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NEW AND RARE ORCHIDS (ORCHIDACEAE)  
IN THE FLORA OF CAMBODIA AND LAOS

НОВЫЕ И РЕДКИЕ ВИДЫ ОРХИДНЫХ  
ВО ФЛОРЕ КАМБОДЖИ И ЛАОСА

**Summary.** Herbarium material collected in 2009–2013 in Cambodia and Laos provides 240 new localities for 156 orchid species (from 73 genera). Among them, 13 and 45 species respectively are new for the flora of each country. One species (*Bulbophyllum konstantinovii*) discovered in Cambodia is described as new for science. Eight genera (*Acanthephippium*, *Didymoplexiopsis*, *Eclecticus*, *Herpysma*, *Hetaeria*, *Lecanorchis*, *Neuwiedia*, and *Trichosma*) were found in Laos at first.

**Key words:** Cambodia, flora, Laos, Orchidaceae, plant diversity.

**Аннотация.** Гербарные сборы 2009–2013 годов документируют 240 новых находений 156 видов орхидных (из 73 родов) в Камбодже и Лаосе. Среди них 13 и 45 видов, соответственно, приводятся впервые для этих стран. Один вид (*Bulbophyllum konstantinovii*), найденный в Камбодже, описывается в качестве нового для науки. Восемь родов (*Acanthephippium*, *Didymoplexiopsis*, *Eclecticus*, *Herpysma*, *Hetaeria*, *Lecanorchis*, *Neuwiedia* и *Trichosma*) приводятся для флоры Лаоса впервые.

**Ключевые слова:** Камбоджа, Лаос, орхидные, разнообразие растений, флора, Orchidaceae.

INTRODUCTION

The orchid flora of Cambodia and Laos still remains one of the less studied orchid floras in Tropical Asia. In comparison to other countries of Indochina Peninsula, such as Thailand or Vietnam each including at least 1100 species (Averyanov, 2003; Pedersen et al., 2011; Seidenfaden, 1992), only 163 orchid species were recorded for Cambodia (Seidenfaden, 1992) and about 485 species for Laos (Newman et al., 2007; Schuiteman et al., 2008). Meanwhile, according to their square and various natural conditions all countries of Indochina should certainly conceal similar orchid richness and diversity. Present paper summarizes some consequent steps in studies of the orchid flora of Cambodia and Laos based on herbarium specimens collected by different collectors in the field during 2009–2013.

The paper provides 240 new localities for 156 species (from 73 genera) among which 13 species are new for the flora of Cambodia and 45 species represent new records for Laos. Eight genera are recorded for the Laotian flora at first: *Acanthephippium*, *Didymoplexiopsis*, *Eclecticus*, *Herpysma*, *Hetaeria*, *Lecanorchis*, *Neuwiedia*, and *Trichosma*. Mentioned new records (see

tables 1 & 2) represent significant addition to our previous knowledge (Callaghan, 2004; Gagnepain, Guillaumin, 1932–1934; Schuiteman, Vogel, 2000; Seidenfaden, 1966, 1973, 1975; Svengsuksa, Lamxay, 2005; Vidal, 1959) summarized in last accounts of Cambodian (Seidenfaden, 1992) and Laotian floras (Newman et al., 2007; Schuiteman et al., 2008). One species, *B. konstantinovii* Aver., discovered in Cambodia is described as new for science.

**Table 1. Orchid species recorded as new for the flora of Cambodia\***

*Acriopsis liliifolia* (J. Koenig) Seidenf.  
*Aerides crassifolia* Par. ex Burb.  
*Bulbophyllum parviflorum* Par. et Rchb. f.  
*B. rufilabrum* Par. ex Hook. f.  
*B. tricornoides* Seidenf.  
*Calanthe cardioglossa* Schltr.  
*Dendrobium indivisum* (Blume) Miq.  
*D. keithii* Ridl.

\**Acriopsis liliifolia*, *Dendrobium indivisum*, *Eria lasiopetala*, and *Porpax elwesii* were recently mentioned in the amateur site "Orchids of Cambodia" (<http://www.orchidcambodia.com>) without citation of locality and voucher specimens proving species occurrence in the country.

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*D. scabrilingue* Lindl.  
*D. setifolium* Ridl.  
*Eria lasiopetala* (Willd.) Ormerod  
*E. muscicola* (Lindl.) Lindl.  
*Porpax elwesii* (Rchb. f.) Rolfe

**Table 2. Orchid species recorded as new for the flora of Lao PDR**

*Acanthephippium striatum* Lindl.  
*Agrostophyllum callosum* Rchb. f.  
*Bulbophyllum apodum* Hook. f.  
*B. psychoon* Rchb. f.  
*B. umbellatum* Lindl.  
*Cheirostylis griffithii* Lindl.  
*C. pusilla* Lindl.  
*C. spathulata* J.J. Sm.  
*C. thailandica* Seidenf.  
*Coelogyne virescens* Rolfe  
*Cymbidium eburneum* Lindl.  
*Dendrobium kontumense* Gagnep.  
*Didymoplexiopsis khiriwongensis* Seidenf.  
*Eclecticus chungii* P. O'Byrne  
*Epigeneium chapaense* Gagnep.  
*Eria calcarea* V.N. Long et Aver.  
*E. corneri* Rchb. f.  
*E. thao* Gagnep.  
*Flickingeria angustifolia* (Blume) A.D. Hawkes  
*Gastrochilus calceolaris* (Buch.-Ham. ex Sm.) D. Don  
*G. pseudodistichus* (King et Pantl.) Schltr.  
*Goodyera fumata* Thwaites  
*G. hispida* Lindl.  
*Herpysma longicaulis* Lindl.  
*Hetaeria affinis* (Griff.) Seidenf. et Ormerod  
*Holcoglossum subulifolium* (Rchb. f.) Christenson  
*Lecanorchis vietnamica* Aver.  
*Liparis balansae* Gagnep.  
*L. pumila* Aver.  
*Micropera poilanei* (Guillaumin) Garay  
*Nephelaphyllum tenuiflorum* Blume  
*Neuwiedia zollingeri* Rchb. f.  
*Oberonia cavaleriei* Finet  
*Otochilus pseudoporrectus* Aver.  
*Paphiopedilum canhii* Aver. et O. Gruss  
*Papilionanthe biswasiana* (Ghose et Mukerjee) Garay  
*Phalaenopsis wilsonii* Rolfe  
*Podochilus oxystophylloides* Ormerod  
*Sunipia rimannii* (Rchb. f.) Seidenf.  
*Thelasis khasiana* Hook. f.  
*Thrixspermum sutepense* (Rolfe ex Downie) Tang et F.T. Wang  
*Trichosma simondii* Gagnep.  
*T. suavis* Lindl.

*Zeuxine flava* (Wall. ex Lindl.) Trimen  
*Z. nervosa* Trimen

The list of all discoveries is presented below. The orchid names in the list are arranged in alphabetic order. Maximally abbreviated and unified text of herbarium labels is reported for each collecting number and includes geographical locality, coordinates and elevation (when available), collection date, collectors' names, collection number and acronym of Herbarium where mentioned specimen is housed.

The following standard abbreviations are used in the text: prov. (province), distr. (district), vic. (vicinity, vicinities), elev. (elevation, elevations), mt. (mountain, mountains), N.P. (National Park), N.P.A. (National Protected Area). The names of orchid species and genera reported for Cambodia and Laos at first are marked with crosslet (+) and asterisk (\*) respectively. Name of a new species is marked by double asterisk (\*\*). The following Herbarium acronyms are used in the text:

**CPC** – Herbarium of the Center for Plant Conservation, Vietnam Union of Science and Technology Associations, Hanoi, Vietnam.

**LE** – Herbarium of Komarov Botanical Institute, Russian Academy of Sciences, St. Petersburg, Russian Federation.

**NHOL** – National Herbarium of Laos, Vientiane, Lao PDR.

**NUOL** – Herbarium of National University of Laos, Vientiane, Lao PDR.

Prefixes “CPC” and “LA-VN” at some collecting numbers represent abbreviations:

**CPC** – The Center for Plant Conservation.

**LA-VN** – Lao-Vietnamese expedition.

Both collecting series are attributed to herbaria collected in expedition managed by the Center for Plant Conservation, Vietnam Union of Science and Technology Associations with main collectors – Prof. Leonid V. Averyanov and Nguyen Tien Hiep.

### **New and rare orchids in Cambodia and in Laos**

*Acampe* Lindl.

*A. ochracea* (Lindl.) Hochr.

LAOS, Vientiane prov., Phou Khao Khouay N.P., Tad Leuk waterfall, 18°23'99.1 N, 103°04'03.1 E, 28 Nov. 2012, *E.L. Konstantinov et al.*, 52OR-L-GPS005 (LE). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650



m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 767* (CPC, NHOL, NUOL).

*A. praemorsa* (Roxb.) Blatt. et McCann

LAOS, Nam Lik, 18°36'80.8"N, 102°24'60.5"E, 24 Nov. 2011, *E.L. Konstantinov et al.*, 5 (LE).

*A. rigida* (Buch.-Ham. ex Sm.) P.F. Hunt

LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57"N 102°14'59"E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 766* (CPC, NHOL, NUOL).

\**Acanthephippium* Blume ex Endl.

\**A. striatum* Lindl.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al., LA-VN 161* (CPC, NHOL, NUOL). LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt, 17°35'13.2" N, 105°47'49.8" E, 1000–1300 m, 9 March 2013, *L. Averyanov et al., LA-VN 298, Fig. 1, A* (CPC, NHOL, NUOL).

*Acriopsis* Reinw. ex Blume

*A. indica* C. Wright

LAOS, Saravan prov., Ta Oy distr., to the SW of Sa Mouay town, near Thong Hang village, 15°37'30.9" N, 106°12'26.5" E, 650–700 m, 4 March 2013, *L. Averyanov et al., LA-VN 217* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Phoudindeng village, 1–2.5 km to the E of Vang Vieng town, 18°57'48.7" N, 102°27'34.0" E, 400 m, 13 March 2013, *N.T. Hiep et al., LA-VN 343* (CPC, NHOL, NUOL).

