

Preliminary survey of hill stream fishes in Upper Cyber Stream, outside Huai Kha Khaeng Wildlife Sanctuary, West Thailand

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ABSTRACT

Fields survey of freshwater fish in Cyber Stream, outside Huai Kha Khaeng Wildlife Sanctuary, at Ban Cyber, Khok Khwai Subdistrict, Hui Kod District, Uthai Thani Province, West Thailand were carried out in December 2015. We found 10 families and 22 species of hill stream fishes. *Schistura desmotes* (Fowler, 1934) and *Homalopteroides smithi* (Hora 1932) (Cypriniformes Balitoridae) are dominant in transparent and running fast stream ecosystem and *Neolissochilus stracheyi* (Day, 1871) and *Mystacoleucus marginatus* (Valenciennes, 1842) (Cypriniformes Cyprinidae) are dominant in running slowly stream and pool of the headwater stream ecosystem. One alien species in this area is *Poecilia reticulata* Peters, 1859 (Cyprinodontiformes Poeciliidae). Two species, *Pseudohomaloptera* cf. *leonardi* (Hora, 1941) (Cypriniformes Balitoridae) and *Channa* cf. *gachua* (Hamilton, 1822) (Perciformes Channidae), still have an unclear taxonomic status. The Thai local names, habitat and distribution data of hill stream fishes are provided.

KEY WORDS

hill stream fishes; Cyber Stream; Huai Kha Khaeng; Wildlife Sanctuary; Thailand.

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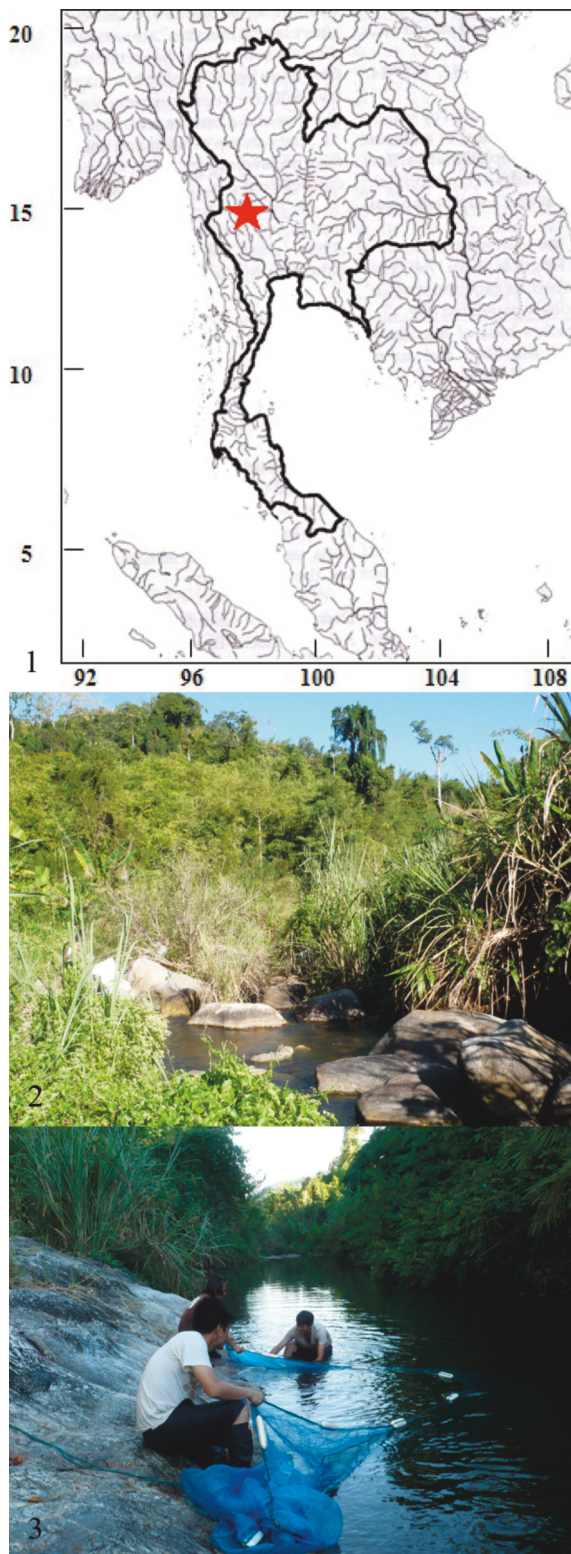
INTRODUCTION

