplenioides* var. *subarctica*, *Plagiochila asplenioides* f. *subarctica*). **ASK:** Worley 1970, Schuster 1980, Hong 1992. **NS:** Schuster 1959a, Steere & Inoue 1978. **YK:** Schuster 1959a.

** *P. schofieldiana* Inoue (*Plagiochila rhizophora* auct., *Plagiochila rhizophora* subsp. *confusa*, *Plagiochila firma* subsp. *confusa*). **ASK:** Schofield 1968, Worley 1970, Godfrey 1977b, Schuster 1980, Hong 1987, 1992. **PH:** Schuster 1959b, Worley 1972.

** *P. semidecurrans* (Lehm. et Lindenb.) Lindenb. **ASK:** Schofield 1968, Hattori 1975, Inoue 1984.

** — var. *alaskana* (A.Evans) Inoue (*Plagiochila alaskana*, *Plagiochila semidecurrans* subsp. *alaskana*, *Plagiochila fryei*). **ASK:** Brinkman 1934, Bonner 1962a, Hattori 1966, Worley 1970, Hong 1987, 1992. **PH:** TYPE of *Plagiochila alaskana*, TYPE of *Plagiochila fryei*, Evans 1915b, Clark & Frye 1942, Frye & Clark 1945, Inoue 1965, Worley 1972, Geissler & Bischler 1989, Geissler & Bischler 1989.

** — var. *semidecurrans* (*Plagiochila semidecurrans* subsp. *grossidens*, *Plagiochila semidecurrans* var. *longifolia*). **ASK:** Schuster 1980, Hong 1987, 1992, Bapna & Kachroo 2000b. **PH:** Schuster 1959b.

Pleurozia

*** *P. purpurea* Lindb. **ASK:** Arnell 1928, Brinkman 1934, Persson 1949, 1950, Arnell 1950, 1956, Hattori 1966, Schofield 1968, Worley 1970, **Thiers 1993**, Paton 1999, Damsholt 2002. **PH:** Evans 1915b, Frye & Clark 1946a, Worley 1972.

Porella

*** *P. cordaeana* (Huebener) Moore (“*cordeana*”, *Madotheca cordaeana*, *Porella rivularis*). **ASK:** Howe 1897, Evans & Nichols 1908, Müller 1915c, Evans 1919b, Brinkman 1934, Clark & Frye 1937, Müller 1956c, Worley 1970, Schofield & Crum 1972, Piippo & Norris 1996, Damsholt 2002, Hentschel *et al.* 2007. **KE:** Evans 1915b, Schofield *et al.* 2002. **KI:** Clark & Frye 1942, Persson 1952, 1969, Hong 1983. **LP:** Persson 1952. **NO:** Hong 1983. **PH:** Macoun 1902, Evans 1900, 1915b, Persson 1952, 1963, Worley 1972, Hong 1983.

*** *P. navicularis* (Lehm. et Lindenb.) Pfeiff. (*Madotheca navicularis*). **ASK:** Pearson 1890, Underwood 1891, Howe 1897, Howe 1899, Barbour 1902, Brinkman 1934, Clark & Frye 1937, Worley 1970, Godfrey 1977b, Hong 1987, Fulford & Sharp 1990, Piippo & Norris 1996, Doyle & Stotler 2006. **FB:** Macoun 1902. **PH:** Gottsche *et al.* 1845, Stephani 1886, Evans 1900, 1915b, Macoun 1902, Clark & Frye 1937, 1942, Frye & Clark 1946a, Eyerdam 1952, Persson 1952, 1963, Worley 1972, Hong 1983.

** *P. roellii* Steph. (“*roelleri*”, *Madotheca roellii*). **ASK:** Brinkman 1934, Persson 1963, Worley 1970, Godfrey 1977b, Hong 1987, Piippo & Norris 1996, Doyle & Stotler 2006. **KE:** Frye & Clark 1946a, Persson 1952. **PH:** Evans 1915b, Clark & Frye 1942, Frye & Clark 1946a, 1946b, Persson 1952, Worley 1972, Hong 1983.

Preissia

*** *P. quadrata* (Scop.) Nees (*Preissia hemisphaerica*, *Cyathophora quadrata*). **ASK:** Underwood 1891, 1895, Evans & Nichols 1908, Brinkman 1934, Müller 1940, Müller 1952, Flowers 1961, Worley 1970, Steere 1976, Steere 1978, Steere & Scotter 1979, Bapna & Kachroo 2000b. **BE:** Macoun 1902. **DE:** Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **KE:** Schofield *et al.* 2002. **KI:** Eyerdam 1952. **NO:** Persson & Gjaerevoll 1961, Potemkin 1995. **NS:** Persson 1962a, Johnson *et al.* 1966, Murray & Murray 1975, 1978, 1982, Steere & Inoue 1978. **NW:** Clark & Frye 1942, 1949, Steere & Inoue 1978. **PH:** Cooley 1892, Evans 1900, 1915b, Macoun 1902, Frye & Clark 1937, Worley 1972. **VC:** Evans 1900, Macoun 1902, Clark & Frye 1949, Eyerdam 1952. **YK:** Evans 1900, Macoun 1902, Drury 1956, Persson & Gjaerevoll 1957, Persson 1962a, Steere & Inoue 1978, Murray & Murray 1982, Cooper 1986.

** — subsp. *hyperborea* R.M.Schust. **ASK:** Damsholt 2013. **NO:** Potemkin 1995.

** — subsp. *quadrata* (*Preissia commutata*). **ASK:** Stephani 1886, 1889b, Pearson 1890, Damsholt 2013.

Pseudolepicolea

** *P. fryei* (Perss.) Grolle et Ando (*Lepicolea fryei*, *Lophochaete fryei*). **ASK:** Schuster 1963, 1984, 2000, Worley 1970, Steere 1976, 1978, Schuster & Konstantinova 1996, Konstantinova 2000. **NO:** TYPE of *Lepicolea fryei*, Persson 1946, 1947, Frye & Clark 1947, Steere 1953, Schuster 1961, 1966, Grolle 1976, Steere & Inoue 1978, Geissler & Bischler 1985, Damsholt 2013. **NS:** Steere 1953,

Schuster & Steere 1958, Schuster 1961, 1966, Smith 1974, Inoue 1976, Murray & Murray 1978, Steere & Inoue 1978. **NW:** Steere & Inoue 1978. **YK:** Schuster 1966.

Pseudotritomaria

*** *P. heterophylla* (R.M.Schust.) Konstant. et Vilnet (*Tritomaria heterophylla*). **ASK:** Schuster & Konstantinova 1996, Konstantinova 2000, Damsholt 2013. **NO:** Potemkin 1995.

Ptilidium

*** *P. californicum* (Austin) Pearson **ASK:** Brinkman 1934, Hattori 1952, Grolle 1969, Worley 1970, Hong 1987, Christy & Wagner 1996, Doyle & Stotler 2006. **KE:** Clark 1958b. **KI:** Clark & Frye 1942, Frye & Clark 1943, Persson 1947. **NW:** Clark & Frye 1942, Persson 1947, Steere & Inoue 1978. **PH:** Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Frye & Clark 1943, Persson 1947, Stair 1947, Eyerdam 1952, Worley 1972. **VC:** Evans 1900, Macoun 1902, Persson 1947.

*** *P. ciliare* (L.) Hampe **ASK:** Stephani 1886, 1909b, Pearson 1890, Underwood 1891, Evans & Nichols 1908, Müller 1914b, 1954a, Brinkman 1934, Schnoberger & Wynne 1945, Schuster 1966, Worley 1970, Steere 1978, Damsholt 2002, 2013. **BE:** Evans 1900, Macoun 1902. **DE:** Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **DI:** Persson & Viereck 1983. **KE:** Schofield *et al.* 2002. **KI:** Evans 1900, Macoun 1902, Eyerdam 1952, Persson 1969. **LP:** Thomas 1952, Hasselbach 1995. **MS:** Persson 1962a. **NO:** Evans 1900, 1901b, Macoun 1902, Arnell 1917, Steere 1938, Potemkin 1995. **NS:** Persson 1962a, Johnson *et al.* 1966, Rastorfer *et al.* 1973, Smith 1974, Murray & Murray 1975, 1982, Inoue 1976, Murray & Murray 1978, Steere & Inoue 1978. **NW:** Steere & Inoue 1978, Potemkin 1995. **PH:** Evans 1900, 1915b, Macoun 1902, Frye & Clark 1943, Stair 1947, Worley 1972. **VC:** Evans 1900, Macoun 1902, Clark & Frye 1942, Eyerdam 1952. **YK:** Drury 1956, Persson & Gjaerevoll 1957, Persson 1962a, Murray & Murray 1978, 1982, Steere & Inoue 1978, Cooper 1986.

*** *P. pulcherrimum* (Weber) Vain. **ASK:** Evans & Nichols 1908, Stephani 1909b, Brinkman 1934, Ammons 1940, Müller 1954a, Schuster 1966, Worley 1970, Steere & Scotter 1978, Damsholt 2002. **DE:** Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **FB:** Clark & Frye 1949, Clark 1958b. **KE:** Clark 1958b, Persson 1962a, Schofield *et al.* 2002. **LP:** Thomas 1952. **NW:** Clark & Frye 1942, 1949, Frye & Clark 1943, Steere & Inoue 1978. **PH:** Evans 1915b, Clark & Frye 1942, Frye & Clark 1943, Worley 1972. **YK:** Persson & Gjaerevoll 1957, Steere & Inoue 1978.

Radula

*** *R. bolanderi* Gottsche (*Radula arctica*). **ASK:** Pearson 1890, Underwood 1891, Stephani 1910, Evans 1915b, Brinkman 1934, Castle 1968, Worley 1970, Guerke 1971, Godfrey 1977b, Hong 1987. **FB:** Macoun 1902. **PH:** SYNTYPE of *Radula arctica*, Stephani 1886, Evans 1900, 1915b, Macoun 1902, Castle 1925, Frye & Clark 1946a, Stair 1947, Clark & Frye 1949, Eyerdam 1952, Persson 1952, 1963, Worley 1972, Godfrey & Godfrey 1980b, Geissler & Bischler 1990. **VC:** Castle 1925.

*** *R. complanata* (L.) Dumort. (*Radula krausei*). **ASK:** Pearson 1890, Underwood 1891, Evans & Nichols 1908, Stephani 1910, Evans 1915b, Müller 1915c, 1956c, Castle 1925, Buch & Tuomikoski 1955, Worley 1970, Steere 1978, Miller *et al.*

1983, Hong *et al.* 1990. **AN:** Persson 1952. **DE:** Stehn *et al.* 2013. **KE:** Schofield *et al.* 2002. **LP:** Frye & Clark 1946b. **NS:** Steere & Inoue 1978, Murray & Murray 1982. **PH:** TYPE of *Radula krausei*, Coville 1895, Stephani 1886, Evans 1900, Macoun 1902, Clark & Frye 1942, Frye & Clark 1946a, Stair 1947, Persson 1952, Worley 1972, Schuster 1980, Geissler & Bischler 1990.

** *R. obtusiloba* Steph. **ASK:** Worley 1970, Hong 1987.

** — subsp. *polyclada* (A.Evans) S.Hatt. (*Radula polyclada*). **ASK:** Brinkman 1934, Schofield 1968, Godfrey 1977b, Hong 1987. **PH:** TYPE, Evans 1915b, Castle 1925, 1937, 1968, Frye & Clark 1946a, 1946b, Persson 1947, 1952, Eyerdam 1952, Worley 1972, Hermann 1973a, Geissler & Bischler 1990. **VC:** Persson 1947, 1952, Eyerdam 1952.

