MELISSA

The Melittologist's Newsletter

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CONTENTS

GENERAL NEWS

"State-of-the-Guild": Results and Analysis of a Survey Conducted at the International Workshop on Non-*Apis* Bees and Their Role as Crop Pollinators, Logan Utah, U.S.A., 10-13 August 1992

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Abstract

Results of a survey conducted at the International Workshop on Non-*Apis* Bees and Their Role as Crop Pollinators are presented. The survey focused on profiling the Workshop attendees, queried existing employment and support conditions for both applied and research aspects of non-*Apis* work and solicited suggestions for improving research opportunities and enhancing the public and policy maker's image of the group.

Participants came from a diverse background of subdisciplines. Employment and support conditions are deteriorating with the loss of many jobs but enthusiasm and optimism for continued work on non-*Apis* projects pervades. Many respondents conduct their work in spare time and on personal funds; most have and are willing to do limited work as volunteers on projects other than their own. Public education, increased media coverage, and more private sector involvement were the most popular suggestions for improving the "state of the guild".

Introduction

The International Workshop on Non-*Apis* Bees and Their Role as Crop Pollinators was sponsored jointly by the USDA-ARS Bee Biology and Systematics Laboratory, the USDA Cooperative State Research Service, and Utah Agricultural Experiment Station at Utah State University. It assembled a unique group of melittologists and pollination specialists to share information on advances in the important fields of non-*Apis* bee biology and alternative pollination technology (Sugden, 1993). Informal discussions touched frequently on employment conditions, support for programs, public perception, and other topics related more to the state of the "guild" than to science and applied pollination per se. I saw a need to

assemble and summarize pertinent facts and opinions to help the group achieve common goals.

Methods

The survey was assembled and conducted *impromptu* at the Workshop. Copies were available for voluntary participation during the last two days of the Workshop. Participants were invited to take blank forms back to their work places to fill out and return by mail or to copy and share with colleagues. **The original survey is reproduced on the last page of this issue of MELISSA. Please complete the survey and return to Evan Sugden at the address listed above. If a significant response is received, results will be summarized in the next MELISSA.**

Results

Thirty-seven surveys were compiled, including 3 returned by mail. Two of the latter may have been completed by individuals not present at the Workshop. Therefore, the response represents a minimum of 35 Workshop participants or 29% of the total (120 registered). Not all questions were answered by all respondents; multiple choice questions allowed more than one choice, so that the totals may be greater than the number of responses.

There were a few glitches in the survey as distributed. The phrase "=1" was accidentally reversed but apparently no respondents were confused (original working in ~~strikeout~~). In question 6, "supervisors" was meant to read "supervisees"; the effect was probably to broaden the reported work group size. Question 10 was apparently misread by two people who listed actual *numbers* of positions; these responses were disregarded. Also regarding responses to question 10, in several cases only the sign (+ or -) was given and not an actual percentage. To deal with this, a new response category was created, 10', for recording only the indicated direction of change. Question 15 applied only if the response to question 14 was "No" (Clarifying introduction in [brackets]). In question 18, the choice "e)" came out as a duplicated "d)"; no apparent confusion. Numeric responses were occasionally given as ranges, in which case, a whole number midpoint was recorded. Likewise, decimal responses were rounded up to the next whole figure.

Results are presented here in order of question number. **1)** Most of the respondents classified their Non-*Apis* involvement as research, teaching, or interestingly, conservation, although all categories were represented. Only 4 did not list research as an involvement (3 students, one hobbyist/retired. **2)** Over half are involved in honey bee or other *Apis* spp. in some way, including 2 of the 3 "development/production" specialists. **3)** Most feel that the Workshop title is appropriately considered in a distinct focus for research, development, production, and education but a considerable number thought otherwise and the negative response was similarly distributed amongst all the "involvement" groups. **4)** Most are "gainfully employed" in non-*Apis* work, the exceptions consisting of 2 researchers, 2 students, and 1 hobbyist/retired. **5)** Length of employment in the field - the distribution is very high in the 1-5 year range and has a long tail in the 20+ range. Although sample size is small (3), the length of employment for the development/production people averaged over 20 years, nearly twice that of the overall mean. This subgroup also included the longest employed. **6)** The mean working group size appears to be 3-4 people. With the maximum of 17 removed (must have included supervisors of supervisors, etc., a federal lab perhaps), the mean is 3.03. The question did not distinguish between full and part time nor between permanent and temporary workers, so this result is highly generalized. **7)** Only 25.80% of respondents do not carry on non-*Apis* work in their spare time; 12.90% do half or more of it in spare time. **8)** Similar figures hold for the percentage of non-*Apis* work personally funded (34.38% are totally funded; for 28%, half or more of their work is personally funded.) There is a high correspondence between the extremes in spare time and personal funds spent. **9)** The major threats to program security are loss of funding, changes in responsibilities, and loss of position. Only 14.71% felt "no particular threat". An interesting and inevitable consequence of success was listed by one respondent under i: "commercial competitors". **10 & 10')** Of all departments/units from which respondents come, just less than half have experienced staff reduction in the last 5 years with a range of 5-50 and a mean of 21 people let go. Of the remainder, only half have increased personnel; the positive increases average 5.25. **11)** 37.04% of respondents could not remember any job offerings in the fields in the last 5 years. Those who were aware of offerings indicated an average of 2.31. One optimistic respondent could recall 300 jobs, although it is difficult in these times to imagine that s/he was not thinking of bees rather than people. **12)** 19.23% felt that they would not return to the field if they lost their current position. Of the remainder, only 6 (28.57%) felt their chances were 50% or better; only one individual was 100% certain. It's hard to imagine that the latter individual was not a bee. **13)** 72.73% predicted that their institutions would be hiring no further non-*Apis* workers in the next five years. Of the remainder, the mean predicted number of increase in personnel was 3.56; the maximum was 10, given by a respondent involved in development/production. **14)** Despite the perception of low chances of returning to the field if positions were to be lost, only 4 pre-retirement workers (11.11%) feel they will not be working in the field 5 years hence. **15)** Retirement accounted for 2 out of 6 reasons given for a negative reply to question 14. **16 & 17)** Most individuals have done volunteer work on non-*Apis* projects of others and even more would be willing to do this. **18)** Finally, the most popular ideas for increasing support were public education, more media coverage, and more private sector involvement. Some think that government representatives should be contacted (lobbied?) while "Earth Watch" tied with "eat more blueberry pie" and "other". Killer Bee threats only went down with 2 individuals, both of whom selected all choices. (Ironically, we are involuntarily tied to the effects of Africanized honey bees, which may increase the cost of honey bee pollination as a result of technical or publicity-related problems, thereby increasing the interest in pollination alternatives.)

Discussion

Researchers comprised most of the Workshop invitees and this is reflected in the activity profile of the participants. However, a considerable number are also involved in conservation and development/production, indicating the multifaceted na-

ture of the field. Since our practical goal is the provision of a commodity through management of certain bee species, it might be advisable to involve even more industry and conservation representatives in future workshops. Most of us deal with honey bees in addition to our non-*Apis* concerns. It would be incongruous and perhaps detrimental to isolate ourselves from traditional apiculture and its related scientific concerns. Perhaps representatives from the honey bee industries should be included in future Workshops. We should consider ourselves a part of the larger, more inclusive pollination field and not an isolated enclave. (The USDA Agricultural Research Service sponsored a general pollination research planning workshop in October, 1991 which included both honey bee and non-*Apis* concerns.) Acknowledgement should be given to efforts toward combined non-*Apis*/honey bee pollination schemes and the use of honey bees or their products in non-*Apis* rearing and production. On the same theme, the Workshop title defines a specialist line of methods and subdisciplines of growing importance but may not define an exclusive focus for research, development, production, and education.

Distribution of length of employment for the group seems encouraging in that many of us are new recruits. Hopefully, the increasing importance of our work, and its perception by policy makers and funding agencies, will act to keep the curve bulging at the low end. We should also wish that our invaluable emeritus members will keep stretching the tail at the other end. With more companies involved in applied work, we should expect overall working group size to increase. Discreet research units will probably remain small but initiates should be encouraged to found more of them. It is both good and bad that so much of our effort is done in spare time and on personal funds. On the one had, we are a committed lot and this has and may continue to see quality non-*Apis* work through hard times. On the other hand, better support and more recognition is badly needed. Many of us are facing increased responsibilities and threats of job loss along with much of the world's technical work force. Nearly half of our institutions have cut personnel while only a quarter have increased it and the cuts seem to be 4 times the size of the increases. Finally, most institutions are predicted not to be in the hiring mode for at least 5 years. New job opportunities must be created. While horticultural/agricultural concerns represent our main hope for jobs in the overall picture, our ties to research dictate that more opportunities must open up there, as well.

Despite some gloomy aspects of the picture, most of us are incredibly optimistic about remaining in the non-*Apis* arena. We enjoy our work and have an understanding bordering on faith that non-*Apis* development is of vital importance to agriculture, conservation, and basic science. Most of us are comfortable with volunteer effort when needed. But recognition and support must accompany our own enthusiasm if our labor is to continue to bear fruit (pun intended). The private sector will find its own economic motivation for pursuing applied non-*Apis* technology, but for research we must actively pursue and promote public education and increased media coverage. Might there be job opportunities in the business of getting our messages across? Most of us could serve as consultants to film-making efforts or even make our own promotional spots. But how about writing a grant proposal to make a comprehensive film on alternative pollination schemes? The traditional media must continue to be invited to major official meetings such as the 1st Workshop. Perhaps those of us with amenable resources should be arranging for more industry cooperative positions for graduate students. We could be offering our skills also to conservation and teaching organizations in exchange for research opportunities. To facilitate all of this, a 2nd Workshop is in order, with planning to begin soon. We should also try hard to get major international representation, especially by those countries whose delegates canceled at the last moment, i.e., China, India, Iran, and Russia. Someone could organize a non-*Apis* symposium at the annual meeting of the Entomological Society of America and/or at other entomological/agricultural gatherings to fill the information gap between Workshops. It was suggested that the unofficial organ for communication amongst non-*Apis* workers should be MELISSA ("The Melittologists's Newsletter"), since most of the group already subscribes. The focus of the newsletter may broaden somewhat and hopefully a more frequent and regular schedule of issues can be maintained. I suggest that the newsletter solicit e-mail numbers for a published listing and otherwise promote enhance intra-group communication. Finally, although I admit a personal bias, I do think that we should all eat more blueberry pie. Anyone for a bake sale?

Acknowledgements

Some of the subjects mentioned above were discussed in a final informal session at the Workshop. The conclusions reached here basically echo this discussion although I have added some ideas of my own. Twilla Hansen, secretary for the USDA-ARS Bee Biology & Systematics Lab at Utah State University kindly typed and duplicated the original on short notice with the consent of John Vandenberg, Research Leader and Workshop organizer/host. John Vandenberg, Stephen Buchmann, and Robbin Thorp critiqued the manuscript. Thanks to all who took time to answer survey questions and return the form.

