INTRODUCTION

Biodiversity encompassing all living organisms represents the biological wealth of a nation and is one of the important cornerstones of sustainable development of the planet earth. The world seems to be facing its greatest ever biodiversity crisis. The diversity richness of life forms of each species that have evolved on planet earth is beginning to disappear on a faster rate (Wilson, 1988; Pimm et al., 1995). This decline in life on earth is both a consequence of anthropogenic climate change and more directly to response of the human activities such as modification of the natural habitats, deforestation, urbanization and industrialization, burning of fossil fuels, illegal/legal trades and release of excessive carbon dioxide and contamination of the earth environment (Meyer and Turner, 1992; Vitousek et al., 1997). In view of this, the conservation of biodiversity and sustainable development has become the much debated issues world-wide. These issues have been given due consideration at the four earth summits held at Rio de Janerio, New York, Johannesburg and Cape Town in 1992, 1997, 2002 and 2007 respectively by various countries of the globe. At the 2002 Johannesburg World summit on sustainable development, as many as, one hundred and ninety countries endorsed a commitment to achieve a significant reduction of the current rate of biodiversity loss at the global, regional and national levels by 2010 (Dobson, 2005).

Though the biodiversity issues are very complex, yet the monitoring and inventorying is one of the foremost prerequisites which can be achieved through sound knowledge on the ecology and biology of different species of animals, particularly the arthropods from conservation of biodiversity view point. The class Insecta of the phylum Arthropoda includes 29 insect orders (Richards and Davies, 1977), to which, Kliss et al. (2002) have added a new order i.e., Mantophasmatodea and the total number comes to thirty. The order Lepidoptera of this class is the second largest order (Roelofs and Rooney, 2003) with over 1, 60,000 described species
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(Kristensen et al., 2007). This order comprises forty-seven superfamilies (Krenn, 2010) and the superfamily Pyraloidea is the third largest having more than 16,000 described species worldwide (Solis, 2007). The latter author has brought great revolution in the classification of this superfamily which has undergone both phylogenetic and nomenclatural changes. On the basis of two distinct tympanal organs present on the second abdominal segment of the adult, Solis (loc. cit) divided it into two families viz., Pyralidae (tympanal case almost closed, tympanum and conjunctiva in same plane) and Crambidae (tympanal case open with wide anteromedial aperture, tympanaum and conjunctiva in a different plane and meet at distinct angle). As per this classification, the superfamily Pyraloidea contains twenty-two subfamilies, out of which five subfamilies i.e., Galleriinae, Chrysauginae, Pyralinae, Epipaschiinae and Phycitinae belong to Pyralidae and seventeen viz., Crambinae, Cybalomiinae, Evergestinae, Giphyriinae, Dichogaminae, Linostinae, Midilinae, Musotiminae, Noordinae, Acentropinae, Odontiinae, Pyraustinae, Spilomelinae, Schoenobiinae, Scopariinae, Heliothelinae and Wurthiinae to the family Crambidae. At the generic level, the family Pyralidae contains 1,067 genera and 6,233 described species, whereas, Crambidae contains 905 genera and 11,817 described species (Footitt and Alder, 2009).

Amongst Lepidoptera, Pyraloids perhaps show the most diverse life history adaptations and behavioral characteristics. They have great economic importance as many species cause serious damage to crops such as sugarcane, maize, tomato, brinjal, cabbage, cotton, oil seed and bamboo (Solis, 1996). The caterpillars of most of the species feed on living plants either internally or externally as leaf rollers, leaf webbers, leaf miners, borers, root feeders and seed feeders. Some species also thrive in ant nests (Wurthiinae), predate upon scale insects (certain Phycitinae) (Solis, 1997) or live in the nests of bees (Galleriinae) and some are adapted to life under water (Acentropinae). With such a variety of living habits, Pyraloids form an ideal group for undertaking studies on their different life history aspects.
For better conservation practices, it appears essential to make exhaustive studies on various aspects such as period of incidence, life history, ovipositional behavior, egg laying patterns, larval morphology, larval behavior, larval parastization, host preference, mode of feeding, adult behavior, arrangement of crochets and chaetotaxy etc., under various climatic or controlled conditions for a maximum number of species. Accordingly, the present investigation aims at studying the life history and chaetotaxy of pests, both major as well as minor of the superfamily Pyraloidea. The data gathered will enrich existing knowledge regarding identification, morphology and behavior of the immature stages of different Indian pest species. It need hardly be emphasized that, by and large, the previous studies on the life histories of different Indian pest species have certain shortcomings such as dimensions of various life history stages viz., length/width of the eggs, head, larval instars and pupae have not been given due weightage/consideration. Similarly, the chaetotaxic studies have not been done in many cases with a view to underline their significance in identification of a pest at its immature stage. Moreso, the nomenclature proposed by Hinton (1946) though has great relevance in naming the setae and punctures present on different body segments, yet certain recent nomenclatorial changes suggested by Paulus (1981) and Stehr (1987) warrant updation of previous works. Furthermore, there is a vast gap/lack of knowledge regarding the identification of different species on the basis of the structure of the eggs. In earlier works, little emphasis has been laid on the Scanning Electron Microscopy (SEM) of eggs to study the egg chorion, size and the shape from the identification point of view.

Accordingly, the present piece of research aims to study the stored as well as field pests, wherein, detailed observations have been made on the life history, besides examination and representation of chaetotaxy with illustrated diagrams of each species. The adults of all the species, studied presently, have been separated by recording their morphological characters, particularly on the basis of tympanal organs.
and classified them into two families viz., Pyralidae and Crambidae. During the present course of investigations, the life history and chaetotaxy of *Galleria mellonella* (Linnaeus), *Corcyra cephalonica* (Stainton) (Galleriinae), *Emmalocera depressella* Swinhoe (Phycitinae), *Scirpophaga nivella* (Fabricius) (Schoenobiinae), *Chilo partellus* (Swinhoe), *C. infuscattellus* Snellen, *C. auricilla* Dudgeon (Crambinae), *Hellula undalis* (Fabricius) (Glaphyriinae), *Pyrausta bambucivora* Moore, *Diaphania indica* (Saunders) (Pyraustinae), *Nausinoe geometralis* (Guenée), *Sylepte derogata* (Fabricius), *Antigastra catalaunalis* (Duponchel), *Leucinodes orbonalis* Guenée and *Syngamia abruptalis* Walker (Spilomelinae) have been studied to make a clear view to identify these pests species on the basis of structure of the egg patterns, various life history parameters and most importantly from the size, shape and position of the setae which are arranged differently on the head, thorax and abdomen of each species. The setal characters do prove good taxonomic characters to separate different species and such fine characters have either been not studied or poorly/partially attempted earlier. The present study is a definite contribution towards updating the database of immature faunal diversity of the superfamily Pyraloidea through investigations of different immature stages of various species during different times of the year according to their incidence periods. The chaetotaxic studies of immatures is an advanced step towards the identification and differentiation of various taxa, so as to make the task easier to adopt Integrated Pest Management strategies for controlling the harmful species and to save the beneficial ones from biodiversity conservation point of view.