*** *R. prolifera* Arnell **ASK:** Steere 1954, 1976, 1978, Worley 1970, Steere & Scotter 1978, Godfrey & Schofield 1979, Schuster 1984, Hong 1987, Schuster & Konstantinova 1996, Grolle & Long 2000, Konstantinova 2000. **BE:** Persson 1947, Steere & Inoue 1978. **DE:** Stehn *et al.* 2013. **NO:** Steere & Inoue 1978, Potemkin 1995. **NS:** Steere 1953, Schuster & Steere 1958, Rastorfer *et al.* 1973, Murray & Murray 1975, 1978, 1982, Inoue 1976, Steere & Inoue 1978, Yamada 1979. **YK:** Persson & Gjaerevoll 1957, Cooper 1986.

Riccardia

*** *R. chamedryfolia* (With.) Grolle (*Riccardia sinuata*, *Aneura major*, *Riccardia major*, *Riccardia sinuata* var. *major*). **ASK:** Evans 1915b, Clark & Frye 1928, Brinkman 1934, Müller 1954a, Bonner 1962b, Worley 1970, Miller *et al.* 1983, Damsholt 2002, Damsholt 2013. **DE:** Stehn *et al.* 2013. **PH:** Frye & Clark 1937, Clark & Frye 1942, Worley 1972, Schuster 1992a.

*** *R. latifrons* (Lindb.) Lindb. (“*Rhiccardia*”, *Aneura latifrons*). **ASK:** Evans & Nichols 1908, Brinkman 1934, Frye & Clark 1937, Ammons 1940, Müller 1954a, Worley 1970, Steere & Scotter 1978. **DE:** Stehn *et al.* 2013. **KI:** Persson 1968. **NO:** Potemkin 1995. **NS:** Persson 1952, Persson 1962a, Johnson *et al.* 1966, Inoue 1976, Steere & Inoue 1978, Murray & Murray 1982. **PH:** Evans 1900, 1915b, Macoun 1902, Stair 1947, Worley 1972. **VC:** Clark & Frye 1942, Eyerdam 1952.

** — subsp. *arctica* R.M.Schust. et Damsh. **ASK:** Damsholt 2013. **NO:** Potemkin 1995.

** — subsp. *latifrons* **ASK:** Schuster 1992a, Damsholt 2002, 2013. **NO:** Potemkin 1995.

*** *R. multifida* (L.) Gray **ASK:** Brinkman 1934, Frye & Clark 1937, Ammons 1940, Müller 1954a, Bird & Ogilvie 1964, Inoue & Miller 1965, Breil 1970, Worley 1970, Godfrey 1977b, Miller *et al.* 1983, Bapna & Kachroo 2000b, Damsholt 2002, 2013. **PH:** Evans 1915b, Clark & Frye 1948. **Worley 1972.**

*** *R. palmata* (Hedw.) Carruth. (*Aneura palmata*). **ASK:** Evans 1913, Brinkman 1934, Ammons 1940, Müller 1954a, Worley 1970, Steere & Scotter 1978, Miller *et al.* 1983, Schuster 1992a, Damsholt 2002, 2013. **NO:** Potemkin 1995. **PH:** Macoun 1902, Worley 1972. **VC:** Frye & Clark 1937, Clark & Frye 1942, Eyerdam 1952, Persson 1952.

Riccia

*** *R. cavernosa* Hoffm. **ASK:** Dirkse & Losada-Lima 2011. **NW:** Seppelt & Laursen 1999, Seppelt 2001.

*** *R. glauca* L. **ASK:** Seppelt & Laursen 1999. **NO:** Potemkin 1995.

*** *R. sorocarpa* Bisch. **ASK:** Seppelt & Laursen 1999. **NS:** Murray 1992.

Ricciocarpos

*** *R. natans* (L.) Corda (“*Ricciocarpus*”). **ASK:** Worley 1970, Perold 1999, Damsholt 2002. **AN:** Lepage 1952, Schuster 1992b.

Saccobasis

*** *S. polita* (Nees) H.Buch (*Sphenolobus politus*, *Tritomaria polita*). **ASK:** Müller 1910a, Evans 1912c, Lorenz 1915, Frye & Clark 1945, Müller 1954b, Schuster 1969, Worley 1970, Hong 1994, Damsholt 2002, 2013. **DE:** Persson & Weber 1958, Worley 1972, Stehn *et al.* 2013, Stehn *et al.* 2013. **KI:** Persson 1947, Worley 1972. **PH:** Worley 1972. **VC:** Clark & Frye 1942, Persson 1947 [doubting earlier reports].

** *S. polymorpha* (R.M.Schust.) Schljakov **ASK:** Konstantinova 2000.

Sauteria

*** *S. alpina* (Nees) Nees **ASK:** Evans 1915b, Evans 1919b, Haynes *et al.* 1923, Brinkman 1934, Müller 1940, 1952, Worley 1970, Steere & Scotter 1979, Schuster 1992b, Damsholt 2002, 2013. **NO:** Potemkin 1995. **NS:** Persson 1962a, Worley 1972, Steere & Inoue 1978. **PH:** Worley 1972.

Scapania

*** *S. americana* Müll.Frib. (*Scapania bolanderi* var. *americana*). **ASK:** Amakawa 1967, Worley 1970, Hong 1975, Godfrey 1977b, Hong 1980b, 1987. **KE:** Schofield *et al.* 2002. **KI:** Clark & Frye 1949. **PH:** Evans 1930, Frye & Clark 1946a, Persson 1947, 1949, Clark & Frye 1949, Eyerdam 1952, Worley 1972. **VC:** Clark & Frye 1942, Eyerdam 1952.

*** *S. apiculata* Spruce **ASK:** Damsholt 2002. **NS:** Murray & Murray 1978, Steere & Inoue 1978, Hong 1980b. **PH:** Müller 1915a, Schuster 1974.

*** *S. bolanderi* Austin (*Scapania albescens*). **ASK:** Pearson 1890, Underwood 1891, Müller 1901, Stephani 1910, Brinkman 1934, Hattori 1952, Amakawa & Hattori 1953, Amakawa 1967, Worley 1970, Hong 1980b, 1987. **FB:** Macoun 1902. **KE:** Evans 1915b, Persson 1962a. **KI:** Evans 1900, Macoun 1902, Eyerdam 1952. **PH:** SYNTYPES of *Scapania albescens*, Stephani 1886, Howe 1899, Evans 1900, 1915b, 1930, Macoun 1902, Müller 1905, Clark & Frye 1942, Frye & Clark 1946a, Stair 1947, Eyerdam 1952, Worley 1972, Geissler & Bischler 1990. **VC:** Evans 1900, Macoun 1902, Müller 1905, Evans 1915b, Clark & Frye 1942, Frye & Clark 1946a, Eyerdam 1952. **YK:** Persson & Gjaerevoll 1961.

*** *S. brevicaulis* Taylor **ASK:** Damsholt 2002, 2013 [both incl. *S. degenii*]. **NS:** Steere & Inoue 1978, Hong 1980b, Potemkin 1999.

*** *S. carinthiaca* Müll.Frib.

*** — var. *massalongi* Müll.Frib. (*Scapania massalongii*). **ASK:** **NS:** Steere & Inoue 1978, Hong 1980b.

*** *S. compacta* (Roth) Dumort. **ASK:** **PH:** Potemkin 1995.

*** *S. crassiretis* Bryhn (*Scapania nemorea* subsp. *crassiretis*). **ASK:** Steere 1978, Damsholt 2002, 2013, Ellis *et al.* 2012. **NO:** Potemkin 1994, 1995. **NS:** Steere & Inoue 1978, Hong 1980b. **YK:** Schuster 1974, Steere & Inoue 1978.

