

NEW MOSQUITO RECORDS FOR NEPAL

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ABSTRACT. Thirteen mosquito species of the genera *Aedes*, *Culex*, *Mimomyia* and *Uranotaenia* are reported from Nepal for the first time. Taking into account taxonomic changes, 70 species of culicine (i.e., non-anopheline) mosquitoes are now known from Nepal.

INTRODUCTION

In 1965, Joshi et al. published a list of 59 species of culicine, sabethine and toxorhynchine mosquitoes occurring in Nepal. This original list has been reduced by 2 with the synonymizing of *Cx. fuscifurcatus* Edwards under *Cx. jacksoni* Edwards (Sirivanakarn 1976) and by discounting the doubtful record of *Cx. minutissimus* (Theobald) (Sirivanakarn 1977). Additional collections made, mainly by the senior author, have resulted in the discovery of 13 species, one genus, *Mimomyia* Theobald and one subgenus, *Verrallina* Theobald, new to Nepal, which are being reported here for the first time.

One event which increased interest in the culicine fauna of Nepal was the appearance of Japanese encephalitis (Khatri et al. 1983), a disease transmitted primarily by mosquitoes of the genus *Culex*. Outbreaks have occurred periodically since 1978, and surveys have been conducted in the affected districts of the terai belt, the southern part at low elevation bordering India.

In this connection, the authors visited an endemic area in Tarahara, Sunsari District, Koshi Zone, from November 23 to December 1, 1987, to make intensive collections in and around 2 Nepal Government Field Stations, the Tarahara Agricultural Farm, Ministry of Agriculture, and the Herbal Farm, Department of Medicinal Plants, Ministry of Forests and Soil Conservation. Nightly hand aspirator collections in pigeries and trapping with a CDC miniature light trap without dry ice on the 2 farms resulted in the discovery of 5 species new to Nepal, as noted below.

Unless otherwise indicated, Barraud (1934) was used during the identifications, and voucher

specimens have been deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC, USA.

DESCRIPTION OF LOCALITIES

The sites from which specimens constituting new country records for Nepal were collected have some interesting and significant topographical features. They are as follows (see Fig. 1):

Musepani, Haldu Khal and Badaipur are all villages in Kanchanpur District, located in the extreme southwestern corner of the country bordering India. Musepani and Haldu Khal are situated in forest clearings near the foothills of the Churia Range (southernmost low range of mountains in the Himalaya Mountain chain). They are surrounded by limited areas of rice fields. Some corn and vegetables are also grown there. Haldu Khal was just recently established. Badaipur, on the other hand, is 12 km south of the Churia Range in open plains surrounded by extensive rice culture. The Sukla Phanta National Park, a forest preserve, is just 3 km away.

Kailali District borders Kanchanpur to the east. The village of Geeta Gate is 6 km north of the district's largest town, Dhanghari Bazar, and is in open plain terai supporting rice growing. However, the collections were made at the Kailali military barracks near Geeta Gate in a small patch of forest.

Mahottari District is located eastcentrally and the village of Pipara is along the Janakpur-Jaleswor highway in the open terai. It is semi-rural and completely surrounded by rice fields.

Tarahara is a relatively small town on the main highway from Biratnagar to Dharan Bazar. Within its borders is the large Tarahara Agriculture Farm of the Nepal Ministry of Agriculture. It has diverse agricultural research projects, including several aquaculture fish ponds, rice and grain plots and animal husbandry, mostly for raising swine. An extensive tropical hardwood forest begins less than 1 km to the north. At its fringe is located the Herbal Farm of the Department of Medicinal Plants, Nepal Ministry of Forests and Soil Conservation. It is a low, swampy area, partially arable, supporting the cultivation of medicinal herbs. Mosquito collections were made at both of these government facilities.

