

THE CHECKLIST OF LIVERWORTS (Hepaticae) AND HORNWORTS (ANTHOCEROTAE) OF VIETNAM UPDATED BASED ON LITERATURE SURVEY

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ABSTRACT: The checklist of liverworts and hornworts of Vietnam was published more than 50 years ago. The aim of this study is to provide new checklist based on literature survey. The updated checklist includes 5 species of hornworts and 296 species of liverworts. The largest taxonomic group in regional hepatic flora is Lejeuneaceae that counts 178 species. It is estimated that the known taxonomic diversity will exceed 400 taxa once purposeful researches would be made.

Keywords: Anthocerotae, Hepaticae, checklist, hornworts, liverworts, Indochina, Vietnam.

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INTRODUCTION

Vietnam and Thailand are two countries in Indochina those were estimated as the taxonomically richest in the region. Both of them have attracted attention of bryologists for a long time since the last quarter of nineteenth century. The first checklist of Vietnam bryophytes was published by a prominent Hungarian bryologist T. Pócs (1965). It includes 394 species of Musci and 162 species of Hepaticae and Anthocerotae. Since then, knowledge on hepatics in this area has been updated. After publication of the first checklist, intensive works were continued by T. Pócs, T. Ninh (former PhD student of Pócs and the first Vietnamese bryologist), P. Tixier and some other bryologists. The similar progress has been made on moss flora recognition and the new checklist of Vietnam mosses was published recently (Si & Khang, 2012). Contrary to the mosses, the complete taxonomic list of hepatics was never published after Pócs' "prodrome" (1965). One of the current tasks for Vietnamese bryologists is, therefore, to publish newly updated checklist of liverworts and hornworts of Vietnam compiled in accordance with

modern nomenclature.

METHODS

List of taxa

The list comprises alphabetically organized lists of hornworts and liverworts which were mentioned in the literature sources since (and including) "Prodrome de la bryoflore du Vietnam" (Pócs , 1965). The most of literature sources includes original data with specimen citations from the country. Besides some monographs providing citations for Vietnam were added. In total 45 sources were accumulated. Each species is annotated with references to the literature where the species was indicated. The nomenclature is standardized following to the "World checklist of hornworts and liverworts" (Söderström et al., 2016) with the exception for *Plectocolea*, which was treated as the genus separate from *Solenostoma*. Each citation is supplemented by the indication of heterotypic synonyms on which the record is based, although homotypic synonyms are omitted. The most of infraspecific taxa (like variety and forma), which status

remains unclear are not mentioned.

RESULTS

ANTHOCEROTOPHYTA

Anthoceros subtilis Steph.: Pócs, 1965 (as *A. brunneus* Steph. and *A. fuscus* Steph.).

Folioceros fuciformis (Mont.) D. C. Bharadwaj: Pócs, 1965 (as *Anthoceros miyabenus* Steph.).

Phaeoceros lamellisporus (Stephani) Udar & D. K. Singh: Pócs, 1965 (as *Anthoceros lamellisporus* Steph., status unclear)

Phaeoceros carolinianus (Michx.) Prosk.: Pócs, 1965 (as *P. communis* (Steph.) Pócs and *Anthoceros tonkinensis* Steph.).

P. erectus Udar et D.K.Singh: Pócs, 1965.

MARCHANTIOPHYTA

Acrolejeunea fertilis (Reinw., Blume et Nees) Schiffn.: Gradstein, 1975; Pócs, 1965.

A. sandvicensis (Gottsche) Steph.: Manju et al., 2012; Pócs, 1965; Pócs, 1970; Pócs, 1971; Zhu & So, 2001.

Acromastigum echinatiforme (De Not.) A.Evans: Pócs, 1971.

A. laevigatum A.Evans: Pócs, 1965.

Bazzania sandei Steph.: Pócs, 1965.

B. angustifolia Horik.: Pócs, 1968b; Pócs, 1969; Pócs et al., 1967.

B. angustistipula N.Kitag.: Pócs, 1969; Pócs, 1971.

B. asperrima Steph.: Pócs, 1965.

B. asymmetrica (Steph.) N.Kitag.: Pócs, 1971.

B. fauriana (Steph.) S. Hatt.: Pócs, 1969; Pócs, 1971; Pócs et al., 1967; Pócs et al., 2013.

B. intermedia (Gottsche et Lindenb.) Trevis.: Pócs, 1965; Pócs, 1968b.

B. japonica (Sande Lac.) Lindb.: Pócs, 1969; Pócs & Ninh, 2005.

B. praerupta (Reinw., Blume et Nees) Trevis.: Pócs, 1969; Pócs et al., 1967 (as *B. yakushimensis* Horik.).

B. recurva (Mont.) Trevis.: Pócs, 1965.

B. revoluta (Steph.) N.Kitag: Pócs, 1969 (as *B. recurvolimbata* (Steph.) N. Kitag.).

B. tridens (Reinw., Blume et Nees) Trevis.: Pócs, 1965 (also as *B. oblonga* (Mitt.) Schiffn.); Pócs, 1968b (as *B. oblonga* (Mitt.) Schiffn.); Pócs, 1969; Pócs, 1971; Pócs & Ninh, 2005; Pócs et al., 2013.

