National Journal of Life Science, **Vol. 9(1) 2012 : 69-71** ISSN : 0972-995X

POPULATION CHARACTERISTICS OF *AUSTROMENOPON DURISETOSUM* ON COMMON SNIPE (*GALLINAGO GALLINAGO*) (SCOLOPACIDAE : CHARADRIIFORMES : AVES)

AFTAB AHMAD [1], A. K. SAXENA [2] and NEELIMA GUPTA [1]*

[1]*Department of Animal Science, M. J. P. Rohilkhand University, Bareilly (U.P.)**

[2]*Department of Zoology, Govt. Raza P.G. College Rampur (U.P.)*

ABSTRACT : Common snipe (*Gallinago gallinago*) (n=8) were examined during May to November,2011 in district Rampur for the presence of lice. Only one genus of amblyceran louse, *Austromenopon durisetosum* was recovered from the infested hosts. As many as 1101 specimens were collected from 05 infested hosts. The present report provides information on the prevalence, intensity of infestation and population composition of *A.durisetosum*. The prevalence of *A.durisetosum* on common snipe was 62.5%, the sample mean abundance and mean intensity of infestation were 137.6 and 220.2 (range-49-425), respectively. Females outnumbered the males in natural population (F:M-1.4:1), while the nymphal population had an edge over adult population (N:A-1.5:1).

Key words : *Phthiraptera, Lice, Prevalence, Amblycera, Mallophaga.*

INTRODUCTION

Information regarding the population characteristics of Phthiraptera on selected Indian birds *viz.* common myna (Chandra *et al.*,1989,1990 and Saxena *et al.*,2007); domestic fowls (Trivedi *et al.*,1991,1992; Saxena *et al.*, 1995, 1997, 2004 and Kumar *et al.*,2004); domestic pigeons (Singh *et al.*, 1998 and Khan *et al.*,2009), red avadavats (Gupta *et al.*, 2007), house sparrows, Indian parakeets, white breasted kingfishers (Saxena *et al.*,2007), house crows (Beg *et al.*,2008), bank Myna (Rajput *et al.*,2009), cattle egret (Ahmad *et al.*, 2010), red whiskered bulbul, common baya (Arya *et al.*,2010, 2011) and certain other poultry (Khan *et al.*,2008) have been accumulating during past two decades. A survey of literature reveals that population level of Phthiraptera on common snipe deserves investigation. The present report furnishes information on the prevalence, intensity of infestation and population composition of an amblyceran louse, *Austromenopon durisetosum* on the common snipe (*Gallinago gallinago*).

MATERIAL AND METHODS

Common snipe (n=8) were trapped alive in district Rampur (India) and brought to the laboratory for investigations. After tying the legs, each bird was examined visually (with the help of magnifying torch) for the presence of parasites. Uninfected birds were released in wild and infested hosts were subjected to delousing by the modified fair lsle method (Gupta *et al.*,2007). Although fumigation methods secures the life of birds but reportedly does not yield complete louse load (Clayton and Drown,2001) and was therefore not adopted for delousing of the birds. The head and body feathers of deloused birds were further examined manually to take out the remaining louse load. Deloused birds were released in wild. Entire louse load was transferred to 70% alcohol and separated sex-wise and stage-wise. The prevalence and mean intensity were calculated according to Bush *et al.* (1997). The sample mean abundance, male female ratio and adult nymph ratio were calculated by the computer in 'word excel'.

RESULTS AND DISCUSSION

As many as 1101 specimens were collected from five infested common Snipe during the present investigation. Only one species of amblyceran louse, *Austromenopon durisetosum* was recovered. The prevalence remained 62.5%. The sample mean abundance was 137.5, while mean intensity remained 220.2 (range of infestation, 49-425). The overall male, female ratio remained 1:1.3. The nymph population had a slight edge over adult nymph, as the over all adult ratio was 1.5:1 while the ratio of first, second and third instars of nymph remained 1:0.71:0.62.