- *** *S. curta* (Mart.) Dumort. **ASK**: Underwood 1891, Evans & Nichols 1908, Evans 1915b, Brinkman 1934, Frye & Clark 1946a, Müller 1956b, Worley 1970, Johnson 1989, Damsholt 2002. **DE**: Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **KI**: Persson 1969. **NO**: Evans 1901b, Macoun 1902, Persson 1952, Potemkin 1995. **NS**: Persson 1962a, Steere & Inoue 1978. **PH**: Evans 1900, Macoun 1902, Müller 1905, Clark & Frye 1942, Stair 1947, Worley 1972. **VC**: Eyerdam 1952. **YK**: Persson & Gjaerevoll 1957, Murray & Murray 1978.
- ** — var. *curta* (*Scapania rosacea*, *Martinellius rosaceus* “*Martinellia rosacea*”). **ASK**: Brinkman 1934, Schuster 1974. **DE**: Stehn *et al.* 2013. **NO**: Arnell 1917, Potemkin 1995.
- ** — var. *grandiretis* R.M.Schust. (*Scapania perssonii*). **ASK**: Konstantinova 2000. **NO**: Potemkin 1995, 1999, Damsholt 2013.
- ** — var. *isoloba* R.M.Schust. **ASK**: **NO**: Potemkin 1995.
- *** *S. cuspiduligera* (Nees) Müll.Frib. **ASK**: Müller 1956b, Schuster 1958b, Worley 1970. **DE**: Persson & Weber 1958, Stehn *et al.* 2013. **FB**: Persson 1952, Persson & Gjaerevoll 1957. **NO**: Potemkin 1995. **NS**: Persson 1962a, Inoue 1976, Steere & Inoue 1978, Murray & Murray 1982. **YK**: Persson & Gjaerevoll 1957, Persson 1963, Steere & Inoue 1978.
- ** — var. *cuspiduligera* **ASK**: Schuster 1974. **DE**: Stehn *et al.* 2013.
- ** — var. *diplophyllopsis* R.M.Schust. **ASK**: **NO**: Potemkin 1995.
- * *S. degenii* Schiffn. ex Müll.Frib. (*Scapania degenii* var. *dubia*). **ASK**: Worley 1970, Schuster & Damsholt 1974, Schuster 1974, Steere 1978. **NO**: Potemkin 1999. **NS**: Murray & Murray 1978, Steere & Inoue 1978, Hong 1980b. **YK**: Steere & Inoue 1978.
- *** *S. gymnostomophila* Kaal. (*Scapania gymnostomophila* f. *incurva*). **ASK**: Müller 1956b, Worley 1970, Schuster 1974, Godfrey 1977a, Christy & Wagner 1996, Damsholt 2002, 2013. **DE**: Persson 1963, Stehn *et al.* 2013. **NO**: Potemkin 1995. **NS**: Persson 1962a, Steere & Inoue 1978, Hong 1980b. **NW**: Hong 1980b. **PH**: Worley 1972. **YK**: Steere & Inoue 1978.
- *** *S. hyperborea* Jørg. (*Scapania hyperborea* f. *apiculata*). **ASK**: **NO**: Potemkin 1995, 1999, Damsholt 2013. **NS**: Steere & Inoue 1978, Hong 1980b. **YK**: Steere & Inoue 1978.
- *** *S. irrigua* (Nees) Nees **ASK**: Evans & Nichols 1908, Müller 1915a, Brinkman 1934, Clark & Frye 1937, Müller 1956b, Worley 1970, Johnson 1989, Damsholt 2002. **AN**: Persson 1952. **BB**: Persson 1952. **BE**: Persson 1952. **DE**: Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **FB**: Clark 1958b. **KE**: Schofield *et al.* 2002. **KI**: Clark & Frye 1942, 1948. **LP**: Evans 1915b, Frye & Clark 1946a. **NO**: Evans 1900, Macoun 1902, Clark & Frye 1948. **NS**: Persson 1962a, Rastorfer *et al.* 1973, Smith 1974, Murray & Murray 1975, 1978, Steere & Inoue 1978. **PH**: Stair 1947, Worley 1972. **YK**: Steere & Inoue 1978, Murray & Murray 1982.
- ** — subsp. *irrigua* **ASK**: Buch 1928.
- ** — subsp. *rufescens* (Loeske) R.M.Schust. **ASK**: **NO**: Potemkin 1995. **NS**: Murray & Murray 1978, Steere & Inoue 1978, Hong 1980b.
- *** *S. kaurinii* Ryan **ASK**: Müller 1956b, Konstantinova 2000, Damsholt 2002 [with a “?”], 2013. **NO**: Potemkin 1995.
- *** *S. microdonta* (Mitt.) Müll.Frib. (*Diplophyllum microdantum*, *Macrodiplrophyllum microdantum*). **ASK**: Amakawa & Hattori 1955, Worley 1970, Hong & Vitt 1977, Hong 1987, Konstantinova 2000. **NO**: Persson 1946, 1949, Frye & Clark 1947, Steere & Inoue 1978. **NS**: Steere & Inoue 1978, Hong 1980a. **NW**: Hong 1980a.
- *** *S. mucronata* H.Buch **ASK**: Buch 1928, Brinkman 1938, Frye & Clark 1946a, Müller 1956b, Worley 1970, Damsholt 2002, 2013. **AN**: Persson 1952. **KI**: Griggs 1933. **NS**: Persson 1963, Smith 1974, Murray & Murray 1978, Steere & Inoue 1978. **PH**: Evans 1936, Persson 1952, Worley 1972. **YK**: Steere & Inoue 1978.
- *** *S. obcordata* (Berggr.) S.W.Arnell (*Scapania lapponica*). **ASK**: Worley 1970, Bednarek-Ochyra *et al.* 2000. **KE**: Arnell & Persson 1961, Persson 1962a, Hong 1980b. **NO**: Potemkin 1999. **NS**: Murray & Murray 1978, Steere & Inoue 1978, Hong 1980b.
- *** *S. obscura* (Arnell et C.E.O.Jensen) Schiffn. **ASK**: Konstantinova 2000.
- *** *S. ornithopodioides* (With.) Waddell **ASK**: Hattori 1966 [rejected by Hattori 1968 as a mistake], Müller *et al.* 1983, Bapna & Kachroo 2000b, Zuo *et al.* 2008. **PH**: Worley 1972.
- *** *S. paludicola* Loeske et Müll.Frib. (*Scapania paludosa* var. *paludicola*). **ASK**: Buch 1928, Brinkman 1934, Evans & Nichols 1935, Frye & Clark 1946a, Buch & Tuomikoski 1955, Müller 1956b, Worley 1970, Godfrey 1977a, Damsholt 2002, 2013. **AN**: Persson 1952. **BB**: Persson 1952. **BE**: Persson 1952. **DE**: Sherrard 1957, Persson & Weber 1958, Persson 1963, Stehn *et al.* 2013. **KI**: Persson 1952. **NO**: Evans 1916, Persson 1952, Potemkin 1995. **NS**: Persson 1952, 1962a, Johnson *et al.* 1966, Smith 1974, Inoue 1976, Murray & Murray 1978, 1982, Steere & Inoue 1978. **NW**: Steere & Inoue 1978. **PH**: Eyerdam 1952, Worley 1972. **VC**: Eyerdam 1952, Persson 1952. **WH**: Potemkin 1995. **YK**: Persson 1963, Steere & Inoue 1978, Murray & Murray 1982.
- * — var. *paludicola* **ASK**: **FB**: Hong 1980b. **NO**: Müller 1915a. **NS**: Hong 1980b.
- ? — var. *rotundiloba* R.M.Schust. [the taxon is not validly published and we do not know the value of it] **ASK**: **NO**: Potemkin 1995, Damsholt 2013.
- ** *S. paludosa* (Müll.Frib.) Müll.Frib. (*Scapania cordifolia*). **ASK**: Stephani 1910, Brinkman 1934, Brinkman 1938, Worley 1970, Hong 1980b, Johnson 1989, Damsholt 2002, Damsholt 2013. **AN**: Persson 1952. **DE**: Hermann 1973b, Stehn *et al.* 2013. **KI**: Clark & Frye 1942, Frye & Clark 1946a, Persson 1952. **NS**: Murray & Murray 1978, Steere & Inoue 1978. **PH**: HA: Worley 1972. **HO**: Persson 1952, Persson 1963, Shacklette 1965, Worley 1972. **JU**: Persson 1952, Worley 1972. **KG**: Persson 1952, Worley 1972. **PE**: Evans 1915b, Worley 1972. **PW**: Evans 1915b, Worley 1972. **SK**: Persson 1952, Worley 1972. **VC**: TYPE of *Scapania cordifolia*, Müller 1903, Clark & Frye 1942, Frye & Clark 1946a, Persson 1952, Persson 1963, Geissler & Bischler 1990. **WH**: Persson 1962b.
- ** *S. parvifolia* Warnst. **ASK**: **FB**: Hong 1980b. **NS**: Murray & Murray 1978, Steere & Inoue 1978, Hong 1980b. **YK**: Murray & Murray 1978, Steere & Inoue 1978, Hong 1980b.
- *** *S. praetervisiva* Meyl. (*Scapania mucronata* var. *praetervisiva*, *Scapania polaris*). **ASK**: Worley 1970, Steere 1978, Paton 1999. **NS**: Persson 1962a, Steere & Inoue 1978, Hong 1980b.

- *** *S. scandica* (Arnell et H.Buch) Macvicar **ASK**: Buch & Tuomikoski 1955, Müller 1956b, Worley 1970, Jessup 2001, Damsholt 2002, 2013. **BE**: Schuster 1958b. **DE**: Persson 1963, Stehn et al. 2013. **KI**: Persson 1946. **NO**: Potemkin 1995. **PH**: Persson 1946, Schuster 1958b, Worley 1972.
- ** — var. *argutedentata* H.Buch **ASK**: **NO**: Potemkin 1995.
- ** — var. *scandica* **ASK**: Arnell 1956, Schuster 1974. **KI**: Hong 1980b. **NO**: Hong 1980b. **PH**: Hong 1980b.
- *** *S. simmonsii* Bryhn et Kaal. (“*simonsii*”). **ASK**: Steere 1954, Müller 1956b, Worley 1970, Steere 1976, Steere 1978, Godfrey & Schofield 1979, Hong 1980b, Konstantinova 2000, Damsholt 2013. **NS**: Steere 1953, Schuster & Steere 1958, Smith 1974, Inoue 1976, Murray & Murray 1978, Steere & Inoue 1978. **YK**: Persson & Gjaerevoll 1957, Murray & Murray 1978, Steere & Inoue 1978, Heinrichs et al. 2012.
- *** *S. spitsbergensis* (Lindb.) Müll.Frib. (“*spitzbergensis*”). **ASK**: Steere 1954, 1978, Müller 1956b, Schuster & Damsholt 1974, Hong & Vitt 1977, Godfrey & Schofield 1979, Schuster 1984, Konstantinova 2000, Damsholt 2002, 2013. **NO**: Potemkin 1994. **NS**: Schuster & Steere 1958, Steere & Inoue 1978, Hong 1980b.
- *** *S. subalpina* (Nees ex Lindenb.) Dumort. (*Martinellia subalpinus* “*Martinellia subalpina*”). **ASK**: Evans 1919b, Clark & Frye 1937, Brinkman 1938, Worley 1970, Schuster 1974, Damsholt 2002, 2013. **AN**: Persson 1952, Persson & Gjaerevoll 1957. **DE**: Persson 1963, Stehn et al. 2013. **KE**: Schofield et al. 2002. **NO**: Arnell 1917, 1922, Persson 1952, Persson & Gjaerevoll 1957, Potemkin 1995. **PH**: Worley 1972. **WH**: Persson 1962b. **YK**: Persson & Gjaerevoll 1957, Murray & Murray 1978.
- * — var. *subalpina* **ASK**: Frye & Clark 1946a.
- *** *S. tundrae* (Arnell) H.Buch **ASK**: Konstantinova 2000. **NO**: Potemkin 1995, Potemkin 1999, Damsholt 2013. **NS**: Murray & Murray 1982.
- *** *S. uliginosa* (Lindenb.) Dumort. **ASK**: Brinkman 1934, Buch & Tuomikoski 1955, Müller 1956b, Worley 1970, Steere 1978, Damsholt 2002, 2013. **DE**: Hermann 1973b, Stehn et al. 2013. **KE**: Schofield et al. 2002. **NS**: Murray & Murray 1978, Steere & Inoue 1978. **PH**: Evans 1915b, Frye & Clark 1946a, Persson 1952, Worley 1972, Hong 1980b. **VC**: Hong 1980b.
- *** *S. umbrosa* (Schrad.) Dumort. **ASK**: Müller 1901, Buch 1928, Brinkman 1934, Müller 1956b, Worley 1970, Schuster 1974, Hong 1980b, Damsholt 2002. **DE**: Stehn et al. 2013. **KE**: Persson 1952, Schofield et al. 2002. **PH**: Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Frye & Clark 1946a, Stair 1947, Eyerdam 1952, Persson 1952, Worley 1972. **VC**: Evans 1900, Macoun 1902, Clark & Frye 1942, Persson 1963.
- *** *S. undulata* (L.) Dumort. (*Scapania oakesii*, *Scapania undulata* var. *oakesii*, *Scapania dentata*). **ASK**: Evans & Nichols 1908, Brinkman 1934, Ammons 1940, Müller 1956b, Müller 1956b, Worley 1970, Hong 1980b, Johnson 1989, Damsholt 2002, 2013. **DE**: Stehn et al. 2013. **KE**: Schofield et al. 2002. **KI**: Griggs 1933, Clark & Frye 1942, Clark & Frye 1942, Persson 1952, Persson 1952. **LP**: Evans 1915b. **NS**: Steere & Inoue 1978, Murray & Murray 1982. **PH**: Evans 1900, 1915b, Macoun 1902, Persson 1952, Worley 1972. **VC**: Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Eyerdam 1952, Persson 1952, Shacklette 1961.
- * — var. *undulata* **ASK**: Worley 1970, Schuster 1974. **DE**: Stehn et al. 2013. **VC**: Frye & Clark 1946a.

- *** *S. zemliae* S.W.Arnell **ASK**: Konstantinova 2000. **NO**: Potemkin 1995, Potemkin 1999, Damsholt 2013.

Schistochilopsis

- *** *S. grandiretis* (Lindb. ex Kaal.) Konstant. (*Lophozia grandiretis*, *Lophozia grandiretis* subsp. *proteidea*). **ASK**: Müller 1954b, Schuster 1969 [with doubt], Worley 1970, Damsholt 2002 [with a “?”], Hong 2002a, Bakalin 2011, Damsholt 2013 [“questionable”]. **NO**: Potemkin 1995. **NS**: Steere & Inoue 1978. **WH**: Potemkin 1995. **YK**: Steere & Inoue 1978.
- ** *S. hyperarctica* Konstant. et L.Söderstr. (*Lophozia hyperarctica*). **ASK**: Grolle & Long 2000, Konstantinova 2000, Hong 2002a, Bakalin 2004, Bakalin 2011. **NS**: Steere & Inoue 1978.
- *** *S. incisa* (Schrad.) Konstant. (*Lophozia incisa*). **ASK**: Stephani 1902b, Evans & Nichols 1908, Brinkman 1934, Ammons 1940, Müller 1954b, Schuster 1969, Worley 1970, Vitt et al. 1971, Steere & Scotter 1978, Bapna & Kachroo 2000b, Damsholt 2002, Hong 2002a, Atwood 2011. **BE**: Evans 1900, Macoun 1902. **DE**: Persson & Weber 1958, Steere 1975, Stehn et al. 2013. **KE**: Clark 1958b, Persson & Gjaerevoll 1961, Schofield et al. 2002. **KI**: Evans 1900, Macoun 1902, Clark & Frye 1948. **NO**: Evans 1901b, Macoun 1902. **NS**: Johnson et al. 1966, Murray & Murray 1978, Steere & Inoue 1978. **NW**: Steere & Inoue 1978. **PH**: Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Frye & Clark 1945, Stair 1947, Worley 1972. **VC**: Evans 1900, Macoun 1902, Clark & Frye 1942. **WH**: Persson 1962b. **YK**: Persson & Gjaerevoll 1957, Steere 1975, Murray & Murray 1978, Steere & Inoue 1978.
- * — var. *incisa* **ASK**: Damsholt 2013. **DE**: Stehn et al. 2013.
- ** *S. opacifolia* (Culm. ex Meyl.) Konstant. (*Lophozia opacifolia*, *Lophozia incisa* subsp. *opacifolia*, *Schistochilopsis incisa* var. *opacifolia*, *Massula opacifolia*). **ASK**: Worley 1970, Godfrey 1977a, Damsholt 2002, 2013, Hong 2002a, Bakalin 2011. **DE**: Stehn et al. 2013. **KE**: Schofield et al. 2002. **NO**: Potemkin 1995. **NS**: Smith 1974, Inoue 1976, Murray & Murray 1978, 1982, Steere & Inoue 1978. **YK**: Murray & Murray 1978.