Huai Kha Khaeng Wildlife Sanctuary (HKKWS) is a 278,000 ha (2,780.14 km²) world heritage (Southeast-Asia, Uthai Thani Province of Thailand) (Sukmasuang, 2009; Simcharoen et al., 2014). Climate of HKKWS is classified as tropical savanna, with six forest type categories: hill ever green (13%), moist ever green, dry ever green (25%), mixed ever green (48%), dry dipterocarps (7%) and a small successional community (The Faculty of Forestry, 1989; WEFCON, 2004).

The Sanctuary is important as in-situ conservation for the diversity of flora and fauna, and ecosystem.

According to a Forest Research Center report (1997), HKKWS consists of 130 mammals, 360 birds, 81 reptiles, 37 amphibians and 105 fish.

Cyber Stream is part of the Huai Khun Kaew Basin and the West Thailand Watershed. The geography of Upper Cyber Stream is a hill and a little flat land, but the lower area is relatively flat (Royal Irrigation Department, 2012). Upper Cyber Stream is characterized by its own ecological features which differentiate it from the other hill stream ecosystem systems of Thailand. Although it is certainly of interest, nevertheless is poorly investigated and little is known about hill stream fishes occurring in this area. In order to obtain a more detailed know-



Figures 1–3. Study area, Upper Cyber Stream, outside Huai Kha Khaeng Wildlife Sanctuary, Uthai Thani Province, West Thailand.

ledge on this item, we carried out this survey project on Cyber Stream fishes, outside HKKWS area but near to Cyber forest (a protect station of HKKWS) at Ban Cyber, Khok Khwai Subdistrict, Hui Kod District, Uthai Thani Province, West Thailand (Figs. 1–3) in December 2015. The area was separated into 3 regions in accordance to the ecosystems; namely:

1. Transparent running fast stream ecosystem (Fig. 2). The average width of the stream is about 10 m, average depth is less than 1 m, the bottom is a combination of sand, gravel and large rock.

2. Transparent running slow stream ecosystem (Fig. 3). The average width of the stream is about 15 m, average depth is about 1–2 m, the bottom is a combination of sand, large rock, clay and sandy mud, the stream is transparent and running slowly.

3. Pool of the headwater stream ecosystem. The average width of the stream is about 10–15 m, average depth is about 1–1.5 m, the bottom is a combination of clay and sandy mud, the area is transparent to turbid.

ACRONYMS. Standard length (SL)

RESULTS

Order CYPRINIFORMES Bleeker, 1859
Family CYPRINIDAE Cuvier, 1817

Danio albolineatus (Blyth, 1860)
Pearl danio

HABITAT. This species (Fig. 4) was found in the pool of the headwater stream and transparent running fast stream.

DISTRIBUTION. This species is known from Irrawaddy Basin and Salween Basin in Myanmar; Sumatra, Indonesia; Indochina, Laos, Mekong Basin and Maeklong drainages in Thailand.

THAI LOCAL NAME. Pla sel bai pai lek.

Rasbora paviana Tirant 1885
Sidestripe rasbora

HABITAT. This species (Fig. 5) was found in the pool of the headwater stream, transparent running fast stream and the main stream.

DISTRIBUTION. This species is known from Indonesia; Malaysia; Indochina, Mekong Basin, Chao

Phraya Basin and Maeklong Basins, northern Malay Peninsula in Thailand.

THAI LOCAL NAME. Pla sel kruiy.

Rasbora borapetensis Smith 1934
Blackline rasbora

HABITAT. This species was found in the pool of the headwater stream and transparent running fast stream.