- var. *assamica* (Steph.) Pócs: Pócs, 1969; Pócs, 1971.

- var. *cornutistipula* (Steph.) Pócs: Pócs, 1965 (as *B. cornutistipula* (Steph.) Pócs)

B. vietnamica Pócs: Pócs, 1969; Pócs, 1971.

Caudalejeunea reniloba (Gottsche) Steph.: Pócs, 1965 (as *C. stephanii* (Spruce) Steph.); Pócs & Ninh, 2005 (as *C. recurvistipula* (Gott.) Schiffn.); Pócs & Ninh, 2012.

Cheilolejeunea birmensis (Steph.) Mizut.: Pócs, 1971.

C. ceylanica (Gottsche) R.M.Schust. et Kachroo: Pócs, 1965; Pócs et al., 2013; Zhu & So, 2001.

C. eximia (Jovet-Ast et Tixier) R.L.Zhu et M.L.So: Pócs, 1965; Zhu & So, 2001.

C. falsinervis (Sande Lac.) R.M.Schust. et Kachroo: Pócs, 1965.

C. incisa (Gottsche) R.M.Schust. et Kachroo: Pócs, 1965.

C. insignis Jovet-Ast et Tixier: Pócs, 1965.

C. meyeniana (Nees, Lindenb. et Gotsche) R.M.Schust. et Kachroo: Pócs, 1965.

C. ryukyuensis Mizut.: Pócs & Ninh, 2005.

C. streimannii Pócs et Ninh: Pócs & Lee, 2016; Pócs & Ninh, 2005.

C. trapezia (Nees) Kachroo et R.M.Schust.: Pócs, 1965 (as *C. longiloba* (Steph.) Kachroo et Schust.); Pócs, 1970 (as *C. subplanilobula* Chen et Wu); Pócs et al., 2013; Zhu & So, 2001 (as *C. imbricata* (Steph.) S. Hatt.).

C. trifaria (Reinw., Blume et Nees) Mizut.: Pócs, 1965.

C. ventricosa (Schiffn. ex P.Syd.) Xiao L.He: Pócs et al., 2013.

C. viridis Steph.: Pócs, 1965.

C. xanthocarpa (Lehm.) et Lindenb.)

- Malombe: Pócs, 1965.
- Cololejeunea aequabilis* (Sande Lac.) Schiffn.: Zhu & So, 2001 (as *C. yulensis* (Steph.) Benedix).
- C. albodenata* P.C.Chen et P.C.Wu: Zhu & So, 2001.
- C. amoena* Benedix: Pócs et al., 2013; Tixier, 1970.
- C. angustiflora* (Steph.) Mizut.: Pócs & Podani, 2015; Pócs et al., 2013.
- C. appressa* (A.Evans) Benedix: Pócs, 1965; Pócs et al., 2013; Tixier, 1970.
- C. bichiana* Tixier: Tixier, 1974; Tixier, 1985.
- C. ceatocarpa* (Ångstr.) Steph.: Pócs & Lee, 2016; Pócs & Ninh, 2012; Tixier, 1985.
- C. ceratilobula* (P.C.Chen) R.M.Schust.: Manju et al., 2012; Pócs, 1971; Pócs & Ninh, 2005; Pócs et al., 1967 (as *Pedinolejeunea formosana* (Mizut.) P.C. Chen & P.C. Wu); Tixier, 1970 (as *Cololejeunea formosana* Mizut.); Zhu & So, 2001.
- C. chenii* Tixier: Pócs, 2012; Tixier, 1985; Zhu & So, 2001.
- C. chrysanthemi* Tixier: Tixier, 1974.
- C. cordiflora* Steph.: Pócs & Ninh, 2012; Tixier, 1985.
- C. dankiaensis* Tixier: Chantanaorrapint & Pócs, 2014.
- C. desciscens* Steph.: Zhu & So, 2001.
- C. diaphana* A.Evans: Pócs & Bernecker, 2009 (as *C. ninhbinhiana* Tixier); Pócs et al., 2013; Tixier, 1974 (as *C. ninhbinhiana* Tixier).
- C. elephantorum* Tixier: Tixier, 1985.
- C. ensifera* Tixier: Chantanaorrapint & Pócs, 2014.
- C. equialbi* Tixier: Pócs & Podani, 2015; Tixier, 1985; Zhu & So, 2001.
- C. falcata* (Horik.) Benedix: Pócs, 1965 (as *C. falcatooides* Benedix); Tixier, 1970 (as *C. falcatooides* Benedix); Zhu & So, 2001.
- C. filicis* (Herzog) Piippo: Pócs & Ninh, 2005; Tixier, 1974 (as *C. pocsii* Tixier); Tixier, 1985 (as *C. pocsii* Tixier); Zhu & So, 2001.
- C. floccosa* (Lehm. et Lindenb.) Schiffn.: Pócs, 1965; Pócs et al., 2013; Tixier, 1970; Zhu & So, 2001.
- var. *aurita* Benedix: Pócs & Ninh, 2012.
- C. fusca* (Steph.) Mizut.: Pócs, 1965 (as *Physocolea balansae* Steph.); Tixier, 1985 (as *Cololejeunea balansae* (Steph.) Mizut.); Zhu & So, 2001.
- C. gottschei* (Steph.) Pandé, K.P.Srivast. et Ahmad: Pócs, 1971 (as *C. yunnanensis* (Chen) Pócs); Pócs & Ninh, 2005; Pócs & Ninh, 2012; Zhu & So, 2001.
- C. grossepapillosa* (Horik.) N.Kitag.: Pócs, 1970.
- C. grushvitzkiana* Pócs: Pócs, 1971.
- C. gynophthalma* Benedix: Pócs, 1965.
- C. haskarliana* (Lehm.) Schiffn.: Pócs & Ninh, 2012; Pócs et al., 2013; Tixier, 1985; Zhu & So, 2001.
- C. hildebrandii* (Austin) Steph.: Tixier, 1985.
- C. hirta* Steph.: Tixier, 1985.
- C. hoabinhiana* Tixier: Tixier, 1974; Tixier, 1985.
- C. horikawana* (S.Hatt.) Mizut.: Zhu & So, 1999.
- C. hungii* Tixier: Tixier, 1974; Tixier, 1985.
- C. indosinica* Tixier: Zhu & So, 2001.
- C. inflata* Steph.: Pócs, 1965 (as *C. oshimensis* (Horik.) Benedix); Pócs, 2012; Pócs & Ninh, 2005; Pócs et al., 2013; Zhu & So, 2001.
- C. inflectens* (Mitt.) Benedix: Pócs, 1965 (as *C. ciliatilobula* Schiffn.); Pócs et al., 2013; Zhu & So, 2001.
- C. lanciloba* Steph.: Pócs, 1965 (also as *Leptocolea tonkinensis* Steph.); Pócs & Ninh, 2005; Pócs & Ninh, 2012; Pócs et al., 2013; Tixier, 1985 (as *Cololejeunea bolombensis* (Steph.) Vaden Berghen).
- C. latilobula* (Herzog) Tixier: Manju et al., 2012; Pócs & Ninh, 2012; Tixier, 1985; Zhu & So, 2001.
- C. littoralis* Tixier: Tixier, 1985.
- C. longifolia* (Mitt.) Benedix ex Mizut.:

- Pócs, 1965 (as *Physocolea acinacifolia* Steph.); Pócs, 2012; Pócs & Ninh, 2012.
- C. macounii* (Spruce) A.Evans: Tixier, 1985; Zhu & So, 2001.
- C. madothecoides* (Steph.) Benedix: Chantanaorrapint & Pócs, 2014; Pócs & Ninh, 2005; Tixier, 1985.
- C. mutabilis* Benedix: Pócs, 1965.
- C. obliqua* (Nees et Mont.) Schiffn.: Pócs, 1965 (as *C. nymanii* (Steph.) Benedix); Pócs, 1971 (as *C. goebelii* (Gott. ex Schiffn.) Schiffn.); Tixier, 1985 (as *C. goebelii* (Gott.) Schiffn. and *C. scabrifolia* (Gott.) Schiffn.).
- C. ocellata* (Horik.) Benedix: Pócs & Lee, 2016; Zhu & So, 2001.
- C. ocelloides* (Horik.) Mizut.: Pócs, 1965 (as *C. leonidens* Benedix); Pócs, 1971 (as *C. leonidens* Benedix); Zhu & So, 2001.
- C. ombrophila* Tixier: Tixier, 1970; Tixier, 1985.
- C. papillosa* (K.I.Goebel) Mizut.: Tixier, 1985.
- C. peraffinis* (Schiffn.) Schiffn.: Pócs, 1968b; Zhu & So, 2001.
- C. plagiophylla* Benedix: Tixier, 1985.
- C. planiflora* Benedix: Pócs, 1968b.
- C. planissima* (Mitt.) Abeyw.: Pócs & Ninh, 2005; Pócs & Ninh, 2012; Tixier, 1985.
- C. platyneura* (Spruce) A.Evans: Zhu & So, 1998.
- C. pseudofloccosa* (Horik.) Benedix: Pócs, 1965; Pócs, 2012.
- C. pseudoschmidii* Tixier: Tixier, 1985; Zhu & So, 2001.
- C. pseudostephani* Tixier: Pócs & Lee, 2016; Pócs et al., 2013.
- C. raduliloba* Steph.: Manju et al., 2012; Tixier, 1985; Zhu & So, 2001.
- C. reineckeana* Steph.: Tixier, 1985.
- C. schmidii* Steph.: Pócs, 1965; Zhu & So, 2001.
- C. selangorensis* Tixier: Tixier, 1985.
- C. serrata* (Steph.) Benedix: Pócs, 1965; Tixier, 1985.
- C. serrulata* Steph.: Zhu & So, 2001.
- C. sigmoidea* Jovet-Ast et Tixier: Pócs, 1965; Pócs et al., 2013; Tixier, 1970; Tixier, 1985; Zhu & So, 2001.
- C. sintenisii* (Steph.) Pócs: Pócs et al., 2013.
- C. spathulifolia* (Steph.) H.A.Mill.: Chantanaorrapint & Pócs, 2014.
- C. sphaerodonta* Mizut.: Pócs et al., 2013; Zhu & So, 2001.
- C. streimannii* Pócs: Pócs & Piippo, 2011.
- C. stylilobula* Tixier: Tixier, 1985.
- C. stylosa* Steph.: Tixier, 1985; Zhu & So, 2001.
- C. tenella* Benedix: Tixier, 1970; Tixier, 1985; Zhu & So, 2001.
- C. teurnoumensis* Tixier: Tixier, 1985.
- C. tranninhiana* Tixier: Pócs & Podani, 2015; Tixier, 1974; Tixier, 1985.
- C. trichomanis* (Gottsche) Besch.: Pócs, 1965; Pócs & Ninh, 2005; Tixier, 1985 (as *C. dalatensis* Tixier).
- C. verrucosa* Steph.: Pócs, 1965; Pócs, 2012; Pócs & Ninh, 2012; Pócs et al., 2013; Tixier, 1985; Zhu & So, 2001.
- C. vietnamensis* Tixier: Tixier, 1985.
- Colura acroloba* (Prantl) Jovet-Ast: Pócs, 1965; Pócs et al., 2013; Zhu & So, 2001.
- C. ari* (Steph.) Steph.: Pócs, 2013; Zhu & So, 2001.
- C. brevistyla* Herzog: Pócs & Ninh, 2005.
- C. conica* (Sande Lac.) K.I.Goebel: Pócs, 1965 (as *C. acutifolia* S. Jovet-Ast); Pócs, 2013; Pócs & Ninh, 2012; Zhu & So, 2001.
- C. corniantha* Grolle: Pócs, 1965 (as *C. cornuta* Jovet-Ast n. inval.)
- C. corynophora* (Nees, Lindenb. et Gottsche) Trevis.: Pócs, 1965; Pócs & Ninh, 2005; Tixier, 1970.
- C. denticulata* Jovet-Ast: Pócs, 1965.
- C. inflata* K.I.Goebel: Pócs, 1965.