Schizophyllopsis

- *** *S. sphenoloboides* (R.M.Schust.) Vána et L.Söderstr. (*Anastrophyllum sphenoloboides*). **ASK**: Worley 1970, Schuster 1984, Hong 1996, Grolle & Long 2000, Konstantinova 2000, Damsholt 2002, Konstantinova & Savchenko 2008, Damsholt 2013. **NS**: Steere & Inoue 1978. **YK**: Steere & Inoue 1978.

Schljakovia

- *** *S. kunzeana* (Huebener) Konstant. et Vilnet (“*kunzeanus*”, *Lophozia kunzeana*, *Barbilophozia kunzeana*, *Orthocaulis kunzeanus*, *Lophozia kunzeana* f. *rotundiloba*, *Barbilophozia kunzeana* f. *rotundiloba*). **ASK**: Müller 1954a, Worley 1970, Hong & Matthews 2001, Damsholt 2002. **DE**: Persson 1952, Persson & Weber 1958, Stehn et al. 2013. **KI**: Persson 1952. **MS**: Persson 1963. **NO**: Potemkin 1995. **NS**: Persson 1952, Arnell & Persson 1961, Persson 1962a, Schuster 1969, Smith 1974, Murray & Murray 1978, 1982, Steere & Inoue 1978. **PH**: Stair 1947, Persson 1952, Schuster 1969, Worley 1972. **VC**: Persson 1952, 1963. **WH**: Persson 1962b. **YK**: Persson & Gjaerevoll 1957, Steere & Inoue 1978, Murray & Murray 1982, Cooper 1986 [with a “cf.”].

Schljakovianthus

*** *S. quadrilobus* (Lindb.) Konstant. et Vilnet (*Sphenolobus quadrilobus*, *Orthocaulis quadrilobus*, *Lophozia quadriloba*, *Barbilophozia quadriloba*, *Lophozia quadriloba* var. *heterophylla*, *Orthocaulis quadrilobus* var. *heterophylla*, *Orthocaulis quadrilobus* var. *glareosa*, *Lophozia quadriloba* f. *glareosa*). **ASK**: Stephani 1902b, Bryhn 1906, Müller 1910b, Evans 1915b, Lorenz 1915, Brinkman 1934, Frye & Clark 1945, Müller 1954a, Schuster 1969, Worley 1970, Steere & Scotter 1978, Steere 1978, Hong & Matthews 2001, Damsholt 2002, 2013. **BE**: Persson 1952. **DE**: Persson & Weber 1958, Persson & Gjaerevoll 1961, Persson & Viereck 1983, Stehn *et al.* 2013. **NO**: Persson 1952, Potemkin 1995. **NS**: Persson 1949, 1952, 1962a, Smith 1974, Inoue 1976, Murray & Murray 1978, 1982, Steere & Inoue 1978. **NW**: Steere & Inoue 1978. **PH**: Evans 1900, Macoun 1902, Persson 1952, Worley 1972. **YK**: Persson & Gjaerevoll 1957, Persson & Gjaerevoll 1957, Persson 1963, Murray & Murray 1978, 1982, Steere & Inoue 1978, Cooper 1986 [with a “cf.”].

Solenostoma

*** *S. confertissimum* (Nees) Schljakov (*Jungermannia confertissima*). **ASK**: Bakalin 2012a, 2014c, Damsholt 2013. **DE**: Stehn *et al.* 2013. **FB**: Vána & Hong 1999. **KE**: Vána & Hong 1999, Schofield *et al.* 2002. **NO**: Potemkin 1995, Vána & Hong 1999. **NW**: Vána & Hong 1999. **PH**: Potemkin 1995.

*** *S. hyalinum* (Lyell) Mitt. (*Jungermannia hyalina*). **ASK**: Bakalin 2014c. **FB**: Vána & Hong 1999. **NO**: Potemkin 1995, Vána & Hong 1999, Damsholt 2013. **PH**: Worley 1972.

*** *S. obovatum* (Nees) C.Massal. (*Nardia obovata*, *Jungermannia obovata*, *Plectocolea obovata*, *Solenostoma subellipticum*, *Plectocolea subelliptica*, *Jungermannia subelliptica*, *Jungermannia obovata* subsp. *minor*) **ASK**: Stephani 1901b, Evans 1915b, Müller 1956a, Worley 1970, Damsholt 2002, 2013, Bakalin 2014c. **DE**: Persson 1963, Vána & Hong 1999, Stehn *et al.* 2013. **KE**: Vána & Hong 1999, Schofield *et al.* 2002. **KI**: Evans 1900, 1919a [doubting the identification], Macoun 1902, Frye & Clark 1946b, Clark & Frye 1949, Persson 1952, Bakalin 2014c. **NO**: Potemkin 1995, Vána & Hong 1999. **NS**: Persson 1952, Inoue 1976, Steere & Inoue 1978, Murray & Murray 1982, Vána & Hong 1999. **PH**: Evans 1900, 1919a [doubting the identification], Macoun 1902, Frye & Clark 1943, 1946b, Persson 1952, Worley 1972, Vána 1975, Vána & Hong 1999, **VC**: Clark & Frye 1942, 1949, Eyerdam 1952, Persson 1952, Vána 1975, Vána & Hong 1999. **YK**: Steere & Inoue 1978.

*** *S. obscurum* (A.Evans) R.M.Schust. (*Plectocolea obscura*, *Jungermannia evansii*). **ASK**: Konstantinova 2000, Bakalin 2014c. **KI**: Damsholt & Vána 1977, Damsholt 2013. **PH**: Vána & Hong 1999, Damsholt 2013.

*** *S. rubrum* (Gottsche) R.M.Schust. (*Jungermannia rubra*, *Plectocolea rubra*). **ASK**: Worley 1970, Bakalin 2012a, 2014c. **BE**: Vána & Hong 1999. **DE**: Persson & Weber 1958, Godfrey 1977b, Vána & Hong 1999, Stehn *et al.* 2013. **PH**: Clark & Frye 1942, Persson 1963, Worley 1972, Vána 1974, Vána & Hong 1999.

*** *S. schusteranum* (J.D.Godfrey et G.Godfrey) Vána, Hentschel et Heinrichs (*Jungermannia schusterana*, *Plectocolea schusterana* “*schusteriana*”). **ASK**: Hong 1987, Vána

& Hong 1999. **PH**: Godfrey & Godfrey 1979, Bakalin 2014c.

*** *S. sphaerocarpum* (Hook.) Steph. (*Aplozia sphaerocarpa* “*Haplozia*”, *Jungermannia sphaerocarpa*, *Jungermannia sphaerocarpa* var. *nana*). **ASK**: Evans 1915b, Brinkman 1934, Steere 1937, Frye & Clark 1943, Schuster 1969, Worley 1970, Vána 1974, Damsholt 2002, 2013, Bakalin 2012a. **AN**: Persson 1952. **BE**: Persson 1952. **DE**: Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **KI**: Griggs 1933, Persson 1952, Vána & Hong 1999. **NO**: Evans 1900, Macoun 1902, Arnell 1917 [rejected by Persson 1952 as *Nardia geoscyphus* f. *insecta*], Potemkin 1995, Vána & Hong 1999, Bakalin 2014c. **PH**: Evans 1900, Macoun 1902, Persson 1963, Worley 1972, Vána & Hong 1999. **YK**: Persson & Gjaerevoll 1961.

Sphenolobus

*** *S. minutus* (Schreb. ex D.Crantz) Berggr. (*Jungermannia minuta*, *Diplophyllum minutum*, *Lophozia minuta*, *Anastrophyllum minutum*, *Anastrophyllum minutum* var. *weberi*, *Anastrophyllum minutum* var. *grandis*, *Sphenolobus saccatulus*). **ASK**: Pearson 1890, Underwood 1891, Collins 1899, Stephani 1902b, Brinkman 1934, Ammons 1940, Persson 1949, Müller 1954b, Persson & Gjaerevoll 1961, Schuster 1969, Worley 1970, Steere 1976, 1978, Hong 1996, Jessup 2000, Damsholt 2002, 2013. **BE**: Evans 1900, Persson 1952. **DE**: Sherrard 1957, Persson & Weber 1958, Stehn *et al.* 2013. **KE**: Persson & Gjaerevoll 1961, Persson 1962a. **KI**: Clark & Frye 1942, Persson 1952, 1969. **LP**: Thomas 1952. **NO**: Evans 1900, Macoun 1902, Arnell 1917, Persson 1952, Potemkin 1995. **NS**: Persson 1952, 1962a, 1963, Smith 1974, Inoue 1976, Murray & Murray 1978, 1982, Steere & Inoue 1978. **NW**: Steere & Inoue 1978. **PH**: Stephani 1886, Evans 1900, 1915b, Macoun 1902, Frye & Clark 1945, Persson 1952, Worley 1972. **VC**: Evans 1900, Macoun 1902, Persson 1952. **WH**: Persson 1962b. **YK**: Persson 1952, Persson & Gjaerevoll 1957, Murray & Murray 1978, 1982, Steere & Inoue 1978, Cooper 1986.

*** *S. saxicola* (Schrad.) Steph. (“*saxicolus*”, *Jungermannia saxicola*, *Lophozia saxicola*, *Anastrophyllum saxicola* “*saxicolus*”). **ASK**: Stephani 1886, 1902b, Pearson 1890, Underwood 1891, Evans 1900, 1915b, Macoun 1902, Lorenz 1915, Frye & Clark 1945, Müller 1954b, Schuster 1958b, 1969, 1984, Worley 1970, Steere 1976, 1978, Hong 1996, Grolle & Long 2000, Konstantinova 2000, Damsholt 2002, 2013. **DE**: Persson & Weber 1958, Persson 1963, Stehn *et al.* 2013. **KI**: Persson 1952. **NS**: Steere & Inoue 1978, Murray & Murray 1982. **PH**: Persson 1952, Persson & Gjaerevoll 1957, Worley 1972. **VC**: Persson 1952. **YK**: Persson & Gjaerevoll 1957, Murray & Murray 1978, Steere & Inoue 1978, Cooper 1986.