DISTRIBUTION. This species is known from Indochina, Mekong Basin, Chao Phraya Basin and Maeklong Basins, northern Malay Peninsula in Thailand.

THAI LOCAL NAME. Pla sel hang dang.

Mystacoleucus marginatus (Valenciennes, 1842)
Indian river barb

HABITAT. This species (Fig. 6) was found in transparent slowly stream and pool of the headwater stream ecosystem.

DISTRIBUTION. This species is known from Myanmar to Indonesia.

THAI LOCAL NAME. Pla kee yok or Pla num lung.

REMARKS. This species is dominant in transparent slowly stream and pool of the headwater. In Thailand, *M. marginatus* can be found in many ecosystems such as reservoir and large running fast rivers (Kottelat, 1998; Petsut & Kulabong, 2015).

Barbodes rhombeus (Kottelat, 2000)
Waterfall barb

HABITAT. This species (Fig. 7) was found in transparent and running fast stream ecosystem.

DISTRIBUTION. This species is known from Mekong Basin, Chao Phraya Basin, Maeklong Basins, eastern Gulf of Thailand Drainages and peninsular Thailand.

THAI LOCAL NAME. Pla Ta pean num tok.

Neolissochilus stracheyi (Day, 1871)
Mahseer

HABITAT. This species (Fig. 8) was found in the

pool of the headwater stream and transparent running slow stream.

DISTRIBUTION. This species is known from Maeklong River, Chao Phraya River, Southeast Basin and Peninsular Thailand; Mekong Basin in Thailand, Laos, Cambodia and Viet Nam; Salween Basin, Thailand and Myanmar.

THAI LOCAL NAME. Pla plong.

REMARKS. This species is dominant in pool and slow stream. In nature, adult Mahseer groups inhabit pools and runs over gravel and cobble in slow hill stream but juveniles commonly can be found in or near rapids (Rainboth, 1996; Kottelat, 2001; Kunlapapuk & Kulabong, 2011).

Osteochilus vittatus (Valenciennes, 1842)
Bonylip barb

HABITAT. This species was found in transparent running fast stream to main stream.

DISTRIBUTION. This species is known from Myanmar; China; Sumatra, Java, Borneo in Indonesia; Mekong Basin, Chao Phraya Basin, Maeklong Basin, eastern Gulf of Thailand Drainages; Malay Peninsula.

THAI LOCAL NAME. Soi nok kaw.

Garra cambodgiensis (Tirant 1884)
Stonelapping minnow

HABITAT. This species (Fig. 9) was found in the transparent running fast stream.

DISTRIBUTION. This species is known from Mekong Basin, Chao Phraya Basin, Peninsula Thailand; Cambodia; Vietnam.

THAI LOCAL NAME. Pla lia hin

Garra nasuta (McClelland, 1838)
Stonelapping minnow

HABITAT. This species (Fig. 10) was found in the transparent running fast stream.

DISTRIBUTION. This species is known from India; Myanmar; South China and Indochina.

THAI LOCAL NAME. Pla mood

Family BALITORIDAE Swainson, 1839

Schistura desmotes (Fowler, 1934)

Loach

HABITAT. This species (Fig. 11) was found in the transparent running fast stream.

DISTRIBUTION. This species is known from Chao Phraya Basin, MaeKlong Basin in Thailand; Malay Peninsula. India; Myanmar; South China and Indochina.

THAI LOCAL NAME. Pla mood

REMARKS. This species is dominant in this study area. In Thailand, can predominantly be found in fast flowing streams over gravel substrate and, sometimes, in pools of hill areas.

Homalopteroides smithi (Hora, 1932)

Gecko fish

HABITAT. This species (Fig. 12) was found in the transparent running fast stream.

DISTRIBUTION. This species is known from Indochina to Malaysia Peninsula; Indonesia.

THAI LOCAL NAME. Pla jing jok.

REMARKS. This species is dominant in rapid stream ecosystem.

Pseudohomaloptera cf. leonardi (Hora, 1941)

Gecko fish

HABITAT. This species (Fig. 13) was found in the transparent running fast stream.