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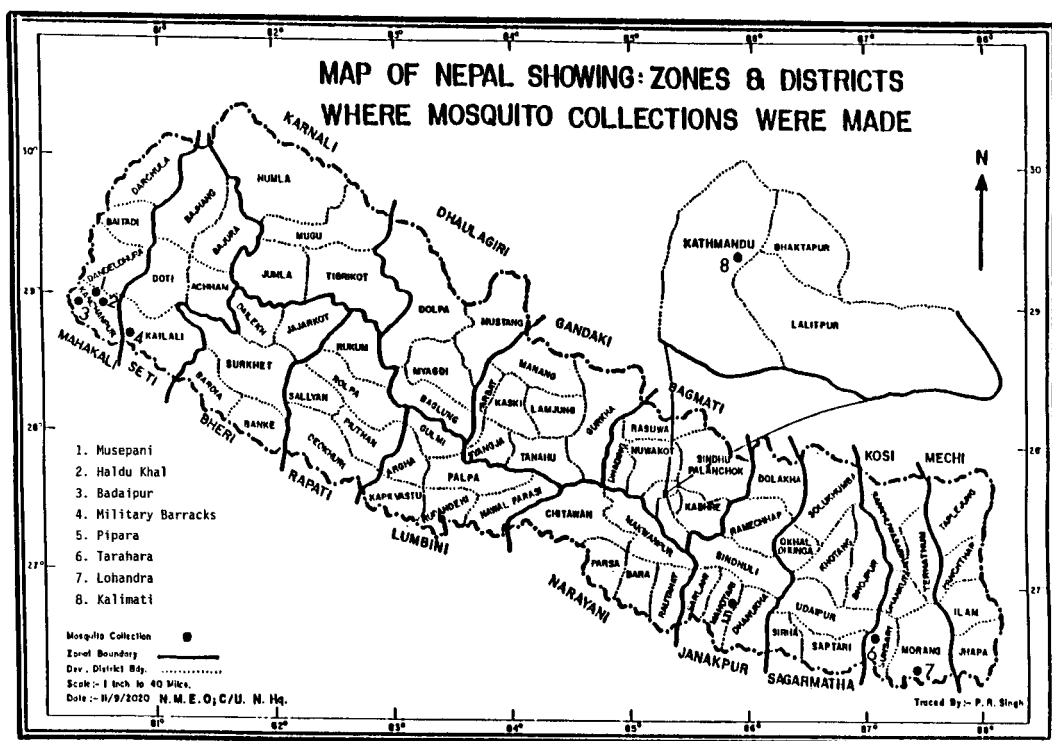


Fig. 1. Map of Nepal showing regions, zones, and districts and localities from which the mosquitoes were collected as new country records.

Lohandra is a village in Morang District, Eastern Nepal, 11.3 km east of Biratnagar, the country's second largest city and District headquarters. Lohandra is surrounded by cultivated rice fields in open terai.

Kalimati is a suburb of Kathmandu, the country's capital. It is completely urban but most of the land not occupied by buildings is used for vegetable gardens. The gardens near where *Cx. hutchinsoni* was collected are irrigated by highly polluted water from a nearby stream. There are ground pools in the vicinity.

NEW COUNTRY RECORDS

Aedes (Aedimorphus) pallidostriatus (Theobald). Two females were collected in Pipara, Mahottari District, Janakpur Zone, July 7, 1984, resting in a cattle shed; 14 females and 2 males in Haldu Khal, Kanchanpur District, Mahakali Zone, August 3, 1986, feeding on cattle at night; 16 females and 7 males in Musepani, Kanchanpur District, Mahakali Zone, August 13, 1987, resting on vegetation near human dwellings; and 17 females in Lohandra, Morang District, Koshi Zone, July 12, 1987, inside human dwellings. Its identity was confirmed by B. A. Harrison, Walter Reed Biosystematics Unit, Smithsonian Institution, Washington, D.C. (*in litt.*).

Aedes (Aedimorphus) pipersalatus (Giles). Three females were collected in Badaipur, Kanchanpur District, Mahakali Zone, August 14, 1987, feeding on carabao at night; 8 females and 3 males in Musepani, Kanchanpur District, Mahakali Zone, August 25, 1987, attracted to humans diurnally. Identifications were made using Reinert (1973).