Reference

Sugden, E. A. 1992. Non-*Apis* bees workshop turns a new page. Bee World 73(4):209-213.

COLLECTING NEWS

Melittology in Thailand

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In January and February, 1993, my wife and I spent a month in Thailand. We were invited to go there by Dr. Somnuk Boongird, who is one of the six members of the Bee Research Branch, Entomology and Zoology Division, Department of Agriculture in Bangkok. His office and laboratory are adjacent

to the campus of Kasetsart University (meaning agricultural university). While most of the responsibilities of the Bee Research Branch concern honeybees, Dr. Boongird is also much involved in work on other bees, especially as pollinators of various tropical fruits, teak, etc.; this was his reason for inviting me to Thailand.

In the Department of Entomology at Kasetsart University, Dr. Boongird's former principal professor, Dr. Savitree Malaipan (Ph.D., University of Manitoba) also works with bees. She has investigated improving sunflower pollination by building up the population of *Ceratina*, providing numerous nest sites (pithy stems). The yellow and black *Ceratina* species of the subgenus *Ceratinidia* are the commonest nonsocial bees at many localities.

Drs. Boongird and Malaipan took us by car during the month to all parts of Thailand except the far east. They interrupted their own activities to take us to places ranging from southernmost Thailand (the cities of Songkhla and Hat Yai) near the Malaysian border to the far north (Fang and the Royal Research Station at Ahn Khang). This is a distance of over 700 miles in a straight line, from the wet tropics in the south (7^0 N) to dryer tropics (some of the trees semideciduous in the dry season). In the mountains west of Fang (about 20^0 N) there are pine trees, bumblebees, and many other indications of temperate climate including temperate fruit trees.

Bee collecting was not very good because we were there in the dry season, and it was an unusually dry dry season. Flowers that might have been in bloom were not. We nonetheless found many bees. The commonest bee in Thailand is *Apis florea*; it is everywhere. This is interesting because the principal small *Apis* in nearby Malaysia is *A. andreniformis*. *A. cerana* is much less common and varies geographically; northern and southern samples do not look the same. *Apis dorsata* is also present; we found all three species on the campus of Kasetsart University.

Apis mellifera has been introduced and is the principal source for the commercially important honey production of Thailand. There are 100,000 to 120,000 colonies in Thailand. They have to be cared for, however, and die out if left to themselves because of mites, wasps, etc.

Stingless bees (Meliponini) are rather abundant. Some big *Ficus* trees have numerous nests, sometimes of two or three species, in their trunks or roots; we found one such roadside tree with 19 nests. Dr. Boongird is familiar with the species, and has had most of them identified by Prof. S. F. Sakagami. The possibility exists for using them to pollinate mango and other tropical fruits, and also teak. The manageable native *Apis* (*cerana*) does not readily visit the flowers of these trees. *Trigona* species that typically nest above ground and in diverse kinds of cavities, such as *Trigona laeviceps*, could presumably be moved around without too much trouble and may be good pollinators.

Dr. Anuchit Chinajariyawong of Prince of Songkhla University in Hat Yai is also much interested in stingless bees and has a student working on them. He has the advantage of working within an easy walk of forested hills probably full of stingless bees. (Much of Thailand, except for some national parks, is deforested.)

The most surprising bee we got was a series of *Systropha*, a genus I had not expected to find, from the narrowest part of the Isthmus of Kra, midway between the Gulf of Siam and the Andeman Sea. There is also *Systropha* in the insect collection of the Chieng Mai University.

There are substantial insect collections with many bees from many parts of Thailand in the Thailand Department of Agriculture, and also in the Department of Entomology of Kasetsart University in Bangkok.

The hospitality and generosity of our hosts were superb; so was the Thai food. The highways are excellent and go nearly everywhere (but avoid Bangkok traffic). The weather was fine. We can recommend bee studies in Thailand. There are numerous agricultural, horticultural, etc., stations at some of which one might arrange to stay. Moreover, the country is full of fascinating historical, artistic, and religious monuments, temples, and for that matter, customs, that make a visit there worthwhile quite aside from the bees. [See note in CURRENT PROJECTS by Hans-Joachim Flügel concerning Thai bees available for study.--RMcG]

Field Work in Sri Lanka

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From 6 July through 12 August 1993 Dr. Karl Krombein and I visited Hymenoptera collections in India and conducted field study in Sri Lanka. About four weeks were spent recording behavioral observations and collecting bees and wasps in the Wet Zone tropical rainforests and Dry Zone jungles of Sri Lanka. We also were afforded the opportunity to present a public lecture at the National Museum in Colombo. Our talks, sponsored jointly by the Department of National Museums and the Institute of Biology seemed of particular interest to local apiculturists wanting to learn more about the pollination potential of their native species.

Investigation of the complex association of invertebrates occurring in and on the leguminous myrmecophyte, *Humboldtia laurifolia*, became a focal point of our work. This small, understory tree grows in the vicinity of streams and hillside seeps in the lowland rainforest. Internodes between the pinnately compound leaves are inflated. As the stems mature, the pith within internodes dies and collapses against the inner wall leaving an elongated cavity. A narrow entrance hole to the chamber also develops at the upper end of the internode. Many of these stems are occupied by one of several ant species that rear their brood in the cavities and feed at the numerous extrafloral nectaries of the tree. In return, the aggressive ants apparently provide the plants protection from herbivory.

This year, the southwest monsoon was abnormally late (usually occurs in May-June). While frequent overcast and occasional down-pours would normally impair field work, the

weather actually facilitated our study by forcing insects to remain in their nests and by simulating night-like conditions. More than 500 internodes were cut open with pocket knives. We learned that many cavities not occupied by ants were used as nesting sites or shelters by a diverse assemblage of invertebrates. We examined nesting colonies of small crabronid wasps and two species of *Braunsapis*, and found predaceous (primarily on ants) dipterous larvae, pseudoscorpions, mites, and slender arboreal earthworms. Large land planarians, some species of which are predaceous on earthworms, were found crawling upon the foliage. We plan to prepare several papers reporting our findings on the *Humboldtia* complex after completing a microscopic examination of the alcoholic material we brought back. Sri Lanka is economically poor, but biologically rich. Much work in Old World tropical rainforests begs to be done.

A Note on Bees from the Island of Madeira and from the Azores - with a Call for Help in Identification

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Madeira is an island in the Eastern Atlantic, about 500 km off the coast of Morocco. Despite having the chair in (of all things) marine biology at the University of Madeira, I have more than a passing interest in bees (see references in this issue of MELISSA) and have started an inventory of the species. I am attempting to collect specimens of all bees of Madeira and have in the past sent the specimens to Dr. Warncke in Germany in the hope of eventually producing together with him a checklist of and a key to the bees of Madeira.

Dr. Warncke and his wife died during a collecting trip to Egypt. In the following, I give a list of the species he identified. The specimens (and the last four lots of unidentified animals sent) are in Dr. Warncke's collection whose fate is undecided at the moment I am writing this.

Anthophora quadrifasciata madeirae Sich.
Bombus terrestris maderensis Erlandsson
Halictus morio wollastoni Ckll.
Halictus villosulus (K.)
Osmia latreillii Spin.
Osmia fulviventris (Pz.)

During a trip to the Azores, end of July 1992, I caught some bees at Ponta Delgada and sent them in two lots. Of the second lot, Dr. Warncke wrote me that it consisted of two species of *Megachile* and one *Halictus*, but he did not send the precise identification prior to his departure for Egypt. The first lot he identified as follows:

Anthidium manicatum (L.)
Halictus morio (F.)
Halictus villosulus (K.)
Halictus minutissimus (K.)

All three halictids apparently are first records for the Azores.

I am continuing to collect bees at Madeira and possibly also the Azores and I am therefore looking for a specialist to identify the species (I am not a bee taxonomist myself). I would prefer an all-around genius who can identify (or describe as a new species, which is quite likely to happen) any bee from Madeira but I fear that after the death of Dr. Warncke I will have to be content with specialists for certain families or even genera (in the later case the problem would be that I can recognize only the most distinctive genera). In any case, I would appreciate if people interested in identifying bees from Madeira would contact me. They would, however, have to promise me to identify or return specimens within a reasonable time - three months minimum surely is a reasonable time.

P.S. If anybody knows a publication dealing with bees from Madeira other than Alfken 1940, I would very much appreciate if he/she could send me a photocopy - literature is hard to get by on this island.

The Bee Fauna of Iraq

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During the last ten years I have collected more than 20,000 specimens of aculeate Hymenoptera from different parts of Iraq. More than 80% of the collected materials are bees of most bee families.

Iraq evidently possesses a rich and interesting bee fauna. Our bees were found to be distributed among six families, 27 genera and 77 estimated species. Nearly 20 taxa representing five families were determined to species. Most of the specimens that could not be identified to species were given a species number. The status of these unnamed bees is uncertain. Without doubt, some are undescribed species. Dr. D.B. Baker and Prof. S. Jensen were consulted for identification and/or conformation of certain genera and species.

I have been able to sort most of the specimens to genera. The relative scarcity of many bee genera is the main reason to assume that the presently known genera are still incomplete. The available data could indicate that certain genera are widely distributed throughout the country. The most diverse family in terms of species is Anthophoridae.

The Bee fauna collected in Iraq from 1983 to 1993:

COLLETIDAE

Hylaeus, 2 undet. species

HALICTIDAE

Halictus, 7 undet. species
Lasioglossum, 2 undet. species
Nomia (or *Pseudapsis*), 2 undet. species

Nomiodes punjabensis (Cameron)
Nomiodes variegata (Oliver)
Sphecodes, 2 undet. species
Thrinchalictus prognathus Michener?

ANDRENIDAE

Andrena savignyi Spin.
Andrena, 8 undet. species
Panurgus, 2 undet. species

MEGACHILIDAE

Anthidiellum sbigatum
Anthidium neosyriacum
Anthocopa, 1 undet. species
Chalicodoma, 2 undet. species
Coelioxys, 2 undet. species
Icteranthidum ferrugicum
Megachile, 6 undet. species

ANTHOPHORIDAE

Amegilla byssina (Klug)
Amegilla, 3 undet. species
Anthophora atriceps Perez
Anthophora spinolana Priesner
Ceratina, 2 undet. species
Eucera dimidiata
Habropoda (?), 1 undet. species
Nomada, 5 undet. species
Paracrocisa sinaitica Alfken
Tetralonia, 2 undet. species
Thyreus, 2 undet. species
Xylocopa aestuans (L)
Xylocopa fenestrata

APIDAE

Apis mellifera
Bombus, 2 undet. species

Expedicion del "PCAM" al Estado de Chiapas

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[NOTE: this article originally appeared in the Chamela Informa, Boletín informativo del la Estación de Biología Chamela, Año 1, Número 2, Julio de 1993.]