DISTRIBUTION. This species is known from Central, East, South Thailand; Malaysia

THAI LOCAL NAME. Pla jing jok.

REMARKS. In Thailand, the taxonomic status of this taxon is still unclear.

Family COBITIDAE Swainson, 1838

Lepidocephalichthys berdmorei (Blyth, 1860)

Burmese loach

HABITAT. In this study, only one specimen was found in the transparent running fast stream and the pool of the headwater stream.

DISTRIBUTION. This species is known from India;

Bangladesh; Myanmar; China; Thailand; Laos; Peninsular Malaysia.

THAI LOCAL NAME. Pla eed.

Order SILURIFORMES Cuvier, 1817

Family BAGRIDAE Bleeker, 1858

Batasio tigrinus Ng et Kottelat, 2001

Hill stream bagrid catfish

HABITAT. In this study, only one specimen was found in the transparent running fast stream over gravel substrate.

DISTRIBUTION. This species is known from MaeKlong Basin and West Thailand.

THAI LOCAL NAME. Pla ka yang pu kao

Pseudomystus siamensis (Regan, 1913)

Asian Bumblebee Catfish

HABITAT. In this study, only one specimen was found in the transparent running fast stream over gravel substrate.

DISTRIBUTION. This species is known from Mekong Basin, Chao Phraya Basin, MaeKlong Basins, eastern Gulf of Thailand Drainages and peninsular Thailand.

THAI LOCAL NAME. Pla ka yang hin.

Hemibagrus nemurus (Valenciennes, 1840)

Yellow Catfish

HABITAT. In this study, only one specimen was found in the transparent slow stream.

DISTRIBUTION. This species is known from Indochina to Indonesia.

THAI LOCAL NAME. Pla kod luang.

