

FISHES OF THE GENUS *AKYSIS* BLEEKER FROM INDIA (TELEOSTEI: AKYSIDAE)W. Vishwanath¹, I. Linthoingambi² and L. Juliana³^{1,3} Department of Life Sciences, Manipur University, Canchipur, Manipur 795003, India
Email: ¹vnath54@yahoo.co.in; ²ilinthoi@yahoo.com

plus web supplement of 1 page

ABSTRACT

Akysis prashadi is redescribed and reported from India. *Laguvia manipurensis*, whose generic placement was disputed has been assigned to genus *Akysis* and is redescribed. *A. prashadi* is distinct in having comparatively slender caudal peduncle, skin with tubercles all over body, lateral line incomplete while *A. manipurensis*, in having deeper body, deep caudal peduncle, skin sparsely granulated and lateral line complete.

KEYWORDS

Akysis, fish, India, new record, redescription

Fishes of the genus *Akysis* are diagnosed by having tough leathery skin covered with tubercles which are arranged in longitudinal rows along sides; the anterior margin of the pectoral spine with a notch visible dorsally and the nasals with expansions beyond the canal-bearing region; no palatal teeth (de Pinna, 1996). Ng and Kottelat (1998) reported the genus to have two groups based on the morphology of the mouth and the nostrils: pseudobagarius-group and variegatus-group. With the description of *A. longifilis* by Ng (2006), 30 species of the genus are known so far including *A. prashadi* Hora which was described from Indawgi lake, Upper Burma, Irrawady basin, Myanmar.

A collection of fishes from Lokchao river, Manipur (draining into the Yu river, a tributary of the Chindwin) obtained specimens of *Akysis prashadi*. It is recorded here for the first time from India. A detailed redescription of the species is provided. Further, Arunkumar (2000) described *Laguvia manipurensis* from Lairok maru, near Moreh, India (Chindwin basin). Ng & Kottelat (2005), considered *Laguvia* Hora to be a junior synonym of genus *Hara* Blyth and also assigned species previously under *Laguvia* to other genera. Now, Thomson & Page (2006) put *Hara* Blyth as a synonym of *Erethistes* Muller & Troschel. Ng & Kottelat (2005) and Thompson & Page (2006) could not assign *L. manipurensis* to any erethistid genera based on the original description only. A close examination of Arunkumar's species reveals that it is an *Akysis* species and is redescribed herein as *A. manipurensis*. With this inclusion, the genus has 31 species.

MATERIALS AND METHODS

The specimens are preserved in 5% formalin and are deposited in the Manipur University Museum of Fishes (MUMF). Measurements follow Ng & Lim (1995). Fin rays were counted under transmitted light using a stereo zoom binocular microscope, using the terminology of Hubbs & Lagler (1947) and details of tubercles on skin and of nostrils

were photographed using a digital camera attached to the microscope. Gill-raker counts were made using the method and terminology of Roberts (1992). Vertebral counts follow the terminology of Roberts (1994). Measurements are made point to point with a dial calliper to the nearest 0.1mm and expressed in percentages of standard length (SL) and head length (HL). Proportional measurements are given as mean and range in parentheses. For bilaterally occurring characters of paired fin rays, measurements were taken in the left side. Number in parentheses following a particular count is the number of examined specimens of that count. Skull, vertebrae and gill-rakers were examined after staining with alizarin red S following Hollister (1934).

AKYSIS MANIPURENSIS (ARUNKUMAR, 2000)(Image 1^w)

Laguvia manipurensis Arunkumar, 2000. (new species). - Britz, R. & Ferraris, 2003 (status discussed).

Material examined

13.iii.1998, 7, Lairok Maru stream near Moreh, Manipur, India, 48.0mm SL, coll. L. Arunkumar, (MUMF 3001/1A-Holotype); 12.iii.1998, Khuga river, Churachandpur district, Manipur, India, 44.3-48.4mm SL, coll. H. Lilabati (MUMF 3061-3065); 15.iv.2000, Lokchao river, Moreh, 47.0mm SL, coll. L. Shakuntala (MUMF 7012).

Distribution

India: Lairok maru, Lokchao river near Moreh and Khuga river (all Chindwin drainage in Manipur).

Diagnosis

Akysis manipurensis is characterised by the following combination of characters: arrangement of tubercles: minute tubercles arranged irregularly in front of and one or two longitudinal rows behind dorsal fin, a row of three or four tubercles on the outer margin of operculum and sparsely on head, a few of them arranged haphazardly behind pectoral fin; three fontanelles on head; and 3+6 gill-rakers on the first branchial arch; deep caudal peduncle (length 20.6-21.2 & height 9.3-10.0% SL); caudal fin with equal lobes.