It has further been reported that the prevalence of Phthiraptera on blue rock pigeons, (29-61%); domestic fowls, (7-51%), common mynas (13-42%), house sparrows (14%-31%), Indian parakeets (17-34%), kingfishers (40%), red avadavats (21-37%), house crows (30-54%), bank Myna (31-48%) and cattle egrets 17.2% (Singh *et al.*,1998; Saxena *et al.*, 2004,2007; Gupta *et al.*,2007; Beg *et al.*,2008; Rajput *et al.*, 2009; Ahmad *et al.*,2010; Arya *et al.*,2010,2011) varied. Different authors have reported variance in prevalence of louse on avian hosts. 10,000 specimens of *Austremenopon* were collected from the common gull, *Laurus canis* (Ash, 1960) and 8,000 chicken body louse, *Menacanthus stramineus* from a single *Gallus gallus domesticus* (Pfadt, 1971). The infestation intensity of Phthirapteran species ranged from 7-36 per host on guilemont, rajor bills and storm petrels (Fowler *et al.*,1984), 0.1-9.5 per host on fulmers, leaches, shearwater and reed buntings (Fowler and Williams, 1985), 21-76 per host on wood ducks (Thul,1985), 6.6 on Wilson's petrels (Fowler and Price,1987), 3.2 per host on

*Author for correspondence (email : guptagrawal@rediffmail.com) Received 11.05.2012 Accepted 30.05.2012

house martins (Clark *et al.*,1994), 1.3-3.9 per host on five varieties of shore birds (Hunter and Colwell,1994), 1.9 per host on swift (Lee and Clayton,1995), 0.66 per host on flycatchers (Potti and Merino,1995), 0.5-7.3 per host on bee eaters (Kristofik *et al.*,1996), 48.7-178.3 per host on peacocks (Stewart *et al.*,1996), 3.85-4.9 per host on hooded crows (Rekasi *et al.*,1997). Thus, the prevalence of *Austromenopon durisetosum* on Common Snipe was comparatively high (62.5%) and its mean intensity (222.2) also remained high.

Lice population on avian host ranges from nil to thousand per host (Marshall,1981). Population levels of Phthiraptera on selected birds have been occasionally reported. However, lice population of avian hosts rarely reach alarming levels, due to various defence tactics (grooming, preening, moulting, dusting etc.) adopted by the host birds (Price *et al.*,2003). An examination of the population structure of a species provides useful clues regarding the temporal stability of the population; presence of fewer adults and more nymphs in a population indicating that the population is expanding and vice- versa (Marshall,1981). Since, avian lice exhibit seasonal variation in population, the proportion of nymphs may vary with time. Apart from seasonality, many other factors can affect the population structure (Marshall, 1981).

As per expectation, the sex ratio of *Austromenopon durisetosum* was female-biased. Marshall (1981) and Gupta *et al.* (2007) have discussed the reasons responsible for skewed sex ratio in Phthirapteran population. On the other hand, the adult nymph ratio exhibits considerable variation on different avian hosts. The occurrence of few nymphs and more adults indicates declining population, while the occurrence of more nymphs and few adults indicates an expanding population. In case of *Austromenopon durisetosum*, the nymphs out numbered the adults in natural population suggesting an expanding population of *A.durisetosum*. However, the lice population on avian host fluctuates seasonally and hence the sex ratio and adult nymph ratios are bound to vary with time and season.

ACKNOWLEDGMENTS

One of us Aftab Ahmad (Dr. D. S. Kothari Post Doctoral Fellow) express is thanks to the University Grants Commission, New Delhi for providing funds under Dr. D. S. Kothari Post Doctoral Fellowship Scheme of U.G.C. (Reference : F.4-2/ 2006 (BSR)/13-398/2011 (BSR).