Order BELONIFORMES L.S. Berg, 1937

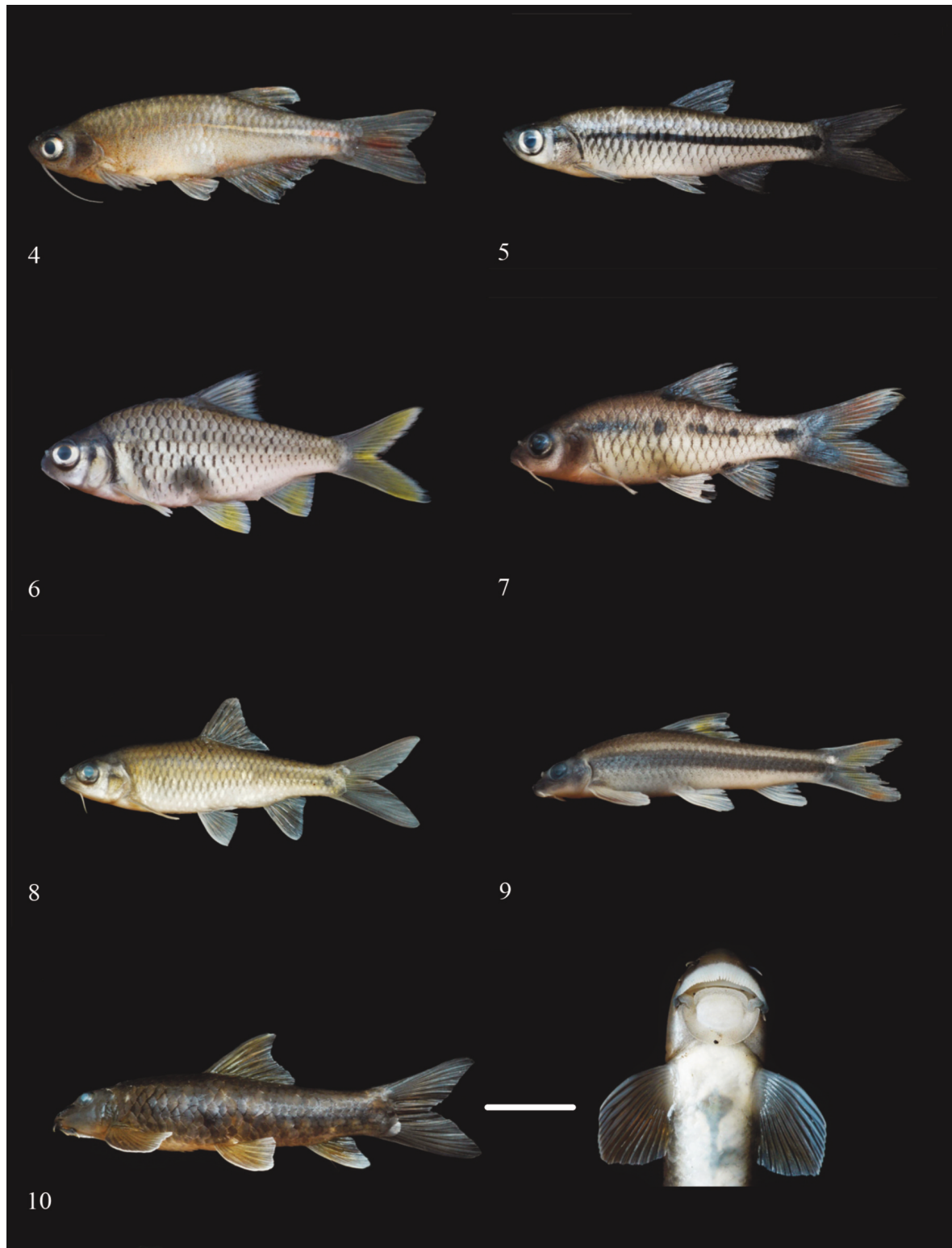
Family BELONIDAE Bonaparte, 1835

Xenentodon cancila (F. Hamilton, 1822)