Description

Morphometric data is in Table 1 and comparison with *A. prashadi* is in Table 2. Body stumpy, tapering behind. Abdomen rounded. Caudal peduncle almost one and a half as long as its height. Skin not covered with roundish granules or tubercles

^w See Images 1^w & 2^w in the web supplement at www.zoosprint.org

Key to the species of *Akysis* of India

- Caudal fin with lower lobe longer than upper, tubercles prominent and arranged in 5-8 longitudinal rows on either side of body *Akysis prashadi*
- Caudal fin with equal lobes, tubercles small and not arranged in rows *Akysis manipurensis*

Table 1. Morphometric comparison of *Akysis manipurensis* (Arunkumar) and *Akysis prashadi* Hora in % of SL except SL in mm.

Characters	<i>A. manipurensis</i> (Arunkumar) MUMF 3061/5 MUMF 3001/1A	<i>A. prashadi</i> Hora MUMF 3066/8, MUMF 3067/24 Type ZSI F 10873/1
Standard length (SL)	42.4-48.4	37.2-48.5
Depth of body	25.3 (24.9-25.7)	22.7 (21.0-26.3)
Head length	22.1 (21.3-23.1)	23.3 (23.1-25.5)
Height of head (at occiput)	20.8 (18.3-22.9)	17.5 (16.3-19.5)
Height of head (at eye)	13.0 (11.3-14.0)	12.6 (11.3-13.4)
Snout length	8.5 (7.8-9.2)	9.1 (7.3-9.7)
Eye diameter (ED)	2.2 (1.7-2.6)	2.2 (1.9-2.7)
Inter-orbital space (IOS)	8.9 (8.1-9.4)	8.9 (7.6-9.4)
Length of caudal peduncle (LCP)	20.9 (20.6-21.2)	17.4 (16.5-18.4)
Height of caudal peduncle (HCP)	9.6 (9.3-10.0)	8.7 (7.7-9.8)
Pre-dorsal length	33.7 (32.6-34.2)	33.1 (29.4-36.0)
Post dorsal length	61.6 (49.2-68.2)	49.7 (36.0-65.0)
Pre-pelvic length	52.5 (51.2-55.0)	51.1 (49.5-54.1)
Pre-anal length	66.4 (59.0-70.0)	68.9 (65.3-71.5)
Pre-anus length	60.3 (59.0-61.1)	59.4 (58.1-62.3)
Inter-narial space	7.2 (6.3-8.1)	8.3 (8.3-10.1)
Inter-nostril space	3.3 (2.8-3.5)	3.4 (2.9-3.9)
Gape width	12.3 (12.0-12.7)	13.3 (11.3-15.4)
Maximum head width (MHW)	23.4 (22.4-24.5)	28.8 (26.0-30.1)
Body width (dorsal origin)	21.2 (20.7-21.5)	20.5 (18.7-22.5)
Body width (at anal origin)	12.1 (11.1-12.9)	10.3 (8.3-13.0)
Dorsal fin base length	14.6 (13.2-15.5)	15.4 (13.0-16.1)
Dorsal fin height	16.2 (15.7-16.9)	17.5 (14.2-20.5)
Length of adipose fin base	20.6 (18.6-21.8)	20.0 (17.7-21.2)
Inter-dorsal space	15.5 (12.9-17.2)	18.7 (14.7-20.7)
Anal fin base length	13.5 (12.6-14.2)	15.3 (13.8-15.9)
Pectoral fin length	23.7 (21.9-25.9)	24.6 (23.1-27.6)
Pelvic fin length	13.7 (12.4-14.6)	15.2 (13.8-15.9)
Length of upper caudal lobe	20.9 (19.6-21.8)	22.7 (20.8-24.4)
Length of lower caudal lobe	22.0 (19.6-24.9)	23.0 (20.7-24.4)
Length of maxillary	30.6 (26.2-34.7)	29.7 (20.6-39.0)
Length of mandibular (ext.)	23.3 (21.3-26.0)	23.2 (19.6-29.2)
Length of mandibular (int.)	15.6 (14.6-16.3)	15.0 (12.6-19.6)
Length of nasal	17.8 (14.7-19.8)	18.9 (16.7-23.1)