- C. jivet-astiae* Grolle: Pócs, 1965 (as *C. undulata* Jovet-Ast).
- C. karstenii* K.I.Goebel: Pócs, 1965; Pócs, 2013; Zhu & So, 2001.
- C. ornata* K.I.Goebel: Pócs & Ninh, 2012.
- C. superba* (Mont.) Steph.: Pócs, 1965; Pócs, 2013; Pócs et al., 2013.
- C. tenuicornis* (A.Evans) Steph.: Pócs, 1965.
- C. tixieri* Jovet-Ast: Pócs, 1965; Tixier, 1970.
- C. valida* Jovet-Ast: Pócs, 1965.
- C. vietnamensis* Jovet-Ast et Tixier: Pócs, 1965.
- Cyathodium aureonitens* (Griff.) Mitten: Srivastava & Dixit, 1996.
- C. smaragdinum* Schiffn.: Pócs, 1965 (as *C. balansae* Steph.).
- Diplasiolejeunea cavifolia* Steph.: Pócs, 1965 (as *D. javanica* Steph.).
- D. cobrensis* Steph.: Pócs, 1965 (as *D. incurvata* Jovet-Ast et Tixier); Schäfer-Verwimp, 2006.
- D. rudolphiana* Steph.: Pócs, 1965; Pócs & Lee, 2016; Schäfer-Verwimp, 2006; Zhu & So, 2001.
- Drepanolejeunea angustifolia* (Mitt.) Grolle: Manju et al., 2012; Pócs, 1965 (as *D. tenuis* (Nees) Schiffn.); Pócs, 1968b (as *D. tenuis* (Nees) Schiffn.); Pócs, 1971 (as *D. tenuis* (Nees) Schiffn.); Pócs & Ninh, 2012; Pócs et al., 2013; Zhu & So, 2001.
- D. bidouensis* Pócs: Pócs et al., 2013.
- D. commutata* Grolle et R.L.Zhu: Pócs et al., 2013; Zhu & So, 2001.
- D. dactylophora* (Nees, Lindenb. et Gottsche) J.B.Jack et Steph.: Pócs, 1965; Pócs et al., 2013; Zhu & So, 2001.
- D. elegans* Herzog: Pócs, 1965.
- D. erecta* (Steph.) Mizut.: Pócs, 1971 (as *D. japonica* Horik.); Zhu & So, 2001.
- D. fleischeri* (Steph.) Grolle et R.L.Zhu: Pócs et al., 2013.
- D. foliicola* Horik.: Pócs et al., 2013.
- D. nymanii* Steph.: Pócs et al., 2013.
- D. obliqua* Steph.: Pócs et al., 1967.
- D. pentadactyla* (Mont.) Steph.: Pócs, 1965 (as *D. micholitzii* Steph.); Pócs & Ninh, 2012; Pócs et al., 2013.
- D. spicata* (Steph.) Grolle et R.L.Zhu: Pócs, 1965; Pócs et al., 2013; Zhu & So, 2001.
- D. tenera* K.I.Goebel: Pócs, 1965; Pócs, 1970.
- D. ternatensis* (Gottsche) Schiffn.: Pócs, 1970.
- D. teysmannii* (Gottsche) Steph.: Pócs, 1965.
- D. thwaitesiana* (Mitt.) Steph.: Pócs, 1965; Pócs et al., 2013; Zhu & So, 2001.
- D. tricornua* Herzog: Pócs et al., 2013.
- D. vesiculososa* (Mitt.) Steph.: Pócs, 1965; Zhu & So, 2001.
- D. yunnanensis* (P.C.Chen) Grolle et R.L.Zhu: Kumar et al, 2015; Pócs, 2012; Pócs et al., 1967; Pócs et al., 2013.
- Dumortiera hirsuta* (Sw.) Nees: Pócs, 1965 (as *D. trichocephala* (Hook.) Nees).
- subsp. *nepalensis* (Taylor) R.M.Schust.: Pócs & Ninh, 2005.
- Frullania alstonii* Verd.: Pócs, 1971; Pócs & Ninh, 2005; Pócs et al., 2013.
- F. apiculata* (Reinw., Blume et Nees) Nees: Pócs, 1965 (also as *F. anamensis* Steph.); Pócs & Ninh, 2005; Pócs et al., 2013.
- F. campanulata* Sande Lac.: Pócs, 1965.
- F. densiloba* Steph. ex A.Evans: Pócs, 1965.
- F. ericoides* (Nees) Mont.: Pócs, 1965 (as *F. squarrosa* Nees and *F. laciniosa* Lehm.).
- F. gracilis* (Reinw., Blume et Nees) Nees: Pócs, 1965.
- F. hamatiloba* Steph.: Pócs & Ninh, 2005.
- F. iwatsukii* S.Hatt.: Hattori, 1976.
- F. junghuhniana* Gottsche: Pócs & Ninh, 2005.
- F. meyeniana* Lindenb.: Pócs, 1965.
- F. moniliata* (Reinw., Blume et Nees) Mont.: Pócs, 1965 (also as *F. balansae* Steph.);

