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NOTES ON THE INCIDENCE AND LIFE HISTORY OF *JAPANAGROMYZA* SP (AGROMYZIDAE: DIPTERA) ON RAPESEED AND MUSTARD HITHERTO UNREPORTED

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DURING *Rabi* 1984–85, while recording observations on seasonal abundance of major pests of rapeseed and mustard crop, certain plants were found having holes vertically upto the height of 0.3 m from the ground level. Such affected plants were brought to the laboratory and examined for the incidence of pest. After slitting the plants, maggots were seen in most of the cases, feeding on the pith of stem. These maggots were bred in the laboratory and adults were recovered. After taxonomic studies, adults were identified as agromyzids and sent to British Museum, London for confirming their identity, and were later identified as *Japanagromyza* sp.

Observations revealed that at low infestation, affected plants did not show any special symptoms from a distance, but a closer examination indicated the presence of exit holes in the stem just above the ground level. The maggots burrow into the stem and make deep tunnels inside, causing drying of the affected pith. A single plant had 15–20 such larvae inside the pith of stem. The damage caused by this pest was recorded to the tune of 60% and peak of its infestation was noticed in the second fortnight of February 1985. The detailed studies on its various aspects of bionomics are under way.

The adult fly is black and mates after 4 days of its emergence. A single female laid about 35 eggs into the leaf petiole by making an elliptical cavity with her ovipositor. Incubation period lasted for 4 days and maggots coming out of eggs, mined through the petiole of stem and went down the stem.

The larva passed through three instar, mean larval period being 12.5 days. The full grown maggot was about 2 mm long. It pupated in the stem itself after making an exit hole through which the adult emerges. The exit holes were marked by a thin covering. The mean pupal duration was 19 days and the mean pupal length measured 3 mm.

The report of this pest by the present authors is the first ever made record from India and abroad.

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RECORD OF *CREATONOTUS GANGIS* (LINNAEUS) ON WHEAT

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CREATONOTUS GANGIS (Linnaeus) (Lepidoptera: Arctiidae) is known to infest coffee, groundnut, lucerne, maruagrass, *Mimulus gracilis*, ragi, *Eleusine coracana* Gaerth, jute, sweet potato, sugarcane and maize[1–5].

During the period December 1984 to February 1985, the wheat, *Triticum aestivum* Linnaeus, grown at the Regional Research Station, University of Agricultural Sciences, Dharwad Campus, Karnataka, was found heavily infested by *C. gangis*. This constituted the first record of this arctiid pest on wheat. The adults laid eggs in mass on the bottom surface of tender leaves. On hatching, the caterpillar scraped the chlorophyll from the leaves. The grown-up caterpillars

defoliated the plants. The attack occurred from tillering stage to earhead stage. Feeding was also noticed on tender milky grains. Infested plants were characterised by the presence of faecal pellets.

Detailed studies on the morphology and biology of the pest are in progress.

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CAN ALFALFA POLLINATING SUBTROPICAL MEGACHILID BEES OVERCOME *COELIOXYS* PARASITIZATION?

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OSCILLATIONS in populations of host-parasites/prey-predators are frequently observed in nature[1–4]. The parasite/predator population increase follows the increase of host/prey population and the former decline at the lower levels of the latter. Two *Coelioxys* species (Megachilidae: Hymenoptera) have been observed as the cleptoparasites of alfalfa pollinating subtropical megachilid bees (Megachilidae: Hymenoptera) and cause major damage to their populations[5]. The bees show regular and large oscillations with the populations of these parasites[5–6]. The present paper examines whether these bees can overcome the parasites to augment their own populations.

The studies were carried on three species of alfalfa pollinating sub-tropical megachilid bees *viz Megachile flavipes* Spinola, *M. lanata* Lepel and *M. cephalotes* Smith at forage research farm of this University where the native bees have been managed for the pollination of alfalfa (*Medicago sativa* L). Seasonal emergence pattern of the bees and their parasites was studied for three years from 1977 to 1979. For this purpose, marked cells containing the pre-pupae were kept in glass battery jars and their emergence dates were recorded when first emergence commenced after the dormancy periods[5].

The alfalfa pollinating sub-tropical megachilid bees show multivoltine life cycle[5–7] and undergo two dormancies *viz* summer dormancy and winter dormancy. Among the emergents of over-summering and over-wintering broods, the parasitization was always maximum[5]. However, the parasitization declined in the subsequent seasons till the bees showed a peak among the emergents. This phenomenon was again repeated thus establishing population oscillations between the bees and their parasites. These bees have no mechanism of defence for their nests and developmental stages. Then, sole factor maintaining such oscillations could be the occurrence of a time lag between the emergence of the parasites and bees which is shown in table 1. After dormancy periods, once commenced, emergence in bees spreads for around 20 days[8] and in *Coelioxys* also, similar pattern existed. But the most striking feature was the emergence of parasites about 7–10 days before the emergence of bees. The former lay eggs on the pollen-nectar provisions of the latter. In the absence of ovipositional site, the parasites waste their reproductive efforts. This could be ascertained by the study of their ovaries which were either in previtellogenic or resorbing stage[9]. The latter observation

Table 1 *Time lag between the commencement of emergence of alfalfa pollinating megachilid bees and their Coelioxys parasites for two seasonal broods of 1977–1979*

	Date of commencement of emergence of			
	Over-wintering brood		Over-summering brood	
Year	Parasite	Bees	Parasite	Bees
	M. flavipes			
1977	18 March	28 March	5 August	12 August
1978	29 March	20 April	28 July	7 August
1979	14 April	21 April	29 August	9 Sept.
	M. lanata			
1977	14 March	22 March	18 July	26 July
1978	23 March	6 April	30 July	10 August
1979	8 April	17 April	21 August	2 Sept.
	M. cephalotes			
1977	3 March	13 March	25 July	2 August
1978	16 March	23 March	7 August	16 August
1979	6 April	14 April	15 August	31 August