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Faunestic study of Neuropteran from Islamabad gharb and Sarpol zahab cities in Kermanshah province

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« بسمه تعالی »

این پایان نامه حاصل دوسال کار و تلاش مداوم اینجانب در مورد جمع آوری و شناسایی شناسایی 33 گونه از راسته بالتوری ها برای شهرستان های اسلام آباد غرب و سرپل ذهاب در استان کرمانشاه است. در ابتدا برخود لازم می دانم از زحمات کلیه عزیزانی که در راستای اجرای این پایان نامه مرا یاری نموده اند تشکر و قدر دانی نمایم. از پدر ارجمندم که در دوران تحصیلم همواره یار و یاورم بود اما در زمان اجرای این پایان نامه برحمت حق پیوست از خداوند متعال برایش طلب مغفرت و آمرزش می کنم و از مادر مهربانم که همیشه دعای خیرش بدرقه راهم بوده است سپاسگزارم. همچنین از اساتید گرانقدری که در طی شش سال تحصیل در گروه گیاه پزشکی دانشکده کشاورزی از وجود آنها بهره مند شده ام از جمله جناب آقایان دکترعلی نقی میرمویدی و دکتر محمد خانجانی اساتید راهنمای گرانقدرم، دکترعلی اکبر حجت جلالی که چون پدری دلسوز همیشه مشوق اینجانب و مایه دلگرمی من بوده اند، دکترناصر معینی نقده، دکترحسنعلی واحدی، دکترعباسعلی زمانی، دکترسعید عباسی و همچنین آقای دکتر سید محمد معصومی نهایت تقدیر و تشکر را می نمایم و از دوستان ارجمندم نیزکه همواره در کنار اینجانب بوده و با راهنمایی های خویش سبب دلگرمی اینجانب برای تحمل مشکلات و انجام بهتر این پایان نامه شدند از جمله آقایان ابوالقاسم رضایی نهاد، مهدی محمدی، محمد عشرتی، سعید امینی، رضا اشرفی، مراد شعبان، میثم افسری و خانم نعیمه ارادتی و سایر دوستانی که هریک به نحوی در جهت کمک به اینجانب تلاش نموده اند نهایت تقدیر و تشکر را دارم و از خداوند متعال پیروزی و سربلندی روز افزون را برای اساتید گرانقدرو ودوستان عزیزم خواستارم.

با تشکر و سپاس

محمد اسدی

تقدیم به:

روان پاک پدرم

و

عشق بی پایان مادرم

چکیده

راسته بالتوری ها (Neuroptera) دارای خانواده های متعددی است که مهم ترین آن‌ها Mantispidae ,Coniopterygidae ,Hemerobiidae ,Chrysopidae ,Ascalaphidae Myrmeleontidae و Nemopteridae می‌باشند که جزء حشرات مفید محسوب می شوند و در بین این خانواده کریزوپیده در مدیریت آفات گیاهی مورد استفاده قرار می گیرد. باتوجه به اهمیت مطالعه فون این راسته از حشرات در شهرستان های اسلام آباد غرب و سرپل ذهاب در استان کرمانشاه، شناسایی و بررسی گونه های مختلف بالتوری های این دو شهرستان در سال های 1388 و 1389 انجام شد. در این بررسی بالتوری های روستاهای مختلف این دو شهرستان جمع آوری، اتاله و در نهایت کلکسیون هایی از آن ها تهیه شد. با بررسی نمونه های جمع آوری شده، با استفاده از ویژگی های ظاهری، شکل بال و خصوصیات دستگاه تناسلی نرها در نهایت تعداد 33 گونه از این راسته شناسایی شد که از بالتوری های خانواده Chrysopidae یازده گونه، خانواده Nemopteridae شش گونه، خانواده Myrmeleontidae و Ascalaphidae هر کدام پنج گونه، خانواده Hemerobiidae سه گونه، خانواده Mantispidae دو گونه و در نهایت خانواده Coniopterygidae یک گونه شناسایی شد. گونه هایی که با علامت * مشخص شده اند برای فون ایران و گونه هایی که با علامت ** مشخص شده اند، برای فون استان کرمانشاه جدید می باشند. لیست گونه های شناسایی شده در زیر آورده شده است:

ASCALAPHIDAE: *Deleproctophyila variegata***, *Idricerus sogdianus***, *Idricerus decriptus***, *Bubopsis hamatus*, *Bubopsis tancrei**

CHRYSOPIDAE:, *Chrysopa derbendica*, *Chrysopa dubitans*, *Chrysopa pallens, Chrysopa viridana*, *Dichochrysa prasina, Italochrysa vartianorum, Suarius nanus*, *Chrysoperla carnea*, *Chrysoperla kolthoffi*, *Chrysoperla lucasina*, *Chrysoperla sillemi*