- Pócs, 1971.
- F. monocera* (Hook.f. et Taylor) Gottsche: Pócs, 1965 (as *F. hampeana* Nees).
- F. nepalensis* (Spreng.) Lehm. et Lindenb.: Pócs, 1965; Pócs et al., 1967 (as *F. nishiyamensis* Steph.)
- F. neurota* Taylor: Pócs, 1965.
- F. nodulosa* (Reinw., Blume et Nees) Nees: Hattori, 1980.
- F. orientalis* Sande Lac.: Hattori, 1975.
- F. physantha* Mitt.: Pócs, 1968b; Pócs et al., 1967; Thaithong & Hattori, 1977.
- F. pocsantha* Thaithong et S.Hatt.: Thaithong & Hattori, 1977
- F. ramuligera* (Nees) Mont.: Pócs, 1971; Pócs et al., 1967.
- F. rio-janeirensis* (Raddi) Ångstr.: Pócs, 1965.
- F. serrata* Gottsche: Pócs, 1971.
- F. ternatensis* Gottsche: Pócs, 1965.
- Fuscocephaloziopsis connivens* subsp. *fissa* (Steph.) Váňa et L.Söderstr.: Pócs & Ninh, 2005.
- Herbertus armitanus* (Steph.) H. A. Mill.: Juslén, 2006.
- H. dicranus* (Gottsche, Lindenb. et Nees Trevis.: Juslén, 2006; Pócs, 1965 (under *H. chinensis*); Pócs, 1971 (as *H. chinensis* Steph.).
- H. longifissus* Steph.: Pócs, 1965.
- H. ramosus* (Steph.) H. A. Mill.: Juslén, 2006; Pócs, 1970.
- Heteroscyphus argutus* (Reinw., Blume et Nees) Schiffn.: Piippo, 1993; Pócs, 1965; Pócs, 1971; Pócs & Ninh, 2005.
- H. coalitus* (Hook.) Schiffn.: Pippo, 1993; Pócs, 1965 (as *H. communis* (Steph.) Schiffn.); Pócs, 1968b (as *H. communis* (Steph.) Schiffn.); Pócs, 1971 (as *H. communis* (Steph.) Schiffn.).
- H. splendens* (Lehm. et Lindenb.) Grolle: Pócs, 1971 (as *H. decurrents* (Nees) Schiffn.).
- H. zollingeri* (Gottsche) Schiffn.: Pócs & Ninh, 2005.
- Isotachis japonica* Steph.: Pócs et al., 1967.
- Jubula hutchinsiae* subsp. *javanica* (Steph.) Verd.: Pócs, 1965 (as *J. tonkiensis* Steph.).
- Lejeunea alata* Gottsche: Pócs, 1965 (as *Taxilejeunea mitracalyx* Eifr.); Zhu & So, 2001
- L. anisophylla* Mont.: Pócs, 1971 (as *L. boninensis* Horik.); Pócs & Ninh, 2005; Pócs & Ninh, 2012; Zhu & So, 2001.
- L. apiculata* Sande Lac.: Pócs, 1965 (as *Drepanolejeunea formosana* Horik.); Pócs et al., 2013; Zhu & So, 2001.
- L. exilis* (Reinw., Blume et Nees) Grolle: Pócs & Ninh, 2005.
- L. flava* (Sw.) Nees: Pócs, 1965; Pócs et al., 2013.
- L. lunatigastria* Tixier: Tixier, 1974.
- L. micholitzii* Mizut.: Pócs & Ninh, 2005.
- L. obscura* Mitt.: Pócs & Ninh, 2005.
- L. papilionacea* Prantl: Pócs, 1965 (as *L. infestans* Steph.).
- L. subolivacea* Mizut.: Pócs, 1965 (as *L. olivacea* Steph.).
- Lejeunea trinitensis* Lindenb.: Pócs, 1965 (as *Stylolejeunea asiatica* Jovet-Ast et Tixier).
- L. umbilicata* (Nees) Nees: Pócs, 1965.
- Lepidolejeunea bidentula* (Steph.) R.M.Schust.: Piippo, 1986; Pócs, 1965 (also as *Pycnolejeunea corticola* Steph.); Tixier, 1970 (as *P. bidentula* Steph.); Zhu & So, 2001.
- Lepidozia tonkinensis* Steph.: Pócs, 1965 (status unclear, nomen nudum).
- L. trichodes* (Reinw., Blume et Nees) Nees: Pócs, 1965; Pócs, 1968b; Pócs & Ninh, 2005.
- Leptolejeunea apiculata* (Horik.) S.Hatt.: Pócs & Lee, 2016; Pócs et al., 2013.
- L. balansae* Steph.: Manju et al., 2012; Pócs, 1965; Pócs & Ninh, 2012; Pócs et al., 2013; Zhu & So, 2001.
- L. elliptica* (Lehm. et Lindenb.) Besch.: Pócs, 1965 (also as *L. subacuta* Steph.); Pócs, 1970 (as *L. subacuta* Steph.); Pócs & Ninh, 2005; Pócs & Ninh, 2012; Pócs et al., 2013; Tixier, 1970 (as *L. subacuta* Steph.).
- L. epiphylla* (Mitt.) Steph.: Pócs & Ninh, 2012.

