

SCIENTIFIC NOTE

**SIGNIFICANT RANGE EXTENSIONS FOR
KANGELLA AND *VIETNAMELLA*
(EPHEMEROPTERA: EPHEMERELLIDAE,
VIETNAMELLIDAE)¹**Luke M. Jacobus,² W. P. McCafferty,² and Robert W. Sites¹

Recent emphasis on the Oriental Ephemeroptera fauna (e.g., Sites et al. 2001, Soldán 2001) has expanded the known geographic range of several families and genera, especially in China and Thailand (e.g., Zhou and Zheng 2001; Parnrong et al. 2002; Zhou et al. 2003, 2004; Zhou 2004). Our examination of extensive Ephemeroptera collections from Thailand has yielded new records and significant range extensions for certain pannota mayflies (McCafferty and Wang 2000), reported below. At this time, our material examined is deposited in the Enns Entomology Museum, Columbia, Missouri, USA; however, some specimens will be deposited in Thailand with the National Science Museum, Pathum Thani; and the Royal Forestry Department, Bangkok. Images of collecting localities ("L" numbers) in Thailand are available online, via a locality image database at the Enns Entomology Museum website.

***Kangella brocha* (Kang and Yang).** The monospecific genus *Kangella* Sartori (2004) has been reported only from Taiwan (Kang and Yang 1995, Soldán 2001), and it represents the single Ephemeroptera genus that has been considered endemic to the island (Soldán and Yang 2003). Our new records, however, indicate that the genus has a broader range of distribution and that no mayfly genera are endemic to Taiwan. Our specific identification was verified by comparison to a paratype of *K. brocha*. *Kangella* larvae are differentiated from other Ephemerellidae by having the length of the antennae greater than one-half the body length, the mandibles greatly elongate, and the labrum elongate and trapezoidal. The alate stages are unknown.

We examined the following material: CHINA, **Taiwan**, Hsinchu Hsien, Wufeng, 24-X-1991, SC Kang, HC Chang, one larva (paratype). THAILAND, **Kampaeng Phet Prov.**, Khlong Lan National Park, Khlong Nam Lai Waterfall, 16°11'N, 99°15'E, 751m elev., 6-IV-2003, L-448, Sites, Vitheepradit, Prommi, Setaphan, three larvae; Mae Wong National Park, Kaeng Pa Nang Koi, 16°02'N, 99°13'E, 290m elev., 7-IV-2003, L-451, Sites, Vitheepradit, Prommi, Setaphan, two larvae.

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***Vietnamella* spp.** The genus *Vietnamella* Tshernova (1972) has been reported from Vietnam and southern China (reviewed by McCafferty and Wang 1997, Soldán 2001). The record from Prachuap Khiri Kan Province listed below extends the range of this genus south onto the Malay peninsula. *Vietnamella* larvae are distinguished easily from other pannota mayflies (McCafferty and Wang 2000) by having long cephalic horns, enlarged forefemora with a serrate ventral (leading) margin, and gills on abdominal segments 1–7. Alate stages are identifiable by cephalic horn vestiges, wing venation, and the structure of the male genitalia (You and Su 1987, Wang and McCafferty 1995). We have not assigned specific identifications to the specimens we examined because the taxonomy of species in this genus remains somewhat dubious, as indicated and discussed by McCafferty and Wang (1997) and Soldán (2001).

We examined the following material: THAILAND, **Chiang Rai Prov.**, stream from Khun Kon waterfall, 19°51'N, 99°39'E, 524m elev., 19-IV-2003, L-466, Vitheepradit, Prommi, Setaphan, one larva; **Prachuap Khiri Khan Prov.**, Amphur Kui Buri Forest Plantation Station, 12°04'N, 99°37'E, 117m elev., 17-V-2002, L-540, Vitheepradit, Ferro, one larva; **Nan Prov.**, Amphur Bo Kluea, Ban Bo Kluea Tai, Nam Mang, gravel, 19°09'N, 101°09'E, 663m elev., 22-IV-2003, L-476, Vitheepradit, Prommi, Setaphan, two larvae.

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LITERATURE CITED

- Kang, S.-C. and C.-T. Yang.** 1995. Ephemerellidae of Taiwan (Insecta, Ephemeroptera). Bulletin of National Museum of Natural Science 5: 95–116.
- McCafferty, W. P. and T.-Q. Wang.** 1997. Phylogenetic systematics of the family Teloganodidae (Ephemeroptera: Pannota). Annals of the Cape Provincial Museums (Natural History) 19: 387–437.
- McCafferty, W. P. and T.-Q. Wang.** 2000. Phylogenetic systematics of the major lineages of pannota mayflies (Ephemeroptera: Pannota). Transactions of the American Entomological Society 126: 9–101.
- Parnrong, S., M. Buathong, and R. W. Sites.** 2002. New records of Behningiidae, Potamanthidae, and Protopistomatidae (Ephemeroptera) from Thailand. ScienceAsia 28: 407–409.

- Sartori, M.** 2004. *Kangella* nom. nov. (Ephemeroptera, Ephemerellidae), replacement name pro *Eburella* Kang & Yang, 1995 nec Monné & Martins, 1973 (Coleoptera, Cerambycidae). Aquatic Insects 26: 75–76.
- Sites, R. W., T.-Q. Wang, S. Permkam, and M. D. Hubbard.** 2001. The mayfly genera (Ephemeroptera) of southern Thailand. Natural History Bulletin of the Siam Society 49: 243–268.
- Soldán, T.** 2001. Status of the systematic knowledge and priorities in Ephemeroptera studies: the Oriental region. pp. 53–65. In: Domínguez, E. (ed), Trends in Research in Ephemeroptera and Plecoptera. Kluwer Academic/Plenum, New York. 478 pp.
- Soldán, T. and J.-T. Yang.** 2003. Mayflies (Ephemeroptera) of Taiwan: species composition, taxonomic shifts, distribution and biogeographical analysis. pp. 413–420. In: Gaino, E. (Editor). Research Update on Ephemeroptera & Plecoptera. Università di Perugia, Perugia, Italy. 488 pp.
- Tshernova, O. A.** 1972. Some new Asiatic species of mayflies (Ephemeroptera, Ephemerellidae, Heptageniidae). Entomologicheskoe Obozrenie 51: 604–614.
- Wang, T.-Q. and W. P. McCafferty.** 1995. Specific assignments in *Ephemerellina* and *Vietnamella* (Ephemeroptera: Ephemerellidae). Entomological News 106: 193–194.
- You, D.-S. and C.-R. Su.** 1987. A new species of *Vietnamella* from China (Ephemeroptera: Ephemerellidae). Acta Zootaxonomica Sinica 12: 176–179.
- Zhou, C.-F. and L.-Y. Zheng.** 2001. A new species of the genus *Neophemera* McDunnough from China (Ephemeroptera: Neophemeridae). Aquatic Insects 23: 327–330.
- Zhou, C.-F.** 2004. A new species of genus *Gilliesia* Peters and Edmunds from China (Ephemeroptera: Leptophlebiidae). Zootaxa 421: 1–4.
- Zhou C.-F., L. Sun, and W. P. McCafferty.** 2003. A new species of *Caenoculis* Soldán from China (Ephemeroptera: Caenidae). The Pan-Pacific Entomologist 79: 185–191.
- Zhou, C.-F., L. Sun, and W. P. McCafferty.** 2004. A new species of *Brachycercus* Curtis from China (Ephemeroptera: Caenidae). Proceedings of the Entomological Society of Washington 106: 312–318.