Tetralophozia

*** *T. setiformis* (Ehrh.) Schljakov (*Jungermannia setiformis*, *Temnoma setiforme* “*Temnoma setiformis*”, *Blepharostoma setiforme* “*setiformis*”, *Chandonanthus setiformis*, *Chandonanthus setiformis* var. *alpinus*). **ASK**: Stephani 1886, 1909a, Pearson 1890, Underwood 1891, Evans 1915b, Müller 1914a, Brinkman 1934, Frye & Clark 1945, Müller 1954a, Steere 1954, 1978, Bonner 1963b, Bird & Ogilvie 1964, Schuster 1969, Worley 1970, Steere 1976, Damsholt 2002, 2013. **AN**: Persson 1952. **BE**: Evans 1900, Macoun 1902, Steere 1938. **DE**: Sherrard 1957, Persson & Weber

1958, Stehn *et al.* 2013. **KE**: Schofield *et al.* 2002. **LP**: Thomas 1952. **MS**: Konstantinova 2002. **NO**: Arnell 1917, Steere 1938, Clark & Frye 1942, Persson 1952. **NS**: Persson 1962a, Inoue 1976, Steere & Inoue 1978, Murray & Murray 1982. **PH**: Worley 1972. **SF**: Persson & Viereck 1983. **VC**: Persson 1952. **YK**: Persson & Gjaerevoll 1957, 1961, Murray & Murray 1978, 1982, Steere & Inoue 1978, Cooper 1986.

Trilophozia

*** *T. quinquentata* (Huds.) Bakalin (*Lophozia quinquentata* “quinkuedentata”, *Tritomaria quinquentata*, *Tritomaria quinquentata* var. *turgida*, *Tritomaria quinquentata* subsp. *turgida*, *Tritomaria quinquentata* f. *gracilis*, *Lophozia lyonii* “lyoni”). **ASK**: Stephani 1902b, Evans & Nichols 1908, Brinkman 1934, Frye & Clark 1945, Müller 1954b, Schuster 1969, Worley 1970, Hong 1994, Damsholt 2002, 2013. **AN**: Persson 1952. **BE**: Evans 1900, Macoun 1902. **DE**: Persson & Weber 1958, Persson & Viereck 1983, Stehn *et al.* 2013. **KE**: Persson 1952, Schofield *et al.* 2002. **KI**: Persson 1952. **LP**: Evans 1915b. **MS**: Persson 1952, Schuster & Konstantinova 1995. **NO**: Persson 1947, Schuster 1969, Potemkin 1995. **NS**: Persson 1947, 1962a, Rastorfer *et al.* 1973, Smith 1974, Murray & Murray 1975, 1978, 1982, Inoue 1976, Steere & Inoue 1978. **PH**: Persson 1947, 1952, Worley 1972. **VC**: Persson 1947, 1952, Eyerdam 1952, Persson & Gjaerevoll 1957. **YK**: Persson & Gjaerevoll 1957, 1961, Persson 1962a, Murray & Murray 1978, Steere & Inoue 1978.

Tritomaria

*** *T. exsecta* (Schmidel) Schiffn. ex Loeske (*Sphenolobus exsectus*). **ASK**: Brinkman 1934, Ammons 1940, Schuster 1969, Worley 1970, Hong 1994, Damsholt 2002. **DE**: Stehn *et al.* 2013. **LP**: Evans 1915b, Frye & Clark 1945. **NS**: Steere & Inoue 1978.

*** *T. exsectiformis* (Breidl.) Schiffn. ex Loeske **ASK**: Müller 1954b, Worley 1970, Hong 1994, Zhang & Guo 1998. **DE**: Stehn *et al.* 2013. **LP**: Thomas 1952. **NO**: Potemkin 1995. **NS**: Steere & Inoue 1978. **WH**: Persson 1962b. **YK**: Steere & Inoue 1978.

** — subsp. *exsectiformis* **ASK**: Schuster 1969, Damsholt 2002, 2013.

*** *T. scitula* (Taylor) Jørg. **ASK**: Müller 1954b [we do not know of any earlier first hand report and Persson & Weber 1958 report it as new to Alaska], Schuster 1969, Hong 1994, Damsholt 2002, 2013. **DE**: Persson & Weber 1958, Stehn *et al.* 2013. **NO**: Potemkin 1995. **NS**: Persson 1962a, Steere & Inoue 1978. **NW**: Steere & Inoue 1978. **YK**: Steere & Inoue 1978.

TAXA DOUBTFULLY OCCURRING IN THE REGION

Anastrophyllum

*** *A. michauxii* (F. Weber) H. Buch **ASK**: Frye & Clark 1945 [referring to Evans & Nichols 1908 but misreading it as they do not report it from Alaska], Schuster 1969, Worley 1970, Damsholt 2002. **NS**: Hong 1996 [the report must be considered doubtful as the species is southern and not known from tundra areas anywhere else].

Calypogeia

** *C. fissa* (L.) Raddi [*Calypogeia trichomanis* (L.) Corda is a nomenclatural synonym to *C. fissa* but the name has been used for various taxa in the past. Before ca. 1950 it was used for almost any *Calypogeia* species and it is not possible

to know which one is meant by the name without checking the specimens it may have been based on. After ca. 1950 the name was mostly used for the taxon now named *C. azurea* (see above). Note that *C. fissa* is known from Alaska by a recent collection.] **ASK**: Evans & Nichols 1908, Brinkman 1934, Ammons 1940. **PH**: Cooley 1892, Coville 1895, Evans 1900, 1915b, Macoun 1902, Clark & Frye 1942, Stair 1947. **VC**: Evans 1900, Macoun 1902, Clark & Frye 1942.

Eremonotus

*** *E. myriocarpus* (Carrington) Lindb. et Kaal. ex Pearson [it is unclear what information Schuster base his report on. Davison (1993) reports it as new to Alaska (from the Aleutians)]. **ASK**: Schuster 1984.

Frullania

*** *F. californica* (M. Howe) A. Evans **ASK**: Worley 1970 [with doubt], Godfrey 1977b [with a ?]. **PH**: Persson 1946, Worley 1972.

*** *F. davurica* Hampe ex Gottsche, Lindenb. et Nees [no first hand report is known and Hattori only reported it from “arctic Alaska”]. **ASK**: Hattori 1976, Schljakov 1982.

Herbertus

*** *H. stramineus* (Dumort.) Trevis. [No first hand report is known to us and the following reports may be based on the complicated synonymy in the species complex]. **ASK**: Worley 1970, Hassel & Løe 1998, Paton 1999, Damsholt 2002.

Heterogemma

*** *H. capitata* (Hook.) Konstant. et Vilnet (*Schistochilopsis capitata*). [We do not know of any first hand report]. **ASK**: Bakalin 2011.

Kurzia

** *K. makinoana* (Steph.) Grolle [All reports probably refer to the Aleutians] **ASK**: Schofield 1968, Hong 1987, Long & Grolle 1990.

Lophozia

*** *L. ascendens* (Warnst.) R.M. Schust. [The report of this boreal species was doubted by Bakalin 2011]. **ASK**: **VC**: Hong 2002a.

Porella

** *P. faurieri* (Steph.) S. Hatt. (“*faurieri*”, *Porella vernicosa* subsp. *faurieri*). [All reports probably refer to the Aleutians]. **ASK**: Hong 1966, Worley 1970, Hong 1987.

*** *P. platyphylloidea* (Schwein.) Lindb. (*Madotheca platyphylla* auct. *Porella platyphylla* auct.). [We doubt the occurrence in Alaska as there is no recent first hand report except by Potemkin 1995]. **ASK**: Stephani 1886, Pearson 1890, Evans 1900, 1915b, Macoun 1902, Evans & Nichols 1908, Müller 1915c, Brinkman 1934, Ammons 1940, Frye & Clark 1946a, Breil 1970, Worley 1970, Schuster 1980, Damsholt 2002. **NO**: Potemkin 1995. **PH**: Cooley 1892, Worley 1972, Hong 1983.

Radula

** *R. auriculata* Steph. **ASK**: Yamada 1979, Hong 1987, Bapna & Kachroo 2000b.

Rivulariella

** *R. gemmipara* (A. Evans) D.H. Wagner (*Chiloscyphus gemmiparus*). **ASK**: Christy & Wagner 1996.

Szygiella

*** *S. autumnalis* (DC.) K. Feldberg, Vána, Hentschel et Heinrichs (*Jamesoniella autumnalis*). [Davison (1993) rejected the reports by Persson (1946) and Eyerdam (1952) from the Aleutians as belonging to *S. nipponica*. It should be checked which taxon the other specimens they reported belong to.

Note that *S. nipponica* have often been regarded as a synonym to, or variety of, *S. autumnalis*. **ASK:** Müller 1956a, Schuster 1969, Worley 1970, Damsholt 2002. **VC:** Persson 1946, Eyerdam 1952.

Tetralophozia

*** *T. filiformis* (Steph.) Urmi (*Chandonanthus pusillus*). **ASK:** Schuster 1984, Hong 1987, Grolle & Long 2000.

TAXA REPORTED BUT REJECTED
FROM THE ALASKAN FLORA

Apotreubia

*** *A. nana* (S.Hatt. et Inoue) S.Hatt. et Mizut. (*Treubia nana*). **ASK: PH:** Worley 1972.

Asterella

*** *A. tenella* (L.) P.Beauv. **ASK:** Rothrock 1867 as *Fimbraria tenella* [rejected as *Asterella ludwigii* by Frye & Clark 1937].

Calycularia

*** *C. crispula* Mitt. [All reports are rejected as *C. laxa* by Konstantinova & Mamontov (2000)]. **ASK: MS: Schuster & Konstantinova 1995. PH: Davison & Smith 1992.**

Conocephalum

*** *C. conicum* (L.) Dumort. [We consider all reports to be *C. salebrosum* (see above)] **ASK: PH: Worley 1972. YK: Drury 1956.**

Frullania

*** *F. jackii* Gottsche **ASK:** Iverson 1963, Worley 1970, Steere 1976, Steere 1978. **NS: Schuster & Steere 1958, Steere & Inoue 1978, Hong 1989. NW: Hong 1989.**

*** *F. tamarisci* (L.) Dumort. [All reports are probably referable to *F. nisquallensis*] **ASK:** Frye & Clark 1947, Buch & Tuomikoski 1955, Müller 1958, Iverson 1963, Worley 1970, Schuster 1992a. **DE:** Stehn *et al.* 2013. **NS:** Steere 1969. **PH: Evans 1900.**

Gymnomitrium

*** *G. crenulatum* Gottsche ex Carrington [All reports are *G. pacificum* (cf. Schuster 1974)] **ASK: Stephani 1901a, Macoun 1902, Müller 1909a, Evans 1915b, Arnell 1928, Brinkman 1934, Frye & Clark 1943, Arnell 1956, Müller 1956a, Bonner 1963b, 1966. PH: Eyerdam 1952, Persson 1963. VC: Persson 1949, Eyerdam 1952.**

Harpanthus

*** *H. scutatus* (F.Weber et D.Mohr) Spruce **ASK: PH:** Worley 1972.

Herbertus

*** *H. hutchinsiae* (Gottsche et Rabenh.) A.Evans [All reports refer to *H. aduncus*]. **ASK:** Brinkman 1934, Clark & Frye 1934, Arnell 1950, 1956, Schuster 1962. **KI: Persson 1946, Eyerdam 1952. PH: Evans 1917b, Frye & Clark 1943, Eyerdam 1952, Persson 1952, 1963.**

Liochlaena

*** *L. subulata* (A.Evans) Schljakov (*Jungermannia subulata*). **ASK:** Damsholt 2002 [including var. *leiantha* and probably referring to that variety].

Metzgeria

*** *M. procera* Mitt. (*Metzgeria hamata*). [*M. hamata* was earlier used for *M. leptoneura* and all reports refer to the latter species]. **ASK:** Evans 1915b, Pagán 1939, Ammons 1940, Worley 1970.

Odontoschisma

*** *O. denudatum* (Mart.) Dumort. **ASK:** Hong 1988b [but not on his map].

*** *O. sphagni* (Dicks.) Dumort. (*Odontoschisma prostratum*).

[Hong 1988b rejected all reports]. **ASK:** Clark & Frye 1937, Brinkman 1938, Ammons 1940, Frye & Clark 1945, Müller 1956c, Schuster 1974 [with doubt], Damsholt 2002 ["doubtfully recorded"].