Durante el pasado mes de abril (8 al 27), tuvimos la oportunidad de colectar insectos en el Estado de Chiapas, como parte de una expedición que se organizó dentro del proyecto "A faunal study of the native bees of Mexico." Este proyecto es una de las acciones que conforman el denominado "Programa Cooperativo sobre la Apifauna Mexicana" (PCAM), cuyo objetivo es conocer la fauna de abejas de México. En esta cuarta expedición participaron Ricardo Ayala, Felipe A Noguera y Alicia Rodríquez de la Estación de Biología Cheamela, IBUNAM, Claudia Mendoza y Efraín Tovar de la Facultad de Ciencias, UNAM, Wallace E. LaBerge de Illinois Natural History Survey, Robert W. Brooks de Snow Entomological Museum, University of Kansas, George C. Eickwort de Cornell University, Ithaca, New York, y John L. Neff de Central Texas Melittological Institute, Austin, Texas. El itinerario fué diseñado pensando en muestrear los diferentes tipos de habitats existentes en Chiapas y en una época del año (en la sequía) con poca información sobre la diversidad de abejas existentes.

El punto de partida fué Tuxtla Gutierrez y la fecha de reunión el día 4 (viajamos en la Combi desde aquí), pernoctamos en Querétaro y llegamos a la Ciudad de México el día 5. Ahí se integraron al grupo Claudia, Efraín y Felipe. El día 6 salimos en la noche hacia Tuxtla y llegamos hasta las 5 de la tarde al aeropuerto, con el tiempo justo para recoger a los demás integrantes, que llegaron a las 5:30 por un vuelo de Mexicana. De ahí nos movimos a la Ciudad de Tuxtla Gutiérrez, en donde nos hospedamos en el Hotel Safari.

Del 8 al 11 dedicamos duestros esfuerzos a los alrededores de Tuxtla Gutiérrez. El día 8 colectamos en la selva baja caducifolia que se encuentra a lo largo del Cañón del Sumidero. El día 9 nos movimos hacia del norte de Ocozocoautla hasta llegar al parque Laguna Bélgica, en donde se encuentra un bosque mesófilo de montaña bien conservado, aunque su área es bastante reducida; desgraciadamente ese día estuvo muy lluvioso y no fué posible colectar. Al día siguiente (día 10) regresamos a Laguna Bélgica, pero nos encontramos con la sorpresa de que no era posible colectar sin una autorización de Miguel Alvarez del Toro. Tuvimos que movernos a los límites del parque en donde obtuvimos una buena cantidad de abejas, sobresaliendo de entre ellas un registro interesante de *Mydrosoma*. El día 11 seguimos el camino a Nuevo México, al sur de Ocozocoautla, colectando en selva baja, bosque de pino-encino y selva mediana muy perturbada, realmente la colecta resultó satisfactoria, ya que se colectó una buena serie de *Centris*, diferentes especies de Megachilidae, además de un género poco común como *Chilicola*. El 12 nos movimos hacia San Cristobal de las Casas y colectamos principalmente en bosque de pino-encino, obteniendo una colecta regular. En San Cristóbal nos hospedamos en el Hotel Posada de los Angeles y durante un breve recorrido por la ciudad, Jack, Bob y Ricardo compraron tres piezas de ámbar, dos de ellas con *Plebeia silicea* Wille y una con otra especie fósil posiblemente nueva. Al día siguiente continuamos hacia Comitán, colectando también en bosques de pino-encino, pero con un día nubiado y poco frío, que no fué muy bueno para la colecta de abejas; llegamos a Comitán en la tarde y nos hospedamos en el Hotel Real Balún Canán. El día 14 la expedición se dividió en dos grupos. El primero, integrado por Ricardo, Felipe, George y Robert, partió con destino a la Estación Chajul en la Selva Lacandona y el segundo, integrado por Claudia, Alicia, Efraín, Wallace y John, permaneció en Comitán y posteriormente se dirigió a Tapachula. Ambos grupos nos volvimos a reunir el día 20 en Comitán.

En el viaje hacia la Estación Chajul, los integrantes del primer grupo experimentamos la gran aventura de nuestra

vida, En Las Margaritas (21 km NE de Comitán) nos esperaba una avioneta CESNA para llevarnos a la Estación en un vuelo de aproximadamente 30 minutos, sin embargo, estos 30 minutos fueron interminables para todos nosotros. Ese día había un viento muy fuerte, que junto con lo endeble de las avionetas, hacia el vuelo bastante difícil. Tuvimos que dejar parte de nuestro equipaje (trampas principalmente), para hacer un total de 350 kilos de peso. Una vez que nos acomodamos dentro de la avioneta, George y el piloto en los asientos de adelante y atrás los otros tres junto con las cosas (sentados dobre una tabla), despegamos con mucha dificultad. Durante todo el trayecto la avioneta fué bamboleándose para todos lados y eso que el piloto subió hasta 7000 pies de altura tratando de evitar las fuertes corrientes de viento; cuando llegamos a Chajul y aterrizamos, realmente fué un gran descanso. Lo más triste de todo, es que después de haber sufrido tanto en la llegada, nuestra colecta en Chajul fué bastante podre. Durante los tres días que estuvimos, colectamos bastante poco, debido principalmente a lo seco que estaba y a que las pocas abejas que se observaban volando, lo hacían en la copa de los árboles, haciendo su colecta prácticamente imposible. No obstante, colectamos algunos registros interesantes como es el caso de *Trigona silvestriana* que previamente era conocida por un solo ejemplar y se dudaba de su existencia en nuestro país. También se capturó un ejemplar de *Osiris* una de las abejas parásitas más raras en colecciones. Entre las abejas sin aguijón se capturaron dos especies de *Melipona,* dos de *Trigona*, tres de *Plebeia* y una de *Nannotrigona, Partamona* y *Trigonisca.* Se colectaron también varias especies de *Megachile, Coelioxys*, Eucerini y *Ceratina.* El Dr. Eickwort encontró una agregación de nidos de *Dialictus* y decicó parte de su tiempo a su estudio.

La Estación de Chajul está enclavada en la reserva de la biosfera Montes Azules, rodeada hacia el norte de una selva alta perennifolia en buen estado de conservación. Sus instalaciones cuentan con dos dormitorios para investigadores visitantes, un comedor, una cocina y cocineras que preparan los alimentos, un laboratorio y dos dormitorios para el personal de intendencia. La energía eléctrica es obtenida por medio de celdas solares y el agua provene de un arroyo que se encuentra cerca de las instalaciones. Durante nuestra estancia el personal de la Estación se mostró muy amable y nos ayudaron en todo lo posible. Las colectas las realizamos a lo largo de las veredas que se encuentran trazadas en la Estación o en distintas localidades a lo largo del Río Lacantún y del Río Chajul, a las cuales llegamos por medio de lanchas propiedad de la Estación y que son manejadas por el personal de la misma.

Rigresamos a Comitán el día 17 en un vuelo mucho más tranquilo que el anterior, hospedándonos en el mismo hotel. Al día siguiente (día 18) fuimos a colectar a las Lagunas de Montebello y a pesar de que estuvo nubiado y frío, pudimos colectar algunas abejas, como *Psythyrus, Bombus, Xylocopa* y varios géneros de Halictidae. El día 19 colectamos en el camino hascia Ciudad Cuauhtémoc, ruta que se caracteriza por el brusco cambio de vegetación, que va de bosque de pino encino en los alrededores de Comitán a selva baja muy seca en las cercanías de Ciudad Cuauhtémoc; no se colectaron muchos ejemplares dado que nos encontramos en la época más seca del año, pero se encontraron representantes de los géneros *Centris, Megachile, Lithurge, Dianthidium, Ancyloselis, Dialictus* y los abundantes *Halictus ligatus.* El día 20 regresamos otra vez a las Lagunas de Montebello, esta vez con una mejor suerte, colectándose varias especies interesantes de Halictidae.

El segundo grupo colectamos el día 14 en las Lagunas de Montebello y exploramos el área cercana a las ruinas de Chinkultic, en donde encontramos gran cantidad de flores, por lo que decidimos volver al día siguiente. Contrario a lo esperado, encontramos pocas abejas y optamos por ir hacia Tzimol, en donde tampoco tuvimos buena suerte. El 16 salimos rumbo a Tapachula y en la primera parada que hicimos, nos encontramos con 2 personas que se identificaron como colectores de mariposas, ellos nos comentaron de un sitio donde se han registrado especies endémicas en aves, reptiles y mariposas, cerca de Frontera Comalapa, por lo que decidimos visitar ese lugar. 7 km al NO de Frontera Comalapa se encuentra una brecha hacia Bella Vista (770 msnm) y apenas 5 km arriba (2030 msnm) llegamos a un bosque mesófilo de montaña bastante bien conservado. Desafortunadamente fué un día nubiado, pero aún así encontramos algunas abejas muy interesantes, como una *Ptiloglossa* y una posible especie nueva de *Bombus*. Ese día llegamos a Tapachula en donde nos hospedamos durante tres días en el Hotel San Francisco. El día 17 nos movimos hacia la costa sin éxito y luego fuimos hacia Nueva Alemania, llegando a una selva mediana subperennifolia con muchas plantaciones de café y cacao, donde tuvimos una colecta muy buena tanto de abejas como de avispas. El día 18 fuimos hacia la frontera con Guatemala y 2 km al S de Talismán, en un área de cultivo de mangos, tuvimos una excelente colecta, capturando una buena serie de Megachilidae (10 spp.), *Euglossa, Centris* y *Mesoplia*. El 19 fuimos rumbo a Belisario Domínguez y encontramos una selva mediana subperennifolia bastante bien conservada, pero sin vías de acceso, por la que no fué posible colectar. Llegado el 20 regresamos a reunirnos con el primer grupo y en el trayecto, 3 km al S de Motazintla, en un bosque de pinos, colectamos gran cantidad de abejas sobre *Senecio* sp., encontrando una *Diadasia* que parece ser una nueva especie.