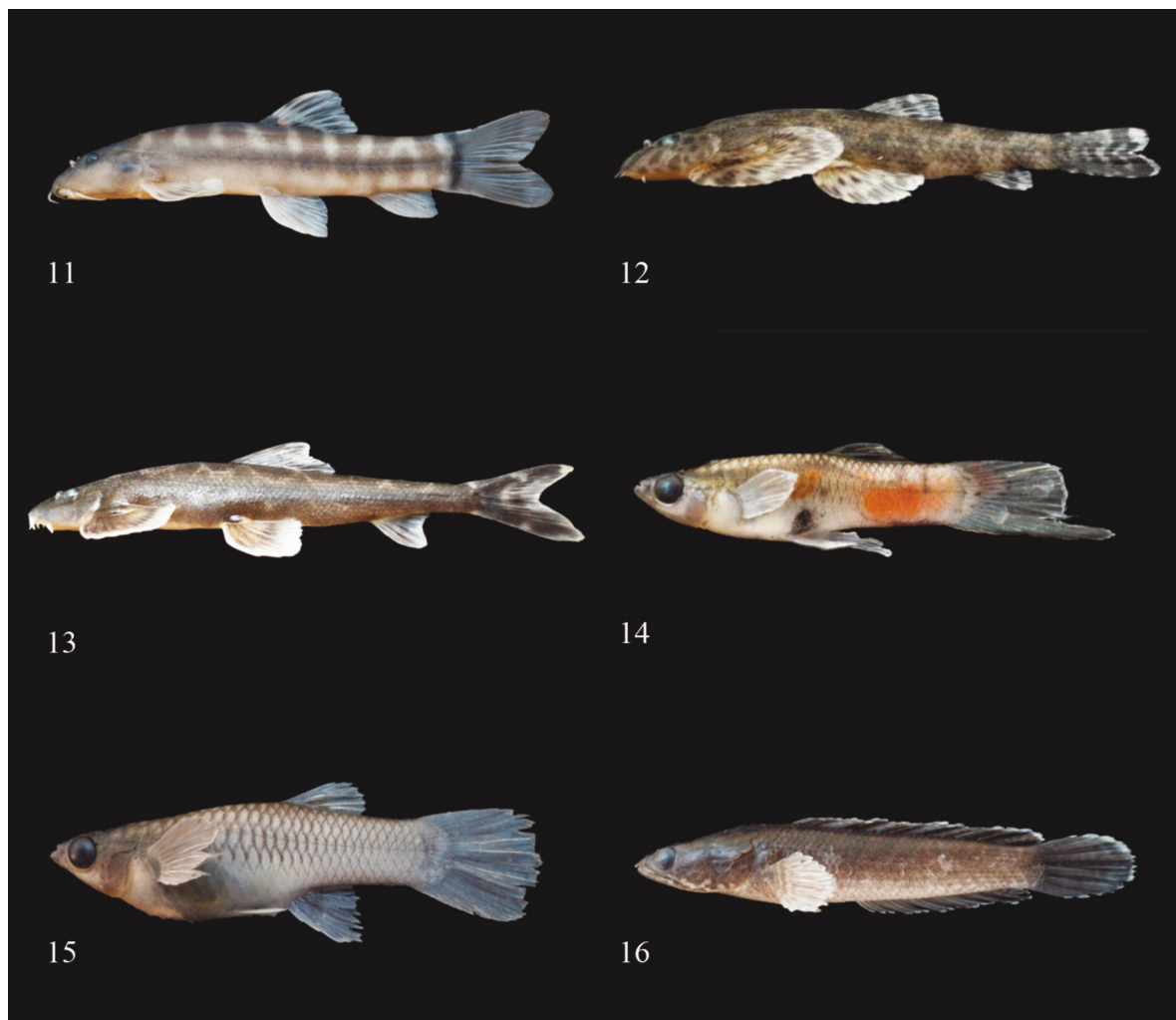
Freshwater garfish

HABITAT. In this study, only one specimen was found in the transparent slow stream.

DISTRIBUTION. This species is known from India



Figures 4–10. Freshwater fish in Cyber Stream, outside Huai Kha Khaeng Wildlife Sanctuary, West Thailand. Figure 4. *Danio albolineatus*, 31 mm SL. Figure 5. *Rasbora paviana*, 51 mm SL. Figure 6. *Mystacoleucus marginatus*, 63 mm SL. Figure . *Puntius rhombeus*, 25 mm SL. Figure 8. *Neolissochilus stracheyi*, 78 mm SL. Figure 9. *Garra cambodgiensis*, 38 mm SL. Figure 10. *Garra nasuta*, 73 mm SL and mouth of *Garra nasuta*.



Figures 11–16. Freshwater fish in Cyber Stream, outside Huai Kha Khaeng Wildlife Sanctuary, West Thailand. Figure 13. *Schistura desmotes*, 63 mm SL. Figure 14. *Homalopteroides smithi*, 35 mm SL. Figure 15. *Pseudohomaloptera* cf. *leonardi*, 70 mm SL. Figure 16. *Poecilia reticulata*, male, 23 mm SL. Figure 17. *Poecilia reticulata*, female, 26 mm SL. Figure 18. *Channa* cf. *gachua*, 133 mm SL.

Sub-continent to Southeast Asia. Introduced in America.

THAI LOCAL NAME. Pla kra tung hav.

Order SYNBRANCHIFORMES Bonaparte, 1838
Family MASTACEMBELIDAE Bleeker, 1870

Mastacembelus favus Hora, 1924
Tire track eel

HABITAT. This species was found in the pool of the headwater stream and transparent running slow stream.

DISTRIBUTION. This species is known from Thailand to Malay Peninsula.

THAI LOCAL NAME. Pla kra ting.

Order CYPRINODONTIFORMES L.S. Berg, 1940
Family POECILIIDAE Bloch et Schneider, 1801

Poecilia reticulata Peters, 1859
Guppies

HABITAT. This species (Figs. 14, 15) was found in the pool of the headwater stream.

DISTRIBUTION. This species is native to South America; introduced to many different countries in the world.

THAI LOCAL NAME. Pla hang nok yung.

REMARKS. Alien species in Thailand.

Order PERCIFORMES Bleeker, 1859
Family AMBASSIDAE Klunzinger, 1870

Parambassis siamensis (Fowler, 1937)
Siamese glassfish

HABITAT. This species was found in the pool of the headwater stream and transparent running slow stream.

