Available Online at http://www.journalajst.com

ASIAN JOURNAL OF SCIENCE AND TECHNOLOGY

ISSN: 0976-3376

Asian Journal of Science and Technology
Vol. 08, Issue, 09, pp.5543-5545, September, 2017

RESEARCH ARTICLE

AQUATIC COLEOPTERA OF GHAGA BEEL, A CLOSED TYPE FRESHWATR WETLAND OF NALBARI DISTRICT OF ASSAM, INDIA

***[1]Alakesh Barman and [2]Dr. Rantu Mani Deka**

[1]Department of Zoology, Cotton College, India
[2]Department of Zoology, Barbhag College, India

ARTICLE INFO

Article History:
Received 25th June, 2017
Received in revised form
19th July, 2017
Accepted 09th August, 2017
Published online 15th September, 2017

Key words:
Ghaga Beel, Hydrophyte,
Aquatic Coleoptera.

ABSTRACT

The present study deals with study of aquatic Coleoptera species of Ghaga Beel. The geographical position of the Beel is 26o 28 ⁄ 21.10 // N –to 26 o 28 / 25.05 //N and 91 o 28 / 51.84 // E to 91 o 29 / 19.80 // and covering an area of about 50 hectares. The present study revealed presence of 12 species of aquatic Coleoptera comprising of 4 families. The family Gyrinidae comprising of 1 species, Noteridae comprising of 2 species, Hydropphilidae comprising of 4 species and Dytiscidae comprising of 5 species. Highest number of species belongs to the family Dytiscidae. The aquatic coleopterans were mostly abundant during the Post monsoon season and lowest during the monsoon season. It was observed that most of the aquatic Coleoptera were associated with different parts of hydrophytes of the Beel.

INTRODUCTION

Coleoptera is the largest order in the animal kingdom. It consisitig of about 350,000 species (Lwarence *et al.,* 1982). They are adapted to various type of habitat which may be terrestrial, aquatic, areal, fossorial etc. A few families have adapted well to aquatic or semi aquatic mood of life. The aquatic mood of life may in larval or adult stages. Aquatic coleopterans are highly diverse and distributed to nearly 30 families and more more than 223 species of aquatic coleopteran are known from India (Deepa *et. al.* 2013). Study on the aquatic coleoptera of India reported from the work of Biswas and Mukhopadhyay (1995), Mukhopadhyaya (2007) Kalita, G. (2008), Jana *et al.,* (2009) Hazarika (2009), Thakare and Zade (2011), Deepa, J. (2013), Barman and Gupta (2015), Ghosh *et al.,* (2016) and Devi *et al*., (2017).

MATERIALS AND METHODS

Ghaga Beel is a closed type freshwater wetland. It is located at Nalbari district of Assam. The geographical position of the Beel is 26º 28′ 21.10 ″ N –to 26 º 28 ′ 25.05 ″N and 91 º 28 ′ 51.84 ″ E to 91 º 29 ′ 19.80 ″ and covering an area of about 50 hectares. Most part of the Beel land area was encroached by the peoples of seven neighboring villages *viz.* Khatkatara, deharkatara, nankar bhaira village, hargitola village, bhutkatara, khudra senikuchi and kendukuchi villages.

Corresponding author: **Alakesh Barman**
Department of Zoology, Cotton College, India.

They used about 12–27 hectares of Beel land area for paddy cultivation and construct fish pond for fish cultivation. Study was carried out for a period of one year (2013-2014) covering three seasons, pre monsoon, monsoon and post monsoon seasons of the year. To collect aquatic Coleoptera from surface of the water, a nylon pond net (mesh size: 500 µm; diameter: 30 cm; depth: 15 cm) were used. 'All out search' method was employed to collect insects from the substratum (Subramanian and Sivaramakrishnan, 2007). For sampling of insects from vegetated zone, small sieve and Hand operated 'D' framed sweep net of the size 50 cm length, 25 cm breadth was with mesh size 200 µm used to collect insects from vegetated area (Junk, 1977). The collected specimen were preserved in 70% alcohol and identified following the standard keys of Vazirani (1984), Biswas and Mukhopadyaya (1995), Biswas *et al.,* (1995a), Pillai (1986), Subramanian & Sivakrishnan (2007) and Khan and Ghosh (2001).

