Additions and corrections to first edition of the Nordic Liverworts 2002

p = page I = column

p. 9 I Pleiocene Baltic amber: *Ptilidium pulcherrimum* from Eocene (54.8-37 m.y.a.). Baltic amber also with *Nipponolejeunea subalpina*, today an subalpine relict in SE-Asia.
p. 9. II Delete *Riccardia incurvata*, replace it with *Scapania compacta*.
p. 10 I line 40 relict ..and so is *M. arctica*, only observed once with young gynoecia, whereas male plants are frequent. Sporophytes recorded from Siberia (p. 356).
line 37... during Pleistocene supposed dispersed to tropical mountains.
II ... *L. rubrigemma* (in this contex considered a synonym of *L. longidens* ssp. *arctica* occurring in the Nordic countries).....*Radula prolifera* Arnell,
add *Tritomaria heterophylla*
line 50: delete *S. compacta*.
p. 12 II line 13 refugium, similar to *Tritomaria quinquedentata* ssp. *turgida* and *Riccia beyrichiana*.
p. 15 after 14. *mirabilis*..Headline: Vegetation above soil surface.
p. 17 II add in key.....usually with n = 5 or 6 *Anthocerophyta*
" " usually with n = 8 or 9 *Marchantiopsida*
p. 18 I line 34: spermatozoids..to the naked egg, unique to bryophytes, only surrounded of a plasma membrane.
p. 21 II point 6 at the end of line: 8 corrected to 9
Cryptocolea is missing near *L. decolorans* 8
p. 22 I: point 19. l-celled gemmae... *Cephalozia bicuspidata* is lacking.
p. 37 Plate 4: Illustrated Erfjord material stated close to *H. aduncus* ssp. *tenuis* of eastern N.Am. (lvs fragile).
p. 42 I: Female plants described by Paton (1999). Female bracts and bracteole to 1.5 mm long, divided 0.5 of the length, lobes subulate, with marginal slime-hairs from base to the middle of lamina. Perianths obovoid 0.8 x 1.6 mm, mouth bilobed to 0.5 of the length, margins with few slime-hairs. Sporophyte unknown.
II: Distrib. Female plants rare. Sporophyte unknown.
Faeroes. Add : Not occurring in the Alps, here supposedly replaced of the closely related *H. sendtneri* (Nees)Lindb.
p. 49. II: Before Dioicous. Gemmae recorded from British Columbia, Vancouver I. (described as dark red, 1 (-2)-celled, angular, 16 x 28 µm.
p. 51 II *Tetralophozia*: reproduce probably by shoot fragments.
p. 55 I: above map. Gemmae only recorded from Sweden !
II: *L. kunzeana*, rarely with branches of *Frullania*-, *Radula*- or *Acromastigum* type.
p. 72 II: *L. rubescens* add distrib. Yukon.
p. 80 I: add syn.: *Lophozia rubrigemma* R.M.Schust.
p. 83 I: key to fo. *cylindracea* add syn. *L jurensis* Meyl. ex Müll.Frib.
p. 86 I: *L. perssonii* Distrib. add Alaska (Potemkin 1995).
p. 93 I: *L. ventricosa* var. *confusa* Distrib. add Alaska (Potemkin 1995).
II: *Lophozia ventricosa* var. *grandiretis* Add syn. *Lophozia savicziae* Schljakov
p. 100 II: *L. sudetica* var. *anomala*. Add: Alaska (Potemkin 1995) and E.Greenland.
p. 101 Plate 30, 1, 7-9. The illustrated female plant of *L. polaris* (RMS & KD 82-1223) probably belongs to var. *sphagnorum* R.M.Schust.