Plagiochila

*** *P. gracilis* Lindenb. et Gottsche (*Plagiochila rhizophora*, *Plagiochila firma*). [All reports from Alaska belong to *P. schofieldiana*]. **ASK:** Schofield 1968, Hattori 1971, Bapna & Kachroo 2000b.

Porella

*** *P. platyphylla* (L.) Pfeiff. (*Madotheca platyphylla*). [North American reports belong to *P. platyphylloidea* (cf. Heinrichs *et al.* 2011)]. **ASK: Stephani 1886, Pearson 1890, Evans 1900, 1915b, Macoun 1902, Evans & Nichols 1908, Müller 1915c, Brinkman 1934, Ammons 1940, Frye & Clark 1946a, Breil 1970, Worley 1970, Schuster 1980, Damsholt 2002. NO: Potemkin 1995. PH: Cooley 1892, Worley 1972, Hong 1983.**

Reboulia

*** *R. hemisphaerica* (L.) Raddi [Worley is referring to Cooley 1892. However, Cooley used the name *Preissia hemisphaerica* which is a synonym to *Preissia quadrata*]. **ASK:** Worley 1970. **PH: JU:** Worley 1972 ["needs to be confirmed"].

Scapania

*** *S. nemorea* (L.) Grolle (*Scapania nemorosa* "numerosa"). [Hong 1980b rejected it from western North America]. **ASK:** Rothrock 1867, **Pearson 1890**, Underwood 1891, Evans 1900, Mohr 1901, **Macoun 1902**, Evans & Nichols 1908, Müller 1915b, 1956b, Buch 1928, Brinkman 1934, Schuster 1974 [with doubt], Paton 1999. **PH: Cooley 1892, Stephani 1886, Evans 1915b.**

SYNONYMS

Acolea concinnata (Lightf.) Dumort. = *Gymnomitrium concinnatum*
A. corallioides (Nees) Dumort. = *Gymnomitrium corallioides*
A. crenulata (Gottsche ex Carrington) Dumort. = *Gymnomitrium crenulatum*
A. obtusa (Lindb.) C.Massal. et Carestia = *Gymnomitrium obtusum*
Alicularia compressa (Hook.) Nees = *Nardia compressa*
A. geoscyphus De Not. = *Nardia geoscyphus*
A. scalaris (Gray) Corda = *Nardia scalaris*
Anastrophyllum cavifolium (H.Buch et S.W.Arnell) Lammes = *Orthocaulis cavifolius*
A. hellerianum (Nees ex Lindenb.) R.M.Schust. = *Crossocalyx hellerianum*
A. minutum (Schreb. ex D.Crantz) R.M.Schust. = *Sphenolobus minutus*
A. minutum var. *grandis* (Gottsche ex Lindb.) R.M.Schust. = *Sphenolobus minutus*
A. minutum var. *weberi* (Mart.) Kartt. = *Sphenolobus minutus*
A. reichardtii (Gottsche ex Jur.) Steph. = *Anastrophyllum assimile*
A. saxicola (Schrad.) R.M.Schust. = *Sphenolobus saxicola*
A. sphenoloboides R.M.Schust. = *Schizophyllopsis sphenoloboides*
Aneura latifrons Lindb. = *Riccardia latifrons*
A. major (Nees) Steph. = *Riccardia chamedryfolia*
A. palmata (Hedw.) Dumort. = *Riccardia palmata*
A. pinguis var. *angustior* (Hook.) Dumort. = *Aneura pinguis*
Anthelia nivalis (Sw. ex F.Weber et D.Mohr) Lindb. *nom. inval.* = *Anthelia juratzkana*
Aplazia atrovirens (Dumort.) Dumort. = *Jungermannia atrovirens*
A. caespiticia (Lindenb.) Dumort. = *Endogemma caespiticia*
A. cordifolia (Hook.) Dumort. = *Jungermannia exsertifolia* subsp. *cordifolia*
A. sphaerocarpa (Hook.) Dumort. = *Solenostoma sphaerocarpum*
Apomarsupella revoluta (Nees) R.M.Schust. = *Gymnomitrium revolutum*
A. pubescens (Schrank) Kuwah. = *Metzgeria pubescens*
Asterella fragrans (Schleich.) Trevis. = *Asterella saccata*
A. gracilis (F.Weber) Underw. = *Mannia gracilis*
Athalamia hyalina (Sommerf.) S.Hatt. = *Clevea hyalina*

- Barbilophozia atlantica* (Kaal.) Müll.Frib. = *Orthocaulis atlantica*
B. attenuata (Mart.) Loeske = *Neoorthocaulis attenuatus*
B. binsteadii (Kaal.) Loeske = *Neoorthocaulis binsteadii*
B. floerkei (F. Weber et D. Mohr) Loeske = *Neoorthocaulis floerkei*
B. gracilis (Schleich. ex DC) Müll.Frib. = *Neoorthocaulis attenuatus*
B. hyperborea (R.M.Schust.) Stotler et Crand.-Stotl. = *Neoorthocaulis hyperborea*
B. hyperborea f. *paradoxa* (R.M.Schust.) Potemkin = *Neoorthocaulis hyperborea*
B. kunzeana (Huebener) Müll.Frib. = *Schljakovia kunzeana*
B. kunzeana f. *rotundiloba* (R.M.Schust.) Potemkin = *Schljakovia kunzeana*
B. quadriloba (Lindb.) Loeske = *Schljakovianthus quadrilobus*
Bazzania deflexa (Mart.) Carruth. = *Bazzania tricenata* var. *tricenata*
B. triangularis (Schleich.) Lindb. = *Bazzania tricenata* var. *tricenata*
B. tricenata f. *vittii* W.S.Hong = *Bazzania tricenata* var. *tricenata*
Blepharostoma setiforme (Ehrh.) Schiffn. = *Tetralophozia setiformis*
Calypogeia meylanii H. Buch = *Calypogeia integrispula*
C. trichomanis (L.) Corda = *Calypogeia fissa* subsp. *fissa*
Cephalozia albescens (Hook.) Dumort. = *Fuscocephaloziopsis albescens*
C. bicuspidata subsp. *ambigua* (C.Massal.) R.M.Schust. = *Cephalozia ambigua*
C. catenulata (Huebener) Lindb. = *Fuscocephaloziopsis catenulata*
C. connivens (Dicks.) Lindb. = *Fuscocephaloziopsis connivens*
C. divaricata (Sm.) Dumort. = *Cephaloziella divaricata*
C. lammersiana (Huebener) Carrington = *Cephalozia bicuspidata* subsp. *lammersiana*
C. leucantha Spruce = *Fuscocephaloziopsis leucantha*
C. loitlesbergeri Schiffn. = *Fuscocephaloziopsis loitlesbergeri*
C. lunulifolia (Dumort.) Dumort. = *Fuscocephaloziopsis lunulifolia*
C. media Lindb. = *Fuscocephaloziopsis lunulifolia*
C. multiflora (Huds.) Lindb. = *Fuscocephaloziopsis connivens* subsp. *connivens*
C. multiflora Spruce nom. illeg. = *Fuscocephaloziopsis lunulifolia*
C. pachycaulis R.M.Schust. = *Fuscocephaloziopsis pachycaulis*
C. pleniceps (Austin) Lindb. = *Fuscocephaloziopsis pleniceps*
Cephaloziella arctica Bryhn et Douin = *Cephaloziella varians*
C. grimsulana var. *angustiloba* Douin = *Cephaloziella grimsulana*
C. leucantha (Spruce) Schiffn. = *Fuscocephaloziopsis leucantha*
C. papillosa (Douin) Schiffn. = *Cephaloziella divaricata* var. *scabra*
C. rubella subsp. *arctogena* (R.M.Schust.) R.M.Schust. et Damsh. = *Cephaloziella arctogena*
C. starkei (Dumort. ex Cogn.) Schiffn. = *Cephaloziella divaricata*
C. striatula (C.E.O.Jensen) Douin = *Cephaloziella spinigera*
C. subdentata Warnst. = *Cephaloziella spinigera*
Cesius concinnatus (Lightf.) Gray = *Gymnomitrium concinnatum*
C. corallioides (Nees) Carruth. = *Gymnomitrium corallioides*
C. crenulatus (Gottsche ex Carrington) Carruth. = *Gymnomitrium crenulatum*
Chandonanthus pusillus Steph. = *Tetralophozia filiformis*
C. setiformis (Ehrh.) Lindb. = *Tetralophozia setiformis*
C. setiformis var. *alpinus* (Hook.) Kaal. = *Tetralophozia setiformis*
Chiloscyphus coadunatus (Sw.) J.J.Engel et R.M.Schust. = *Lophocolea coadunata*
C. fragilis (Roth) Schiffn. = *Chiloscyphus pallescens* var. *fragilis*
C. gemmiparus A. Evans = *Rivulariella gemmipara*
C. minor (Nees) J.J.Engel et R.M.Schust. = *Lophocolea minor*
C. polyanthos var. *fragilis* (Roth) Müll.Frib. = *Chiloscyphus pallescens* var. *fragilis*
C. rivularis (Schrud.) Hazsl. = *Chiloscyphus polyanthos* var. *rivularis*
Cladopodiella fluitans (Nees) Jørg. = *Odontoschisma fluitans*
Cordaea flotoviana Nees = *Moerckia flotoviana*
Cyatophora quadrata (Scop.) Trevis. = *Preissia quadrata*
Diplophyllia albicans (L.) Trevis. = *Diplophyllum albicans*
D. plicata (Lindb.) A. Evans = *Douinia plicata*
D. taxifolia (Wahlenb.) Trevis. = *Diplophyllum taxifolium*
Diplophyllum argenteum Taylor et Spruce = *Douinia ovata*
D. hyalinum Brinkm. = *Douinia plicata*
D. imbricatum (M. Howe) Müll.Frib. ex Steph. = *Douinia imbricata*
Diplophyllum microdontum (Mitt.) H. Buch = *Scapania microdonta*
D. minutum (Schreb. ex D. Crantz) Dumort. = *Sphenolobus minutus*
D. ovatum (Dicks.) Lindb. ex Steph. = *Douinia ovata*
D. plicatum Lindb. = *Douinia plicata*
D. taxifolium var. *macrostictum* H. Buch = *Diplophyllum taxifolium*
Fimbraria fragrans (Balb.) Nees = *Mannia fragrans*
F. lindenberghiana Corda ex Nees = *Asterella lindenberghiana*
F. saccata (Wahlenb.) Nees = *Asterella saccata*
F. tenella (L.) Nees = *Asterella tenella*
Frullania tamarisci subsp. *nisquallensis* (Sull.) S.Hatt. = *Frullania nisquallensis*
F. tamarisci var. *nisquallensis* (Sull.) S.Hatt. = *Frullania nisquallensis*
Grimaldia fragrans (Balb.) Corda ex Nees = *Mannia fragrans*
G. pilosa (Hornem.) Lindb. = *Mannia pilosa*
G. sibirica (Müll.Frib.) C.Massal. = *Mannia sibirica*
Gymnocolea acutiloba (Schiffn.) Müll.Frib. = *Gymnocolea inflata* subsp. *acutiloba*
G. apiculatum (Schiffn.) Müll.Frib. = *Marsupella apiculata*
G. varians (Lindb.) Schiffn. = *Gymnomitrium brevissimum*
Herbertus aduncus subsp. *schusteri* (H.A. Mill. et E.B. Scott) H.A. Mill. et E.B. Scott = *Herbertus aduncus*
H. himalayanus (Steph.) Herzog = *Herbertus dicranus*
H. sakuraii (Warnst.) S.Hatt. = *Herbertus dicranus*
H. sakuraii subsp. *arcticus* Inoue et Steere = *Herbertus arcticus*
Herpetium filamentosum (Lehm. et Lindenb.) Mont. = *Lepidozia filamentosa*
Hygrolejeunea alaskana R.M.Schust. et Steere = *Lejeunea alaskana*
Isopaches hellerianus (Nees ex Lindenb.) H. Buch = *Crossocalyx hellerianus*
Jamesoniella autumnalis (DC.) Steph. = *Syzygiella autumnalis*
Jungermannia albicans L. = *Diplophyllum albicans*
Jungermannia barbata Schmidel ex Schreb. = *Barbilophozia barbata*
J. binsteadii Kaal. = *Neoorthocaulis binsteadii*
J. caespiticia Lindenb. = *Endogemma caespiticia*
J. confertissima Nees = *Solenostoma confertissimum*
J. cordifolia Ehrh. ex F. Weber et D. Mohr nom. inval. = *Jungermannia exsertifolia* subsp. *cordifolia*
J. cordifolia Hook. nom. illeg. = *Jungermannia exsertifolia* subsp. *cordifolia*
J. eucordifolia (Hook.) Schljakov = *Jungermannia exsertifolia* subsp. *cordifolia*
J. evansii (A. Evans) Vána = *Solenostoma obscurum*
J. hyalina Lyell = *Solenostoma hyalinum*
J. kaurinii Limpr. ex Cohn = *Mesoptychia gillmanii*
J. leiantha Grolle = *Liochlaena lanceolata*
J. minuta Schreb. ex D. Crantz = *Sphenolobus minutus*
J. obovata Nees = *Solenostoma obovatum*
J. obovata subsp. *minor* (Carrington) Damsh. = *Solenostoma obovatum*
J. porphyroleuca Nees nom. illeg. = *Lophozia guttulata*
J. pumila subsp. *polare* (Lindb.) R.M.Schust. = *Jungermannia polaris*
J. rubra Gottsche = *Solenostoma rubrum*
J. saxicola Schrad. = *Sphenolobus saxicola*
J. schusterana J.D. Godfrey et G. Godfrey = *Solenostoma schusteranum*
J. setiformis Ehrh. = *Tetralophozia setiformis*
J. sphaerocarpa Hook. = *Solenostoma sphaerocarpum*
J. sphaerocarpa var. *nana* (Nees ex Flot.) Frye et L. Clark nom. illeg. = *Solenostoma sphaerocarpum*
J. subelliptica (Lindb. ex Heeg) Levier = *Solenostoma obovatum*
J. subulata A. Evans = *Liochlaena subulata*
J. trichophylla L. = *Blepharostoma trichophyllum*
J. tristis Nees = *Jungermannia atrovirens*
J. ventricosa Dicks. = *Lophozia ventricosa*
Kantius trichomanis (L.) Gray = *Calypogeia fissa* subsp. *fissa*
Leiocolea badensis (Gottsche ex Rabenh.) Jørg. = *Mesoptychia badensis*
L. bantriensis (Hook.) Jørg. = *Mesoptychia bantriensis*
L. collaris (Nees) Schljakov = *Mesoptychia collaris*
L. gillmanii (Austin) A. Evans = *Mesoptychia gillmanii*
L. heterocolpos (Thed. ex Hartm.) H. Buch = *Mesoptychia heterocolpos*
L. heterocolpos var. *harpanthoides* (Bryhn et Kaal.) R.M.Schust. ex S.W. Arnell = *Mesoptychia heterocolpos* var. *harpanthoides*
L. holmeniana (Inoue et Steere) Konstant. = *Mesoptychia heterocolpos* var. *harpanthoides*
L. obtusa (Lindb.) H. Buch = *Obtusifolium obtusum*
L. ruteana (Limpr.) Müll.Frib. = *Mesoptychia ruteana*
L. schultzei (Nees) Jørg. = *Mesoptychia ruteana*
Lepicolea fryei Perss. = *Pseudolepicolea fryei*
Lepidozia setacea (Weber) Mitt. = *Kurzia pauciflora*
Leptoscyphus taylorii (Hook.) Mitt. = *Mylia taylorii*
Lophochaete fryei (Perss.) R.M.Schust. = *Pseudolepicolea fryei*