CONIOPTERYGIDAE: *Aleuroptyrex ressli*

HEMEROBIIDAE: *Wesmaeilus navasi, Symphemerobius pygmaeus, Psectra sp.**

MANTISPIDAE: *Mantispa styriaca, Mantispa scabricollis*

MYRMELEONTIDAE: *Creoleon remanei*, *Myrmecaelurus trigrammus, Palpares libelolluides, Myrmeleon linearis**, *Accanthaclisis occitanica*

NEMOPTERIDAE: *Lertha extensa*, *Dielocroce persicae*, *Dielocroce heberae**, *Dielocroce vartianae***, *Dielocroce meadewaldoi**, *Anacroce tincta**

واژگان کلیدی: فون، بالتوری ها، اسلام آباد غرب، سرپل ذهاب.

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CHAPTER ONE

INTRODUCTION

1-1-Kermanshah province

The Kermanshah province with an area of 24,461 square kilometers is located in the western part of Iran. This province from its east part is bound by Hamedan province and it's north side is located Kurdistan province, in westward is bound to Iraq, and from the southward to Ilam and Lorestan. Population of the province is about 2.3 million out of which 61.7 percent were settled in the cities and 37.7 % were residents of rural areas and the rest was no-man's land uninhabited by population. The province of Kermanshah is located between Iranian Plateau and Mesopotamia Plain in the mountainous area and Zagross heights along with summits cover the whole area. Parts of the slopes mountainous expansion are low lands and alluvium plains.

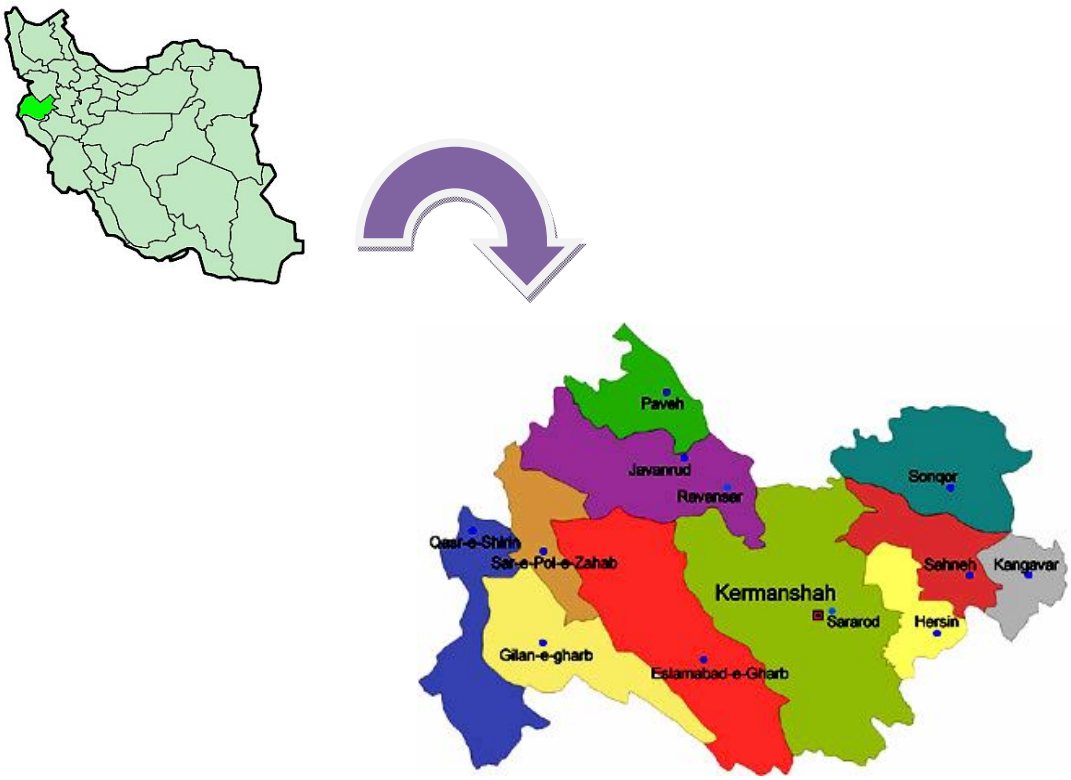

Figure1-1. Map of Kermanshah province

1-1-1-Islamabad gharb and Sarpol zahab cities

Islamabad gharb is one of the twonships of the Kermanshah province and has a temperate climate. The center of which is the city of Islamabad gharb and is a city which has good climate and pastures and considered to be one of the flourishing cities of the province. The city of Sarpol zahab is located in the west of the province and is western side is bounded to Iraqi border line. Its climate although generally is warm, but in some part temperate climate governs.