p. 102 I: n=9 (Inoue 1975 and New Manual p. 123) some gemmae diploid with n = 18. Diploid gemmae first recorded from *Calypogeia neesiana* (Tatuno).
p. 104 I: var. *minor* R.M.Schust. recorded from Spitsbergen.
p. 112 II. *L. debiliformis*, distribution. S.Trdl. Uppdal, Trollheimen, lower Kamtjønna at the foot of Blåhø. Alt. 1366 m (leg. Kristian Hassel 2003).
N.Troms, Lyngen, Storelva, Rottenvik, Vattenfall. Alt. 170 m (69°37'N., 20°15'E.) Aug. 22, 2004. leg. T.Hallingbäck 41799.
p. 122 II: Limpricht considered the form with obtuse lobes to be the typical form of *L. gillmanii*, whereas the form with acute lobes was described as fo. *acutifolia*.
p. 123 II: below column .. p. 117 *L. rutheana* var. *laxa* from Sweden, Lule lappmark, Muddus was not seen, but suggested being *L. gillmanii* var. *gillmanii*.
p. 124 II: male bracts of *L. heterocolpos* sometimes reddish.
p. 126 I: add, Syn.: *Lophozia holmenianum* Inoue et Steere 1978:285 J.Hatt.Bot.Lab.
II: distrbution: add Alaska (Potemkin 1995).
p. 127 I: first line: "some brownish" add "or purplish".
II: add. Alaska (Potemkin 1995).
p. 145 I: Distr. Arctic, boreal montane.
p. 152 I: combination validated in Söderström et Váňa 2002 Lindbergia 27,1:43.
p. 163 I: The described gemmae from N.Trdl.were from *A. minutum*; gemmae of *A. assimile* still unknown. Distribution map fig. 65, delete dot from N.Trdl.
p. 164 I : "from sea level to alt. 600m, not alpine".
p. 167 II: Considered relictual in the whole area of distribution.
p. 168 I: Sporophytes in the boreal part of the Temperate zone. Sweden, sporophytes from Md, Borgsjö, Randkleven (Arnell 1890), Ll, Jokkmokk (Hagen 1867), Njammats (E.Nyman 1891). – Sporophytes also from Finske Bugt, Suursuari (Hogland, Gogland) S.O.Lindberg 1867, Fl.D. Rev.crit.com. 1871.
p. 175 Plate 61 fig. 4: oil-bodies more numerous than described in text.
p. 185. fo. *gracilis* Found as fo. *dentata* in SE. Greenland (JL 70-1733), still with the small cells of fo. *gracilis*. Dentition similar to that of the female bracts in *T. heterophylla*.
p. 187 I: perianth ..sometimes only 2-3 stratose at the very base (Mestersvig E.Greenland).
p. 190 II: P-mouth ? (probably not beaked), delete " beaked".
p. 191 I: Perianth beaked delete " beaked". Perianth also not found beaked in the material from Mackenzie R.-delta.
II: line 25 asymmetrical, add "at base sometimes with 1-2 celled thread-like appendages
II: Perianth contracted and beaked, delete "beaked".Described as "not beaked" in Inoue & Steere 1971.
p. 192 I: Distrib. add Yukon, Siberia. Delete bisexual replace with unisexual.
II: Dioicous under subfam. *Jameson...* on a new line.
line 26 "paraphyses lacking" replaced of only present in *J. undulifolia*.
p. 195 I: *J. undulifolia* branches add of *Radula*- and *Frullania* type.
II: after 1-2 antheridia add "and paraphyses".
p. 196 I: *J. undulifolia* is possibly circumpolar, circumboreal (Lindbergia 21,03 1996). Sporophytes rare.
p. 200 I: map. fig. 80 is *Chiloscyphus polyanthos* var. *polyanthos* in Söderström et al. 1995:79 not *J. leiantha* (syn. *J. subulata*) fig. 133 *l. c*. as it should have been. (Fig. 165, p. 406 is Söderström et al. 1995 fig. 78 *Chiloscyphus polyanthos*).
p. 201 I: Description, add "slightly to strongly aromatic" to the first line.