+*A. liliifolia* (J.Koenig) Seidenf.

CAMBODIA, to the N of Sianukwille town, Kaoh Rong Samoloem Khong Island in Siam Gulf, 10°36'45" N, 103°18'38" E, 20 Nov. 2011, *T. Maisak, L. Osinovez, M. Telepova s.n.* (LE).

*Aerides* Lour.

+*A. crassifolia* Par. ex Burb.

CAMBODIA, eastern part of Cardamom Mountains, Phnom Aural mt, 23 Nov. 2012. *T. Maisak et al., 961* (LE).

*A. rosea* Lodd.

LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 758* (CPC, NHOL, NUOL).

*Agrostophyllum* Blume

\**A. callosum* Rchb. f.

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1400 m, 9 March 2013, *L. Averyanov et al., LA-VN 323, Fig. 1, B* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Thong Mout village, 19°23'27.3" N, 102°08'21.3" E, 1800 m, 20 March 2013, *N.T. Hiep et al., LA-VN 656* (CPC, NHOL, NUOL).

*A. planicaule* (Lindl.) Rchb. f.

LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, around point 18°52'28" N, 102°24'21" E, 300 m, 21 Jan. 2009, *O. Souliya et al., LA-VN 58* (CPC). LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–500 m, 14 March 2013, *N.T. Hiep et al., LA-VN 376* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 745* (CPC, NHOL, NUOL).

*Appendicula* Blume

*A. hexandra* (J. Koenig) J.J. Sm.

CAMBODIA, Bokor, 24 Nov. 2012, *T. Maisak et al., 922* (LE).

*A. torta* Blume

LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al., LA-VN 474* (CPC, NHOL, NUOL).

*Arachnis* Blume

*A. labrosa* (Lindl. et Paxton) Rchb. f.

LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, around point 18°52'28" N, 102°24'21" E, 300 m, 21 Jan. 2009, *O. Souliya et al., LA-VN 81* (CPC). LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the N of Paosamphanmixay village, 14°51'53.4" N, 107°11'38.2" E, 178 m, 28 February 2013, *L. Averyanov et al., LA-VN 116* (CPC, NHOL, NUOL). LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 700 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al., LA-VN 164* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Thong Mout village, 19°26'51.5" N, 102°07'45.8" E,

1550–1650 m, 20 March 2013, *N.T. Hiep et al.*, LA-VN 608 (CPC, NHOL, NUOL).

***Arundina*** Blume

***A. graminifolia*** (D. Don) Hochr.

CAMBODIA, Kampot prov., Phnom Bokor N.P., 10°37'92.3 N, 104°01'14.3 E, 21 Dec. 2012, *E.L. Konstantinov et al.*, 45P-C-GPS042 (LE). LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the E of Paosamphanmixay village, 14°48'24.8" N, 107°24'23.2" E, 600–700 m, 28 Feb. 2013, *L. Averyanov et al.*, LA-VN 111 (CPC, NHOL, NUOL).

***Brachypeza*** Garay

***B. laotica*** (Seidenf.) Seidenf.

LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–400 m, 14 March 2013, *N.T. Hiep et al.*, LA-VN 425 (CPC, LE, NHOL, NUOL).

***Bromheadia*** Lindl.

***B. finlaysoniana*** (Lindl.) Miq.

CAMBODIA, Kampot prov., Phnom Bokor N.P., 10°39'63.9 N, 104°03'24.8 E, 17 Dec. 2011, *E.L. Konstantinov et al.*, 2b (LE).

***Bulbophyllum*** Thouars

***B. affine*** Wall. ex Lindl.

LAOS, Saravan prov., Ta Oy distr., to the SW of Sa Mouay town, near Thong Hang village, 15°37'30.9" N, 106°12'26.5" E, 650–700 m, 4 March 2013, *L. Averyanov et al.*, LA-VN 219 (CPC, NHOL, NUOL).

**\**B. apodum*** Hook. f.

LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 482 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy*, LA-VN 765 (CPC, NHOL, NUOL).

***B. blepharistes*** Rchb. f.

LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the N of Paosamphanmixay village, 14°51'53.4" N, 107°11'38.2" E, 200 m, 1 March 2013, *L. Averyanov et al.*, LA-VN 133 (CPC, NHOL, NUOL). LAOS, Saravan area, 100–200 m, 6 March 2013, *L. Averyanov et al.*, LA-VN 325 (CPC, NHOL, NUOL).

***B. dissitiflorum*** Seidenf.

LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing

Protected Authority (WMPI) region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 19 (CPC). LAOS, Saravan prov., Ta Oy distr., to the SW of Sa Mouay town, near Thong Hang village, 15°37'30.9" N, 106°12'26.5" E, 650–700 m, 4 March 2013, *L. Averyanov et al.*, LA-VN 215 (CPC, NHOL, NUOL).

**\*\**B. konstantinovii*** Aver., sp. nov. (sect. *Macrocaulia* (Blume) Aver.)

Described from S. CAMBODIA ("CAMBODIA, Kampot prov., Phnom Bokor N.P. Epiphyte. 10°37'92.3 N, 104°01'14.3 E). **Type** ("21 Dec. 2012. *E.L. Konstantinov et al.*, 051P-C-GPS042") – LE (holotype).

Dwarf creeping epiphyte. Rhizome thin, wiry, young greenish, later whitish-gray, 0.5–1 mm wide, with numerous pseudobulbs distant on 1–5 cm and 3–4 wiry, whitish flexuose roots at pseudobulb base. Pseudobulbs light olive, yellowish-green to green, ovate, 4–8(10) mm tall, 2–6 mm wide, often oblique, slightly bending to rhizome, longitudinally irregularly grooved and wrinkled, with 1 apical leaf. Leaves coriaceous, narrowly ovate to ovate, 8–22 × 3–8 mm, conduplicate, obtuse, subsessile or with very short petiole. Inflorescence arising from the base of pseudobulb, 1.5–2.5 cm long, with 1 terminal flower, on ascending, filiform, sometime slightly flexuose, light yellowish-green, glabrous stalk 1–1.8 cm long, with one small bract at the base. Bract hyaline, goblet-shaped, 0.5–1 mm long, 0.3 mm in diam., embracing apex of inflorescence stalk. Pedicel and ovary light green, glabrous, filiform, 5–10 mm long; ovary 0.2 mm wide. Flowers widely opening, 1 cm across spreading lateral sepals. Sepals sub-similar, light dull-yellowish with broad purple-brown stripes, 5–6 × 1.5–1.8 mm, acute, with 3 distinct nerves; median sepal elliptic, directed forward; lateral sepals narrowly ovate, spreading, slightly longer and wider, oblique at the base. Petals directed forward, brightly yellow, oblique ovate, acute, 1.6–2 × 1–1.2 mm, with 1 nerve. Lip brightly yellow, simple, without auricles, elliptic, 3–4 × 1–1.5 mm, at the base with narrowing strongly bending neck, jointed with column foot apex by semi-movable articulation; lip blade with 3 thick nerves, fleshy along margin. Column brightly yellow, erect, 0.8 × 0.5 mm, at the apex with 2 long erect, straight, acute stielidia 0.8 mm long; column foot forward curved, apically broadening into cup-like cordate apex 1 mm long and wide. Operculum yellow, cup-like, half ovoid, 0.4 mm long, with short broad beak. Pollinia 2, globular. Fig. 1, C; 2.

**Etymology:** Species is named after its discoverer – Dr. E.L. Konstantinov.

**Flowering time:** November – December.

**Ecology:** Epiphyte, 100–200 m a.s.l.

**Distribution:** S. CAMBODIA, Kampot prov. (Phnom Bokor N.P.). Endemic.

**Notes:** Morphologically new species may be most close to *Bulbophyllum simplicilabellum* Seidenf. and *B. didymotropis* Seidenf. described from Thailand, but distinctly differs in 3-nerved sepals, broadly ovate, oblique, acute petals, broad cup-like, cordate broadening of column foot apex and inflated fleshy margin of the lip.

***B. lasiochilum*** Parish et Rchb. f.

LAOS, Borikhamxai prov., Khamkeut distr., Phone Sa At village, 18°03'38" N, 105°02'28" E, 635 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 26 (CPC, LE).

***B. orectopetalum*** Garay, Hamer et Siegerist

CAMBODIA, Kampot prov., Phnom Bokor N.P., 10°37'92.3 N, 104°01'14.3 E, 21 Dec. 2012, *E.L. Konstantinov et al.*, 28P-C-GPS042 (LE). LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 464 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1200 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy*, LA-VN 790 (CPC, NHOL, NUOL).

**+*B. parviflorum*** Par. et Rchb. f.

CAMBODIA, to the N of Sianukwille town, Kaoh Rong Samoloem Khong Island in Siam Gulf, 10°36'45" N, 103°18'38" E, 19 Nov. 2011, *T. Maisak, M. Telepova, L. Osinovets*, 847, Fig. 1, D (LE).

**\**B. psychoon*** Rchb. f.

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 800 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 319 (CPC, LE, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Thong Mout village, 19°26'51.5" N, 102°07'45.8" E, 1550–1650 m, 20 March 2013, *N.T. Hiep et al.*, LA-VN 613, Fig. 1, E (CPC, LE, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1600 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* LA-VN 795 (CPC, NHOL, NUOL).

***B. reptans*** (Lindl.) Lindl. ex Wall.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 175 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr.,

Thong Mout village, Pudang Ridge, 19°23'33.7" N, 102°08'05.7" E, 1950–2000 m, 22 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy*, LA-VN 703 (CPC, NHOL, NUOL).