1-2- Order Neuroptera

The Neuroptera are a diverse fascinating group of about 6000 species of insects which seem so often to miss out on the attention they deserve. They are often easy to find and are well known as gardeners' friends. They include Lacewings, Dobsonflies, and Mantidflies and so on. They are described as soft bodied insects of variable size usually with long antennae. They have biting and chewing mouth parts both as larvae

and as adults, though some of the adults do not feed. They generally have 2 pairs of wings which the hind pair are usually larger to some extent. The wings are normally held tent-like over their abdomen when not in flight. They have no cerci and also have ten segments to their abdomen and 5 to their tarsi. They have large compound eyes. Their legs are all similar, except in the Mantispidae which have raptorial grasping forelegs. Those adults which feed do so on dead insects, nectar and other liquids. The larvae are all carnivorous. Many of the adults are relatively weak flyers and the larvae of some species attach the empty skins of their prey to backs as a disguise.

1-3-Classification of Order Neuroptera

Order Neuroptera represents one of the oldest and most archaic lineages of endopterygote (holometabolous), or undergoing complete metamorphosis insects. Neuroptera comprises 17 extant families containing more than 6,000 species worldwide divided into three superfamilies. Myrmeleontidae (more than 2,000 spp.) and Chrysopidae (more than 1,200 spp.) are the most specious rich families, followed by Hemerobiidae (about 550 spp.) and Ascalaphidae (some 400 spp.). The superfamily Nevrorthiformia, with the single family Nevrorthidae, represents the most basal group; members of this family are sporadically found in Japan, Taiwan, Australia, and Europe. The Myrmeleotiformia contains five families (Myrmeleontidae, Ascalaphidae, Nemopteridae, Psychopsidae, and Nymphidae). It is a well defined group of generally large lacewings with soil dwelling or arboreal larvae.The Hemerobiiformia, comprise of 6 superfamilies as follows; Chrysopoidea, Coniopterygoidea, Hemerobioidea, Ithonioidea, Mantispoidea, Osmyloidea, that is a morphologically diverse assemblage of lacewings, many of which have unique and highly specialized life cycles. Ithonidae are robust, moth-like lacewings with fossorial, scarab-like larvae associated with roots of trees and bushes (e.g., creosote). This family and the sister family Polystoechotidae sometimes are considered the most basal clade of lacewings. Another clade, or group of closely related families, is the Dilaridae clade. This group comprises Dilaridae, Rhachiberothidae, Mantispidae, and Berothidae and is united by particular larval head characteristics. The insects here included in the superorder Neuropterida are by some authorities divided into three orders, Neuroptera, Megaloptera and Rhaphidioptera.

Order: Neuropteran

Suborder: Nevrothiformia
Family: Nevrothidae Nakahara 1915

Suborder: Hemerobiiformia
Family: Ithonidae Newman 1853
Family: Rapismatidae Navas 1929
Family: Polystoechotidae Handlirsch 1905
Family: Osmylidae Leach 1815
Family; Chrysopidae Schneider 1815
Family: Hemerobiidae Latreille 1802
Family: Coniopterygidae Burmeister 1839
Family: Mantispidae Leach 1815
Family: Berothidae Handlirsch 1905
Family: Rachiberothidae Tjeder1959

Suborder: Myrmeleontiformia
Family: Psychopsidae Handlirsch 1906

Family: Nemopteridae Burmeister 1840
Family: Nymphidae Rambur 1842
Family: Myrmeleontidae Latreille 1802
Family: Ascalaphidae Lefebvre 1842

1-3-1- Family Ascalaphidae (Owlflies)

The 350 species of Ascalaphids or Owlflies are very similar to Dragonflies whom they both look like and hunt like. They lay eggs on grass stems. The larvae live freely amid the leaf litter in and around stones. They are actively carnivorous feeding on what ever comes their way. Owlflies are dragonfly-like insects with large bulging eyes and long knobbed antennae. They are not true flies, but rather neuropterans in the family Ascalaphidae, and as such are not closely related to the true flies at all; to the dragonflies and damselflies, they are even more distantly related. Owlflies are easily distinguished from dragonflies because the latter have short bristle-like antennae. The closely related antlions, family Myrmeleontidae, have short, clubbed antennae, smaller eyes, and very different wing venation.