p. 207 II: shoot 0.4-1.2 mm wide corr. to 0.4-1.5 mm wide
p. 212 I: The rhizoid character, used in distinguishing Sect. *Desmorhiza*, is for Greenland and N.Am. plants demissed as diagnostic, being considered environmentally induced (R.M.Schust. 1988 Hep.S.Greenl.); the ventral strand-like decurrent bundle of rhizoids is developed as a result of optimal growth.
p. 214 II: add distrib. Alaska (Potemkin (1995).
p. 216 II. line 4 of key : "Pergynium lacking", replaced of "Perigynium lacking or very low in var. *nana*".
p. 218 II line 5. "perigynium lacking" replaced of "perigynium low, but distinct "
p. 225 I Sect. *Chascostoma* replaced of *Eucalyx* (Lindb.)Grolle Grolle & Long 2000. Basionym: *Nardia* sect. *Eucalyx* Lindb. Acta Soc.Sci.Fenn. 13: 369, 1874.
I: key point 1 add.””.as wide. "Perianth exserted". Dioicous or paroicous.
key point 1 add.”” than wide. "Perianth included". Paroicous..
p. 232 I: line 23 brownish walls. Add: Oil-bodies 2-8 per cell.
p. 238 II: Distr. add Alaska (Potemkin 1995)
p. 251 I: line 8 "furrow", usually described as a "sulcus".
p. 256 II: (n =9) Sporophytes known from Siberia (Lindbergia 21,1: 34 1996) Chukotka Pen., and Canada NWT.
p. 258 I: Arctic. In Europe only known... Chukotskyi Pen., prob. pre-pleistocene. Recorded from Sweden Lule Lappmark, Jokkmokk, Padjelanta, Kierkevaare (leg. H.Weibull Aug. 2002).
p. 259 Plate 94,2 : male plant from Dalsland, Edelskog, högheten (leg. C.Jensen Aug. 20, 1927).
p. 274 II: add Alaska (Potemkin 1995).
p. 276 II: after Baffin I add: S.Am., Venezuela.
p. 282 I: var. *intermedia* probably raised to *G. mucrophorum* R.M.Schust.
p. 285 I: *Corallioides* or *Coralliodes* (perhaps the missing "i" was deliberately missing, but sect. *Corallioides* was used in the key p. 121 in R.M.Schust, 1974 Hep.Anth.N.Am. III).
p. 309 II: add: Alaska (Potemkin 1955, Fragm. Fl. et Geob. XL,1: 331). Recorded from Pacific N.Am. (Schofield 2002),
p. 315 II: (*S. pseudocalcicola*) - Sporophyte unknown. R.M.Schust in R.M.Schust & Damsh.
p. 317 I: Distr. ..forests. W. & NW. Greenland, both records probably representing juvenile *S. cuspiduligera*.
p. 321 I: add to distrb. of var. *massalongii*: Medelpad, W. of Sundsvall, Viskanbädren. On *Picea* branches, close to bädren (leg. H.Weibull July 2002).
p. 331 I: key second point 2 after 1921 add Plate 122
p. 333 I: key first point 1 add: Plate 123
key second point 1 add: Plate 124
p. 338 II: *S. lingulata* ssp. *microphylla* should be *S. lingulata* var. *microphylla* (Warnst.)R.M.Schust.
p. 343 II line 17: ..present. Gemmiparous shoot sectors often with strongly inhibited leaves with 2 triangular lobes only (H.Buch 1911,51), such inhibited lobes also occur in *S. hyperborea* (e.g. W.Greenland, Disko I., Skarvefjeld RMS & KD 66-0406, 66-0407, 66-0409).
p. 348 II: Distrib. add Alaska (Potemkin 1995).
p. 350 II: Ecology, add W.Greenland, Svartenhuk found with calciphytes as *Lophozia quadriloba, L. heterocolpos* var. *arctica, Tritomaria polita* ssp. *polymorpha*, in Norway among *Lophozia quadriloba* and *Aneura pinguis*,

Distrib. add Alaska (Potemkin 1995).

p. 360 I: Perianth mouth with thick-walled apical cells, undentate (Potemkin 1998)

p. 366 I: Greenland. Only one record. SE.Greenland, Angmagssalik, Paornartivartik (KD 69-346 leg. O. Hamann), few shoots accepted, but questionable.

p. 369 I: line 16 *Scapania cupiduligera* corr. to *Scapania cuspiduligera*.

p. 416 II: ? Iceland

p. 470 II: with ventral intercalary branches.. add rarely with *Acromastigum* type branches.

p. 472 I: n = 8...Diploid gemmae from haploid shoots (New Manual p. 123).

p. 474 I: intercalary branches.....rarely with *Frullania* type terminal branches.

p. 511 I: Distrib.: add Sweden, Helsingland, Hedvigsforsen (H.Weibull 2004).

I: delete 2 repeated lines of the bottom 4 ".Perianth usually ellipsoidal to subfusiform, unistratose almost to the base, trigonous"

p. 513 II: line 12 *C. macrostachya* to be replaced of *C. loitlesbergeri*.

p. 524 I: bracts subtending 1-2 antheridia in S.Greenland plants.

p. 530 I: Distrib. doubtfully reported from British Columbia, add: Yukon, Alaska, Oregon and Washington.

p. 539 II: Key 13. – first couple of the two 13, line two: "Female bracts dentate, lacking hooked lobe apices". (delete "and teeth").

p. 550 I: Distrb. Alaska (Potemkin 1995). Norway, S.Trdl. Holvasselva, Rissa. – Bergveg at Storfossen (Kr. Hassel Oct. 18, 2005).

p. 552 I: gemmae colour, also purplish (S.Greenland Hep. 1988: 202), also purplish in collection from Norway, Finse (KD 80-186).

p. 566 I: Distr. var. *elegans* add: Alaska (Potemkin 1995).