A partier del día 21 los dos grupos seguimos las mismas rutas, aunque cada uno paraba en loclidades diferentes (viajábamos en dos combies). Ese día colectamos por la ruta Comitán-Tzimol-San Francisco Pujitic-Amatenango del Valle-Comitán. La mayor parte de esa ruta está muy perturbada y estaba demasiado seca entonces, siendo principalmente selva baja a excepción del área cercana a Amatenango, en donde encontramos bosques de pinos. La colecta no fué muy buena, encontrándose especies de *Dianthidium, Anthidiellum, Nomada* y *Ancyloscelis*. El día 22 salimos rumbo a San Cristóbal, con muy poca suerte en la colecta debido a que estaba muy nubiado. De San Critóbal nos sequimos hasta Ocosingo, en donde pasamos la noche en el Hotel Las Margaritas. Al día siguiente (día 23) nos dirigimos hacia Palenque e hicimos varias paradas en el camino. Una de ellas fué en el ejido Shanil a orillas del río Paxihá, la cual fué la más productiva de todo el viaje, al colectarse varios cientos de abejas, encontrán-

dose varias especies de *Nomada, Ceratina,* Megachilidae, *Coelioxys, Melissodes,* etc. Posteriormente, el primer grupo se desvió hacia las cascadas de Agua Azul, en donde se colectó un individuo de *Rathymus*, abeja parásita muy rara y de la cual solamente se conocían dos individuos. Esta fué una de las estrellas de la expedición. Ese día llegamos a Palenque en donde pasamos tres noches hospedados en el Hotel Nututum. El día 24 el primer grupo colecto en los alrededores de las runas de Palenque y el segundo hacia La Libertad, al norte de Palenque, desraciadamente ninguno tuvimos buena suerte. El día 25 durante la mañana visitamos en plan de turistas las ruinas de Palenque y a mediodía un grupo nos dirigimos a colectar a las cascadas de Misol Há en donde encontramos *Melitoma, Dialictus, Coelioxys, Megachile* y *Euglossa*. El día 26 regresamos a San Cristóbal de las Casas, colectando en algunos puntos del camino, pero sin mucha suerte en abejas, sin embargo, logramos colectar un nido de avispas de Epipona guerini, lo cual fué un muy buen registro para nosotros, dado que nos permitió conocer las características del nido. Ese día nos quedamos en San Cristóbal y al día siguiente tuvimos oportunidad de ir por la mañana al mercado de Santo Domingo y comprar algunas artesanias. A mediodía slimos a Tuxtla Gutiérrez y por la tarde fuímos a conocer el Zoológico de Alvarez del Toro, el cual es bastante inusual e interesante. Nuestra cena de despedida fué en el restaurante Las Pichanchas, el cual ofrece comida típica de la región y presenta bailables regionales todos los días. El día 27 por la mañana, Wally, Jake, George y Bob partieron rumbo a los Estados Unidos y el resto regresamos hacia la Ciudad de México. Llegamos ese día hasta Oaxaca y al día diguiente arribamos a la Ciudad de México, en donde se quedaron Efraín y Claudia. El día 30 nosotros tres continuamos hacia Chamela, llegando hasta el día 1 de Mayo a la Estación debido a que hicimos una escala en Guadalajara.

El balance final de esta expedición fué muy positivo, porque no sólo nos permitió incrementar el conocimiento de las abejas en México, sino que también fué posible conocer localidades muy interesantes para su estudio, colectar material de otros grupos de insectos (principalmente avispas y cerambícidos) e interactuar con diferentes investigadores de los Estados Unidos, lo que puede incrementar en un futuro, el intercambio académico entre sus instituciones y la nuestra.

Antes de concluir con nuestra narrativa, no queremos dejar de comentar que en dos ocasiones nos enfrentamos con la negativa para poder colectar en ciertos lugares (Parque Laguna Bélgica y las ruinas de Palenque) y en otra, con la prepotencia de un elemento de una patrulla ecológica del Gobierno del Estado de Chiapas. En los tres casos fué a pesar de que se contaba con un permiso oficial de SEDESOL, para colectar abejas en el Estado. Esto es bastante desconcertante, dado que al parecer el permiso oficial otorgado por la dependencia federal (que costó N$2175.00 y bastantes retrasos burocráticos), no tiene validez sobre la legislación estatal o municipal y se debe por lo tanto, solicitar también permiso a esos niveles. Esto es bastante preocupante, dado que no sólo no se apoya la investigación, sino que en este caso, se obliga a cumplir demasiados trámites (que no siempre tienen una buena fundamentación académica), lo que desalienta su realización.

Esperamos que experiencias como éstas, puedan abrir la posibilidad de discusiones en los foros iadecuados, que permitan que la investigación científica que realizan instituciones académicas como la nuestra, tenga el apoyo necesario de las instancias federales, estatales y municipales.

The Fourth PCAM Expedition: Chiapas, 7-28 April 1993

English Summary by Robert W. Brooks
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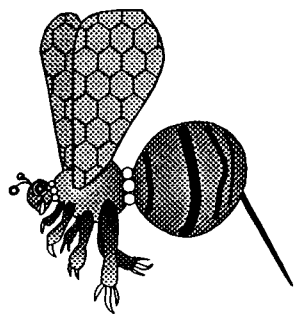
The fourth PCAM expedition collected in the state of Chiapas from the 7th-28th of April with five Mexican and four USA participants. The PCAM combi plus two rental vehicles were used, but one of the vehicles was returned since it was not needed. After the USA participants rendezvoused with the Mexicans at Tuxtla, the next two days were spent exploring nearby localities such as Sumidero Canyon (high, dry deciduous forest; poor collecting), Parque Laguna Belgica (cloud forest; excellent collecting), localities south of Tuxtla such as Nuevo Mexico, Miguel Gutierrez and Suchiapa (dry lowland deciduous forest; good collecting - good series of *Chilicola*). On the 12th we went to San Cristobal de Las Casas (pine-oak montane; poor collecting) and collected in nearby localities. On the 14th we traveled to Comitan where the expedition split. At this point Ayala, Noguera, Eickwort and Brooks flew into the Lacandon Forest to the Chajul Tropical Biology Station (lowland rain forest; poor collecting). As far as we knew our entomological collections were the first (especially for bees) to be made of this area of the Lacandon and probably of any area of the Lacandon. Due to the poor collecting because of dry conditions we cut our stay short and returned to Comitan on the 17th. While we were at Chajul the rest of the participants went to Tapachula and had very good collecting, most notably being an undescribed *Diadasia* with a black head and thorax and red abdomen (female, the male looking normally *Diadasia*-like). While we waited for the return of the second group we had good success at Lagunas de Montebello, collecting *Dinagapostemon* among others. The last leg of the trip was to Palenque and nearby areas before we returned to Tuxtla. Even though many of the areas were extremely dry, resulting in few numbers of bees, the collections were very interesting. The dry season bee fauna is undoubtedly very different from the wet season one. We have a paucity of material from both seasons but we will especially need to return again during the months of October to December.



The Faunal Study of the Native Bees of Mexico

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"The Faunal Study of the Native Bees of Mexico," written by Wallace LaBerge and Ronald McGinley, was funded by NSF starting 30 August 1991 for two years with a six month flex period. Recently we submitted a refunding proposal to the same agency for a period of five years starting June 1994. If funded, research objectives and priorities will remain the same, but with some notable differences in methodology.

Database: The database currently consists of 4800 records representing 950 species of Mexican bees (approx. 12,000 specimens). Each record represents a single lot, which is a group of specimens that have been determined to belong to the same species and that were collected on a given plant at a given locality by a given collector. We are now proposing to modify the existing database so that each individual specimen will correspond to a unique record in the database. Entomological collections are generally not inventoried on an individual specimen basis, primarily because of the enormous number of specimens they contain, but also because large numbers of individuals of the same species are routinely collected at a given time and place, so that the label for each specimen contains the same information. Because specimens that have been lumped together within a lot will need to be re-entered in the existing database as individual records, this will entail extra time and expense at this stage in the project. We consider the effort worthwhile for the following reasons:

1) In order for a specimen level database to be verifiable it must be vouchered. Individual specimen inventories provide clear and unambiguous vouchering. If identification errors are discovered, taxonomic judgments change, or for any other reason changes need to be made within a record, this can be done more simply and accurately when individual records in the database correspond to individual specimens.

2) It is important that the database be designed in a way that allows as much flexibility as possible in the ways that it can be used. Any taxon-based system is inevitably constrained by taxonomy, and taxonomic systems are still unstable. On the other hand, an individual insect on a pin is an unambiguous and stable entity.

3) Material collected in this project will routinely be distributed among numerous institutions. They will initially be sent to specialists for identification, and subsequently divided evenly between collections in Mexico and the U.S. Keeping track of specimens under these conditions will be less confusing if each specimen has a unique identifier.

4) Under the current system, no information is entered into the database until specimens have been labelled, sent out to a taxonomist for identification, and then returned to the central processing center. It would be much more efficient, and it is technically feasible, to enter the geographic and host information along with individual specimen numbers into the database at the same time that locality labels are being made. When identifications become available, this new information can easily be added to the appropriate records in the database.

It is important for the database to have the fewest possible intrinsic constraints on the kind of information in it that can be retrieved and compared. As databasing increases in prevalence, new and unanticipated uses will undoubtedly be found for the information contained in collections. Specimen level databases possess this utility.

Inventory of Specimens Already in Collections: Several entomological collections in North America have substantial holdings of Mexican bees that have been obtained over the past century or longer. Given that the objective of building a database of Mexican bees is to develop the most comprehensive possible inventory of their geographic distribution, seasonal activity, and floral associations, specimens that are already on hand represent an invaluable resource that should not be overlooked. These specimens are especially valuable as irreplaceable records of past distributions. Furthermore, they already have been collected and labelled, so the expense of acquiring the specimens has already been invested. The more accessible this information becomes, the greater will be the return on this initial investment.

At present, it is impossible to give an accurate estimate of how many specimens of Mexican bees are already on hand in existing collections in North America, and this makes it impossible to estimate precisely how much time and expense would be involved in building a complete database for all of this material. The Snow Entomological Museum at the University of Kansas as a whole is one of the largest in North America (containing approximately 465,000 bee specimens). A survey of the material in the Snow Museum leads us to estimate that a complete inventory of all Mexican bee specimens (determined and undetermined) could be completed in 3.2 years. We have requested funds in the pending proposal to expand the existing database, which currently contains information only about bees that have been collected on grant-funded expeditions, by adding information from specimens that are already on hand in museums with large holdings of Mexican bees. Our plan is to start by inventorying the Mexican bees in the Snow Museum. This will enable us to develop efficient sampling protocols to be used in visiting other institutions and estimating the size of their holdings of Mexican bees. When this survey is completed, we can develop a prioritized list of institutions that should be inventoried in order to most efficiently compile a database that is as comprehensive as possible, and a timetable for completion of the project.

The emphasis of the present refunding proposal is about equally divided between the field expeditions and the development of a more comprehensive database. Collecting continues to be worthwhile, since quite a few undescribed species have been found on the four trips funded by the previous grant, and a great deal of new information about geographic distribution, seasonal activity, plant associations, immature stages, etc., is being acquired. Furthermore, habitats are disappearing at an

alarming rate, so that opportunities to sample their bee diversity are also disappearing.