RESULTS AND DISCUSSION

The present study revealed presence of 12 species of aquatic Coleoptera comprising of 4 families. The family Gyrinidae comprising of 1 species, Noteridae comprising of 2 species, Hydropphilidae comprising of 4 species and Dytiscidae comprising of 5 species. Highest number of species belong to the family Dytiscidae. In the similar study Jana *et al.,* (2009) also recorded 20 species of aquatic insects from a weed infested pond of west Bengal. They recorded 10 numbers of

Coleopteran species. Study of Khan and Ghosh (2001) recorded presence of 23 aquatic coleopteran species in different wetlands of west Bengal. Jaiswal (2013) also recorded 31 species of Coleoptera in lakes around Hyderabad. It was observed that aquatic coleopteran were mostly abundant during the Post monsoon season.

Table 1. Aquatic Coleoptera of Ghaga Beel

Family	Genus/species
Gyrinidae	*Dineutus (Spinosodineutus) unidenttatus* Aube
Noteridae	*Neohydrocoptus subvittulus* Mots
	Canthydrus laetabilis Walker
Hydrophilidae	*Laccobius sp.*
	Hydrophilus olivaceus Fab
	Amphiops sp.
	Cercyon sp.
Dyticsidae	*Hydrovatus sp*
	Laccophilus anticatus anticatus Sharp
	Laccophilus inefficiens Walker
	Laccophilus elegans Sharp
	Cybister tripunctatus asiaticus Sharp

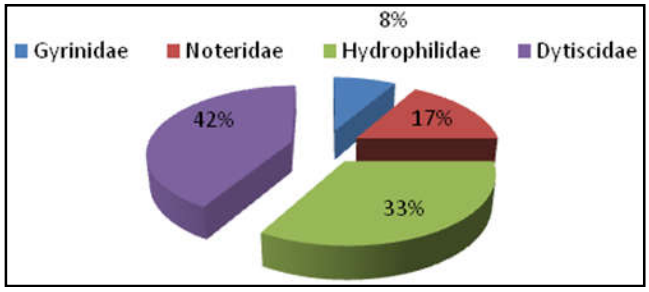

Fig. 1. Percentage of different families of coleoptera

As in post monsoon season the Beel water has the favourable condition of physico chemical characteristics for growth and proliferation of insects and adequate food and shelter for their assemblage. This observation support the findings of Mukherji *et al*., (1998). But in the monsoon season the abundance of coleopteran species become decreases. This may water due water dynamics of the Beel resulted by rain which disturb the habitat and stability of the insects and thereby growth and proliferation. This finding was in agreement with the findings of Sarma and Baruah (2013). During the entire study period it was observed that most of the aquatic Coleoptera were associated with different parts of hydrophytes of the Beel. They were mostly associated with emergent type aquatic vegetation. Most of the Coleoptera Species preferred Water hyacinth. They occupy almost all the parts of the water hyacinth. It implies that this plant provides adequate place for carrying out different activities by the insects. This finding support the work of Pal *et al.,* (2000), Bhattachrya (2000) and Tara *et al.,* (2011). They observed highest number of insects in the dense macrophytes area of wetland and utilized them for various purposes.

REFERENCES

Barman, B. and Gupta, S. 2015. Aquatic Insects As Bio-Indicator of Water Quality- A Study On Bakuamari Stream, Chakras Hila Wildlife Sanctuary, Assam, North East India. *Journal of Entomology and Zoology Studies,* 3(3): 178-186.

Bhattacharya, D.K. 2000. Insect fauna associated with large water hyacinth in fresh water wetland of West Bengal. Diversity and environment. Aditya and Haldar (editer) Proceding of National Seminar on Environmental Biology. Daya publishing house. New Delhi p: 145- 148.

Biswas, S. and Mukhopadhyay, P. 1995. Insecta: Coleoptera: Hydrophilidae. In: State fauna Series 5: Fauna of West Bengal, Part 6a, Zoological Survey of India, Calcutta. pp.143-168.

Biswas, S., Mukhopadhyay, P. And Saha, S.K. 1995a. Insecta: Coleoptera: Adephaga. Family Dytiscidae. In: State fauna Series 5: Fauna of West Bengal, Part 6a, Zoological Survey of India, Calcutta. pp. 77-120.

Biswas, S., Mukhopadhyay, P. and Saha, S.K. 1995a. Insecta: Coleoptera: Adephaga. I Family Gyrinidae anjd Halipidae . In: State fauna Series 5: Fauna of West Bengal, Part 6a, Zoological Survey of India, Calcutta, pp. 121-142.

Deepa, J. 2013. Aquatic Insects of Lakes in and around Hyderabad and Coleoptera. Occasional Paper no. 350. Zoological Survey of India.