DISTRIBUTION. This species is known from Indochina to Malay Peninsula; introduced in Singapore and Indonesia.

THAI LOCAL NAME. Pla pan ghav.

Family NANDIDAE Bleeker, 1852

Pristolepis fasciata (Bleeker, 1851)
Malayan leaffish

HABITAT. This species was found in the pool of the headwater stream and transparent running slow stream.

DISTRIBUTION. This species is known from Myanmar to Indonesia.

THAI LOCAL NAME. Pla mor chang yab.

Channa* cf. *gachua (Hamilton, 1822)
Dwarf snakehead

HABITAT. This species (Fig. 16) was found in running slow stream and the pool of the headwater stream.

DISTRIBUTION. This species is known from Indian Sub-continent to Southeast Asia.

THAI LOCAL NAME. Pla gung.

REMARKS. In Thailand, the taxonomic status of this taxon is still unclear, being reported from time to time as *C. gachua* or *C. limbata*.

CONCLUSIONS

In this work a total of 10 families and 22 species of hill stream fishes were recorded from Upper Cyber Stream, outside Huai Kha Khaeng Wildlife Sanctuary, West Thailand. In particular, 1 alien species, *Poecilia reticulata* is reported for Upper Cyber Stream and two species, *Pseudohomaloptera* cf. *leonardi* and *Channa* cf. *gachua* still have an unclear taxonomic status.

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REFERENCES

- Faculty of Forestry. 1989. Master Plan of Huai Kha Khaeng Wildlife Sanctuary. Kasetsart University Thailand.
- Forest Research Center, 1997. Application of Remote Sensing and GIS for Monitoring Forest Land Use Change in Huai Kha Khaeng Wildlife Sanctuary. Faculty of Forestry. Kasetsart University, Thailand.
- Kottelat M., 1998. Fishes of the Nam Theun and Xe Bangfai basins, Laos, with diagnoses of twenty-two new species (Teleostei: Cyprinidae, Balitoridae, Cobitidae, Cobiidae and Odontobutidae). Ichthyological Exploration of Freshwaters, 9: 1–128.
- Kottelat M., 2001. Fishes of Laos. WHT Publications, Colombo, 198 pp.
- Kunlapapuk S. & Kulabong S., 2011. Breeding, Nursing and Biology of Thai Mahseer (*Tortamboides*) in Malaysia: An Overview. Journal of Agricultural Science and Technology, A1: 1214–1216.
- Petsut N. & Kulabong S., 2015. Field survey of freshwater fishes in Upper Wang River, North Thailand. Biodiversity Journal, 6: 513–516.
- Rainboth W.J., 1996. Fishes of the Cambodian Mekong. FAO Species Identification Field Guide for Fishery Purposes. FAO, Rome, 265 pp.

- Sukmasuang R., 2009. Population Density of Density of Asian Elephant in Huai Kha Khaeng Wildlife Sanctuary. Thai Journal of Forestry, 28: 40–50.
- Simcharoen A., Savini T., Gale G.A., Roche E., Chimchome V. & Smith J.L.D., 2014. Ecological factors that influence sambar (*Rusa unicolor*) distribution and abundance in western Thailand: implications for tiger conservation. Raffles Bulletin of Zoology, 62: 100–106
- Vidthayanon C., Karnasuta J. & Nabhitabhata, 1997. Diversity of freshwater fishes in Thailand. Office of Environmental and Planning, Bangkok, 120 pp.
- Royal Irrigation Department, 2012. The Effect of Sedimentation to Reservoir Capacity; A Case Study of Huai Khunkaew Reservoir, Huai Khot District, Uthai Thani Province. Office of water management and hydrology, Royal Irrigation Department, 49 pp.
- WEFCOM, 2004. GIS Database and its Applications for Ecosystem Management. The Western Forest Complex Ecosystem Management Project, Department of National Park, Wildlife, and Plant Conservation, Bangkok, Thailand, 228 pp.