CHALCID FORUM

A FORUM TO PROMOTE COMMUNICATION AMONG CHALCID WORKERS

Volume 19. December, 1996

Editor's Notes

Welcome to the latest edition of Chalcid Forum. It is hard to believe that it has been another year since we produced CF 18 and even harder to believe that this is our 19th volume. We have changed the style of CF a bit this time as we are using different software. We hope it remains useful. As always, we include a good deal of recent literature (thanks again to John Huber for this valuable service), research tidbits from other chalcid workers, address changes, etc. The masthead from this issue is of a ??? eucharitid kindly supplied by John Heraty.

Research News

Raju Raj Pandey

[Lumle Agricultural Research Centre, P.O. Box 1, Pokhara, Gandaki Anchal, Nepal]

I am an Entomologist at Lumle Agricultural Research Centre (LARC), one of the major hill research centres working under the broad umbrella of Nepal Agricultural Research Council (NARC), the apex body for Agricultural Research in Nepal. My current responsibilities include the development of integrated pest management technology against major pests of hills crops, vegetables and fruits (such as oranges) for the eleven hills Districts of western hills of Nepal. We are initiating some biological control studies as a part of development of IPM.

Yang Zhong-qi

[Research Institute of Forest Protection, Chinese Academy of Forestry, Beijing 100091, China]

"I just moved to the Institution above from Department of Forest Protection, Northwestern College of Forestry, Yangling, Shaanxi. I am now working on the investigation and taxonomy of the parasitoids on woodborers and other forest insect pests, as well as the biocontrol of *Hyphantria cunea* Drury (Lepidoptera: Arctiidae) introduced by accident by using the biocontrol agent *Chouioia cunea* Yang (Chacidoidea: Eulophidae, Tetrastichinae), a very effective endoparastic wasp of the moth pupa. From a pupa, over 300 individuals of the eulophid wasp emerged. The ideal control results have been reached in the wasp releasing areas.

Evgeny S. Sugonyaev

[Russian-Vietnamese Tropical Center c/o the Embassy of Russian Federation Hanoi, Vietnam]

I have been in Vietnam for three years already where I am head of the Laboratory of Biotechnology. I work on the ecological support of rice IPM. I also study privately chalcid—wasps fauna, mainly Encyrtidae and Aphelinidae, their taxonomy and strategy of parasitization under tropical condition. My work will last till the end of 1996 at least. I need any kind of support for the chalcid study project for its duration here. I welcome any ideas.

P.S. My last available publications are:

Sugonyaev E.S. 1994. Chalcid wasps (Hym., Chalc.) parasites of soft scales (Coccin., Coccid.) in Vietnam.

____ 1994. Two new peculiar species of the aphelinid genus *Coccophagus* Westw. Found in the nest of ants. I. Entomological Review 73(2): 427-32.

____ 1995. Ant nests on living plants in the Tropics as the refugees for soft scale insects (Hom., Coccid.) protecting them from the attacks of chalcidoid parasites (Hym., Chalc.). Zoological Journal 74(3): 80-7.

Valentina A. Yasnosh

[Department of Biological Control, Plant Protection Research Institute, Tbilisi, Republic of Georgia.]

I continue to work on the systematics and biology of Aphelinidae as well as on parasitoids of scale insects, whiteflies, and aphids and their use in biological control programs. I revised the genus *Aphytis* (Aphelinidae), ectoparasitoids of armored scale insects in the former USSR. At present, 12 species are known from this area including one newly described species-*A. stepanovi* from

southeast Russia (Vladivostock)-parasitoid of *Pseudaulacaspis cockerelli* (Cocley). The article "*Aphytis* species occuring in the former USSR and their role in the biological control" is published in the book "Advances in the study of *Aphytis* species (Hymenoptera: Aphelinidae)" Ed. D. Rosen. Intercept Ltd., Andover, 1994, 362 pp.

My junior colleague, O. Chervonenke from the Zoological Institute, Kiev, Ukraine and I have finished a revision of the genus *Aphelinus* Dalman. The species are parasitoids of aphids in the european part of the Palaearctic Region. The review is almost ready for publication. It includes new material, predominantly from eastern Europe, collected by authors and other entomologists. The earlier known species were rexamined and most were compared with types. We are very sorry that Dr. M. Graham will never see this article. His excellent work on the desnigation and description of type-material of mainly "old" species was particularly important for the study of *Aphelinus*. We also examined some previously unknown type-material from the Kurdjumov and Foerster collections which are located in the Zoological Institute, St. Petersburg. They were recently found by Dr. V. Trjapitzin. Dr. Graham (1976) was correct when he wrote that some types from Foerster's collection might be with the Kurdjumov material. Twenty-two species of Aphelinus are now recognized in Europe. I also wrote a key to the species of Aphelinidae (18 genera, 105 species) for the book " The Key to Insects of the Far East of Russia," vol. IV, p. 2, Hymenoptera. Vladivostok, Dalnauka, 1995, 396 pp., Ed. P. Lehri. (In Russian).