on the general body surface except in the opercular region and behind pectoral fin. Tubercles behind pectoral fins prominent and arranged haphazardly. Head depressed, without prominent ridges, covered by soft skin. Three small fontanelles on dorsum of head. Eyes small, subcutaneous and dorsally situated. Mouth sub-terminal, transverse, moderate width, and slightly overhung by the upper jaw. Lips fleshy, labial groove widely interrupted. On the lower jaw, the villiform tooth patch is slightly grooved in the middle. Inter-orbital space greater than snout length. Anterior nostril tubular, widely separated from the posterior one, which bears a nasal barbel. Gill openings moderate, widely separated from each other and extending to above base of pectoral fin. Gill membranes united with each other and with isthmus. Barbels four pairs. Branchiostegal rays 6 (1), vertebrae 16+17 (1). No adhesive apparatus present. Lateral line incomplete extending up to halfway distance between pelvic and anal fins.

Fins: Dorsal fin rays I, 4, i (1) or I, 5 (6); pectoral fin rays

Table 2. Comparison of *Akysis manipurensis* (Arunkumar) with *Akysis prashadi* Hora

Characters	<i>A. manipurensis</i> (Arunkumar) MUMF 3061/5 MUMF 3001/1A Mean (range)	<i>A. prashadi</i> (Hora) MUMF 3066/8, Type ZSI F 10873/1 Mean (range)
In % of Head Length		
Height of head at occiput	94.2 (76.2-107.8)	76.5 (73.0-79.6)
Height of head at eye	59.1 (52.5-66)	54.0 (49.5-57.8)
Snout length	38.2 (35.1-39.6)	37.0 (34.3-41.9)
Eye diameter	10.0 (9.6-12.1)	10.5 (8.1-12.7)
Maxillary barbell	136.8 (123.3-150)	150.4 (114.0-183.3)
Outer mandibular barbel	107.0 (100.0-112.9)	129.0 (84.9-130.4)
Inner mandibular barbel	70.8 (67.7-74.8)	71.3 (54.7-86.3)
Nasal barbel	80.1 (68.9-89.4)	86.9 (72.1-100.9)
Other ratios		
Gape width (% MHW)	52.6 (51.3-53.7)	46.5 (41.4-54.5)
ED (% Snout length)	26.2 (19.0-30.8)	24.9 (26.3-37.1)
ED (% IOS)	24.9 (19.0-32.4)	25.3 (20.0-35.1)
LCP / HCP	1.8 (1.6-2.1)	1.6 (1.4-1.8)

I, 8 (4) or I, 9 (3); pelvic fin rays i, 4 (5) or i, 5 (2); anal fin rays iii, 5, i (7); and caudal fin rays 7/6 (1) or 7/7 (6). Dorsal fin inserted nearer to snout than adipose fin above mid-length of pectoral fin; adipose dorsal moderate, not confluent with rayed dorsal and caudal fins. Paired fins inserted horizontally. Pectoral fin with a smooth, strong spine longitudinally grooved on the anterior side. Pelvic fin reaching beyond anal opening extending midway between anus and anal fin. Pectoral and dorsal fin covered with thick skin. Caudal fin deeply forked, with equal lobes.

Sexual dimorphism: Males possess a short conical genital papilla behind anus. Females with a flat papilla, grooved radially at the opening.

Colour: Head brownish, speckled with irregular light markings. Body dark in front of ventral fins dorsally. This area is joined by another dark patch above anal fin by a longitudinal band and in the same way; another dark band connects this area with a broad black mark at the base of caudal fin. Belly and abdomen pale, the proximal part of dorsal and adipose fins black. Pectoral, ventral and anal fins are streaked with black markings. A black band stretches across the middle of caudal fin. Barbels variegated with black.

***AKYSIS PRASHADI* Hora**
(Image 2^w)

Akysis variegatus variegatus, Prashad & Mukerji, 1929 (new subspecies)

Akysis prashadi Hora, 1936 (description of *A. variegatus variegatus* as new species)

Material examined

18-31.x.1926, 35, Southern end of Indawgyi Lake and

along W. shore near Lonton village, Myitkyina Dt, Burma; coll. B. Chopra, (ZSI-F 10873/1-type); 14-16.vi.2000, 8, Lokchao River, Manipur, India; 38.9-50.9mm SL, coll. K. Nebeshwar & M. Shantakumar (MUMF 3066); 2-4.iv.2004, 24, same locality, 40.2-49.8mm SL, W. Vishwanath & party (MUMF3067)

Diagnosis

Akysis prashadi is characterised by the following combination of characters: 5 to 8 longitudinal rows of tubercles on each side of head and body; gill-rakers 1+6 (1) or 1+8 (1) or 2+8 (1) on the first gill-arch; slender caudal peduncle (length 16.5-18.4 and height 7.7-9.8% SL); caudal fin with the lower lobe being slightly longer than upper.