If our research plans for the database are realized it will be an incredibly powerful and useful tool once complete. This is because a database makes it possible to quickly and efficiently obtain any information associated with the specimens in an insect collection, regardless of how the specimens are arranged in the collection. At present, the primary users of insect collections are systematists. When they want to use the material in a collection, they ask to borrow specimens in a given taxon. Since the specimens are arranged taxonomically, it is easy for a collection manager to locate them. However, if somebody wanted to know how many bees in a collection have been found on a given flower, or at a given locality, or on a given date, there is no efficient way for a collection manager to locate such information, despite the fact that the information is undoubtedly there in the collection. Computerized databases make such information readily available, and thus greatly expand the number of people who can use the collection. Thus, it is our intention that the database and bee collection produced by funds from this grant can be used by systematists planning revisions of particular bee taxa; by evolutionary biologists interested in phenomena such as patterns of speciation and geographic variation; for ecologists, behaviorists, and pollination biologists seeking appropriate systems for detailed study or information on natural history (such as host/parasite associations) or community composition; for biogeographers seeking information on patterns of distribution; and for resource managers and conservationists seeking information for planning decisions, lends much strength to the collaborative effort of PCAM. **[Bee workers interested in the Mexican fauna should see the important paper just published by Ayala, R., Griswold, T. L., & Bullock, S. H.(1993). The native bees of Mexico (in Recent Publications section in this issue of MELISSA).--RMcG]**

Mexican Bee Database

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I am in charge of a database on Mexican bee biodiversity, which is a part of a much larger international collaboration call PCAM - Programa Cooperativo sobre la Apifauna Mexicana. This is group of bee biologists and systematists from the U.S. and Mexico, who have been interested in developing a research program to study the bees of Mexico. A recent NSF grant has funded several field trips, as well as the creation of a database to store all the pertinent information. Presently, the database contains information from three field trips, which yielded on the order of 30,000 bee specimens from some 300 different localities; data recorded for each specimen include (when possible) date/locality (including elevation and lat/long), complete ID to (sub)species, and host plant ID to as great a degree as possible (generally to species; plant IDs by the University of Texas botanical staff). At present, this covers well over 500 bee species from some 120 genera, collected from over 400 different plants. Not all of the data is yet entered in the database (pending species IDs for some large bee taxa such as *Megachile, Colletes,* and *Perdita*), but this is an ongoing process, with more field trips planned, and is not likely to ever be quite caught up, as it were. Information from the database has already been used by non-PCAM scientists for distributional and systematic revisions of bee taxa, as well as pollination biology, and any other scientists who feel they can make use of such information are welcome to it.

At present, the original grant will be expiring shortly, and work is under way to submit a new proposal to continue the work and expand the database. If you have immediate use for the database and wish to get data, please contact me directly via e-mail (listed above). If you do not presently have any use, but can foresee one, you might consider expressing your interest and support in the continuation of this project - this sort of thing may help in obtaining grant funding from NSF and/or other agencies. It may be worth mentioning that part of the new grant involves the inventory of data from the major collections of Mexican bees, and the database will ultimately include the vast majority of available information (geographic, historical/phenological, and host associations); this should be an extremely valuable resource for biodiversity/conservation studies in the future. Bees are an integral part of healthy ecosystems, and their diversity, often very strong host associations, and the relative ease with which they can be identified (among other things) makes them almost ideal organisms for biodiversity/conservation research. In terms of practicality, not as easy to work with as butterflies, but just about as good as one can get otherwise. Given support for this baseline work now, bee biodiversity work could clearly become a significant field of investigation (a bit of self-serving propaganda, admittedly, but I'm not alone in this opinion), and this project is not unique (most notable is the work of Chris O'Toole, Avi Shmida and others on the bees of Israel and their plant associations, as far as entire bee faunas go). Thanks for your time and interest.

Colorado Database

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A gopher database is now available to anyone interested in insects from Boulder County, Colorado. To access this gopher, point your server to the University of Colorado gopher and to the following subdirectory: Online Library Catalogs, Electronic Books and Reference Databases/University of Colorado Entomology Database/. This directory looks like this: 1. Coleoptera, 2. Hymenoptera (**including bees**), 3. Lepidoptera, 4. Odonata, 5. README.

To conduct a search within an order, get into the appropriate section of the database and type a slash (/) followed by the search word.

This database contains 26,402 records of insects collected in Boulder County, Colorado from the orders Coleoptera,

Hymenoptera, Lepidoptera and Odonata. The fields included for each order are: LOCALITY, DATE, COLLECTOR, FAMILY, ORGANISM (genus, specific epithet and subspecies), and HABITAT/ALTITUDE. This information is drawn primarily from the holdings of the insect collection at the University of Colorado at Boulder Museum. Additional material was collected from the Colorado State University collection, Fort Collins, and the Museum of Natural History, Denver.

All data presented in this database are transcribed from the labels of every insect collected in Boulder County and deposited in the above collections. For practical purposes we have excluded insects that were not identified to at least the family level. The locality field represents the most specific geographic location listed on the primary label. The Habitat field represents the specific microhabitat within that geographical location.

This is an ongoing project and we welcome suggestions, requests and revisions. We are in the process of entering data from the rest of our collection and would like to make available a database of our entire collection. Please direct any comments you might have to Virginia Scott at the address listed above.

The Distribution of *Bombus schrencki* Mor. in Poland

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Bombus schrencki Mor. is found in large forests and forest glades. So far only sporadically observed in northeastern Poland. The list below shows old and recent finds. Of the recent collections it might be asked whether this is due to insufficient investigations or to a recent invasion of NE Poland by this taiga species.

List of localities (UTM map not included): Bialowieza Forest - FD94 (Bischoff, 1925; Reinig, 1937); Augostów Forest - FE29 Plociczno, FE38 Bryzgiel, FE39 Krzywe and Leszczewo, FE48 Czerwony Krzyz and Suche Bagno Res., FF30 Krolowek (Krzysztofiak, 1993); Borecka Forest - EF70 Czerwony Dwor and Lesny Zakatek (collected in 1990, not published).

Recent finds in the large forest areas of the NE Poland perhaps indicate a further moving of the western limit of the species.

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Bee Species Records New to the USA

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New species records for U.S. bees are as follows: *Coelioxys (Acrocoelioxys) azteca* Cresson, Texas; *C. (Cyrtocoelioxys) tiburonensis* Cockerell, Texas; and *Ancyloscelis melanostomus* Cockerell, New Mexico and Arizona. All of these have been verified by study of the types.

COLLECTION NEWS

Fritz Collection Moves to the American Museum of Natural History

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The Hymenoptera collection of Manfredo Fritz (Salta, Argentina), has been acquired by the American Museum of Natural History. The collection consists mostly of Aculeate Hymenoptera, primarily from Argentina and other South American countries. More than 8000 specimens are bees. Holotypes and approximately half of the paratypes remain in the private collection of Fritz in South America. This acquisition augments the American Museum's growing collection of bees from temperate South America.

RESEARCH NEWS

Pollination of Australian Orchids by *Trigona* Jurine Bees

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Within the Australian orchids there exists a diversity of floral forms and pollination syndromes, although bee pollination, melittophily, is common in many of the genera. In recent years there has been an increase in the number of observations of *Trigona* Jurine bees pollinating epiphytic and terrestrial species. The *Trigona*-orchid relationship is shown by at least nine endemic species of six genera, and might allow natural hybrids to develop in the genus *Dendrobium* Sw. Nectar is not offered to pollinators visiting these orchids and the bees are apparently attracted by a colorful floral display and fragrance. Aromatic compounds of fragrance have been identified and successfully used to attract *Trigona* bees. The fate of those compounds remains unknown, but they may be used as precursors to pheromones. Among these orchids, *Trigona* bees have permitted the evolution of unusual floral displays and mecha-

nisms of pollination. The evidence indicate that *Trigona* bees may have exploited a niche in Australian orchid pollination that is paralleled by the activity of euglossine bees in pollinating South American orchids. Adams et al. (1992) recently documented both new observations as well as all known records of *Trigona* pollination of Australian orchids.

Reference:

Adams, P.B., T. Bartareau and K.L. Walker (1992). Pollination of Australian orchids by *Trigona (Tetragona)* Jurine bees (Hymenoptera): Apidae). *Aust. Ent. Mag.* 19(4):97-101.

Grasping at Straws

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Frankfort, Kentucky 40601, USA

Paper straws have long been a favorite artificial cavity for trap nesting bees. They are easy to dissect and semi-porous, allowing immature bees to develop without the moisture build up and mold problems associated with plastic straws. But they have not been commercially manufactured in the USA (or elsewhere?) for many years. Hence, they are a scarce and dwindling commodity. I recently discovered a cache of such straws under interesting circumstances. While changing planes at O'Hare International airport in Chicago in January of 1993, I perused the Christmas displays in my concourse. One of them was a tree decorated entirely with elegant white stars. It was sponsored by a Lithuanian cultural group. On second glance, the stars were made of paper straws, which brought back memories of placing and collecting trap nest blocks in the field and dissecting hundreds of live pupae and larvae from them in the lab. Could paper straws still be available at the star factory? I launched an investigation by telephone which spanned several months. Eventually, I found the source of the straws, the Balzekas Museum of Lithuanian Culture in Chicago. This is a small museum run by the Balzekas family. They sent me a museum brochure and said that straws can be purchased through the gift shop by the box @ $4.99 (500 straws per box). They sent me some samples. They are the old standard Sweetheart brand, white, 5.5 mm inside diameter, 8.5 in. long. There is also a 15 in. type available. The inventory was incomplete, but I was told they had several crates of them. If interested, write to: Gift Shop, Balzekas Museum of Lithuanian Culture, 6500 Pulaski Road, Chicago, IL 60629; (312) 582-6500.

CURRENT PROJECTS

Byron Alexander.--Rob Brooks, Ricardo Ayala, Doug Yanega and I are currently writing a proposal to NSF to seek continued funding for the faunal survey of Mexican bees. As regular readers of MELISSA probably already know, this is a collaborative project involving numerous specialists in the U.S. and Mexico, and we are hopeful that it will receive continued funding.

A species-group revision of *Nomada* that I have been working on intermittently for several years has been submitted to the University of Kansas Science Bulletin. I am giving serious thought to working on a species-level revision of a strictly North American group within *Nomada*, the *erigeronis* group (equivalent to the subgenera *Nomadula* and *Centrias* in the Catalog of Hymenoptera, or the genus *Centrias* in Snelling's 1986 treatment of New World *Nomada*). If anybody else is eager to work on this group, let me know -- I could probably be talked out of working on it myself, but I am sufficiently interested in it to really work on it if nobody else does.