REFERENCES

Ahmad, A.; Khan, V.; Badola, S.; Arya, G.; Bansal, N. and Saxena, A. K. (2010). Population characteristics and the nature of egg shells of two phthirapteran species parasitizing Indian cattle egrets. *J. Ins. Sci.*, **10** : 176.

Arya, G.; Bansal, N.; Khan, V.; Ahmad, A. and Saxena, A. K. (2010). Population characteristics of Phthiraptera occurring on Red whiskered bulbul (*P.jocosus*). *J. Appl. Nat. Sci.*, **2** : 263-265.

Arya, G.; Bansal, N.; Ahmad, A., Gupta, N. and Saxena, A. K. (2011). Population ecology of phthirapteran occurring on common baya (*Ploceus phillipinus*) (Ploceidae : Passeriformes : Aves). *Turkish J. Vet. Anim. Sci.*, **35(1)** : 183-185.

Ash, J. S. (1960). A study of the Mallophaga of the birds with particular reference to their ecology. *Ibis.*, **102(1)** : 93-110.

Beg, S.; Gupta, N.; Kumar, S.; Khan, V.; Bhatnagar, S. and Saxena, A. K. (2008). Occurrence of Phthiraptera on the house crow, *Corvus splendens* (Passreiformes : Corvidae). *Entomon.*, **33** : 75-78.

Bush, A. O.; Lafferty, K. D.; Lotz, J. M. and Shastak, A. W. (1997). Parasitology meets ecology on its own terms : Margolis *et al.*, 1982. *Rev. de. Parasitol.*, **83** : 575-583.

Chandra, S.; Agarwal, G. P. and Saxena, A. K. (1989). Distribution of Mallophaga on the body of *Acridotheres tristis* (Aves). *Angew. Parasitol.*, **30** : 39-42.

Chandra, S.; Agarwal, G. P.; Singh, S. P. N. and Saxena, A. K. (1990). Seasonal changes in a population of *Menacanthus eurysternus* (Mallophaga:Amblycera) on the common Myna, *Acridotheres tristis*. *Int. J. Parasitol.*, **20** : 1063-1065.

Clark, F.; Farrell, J. and Hill, L. A. (1994). A study of a population of the House martin [*Delichon urbica* (L.)] feather louse *Bruelia gracilis* Nitzsch (Mallophaga : Ischnocera) in Licolnshire, U.K. *Entomologist*, **113** : 198-206.

Clayton, D. H. and Drown, D. M. (2001). Critical evaluation of five methods for quantifying chewing lice (Insecta : Phthiraptera). *J. Parasitol.*, **87** : 1291-1300.

Fowler, J. A.; Miller, C. J. and Cohen, S. (1984). Ectoparasites population from breeding and wandering storm petrels. *Bird study*, **31** : 126-130.

Fowler, J. A. and Price, R. A. (1987). A comparative study of the Ischnocera Mallophaga of the Wilson's Petrel *Oceanites ocianicus* and British storn Petrels *Hydrobates pelagicus*. *Seabird*, **10** : 43-49.

Fowler, J. A. and Williams, L. R. (1985). Population dynamics of Mallophaga and acari on reed buntings occupying a communal winter roost. *Eco. Ent.*, **10** : 377-383.

Gupta, N.; Kumar, S., and Saxena, A. K. (2007). Prevalence and population structure of lice (Phthiraptera) on the Indian Red Avadavat. *Zool. Sci.*, **24** : 381-383.

Hunter, J. E. and Colwell, M. A. (1994). Phthirapteran infestation of five shorebird species. *Wilson Bull.*, **106(2)** : 400-403.

Khan, V.; Kumar, S., Gupta, N.; Ahmad, A. and Saxena, A. K. (2008). Prevalence of phthirapteran ectoparasites on selected poultry in the district, Rampur (U.P.). *Indian Vet. J.*, **85** : 447-448.

Khan, V., Kumar, S.; Gupta, N.; Ahmad, A. and Saxena, A. K. (2009). Prevalence of lice in pigeons. *Indian Vet. J.*, **86** : 531-532.