Techniques

CMC-10 for Mounting Chalcids

by Jason B. Oliver, Department of Entomology
Auburn University, Auburn, Alabama

CMC-10 is a commercially available product that is comparable, if not superior, to Hoyer's for slide preparation of small insects such as parasitic Hymenoptera. The ingredients of CMC-10 are acetone, chloral hydrate, lactic acid, and polyvinyl alcohol (22-27, 10-15, 5-10, 3-8%, respectively). The material is "plastic" in nature, and produces mounts that should be permanent (personal communication, technical representative, Master's Chemical Company). CMCP-9, a similar product differing only by the inclusion of phenol, has been described as "questionably permanent" (Stehr, 1987). In using CMC-10, I have found the following:

Advantages:

- CMC-10 dries slower than Hoyer's or Canada balsam (slow drying time permits specimen manipulation during slide preparation).
- Less preparation steps than balsam.
- Commercial source (no FDA approval for chloral hydrate).
- To date, dry specimens I have mounted from lactophenol have no evidence of collapse (as can occur with balsam - Noyes, 1982).
- Probably permanent?
- Specimens can be mounted directly from alcohol, water, or lactophenol. Presence of water in specimens prior to mounting is not a problem (Peterson, 1964). Specimens mounted from alcohol may appear "milky" for a short time (Peterson, 1964).
- Ringing is unnecessary according to the supplier (but is recommended by Peterson to prevent the formation of bubbles under the cover glass as drying continues).

Disadvantages:

- CMC-10 dries slower than Hoyer's or balsam; increased processing time (slides generally can be oriented vertically after ca. 2 weeks).
- Minimal specimen clearing (I generally pre-clear in lactophenol for 24-48 hours or longer if necessary).
- CMC-10 is less viscous than balsam (low viscosity can impede orientation of specimens).

The material has been available for years through Turtox (Anonymous, 1954). The product retails for $27.70 (5 ounces) and can presently be obtained from:

Master's Chemical Company Inc.
520 Bonnie Lane
Elk Grove, Illinois 60007
Phone: (708) 238-9292
Fax (708) 238-9297

Literature Cited

ANONYMOUS, 1954. CMC-10 mounting medium. Turtox News. 32: 183

NOYES, J.S. 1982. Collecting and preserving chalcid wasps (Hymenoptera: Chalcidoidea). J. Nat. Hist. 16: 315-334

PETERSON, A. 1964. Mounting media - microscope slide preparation, pp. 64-66. In Entomological techniques how to

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work with insects. Edwards Brothers, Inc. Ann Arbor, MI. 435 pp

STEHR, F.W. 1987. Techniques for collecting rearing, preserving, and studying immature insects, pp. 7-18. In F.W. Stehr (ed.), Immature insects. Kendall/Hunt Publishing Company. Dubuque, IA. 754 pp

Books

The following announcements for new books have been sent to us. [Eds.]

Zerova, M.D. ***"The Parasitic Hymenoptera - Subfamilies Eurytominae and Eudecatominae (Chalcidoidea, Eurytomidae) of the Palaearctics."*** Kiev, Naukova Dumka Publishers, 1995, 457 pp. (In Russian). 368 literature references, 125 tables with white & black pictures. Hard cover. Price 25.00 US$ (including packing and shipping). Summary.

The book represents new taxonomical research of a large group of phytophagous and entomophagous chalcidoid wasps of subfamilies Eurytominae and Eudecatominae which are associated with many plant and insect species in the Palaearctic region.

The first chapter of the book contains a review of morphology of adults and preimaginal stages of Eurytominae and Eudecatominae.

The table of trophical connections is given. The majority of species of Eurytominae and Eudecatominae are entomophagous (151 species among 261 with known hosts). The entomophagous species are associated with 6 orders of insects: Blattodea, Orthoptera, Hymenoptera (74 species of Eurytomids), Diptera (43 species), Coleoptera (25 species) and Lepidoptera. Phytophagous Eurytominae are associated with 139 species of 13 families of plants. Most of the phytophagous species are seed feeders and only 2 species of Eurytominae are gall-formers. Four genera of Eurytominae (*Bruchophagous*, *Systole*, *Pseudostyle*, *Exeurytoma*) are exclusively seed-feeders. The largest phytophagous group includes 35 species which develop on members of the plant family Fabaceae.

The economic importance of parasitic and phytophagous species are discussed. Forty species of Eurytominae develop on plants of economic importance belonging to 7 families (Rosaceae, Fabaceae, Apiaceae, Lamiaceae, Anacardiaceae, Brassicaceae, Pinaceae). Twenty species of Eurytominae may be identified as serious pests. Most of them are seed—feeders and 5 important *Eurytoma* species are developing inside plant stems. Parasitic species of Eurytominae are included in entomophagous complexes of many economically important insect groups: Coleoptera (Bruchidae, Buprestidae, Curculionidae etc.), Diptera (Cecidomyidae, Tephritidae) and Hymenoptera (Cynipidae).

The peculiarities of geographical distribution and the evolutionary trends of development of trophical connections are discussed.

The taxonomy of Eurytomidae and phylogenetic relationships of subfamilies are discussed in a separate chapter.

The systematic chapter of the book contains the revision of 6 genera of Eurytominae: *Eurytoma*, *Bruchophagus*, *Systole*, *Pseudosystole*, *Exeurytoma*, *Nikanoria* and *Eudecatoma* (Eudecatominae). The genus *Eurytoma* is divided into 14 species groups. The genus *Nikanoria* is divided into 3 species groups. The genera *Bruchophagus* and *Systole* have 2 subgenera in each genus.