- Lophocolea cuspidata* (Nees) Limpr. nom. illeg. = *Lophocolea bidentata*
Lophozia albobiviridis R.M.Schust. = *Isopaches albobiviridis*
L. alpestris subsp. *polaris* R.M.Schust. = *Lophozioopsis polaris*
L. atlantica (Kaal.) Schiffn. = *Orthocaulis atlanticus*
L. attenuata (Mart.) Dumort. = *Neoorthocaulis attenuatus*
L. badensis (Gottsche ex Rabenh.) Schiffn. = *Mesoptychia badensis*
L. badensis var. *apiculata* R.M.Schust. = *Mesoptychia badensis*
L. bantriensis (Hook.) Steph. = *Mesoptychia bantriensis*
L. barbata (Schmidel ex Schreb.) Dumort. = *Barbilophozia barbata*
L. bicrenata (Schmidel ex Hoffm.) Dumort. = *Isopaches bicrenatus*
L. binsteadii (Kaal.) A.Evans = *Neoorthocaulis binsteadii*
L. cavifolia (H.Buch et S.W.Arnell) R.M.Schust. = *Orthocaulis cavifolius*
L. collaris (Nees) Dumort. = *Mesoptychia collaris*
L. debiliformis R.M.Schust. et Damsh. = *Barbilophozia sudetica*
L. ehrhartiana (Weber) Inoue et Steere = *Lophozia ventricosa*
L. excisa (Dicks.) Dumort. = *Lophozioopsis excisa*
L. excisa var. *infuscata* R.M.Schust. et Damsh. = *Lophozioopsis excisa*
var. *infuscata*
L. excisa var. *succulenta* R.M.Schust. et Damsh. = *Lophozioopsis excisa*
var. *succulenta*
L. floerkei (F.Weber et D.Mohr) Schiffn. = *Neoorthocaulis floerkei*
L. gillmanii (Austin) R.M.Schust. = *Mesoptychia gillmanii*
L. gracilis (Schleich. ex DC) Steph. nom. illeg. = *Neoorthocaulis attenuatus*
L. grandiretis (Lindb. ex Kaal.) Schiffn. = *Schistochilopsis grandiretis*
L. grandiretis subsp. *proteidea* (Arnell) Damsh. = *Schistochilopsis grandiretis*
L. groenlandica (Nees) Macoun = *Lophozia murmanica*
L. hatcheri (A.Evans) Steph. = *Barbilophozia hatcheri*
L. heterocolpos (Thed. ex Hartm.) M.Howe = *Mesoptychia heterocolpos*
var. *arctica* (S.W.Arnell) R.M.Schust. et Damsh. = *Mesoptychia heterocolpos*
var. *arctica*
L. heterocolpos var. *harpanthoides* (Bryhn et Kaal.) R.M.Schust. = *Mesoptychia heterocolpos*
var. *harpanthoides*
L. heteromorpha R.M.Schust. et Damsh. = *Lophozia murmanica*
L. holmeniana Inoue et Steere = *Mesoptychia heterocolpos* var. *harpanthoides*
L. hyperarctica R.M.Schust. nom. inval. = *Schistochilopsis hyperarctica*
L. hyperborea (R.M.Schust.) R.M.Schust. = *Neoorthocaulis hyperborea*
L. hyperborea f. *paradoxa* R.M.Schust. = *Neoorthocaulis hyperborea*
L. incisa (Schrad.) Dumort. = *Schistochilopsis incisa*
L. incisa subsp. *opacifolia* (Culm. ex Meyl.) R.M.Schust. et Damsh. nom. inval. = *Schistochilopsis opacifolia*
L. inflata (Huds.) M.Howe = *Gymnocolea inflata*
L. jurensis Meyl. ex Müll.Frib. = *Lophozioopsis excisa* var. *excisa*
L. kaurinii (Limpr. ex Cohn) Steph. = *Mesoptychia gillmanii*
L. kunzeana (Huebener) A.Evans = *Schljakovia kunzeana*
L. kunzeana f. *rotundiloba* (R.M.Schust.) R.M.Schust. = *Schljakovia kunzeana*
L. latifolia R.M.Schust. = *Lophozioopsis propagulifera*
L. laxa (Lindb.) Grolle = *Heterogemma laxa*
L. longidens (Lindb.) Macoun = *Lophozioopsis longidens*
L. lycopodioides (Wallr.) Cogn. = *Barbilophozia lycopodioides*
L. lyonii (Taylor) Steph. = *Trilophozia quinquentata*
L. marchica (Nees ex Limpr.) Steph. = *Heterogemma laxa*
L. minuta (Schreb. ex D.Crantz) Schiffn. = *Sphenolobus minutus*
L. obtusa (Lindb.) A.Evans = *Obtusifolium obtusum*
L. opacifolia (Culm.) Culm. ex Meyl. = *Schistochilopsis opacifolia*
L. opacifolia Culm. nom. inval. = *Schistochilopsis opacifolia*
L. ovata (Dicks.) M.Howe = *Douinia ovata*
L. pellucida f. *rubrigemma* (R.M.Schust.) Bakalin nom. inval. = *Lophozioopsis rubrigemma*
L. pellucida R.M.Schust. = *Lophozioopsis pellucida*
L. pellucida var. *minor* R.M.Schust. = *Lophozioopsis pellucida* var. *minor*
L. perssonii H.Buch et S.W.Arnell = *Oleolophozia perssonii*
L. polaris (R.M.Schust.) R.M.Schust. et Damsh. = *Lophozioopsis polaris*
L. polaris var. *sphagnum* (R.M.Schust.) R.M.Schust. et Damsh. = *Lophozioopsis polaris*
var. *sphagnum*
L. porphyroleuca (Nees) Schiffn. nom. illeg. = *Lophozia guttulata*
L. porphyroleuca var. *guttulata* (Lindb. et Arnell) Meyl. = *Lophozia guttulata*
L. propagulifera (Gottsche) Steph. = *Lophozioopsis propagulifera*
L. quadriloba (Lindb.) A.Evans = *Schljakovianthus quadrilobus*
L. quadriloba f. *glareosa* (Jørg.) R.M.Schust. nom. inval. = *Schljakovianthus quadrilobus*
L. quadriloba var. *heterophylla* Bryhn et Kaal. = *Schljakovianthus quadrilobus*
L. quinquentata (Huds.) Cogn. = *Trilophozia quinquentata*
L. rubrigemma R.M.Schust. = *Lophozioopsis rubrigemma*
L. rufescens Schljakov = *Barbilophozia sudetica*
L. rutheana (Limpr.) M.Howe = *Mesoptychia rutheana*
L. saxicola (Schrad.) Schiffn. = *Sphenolobus saxicola*
L. schultzii (Nees) Schiffn. nom. illeg. = *Mesoptychia rutheana*
L. sudetica (Nees ex Huebener) Grolle = *Barbilophozia sudetica*
L. sudetica var. *anomala* (Schljakov) Schljakov = *Barbilophozia sudetica*
L. ventricosa var. *silvicola* (H.Buch) E.W.Jones = *Lophozia silvicola*
L. wenzelii var. *groenlandica* (Nees) Bakalin = *Lophozia murmanica*
Macrodiplophyllum imbricatum (M.Howe) Perss. = *Douinia imbricata*
M. microdontum (Mitt.) Perss. = *Scapania microdonta*
M. plicatum (Lindb.) Perss. = *Douinia plicata*
Madotheca cordaeana (Huebener) Dumort. = *Porella cordaeana*
M. navicularis (Lehm. et Lindenb.) Nees = *Porella navicularis*
M. platyphylla (L.) Dumort. = *Porella platyphylla*
M. platyphylla â* *convexula* Nees nom. illeg. = *Porella platyphylla*
M. roellii Steph. = *Porella roellii*
Mannia pilosa var. *sibirica* (Müll.Frib.) S.W.Arnell = *Mannia sibirica*
Marchantia alpestris (Nees) Burgeff = *Marchantia polymorpha* subsp. *montivagans*
M. aquatica (Nees) Burgeff = *Marchantia polymorpha* subsp. *polymorpha*
M. polymorpha var. *alpestris* (Nees) Arnell et C.E.O.Jensen = *Marchantia polymorpha*
subsp. *montivagans*
Marsupella alpina (Gottsche ex Husn.) Bernet = *Gymnomitrium alpinum*
M. brevissima (Dumort.) Grolle = *Gymnomitrium brevissimum*
M. commutata (Limpr.) Bernet = *Gymnomitrium commutatatum*
M. emarginata f. *juventes* Perss. ex Eyerdam nom. inval. = *Marsupella emarginata*
subsp. *emarginata*
M. emarginata var. â *aquatica* (Lindenb.) Dumort. = *Marsupella aquatica*
M. groenlandica C.E.O.Jensen = *Marsupella arctica*
M. sphacelata f. *media* (Gottsche) R.M.Schust. = *Marsupella sphacelata*
M. ustulata Spruce = *Marsupella sprucei*
M. varians (Lindb.) Müll.Frib. = *Gymnomitrium brevissimum*
Marsupella emarginata var. â *aquatica* (Lindenb.) Dumort. = *Marsupella aquatica*
Martinellius rosaceus (Corda) Lindb. = *Scapania curta* var. *curta*
M. subalpinus (Nees ex Lindenb.) Trevis. = *Scapania subalpina*
Massula opacifolia (Culm. ex Meyl.) Schljakov nom. illeg. = *Schistochilopsis opacifolia*
Mastigobryum deflexum (Mart.) Nees nom. illeg. = *Bazzania tricrenata*
var. *tricrenata*
Mesoptychia holmeniana (Inoue et Steere) L.Söderstr. et Vána = *Mesoptychia heterocolpos*
var. *harpanthoides*
Metacalypogeia schusterana S.Hatt. et Mizut. = *Eocalypogeia schusterana*
Metzgeria fruticulosa (O.F.Müll.) A.Evans = *Riccardia palmata*
M. hamata Lindb. nom. illeg. = *Metzgeria procera*
Microlepidozia setacea (Weber) Jørg. = *Kurzia pauciflora*
Moerckia hibernica f. *flotoviana* (Nees) De Sloover = *Moerckia flotoviana*
Nardia geoscyphus f. *insecta* (Lindb.) Arnell = *Nardia insecta*
N. haematosticta (Nees) Nees ex Lindb. = *Nardia geoscyphus*
N. obovata (Nees) Lindb. = *Solenostoma obovatum*
Odontoschisma denudatum subsp. *elongatum* (Lindb.) Potemkin = *Odontoschisma elongatum*
O. prostratum (Sw.) Trevis. = *Odontoschisma sphagni*
Orthocaulis binsteadii (Kaal.) H.Buch = *Neoorthocaulis binsteadii*
O. floerkei (F.Weber et D.Mohr) H.Buch = *Neoorthocaulis floerkei*
O. gracilis (Schleich. ex DC) H.Buch = *Neoorthocaulis attenuatus*
O. hyperboreus (R.M.Schust.) Konstant. = *Neoorthocaulis hyperboreus*
O. kunzeanus (Huebener) H.Buch = *Schljakovia kunzeana*
O. quadrilobus (Lindb.) H.Buch = *Schljakovianthus quadrilobus*
O. quadrilobus var. *glareosa* (Jørg.) S.W.Arnell nom. inval. = *Schljakovianthus quadrilobus*