p. 568 I: Distr. ssp. *arctogena* add: Alaska (Potemkin 1995).

p. 569 II: description line 5: µm corr. to mm.

p. 570 I: var. *scabra* perhaps Plate 208,3.

p. 572 I: Distrb. Adventfjorden etc....add: Sweden, Lule Lappmark, Jokkmokk, Padlejanta, Kierkevaare (Leg. H. Weibull Aug. 2002).

p. 575 I: In eastern N.Am. from Alaska, Ellesmere I. (Potemkin 1995)

p. 578 II: Sweden Uppland, Nora Korpholmen ca. 900 m west of Sneickanbo, veststranden. On soil/humus of rocks along margin of stream (strandklippar) May 13, 2004. T. Pettersson. 1557083 6677371.

p. 580 II: Distrb. add Alaska (Potemkin 1995).

p. 585 II: Distrb. add after "frequent". The species found in Baltic amber from Eocene (54.8-37 m.y.a.).

p. 610 I: *Frullania bolanderi* recently also found in S.Trdl., midtre Gaudal (Gudm. Moen in lit. 2008) Norway.

p. 617 II: key replace in both point 2 "long" with "large"

p. 653 II Replace "Calyptra large" with "Shoot calyptra large".

p. 661 I: Distrb. The N.Am. material from Oregon revised, was *R. chamedryfolia*. Accordingly is *R. incurvata* not found in N.Am.

p. 665 II: line 4 replace geotropic with geotropical

Distribution add : Alaska (Potemkin 1995).

p. 702 II: Dgdeck should be Děděck

p. 708 I: *Reboulia* in key, move to the right.

p. 714 Plate 269, the Finnish (fig. 1-2, 6) material by Schill suggested being *M. sibirica*. The Nordic distribution and occurrence of *M. fragrans* need a revision!

p. 730 *Conocephalum conicum*. Male plants from Sweden, Åsl. Sporophytes from Denmark, N.Sealand. – *C. salebrosum* recorded from the Nordic countries, distribution and status of that taxon still uncertain.
p. 747 I: line 27 "ium" (of antherid-ium) add: antheridia immersed through upgrowths of the thallus around superficial antheridia initials.
II: key 7-9 gemmae, counted to 32-39 gemmae in plants from Greenland.
p. 748 II: 7-9 gemmae, but counted to 32-39 gemmae in plants from Greenland.
p. 752 II: line 29...lacking air-chambers add "best seen when dry".
p. 758 II: Distrib. add Alaska (Potemkin 1995).
p. 783 I: Distrib. add Alaska (Potemkin 1995).
p. 797 II: line 10: *Anthocerotaceae* (n = 5 or 6 rarely 9 or 10 by autopolyploidy).
p. 800 II *agrestis* (n = 4+ 1 m).
p. 802 II var. *douinii*, cross-section 5-10 (-15).....not 5-10 (-5)..
p. 803 II: n = (4 + 1m).
p. 806 I: Diploid gemmae known from *Calypogeia neesiana* (Tatuno), *Lophozia polaris* (Inoue 1975, New Manual p. 123). Add alloploidy.
II: Archegonium -...the egg cell. corr. to " the naked egg cell, unique in only being surrounded of a plasma membrane, whereas with a bounding layer in ferns.
p. 816 Dgdeck should be Děděck , in both ends of the line.
p. 821 I: under *A. hellerianum* , 22, 26.. moves to the right
II: *Anthoceros punctatus*, "hom. illeg." moves to the right.
p. 822 II: under *Calypogeia sphagnicola* "Loeske in Loeske" etc. moves to the right.
p. 824 I: *Cephaloziella rubella* ssp. *arctogena* next line, starting with Damsh., moves to the right.
p. 825 II: *Fossombronia wondraczekii* corr. to *wondraczeckii*.
p. 826 I: *Gymnocolea inflata* ssp. *inflata* var. *heterostipa*, move next line starting with "Spruce" to the right.
I: *Haplomitraceae* Ddeek, the author should have been Děděck
II: add after *Herbertus sakuraii* ssp. *sakuraii* "*sendtneri* (Nees)Lindb. 42"
p. 827 II: *exsertifolia* ssp. *cordifolia* VaHa corr. to Váňa.
p. 829 II: *Lophocoleoideae* and the following lines, page down, moves two steps to the left.
p. 833 I: *Pellia epiphylla* ssp. *borealis* the next line starting with " Messe.." moves to the right.
p. 836 I: add. to *lingulata* H.Buch "var. *microphylla* (Warnst.)R.M.Schust. 338"