Eighteen species of *Eurytoma* are newly described, 9 species names are designated as synonyms, and one species is proposed as a nomen nudum. The synonymy is established: *Homodecatoma* Liao Ding-Shi and *Eurytomocharis* Ashm. belong to *Eurytoma*. *Isosomorpha* Ashm. belongs to *Tetramesa*.

Original identification keys and complete descriptions with details of biology, type locality and distribution are given for 265 Palaearctic species of Eurytominae and 9 Palaearctic species of Eudecatominae. Original black and white drawings of the adults and preimaginal stages of chalcidoid wasps are represented by 125 figures.

The book gives unique information about chalcidoid wasps of subfamilies Eurytominae and Eudecatominae that is aimed at a wide audience of entomologists-taxonomists, advanced students, research workers and advisers in biological control, applied entomology, crop protection and plant quarantine. The book may be ordered from the author at: eis@ix.netcom.com (Robert Poole). -Andrey Sharkov

Yang, Zhong-qi. ***Parasitic wasps on bark beetles in China (Hymenoptera)***. (Pp. I-iv, 1-363, 1996: Science Press, Beijing, 100717) (In Chinese with English abstract)

Based upon studies of over 50 thousand parasitoid specimens collected and reared from many parts of China. The book describes 45 genera and 143 species and subspecies of chalcidoids and braconids parasitizing bark beetles belonging to four families of Chalcidoidea and one family (Braconidae) of Ichneumonoidea (Hymenoptera). Five genera of chalcidoids and 112 species (4 braconids and 108 chalcidoids belonging to Eurytomidae, Pteromalidae, Eupelmidae and Eulophidae) are new to science. Twenty-one genera and 17 species and 2 subspecies are new to China. A historical review on the subject in a global scale, and the morphology and biology of those parasitoids are also dealt with. Each family, genus, and species is described, keys to genera and species are provided, literature is cited, and 441 line drawings and 86 electronic microscope photos are included. The phylogeny of *Roptrocerus* Ratzeburg, 1844 (Pteromalidae) is studied. The list of "host parasitoids" is provided. For the book, please contact Mrs. Wang Eilin, 3rd Editorial Department, Science Press, Beijing 100717, China.- Zhong-qi Yang

Collections

Survey of collections of Nearctic Chalcidoidea

J. Huber, Forestry Canada, ECORC, K. W. Neatby Bldg., Agric. Canada, C.E.F., Ottawa, Ontario K1A 0C6 CANADA

In late 1993/early 1994 a questionnaire was sent to all North American insect collections listed in Arnett et al. (1986) to determine their Chalcidoidea holdings. A total of 70 questionaires were returned (10 indicated they had no holdings) and the results are summarized below. The two national collections in Canada and the US, both of which contain large numbers chalcidoids, are not included in this survey.

Some collection managers gave their holdings by number of drawers, others by number of specimens, and yet others by both. No attempt was made to translate number of drawers into numbers of specimens in Table 1 (pg. 5), but for comparison purposes among chalcidoid families in Table 2 (pg. 6) I calculated an equivalent number of specimens, assumuming that a maximum of about 600 pinned and labelled specimens would comfortably fill a standard USNM or Cornell drawer of unit trays.

Several collections have their holdings listed according to whether they were Nearctic or not, as requested on the questionnaire, but because most did not make a distinction this aspect of chalcid collections is not analysed here. Although several of the collections are small, many of the curators indicated that they contained reared specimens and so they are potentially very important for taxonomists; however, the proportion of reared material per collection could not be entered conveniently into the following tables, so is not included. Alcohol collections listed as "bulk" are unsorted sample from which chalcids have not yet been extracted. Specific mention of these was made by the curator when filling the chalcid form so that information is passed on here. The current manager is listed, when known, because some have retired or moved since the questionaires were returned.

The individual" who returned questionaires are thanked for their time and effort. I hope the chalcid taxonomist community will respond by borrowing specimens from the collections listed below when they are doing revisioary work, or even simply to sort material to family, genus or species as needed and as time permits.

Summary of results

Other than in the Smithsonian Institution and Canadian National Collection, chalcid collections are located in at least 62 institutions (55 cities) in 33 states and 7 provinces. This number will certainly be increased as information on other chalcid collections is obtained, but perhaps by not more than another dozen collections. The largest holdings are, inevitably, in the large families (Encyrtidae, Eulophidae, Pteromalidae) or those that include large and heavily sclerotized species (e.g., Chalcididae, Eurytomidae, Leucospidae). Most material is pinned, even for groups such as trichogrammatids and mymarids. Thus, the Leucospidae, a rare group with few species, is represented in as many collections (39) as the Mymaridae, a very common group with far more species but relatively poorly represented because of their small size and difficult preparation. The Pteromalidae, is the best represented family (53 collections) and the rarely collected Tetracampidae is the worst represented (4 collections). This may partly be an artifact as tetracampids are difficult to identify and may be present under other family names.

Reference

Arnett, R.H., Jr. and G.A. Samuelson. 1986. The insect and spider collections of the world. E.J. grill/Fauna and Flora Publications. Gainesville, FL. 220 pp.

Table 1. Collection name and coden (=acronym), contact person, and total siz of chalcid collection.