Kristofik, J.; Manas, P. and Sustek, K. (1996). Ectoparasites of bee eater (*Merops apiaster*) and arthopods in its nets. *Biologia*, **51(5)** : 557-570.

Kumar, S.; Gupta, N. and Saxena, A. K. (2004). Population composition of selected poultry lice (Phthiraptera). *Rev. Iber. Parasitol.*, **64** : 49-54.

Lee, P. L. M. and Clayton, D. (1995). Population biology of swift (*Apus apus*) ectoparasites in relation to host reproductive success. *Ecol. Ent.*, **20** : 43-50.

Marshall, A. G. (1981). *The ecology of ectoparasitic insects*.

Academic Press. London.

Pfadt, R. E. (1971). *Fundamentals of Applied Entomology*. Macmillan, New York.

Potti, J. and Merino, S. (1995). Louse loads of pied flycatchers : Effects of hosts sex, age condition and relatedness. *J. Avian Biol.*, **26** : 203-208.

Price, R. D.; Hellenthal, R. A.; Palma, R. L.; Johnson, K. P. and Clayton, D. H. (2003). The chewing lice : World checklist and biological overview. *Illinois Natural History Survey Special Publication, pp. 1-501.*

Rajput, S.; Joshi, V. D.; Gupta, N.; Khan, V. and Saxena, A. K. (2009). Population dynamics of Phthiraptera on bank myna, *Acridotheres ginginianus*. *Entomon.*, **34(2)** : 25-57.

Rekasi, J.; Rozsa, L. and Kiss, B. J. (1997). Patterns in the distribution of avian lice (Phthiraptera : Amblycera, Ischnocera). J. *Avian Biol.*, **28** : 150-156.

Saxena, A. K.; Kumar, A., Surman and Singh, S. K. (1995). Prevalence of *M.gallinae* Linne. (Phthiraptera : Amblycera) on poultry birds of Garhwal. *J. Par. Dis.*, **19(1)** : 69-72.

Saxena, A. K., Surman, Singh, S. K.; Kumar, A. and M. C. Trivedi (1997). Population composition of poultry shaft louse, *Menopon gallinae* (Insecta, Phthiraptera, Amblycera, Menoponidae). *Rudolst. Nat. Sch.*, **7** : 49-51.

Singh, S. K.; Surman, Kumar, A. and Saxena, A. K. (1998). Population composition of four phthirapteran ectoparasites infesting blue rock pigeon *C.livia*. *J. Par. Dis.*, **22(2)** : 144-147.

Saxena, A. K., Kumar, S.; Gupta, N. and Singh, S. K. (2004). Prevalence of phthirapteran ectoparasitic insects on domestic hens of Rampur. *J. Par. Dis.*, **28(1)** : 57-60.

Saxena, A. K.; Kumar, S.; Gupta, N.; Mitra, J. D.; Ali, S. A. and Srivastava, R. (2007). Distribution pattern of phthirapterans infesting certain common Indian birds. *J. Parasitol.*, **93(4)** : 957-958.

Stewart, I. R. K.; Clark, F. and Petrie, M. (1996). Distribution of chewing lice upon the polygynous Peacock, *Pavo cristatus*. *J. Parasitol.*, 82(2) : 370-372.

Thul, J. E. (1985). Parasitic athropods of wood ducks, *Aix sponsa* L., in the Atlantic flyway. *J. Wild. Disl.*, **2(3)** : 316-318.

Trivedi, M. C. and Saxena, A. K. (1991). Population dynamics of chicken body louse, *Menacanthus stramineus* (Phthiraptera : Amblycera). *J. Zool. Res.*, **4(1-2)** : 37-42.

Trivedi, M. C.; Saxena, A. K. and Rawat, B. S. (1992). Insidence of Mallophaga on poultry in Dehradun (India). *Angew Parasitol.*, **33** : 69-78.