

การศึกษาเบื้องต้นทางอนุกรรมวิธานของแมลงในประเทศไทย

The Kasetsart University Entomological Collection

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An entomological collection is a basic necessity for any Entomology department of a university. It is an important working tool for both instruction and research. It helps to answer the basic question of "What Is the insect which is under consideration?" it is the contention of entomologists throughout the world that in order to have an outstanding Entomology department in a university, a good insect collection must be readily available. The Entomology section at Kasetsart University has been handicapped by the lack of a collection. During the late months of 1962 it was decided to rectify this situation by initiating an insect collection under the auspices of Project No. 8, Kasetsart/Hawaii University Contract, USOM Thailand.

This paper is progress report wherein the facilities, equipment, methods, and the present state of the KU Insect Collection are discussed.

FACILITIES, EQUIPMENT AND METHODS

The depository of the insect collection is a room on the second floor of the Entomology and Plant Pathology Building, a relatively new concrete building. Because of the high humidity and high water table which prevails in Bangkok, it is important that the Collection be located on the second floor where it is relatively dry. The room is 10×12 m. in size and is well-lighted by ceiling neon lights.

Within the room are eight desks for faculty members and technicians. Six large work tables are scattered throughout the room in appropriate places. Two large card file cabinets with 50 drawers each are available but not in use as yet. A master file for all species found in the Collection is contemplated which would be an admirable but a monumental task. At present one of the cabinets with locks are available in which pertinent literature and equipment are kept.

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The pinned specimens of the insect collection are deposited in 24 cabinets each with 40 drawers. The cabinets are actually of two pieces, one placed on top of the other, each holding 20 drawers. The cabinets are constructed of teakwood and have swinging glass-paneled doors. Although they are not airtight, we have had no trouble on account of this. The drawers are $6.5 \times 44.0 \times 56.5$ cm. in size. The sides and bottom are of hardwood and the top of glass. White cork-bottomed specimen trays of four different sizes are used within the drawers to segregate the insects into various taxa.

The liquid collection is kept in a cabinet which has a capacity of 50 drawers. Each drawer can hold 88 vials 2.5 cm. in diameter and 10.5 cm. in length for a total capacity of 4400 vials.

Four cabinets are available for specimens on glass slides. Each cabinet contains 12 drawers with slots for 100 slides each giving a total capacity of 4800 slides.

Unprocessed specimens are kept in insect boxes $29.5 \times 10.0 \times 44.0$ cm. in size. Several hundred of these boxes are available and these are kept in four large open cabinets which can hold 120 boxes each. Some of these boxes are used by students for their collections.

Equipment usually associated with an insect collection is available in adequate quantity. Collecting equipment includes sweeping, beating, and aquatic nets, two light traps, which can

be used either with a gasoline lantern or electric bulb, also Berlese funnels. Four microscopes of research caliber are available, three Bausch and Lomb "Stereozoom" and one American Optical "Microstar", all equipped with illuminators. Two glass dessicators for relaxing dried insects, a slide dryer, and chemicals and glassware which are generally required with an insect collection are available.

It is important in humid Bangkok that insects be dried as soon as possible after being collected to minimize the growth of fungi on the specimens. For this purpose a large thermostatically controlled dryer, $50 \times 180 \times 120$ cm. in size, is used. The temperature is kept at 45°C .

Insects are mounted as soon as possible after being collected. Stainless steel pins of size 0 to 5 are used for pinning. Black steel pins are not satisfactory because they rust in the humid conditions of Bangkok. The smaller insects are glued onto triangular cardboard paper-points with Revlon Nail Fix. All pinned specimens are then placed in the dryer for minimum of four days.

After drying each specimen is provided with a printed locality and date label. Printed labels are available for all the provinces of Thailand. The zinc plates used for the printing of these labels are deposited in the collection room and can be used for additional labels. The Thai names are spelled on the labels in accordance

with the rules set by the United States Board on Geographic Names.

Slide specimens are mounted in Canada balsam and the liquid collection is kept in 70 per cent ethyl alcohol. Most of the insect specimens for the liquid collection are killed in KAAD solution.

To prevent infestation by museum insect pests, paradichlorobenzene crystals are placed in each drawer. In addition thymol crystals are placed in the drawers to prevent fungus growth. These chemicals are replenished every three months.

SOURCE OF INSECT SPECIMENS

There are three major sources of insects for the Collection. One which has been fruitful is the collections handed in by students taking the course in General Entomology. About 220 students take this course per year and each student turns in an average of 200 insects. Most of these are the large and spectacular with very few of the minute insects. Many are not acceptable as museum specimens because they are damaged or poorly mounted but enough good specimens are handed in to constitute an important contribution to the Collection. An added value of the students' collections is that they represent a broad geographical sampling of the various localities of Thailand and are collected at various times of the year.

The most important source of insects has been the collecting trips undertaken under the auspices of the Kasetsart/Hawaii University Contract, Project

No. 8. The authors were the members of the collecting team and during the past two years 16 trips of week or more duration were undertaken. These trips were planned to cover the various ecological areas of Thailand.

Another source of specimens for periodic light trapping at the Kasetsart Campus. In addition to the significant number of specimens contributed, these traps are providing information on the periodicity of the insects in this area.