**+*B. rufilabrum*** Par. ex Hook. f.

CAMBODIA, Koh Rong island, 10°45'90.9 N, 103°13'33.1 E, 15 Dec. 2011, *E. Konstantinov et al.*, 3 (LE). LAOS, Phu Khao Khuay N.P., Tad Leuk waterfall, 18°23'72.3 N, 103°04'32.8 E, 12 Nov. 2011, *E. Konstantinov et al.*, 1a (LE). LAOS, Nam Lik, 18°36'80.8 N, 102°24'60.5 E, 24 Nov. 2011, *E. Konstantinov et al.*, 4 (LE). LAOS, Vientiane prov., Phou Khao Khouay N.P., Tad Leuk waterfall, 18°23'99.1 N, 103°04'03.1 E, 28 Nov. 2012, *E.L. Konstantinov et al.*, 53OR-L-GPS005 (LE).

***B. rufinum*** Rchb. f.

LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the N of Paosamphanmixay village, 14°51'53.4" N, 107°11'38.2" E, 200 m, 1 March 2013, *L. Averyanov et al.*, LA-VN 134 (CPC, NHOL, NUOL).

**+*B. tricornooides*** Seidenf.

CAMBODIA, to the N of Sianukwille town, Kaoh Rong Samoloem Khong Island in Siam Gulf, 10°36'45" N, 103°18'38" E, 20 Nov. 2011, *T. Maisak, L. Osinovez, M. Telepova, s.n.* (LE).

**\**B. umbellatum*** Lindl.

LAOS, Vientiane prov., Kasi distr., Thong Mout village, 19°26'51.5" N, 102°07'45.8" E, 1550–1650 m, 20 March 2013, *N.T. Hiep et al.*, LA-VN 612, Fig. 1, F (CPC, LE, NHOL, NUOL).

***Calanthe*** Ker Gawl.

**+*C. cardioglossa*** Schltr.

CAMBODIA, Kampot prov., Phnom Bokor N.P., 10°37'92.3 N, 104°01'14.3 E, 21 Dec. 2012, *E.L. Konstantinov et al.*, 44P-C-GPS042, Fig. 1, G (LE).

***Callostylis*** Blume

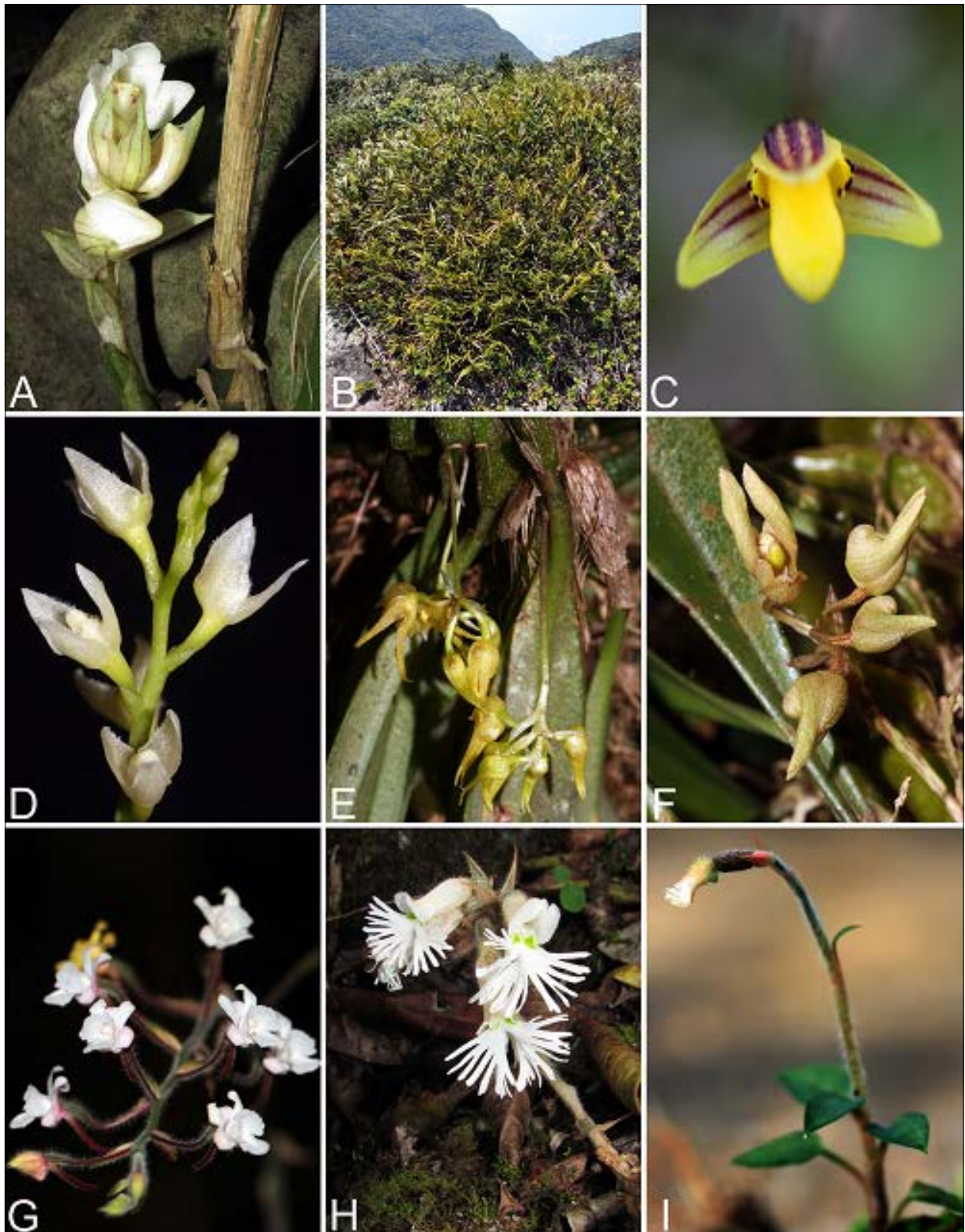
***C. rigida*** Blume

LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 476 (CPC, NHOL, NUOL).

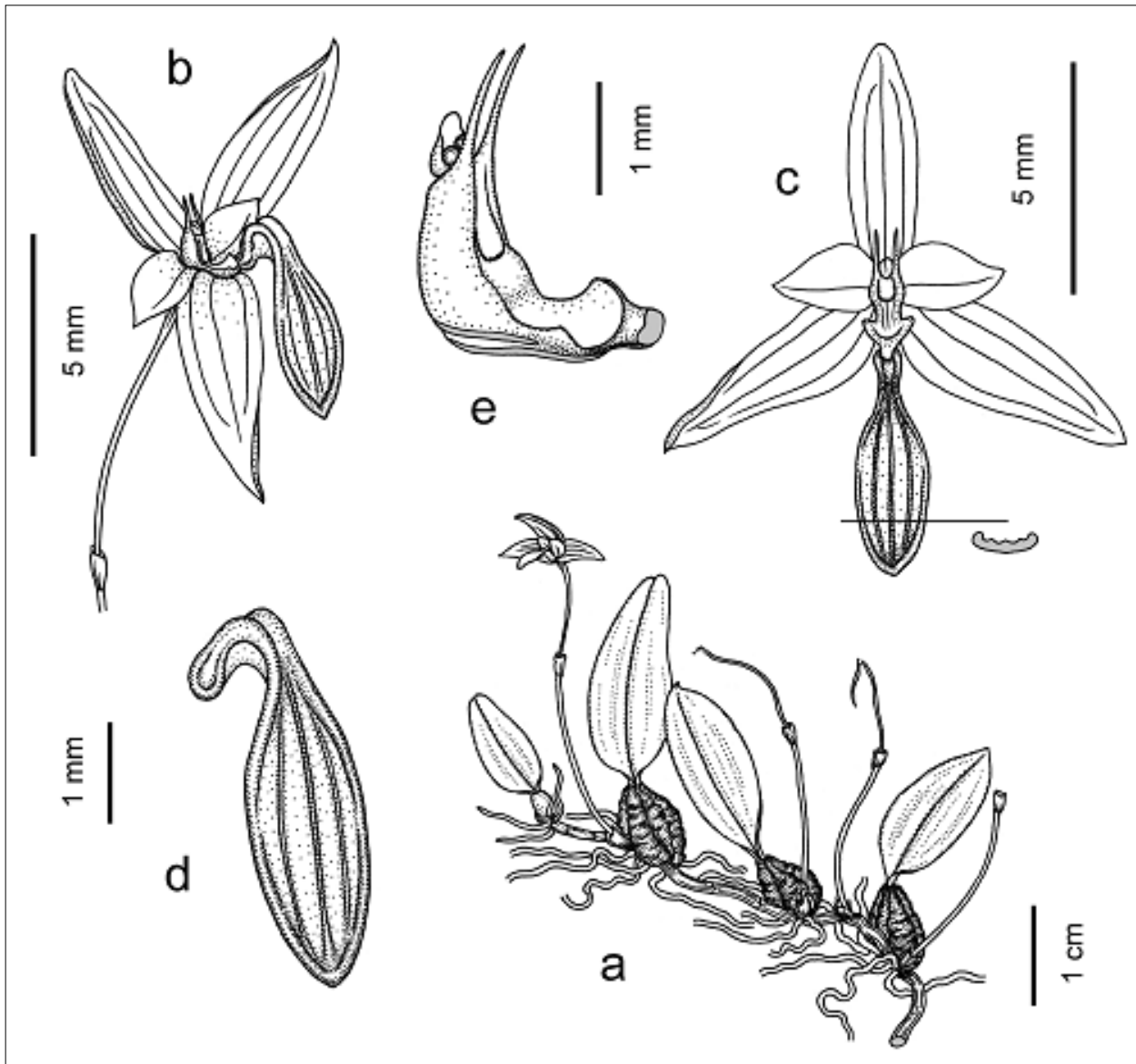
***Cephalantheropsis*** Guillaumin

***C. obcordata*** (Lindl.) Ormerod

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 160 (CPC, NHOL, NUOL).