- O. quadrilobus* var. *heterophylla* (Bryhn et Kaal.) S.W.Arnell *nom. illeg.* = *Schljakovianthus quadrilobus*
Pallavicinia flotoviana (Nees) Lindb. = *Moerckia flotoviana*
P. hibernica (Hook.) Carruth. = *Moerckia hibernica*
Peltolepis grandis (Lindb.) Lindb. = *Peltolepis quadrata*
Plagiochila alaskana A.Evans = *Plagiochila semidecurrens* var. *alaskana*
P. arctica var. *subarctica* (Jørg.) Inoue = *Plagiochila porelloides* var. *subarctica*
P. asplenioides subsp. *arctica* (Bryhn et Kaal.) R.M.Schust. = *Plagiochila arctica*
P. asplenioides var. *grandiretis* R.M.Schust. = *Plagiochila porelloides*
P. asplenioides subsp. *porelloides* (Torr. ex Nees) Kaal. = *Plagiochila porelloides*
P. asplenioides f. *subarctica* (Jørg.) R.M.Schust. = *Plagiochila porelloides* var. *subarctica*
P. asplenioides var. *subarctica* Jørg. = *Plagiochila porelloides* var. *subarctica*
P. firma Mitt. = *Plagiochila gracilis*
P. firma subsp. *confusa* (R.M.Schust.) Inoue = *Plagiochila schofieldiana*
P. fryei A.Evans = *Plagiochila semidecurrens* var. *alaskana*
P. major (Nees) S.W.Arnell *nom. illeg.* = *Plagiochila asplenioides*
P. rhizophora S.Hatt. = *Plagiochila gracilis*
P. rhizophora subsp. *confusa* R.M.Schust. = *Plagiochila schofieldiana*
P. satoi S.Hatt. = *Plagiochila porelloides*
P. satoi var. *magna* W.B.Schofield et W.S.Hong = *Plagiochila porelloides*
P. semidecurrens subsp. *grossidens* (Herzog) R.M.Schust. = *Plagiochila semidecurrens* var. *semidecurrens*
P. semidecurrens var. *longifolia* Inoue = *Plagiochila semidecurrens* var. *semidecurrens*
Plectocolea obovata (Nees) Lindb. = *Solenostoma obovatum*
P. obscura (A.Evans) A.Evans = *Solenostoma obscurum*
P. rubra (Gottsche) A.Evans = *Solenostoma rubrum*
P. schusterana (J.D.Godfrey et G.Godfrey) Bakalin = *Solenostoma schusteranum*
P. subelliptica (Lindb. ex Heeg) A.Evans = *Solenostoma obovatum*
Pleuroclada albescens (Hook.) Spruce = *Fuscocephaloziopsis albescens*
Pleurocladula albescens (Hook.) Grolle = *Fuscocephaloziopsis albescens*
Pleuroschisma pearsonii (Steph.) Müll.Frib. = *Bazzania pearsonii*
Porella rivularis (Nees) Lindb. = *Porella cordaeana*
P. vernicosa subsp. *faurieri* (Steph.) S.Hatt. = *Porella faurieri*
Preissia commutata (Lindenb.) Nees = *Preissia quadrata* subsp. *quadrata*
P. hemisphaerica (L.) Cogn. = *Preissia quadrata*
Prionolobus striatulus (C.E.O.Jensen) Schiffn. = *Cephaloziella spinigera*
Protolophozia debiliformis (R.M.Schust. et Damsh.) Konstant. = *Babilophozia sudetica*
Radula arctica Steph. = *Radula bolanderi*
R. krausei Steph. = *Radula complanata*
R. polyclada A.Evans = *Radula obtusiloba* subsp. *polyclada*
Riccardia major (Nees) Lindb. = *Riccardia chamedryfolia*
R. pinguis (L.) Gray = *Aneura pinguis*
R. sinuata (Dicks.) Trevis. = *Riccardia chamedryfolia*
R. sinuata var. *major* (Nees) Arnell = *Riccardia chamedryfolia*
Sarcocypophos sphaecelatus (Giesecke ex Lindenb.) Nees = *Marsupella sphaecelata*
Scapania albescens Steph. = *Scapania bolanderi*
S. bolanderi var. *americana* (Müll.Frib.) Frye et L.Clark = *Scapania americana*
S. cordifolia Müll.Frib. = *Scapania paludosa*
S. degenii var. *dubia* R.M.Schust. = *Scapania degenii*
S. dentata (Dumort.) Dumort. = *Scapania undulata*
S. gymnostomophila f. *incurva* (Bryhn et Kaal.) R.M.Schust. = *Scapania gymnostomophila*
S. hyperborea f. *apiculata* R.M.Schust. = *Scapania hyperborea*
S. imbricata M.Howe = *Douinia imbricata*
S. irrigua var. *rufescens* (Loeske) H.Buch = *Scapania irrigua* subsp. *rufescens*
S. lapponica (Arnell et C.E.O.Jensen) Steph. = *Scapania obcordata*
S. massalongi (Müll.Frib.) Müll.Frib. = *Scapania carinthiaca* var. *massalongi*
S. mucronata var. *praetervisa* (Meyl.) H.Buch = *Scapania praetervisa*
S. nemorea subsp. *crassiretis* (Bryhn) Potemkin = *Scapania crassiretis*
S. nemorosa (Dumort.) Dumort. *nom. illeg.* = *Scapania nemorea*
S. oakesii Austin = *Scapania undulata*
S. paludosa var. *paludicola* (Loeske et Müll.Frib.) Husn. = *Scapania paludicola*
S. perssonii R.M.Schust. = *Scapania curta* var. *grandiretis*
S. plicata (Lindb.) Potemkin = *Douinia plicata*
S. polaris R.M.Schust. *nom. inval.* = *Scapania praetervisa*
S. roseacea (Corda) Nees = *Scapania curta* var. *curta*
S. undulata var. *oakesii* (Austin) H.Buch = *Scapania undulata*
Schisma aduncum (Dicks.) Dumort. = *Herbertus aduncus*
Schistocephalopsis capitata (Hook.) Konstant. = *Heterogemma capitata*
S. incisa var. *opacifolia* (Culm. ex Meyl.) Bakalin = *Schistocephalopsis opacifolia*
S. laxa (Lindb.) Konstant. = *Heterogemma laxa*
Schofieldia monticola J.D.Godfrey = *Fuscocephaloziopsis monticola*
Solenostoma atrovirens (Dumort.) Müll.Frib. *nom. illeg.* = *Jungermannia atrovirens*
S. caespitium (Lindenb.) Steph. = *Endogemma caespiticia*
S. cordifolium (Dumort.) Steph. = *Jungermannia exsertifolia* subsp. *cordifolia*
S. polare (Lindb.) R.M.Schust. = *Jungermannia polaris*
S. pumilum (With.) Müll.Frib. = *Jungermannia pumila*
S. pumilum subsp. *polaris* (Lindb.) R.M.Schust. = *Jungermannia polaris*
S. subellipticum (Lindb. ex Heeg) R.M.Schust. = *Solenostoma obovatum*
S. triste (Nees) Müll.Frib. = *Jungermannia atrovirens*
Sphenolobus cavifolius (H.Buch et S.W.Arnell) Müll.Frib. = *Orthocaulis cavifolius*
S. exsectus (Schmidel) Steph. = *Tritomaria exsecta*
S. ovatus (Dicks.) Schiffn. = *Douinia ovata*
S. politus (Nees) Steph. = *Saccobasis polita*
S. quadrilobus (Lindb.) Steph. = *Schljakovianthus quadrilobus*
S. saccatulus (Lindb.) Müll.Frib. = *Sphenolobus minutus*
Temnoma setiforme (Ehrh.) M.Howe = *Tetralophozia setiformis*
Treubia nana S.Hatt. et Inoue = *Apotreubia nana*
Tritomaria heterophylla R.M.Schust. = *Pseudotritomaria heterophylla*
T. polita (Nees) Jørg. = *Saccobasis polita*
T. quinqueidentata (Huds.) H.Buch = *Trilophozia quinqueidentata*
T. quinqueidentata f. *gracilis* (C.E.O.Jensen) R.M.Schust. = *Trilophozia quinqueidentata*
T. quinqueidentata subsp. *turgida* (Lindb.) Damsh. = *Trilophozia quinqueidentata*
T. quinqueidentata var. *turgida* (Lindb.) Weim. = *Trilophozia quinqueidentata*

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