- L. foliicola* Steph.: Pócs, 1965.
- L. maculata* (Mitt.) Schiffn.: Pócs & Ninh, 2012; Pócs et al., 2013.
- L. radiata* Steph.: Pócs, 1965.
- L. serrulata* Herzog: Pócs, 1965; Pócs & Podani, 2015.
- L. subdentata* Schiffn. ex Herzog: Pócs, 1965; Pócs et al., 2013; Zhu & So, 2001.
- L. vitrea* (Nees) Schiffn.: Pócs, 1965.
- Lopholejeunea applanata* (Reinw., Blume et Nees) Schiffn.: Pócs & Ninh, 2005.
- L. euplopha* (Taylor) Schiffn.: Pócs & Ninh, 2005; Pócs et al., 2013; Zhu & Gradstein, 2005.
- L. nigricans* (Lindenb.) Schiffn.: Zhu & Gradstein, 2005.
- L. subfusca* (Nees) Schiffn.: Pócs, 1965; Pócs & Ninh, 2005; Zhu & Gradstein, 2005.
- L. vietnamica* Tixier: Tixier, 1974 (probably another genus, cf. Söderström et al., 2016).
- Marchantia emarginata* Reinw., Blume et Nees: Bischler-Causse, 1989; Pócs, 1965 (as *M. palmata* Nees).
- subsp. *tosana* (Steph.) Bischl.: Bischler-Causse, 1989; Pócs, 1965 (as *M. angusta* Steph.); Pócs & Ninh, 2005.
- M. paleacea* Bertol.: Bischler-Causse, 1989; Pócs, 1965.
- M. polymorpha* subsp. *ruderalis* Bischl. et Boissel.-Dub.: Bischler-Causse, 1989.
- Mastigolejeunea humilis* (Gottsche) Schiffn.: Pócs, 1965.
- M. recondita* (Steph.) Mizut.- Pócs, 1965 (as *Ptychanthus reconditus* Nees).
- Mastigophora diclados* (Brid. ex F. Weber) Nees: Pócs, 1965 (also as *M. gracillima* Steph.); Pócs, 1971 (as *M. gracillima* Steph.); Pócs et al., 2013 (as *M. gracillima* Steph.).
- Metalejeunea cucullata* (Reinw., Blume et Nees) Grolle: Pócs, 1965 (also as *Microlejeunea cumingiana* Steph.); Pócs, 1971; Pócs et al., 2013.
- Metzgeria conjugata* Lindb. ssp. *japonica* (Hatt.) Kuwah.: Pócs, 1968b; Pócs, 1971; Pócs & Ninh, 2005.
- M. consanguinea* Schiffn.: So, 2003.
- M. furcata* (L.) Corda: Pócs, 1965; Pócs et al., 2013.
- M. pubescens* (Schrink) Raddi: Pócs, 1968b.
- Microlejeunea punctiformis* (Taylor) Steph.: Manju et al., 2012; Pócs, 1968b; Pócs, 1971; Pócs & Ninh, 2005; Zhu & So, 2001.
- Myriocoleopsis vuquangensis* (Pócs) et Ninh Pócs: Pócs, 2010; Pócs & Ninh, 2005.
- Notoscyphus lutescens* (Lehm. et Lindenb.) Mitt.: Pócs, 1965 (as *Prasanthus paroicus* (Schiffn.) Kamim.).
- Otolejeunea hoana* (Tixier) Grolle: Tixier, 1980.
- O. semperiana* (Steph.) Grolle: Pócs, 1965.
- Plagiochasma appendiculatum* Lehm. et Lindenb.: Pócs, 1965 (as *P. reboulloides* Horik.).
- Plagiochila bantamensis* (Reinw., Blume et Nees) Mont.: Pócs, 1970 (as *P. meyeniana* Steph.); So, 2001.
- P. chinensis* Steph.: Pócs, 1970 (also as *P. wilsoniana* Steph.); So, 2001.
- P. durelii* Schiffn.: Inoue, 1968 (as *P. vietnamica* H. Inoue); So, 2001.
- P. flexuosa* Mitt.: Pócs, 1968b; So, 2001.
- P. fordiana* Steph.: Inoue, 1968; So, 2001.
- P. fruticosa* Mitt.: Pócs, 1965; Pócs, 1968b; Pócs, 1970; Pócs, 1971; So, 2001.
- P. furcifolia* Mitt.: Inoue, 1968 (as *P. fissifolia* Steph.); Pócs, 1965 (as *P. fissifolia* Steph.); So, 2001.
- P. grollei* Inoue: Pócs, 1970; So, 2001.
- P. integrilobula* Schiffn.: Pócs & Ninh, 2005.
- P. javanica* (Sw.) Nees et Mont.: Pócs & Ninh, 2005.
- P. junghuhniana* Sande Lac.: So, 2001.
- P. nepalensis* Lindenb.: Pócs, 1970 (also as *P. gollanii* Steph.); So, 2001.
- P. oblonga* Inoue: Pócs, 1968b; Pócs, 1970.
- P. obtusa* Lindenb.: Pócs, 1965 (as *P. eberhardtii* Steph.); So, 2001.