**Fig. 1.** New orchids in the flora of Cambodia and Laos. **A** – *Acanthephippium striatum* Lindl. (L. Averyanov et al., LA-VN 298). **B** – *Agrostophyllum callosum* Rchb. f. (L. Averyanov et al., LA-VN 323). **C** – *Bulbophyllum konstantinovii* Aver. (type specimen, E.L. Konstantinov et al., 051P-C-GPS042). **D** – *B. parviflorum* Par. et Rchb. f. (T. Maisak, M. Telepova, L. Osinovets, 847). **E** – *B. psychoon* Rchb. f. (N.T. Hiep et al., LA-VN 613). **F** – *B. umbellatum* Lindl. (N.T. Hiep et al., LA-VN 612). **G**: *Calanthe cardioglossa* Schltr. (E.L. Konstantinov et al., 44P-C-GPS042). **H** – *Cheirostylis griffithii* Lindl. (L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 782). **I** – *C. pusilla* Lindl. (E.L. Konstantinov et al., 14bOR-L-GPS018). Photos by Nguyen Sinh Khang (A, H), Pham Van The (B), E. Konstantinov (C, G, I) and L. Averyanov (D, E, F).



**Fig. 2. *Bulbophyllum konstantinovii* Aver.** a – flowering plant; b – flattened flower, half-side view; c – flattened flower, frontal view; d – lip, half-side view; e – column, side view. All drawings from the type (*Konstantinov et al. 051P-C-GPS042*) by L. Averyanov.

*Ceratostylis* Blume

*C. himalaica* Hook. f.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 174 (CPC, NHOL, NUOL).

*C. subulata* Blume

CAMBODIA, Kampot prov., Phnom Bokor N.P., 10°37'92.3 N, 104°01'14.3 E, 21 Dec. 2012, *E.L. Konstantinov et al.*, 27P-C-GPS042 (LE).

*Cheirostylis* Blume

*C. chinensis* Rolfe

LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, 18°52'28" N, 102°24'21" E, 300 m, 21 Jan. 2009, *O. Souliya et al.*, LA-VN 78 (CPC).

\**C. griffithii* Lindl.

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy*, LA-VN 782, Fig. 1, H (CPC, LE, NHOL, NUOL).

\**C. pusilla* Lindl.

LAOS, Luang Namtha prov., Ban Nam Eng, 21°43'49.7 N, 101°09'23.9 E, 3 Dec. 2012, *E.L. Konstantinov et al.*, 14bOR-L-GPS018, Fig. 1, I (LE).

\**C. spathulata* J.J. Sm.

LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 300–900 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 487 (CPC, LE, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Na Po village,



about 12 km to the W of Vang Vieng town, Pa Nang Oua mt., 18°55'36.4" N, 102°20'44.6" E, 350–450 m, 17 March 2013, *N.T. Hiep et al.*, LA-VN 509, Fig. 3, A (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy*, LA-VN 734 (CPC, NHOL, NUOL).

\**C. thailandica* Seidenf.

LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, 18°55'34.2" N, 102°22'58.4" E, 300 m, 13 March 2013, *N.T. Hiep et al.*, LA-VN 351a, Fig. 3, B (CPC, LE, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Na Po village, about 12 km to the W of Vang Vieng town, Pa Nang Oua mt., 18°55'44.9" N, 102°20'20.1" E, 500–1000 m, 17 March 2013, *N.T. Hiep et al.*, LA-VN 513 (CPC, LE, NHOL, NUOL).

*Cleisostoma* Raf.

*C. fuerstenbergianum* Kraenzl.

LAOS, Borikhamxai prov., Khamkeut distr., Phone Sa At village, 18°03'38" N, 105°02'28" E, 635 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 37 (CPC).

*C. rostratum* (Lindl.) Garay

LAOS, Vientiane prov., Phou Khao Khouay N.P., Tad Leuk waterfall, 18°23'99.1" N, 103°04'03.1" E, 28 Nov. 2012, *E.L. Konstantinov et al.*, 11OR-L-GPS005 (LE). LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–500 m, 14 March 2013, *N.T. Hiep et al.*, LA-VN 384 (CPC, NHOL, NUOL).

*C. simondii* (Gagnep.) Seidenf.

LAOS, Phu Khao Khuay N.P., Tad Leuk waterfall, 18°23'72.3" N, 103°04'32.8" E, 12 Nov. 2011, *E. Konstantinov et al.*, 1b (LE).

*Coelogyne* Lindl.

*C. fimbriata* Lindl.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 154 (CPC, NHOL, NUOL).

*C. flaccida* Lindl.

LAOS, Vientiane prov., Vang Vieng distr., Na Po village, about 12 km to the W of Vang Vieng town, Pa Nang Oua mt., 18°55'44.9" N, 102°20'20.1" E, 500–1000 m, 17 March 2013, *N.T. Hiep et al.*, LA-VN 515 (CPC, LE, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Namken village,

Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy*, LA-VN 768 (CPC, LE, NHOL, NUOL).

\**C. virescens* Rolfe

LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the N of Paosamphanmixay village, 14°51'53.4" N, 107°11'38.2" E, 178 m, 28 Feb. 2013, *L. Averyanov et al.*, LA-VN 113, Fig. 3, C (CPC, LE, NHOL, NUOL).

*C. viscosa* Rchb. f.

LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, 18°52'28" N, 102°24'21" E, 400–600 m, 21 Jan. 2009, *O. Souliya et al.*, LA-VN 101 (CPC).

*Collabium* Blume

*C. chinense* (Rolfe) Tang et F.T. Wang

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 900 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 304 (CPC, NHOL, NUOL).

*Corymborkis* Thouars

*C. veratrifolia* (Reinw.) Blume

LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, 18°52'28" N, 102°24'21" E, 300 m, 21 Jan. 2009, *O. Souliya et al.*, LA-VN 74 (CPC). LAOS, Vientiane prov., Vang Vieng distr., Na Po village, about 12 km to the W of Vang Vieng town, Pa Nang Oua mt., 18°55'36.4" N, 102°20'44.6" E, 350–450 m, 17 March 2013, *N.T. Hiep et al.*, LA-VN 494 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 650–800 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* LA-VN 789 (CPC, NHOL, NUOL).

*Cymbidium* Sw.

*C. aloifolium* (L.) Sw.

LAOS, Kham Mouan prov., Bounlapha distr., Nam Boua Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°33'43.6" N, 105°45'08.3" E, 230 m, 10 March 2013, *L. Averyanov et al.*, LA-VN 328 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–500 m, 14 March 2013, *N.T. Hiep et al.*, LA-VN 390 (CPC, NHOL, NUOL).

\**C. eburneum* Lindl. var. *eburneum*

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E,

E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 804*, Fig. 3, D (CPC, LE, NHOL, NUOL).

\**C. eburneum* Lindl. var. *longzhouense* Z.J. Liu et S.C. Chen

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 803*, Fig. 3, E (CPC, LE, NHOL, NUOL).

*C. lancifolium* Hook.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al., LA-VN 177* (CPC, NHOL, NUOL). LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1100 m, 9 March 2013, *L. Averyanov et al., LA-VN 300* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 786* (CPC, NHOL, NUOL).

*C. lowianum* (Rchb. f.) Rchb. f.

LAOS, Vientiane prov., Kasi distr., Thong Mout village, 19°26'51.5" N, 102°07'45.8" E, 1550–1650 m, 20 March 2013, *N.T. Hiep et al., LA-VN 604* (CPC, LE, NHOL, NUOL).

*Dendrobium* Sw.

*D. cariniferum* Rchb. f.

LAOS, Borikhamxai prov., Khamkeut distr., Phone Sa At village, 18°03'38" N, 105°02'28" E, 635 m, 18 Jan. 2009, *S. Bounphanmy et al., LA-VN 29* (CPC). LAOS, Phongsali prov., Muong May distr., 21°12'32" N, 102°53'44" E, 1250–1400 m, 22 April 2011, *L. Averyanov, P.V. The, CPC 2429* ((CPC).

*D. crepidatum* Lindl.

LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al., LA-VN 481* (CPC, NHOL, NUOL).

*D. cumulatum* Lindl.

CAMBODIA, to the N of Sianukwille town, Kaoh Rong Samoloem Khong Island in Siam Gulf, 10°36'45" N, 103°18'38" E, 20 Nov. 2011, *T. Maisak, L. Osinovez, M. Telepova, 835, 836* (LE).

*D. dalacourii* Guillaumin

LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the N of Paosamphanmixay village, 14°51'53.4" N, 107°11'38.2" E, 200 m, 1

March 2013, *L. Averyanov et al., LA-VN 130* (CPC, NHOL, NUOL).

*D. draconis* Rchb. f.

CAMBODIA, eastern part of Cardamom Mountains, Phnom Aural mt., 23 Nov. 2012, *T. Maisak et al., 944* (LE).

*D. findleyanum* Par. et Rchb. f.

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1600 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 792* (CPC, NHOL, NUOL).

*D. gratiosissimum* Rchb. f.

LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al., LA-VN 21b* (CPC, LE). LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1200 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 772* (CPC, LE, NHOL, NUOL).

\**D. indivisum* (Blume) Miq.

CAMBODIA, eastern part of Cardamom Mountains, Phnom Aural mt., 23 Nov. 2012, *T. Maisak et al., 953, 955*, Fig. 3, F (LE).

\**D. keithii* Ridl.

CAMBODIA, to the N of Sianukwille town, Kaoh Rong Samoloem Khong Island in Siam Gulf, 10°36'45" N, 103°18'38" E, 20 Nov. 2011, *T. Maisak, L. Osinovez, M. Telepova, s.n.*, Fig. 3, G (LE).

\**D. kontumense* Gagnep.

LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al., LA-VN 21a*, Fig. 3, H (CPC, LE).

*D. monticola* Hunt et Summerh.