I've also finally started writing a couple of papers summarizing my comparative studies of the female reproductive systems of nomadine bees. Jerry Rozen has been enormously helpful in providing me with specimens to dissect, and Bob Minckley and Bruce Cutler have recently been providing our first look at the histology of a pair of lateral sacs lying at the base of the ovaries. It turns out that L. Dufour first described the sacs in *Nomada* back in 1841. **HELP:** If anybody reading this knows of other early studies of female reproductive systems of bees that might have information about nomadines, I would be most grateful for the references.

Ricardo Ayala, Estación de Biología Chamela, UNAM, Apartado Postal 21, San Patricio, Jalisco 48980, MEXICO.--CURRENT PROJECTS: 1) Supraspecific revision of Centridini (Hymenoptera: Anthophoridae) - **HELP:** will need any additional *Centris, Epicharis* and *Ptilotopus* specimens principally from South America to include in the revision. 2) Continuing work on the bionomics of different species of bees at Chamela. 3) The bee fauna of a pine forest in Jalisco, Mexico - **HELP:** Identification. 4) To create a check list and a catalogue of the bees of Mexico and a record of publications - **HELP:** I might need help in obtaining literature. **COMMENTS:** In the Estación de Biología Chamela, IBUNAM, there is a bee collection, with good representation of the bee fauna of the Jalisco Coast and also a considerable number of specimens from the other states of Mexico. This collection is the largest of its kind in Mexico and is open to specialists and students. My recent field work has been at "Tierra Caliente" in "Cuenca del Balsas," Michoacán.

Józef Banaszak, Department of Environment Protection, Pedagogical University, Chodkiewicza str. 51, 85-667 Bydgoszcz, POLAND.--CURRENT PROJECTS: 1) Spending half part of 1993 in Belgium together with Prof. Pierre Rasmont. I will lecture on the ecology of bees at Mons-Hainaut University, and am starting: 2) together with Pierre Rasmont, taxonomic studies of Polish *Terrestribombus,* 3) investigations on natural resources of wild bees in Belgium and South France. 4) Completing investigations on natural resources and ecology of Apoidea in an agricultural landscapes of Bulgaria (with Prof. B. Dochkova). 5) Diversity and density of wild bees of xerothermal habitats in the region of lower Vistula - planning to complete manuscript during 1993 (with Dr. T. Cierzmniak). 6) Finally writing up the monograph "Bumblebees of Poland." 7) Just published book ["Ecology of Bees"] (1993, Wyd. Nauk. PWN, Warszawa-Poznan, 263 pp., ISBN

83-01-10553-4) - **HELP:** I am looking for a publisher for this book in English.

Robert W. Brooks, Snow Entomological Museum, Snow Hall, University of Kansas, Lawrence, Kansas 66045-2106, USA.--CURRENT PROJECTS: 1) Completing revision of *Trachusa (Ulanthidium)-(Trachusomimus)* with Robin Thorp. I also am working on a revision of *Chlerogella* and *Chlerogas* - **HELP:** Need any additional specimens of the above three groups. I am trying to get some publications out in regards to the Bees of Mexico with the idea of writing another NSF grant to continue the PCAM work [proposal was submitted - see above article]. With this in mind I am going to try and get a few short papers out.

João Maria Franco de Camargo, Departamento de Biologia, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto, SP, 14.100, BRAZIL.--CURRENT PROJECTS: 1) The revisions of the genera *Paratrigona* and *Aparatrigona* are finished. 2) Now, I am finishing (with D.W. Roubik and J. Lobo) the description of a new genus of Meliponinae from Central America and, 3) starting the revision of *Scaptotrigona* and *Geotrigona* (Neotropical Meliponinae) - **HELP:** I need specimens of *Scaptotrigona* and *Geotrigona* from all Neotropical regions. **COMMENTS:** In this year, I have funds for two expeditions, one to northeastern Brazil and another to Jurua river, Amazon, Brazil.

Howell V. Daly, Department of Entomological Sciences, 201 Wellman Hall, University of California, Berkeley, California 94720, USA.--CURRENT PROJECTS: In collaboration with the Bishop Museum in Honolulu, I am preparing a taxonomic revision of bees of the genus *Hylaeus (Nesoprosopis)* described from the Hawaiian Islands. I have just completed a manuscript in which 44 lectotypes will be designated and 13 holotypes identified. The types are in The Natural History Museum, London, and the Bishop Museum. **HELP:** Unfortunately, I was not able to find the type specimens or specimens from the type series for the following species described by R.C.L. Perkins and Thomas Blackburn: **1.)** *Prosopis rugiventris,* described by Blackburn and P. Cameron, 1886, Proc. Manchester Lit. and Phil. Soc., 25:134-183; **2)** *Nesoprosopis ombrias* (no specimen found with Perkins's type label, but some specimens from the type series are available), described by Perkins in 1910, Fauna Hawaiiensis, P. 604; **3)** *N. filicum, N. homeochroma, N. hula, N. pele, N. psammobia* (no specimen of the latter species found with Perkins's type label, but some specimens from the type series are available), all described by Perkins in 1911, Trans. Ent. Soc. London, pp. 719-727.

The biographical memoir for Perkins (Biographical Memoirs of Fellows of the Royal Society, 1956, 2:215-236) indicates that his collections were given to what is now The Natural History Museum (London), Bishop Museum, Oxford, and Cambridge. Cambridge received his British aculeates, but no non-British material. The other three museums have roughly equal numbers of his Hawaiian bees. All specimens labeled by him as "Type" are in London. This includes all the species proposed in volume 1 of the Fauna Hawaiiensis. Missing are types for species proposed in two subsequent publications. Perkins' specimens are clearly labeled and easy to identify.

The types for 3 of the 4 species proposed by Blackburn are in the Bishop Museum. Possibly they were put there by Perkins. In his paper in 1911, Perkins states that "...I have obtained the old collection formed by the Rev. T. Blackburn, wherein are a number of types of species that he described himself, as well as examples of the species that he sent for description to F. Smith and Cameron."

I would appreciate any suggestions as to where the missing types might be.

Heidi E.M. Dobson, Department of Biology, Whitman College, Walla Walla, Washington 99362, USA.--CURRENT PROJECTS: I have a tenure-track position here at Whitman College: I am the only botanist and have lots of leeway in deciding what will be taught, etc. I am still going on with my research on oligolectic bees, mainly in Sweden. Most of the data are in files, waiting to be written up, but I am getting to them gradually.

George C. Eickwort, Department of Entomology, Comstock Hall, Cornell University, Ithaca, New York 14853-0901, USA.--CURRENT PROJECTS: 1) Completing revision of Greater Antillean Halictidae. Species defined and types examined but descriptions need to be completed. **HELP:** need any additional specimens of Halictidae from the Greater Antilles, Bahamas, and adjoining West Indian islands. 2) Continuing systematic studies of Nearctic *Dialictus* (Halictidae). To date most types have been examined and species defined, except for some difficult species groups. Much identification of borrowed specimens needs to be done, and no additional material is requested at this time. 3) Biological studies of West Indies, New York, Colorado, and Arizona Halictinae. Field work and most data analysis completed, several manuscripts in preparation. 4) Studies of mites associated with Hymenoptera and Isoptera. A review of associations of mites with all bee groups has just been published in a book edited by Marilyn Houck. Catalog in preparation of all mites with "significant" associations with Hymenoptera and Isoptera. **HELP:** any new publications that cite such associations with mites. **COMMENTS:** My position at Cornell is primarily a teaching position, and time for research is limited. This is especially true now because I assumed the chair of the Entomology Department at Cornell in September. I am associate curator in the Entomology Collections of Cornell, and will be happy to loan specimens of bees for systematic studies. We have a strong world-wide collection of Apoidea, all sorted to genus.

Michael Engel, Department of Entomology, Cornell University, Ithaca, New York 14853, USA (e-mail: me18@cornell.edu).--I am a first year Ph.D. student at Cornell, studying under the supervision of Dr. George Eickwort. I am developing ideas to combine molecular and morphological characters in a systematic analysis of the *Augochlora* complex. With the resulting phylogeny I can then analyze the evolution of behavioral patterns within it.

Hans-Joachim Flügel, Zur Windmühle 367, D-1000 Berlin-47, GERMANY.--I am a biologist and have finished my studies in the late seventies with a concentration in plant geography. After having completed some popular works concerning floral ecology, and after a period of free work as a garden designer, I found my way back to biology by obtaining a commission to study the living possibilities of Apoidea in urban areas. Since this time I have made many private and commissionary inventories of aculeate hymenopteres in Berlin and surroundings.

My last holidays I spent with my family in Thailand. From the end of January till the end of February we travelled from the north of Thailand to the extreme south, and in all regions I looked for bees and wasps. Because of the dry season, and also because of the intensity of agri- and sylviculture and the spraying of pesticides there were only very few flower visiting insects. Nevertheless, I did collect hymenopteres, and would like to obtain determinations for the Apoidea, Sphecoidea and Vespoidea. **HELP:** I wish to know if anyone can tell me of appropriate literature to make determinations of these groups in Thailand or know of someone who would like to study this material for identification.

Jorge F. Genise, Division Entomologia, Museo Argtentino de Ciencias Naturales, Av. Angel Gallardo 470, (1405) Buenos Aires, ARGENTINA.--CURRENT PROJECTS: 1) Bee behavior related with floral biology of Leguminosae. 2) Trace fossils of bee cells (with Dr. Thomas Bown, US Geological Survey).

Roderick Peter Macfarlane, *Buzzuniversal*, 33 Woodside Common, Westmorland, Christchurch, NEW ZEALAND.--CURRENT PROJECTS: 1) Finishing account of pathogens, *Melittobia*, mites and associates of bumble bees in New Zealand. Preparing world summary of *Bombus* diseases. 2) Help for Maeta with study of 25 spp. of Japanese Conopidae ending slowly. Bumble bee parasitism, biology, distribution part sent to journal - completion of taxonomic revision to be resolved. 3) As ICPBR vice-chairman, I developed and gradually promote a world register of bee and pollination scientists, advisors and firms. Register with 1,220 entries of variable quality in 8 separate regional lists. 4) Male bumble bee proventriculus structure in the world with Mejdle (Norway) and ?Aichorn (Austria). 5) Cranberry pollination and biology, ecology and management of American bumble bees. **HELP:** Anybody more wanting to form a world network to develop and maintain the bee-pollination register please contact me. Copy of register on disc for $NZ 18. Cost covers disc, packaging, postage and handling for genuine collaborators or those that exchange about 50 new addresses or summation of the research interests of scientists in a region. Proventriculus paper finished, but need to dissect and perhaps redraw the entrance for *Rhodobombus*. Would like a volunteer collaborating author/s to check *Rhodobombus* or dissect a *Mendacibombus* species and/or upland neotropical *Bombus* subgenera. **COMMENT:** Now seasonally self employed. Progress publishing 16 years accumulated quantitative data on bumble bee life cycles, district species composition from 30,000 bees of 4 spp. on 250 plus flower spp., colony size and composite life tables from over 1,000 nests depends on funding to statistically analyze, write and cover publication costs.