Aedes (Aedimorphus) punctifemoris (Ludlow). Two females were collected at the military barracks in Geeta Gate, Kailali District, Seti Zone, Sept. 10, 1983, feeding on pigs; 22 females in Haldu Khal, Kanchanpur District, Mahakali Zone, August 13, 1987, caught feeding on cattle at night; 7 females in Musepani, Kanchanpur District, Mahakali Zone, August 13, 1987, attracted to humans and resting on vegetation near human dwellings. Identifications were made using Reinert (1973).

Aedes (Christophersiomysia) thomsoni (Theobald). One female was collected at the military barracks in Geeta Gate, Kailali District, Seti Zone, Sept. 10, 1983, feeding on pigs. Its identity was confirmed by Dr. R. Rajagopal, National Institute of Communicable Diseases, Delhi, India (*in litt.*).

Aedes (Verrallina) indicus (Theobald). One female was collected in the military barracks in Geeta Gate, Kailali District, Seti Zone, Sept. 30,

1987, attracted to humans at night. This record represents the first time a species of the subgenus *Verrallina* Theobald was taken in Nepal. The identification was made by J. F. Reinert.

Culex (Culex) edwardsi Barraud. Two females were collected at the Herbal Farm, Department of Medicinal Plants, Ministry of Forests and Soil Conservation, Tarahara, Sunsari District, Koshi Zone, Nov. 27, 1987, captured in a CDC miniature light trap located at the edge of a tropical forest; 2 females, at Tarahara Agricultural Farm, Tarahara, Sunsari District, Koshi Zone, Nov. 29, 1987, in a CDC light trap hung in a piggery. Identifications were made using Sirivanakarn (1976).

Culex (Culex) hutchisoni Barraud. One female was collected in Kalamati, Kathmandu District, Bagmati Zone, August 12, 1986, attracted to humans indoors at night in a completely urbanized area where vegetable gardens surrounded the houses. Its identification was made using Sirivanakarn (1976).

Culex (Culiciomyia) nigropunctatus Edwards. One male was collected at the Herbal Farm, Department of Medicinal Plants, Ministry of Forests and Soil Conservation, Tarahara, Sunsari District, Koshi Zone Nov. 26, 1987, captured in a CDC miniature light trap hanging over a ditch in the fringe of the forest. Its identification was made using Bram (1967).

Mimomyia (Etorleptomyia) luzonensis (Ludlow). One female was collected at Tarahara Agricultural Farm, Ministry of Agriculture, Tarahara, Sunsari District, Koshi Zone, Nov. 25, 1987, at night feeding on pigs. Its identification was made using Mattingly (1957).

Uranotaenia (Pseudoficalbia) recondita Edwards. One female was collected at the Herbal Farm, Department of Medicinal Plants, Ministry of Forests and Soil Conservation, Tarahara, Sunsari District, Koshi Zone, Nov. 26, 1987, in a CDC miniature light trap hanging over a ditch at the fringe of the tropical forest. Barraud (1934) was used for the identification.

Uranotaenia (Pseudoficalbia) stricklandi Barraud. One female was collected in Haldu Khal, Kanchanpur District, Mahakali Zone, August 19, 1986, resting in a cattle shed at night. Its identification was made using Peyton (1977).

Uranotaenia (Uranotaenia) macfarlanei Edwards. Eight females were collected at the Herbal Farm, Department of Medicinal Plants, Ministry of Forests and Soil Conservation, Tarahara, Sunsari District, Koshi Zone, Nov. 25 to 28, 1987 in a CDC miniature light trap hanging over a ditch at the fringe of the forest. Barraud (1934) was used for its identification.

Uranotaenia (Uranotaenia) spp. near testacea Theobald. Three females and one male were

collected at the Herbal Farm, Department of Medicinal Plants, Ministry of Forests and Soil Conservation, Tarahara, Sunsari District, Koshi Zone, Nov. 26, 1987, in a CDC miniature light trap hanging over a ditch in the fringe of the tropical forest. These specimens belong to an undescribed species. Other specimens of this taxon have been collected in India (Assam), Burma, Thailand, Kampuchea, Vietnam, East and West Malaysia (E. L. Peyton, personal communication).

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