State/Prov. location	Coden	Collection manager or Curator	Total size drawers	pins	slides	alcohol
UNITED STATES						
AZ						
Tucson	UAIC	C. Olson	34	≈8,000	8	1v
CA						
Berkeley	CISC	R. Zuparko	-	18,748	5,728	-
Davis	UCDC	S. Heydon	98.5	49	-	-
Los Angeles	LACM	B. Brown	20	-	11	-
Northridge	SFVS	P. Bellinger	1	-	-	-
Riverside	UCRC	S. Triapitsin	161	-	82,000	-
Sacramento	CDAE	J. Sorensen	-	≈2,000	-	-
San Fransisco	CASC	?. Ubick	67	26,687	24	-
Stockton	SJAC	K. Brown	1	339	110	120
CO						
Denver	DNHC	R. Peigler	-	300	-	-
Fort Collins	CSUC	B. Kondratieff	10	6,430	-	1,000
CT						
New Haven	PMNH	R. Pupedis	26	11,774	-	-
New Haven	CAES	R. Weseloh	8	≈2,000	-	-
GA						
Athens	UGCA	C. Smith	15	≈600	-	many
HI						
Honolulu	HDOA	B. Kumashiro	23	12,112	1734	1,030
Honolulu	BPBM	G. Nishida	107	200	-	-
IL						
Chicago	FMNH	P. Parillo	6	1,074	-	36
Chicago	CASM	R. Vasile	-	28	-	-
Springfield	ISMS	D. Cashatt	-	45	-	-
IN						
Lafayette	PURC	A. Provonsha	7	≈1,250	-	9v
KS						
Lawrence	SEMC	R. Brooks	26	8,076	8	-
LA						
Baton Rouge	LSUC	V. Moseley	-	722	-	55
ME						
Augusta	ELMF	R. Dearborn	6	-	-	-
Orono	UMDE	S. Woods	3	-	-	-
MI						
East Lansing	MSUC	F. Stehr	21.5	-	-	-
MN						
St. Peter	GACC	M. Anderson	-	20	-	-
MO						
Columbia	UMRM	R. Sites	-	5,371		≈750s
St. Louis	SLSC	R. Beer	400 hyms. (may have chalcids)			
MN						
Albuquerque	PCBC	-	1	≈305	-	-
MS						
Mississipi State	MUIC	T. Schiefer	-	4,976	-	-
MT						
Bozeman	MTEC	M. Ivie	5	1,293	157	thousands
Bozeman	MAIC	M. Ivie	-	256		
NC						
Raleigh	NCSU	-	8	2,570	148	137
ND						
Fargo	NDSU	D. Fauske	5	636	-	120bulk
NE						
Lincoln	DEUN	B. Ratcliffe	-	1,079	-	-
NH						
Durham	DENH	D. Chandler	22	10,106	-	-
NM						
Albuquerque	PCBC	-	1	≈305	-	-
NY						
New York	AMNH	J. Carpenter	50	16,000	-	-
Staten Island	SIIS	E. Johnson	1	160	-	-
Syracuse	DFEC	F. Kurczewski	11	-	-	-
OH						
Columbus	OSUC	A. Sharkov	-	2,403	-	-
OK						
Stillwater	OSEC	D. Arnold	2	1,527	-	a few
OR						
Crater Lake	CLNP	M. Benterou	-	10	-	-
Salem	ODAC	R. Westcott	-	412	-	-
PA						
Harrisburg	PADA	K. Valley	6	1,794	-	27v
Philadelphia	ANSP	D. Azuma	12	53	-	-
Pittsburg	ICCM	J. Rawlins		58	-	-
SC						
Clemson	CUCC	J. Morse	-	735	-	103v
TN						
Gatlinburg	GSNP	K. Manscill	-	23	-	9
TX						
College Station	TAMU	J. Woolley	258	-	1000's	many
Wichita Falls	MSSC	N. Horner	-	52	4	26
UT						
Logan	EMUS	W. Hanson	34	2,500	-	-
WA						
Pullman	WSUC	R. Zack	15	≈3,418	-	-
WI						
Madison	UWEM	S. Krauth	45	19,947	-	353
CANADA						
AB						
Edmonton	NFRC	D. Williams	8	2,840	-	5
BC						
Vancouver	SMDV	K. Needham	2½	902	-	-
MB						
Winnipeg	EDUM	T. Galloway	1	≈458	-	-
NB						
Fredericton	FRLC	G. Smith		2,412	-	3,321
NF						
St. John's	ACSN	P. Dixon	-	31	-	-
St. John's	MUNC	D. Larson	1	-	-	-
ON						
Kingston	BDQU	R. Harmsen	-	-	-	many v
QC						
Laval	ULQC	J. Perron	1	50	-	-
Ste. Anne de Bellevue	LEMQ	G. Hsiung	17	2,982	-	-
TOTALS				185,862	89,932	6129

(+ 160,000 more pinned, estimated from number of drawers @ 600 per drawer)
GRAND TOTAL = 287,323 pinned, slide mounted and vials of Chalcidoidea

Table. 2.