THE COLLECTION

Currently the Kasetsart University Insect Collection contains somewhat more than 50,000 specimens. Twenty-one orders are represented and they are listed below with the included families that have been identified. Family identification is at this date only fragmentary.

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| order | Thysanura |
| Order | Ephemeroptera |
| Order | Odonata. Coenagrionidae, Agrionidae, Gomphidae, Aeshnidae, Libellulidae. |
| Order | Orthoptera-Blattidae, Mantidae, Tettigoniidae, Gryllacridae, Gryllidae, Gryllotalpidae, Tridactylidae, Acrididae, Tetrigidae, Phasmatidae. |
| Order | Dermoptera |
| Order | Embioptera |
| Order | Isoptera |
| Order | Corrodentia |
| Order | Mallophaga |
| Order | Thysanoptera |
| Order | Homoptera-Cicadidae, Membracidae, Cercopidae, Cic- |

adellidae, Derbidae, Dictyopharidae, Fulgoridae, Flatidae, Ricanidae, Aphidiidae, Coccidae.

Order Hemiptera - Plataspidae, Cydnidae, Scutelleridae, Pentatomidae, Podopidae, Coreidae, Gerridae, Veliidae, Aradidae, Saldidae, Mesoveliidae, Hebridae, Hydrometridae, Lygaeidae, Pyrrhocoridae, Tingidae, Reduviidae, Ploioariidae, Navidae, Cimicidae, Miridae, Ochteridae, Nepidae, Belostomatidae, Notonectidae, Corixidae.

Order Anoplura.

Order Mecoptera

Order Neuroptera

Order Trichoptera

Order Lepidoptera-Cossidae, Psychidae, Aegeriidae, Tortricidae, Eucleidae, Aygaenidae, Pyralididae, Geometridae, Uraniidae, Bombycidae, Saturniidae, Lasiocampidae, Sphingidae, Noctuidae, Agaristidae, Arctiidae, Hypsidae, Lymantriidae, Euchromiidae, Hesperiidae, Papilionidae, Pieridae, Lycaenidae, Libytheidae, Danaiidae, Satyridae, Amaurisidae, Numphalidae.

Order Diptera-Tipulidae, Psychodidae, Culicidae, Chiromomidae, Ceratopogonidae, Mycetophilidae, Sciaridae, Sarcopsidae, Stratiomyidae, Rhagionidae, Tabanidae, Therevidae, Scenopinidae

Asilidae, Bombyliidae, Empididae, Dolichopodidae, Phoridae, Syrphidae, Conopidae, Calliphoridae, Sarcophagidae, Muscidae, Anthomyiidae, Neriidae, Calobatidae, Pyrgotidae, Otitidae, Trypetidae, Lonchaeidae, Sciomyzidae, Sepsidae, Diopsidae, Lauxaniidae, Celyphidae, Chamaemyiidae, Clusiidae, Drosophilidae, Canaceidae, Ephydriidae, Chloropidae, Agromyzidae, Miliichiidae.

Order Siphonaptera

Order Coleoptera-Cicindelidae, Carabidae, Paussidae, Haliplidae, Dytiscidae, Gyrinidae, Hydrophilidae, Silphidae, Lampyridae, Lycidae, Cloridae, Mordellidae, Meloidae, Rhipiceridae, Elateridae, Buprestidae, Dermestidae, Histeridae, Ostomatidae, Bostrichidae, Coccinellidae, Tenebrionidae, Cermbycidae, Chrysomelidae, Hispidae, Brentidae, Curculionidae, Passalidae, Lucanidae, Scarabaeidae.

Order Hymenoptera - Tenthredinidae, Gasteruptionidae, Euanidae, Braconidae, Ichneumonidae, Trigonalidae, Torymidae, Agaontidae, Chalcidae, Perilampidae, Eucharididae, Eulophidae, Diapriidae, Scelionidae, Cynipidae, Chrysidae, Sco-

liidae, Tiphidae, Mutillidae, Formicidae, Vespidae, Pompilidae, Ampulicidae, Sphecidae, Halictidae, Megachilidae, Apidae, Anthophoridae, Xylocopidae.

Coleoptera comprise the largest portion of the Collection-about 26 per cent. Other major orders are: Diptera 19 percent; Homoptera and Heteroptera- each 13 per cent; Hymenoptera- 11 per cent; Lepidoptera- 9 per cent.

At present very few specimens are identified to species. However, thousands of specimens are in the hands of experts in other countries and they should be returned identified in the very near future.

สรุป

การเก็บรักษาตัวแมลง เป็นงาน ราชสีห์ และเป็นสิ่งจำเป็นอย่างยิ่งสำหรับนักวิทยา ของมหาวิทยาลัย ชั้นงานทางค้านั้น กอง อาศัยเครื่องมือเครื่องใช้สำหรับจับแมลง และ การเก็บรักษาแมลงที่จับมาได้นั้น จะนำมานำไป เข้ม คัด แยกเข้าเป็นหมวดหมู่ อันดับ วงศ์ ตระกูล และชนิดต่าง ๆ และเก็บเข้า พิพิธภัณฑ์แมลง จำนวนแมลงที่จับได้มี จำนวนมากกว่า ๕๐,๐๐๐ ตัว แบ่งออก เป็นอันดับต่าง ๆ ๒๑ อันดับ และ ๑๙ วงศ์