1-3-2- Family Chryopidae (Green lacewings)

Green Lacewings are by far the most common of the Neuropterans, at least in northern temperate zones and, like the closely related brown lacewings, are the gardeners' friends because of the large numbers of aphids they consume. The larvae are all terrestrial. They have their ears in the large veins of their wings which allow them to detect the sonic of bats, the main predators of nocturnal flying insects (apart from spiders of course). The eggs of green lacewings are laid on the end of a thin stalk. Adults of some species are predators of mites, while others feed on pollen or honeydew. Eggs are laid on long stalk, presumably reducing cannibalism among newly hatched siblings. Larvae have long sickle-like mandibles and are voracious predators. Some species, commonly called trashbugs, pile debris on their back as they move around region. In some species such as the cosmopolitan *Chrysoperla carnea* the male attracts the female by vibrating his abdomen rapidly; the vibrations are transmitted down his legs to the leaf he is standing on (usually on the underside). A nearby female (up to 15cm away) will answer back in a similar fashion. The male will then search out the female, at the same time he will keep signaling. When he finds her, he will bow low before her holding his antennae back beside his wings. She responds by quivering her wings against his head while they both twitch their bodies vigorously. The female then kisses the male, and then they both hang down by their forelegs prior to mating. Other species of lacewing have similar but different courtships.

1-3-3- Family Coniopterygidae (dustywing lacewings)

The dustywings, Coniopterygidae, are a family of Pterygota (winged insects) of the net-winged insect order (Neuroptera). About 460 living species are known. These tiny insects can usually be determined to genus with a hand lens according to their wing venation, but to distinguish species, examination of the genitals by microscope is usually necessary.

1-3-4-Family Hemerobiidae (Brown lacewings)

Hemerobioidea redirects here. Numerous lacewing families were formerly included there but now are placed elsewhere; Hemerobiidae is a family of Neuropteran insects

commonly known as brown lacewings. These insects differ from the somewhat similar Chrysopidae (green lacewings) not only by the usual colouring but by the wing venation: hemerobiids having numerous long veins lacking in chrysopids. Some of the costal cross veins are forked, unlike in green lacewings. Hemerobiids, like chrysopids, are predatory, especially on aphids, both as larvae and adults. Hemerobiid larvae are usually less hairy than chrysopid larvae.

1-3-5- Family Mantispidae (Mantidflies)

Mantidflies often referred to as Mantispids a notable in that they possess raptorial forelegs much like those of the similarly named praying mantids which they use in the same way. There are about 400 species.The larvae are all terrestrial. Many of them are excellent wasp mimics.The males use pheromones instead of sound to attract females. During courtship the male rows his forelegs in the air while raising and lowering his wings. The eggs are laid at the end of a thin stalk. The eggs soon hatch and immediately enter a state of diapuse. In spring they seek out an egg sac of a glycosides spider which it enters. After eating all the young hatchling spiders it spins a silken cocoon inside the egg sac.

1-3-6- Family Mymeleontidae(Antlions)

Antlions are a family of insects in the order Neuroptera with the scientific name Myrmeleontidae formerly called Myrmeleonidae "Myrmeleonidae"; the most famous genus is *Myrmeleon*. There are about 2,000 species. Strictly speaking, the term "Antlion" applies to the larval form of the members of this family, but while several languages have their own terms for the adult, there is no widely used word for them in English. The adults are called "Antlion". Antlion larva is often called "doodlebug" because of the odd winding, spiralling trails it leaves in the sand while looking for a good location to build its trap, as these trails look like someone has doodled in the sand. It is also sometimes called "sand dragon". Antlions are weak flyers as adults, but are best known for the trap/pits the larvae, known as doodlebugs dig and live in. The pits are dug in loose sand and as their name suggests their main food items are often ants. The larvae will interfere with any ant that looks like it might be getting out of the pit by flicking grains of sand at it to make it loose its footing and thus fall into the waiting larvae's jaws. There are about 2,000 species of antlions in the world. There are quite a few other groups within the neuroptera, one of them are the Spongeflies Sisyridae, small brownish insects who lay their eggs on vegetation bordering water and whose larvae feed exclusively on freshwater sponges.

1-3-7- Family Nemopteridae(Spoon wings)

Spoonwings or Nemopteridae are a family of neuropteran insects. They are also called thread-winged antlions. Their flight is delicate and they have a circling flight to avoid walls when they are trapped indoors. The long streamer is conspicuous when the insects are flying and these are the elongated and spatulate hindwings.

4-1-Thesis aims and perspectives:

The aims of my thesis are as follows:

1.Determination of not already known Neuroptera fauna of Islamabad gharb and sarpol zahab in Kermanshah province

2.Possibility of finding new species of Neuropterans in the surveyed sites.