Collection holdings, grouped by chalcidoid family, are indicated by their codens (see Table 1 for collection location), followed by the number of specimens in the collection. Specimens are considered to be pinned unless indicated by "s" (slide) or "v" (liquid). A vial may contain one or more specimens; in some cases the actual number of specimens was given, in others it was not, so it was not possible to get an accurate count of alcohol specimens. "xx" indicates that specimens were sorted to family but the number of specimens was not provided. Some curators only gave the number of drawers for a given family. This is indicated by "d" after the number. Other curators simply indicated a total number of drawers, but did not subdivide the collection by family (e.g., ELMF) though the material was said to be mostly identified to genus or species. Some collections are computer-catalogued by species, and number of specimens (e.g., UAIC, CISC) and even locality (e.g., DNHC). The (apparently) largest regional collection for each family is underlined. The calculations of total holdings per family are approximate. A vial was counted as 1 specimen, even though most vials probably contain several to many individuals. A full drawer was counted as 600 specimens even though it is much more likely that only half that many or fewer are actually contained per drawer. Taking Agaonidae as an example, the largest collection is BPBM (almost entirely non-Nearctic, incidentally) and the total is 23 collections containing 1345 pinned specimens (p), slides (s) and vials (v) + 14,550 estimated from number of drawers (d). Because of the approximations the total for all the family does not equal the total number of chalcids listed in Table 1.

Agaonidae: AMNH-425, ANSP-3, BPBM-21d, CASC-215, CDAE-63, CISC-35+2s, DENH-2, EMUS-250, FMNH-31, HDOA-256, ICCM-1d, LACM-d, MAIC-1, MUIC-2, NCSU-2v, PMNH-2, SEMC-27, SJAC-5+5v, TAMU-1d, UAIC-12+1v, UCDC-1d, UCRC-1d, UGCA-1, WSUC-5.

Total. 24 collections, 1345p,s,v + 15,550d.

Aphelinidae: AMNH-63, BPBM-3d, CAES-xx, CASC-72, CISC-1312+1721s, CSUC-150+100v, CUCC-5v, DENH-80, EDUM-20, EMUS-45, GSNP-1v, HDOA-979+651s+130v, ICCM-1d, LSUC-3v, MSSC-1, MUIC-27, NCSU-60, OSEC-30, OSUC-20, SEMC-10, SJAC-5, TAMU-11d+3000s, UAIC-500+8s, UCDC-d, UCRC-7d+11,874s, UMRM-29, WSUC-400.

Total. 27 collections, 21,233p,s,v + 13,800d.

Chalcididae: AMNH-1725, ANSP-4d, BDQU-manyv, BPBM-9d, CAES-xx, CASC-3489, CASM-18, CDAE-300, CISC-2295+5s, CLNP-2, CSUC-1000, CUCC-154+15v, DENH-400, DEUN-245, DFEC-1d, DNHC-23, EDUM-50, EMUS-5500, FMNH-157+1v, FRLC-71+56v, GSNP-3, HDOA-463, ICCM-5d, LACM-3d, LEMQ-60, LSUC-272+1v, MAIC-59, MSSC-30+11v, MSUC-3d, MTEC-182, MUIC-643, NCSU-400+1v, NDSU-55, NFRC-33, ODAC-73, OSEC-600, OSUC-911, PADA-137, PCBC-250, PMNH-510, PURC-25, SEMC-1612, SFVS-xx, SJAC-29+1v, SMDV-277, SIIS-2, TAMU-10d, UAIC-1000, UCDC-8d, UCRC-3d, UGCA-617, UMDE-xx, UMRM-517+2v, UWEM-480, WSUC-2d.

Total. 55 collections, 22,772p,s,v + 28,300d.

Elasmidae:AMNH-112, BPBM-2d, CAES-xx, CISC-26+2s, DENH-6, EMUS-200, NDSU-3, FRLC-11+9v, HDOA-9, ICCM-1d, LACM-d, LSUC-10, MAIC-10, MUIC-41, NFRC-1, OSEC-12, OSUC-8, PMNH-71, SEMC-194, UAIC-50, UCDC-d, UCRC-d, UGCA-4, UMRM-4, UWEM-70, WSUC-10.

Total. 26 collections, 863p,s,v + 2350d.

Encyrtidae:AMNH-1500, ANSP-2/3d, BPBM-11d, CAES-xx, CASC-1541, CISC-4050+835s, CUCC-11+24v, CDAE-800, CSUC-200, DENH-1380, DEUN-15, DFEC-d, GSNP-1+1v, EDUM-25, EMUS-2800, FMNH-33+16v; FRLC-590+754v, HDOA-3834+224s+300v, ICCM-5d, LACM-2d, LEMQ-153, LSUC-137+19v, MAIC-15, MSSC-2+1v, MSUC-1d, MTEC-122+153s, MUIC-353, NCSU-275+125v, NDSU-28, NFRC-300, ODAC-34, OSEC-70, OSUC-122, PADA-226, PMNH-919, PURC-15, SEMC-360, SFVS-xx, SJAC-18+110s+100v, SMDV-25, TAMU-100d+1000s, UAIC-400, UCDC-4d, UCRC-85d+8087s, UGCA-26, UMDE-xx, UMRM-72+150v, UWEM-753, WSUC-1d.

Total. 49 collections, 24,463p,s,v, + 126,100d.

Eucharitidae:AMNH-200, ANSP-1/3d, BPBM-8d, CASC-448, CDAE-100, CISC-198, CSUC-100, CUCC-20, DENH-165, DEUN-1, EMUS-750, FMNH-8, HDOA-14, ICCM-1d, LACM-d, LEMQ-18, LSUC-20, MAIC-9, MSUC-d, MTEC-37, MUIC-76, NCSU-5, ODAC-3, OSUC-75, PURC-21, SEMC-370, SMDV-13, TAMU-2d, UAIC-xx, UCDC-1d, UCRC-1d, UGCA-20, UWEM-87, WSUC-45.

Total. 34 collections, 2803p,s,v + 8600d.