- P. parvifolia* Lindenb.: Pócs, 1965; Pócs, 1970 (also as *P. consociata* Steph. and *P. ventricosa* Steph.); So, 2001.
- P. peculiaris* Schiffn.: Pócs, 1970 (as *P. crassitexta* Steph.); So, 2001.
- P. pseudorenitens* Schiffn.: So, 2001.
- P. pulcherrima* Horik.: So, 2001.
- P. renitens* (Nees) Lindenb.: Pócs, 1971.
- P. sandei* Dozy ex Sande Lac.: Pócs, 1965.
- P. sciophila* Nees: Inoue, 1968 (as *P. subplanata* H. Inoue); Pócs, 1965 (as *P. tonkiensis* Steph.); Pócs, 1970 (also as *P. subplanata* H. Inoue); Pócs & Ninh, 2005; So, 2001.
- P. secretifolia* Mitt.: So, 2001.
- P. semidecurrens* (Lehm. et Lindenb.) Lindenb.: Pócs, 1968b; Pócs, 1971; So, 2001.
- P. subplana* Lindenb.: Pócs, 1971.
- P. trabeculata* Steph.: Inoue, 1968 (as *P. pocsii* H. Inoue); So, 2001.
- Plagiochilion oppositum* (Reinw., Blume et Nees) S.Hatt.: Pócs, 1965.
- Plectocolea ariadne* (Taylor ex Lehm.) Mitt.: Váňa, 1972.
- Pleurozia gigantea* (F.Weber) Lindb.: Pócs, 1969.
- Plicanthus birmensis* (Steph.) R.M.Schust.: Pócs, 1970; Pócs, 1971.
- P. hirtellus* (F.Weber) R.M.Schust.: Pócs, 1965; Pócs, 1971.
- Porella acutifolia* (Lehm. et Lindenb.) Trevis.: Pócs, 1968a.
- P. caespitans* var. *cordifolia* (Steph.) S.Hatt. ex T.Katag. et T.Yamag.- Pócs, 1965 (as *Madotheca urophylla* C. Massal and as *Porella piligera* (Steph.) Pócs); Pócs, 1968a (also as *P. piligera* (Steph.) Pócs); Pócs, 1968b (as *P. piligera* (Steph.) Pócs).
- var. *reflexigastria* (Pócs) S.Hatt.: Pócs, 1968a.
- P. campylophylla* (Lehm. et Lindenb.) Trevis.: Hattori, 1978.
- P. densifolia* (Steph.) S.Hatt.: Hattori, 1978; Pócs, 1968a.
- P. grandifolia* (Steph.) S.Hatt.: Hattori, 1978; Pócs, 1968a.
- P. japonica* (Sande Lac.) Mitt.: Hattori, 1978; Pócs, 1968a.
- P. madagascariensis* (Nees et Mont.) Trevis.: Pócs, 1968a.
- P. obtusata* (Taylor) Trevis.: Pócs, 1968a (as *P. thuja* (Dicks) Moore).
- P. perrottetiana* (Mont.) Trevis.: Hattori, 1978; Pócs, 1968a; Pócs, 1971.
- P. plumosa* (Mitt.) Parihar: Hattori, 1978; Pócs, 1968a; Pócs, 1968b.
- P. striatus* (Lehm. et Lindenb.) Nees: Pócs, 1965 (also as *P. pyriformis* Steph.); Pócs, 1970; Pócs, 1971; Pócs et al., 2013.
- Pycnolejeunea convexifolia* (Mitt.) Steph.: Pócs, 1965 (as *Cheilolejeunea imbricata* (Nees) S.Hatt.)
- Radula acuminata* Steph.: Pócs, 1965; Pócs, 1971; Pócs & Ninh, 2005; Pócs et al., 2013; Yamada, 1979; Zhu & So, 2001.
- R. aneurismalis* (Hook.f. et Taylor) Gottsche, Lindenb. et Nees: Pócs, 1971.
- R. assamica* Steph.: Pócs, 1965; Pócs, 1971; Pócs & Ninh, 2005; Pócs et al., 2013; Yamada, 1979; Zhu & So, 2001.
- R. borneensis* Steph.: Pócs, 1965; Yamada, 1979.
- R. cavifolia* Hampe ex Gottsche: Pócs et al., 2013; Yamada, 1979; Zhu & So, 2001.
- R. gedenia* Gottsche: Pócs et al., 2013.
- R. javanica* Gottsche: Pócs et al., 2013; Yamada, 1979.
- R. nymannii* Steph.: Pócs, 1965; Yamada, 1979.
- R. obtusiloba* Steph.: Pócs, 1971.
- R. tibiodensis* K.I.Goebel: Pócs, 1965; Zhu & So, 2001.
- Riccia crystallina* L.: Pócs, 1965.
- R. frostii* Austin: Pócs, 1965 (as *R. microspora* Steph.).
- Scapania ciliata* Sande Lac.: Potemkin, 2001.