Description

Head depressed without prominent ridges, covered by soft skin with three median fontanelles. Eyes small, dorsally situated and subcutaneous. Anterior nostril tubular, widely separated from the posterior one by a distance of 3.4 (2.9-3.9) % of SL., which bears a long nasal barbel. Gape width moderate, transverse and slightly overhung by the upper jaw, lips fleshy. Pre-maxillary villiform teeth in two patches, not exposed when mouth is closed, palate edentate. Occipital process not reaching basal bone of dorsal fin. Gill-opening moderate, gill-membranes united with each other and with isthmus. Air bladder with thin walls. Barbels four pairs. Branchiostegal rays 6 (2) or 7 (1). Vertebrae 15 + 17 = 32 (2) or 16 + 17 = 33 (1). Gill-rakers 1+6 (1) or 1+8 (1) or 2+8 (1) on the first gill-arch. No adhesive apparatus. Lateral line incomplete extending upto end of anal fin base.

Fins: ray counts: dorsal I, 3,i (1) or I, 4,i (30) or I, 5 (1); pectoral I, 7 (1) or I, 8 (31); ventral i, 4, i (25) or i, 5 (7); anal ii, 5 (2) or ii, 7 (1) or iii, 3 (1) or iii, 4 (1) or iii, 6, i (10) or iii, 7, i (3); or iii, 5, i (14); caudal 7/6 (2) or 7/7 (30). Dorsal fin inserted nearer to adipose than snout, adipose dorsal distinct not confluent with the rayed dorsal and caudal fins. Paired fins inserted horizontally. Pectoral fin with a smooth, strong spine longitudinally grooved on the anterior side. Pelvic fin reaching beyond anal opening extending midway between anus and anal fin. Pectoral and dorsal fin covered with thick skin. Caudal fin lower lobe longer than upper lobe.

Sexual dimorphism: Males possess a short conical genital papilla behind anus. Females with a flat papilla, grooved radially at the opening.

Colour: Dorsal part of head dark brown speckled with irregular light markings. Body in front of ventral fin dark, which is joined by another dark area above anal fin by a small longitudinal band. Similarly a dark patch is found at the base of caudal fin, the latter of also has a band across its lobes. Abdomen pale. Each of the pectoral, pelvic and anal fins has a single band across them. Barbels variegated with dark brown.

Distribution: India: Lokchao River, a tributary of the Chindwin, Manipur. Myanmar: Indawgyi Lake and round about Kamaing in the Myitkyina District, Myanmar.

DISCUSSION

Akysids including Parakysidae of Roberts (1989) differ

from Erethistids and in having the nostrils on each side of the head widely separated, with a barbel on the posterior nostril. Erethistids have nostrils close together, separated by a nasal barbel (Thomson & Page, 2006). de Pinna (1996) has already distinguished Amblycipitidae and Akysidae from Erethistids based on detailed osteological features. Erethistid genera: *Pseudolaguvia* Misra and *Conta* Hora have adhesive apparatus in thorax and abdomen. Arunkumar (2000) did not mention about such an organ and Britz and Ferraris (2003) noted this. *Erethistes*, on the other hand is distinct from Akysids in the characters stated above. The species can not be included in Sisoridae (as in the title of the paper) as the nostrils are not close together. The species in question may be well placed under *Akysis* as it has longitudinal rows of tubercles on the body and widely separated nostrils and also other characters mentioned.