Eulophidae: AMNH-2700, ANSP-1d, ACSN-1, BPBM-19d, CAES-xx, CASC-4098, CASM-1, CDAE-625, CISC-3051+194s, CSUC-300, CUCC-56+27v, DENH-2800, DEUN-70, DFEC-3d, DNHC-84, EDUM-200, EMUS-5600, FMNH-188+15v, FRLC-758+1253v, GSNP-3+1v, HDOA-2253+189s+150v, ICCM-5d, LACM-1d, LEMQ-1008, LSUC-129+12v, MAIC-18, MSUC-2d, MTEC-240, MUIC-1001, NCSU-150, NDSU-137, NFRC-900, ODAC-12, OSEC-330, OSUC-276, PADA-410, PCBC-3, PMNH-3860, PURC-43+9v, SEMC-1209+8s, SFVS-xx, SJAC-82, SMDV-57, TAMU-40d, UAIC-3500, UCDC-11d, UCRC-24d+740s, UGCA-294, UMDE-xx, UMRM-296+500v, UWEM-5156, WSUC-2d.

Total. 52 collections, 36,703p,s,v + 281,706d.

Eupelmidae:AMNH-400, ANSP-1/3d, BPBM-4d, CASC-641, CASM-3, CDAE-33, CISC-903+6s, CSUC-200, CUCC-4v, DENH-120, DEUN-6, DFEC-2d, DNHC-xx, EDUM-5, EMUS-3800, FMNH-12, FRLC-31, GSNP-1+1v, HDOA-931+50v LACM-1d, LEMQ-2, LSUC-17+2v, MAIC-2, MSSC-1, MSUC-1d, MTEC-18, MUIC-240, NCSU-175, NDSU-26, NFRC-5, OSEC-10, OSUC-23, PADA-41, PMNH-466, PURC-3, SEMC-55, SFVS-xx, SJAC-4+1v, SMDV-9, UAIC-xx, UCDC-2d, UCRC-1d, UGCA-72, UMRM-50, UWEM-147, WSUC-75. Total. 46 collections, 8014p,s,v + 6150d.

Eurytomidae:AMNH-1550, ANSP-1d, BPBM-7d, CAES-xx, CASC-2335, CDAE-650, CISC-1803+3s, CSUC-1200, CUCC-134+4v, DENH-850, DEUN-130, DFEC-2d, DNHC-14, EDUM-12, EMUS-400, FMNH-76, FRLC-82+95v, GSNP-3+1v, HDOA-546+15s+60v, ICCM-3d, LACM-1d, LEMQ-517, LSUC-22+6v, MAIC-7, MSSC-1, MSUC-2d, MTEC-52, MUIC-416, NCSU-360+3v, NDSU-116, NFRC-250, ODAC-95, OSEC-70, OSUC-73, PADA-383, PMNH-1143, PURC-24, SEMC-379, SJAC-52+5v, SMDV-72, TAMU-6d, UAIC-900, UCDC-9d, UCRC-4d, UGCA-213, UMDE-xx, UMRM-315+15v, UWEM-2621, WSUC-2.

Total. 49 collections,18,067p,s,v + 22,650d.

Leucospidae: AMNH-600, ANSP-1/3d, BPBM-180, CAES-xx, CASC-488, CISC-254, CSUC-210, DENH-15, DEUN-40, EDUM-6, EMUS- FMNH-14, HDOA-5, ICCM-2d, LACM-1d, LEMQ-43, LSUC-4, MAIC-2, MSSC-1, MSUC-d, MTEC-1, MUIC-5, NCSU-32, NDSU-1, ODAC-4, OSUC-76, PADA-6, PMNH-22, PURC-6, SEMC-210, SMDV-16, UAIC-125, UCDC-2d, UCRC-d, UGCA-37, UMDE-xx, UMRM-13, UWEM-180, WSUC-40.

Total. 39 collections, 2635p,s,v + 3650d.

Mymaridae: AMNH-175, ANSP-1, BPBM-1d, CAES-xx, CASC-136+14s, CDAE-600, CISC-224+2226s, CSUC-100, CUCC-28, DENH-450, DFEC-d, EMUS-800, FMNH-5, FRLC-6, GSNP-1+2v, HDOA-243+153s+5v, ICCM-1d, LACM-d, LEMQ-117, LSUC-4v, MSUC-1d, MTEC-32+3s, MUIC-145, NCSU-85+5s, NDSU-7, NFRC-3, PADA-13, PURC-1, SEMC-96, SFVS-xxs, SMDV-4, TAMU-4d, UAIC-700, UCDC-2d, UCRC-5d+620s, UGCA-33+manyv, UMDE-xx, UMRM-12+1v, UWEM-876, WSUC-100.

Total. 40 collections, 2635p,s,v + 9150d.

Ormyridae: AMNH-225, ANSP-50, BPBM-1d, CAES-xx, CASC-93, CDAE-30, CISC-45, DENH-120, DFEC-d, EMUS-155, FMNH-1, FRLC-6, ICCM-1d, LACM-d, MSSC-1, MUIC-12, NCSU-85, NFRC-16, ODAC-6 OSEC-15, OSUC-1, PMNH-24, PURC-1, SEMC-55, TAMU 1d, UAIC-50, UCDC-d, UCRC-d, UGCA-14, UMRM-9, UWEM-169.

Total. 31 collections, 1183p,s,v + 2550d.