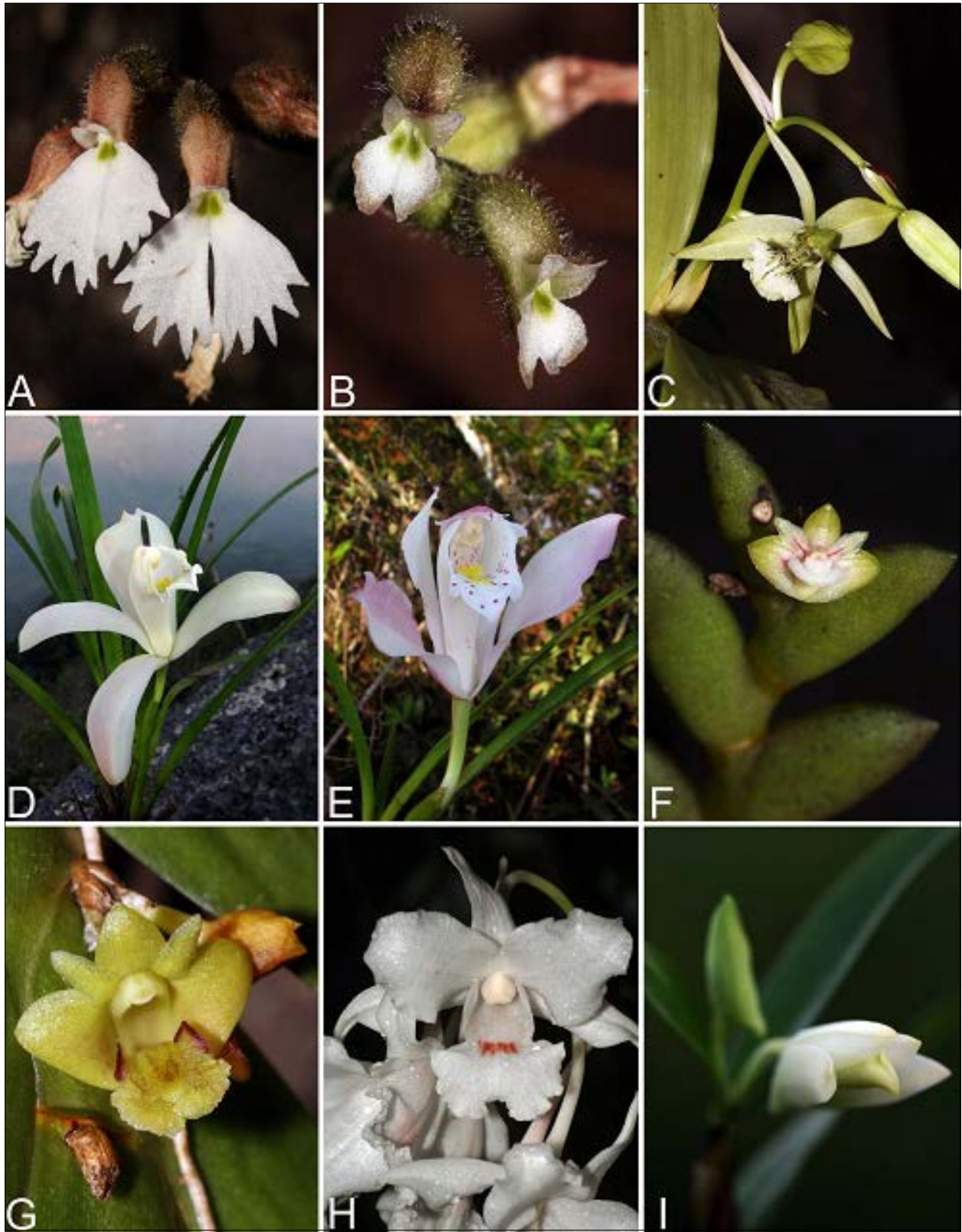
LAOS, Borikhamxai prov., Khamkeut distr., Phone Sa At village, 18°02'09" N, 105°02'31" E, 618 m, 18 Jan. 2009, *S. Bounphanmy et al., LA-VN 39* (CPC).

*D. multilineatum* Kerr

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1300–1425 m, 9 March 2013, *L. Averyanov et al., LA-VN 256* (CPC, LE, NHOL, NUOL).

*D. nathanielis* Rchb. f.

LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the N of Paosamphanmixay village, 14°51'53.4" N, 107°11'38.2" E, 178 m, 28 Feb. 2013, *L. Averyanov et al., LA-VN 114* (CPC, LE, NHOL, NUOL).



**Fig. 3.** New orchids in the flora of Cambodia and Laos. **A** – *Cheirostylis spathulata* J.J. Sm. (N.T. Hiep et al., LA-VN 509). **B** – *C. thailandica* Seidenf. (N.T. Hiep et al., LA-VN 351a). **C** – *Coelogyne virescens* Rolfe (L. Averyanov et al., LA-VN 113). **D** – *Cymbidium eburneum* Lindl. var. *eburneum* (L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 804). **E** – *C. eburneum* Lindl. var. *longzhouense* Z.J. Liu et S.C. Chen (L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 803). **F** – *Dendrobium indivisum* (Blume) Miq. (T. Maisak et al., 953, 955). **G** – *D. keithii* Ridl. (T. Maisak, L. Osinovez, M. Telepova, s.n.). **H** – *D. kontumense* Gagnep. (S. Bounphanmy et al., LA-VN 21a). **I** – *D. scabrilingue* Lindl. (E.L. Konstantinov et al., 29P-C-GPS042). Photos by L. Averyanov (A, B, C, F, G, H), Nguyen Sinh Khang (D, E) and E. Konstantinov (I).

***D. oligophyllum*** Gagnep.

LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–500 m, 14 March 2013, *N.T. Hiep et al.*, LA-VN 383 (CPC, LE, NHOL, NUOL).

***D. parcum*** Rchb. f.

LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 20 (CPC). LAOS, Saravan prov., Ta Oy distr., to the SW of Sa Mouay town, near Thong Hang village, 15°37'30.9" N 106°12'26.5" E, 650–700 m, 4 March 2013, *L. Averyanov et al.*, LA-VN 222 (CPC, NHOL, NUOL).

***D. scabrilingue*** Lindl.

CAMBODIA, Kampot prov., Phnom Bokor N.P., 10°37'92.3 N, 104°01'14.3 E, 21 Dec. 2012, *E.L. Konstantinov et al.*, 29P-C-GPS042, Fig. 3, I (LE).

***D. secundum*** (Blume) Lindl.

LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the N of Paosamphanmixay village, 14°51'53.4" N, 107°11'38.2" E, 200 m, 1 March 2013, *L. Averyanov et al.*, LA-VN 132 (CPC, NHOL, NUOL).

***D. setifolium*** Ridl.

CAMBODIA, Kampot prov., Phnom Bokor N.P., 10°37'92.3 N, 104°01'14.3 E, 21 Dec. 2012. *E.L. Konstantinov et al.*, 35P-C-GPS042 (LE), 42P-C-GPS042, Fig. 4, A (LE).

***D. signatum*** Rchb. f.

LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 21d (CPC, LE).

***D. spatella*** Rchb. f.

LAOS, Borikhamxai prov., Khamkeut distr., Phone Sa At village, 18°03'38" N, 105°02'28" E, 635 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 38 (CPC).

***D. wardianum*** R. Warner

LAOS, Vientiane prov., Kasi distr., Thong Mout village, Pudang Ridge, 19°23'33.7" N, 102°08'05.7" E, 1950–2000 m, 22 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy*, LA-VN 705 (CPC, LE, NHOL, NUOL).

***Didymoplexiopsis*** Seidenf.***D. khiriwongensis*** Seidenf.

LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the E of Paosamphanmixay village, 14°48'24.8" N, 107°24'23.2" E, 700–20 m, 28 Feb. 2013, *L. Averyanov et al.*, LA-VN 110, Fig. 4, B (LE).

***Doritis*** Lindl.***D. pulcherrima*** Lindl.

LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 21 (CPC).

***\*Eclecticus*** P. O'Byrne***\*E. chungii*** P. O'Byrne

LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–500 m, 14 March 2013, *N.T. Hiep et al.*, LA-VN 385c, Fig. 4, C, D (LE).

***Epigeneium*** Gagnep.***\*E. chapaense*** Gagnep.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 193 (CPC, NHOL, NUOL).

***Epipogium*** J.G. Gmel. ex Borkh.***E. roseum*** (D. Don) Lindl.

LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 465 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Nam Pe village, about 12 km to the W of Vang Vieng town, 18°58'41.0" N, 102°18'54.1" E, 400 m, 18 March 2013, *N.T. Hiep et al.*, LA-VN 586 (CPC, NHOL, NUOL).

***Eria*** Lindl.***E. boniana*** (Gagnep.) Tang et F.T. Wang

LAOS, Vientiane prov., Kasi distr., Thong Mout village, 19°26'51.5" N, 102°07'45.8" E, 1550–1650 m, 20 March 2013, *N.T. Hiep et al.*, LA-VN 609 (CPC, NHOL, NUOL).

***\*E. calcarea*** V.N. Long et Aver.

LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 480 (CPC, NHOL, NUOL).

***\*E. corneri*** Rchb. f.

LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, 18°52'28" N, 102°24'21" E, 300 m, 21 Jan. 2009, *O. Souliya et al.*, LA-VN 64 (CPC). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57"

N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 764* (CPC, NHOL, NUOL).

*+E. lasiopetala* (Willd.) Ormerod

CAMBODIA, Kampot prov., Phnom Bokor N.P., 10°37'92.3 N, 104°01'14.3 E, 21 Dec. 2012, *E.L. Konstantinov et al., 39P-C-GPS042*, Fig. 4, E (LE). LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al., LA-VN 13* (CPC). LAOS, Saravan prov., Ta Oy distr., to the SW of Sa Mouay town, near Thong Hang village, 15°37'30.9" N, 106°12'26.5" E, 650–700 m, 4 March 2013, *L. Averyanov et al., LA-VN 218* (CPC, NHOL, NUOL).

*+E. muscicola* (Lindl.) Lindl.

CAMBODIA, Bokor N.P., Bokor mt., 1047 m, 10°38'17" N, 104°00'46" E, 24 Nov. 2012, *T. Maisak et al., 925*, Fig. 4, F (LE).

*E. paniculata* Lindl.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al., LA-VN 176* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 801* (CPC, NHOL, NUOL).