Akysis manipurensis (Arunkumar) and *A. prashadi* Hora belong to the variegatus group as they both have terminal mouth, relatively small nostrils and located further apart with a distance between nasal barbell and anterior nostril, anterior nostril situated at tip of short tube, and caudal fin not strongly forked. *A. manipurensis* is compared with *A. prashadi* and *A. pictus* Gunther as they are the only ones found in the Indian region and the only members of the genus with smooth dorsal and pectoral spines. It is distinct from *A. prashadi* by its smaller tubercles arranged in a single row in the opercular region, haphazardly behind pectoral fin and caudal peduncle region and longitudinally behind dorsal fin vs. larger tubercles arranged in 5-8 longitudinal rows all over the body; branched anal fin rays 5 vs. 3-7; dorsal fin inserted nearer to snout than to adipose fin vs. nearer to adipose than to snout and gill-rakers of 3+6 vs. 1+6 or 1+8 or 2+8. Hora (1936) observed two broad median fontanelles on the head of *A. prashadi*. However, after osteological examination of the skull region of 5 specimens of the species it is found to have three fontanelles. Ng (1999) observed only 7 branched anal fin rays from four specimens, vertebral count of 33-34 and 2+8 gill-rakers in *A. prashadi*. However, on further examinations of this species in 32 specimens, it is found to be highly variable ranging from 3 to 7 branched anal fin rays, vertebral count of 32-33 and 1+6 or 1+8 or 2+8 gill-rakers. The anal fin ray count of the holotype of *A. manipurensis* is iii, 5, i as against originally reported as ii, 6 by Arunkumar (2000).

According to the characters of *A. pictus* mentioned by Ng (1999), *A. manipurensis* also differs from *A. pictus*, which has 5-6 longitudinal rows of tubercles on each side of the body. It also differs from *A. pictus* in having branched anal fin rays of 5 vs. 4 or 6; pectoral fin ray count of I, 8-9 vs. I, 7; caudal fin deeply forked vs. deeply emarginated; gill-rakers of 3+6 vs. 3+3.

The present species cannot be placed under the genus *Parakysis* Herre as it does not have pigmented tubercles and lateral lobes of lower lip, which are the characteristic features of the later (Roberts, 1989). Ng & Lim (1995) also distinguished the genus from *Akysis* in having well developed nasal, maxillary and mandibular barbels, absence of teeth on palatine and non serrate pectoral and dorsal spines, apparent absence of lateral line, long adipose fin of uniform height,

extending from behind dorsal fin and continuing upto the low ridge formed by the upper procurrent caudal fin rays.

Akysis has only been reported from Java, Sumatra, Borneo, Tenasserim, Thailand and only as far as upper Burma. Its extension westwards and towards Chindwin has been confirmed by the recent collections. The paper extends the distribution of the genus to India.

Comparative Material

Akysis variegatus variegatus Prasad and Mukerji, (= *A. prashadi*) Type F 10873/1 (in ZSI, Calcutta). Southern end of Indawgyi Lake and along W. shore near Lonton village, Myitkyina Dt., Burma; B. Chopra. 18-31.x.1926,

REFERENCES

- Arunkumar, L. (2000). *Laguvia manipurensis*, a new species of sisorid catfish (Pisces: Sisoridae) from the Yu River system of Manipur. *Indian Journal of Fisheries* 47(3): 193-200.
- Thomson, A.W. & L.M. Page (2006). Genera of the Asian catfish families Sisoridae and Erethistidae (Teleostei: Siluriformes). *Zootaxa* 1345: 1-96.
- Britz, R. & C.J. Ferraris (2003). A new species of the Asian catfish genus *Pseudolaguvia* from Myanmar (Teleostei, Ostariophysi: Siluriformes: Erethistidae). *Zootaxa* 388: 1-8.
- Hollister, G. (1934). Clearing and dyeing fish for bone study. *Zoologica* 12: 89-101.
- Hubbs, C.L. & K.F. Lagler (1947). Fishes of the Great Lakes region. *Bulletin of the Cranbrook Institute of Science* 26: 1-186.
- Jayaram, K.C. (1999). *The Freshwater Fishes of the Indian Region*. Narendra Publishing House, Delhi, India, 551pp + 18pls.
- Ng, H.H. (1999). The *Akysis* of Myanmar: A review (Teleostei: Akysidae). *The Raffles Bulletin of Zoology* 47(2): 541-548.
- Ng, H.H. (2006). *Akysis longifilis*, a new species of catfish (Teleostei: Akysidae) from Myanmar. *Zootaxa* 1150: 19-20.
- Ng, H.H. & K.K. Lim (1995). A revision of the South-east Asian catfish genus *Parakysis* (Teleostei: Akysidae), with descriptions of two new species. *Ichthyological Exploration of Freshwaters* 6: 255-266.
- Ng, H.H. & M. Kottelat (2005). *Caelatoglanis zonatus*, a new genus and species of the Erethistidae (Teleostei: Siluriformes) from Myanmar, with comments on the nomenclature of *Laguvia* and *Hara* species. *Ichthyological Exploration Freshwaters* 10: 375-380.
- Pinna, M.C. de (1996). A phylogenetic analysis of the Asian catfish families Sisoridae, Akysidae, and Amblycepididae, with hypothesis on the relationships of the neotropical Aspredinidae (Teleostei: Ostariophysi). *Fieldiana: Zoology* 8: 1-83.
- Prashad, B. & D.D. Mukerji (1929). The fish of the Indawgyi lake and the streams of the Myitkyina district (Upper Burma). *Records of the Indian Museum* 31: 161-223.
- Roberts, T.R. (1989). The Freshwater Fishes of Western Borneo (Kalimantan, Barat, Indonesia). *Memoirs of the California Academy of Sciences*, 14: 1-210.
- Roberts, T.R. (1992). Revision of the striped catfishes of Thailand misidentified as *Mystus vittatus*, with descriptions of two new species (Pisces: Bagridae). *Ichthyological Explorations of Freshwaters* 3: 77-88.
- Roberts, T.R. (1994). Systematic revision of Asian bagrid catfishes of the genus *Mystus* sensu stricto, with a new species from Thailand and Cambodia). *Ichthyological Explorations of Freshwaters* 5: 241-256.