Schiffneriolejeunea cumingiana (Mont.)
Gradst.: Pócs, 1965.

Schistochila acuminata Steph.: Pócs, 1965
(as *S. rigidula* Horik.).

S. aligera (Nees et Blume) J.B.Jack et
Steph.: Pócs, 1965 (also as *S. philippinensis*
(Mont.) Jack. et Steph.); Pócs, 1968b; Pócs,
1971 (also as *S. recurvata* Buch.).

S. blumei (Nees) Trevis.: Pócs, 1971.

S. caudata R.M.Schust. et J.J.Engel: Pócs,
1965.

Spruceanthus semirepandus (Nees) Verd.:
Pócs, 1965; Pócs, 1971.

S. sulcatus (Nees) Gradst: Pócs, 1965.

Tricholepidozia neesii (Lindenb.) E.D.
Cooper: Pócs, 1971 (as *Telaranea neesi*
(Lindenb.) Fulford).

Thysananthus comosus Lindenb.: Pócs et
al., 1967.

T. spathulistipus (Reinw., Blume et Nees)
Lindenb.: Pócs, 1965; Tixier, 1970.

Trichocolea pluma (Reinw., Blume et Nees)
Mont.: Pócs, 1965.

T. tomentella (Ehrh.) Dumort.: Pócs, 1965.

Tuyamaella angulistipa (Steph.)
R.M.Schust. et Kachroo: Pócs, 1965.

T. molischii (Schiffn.) S.Hatt.: Pócs, 1965;
Pócs et al., 2013; Zhu & So, 2001.

Tylimanthus tonkinensis Steph.: Pócs, 1965
(status unclear, nomen nudum)

DISCUSSION

The compiled checklist consists of 5 species
of hornworts, including *Phaeoceros lamellisporus* of unclear status, and 296 species,
2 subspecies and 4 varieties of liverworts,
including two *nomen nudum* (*Lepidozia tonkinensis*, *Tylimanthus tonkinensis*) with
unknown types. More than the half of the
known liverwort diversity comprised by
Lejeuneaceae that count 178 species in the
country. The subsequent families are quite small
in taxa (Plagiochilaceae: 26 species and
Frullaniaceae: 22).

As the result of researches of the last 50
years since the publication of the checklist by
Pócs (1965), 141 species have been added to the
liverwort and hornwort flora of Vietnam.
Nevertheless, the known number of hepatic taxa
is not comprehensive and the progress in the
knowledge of taxonomic diversity of Vietnam is
hardly near to the end. The liverwort and
hornwort checklist of Thailand (Lai et al., 2008)
includes 386 taxa that still is not the final
number. Very preliminary we may estimate that
the expected taxonomic diversity of Vietnam
liverworts and hornworts exceeds 400 species
and several taxa are needed to be described as
new for science in the course of further
researches.

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DANH LỤC CÁC LOÀI RÊU TẢN (Hepaticae) VÀ RÊU SÙNG (Anthocerotae) CỦA VIỆT NAM

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TÓM TẮT

Danh lục các loài Rêu tản (Hepaticae) và Rêu sừng (Anthocerotae) của Việt Nam được công bố cách đây hơn 50 năm. Bài báo này cung cấp một danh lục mới dựa trên nghiên cứu các tài liệu đã công bố. Danh lục cập nhật bao gồm 5 loài rêu sừng và 296 loài rêu tản. Nhóm taxon lớn nhất của khu hệ rêu tản là họ Lejeuneaceae bao gồm 178 loài. Theo đánh giá của chúng tôi, có đến hơn 400 loài Rêu tản và Rêu sừng ở Việt Nam.

Từ khóa: Danh lục, rêu tản, rêu sừng, Đông Dương, Việt Nam.