*E. pannea* Lindl.

CAMBODIA, Kampot prov., Phnom Bokor N.P., 10°37'92.3 N, 104°01'14.3 E, 21 Dec. 2012, *E.L. Konstantinov et al., 41P-C-GPS042* (LE). LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al., LA-VN 12* (CPC). LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al., LA-VN 191* (CPC, NHOL, NUOL). LAOS, Saravan prov., Ta Oy distr., to the SW of Sa Mouay town, near Thong Hang village, 15°37'30.9" N, 106°12'26.5" E, 650–700 m, 4 March 2013, *L. Averyanov et al., LA-VN 216* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al., LA-VN 471* (CPC, NHOL, NUOL).

*E. perpusilla* Par. et Rchb. f.

LAOS, Vientiane prov., Vang Vieng distr., Na Po village, about 12 km to the W of Vang

Vieng town, Pa Nang Oua mt., 18°55'44.9" N, 102°20'20.1" E, 700–1000 m, 17 March 2013, *N.T. Hiep et al., LA-VN 527a* (LE).

*E. spirodela* Aver.

LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the E of Paosamphanmixay village, 14°48'24.8" N, 107°24'23.2" E, 700–920 m, 28 February 2013, *L. Averyanov et al., LA-VN 106* (CPC, NHOL, NUOL). LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt. composed by sandstone, 17°35'13.2" N, 105°47'49.8" E, 1300 m, 9 March 2013, *L. Averyanov et al., LA-VN 316* (CPC, NHOL, NUOL).

*\*E. thao* Gagnep.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al., LA-VN 153* (CPC, NHOL, NUOL).

*E. truncata* Lindl.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al., LA-VN 170* (CPC, LE, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Thong Mout village, Pudang Ridge, 19°23'33.7" N, 102°08'05.7" E, 1950–2000 m, 22 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 706* (CPC, LE, NHOL, NUOL).

*Eulophia* R. Br.

*E. graminea* Lindl.

LAOS, Vientiane prov., Vang Vieng distr., vic. of Vang Vieng town, 18°54'58" N, 102°24'52" E, 400–450 m, 24 April 2011, *L. Averyanov, P.V. The CPC 2441* (CPC).

*Flickingeria* A.D. Hawkes

*\*F. angustifolia* (Blume) A.D. Hawkes

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al., LA-VN 182*, Fig. 4, G (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 752* (CPC, NHOL, NUOL).

*Gastrochilus* D. Don

*\*G. calceolaris* (Buch.-Ham. ex Sm.) D. Don

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu

Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1000–1100 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 303 (CPC, NHOL, NUOL).

\**G. pseudodistichus* (King et Pantl.) Schltr.

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1600 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy*, LA-VN 794 (CPC, NHOL, NUOL).

*Goodyera* R. Br.

\**G. fumata* Thwaites

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1000 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 301 (CPC, NHOL, NUOL).

\**G. hispida* Lindl.

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy*, LA-VN 797, Fig. 4, H (CPC, NHOL, NUOL).

\**Herpysma* Lindl.

\**H. longicaulis* Lindl.

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., around point 19°18'45.5" N, 102°22'31.4" E, 1600 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy*, LA-VN 791 (CPC, LE, NHOL, NUOL).

\**Hetaeria* Blume

\**H. affinis* (Griff.) Seidenf. et Ormerod

LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 300 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 429 (CPC, LE, NHOL, NUOL).

*Holcoglossum* Schltr.

\**H. subulifolium* (Rchb. f.) Christenson

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1400 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 260, Fig. 4, I (CPC, LE, NHOL, NUOL).

*Kingidium* P.F. Hunt

*K. deliciosum* (Rchb. f.) H.R. Sweet

LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, 18°55'34.2" N, 102°22'58.4" E, 300 m, 13 March 2013, *N.T. Hiep et al.*, LA-VN 351 (CPC, NHOL, NUOL).

\**Lecanorchis* Blume

\**L. vietnamica* Aver.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 171 (CPC, NHOL, NUOL).

*Liparis* Rich.

\**L. balansae* Gagnep.

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1425 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 309 (LE).

*L. bootanensis* Griff.

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1200 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 309 (CPC, NHOL, NUOL).

*L. nervosa* (Thunb.) Lindl.

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 900 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 296 (CPC, NHOL, NUOL).

\**L. pumila* Aver.

LAOS, Borikhamxai prov., Khamkeut distr., Phone Sa At village, 18°03'38" N, 105°02'28" E, 635 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 34 (CPC). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* LA-VN 750 (CPC, NHOL, NUOL).

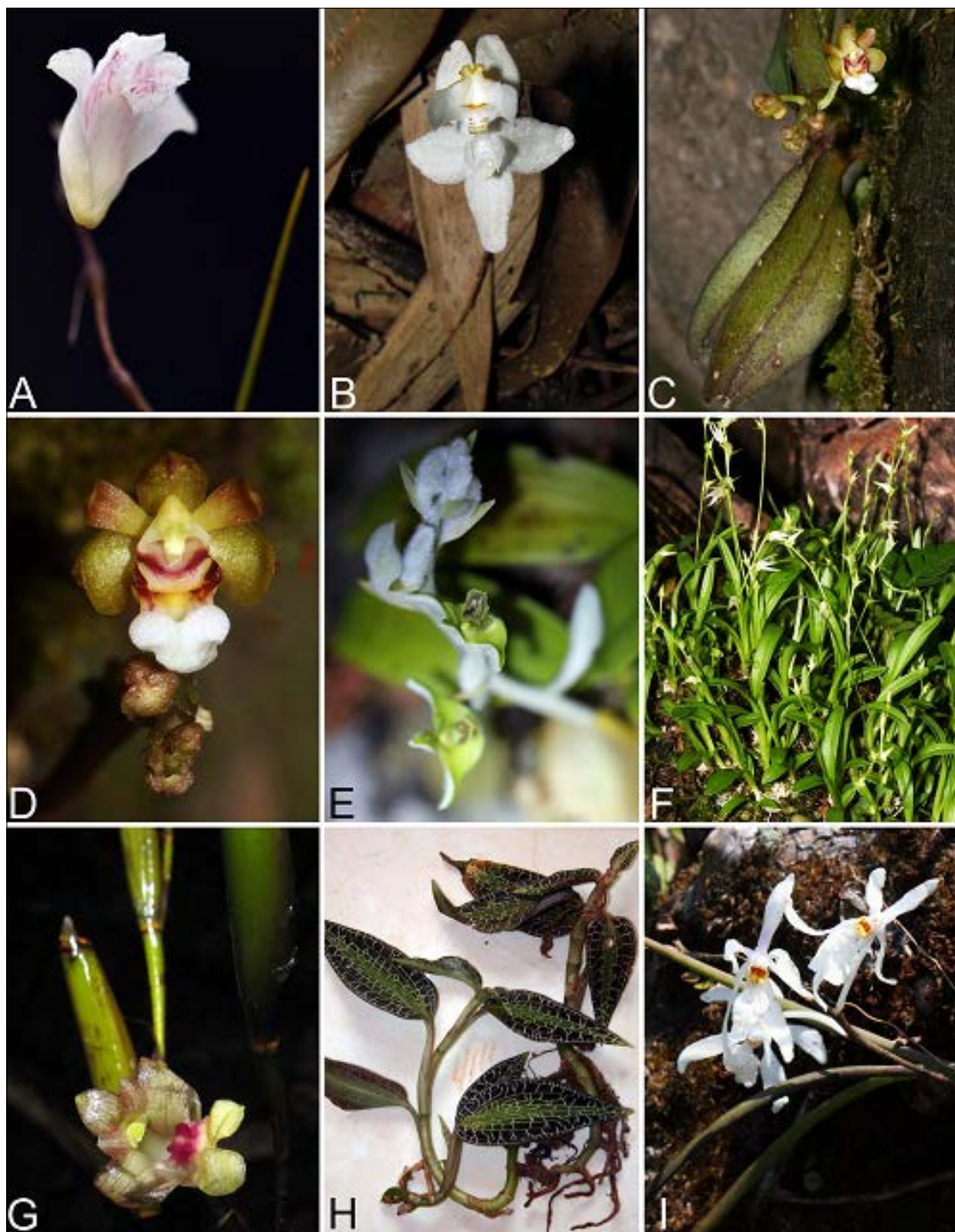
*L. viridiflora* (Blume) Lindl.

LAOS, Vientiane prov., Kasi distr., Thong Mout village, 19°26'51.5" N, 102°07'45.8" E, 1550–1650 m, 20 March 2013, *N.T. Hiep et al.*, LA-VN 607 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 479 (CPC, NHOL, NUOL).

*Luisia* Gaudich.

*L. filiformis* Hook. f.

LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the N of Paosamphanmixay village, 14°51'53.4" N, 107°11'38.2" E, 178 m, 28 February 2013, *L. Averyanov et al.*, LA-VN 115 (CPC, LE, NHOL, NUOL).



**Fig. 4.** New orchids in the flora of Cambodia and Laos. **A** – *Dendrobium setifolium* Ridl. (E.L. Konstantinov et al., 35P-C-GPS042). **B** – *Didymoplexiopsis khiriwongensis* Seidenf. (L. Averyanov et al., LA-VN 110). **C**, **D** – *Eclecticus chungii* P. O’Byrne (N.T. Hiep et al., LA-VN 385c). **E** – *Eria lasiopetala* (Willd.) Ormerod (E.L. Konstantinov et al., 39P-C-GPS042). **F** – *E. muscicola* (Lindl.) Lindl. (T. Maisak et al., 925). **G** – *Flickingeria angustifolia* (Blume) A.D. Hawkes (L. Averyanov et al., LA-VN 182). **H** – *Goodyera hispida* Lindl. (L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 797). **I** – *Holcoglossum subulifolium* (Rchb. f.) Christenson (L. Averyanov et al., LA-VN 260). Photos by E. Konstantinov (A, E), Nguyen Sinh Khang (B, G), L. Averyanov (C, D, E, H) and Pham Van The (I).