Glynn Maynard, ABRS, GPO Box 636, Canberra, ACT 2601, AUSTRALIA.--CURRENT PROJECTS: Investigation of the biology of *Leioproctus nigrofulvus* and revision of subgenera of Australian *Leioproctus* (currently I am working on *Leioproctus (Anacolletes)* and a new subgenus). *Leioproctus (Leioproctus) nigrofulvus* nests in mounds of *Coptotermes lacteus*. The termite mounds are 2-5 ft in height and about 5 ft in diameter. The bees nest from the base to apex. It is on the wing in October and November.

S.R.M. Pedro, Departamento de Biologia, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto, SP, 14.100, BRAZIL.--CURRENT PROJECTS: 1) Bees: diversity, relative abundance, phenology and flower visitation in a natural "cerrado" ecosystem, southeast Brazil (with J.M.F. Camargo, M. Mazucato, J.A. Tavarez Filho). 2) Systematics and biogeography of the Neotropical bee genus *Partamona* Schwarz (Apidae, Meliponinae) (with J.M.F. Camargo) - **HELP:** We have ca. 15,000 specimens and hope to receive collaboration from other museums and collections.

Roy R. Snelling, Department of Entomology, Natural History Museum of Los Angeles County, 900 Exposition Boulevard, Los Angeles, California 90007, USA. GENERAL NEWS: Well, all I can say for 1993 is: Wasn't that a time! Many of you will already have read, via SPHECOS, that our administration here at good ole LACM forced me into retirement. That's behind us now, and, while I still feel some anger about the whole affair, it's time to get on with life and work, dealing with the reality of changed circumstances.

1993 was a difficult year in other respects as well. The terrible brush fires (the result of arson) in coastal southern California did not adversely affect me in any direct sense. But, that doesn't lessen the impact that they have had on all of us who live here. With the economy of California as severely depressed as it has been, those fires were something we really did not need.

All in all, it was certainly an interesting year for our new curator, Brian Brown: flood, fire, earthquake. Don't know how we are going to top that!

A more personal calamity, though on a much lesser scale, was the loss of my beloved 1969 MG, wheels that carried me to many very strange places that nobody of balanced mentality would drive a small sports car to. I bought that car new in 1969, rebuilt the engine twice and the transmission twice, drove it for a total of 359,889 miles! Another driver, forever unforgiven, chose an inappropriate moment to pull out into an intersection. The result did so much damage to the MG that I had to consider it a total loss. That other driver's insurance company paid off sufficiently well that I was able to procure a 1991 Jeep Cherokee Sport in impeccable condition with only 35,000 miles. Admittedly, this is a more appropriate vehicle for field work than was the MG so I guess I have to admit it an improvement.

1994 seems to be off to an interesting start. The 6.6 Northridge Earthquake was something we didn't really need and it will be at least a year before the situation here approaches normalcy (for us) again - assuming there are no further calamities.

The LACM got through the earthquake OK. There was the usual clutter of things fallen off shelves and some minor breakage. Hardest hit were some of the exhibits, especially relatively fragile things such as the dinosaur skeletons; those took a lot of damage. In the Entomology Section, we had a lot of papers and such on the floors; very nearly every book in the library was off the shelf. A few minor vials of specimens were broken in my office which did look pretty trashed when I first saw it. But, not as badly as first appeared. In a way, a blessing since it has prompted me to toss out a lot of miscellaneous stuff that was not really worth saving in the first place.

All the pinned specimens in the compactor came through in fine shape, at least judging by what we've seen so far. The quake did torque the guide-rails pretty severely, with the result that the compactor was non-functional for over a week, but now that is fixed and we're back in business.

Of course, it does appear as though we have another season of little rain. All those who, a year ago, were proclaiming the drought over seem not to have understood that it takes more than one good rainy season to end a drought.

COLLECTING IN SOUTHERN CALIFORNIA: My son Gordon and I spent various weekends collecting in the desert areas here. Despite the heavy rains of the pervious winter, the desert received little in the way of precipitation. While the perennials bloomed well and on schedule, there was a notable scarcity of annuals. Bee collecting, therefore, was not the best I've seen. Did pick up a few goodies here and there, but little to brag about. I did collect my first *Hexepeolus*, a few specimens down near Ocotillo in Imperial County. We also found a number of interesting looking *Perdita* at various times, but I admit that I've not yet summoned up the courage to try to figure them out. We also collected large numbers of *Martinapis occidentalis*, a very handsome eucerine; our series were collected in the Glamis sand dunes on indigo bush.

We also got a very good series of a presently undescribed species of *Hesperapis* that is an oligolege of *Eriastrum* spp. I am trying to recollect better material of several of these undescribed *Hesperapis* before I finish the rewrite of the Gerry Stage revision of this genus. Much of the material had been stored in the garage of Stage's residence in Connecticut for some years; many of the specimens are moldy to some degree. I am, therefore, trying to pick up substitute material for type series.

COLLECTING ON GUANA ISLAND: I managed two visits to Guana Island in the British Virgin Islands, one from mid-April to mid-May, the other mid-June to mid-July. Bees were very scarce for most of the period of the first trip, which was at the conclusion of the dry season. We had some rain about a week before I left and things were just getting interesting. *Centris smithii* Cresson was present in some numbers in the more xeric area of the island (Long Man's Point); females were nesting in very hard-packed soil of a trail; males patrolled the area, but were scarce. Females were collected only at flowers of *Stigmaphyllon periplocifolium* (Malpighiaceae). I also found some specimens of *C. haemorrhoidalis* on the same plant. A new record for the Island is *C. decolorata* (Fabricius); this bee is found over much of the Caribbean, most often nesting in sandy areas. I got one female in April on *S. periplocifolium*, then several males in late June on flowers of *Melochia tomentosa*; males of *C. smithii, C. haemorrhoidalis*, and *C. lanipes* were also taken on the same flowers.

Collecting during both trips was challenging, to say the least. There simply weren't that many bees around. There were also few native plants in bloom.

I did come up with two additional species, however, for Guana Island. The first of these was *Mesoplia rufipes* (Perty), a very handsome ericrocidine parasitic on *Centris* species. It apparently ranges from Cuba and Hispaniola south to northern South America, as well as being present in Central America. Its presence on Guana can hardly be considered a surprise.

The same cannot be said of the second novelty collected there in late June. A single male of *Hylaeus (Paraprosopis) wootoni* (Cockerell) was collected from flowers of *Ipomoea pescaprae* at White Beach. This bee is native to the southwestern United States and adjacent Mexico, extending from Colorado and Coahuila to the Californias. It will be interesting to see whether or not this bee will become established on Guana.

RESEARCH PROJECTS: Foremost is the effort to finish up on the massive rewrite of the Gerry Stage revision of *Hesperapis*. There have been too many delays and I want to get rid of the thing. My biggest difficulty is that the entire section on biology and nesting behavior needs to be rewritten and I just keep putting it off. There are also a few more illustrations to do, as well as all the maps.

Also high on the list of things to complete is the revision of the North American (incl. "Central America") *Hypochrotaenia*. The keys are pretty well done, but I still have to do the species descriptions (several new species) as well as all the illustrations and maps. Big job.

Two shorter projects: the *Centris* of the Greater Antilles (Bahamas to Virgin Islands) and the *Hylaeus* of the Greater Antilles. Some new synonymy in *Centris*; several new species of *Hylaeus*, including one from Guana Island and several from Cuba.

Karen Strickler, College of Agriculture, Parma Research and Extension Center, 29603 U of I Lane, Parma, Idaho 83660, USA.--CURRENT PROJECTS: 1) Is it possible to raise a sustainable yield of alfalfa leafcutting bees in the Northwest U.S.? If so, under what conditions? Is it economical? What are the tradeoffs between high bee yields and high seed yields? 2) How can biocontrol, cultural control, and resistance management be improved to minimize the need for mid-season insecticide sprays on alfalfa grown for seed, so bee populations are not impacted. 3) Develop and maintain a long term data base on pest and parasite levels, bee inputs and outputs, pesticide inputs, and seed yields. 4) Pollination of other crops (e.g., fruits and nuts, onion seed, carrot seed, rape seed, flower

seed, etc.), especially pollination involving solitary bees and other insects. Alfalfa seed production as a model for pollination of other crops by solitary bees.

Wu Yan-ru, Department of Insect Systematics & Faunistics, Institute of Zoology, Academia Sinica, Beijing, 100080, CHINA.--CURRENT PROJECTS: Fauna Sinica - Insecta (Melittidae, Anthophoridae; completed "Pollination efficiencies at apple tree & other of bees (*Osmia excavata, O. jacoti, O. cornifrons*) (NSF China) with Prof. Zhou and others - got significant results on the quality and quantity of apple; collaborative study with Dr. Pesenko of Halictini of China. Dr. Pesenko and I visited each other's Institute's for one month as part of an exchange program. I would like to collaborate with any melittologist who could pay their own expenses (including travel and accommodations in China or mailing expenses for shipment of specimens. **HELP**: I need additional material from South-east Asia, eastern Palearctic and Middle East.

NEW LOCALITY RECORDS

Ali S. Moalif, Department of Biology, College of Science, University of Babylon, Babylon, P.O. Box 4, IRAQ. Ali writes: "I have moved from Basrah to my hometown Babylon to work as an Assitant Prof. of Entomology at the University of Babylon." [See his contribution on "The Bee Fauna of Iraq" in this issue of MELISSA.]

Robert J. Paxton, Department of Genetics, Uppsala University, BOX 7003, S-750 07, Uppsala, SWEDEN; Phone: +46-18-672661; FAX: +46-18-672705; E-mail: Robert.Paxton@genetik.uu.se. Robert writes: "I have moved from Cardiff University and henceforth I will be at the Department of Genetics, Uppsala University. The change comes about because I am on an EC-fellowship to study the chemical ecology and the costs and benefits of communal nesting in two andrenid bee species of Sweden, *Andrena jacobi* and *Panurgus calcaratus*. On Öland, I work with Jan Tengö, and at Uppsala I with Pekka Pamilo."

Michael Schwarz, School of Biological Sciences, Flinders University, GPO Box 2100, Adelaide, SA 5001, AUSTRALIA; FAX: 61-8-201 3015, Phone: 61-8-201 2280. Michael writes: "After nearly six years of postdoc'ing and fellowships I've finally got a REAL job and will be taking up a lectureship in animal behaviour at Flinders University in Adelaide, South Australia. Because of the new location, my work will be gradually moving over to inter-relationships of behavioural, ecological and genetic aspects of arid-zone bees (and some other insect groups)."

