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## New Record of Superfamily Chrysidoidea (Hymenoptera) with a Key to Families from Punjab, Pakistan

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**Abstract:** To collect the parasitic fauna of Hymenoptera, from Kasur district, Malaise traps and net sweeping were used. During this endeavor, members of Superfamily Chrysidoidea, the parasitoids of wood boring coleopterous larvae are collected and identified from the region. The identifications are made up to subfamily level. This superfamily consists of two most commonly met families, i.e., Bethyidae and Dryinidae from this area. Subfamilies Epyrinae and Dryininae are identified in the above mentioned families, respectively. An illustrated key to the families is provided. Important taxonomic characters and economic importance of each subfamily is discussed briefly. This is the first ever record of chrysidoid parasitoids from Pakistan.

**Key words:** Systematics, parasitoids, Chrysidoidea, Bethyidae, Dryinidae

### Introduction

Superfamily Chrysidoidea consists of seven families worldwide, viz., Bethyidae, Chrysididae, Dryinidae, Embolemidae, Plumariidae, Sclerogibbidae and Scolebythidae, of which, first three are most common and abundant. Most chrysidoids are among the smallest of parasitic wasps, usually under three mm in length. Mostly chrysidoid species are black or dark brown in color, commonly collected in pitfall traps, Malaise traps and on light. Members of the superfamily are parasitoids of the eggs of stick insects, nymphs of cicadellids and earwigs and larvae of the Coleoptera and Lepidoptera. Some species are gregarious external parasitoids of wood boring Cerambycidae (Finnamore and Brothers, 1993). Females of some families like Dryinidae are flat-bodied and wingless resembling ants in shape. This body shape helps them to attack hosts in concealed situations like under tree bark or in the soil.

The cladistic relationships of chrysidoid families were rigorously analyzed and discussed. However, these analyses were later on re-examined and extended (Carpenter, 1986). World fauna of the chrysidoid wasps consist of seven families and 19 subfamilies (Finnamore and Brothers, 1993). The Australian Chrysidoidea have also been subjected to extensive taxonomic studies and six families, out of worldwide occurring seven, have been recorded (Naumann *et al.*, 1991). Present study presents two most commonly met families of the group i.e., Bethyidae and Dryinidae. Collection of the two families from a comparatively smaller area indicates the biodiversity richness of our agro-ecosystem. An illustrated key to the families found in this region is presented, identification up to subfamily level is given and distinguishing characters, as well as economic importance of each subfamily is discussed briefly.

### Materials and Methods

Malaise traps were installed on 10 different localities of district Kasur for the collection of aerial Hymenoptera, in addition, net sweeping were also used for collection from these localities. The selection of localities was based purely on the diversity of vegetation. Out of these 10, five localities yielded specimens of Chrysidoidea, the maximum of which (i.e., 60%) were collected from a single locality i.e., Chhanga Manga forest plantation. In laboratory these

specimens were cleaned in dilute (5-10%) soap solution and thereafter thoroughly washed with water, dehydrated in ascending alcohol series. Specimens from absolute alcohol were then air dried and mounted on triangular card points with water based secotone glue. The mounted specimens were then identified upto subfamily level by using Wild M3B binocular microscope (6.4 × 10X, 16 × 10X, 40 × 10X). Line drawings were prepared to illustrate the key to families.

### Results and Discussion

This study has yielded 15 specimens of most abundant and cosmopolitan families of Chrysidoidea i.e., Bethyidae, Dryinidae and both are new records in Pakistan.

#### Keys to the families of Chrysidoidea

- 1 Head dorsally concave, without occipital carina; flagellum eight segmented; mesosoma with pronotum free propodeum not clearly demarked from scutum and scutellum; metanotum and propodeum fused together (Fig. 1); protarsus pincer-like (Fig. 2) ----- Dryinidae
- 2 Head dorsally convex with occipital carina; flagellum 10 segmented; mesosoma with pronotum not free, large pyramid like, propodeum declivous, clearly demarked from scutum and scutellum; metanotum and propodeum separated from each other (Fig. 3); protarsus simple (Fig. 4) ----- Bethyidae

Superfamily	Chrysidoidea
1. Family	Bethyidae
Subfamily	Epyrinae (Fig. 3-5)

**Material examined:** 3♂ and 2♀, Chhanga Manga, 25-ix-1999, A. Khan; 1 ♀ and Maigha, 22-viii-1999, A. Khan.

**Distinguishing characters:** Mostly black and fully winged; forewing with veins Rs and M evenly arched; propodeum not constricted anteriorly, with dorsal postero-lateral angle evenly arched; eye height more than one quarter of head width; metanotum reduced and scutellum in contact with propodeum.

**Economic importance:** This subfamily is cosmopolitan in distribution. Epyrine wasps are highly important, because

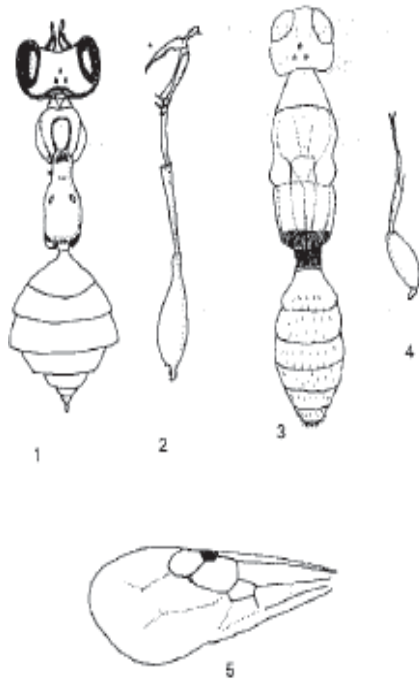


Fig. 1-5: 1. Dryinidae, dorsal habitus showing fused scutum scutellum and propodeum, 2. Dryinidae, proleg showing pricer like tarsus, 3. Bethylinidae, dorsal habitus, showing pyramid like pronotum and clear demarcation between scutum, scutellum and declivous pronotum, 4. Bethylinidae, proleg showing a simple tarsus, 5. Bethylinidae, forewing showing presence of more than two cells

they feed upon beetles larvae present in concealed situations, such as those; feeding in stored grains, insect collections, fungi and wood.

Superfamily Chrysididae  
1. Family Dryinidae  
Subfamily Dryininae (Fig. 1-2)

**Material examined:** 2♀ and 1♂, Nathay Khalsa, 15-ix-1998, A. Khan; 4♀ Chhanga Mange, 20-viii-1999, A. Khan; 1♀, Habibabad, 2-ix-1999, A. Khan; 1♂, Haila Manhasan, 23-ix-1998, A. Khan.

**Distinguishing characters:** Mostly dark brown; wingless, ant-like specimens; head deeply concave without occipital carina; antennae without tuft of hairs; ocelli present; mandibles with four teeth, mid tibia with one apical spur; protarsus chelate in females.

**Economic importance:** This widely distributed subfamily contain about 190 species in eight genera worldwide. These minute wasps are important parasitoids of hemipterous bugs feeding upon trees like *Eucalyptus* and shrubs like vines.

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