Devi, B. M., Devi, O. S. and Wanghengbam, L. 2017. Aquatic Coleoptera Assemblages In Different Wetlands Of Manipur. *International Journal of Recent Scientific Research,* Vol. 8, Issue, 4, pp. 16596-16603, April.

Ghosh, S. K., Das P. and Mitra, B. 2016. Studies on the fresh water aquatic beetle fauna (Coleoptera: Insecta) of Chilika lake and its adjoining areas and their colonization in brackish water. *International Journal of Fauna and Biological Studies,* 3(6): 19-24.

Gupta, S. and Narzary, R. 2013. Aquatic Insect community of Lake, Phulbari anua in cachar, Assam; *Journal of Environmental biology*, May 201, Vol 34, pp. 591-597.

Hazarika, R. 2009. Studies On aquatic Insect of Fish Pond Ecosystem with special Reference to Hemiptera, Ph. D Thesis. Gauhati University, Assam, India.

Jaiswal, D. 2013. Aquatic Insects of Lakes in and around Hyderabad (Hemiptera and Coleoptera), Occasional Paper No. 350; pp. 3. Records of Zoological Survey of India.

Jana, S., Pahari P.R., Dutta, T. K. and Bhattacharya, T. 2009. Diversity and community structure of aquatic insects in a pond in Midnapore town, West Bengal, India, *Journal of Environmental Biology, March,* 30(2), 283-287.

Junk , W.J. 1977. The Invertebrate fauna of floating vegetation of Bong Barapeta, a reservoir in Centra Thailand. *Hydrobilogica, 53: 229-238.*

Kalita, G. 2008. Ecology and Distribution of macroinvertebrate enmeshed fauna in Deepar wetland of Assam, India. Ph.D. Thesis Gauhati University, Guwahati, Assam, India.

Kalita, G. 2008. Ecology and Distribution of macroinvertebrate enmeshed fauna in Deepar wetland of Assam, India. Ph.D. Thesis Gauhati University, Guwahati, Assam, India.

Khan, R.A. and Ghosh, L.K. 2001. Faunal Diversity of Aquatic insects in Freshwater Wetlands of South eastern West Bengal, Occasional Paper No. 194, Records of Zoological Survey of India.

Lawrence, J.F. 1982. Coleoptera. Pp.482-553. In : S.P. parker (ed.) *Synopsis and Classification of Living Organisms,* 2; McGraw Hill, New York.

Mukherji Manika, Pal, Sujit and Nandi N.C. 1998. The Macro invertebrate Diversity of Some Urban Wetlands of Calcutta. Proceedings of the National Seminaer on Environmental Biology, April 03-05, 1998. Edited by A.K. Aditya & F. Halder. Daya Publishing House, Delhi.

Pal, S., Dey S.R. and Bhattachrya D.K. 2000. Macrophyte preference and Insect Diversity of Fresh water wetlands in South-eastern Bengal. *Proceedings of the National Seminaer on Environmental Biology,* April 03-05, 1998. Edited by A.K. Aditya & F. Halder. Daya Publishing House, Delhi.

Pillai, N. K. 1986. Introduction to planktonology. Himalaya Publ. House. Bombay, India.

Sarma, B.K. and Baruah, B.K. 2013. Study on seasonal variation of aquatic insects in a lotic ecosystem of Guwahati City, Assam, India. *The Clarion,* Volume 2. Number 1 pp. 30-36.

Subramanian, K. A. and Sivaramakrishnan, K. G. 2007. Habitat and microhabitat distribution of streaminsect communities of the Western Ghats. *Current Science,* Vol. 89, no. 6, 25 September 2005.

Subramanium, K. A. and Sivaramakrishnan, K. G. 2007. Aquatic Insects of India-A field guide, Ashoka Trust for Research in Ecology and Environment (ATREE) Small Grants Programme.

Tara, J. S., Kour, R. and Sharma, Sunil, 2011. Studies on the Occurrence and Seasonal Abundance of Aquatic Coleoptera In Relation To Some Physicochemical Parameters of Water of Gharana Wetland Reserve Jammu (J And K). *The Bioscan,* 6(2) : 257-261.

Thakare, V. G. and Zade, V. S. 2011. Diversity, Abundance and Species Composition of Water Beetles (Coleoptera: Dytiscidae, Hydrophilidae and Gyrinidae) in Kolkas Region of Melghat Tiger Reserve, Central India. *Academic Journal of Entomology,* 4 (2): 64-71.

Vazirani, T.G. 1984. The Fauna of India. Coleoptera, Family Gyrinidae and Family Haliplidae; Zoological Survey of India, Kolkata.

****