***Micropera*** Lindl.\****M. poilanei*** (Guillaumin) Garay

LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–500 m, 14 March 2013, *N.T. Hiep et al.*, LA-VN 377 (CPC, NHOL, NUOL).

***Nephelaphyllum*** Blume\****N. tenuiflorum*** Blume

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 168 (CPC, NHOL, NUOL).

\****Neuwiedia*** Blume\****N. zollingeri*** Rchb. f.

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 500–900 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 297 (CPC, NHOL, NUOL).

***Oberonia*** Lindl.\****O. cavaleriei*** Finet

LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* LA-VN 757 (CPC, NHOL, NUOL).

***O. falcata*** King et Pantl.

LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 17 (CPC).

***Ornithochilus*** (Lindl.) Benth.***O. difformis*** (Wall. ex Lindl.) Schltr.

LAOS, Phongsali prov., Muong May distr., 21°12'32" N, 102°53'44" E, 1250–1400 m, 22 April 2011, *L. Averyanov, P.V. The, CPC 2431* (CPC). LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 167 (CPC, NHOL, NUOL).

***Otochilus*** Lindl.\****O. pseudoporrectus*** Aver.

LAOS, Vientiane prov., Kasi distr., Thong Mout village, Pudang Ridge, 19°23'33.7" N, 102°08'05.7" E, 1950–2000 m, 22 March 2013, *L.*

*Averyanov, N.S. Khang, S. Lorphengsy* LA-VN 704 (CPC, LE, NHOL, NUOL).

***Panisea*** (Lindl.) Lindl.***P. uniflora*** (Lindl.) Lindl.

CAMBODIA, to the N of Sianukwille town, Kaoh Rong Samoloem Khong Island in Siam Gulf, 10°36'45" N, 103°18'38" E, 19 Nov. 2011, *T. Maisak, M. Telepova, L. Osinovets, 907* (LE). LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 21i (CPC, LE). LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, 18°52'28" N, 102°24'21" E, 400–600 m, 21 Jan. 2009, *O. Souliya et al.*, LA-VN 92 (CPC). LAOS, Vientiane prov., Vang Vieng distr., vic. of Vang Vieng town, 18°54'58" N, 102°24'52" E, 400–450 m, 24 April 2011, *L. Averyanov, P.V. The, CPC 2439* (CPC). LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 475 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Na Po village, about 12 km to the W of Vang Vieng town, Pa Nang Oua mt., 18°55'44.9" N, 102°20'20.1" E, 500–1000 m, 17 March 2013, *N.T. Hiep et al.*, LA-VN 515a (CPC, LE, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 761* (CPC, NHOL, NUOL).

***Paphiopedilum*** Pfitzer***P. appletonianum*** (Gower) Rolfe

CAMBODIA, Kampot prov., Phnom Bokor N.P. Epiphyte, 10°37'92.3 N, 104°01'14.3 E, 21 Dec. 2012, *E.L. Konstantinov et al.*, 50P-C-GPS042 (LE). LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 178 (CPC, NHOL, NUOL). LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1200–1300 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 305 (CPC, NHOL, NUOL).

\****P. canhii*** Aver. et O. Gruss

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1600 m, 24 March 2013, *L. Averyanov, N.S.*



*Khang, S. Lorphengsy, LA-VN 793, Fig. 5, A, B* (CPC, LE, NHOL, NUOL).

***P. concolor*** (Lindl.) Pfitzer

LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 743* (CPC, NHOL, NUOL).

***P. dianthum*** Tang et F.T. Wang

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 781* (CPC, NHOL, NUOL).

***Papilionanthe*** Schltr.

**\**P. biswasiana*** (Ghose et Mukerjee) Garay

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 799, Fig. 5, C* (CPC, LE, NHOL, NUOL).

***Pelatantheria*** Ridl.

***P. ctenoglossum*** Ridl.

LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 748* (CPC, NHOL, NUOL).

***Phaius*** Lindl.

***P. flavus*** (Blume) Lindl.

LAOS, Vientiane prov., Vang Vieng distr., Na Po village, about 12 km to the W of Vang Vieng town, Pa Nang Oua mt., 18°55'44.9" N, 102°20'20.1" E, 600–900 m, 17 March 2013, *N.T. Hiep et al., LA-VN 550* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1000–1600 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 779* (CPC, NHOL, NUOL).

***Phalaenopsis*** Blume

**\**P. wilsonii*** Rolfe

LAOS, Vientiane prov., Kasi distr., Thong Mout village, 19°26'51.5" N, 102°07'45.8" E, 1550–1650 m, 20 March 2013, *N.T. Hiep et al., LA-VN 606, Fig. 5, D* (CPC, NHOL, NUOL).

***Pholidota*** Lindl.

***P. articulata*** Lindl.

LAOS, Borikhamxai prov., Khamkeut distr., Phone Sa At village, 18°03'38" N, 105°02'28" E,

635 m, 18 Jan. 2009, *S. Bounphanmy et al., LA-VN 30* (CPC). LAOS, Saravan prov., Ta Oy distr., to the SW of Sa Mouay town, near Thong Hang village, 15°37'30.9" N, 106°12'26.5" E, 650–700 m, 4 March 2013, *L. Averyanov et al., LA-VN 221* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al., LA-VN 477* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 775* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 763* (CPC, NHOL, NUOL).

***P. chinensis*** Lindl.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al., LA-VN 184* (CPC, NHOL, NUOL). LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1100 m, 9 March 2013, *L. Averyanov et al., LA-VN 318* (CPC, NHOL, NUOL).

***P. imbricata*** Lindl.

LAOS, Borikhamxai prov., Khamkeut distr., Phone Sa At village, 18°03'38" N, 105°02'28" E, 635 m, 18 Jan. 2009, *S. Bounphanmy et al., LA-VN 35* (CPC). LAOS, Attapeu prov., Saysettha distr., Dong Am Pham N.P.A., to the N of Paosamphanmixay village, 14°51'53.4" N, 107°11'38.2" E, 200 m, 1 March 2013, *L. Averyanov et al., LA-VN 135* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–500 m, 14 March 2013, *N.T. Hiep et al., LA-VN 389* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 760* (CPC, NHOL, NUOL).

***P. pallida*** Lindl.

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 780* (CPC, NHOL, NUOL).

***Plocoglottis*** Blume***P. bokorensis*** (Gagnep.) Seidenf.

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 500–1000 m, 9 March 2013, *L. Averyanov et al.*, *LA-VN 284* (CPC, NHOL, NUOL).

***Podochilus*** Blume**\**P. oxystophylloides*** Ormerod

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1200–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* *LA-VN 783* (CPC, NHOL, NUOL).

***Pomatocalpa*** Breda***P. angustifolium*** Seidenf.

LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–500 m, 14 March 2013, *N.T. Hiep et al.*, *LA-VN 385* (CPC, LE, NHOL, NUOL).

***Porpax*** Lindl.**\**P. elwesii*** (Rchb. f.) Rolfe

CAMBODIA, to the N of Sianukwille town, Kaoh Rong Samoloem Khong Island in Siam Gulf, 10°36'104 N 103°18'056 E, 19 Nov. 2011, *T. Maisak, M. Telepova, L. Osinovets*, 851, Fig. 5, E (LE).

***Renanthera*** Lour.***R. coccinea*** Lour.

LAOS, Vientiane prov., Vang Vieng distr., vic. of Vang Vieng town, 18°54'58" N, 102°24'52" E, 400–450 m, 24 April 2011, *L. Averyanov, P.V. The*, *CPC 2443* (CPC).

***Sarcoglyphis*** Garay***S. mirabilis*** (Rchb. f.) Garay

LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–500 m, 14 March 2013, *N.T. Hiep et al.*, *LA-VN 385a* (CPC, LE, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 300–500 m, 15 March 2013, *N.T. Hiep et al.*, *LA-VN 467* (CPC, LE, NHOL, NUOL).

***Schoenorchis*** Blume***S. gemmata*** (Lindl.) J.J. Sm.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March

2013, *L. Averyanov et al.*, *LA-VN 186* (CPC, NHOL, NUOL). LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1400 m, 9 March 2013, *L. Averyanov et al.*, *LA-VN 322* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Thong Mout village, 19°24'23.7" N, 102°09'50.2" E, 1760 m, 20 March 2013, *N.T. Hiep et al.*, *LA-VN 645* (CPC, NHOL, NUOL).

***Smitinandia*** Holttum***S. micrantha*** (Lindl.) Holttum

LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al.*, *LA-VN 21c* (CPC). LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–400 m, 14 March 2013, *N.T. Hiep et al.*, *LA-VN 423* (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, 18°52'28" N, 102°24'21" E, 400–600 m, 21 Jan. 2009, *O. Souliya et al.*, *LA-VN 84* (CPC).

***Spathoglottis*** Blume***S. affinis*** de Vriese

LAOS, Phu Khao Khuay N.P., Xang waterfall, Tad Leuk willage, 18°24'05.8" N, 103°03'03.3" E, 12 Nov. 2011, *E. Konstantinov et al.*, 6 (LE).

***S. eburnea*** Gagnep.

CAMBODIA, Kampot prov., Phnom Bokor N.P., 10°37'92.3" N, 104°01'14.3" E, 21 Dec. 2012, *E.L. Konstantinov et al.*, *46P-C-GPS042* (LE). LAOS, Namnor, 18°01'66.1" N, 104°41'45.8" E, Nov. 2011, *E. Konstantinov et al.*, *2a* (LE).

***Sunipia*** Lindl.**\**S. rimannii*** (Rchb. f.) Seidenf.

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* *LA-VN 802*, Fig. 5, F (CPC, LE, NHOL, NUOL).

***S. scariosa*** Lindl.

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* *LA-VN 774* (CPC, NHOL, NUOL).

***Tainia*** Blume***T. longiscapa*** (Seidenf.) J.J. Wood et A.L.

Lamb

LAOS, Vientiane prov., Vang Vieng distr., Na Po village, about 12 km to the W of Vang Vieng town, Pa Nang Oua mt., 18°55'44.9" N, 102°20'20.1" E, 600–900 m, 17 March 2013, *N.T. Hiep et al.*, LA-VN 551 (CPC, NHOL, NUOL).