ACKNOWLEDGEMENTS

We are also grateful to Maurice Kottelat, Switzerland, Ralf Britz, BMNH, London, H.H. Ng, Michigan University, USA, for literature, Carl Ferraris Jr., Fang Kullander, Dario Zucon for critically going through the manuscript and other helps; to the Director, Zoological Survey of India, Kolkata for permission to examine specimens and to K. Nebeshwar Sharma and M. Shantakumar Sharma for their help in collection of fishes. We are also grateful to NE Collaborative project (ICAR though NBFGR) for financial assistance.



TRADITIONAL BIRD TRAPS OF KAMRUP DISTRICT, ASSAM, INDIA

Girindra Kalita

Sr. Lecturer, Department of Zoology, Guwahati College, Assam
Email: girin_05@yahoo.co.in

plus web supplement of 2 pages

Trapping is the activity or practice of capturing or holding animals for various human-use purposes. Since time immemorial, people trap mammals and birds for food, sports or trading. The traps are mainly used for collection of living animals as freshly killed animals are consumed. In some villages in Assam, the trapping of animals is also related to festivals. However, due to the vanishing wildlife in the vicinity of human habitations, this practice is confined to certain localities only. As hunting has been banned legally, fewer people participate in such activities. Moreover, with the concept of conservation of wild animals increasing, the younger generation is less interested about such skills. Except in one case, the entire tradition of trapping of wild animal is now restricted to a few underprivileged, elderly people only.

In Assam, no attempt has yet been made to record this kind of local skill. However, it is observed that such traditional skill has enormous potential for utilizing in various scientific studies. Therefore, an attempt has been made to record some such traditional traps and categorize accordingly as per the nature of the device.

Villages from both sides of the river Brahmaputra in Kamrup district were selected based on local information and newspaper reports. The villages near and in the catchment areas of wetlands were selected for aquatic and semi-aquatic bird traps. Tribal and forest villages and tea garden areas were chosen for aerial bird traps. Firsthand information was gathered through distributing questionnaires among the villagers, after which a physical survey was conducted in the reported areas and individuals involved in this practice were interviewed. The study areas include villages from:

(a) Hajo and Kalitapara; (b) Kamalpur; (c) Kurua; (d) Around Deepar wetland; (e) Around Chandadubi wetland; (f) Around Amchang tea state.

It is observed that the traditional bird traps in the studied areas are basically of four types. These are (a) Snare trap; (b) Cage trap; (c) Net trap; and (d) Gum trap. The season for different bird trapping has been tabulated (Table 1). A brief description of each trapping method is given below.

(a) Snare trap

In this type of trap, a snare knot is used for capturing the bird. Earlier *Muga* (wild silk thread derived from *Antheraea assamica*) was used, while these days nylon thread is used. The snare traps can be further sub divided into five different types viz. (i) Rectangular bar trap; (ii) Open bar trap; (iii) Closed, dome-shaped trap; (iv) Pole trap; and (v) Bow trap.

(i) Rectangular bar trap: (Image 1"). In this type of trap,

Manuscript 1548; © ZOO; Date of publication 21 April 2007
Received 03 March 2006; Revised received 22 December 2006;
Finally accepted 26 February 2007

May 2007 | ISSN 0973-2535 (Print edition); 0973-2551 (Online edition)