Virginia Scott, Museum - Entomology Section, Campus Box 218, University of Colorado, Boulder, CO 80309-218, USA; Phone: (303) 492-6270; E-mail: SCOTTV@spot.Colorado.edu

Karen Strickler, College of Agriculture, Parma Research and Extension Center, 29603 U of I Lane, Parma, Idaho 83660, USA. See CURRENT PROJECTS, above.

Evan A. Sugden, Community Research Service, Atwood Research Facility, Kentucky State University, Frankfort, KY 40601, USA; Phone:(502) 227-6351; FAX: (502) 227-6381.

ANNOUNCEMENTS

Zoological Catalogue of Australia, Volume 10, Hymenoptera: Apoidea, by J. Cardale

[ABRS publication advertisement follows.]

Volume 10 is the second of seven proposed volumes on the Hymenoptera of Australia. It covers the superfamily Apoidea - the bees. This group is of considerable economic and ecological significance as pollinators of crops and native flora, and as a source of honey and wax.

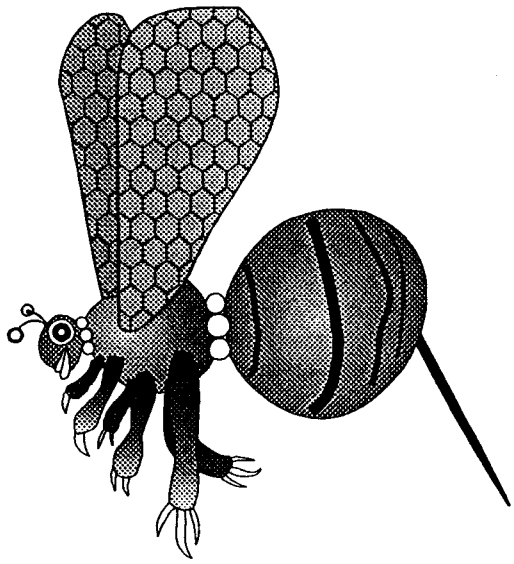
The volume deals with the seven families and 13 subfamilies found in Australia. It lists over 60 valid genus names with some 200 genus available names, and over 1500 valid species names with nearly 2000 species available names. Some 2000 flower-visiting records for over 700 species are also listed.

This is the first comprehensive catalogue on the Australian Apoidea for nearly 30 years and is the authoritative source of information. It is an essential text for those involved with this superfamily and with pollination ecology.

Cat. No. 93 1429 9; $59.95. Mail order sales: Australian Government Publishing Service, GPO Box 84, Canberra, ACT 2601, Australia.

Ecology of Bees, by Józef Banaszak

This book is a real novelty both in Polish and world literature. It deals with the ecology of bees - solitary wild living bees, semi-social and social bees - bumble bees, stingless bees and honey bees. An incredible differentiation of these insects (20,000 species) in the world is presented on the background of climatic zones. Among the classical problems, the interrelation between bees and flowers is discussed considering a wide range of mutual adaptations. Examples of biology and ethology of bees on various levels of their social organization are given. The final chapters are particularly innovative, presenting what determines bees occurrence in the landscape and the evaluation of contemporary natural resources of these insects - the results of the author's investigations in Poland, Romania, Bulgaria and Germany. The changes in fauna were presented together with the author's daring concept differing from the common opinions. The book is also rich in information on less recognized problems of bees and flower biology such as perfume syndrome, sexual attractiveness of flowers, and bee activity during the night. The quoted literature covers a wide range of publications.--**Olcha Sikorska, Polish Scientific Publishers, Pozna, ul. Ratajczaka 35, Poland.**



Bienen, Wespen und Ameisen der Kanarichen Inseln, Vols. 1 and 2, H. Hohmann, F. LaRoche, G. Ortega, and J. Barquin, editors

[These volumes constitute vol. 12 of the Veröffentlichungen aus dem Übersee-Museum Bremen Naturwissenschaften.]

The Canaries are a group of seven islands in the Atlantic off the north African coast. They are believed to vary from a few to perhaps 20 million years old, and have interesting patterns of endemism, while being populated also by species that are widespread in the western palearctic region.

The amount of collecting of the rich Hymenopteran fauna has been impressive; the first report on them was by Brullé in 1832. These books summarize data from publications and older collections, and at the same time report upon much material that had not previously been made know. For each species and subspecies, references are given, together with distribution on the islands and beyond, seasonality of collecting records, altitudes, and flower records. Moreover, for each flower species, aculeate visitors are listed. For Aculeate Hymenoptera 369 taxa have been found on the islands (53 were new), 218 of them appear to be endemic on one or more of the islands. For bees, 147 taxa are known, of which 86 appear to be endemic.

The volumes are extraordinarily thorough, including 177 distribution maps, 12 magnificent plates, most of them in color, that show superbly even such hairy bees as *Eucera* and *Anthophora*.

New forms and other taxonomic information are included in a series of chapters by specialists. For bees, such chapters are by H. H. Dathe, K. Warncke, A. W. Ebmer, B. Tkalc, P. Westrich, and M. Schwarz.

Significant parts of the text are repeated in Spanish, a fact that greatly increases usefulness of the books for those that find German a problem.--**Charles D. Michener, University of Kansas**

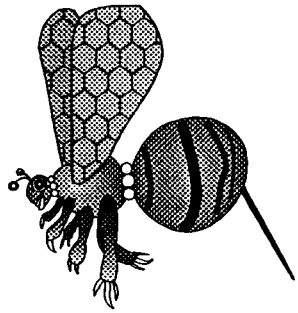
The Bee Genera of North and Central America: (Hymenoptera: Apoidea), by Charles Michener, Ron McGinley and Bryan Danforth

[The following is taken from the Smithsonian Institution Press spring catalog.]

For years entomologists, ecologists, and botanists interested in pollination problems have urged bee specialists to prepare a key for identifying bee genera in North and Central America. Although regional keys exist, this extensively field-tested reference is the first to facilitate identification to the genus level of bees throughout the Northern (American) Hemisphere. More than 500 drawings and photographs illustrate nearly every step in this key to the 169 genera, with text in both English and Spanish.

In the introduction, the authors describe how researchers already familiar with bee genera can streamline their use of the keys. Along with the comprehensive classification and discussion of features, the authors also provide practical advice to students embarking on their first attempts at bee identification. The notes on each genus give its range (for North and Central America), number of species, references to any revisional studies, subgenera, if any, and distinguishing features. The book indicates nest sites for those bees that do not nest in the ground and hosts for socially parasitic and cleptoparasitic genera. The authors list changes in classification and nomenclature and summarize the current classification by genera and subgenera.

The Bee Genera of North and Central America (79 b&w photographs, 440 line illus., 304 pp.) will be available from the Smithsonian Institution Press in April 1994 for $45.00. Orders for the book may be placed with regional distributors, and all back-orders will be released upon publication. Customers in the U.S., Canada, and Latin America may contact Smithsonian Institution Press, Dept. 900, Blue Ridge Summit, PA 17294-0900, (tel: 800/782-4612 or 717/794-2148). Individuals in Latin America are requested to pay with a VISA or MasterCard, so actual costs of surface shipment can be charged directly to their credit card. Prices outside North and Latin America will be announced in January 1994 and will be somewhat higher. Customers in Australia and New Zealand may contact Peribo Pty. Limited, 26 Tepko Road, Terrey Hills, NSW 2084, Australia (tel: 61 2 486 3188). All other foreign customers may contact IBD Ltd., Campus 400, Maylands Avenue, Hemel Hempstead, Herts HP2 7EZ, England, (tel: 442 881900).



Russian IUSSI Colloquium

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The Third Colloquium of the Russian-speaking Section of the International Union for the Study of Social Insects will be held in Kiev (Ukraine) from Monday, 26 September till Sunday, 2 October 1994. The scientific meetings, round tables and discussions are scheduled for three full days, other two days being devoted to excursions all over Kiev and its suburbs. Papers presented for the Colloquium (up to 10 pages in Russian or in English) will be printed in "Proceedings of the Russian Colloquia on Social Insects."

The participation fee will be $50 (including the cost of "Proceedings" publication). The preliminary assessment of other costs for a participant (accommodation in a cheap hotel, meals, etc., but no travel expenses) is altogether $80-100. This amount should be paid after the arrival to Kiev.

We would be happy to see our colleagues from other sections of IUSSI among the participants of the Colloquium.

If you intend to participate please send us at the address given above the following information: your full name, title of a lecture, address, e-mail address, telephone and fax numbers. We will send out a second announcement in June 1994. The deadline for registration is 15 August 1994.

Trends of Changes in the Fauna of Wild Bees in Europe - Bydgoszcz, Poland, 24-26 November 1994

We would like to create the possibility for a meeting of apidologists from Western and Eastern parts of Europe to discuss contemporary problems of wild bee populations and their changes. Complete texts of lectures (in English) will be published in book form. Details (fees, place, programme) will be presented in the next announcement. If you are interested in the Colloquy, please send your name, address and subject of lecture to Jozef Banaszak, Department of Biology and Environment Protection, Pedagogical University, Chodkiewicza str., 51, 85-667 Bydogoszcz, Poland. [The initial deadline for preliminary registration was for the end of December, 1993 - however, Dr. Banaszak would probably like to hear from additional workers as soon as possible.--RMcG.]

PASSINGS

Klaus and Christa Warncke

Dr. Klaus Warncke and his wife Christa were tragically killed in a car crash on January 2, 1993, while on a field trip in Egypt. Information concerning publication of obituaries, etc., will be included in the next issue of MELISSA.

RECENT LITERATURE

The following list of references has been compiled from two sources. First, we continue to receive the current awareness printouts from the National Agriculture Library, which represents searches from the following sources: Biological Abstracts, the Commonwealth Agricultural Bureau database (CAB), Zoological Record, and Agricola, the Agriculture Library's own survey of literature of a specifically agricultural bent. Second, we receive references directly from BIOSIS of the Biological Abstracts database on disk. The two searches are conducted based on roughly the same key words, which include most bee genera, familial and subfamilial names as well as pollination biology and bee/plant interactions. As in previous lists, *Apis* literature is included only when it concerns topics of very general biological interest.

At present the 469 references shown below are included in a single file created by v. 2.0 of the bibliographic software package Pro-Cite (Address: P.O. Box 4250, Ann Arbor, Michigan, 48106; 313-996-1580). The "master" bibliography, which contains all citations listed in earlier versions of MELISSA as well as those from a BIOSIS retroactive literature search (back to 1980) now contains 6,028 references in a single file. The Pro-Cite capbility to sort on key words and titles makes this quite a useful research tool.

We apologize in advance for the hetergeneous format (upper and lower cases for authors and journal names in some situations) and the lack of diacritic marks. This has been unavoidable due to the specific format of the citations we get on disk, and can be corrected as the citations are checked. These citations have not been checked for accuracy and we strongly recommend that readers do not use them without referring to the papers listed.--**RMcG, MJM**

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