Perilampidae: AMNH-325, ANSP-2/3d, BPBM-17, CASC-263, CDAE-22, CISC-731, CUCC-1v, DENH-75, DFEC-d, DNHC-4, EDUM-60, EMUS-950, FMNH-75, FRLC-14, GSNP-1+1v, HDOA-1, ICCM-2d, LACM-d, MAIC-3, MSSC-2, MSUC-d, MTEC-83, MUIC-36, NCSU-100, NDSU-92, NFRC-50, OSEC-75, OSUC-127, PMNH-1, PURC-180, SJAC-15, TAMU-2d, UAIC-100, UCDC-3d, UCRC-1d, UGCA-37, UMDE-xx, UMRM-89, UWEM-843, WSUC-300.

Total. 40 collections, 4671p,s,v + 6000d.

Pteromalidae: AMNH-2775, ANSP-1d, ACSN-26, BPBM-10d, CAES-xx, CASC-3061, CASM-6, CDAE-1108, CISC-5337+89s, CLNP-8, CSUC-2300, CUCC-310+20v, DENH-2900, DEUN-530, DFEC-2d, DNHC-2, EDUM-1d, EMUS-5800, FMNH-134+4v, FRLC-600+357v, GSNP-8+1v, HDOA-2031+52s+95v, ICCM-14d, LACM-2d, LEMQ-914, MAIC-31, MSSC-1, MSUC-5d, MTEC-386, MUIC-1624, LSUC-106+6v, NCSU-500+3s+5v, NDSU-179, NFRC-830, ODAC-72, OSEC-200, OSUC-409, PADA-581, PCBC-12, PMNH-4245, PURC-43, SEMC-2696, SFVS-xx, SJAC-64+8v, SMDV-242,TAMU-30d, UAIC-3000, UCDC-38d, UCRC-22d+400s, UGCA-643, UMDE-xx, UMRM-255+45v, UWEM-5407, WSUC-4d.

Total. 54 collections, 50,461p,s,v + 78,000d.

Signiphoridae: AMNH-4, CASC-2, CISC-9+67s, EMUS-20, HDOA-20, MAIC-1, MUIC-3, SEMC-1, TAMU 8d+2500s, UCDC-42, UCRC-d.

Total. 10 collections, 4969p,s,v + 2700d.

Tanaostigmatidae: AMNH-25, CASC-7, CISC-1, EMUS-30, PMNH-1, SEMC-5, TAMU-2d, UCDC-d, UCRC-1d, UGCA-1.

Total. 10 collections, 70p,s,v + 1800d.

Tetracampidae: BPBM-10, DENH-4, SEMC-7, TAMU-1d, UCDC-7.

Total. 5 collections, 28p,s,v. +600d.

Torymidae: AMNH-1800, ANSP-1d, BPBM-11d, CAES-xx, CASC-2435, CDAE-936, CISC-1743+35s, CSUC-350, CUCC-22+1v, DENH-675, DEUN-42, DFEC-d, DNHC-100, EDUM-30, EMUS-3050, FMNH-42, FRLC-20+124v, GSNP-2, HDOA-292+3s, ICCM-7d, LACM-2d, LEMQ-132, LSUC-5, MAIC-15, MSUC-2d, MTEC-139, MUIC-344, NCSU-325+1v, NDSU-106, NFRC-430, ODAC-45, OSEC-115 OSUC-282, PADA-359, PCBC-12, PMNH-373, PURC-36, SEMC-775, SFVS-xx, SJAC-65, SMDV-89, UAIC-800, UCDC-15d, UCRC-5d, UGCA-97, UMRM-174, UWEM-2552, WSUC-1d.

Total. 49 collections, 18,973p,s,v + 31,550d.

Trichogrammatidae: AMNH-20, ACSN-4, BPBM-d, CAES-xx, CASC-14+10s, CDAE-100, CISC-24+1674s, CSUC-320, CUCC-3v, DENH-70, DFEC-d, EDUM-30, EMUS-40, FRLC-223+673v, HDOA-235+447s+90v, ICCM-1d, LACM-10, LEMQ-18, LSUC-2v, MSUC-1d, MTEC-1, MUIC-8, NCSU-18+140s, NFRC-15+5v, PMNH-137, SEMC-9, SMDV-2, TAMU-1d, UAIC-630, UCDC-d, UCRC-60,000s, UGCA-3, UMRM-8+40v, WSUC-40.

Total. 34 collections, 65,063p,s,v + 2,550d.

Unsorted to family: AMNH-1250, CASC-1600, CDAE-2000, CSUC-1200+1000v, ELMF-2, EMUS-2500, GACC-20, ICCM-8d, ISMS-45, LACM-1d, LSUC-349+3v, MUNC-1d, NCSU-3d, NDSU-manya, NFRC-570, ODAC-73, PMNH-333, PURC-_250, SIIS-160, SLSC-xx, SMDV-94, UGCA-600, ULQC-1d, UMDE-xx, WSUC-2d.

Total. 26 collections, 12,049p,s,v + 25,200d.

Miscellaneous

The following is excerpted from Klapalekiana. 30:209-217. In addition to the short biography given below celebrating the 70th birthday of Dr. Boucek, the article also includes a bibliography of his work up to 1993. Eds.