***Thelasis*** Blume

\**T. khasiana* Hook. f.

LAOS, Vientiane prov., Kasi distr., Thong Mout village, 19°26'51.5" N, 102°07'45.8" E, 1550–1650 m, 20 March 2013, *N.T. Hiep et al.*, LA-VN 610 (CPC, NHOL, NUOL).

*T. pygmaea* (Griff.) Blume

LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013 Coll.: *N.T. Hiep et al.*, LA-VN 473 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, 18°52'28" N, 102°24'21" E, 400–600 m, 21 Jan. 2009, *O. Souliya et al.*, LA-VN 87 (CPC).

***Thrixspermum*** Lour.

*T. centipeda* Lour.

LAOS, Borikhamxai prov., Khamkeut distr., Dan Khum Ngan locality, Watershed Managing Protected Authority region, 17°57'32" N, 105°01'05" E, 538 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 18 (CPC).

\**T. sutepense* (Rolfe ex Downie) Tang et F.T. Wang

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* LA-VN 788, Fig. 5, G (CPC, LE, NHOL, NUOL).

***Trias*** Lindl.

*T. nasuta* (Rchb. f.) Stapf

LAOS, Saravan prov., Ta Oy distr., to the SW of Sa Mouay town, near Thong Hang village, 15°37'30.9" N, 106°12'26.5" E, 650–700 m, 4 March 2013, *L. Averyanov et al.*, LA-VN 220 (CPC, NHOL, NUOL).

***Trichoglottis*** Blume

*T. orchidea* (J. Koenig) Garay

LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 466 (CPC, NHOL, NUOL).

\**Trichosma* Lindl.

\**T. simondii* Gagnep.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 185 (CPC, NHOL, NUOL).

\**T. suavis* Lindl.

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 1200 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 310 (CPC, NHOL, NUOL).

***Trichotomia*** Blume

*T. dasyphylla* (Par. et Rchb. f.) Kraenzl.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 169 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Phol Xai village, about 8 km to the W of Vang Vieng town, Phar Poon mt., 18°56'11.5" N, 102°20'05.0" E, 800–900 m, 15 March 2013, *N.T. Hiep et al.*, LA-VN 470 (CPC, NHOL, NUOL).

*T. pulvinata* (Lindl.) Kraenzl.

LAOS, Saravan prov., Sa Mouay distr., to the SEE of Sa Mouay town, elev. from Ta Oy village, 1350 m, 16°08'47.0" N, 106°52'35.4" E, 4 March 2013, *L. Averyanov et al.*, LA-VN 196 (CPC, NHOL, NUOL).

***Tropidia*** Lindl.

*T. angulosa* (Lindl.) Blume

LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, 18°52'28" N, 102°24'21" E, 300 m, 21 Jan. 2009, *O. Souliya et al.*, LA-VN 67 (CPC). LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 400–900 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 295 (CPC, NHOL, NUOL). LAOS, Kham Mouan prov., Bounlapha distr., Nam Boua Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°33'43.6" N, 105°45'08.3" E, 230 m, 10 March 2013, *L. Averyanov et al.*, LA-VN 329 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Nathong village, about 5 km to the W of Vang Vieng town, Tham Kang mt., 18°55'51.4" N, 102°23'50.6" E, 300–500 m, 14 March 2013, *N.T. Hiep et al.*, LA-VN 388 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Vang Vieng distr., Na Po village, about 12 km to the W of Vang Vieng town, Pa Nang Oua mt., 18°55'36.4" N, 102°20'20.1" E, 600–900 m, 17 March 2013, *N.T. Hiep et al.*, LA-VN 551 (CPC, NHOL, NUOL).



**Fig. 5.** New orchids in the flora of Cambodia and Laos. **A, B** – *Paphiopedilum canhii* Aver. et O. Gruss (L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 793). **C** – *Papilionanthe biswasiana* (Ghose et Mukerjee) Garay (L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 799). **D** – *Phalaenopsis wilsonii* Rolfe (N.T. Hiep et al., LA-VN 606). **E** – *Porpax elwesii* (Rchb. f.) Rolfe (T. Maisak, M. Telepova, L. Osinovets, 851). **F** – *Sunipia rimannii* (Rchb. f.) Seidenf. (L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 802). **G** – *Thrixspermum sutepense* (Rolfe ex Downie) Tang et F.T. Wang (L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 788). **H** – *Zeuxine flava* (Wall. ex Lindl.) Trimen (L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 777). **I** – *Z. nervosa* Trimen (L. Averyanov, N.S. Khang, S. Lorphengsy LA-VN 800). Photos by Nguyen Sinh Khang (A, C, F-I), L. Averyanov (B), Pham Van The (D) and T. Maisak (E).

N, 102°20'44.6" E, 350–450 m, 17 March 2013, *N.T. Hiep et al.*, LA-VN 501 (CPC, NHOL, NUOL). LAOS, Vientiane prov., Kasi distr., Tam Tai village, about 10 km to the NW of Kasi town, 19°12'57" N, 102°14'59" E, 500–650 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* LA-VN 741 (CPC, NHOL, NUOL).

***T. curcugiloides*** Lindl.

LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 700–900 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 294 (CPC, NHOL, NUOL).

***Vanda*** R. Br.

***V. brunnea*** Rchb. f.

LAOS, Phongsali prov., Muong May distr., 21°12'32" N, 102°53'44" E, 1250–1400 m, 22 April 2011, *L. Averyanov, P.V. The*, CPC 2432 (CPC).

***Vandopsis*** Pfitzer

***V. gigantea*** (Lindl.) Pfitzer

LAOS, Vientiane prov., Vang Vieng distr., Na Khun Village, 18°52'28" N, 102°24'21" E, 300 m, 21 Jan. 2009, *O. Souliya et al.*, LA-VN 82 (CPC). LAOS, Kham Mouan prov., Bounlapha distr., Thong Sam village, Hinnam No N.P.A., Pu Pha Song mt., 17°35'13.2" N, 105°47'49.8" E, 500–700 m, 9 March 2013, *L. Averyanov et al.*, LA-VN 324 (CPC, NHOL, NUOL).

***Zeuxine*** Lindl

**\**Z. flava*** (Wall. ex Lindl.) Trimen

LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* LA-VN 777, Fig. 5, H (CPC, LE, NHOL, NUOL).

**\**Z. nervosa*** Trimen

LAOS, Borikhamxai prov., Khamkeut distr., Phone Sa At village, 18°03'38" N, 105°02'28" E, 635 m, 18 Jan. 2009, *S. Bounphanmy et al.*, LA-VN 27 (CPC). LAOS, Luang Namtha prov., Ban Nam Ha, 21°00'15.9 N, 101°24'55.4 E, 2 Dec. 2012, *E.L. Konstantinov et al.*, 14ORa-L-GPS018 (LE). LAOS, Vientiane prov., Kasi distr., Namken village, Phachao mt., 19°18'45.5" N, 102°22'31.4" E, 1500–1750 m, 24 March 2013, *L. Averyanov, N.S. Khang, S. Lorphengsy* LA-VN 800, Fig. 5, I (CPC, LE, NHOL, NUOL).

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## LITERATURE

- Averyanov L.V., Averyanova A.L.* Updated checklist of the orchids of Vietnam. – Hanoi: Vietnam Nat. Univ. Publ. House, 2003. – 102 p.
- Callaghan M.* Checklist of Lao Plant Names. – Vientiane, 2004. – 210 p.
- Gagnepain F., Guillaumin A.* Orchidaceae and Apostasiaceae // H. Lecomte (ed.). Flore Generale de l'Indochine 6. – Paris: Masson et Cie, 1932–1934. – P. 142–652.
- Newman M.F., Ketphanh S., Svengsuksa B., Thomas P., Sengdala K., Lamxay V., Armstrong K.* A checklist of the vascular plants of Lao PDR. – Edinburgh: Royal Botanic Garden, 2007. – 394 p.
- Orchids of Cambodia. <http://www.orchidcambodia.com>. (accessed at 20 July 2013).
- Pedersen H.A., Kurzweil H., Suddee S., Cribb P.J.* Flora of Thailand. – Vol. 12 (1). Orchidaceae (Cyripedioideae, Orchidoideae, Vanilloideae). – Bangkok: Forest Herb, 2011. – 302 p.
- Schuiteman A., de Vogel E.F.* Orchid genera of Thailand, Laos, Cambodia and Vietnam. – Leiden: Nat. Herb. Nederlands, 2000. – 118 p.
- Schuiteman A., Bonnet P., Svengsuksa B., Barthelemy D.* An annotated checklist of the Orchidaceae of Laos // Nordic Journal of Botany, 2008. – Vol. 26. – P. 257–316.
- Seidenfaden G.* On a small collection of orchids from Laos // Nat. Hist. Bull. Siam. Soc., 1966. – Vol. 21, № 1–2. – P. 63–67.

**Seidenfaden G.** An enumeration of Laotian orchids // Bull. Mus. Nat. Hist. (Paris), 3 ser., 1973. – Vol. 71, Bot. Issue 5. – P. 101–152.

**Seidenfaden G.** Contributions to a revision of the Orchid flora of Cambodia, Laos, and Vietnam, 1. A preliminary enumeration of all orchids hitherto recorded. – Fredensborg: Kai Olsen, 1975. – 117 p.

**Seidenfaden G.** The orchids of Indochina // Opera Bot., 1992. – Vol. 114. – P. 1–502.

**Svengsuksa B., Lamxay V.** Field guide to the Orchids of Lao PDR. – Vientiane: National University of Lao PDR, 2005. – 185 p.

**Vidal J.** Noms vernaculaires de plantes (Lao, Meo, Kha) en usage au Laos // Extrait du Bulletin de l'Ecole Francaise d'Extreme-Orient, Paris, 1959. – Vol. 49, № 2. – P. 435–608.