Dr Z. Boucek, born in Hradec Kralove (Czech Republic), celebrated his 70th birthday on January 8th this year. He read for the degree of Doctor of Natural Sciences at the Natural History Faculty of Charles University in Prague. Later he was awarded the degree of doctor of biological sciences (DrSc.) by the Czechoslovak Academy of Sciences on the basis of his dissertation.

In his professional career he never strayed from the goals he had set himself. His perseverance, industry and tenacity of purpose - that of a country-bred man - have been remarkable right from the start of his activities in entomology. These personal qualities helped him to overcome many severe impediments in his life and to achieve his life aim of the advancement of taxonomy and the biology of a large and poorly known yet economically very important group of hymenopterous insects, the Chalcidoidea.

After temporary employment at the Parasitological Department of Charles University and several years in the Plant Protection Department ofthe Research Institute for Crop Production in Prague-Ruyne, Dr Boucek became the hymenopterist of the National Museum in Prague. However, his wider taxonomic ambitions and the obstacles in the way of studying the necessary type of material of the entomological classics in world collections, plus obstructions preventing contacts with specialists abroad, led him to the painful decision to leave his homeland. In 1969 he emigrated to England. There he eventually received a grant to work at the Hope Department of Entomology, Oxford University, and was later employed by the Commonwealth Institute at the British Museum of Natural History. He retired in 1988 but his taxonomic work goes on and his major works published after retirement are witness to his high professional qualities.

Dr Boucek's publications on Chalcidoidea began with his first dissertation, a revision of the European species of the Chalcididae family, and continues with works on the European species of the Perilampidae, Tetracampidae, Pteromalidae and Eulophidae families, on the world species of Leucospidae, on Torymidae and other families. His professional work culminated in a monograph of more than 800 pages on the genera of 14 families ofthe Australasian Chalcidoidea, unique in the world because of the number of new taxa and taxonomic improvements. It was acknowledged as the fundamental and indispensible work for everyone wishing to work with this group of insects.

After earlier works, mainly on *Spalangia* (parasites of synanthropic flies), and a catalogue of Palaearctic Eulophidae, African Torymidae, European and Indian Pteromalidae, European Eulophidae, Mongolian Perilampidae and especially the West-Palaearctic genera of Pteromalidae (1991), Dr Boucek is now completing keys to the genera of the North American Pteromalidae and several other families.

For the former Czechoslovakia, he edited and wrote the major part of keys to the genera and partly the species of Hymenoptera (1957). In the 1960s these keys were widely used, not only in Europe but also elsewhere, especially the part on the Chalcidoidea (translated into English) in Canada, 1964.

Dr. Boucek has also done much for the faunistics of the former Yugoslavia and the present Czech and Slovak Republics. The results of the latter research are included in the Check list of Czechoslovak Insects 111 (Hymenoptera) in which, as an emigrant, he could not be mentioned as co-author of the part on the Chalcidoidea. In addition, he has done a lot of useful work and provided friendly help in the identification of chalcidoids as parasites of economically important pests and in providing literature for various individuals and organizations at home and abroad.

Age has not slowed Dr Boucek down in his work. Even so, we wish him continued success and good health in the future so that his life's aims may be furfilled to the maximum. -Josef Sedivy

Entomological Monument Unveiled

On Friday 22 September 1995 a small, but distinguished, group of people gathered beneath a few fine old Eucalyptus trees at the entrance of Cedara Agricultural Development Institute, near Pietermaritzburg in South Africa, to witness the unveiling of a monument to mark what must be one of the most sucessful Southern African

biocontrol projects. All the important details are contained in the inscription which reads: Milestone in Biological Control. This plaque commemorates the discovery of an egg parasite of the Australian eucalyptus snout-beetle, *Gonipterus scutellatus* Gyll, by Dr. F.G.C. Tooke, a South African entomologist, in 1926, at Penola, South Australia. The snout-beetle, accidentally introduced from Australia into South Africa early this century, became widespread and caused immense damage to gum trees. The introduction of the parasite, *Anaphoidea nitens* (Girault), brought about a remarkable biological control of the eucalyptus snout-beetle in South Africa. The first release of this parasite in this Province was made at this site in November, 1927, by Mr. G.A. Hepburn.

The ceremony commenced with a short introductory address by Dr. C.N. MacVicar, Chief Director of Cedara, who then called upon Mr. Graham Hepburn, now 92, to unveil the monument. Mr. Hepburn briefly summarised the history behind the event, causing some amusement as he demonstrated how he had expelled the parasites into the air all those years ago. Instead of using tiny wasps he had filled a tube with white confetti which cascaded to the ground when he blew through the tube.

Flanked by Mr. Johnny Krog of Cedara, who had constructed the approximately 1.5 metre high granite memorial, and Mr. George Bartlet, Kwazulu-Natal Minister for Agriculture, Mr. Hepburn then unveiled the plaque.

This event must be seen as important for a variety of reasons. Apart from the acknowledgement it makes of the importance of the events surrounding the control of snout-beetles it also serves to publicise the work of entomologists in general. The monument clearly focusses attention on two insect species. Apart from having heard that there is a monument featuring the Colorado Potato Beetle I am not aware of any other insect which has been so 'honoured'. I would be grateful if readers who are aware of other monuments featuring insects could let me have the details. -Jason Londt, Natal Museum, P. Bag 9070, Pietermaritzburg, 3200 SOUTH AFRICA

Recent Literature

(from 1 July, 1995- 1 July, 1996, a few 1994 included)

Compiled by John Huber

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