

MELISSA

The Melittologist's Newsletter



Ronald J. McGinley, Bryan N. Danforth, Maureen J. Mello
Department of Entomology • Smithsonian Institution, NHB-105 • Washington, DC 20560

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COLLECTING NEWS

Report on Third PCAM Expedition

Robert W. Brooks
Snow Entomological Museum
University of Kansas
Lawrence, KS 66045

The third NSF funded PCAM (Programa Cooperativo sobre la Apifauna Mexicana) expedition took place from March 23 to April 3, 1992. The major goals of this trip were to do springtime collecting in the Chihuahuan Desert and Coahuilan Inland Chaparral habitats of northern Mexico. We also did some collecting in coniferous forest (pinyon-juniper), mixed oak-pine forest, and riparian habitats in the Sierra Madre Oriental.

Participants in this expedition were Ricardo Ayala (Instituto de Biología, Chamela, Jalisco); John L. Neff (Central Texas Melittological Institute, Austin, Texas); and Byron A. Alexander, Robert W. Brooks, and Douglas Yanega (Snow Entomological Museum, University of Kansas, Lawrence, Kansas). Ricardo Ayala departed on March 26 because of other responsibilities; the other four participants were present for the entire 3-week period.

The expedition collected bees at fifty-seven localities, primarily in the state of Coahuila, but also in Durango and Nuevo Leon (Fig. 1). Thirty-eight of the fifty-seven collecting sites were in desert shrub habitat. Several of these sites also included disturbed areas such as roadsides and fallow fields, and in seven cases the collecting was restricted to such disturbed areas within desert shrub habitat. Seven sites were in coniferous forest or mixed oak-pine forest, three were in chaparral, and two were in other habitats (dunes, river floodplain).

This was clearly a year of unusually high precipitation, because the desert shrub habitat had large numbers of herbaceous annual plants in bloom. This was one reason for the extensive collecting in this habitat. Another was the accessibility of this habitat relative to the chaparral. Most of the chaparral habitat in Coahuila is at elevations above 1500 m in the numerous isolated mountain ranges that occur throughout the state. There are no roads leading directly into this habitat in most of the mountains, and climbing into the chaparral is very arduous and time-consuming because of the terrain and the extremely thorny vegetation that one must pass

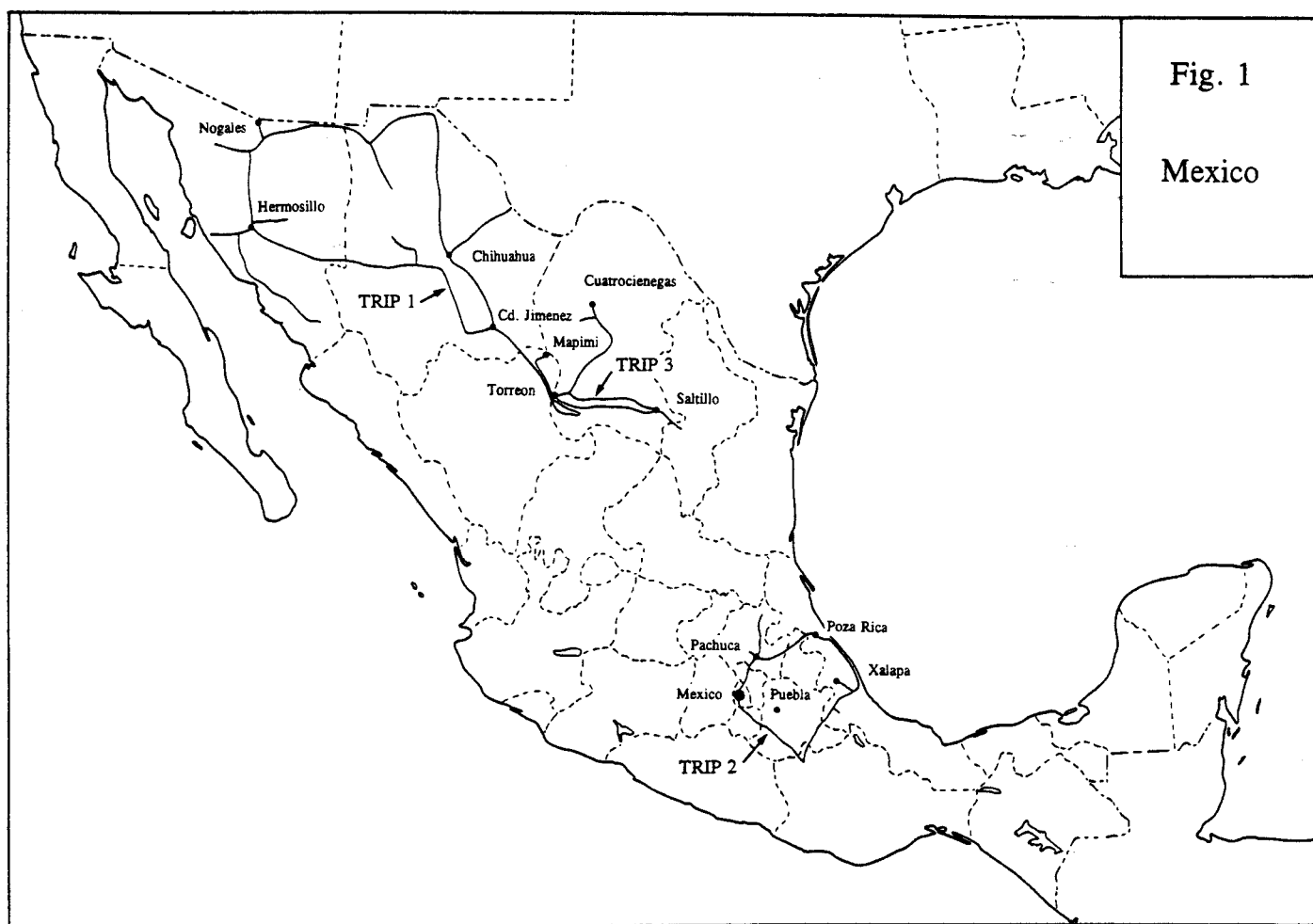


Fig. 1

Mexico

through in order to reach the chaparral zone. We found one locality in southern Coahuila, along a newly paved road from Saltillo to Parras de la Fuente by way of General Cepeda, where we could easily reach chaparral habitat, and we spent one afternoon and another full day collecting at this locality. Spring is apparently a good time of year to collect in this habitat, because most of the dominant trees and shrubs were

in bloom. We also found many herbaceous plants blooming in the chaparral this year. More extensive collecting in chaparral habitat would require a different type of expedition from the three trips that have been made so far, all of which have covered many miles and concentrated on collecting close to roadsides. Relatively little of the existing chaparral habitat can be reached in this way, and sampling this habitat

Table 1.—Bee genera collected on the Third Mexican Apifaunal Survey (the bee classification employed here is from Michener, McGinley and Danforth's forthcoming review of Central and North American bee genus). SITES = number of sites at which genus was collected.

	SITES	PLANTS (GENERA) ON WHICH BEE GENUS WAS COLLECTED
COLLETIDAE		
<i>Colletes</i>	15	<i>Acacia, Chamaesaracha, Dalea, Larrea, Prosopis, Ungnadia, Verbesina</i>
<i>Hylaeus</i>	9	<i>Acacia, Ceanothus, Lesquerella, Nama, Prosopis, Senecio, Sphaeralcea</i>
ANDRENIDAE		
<i>Andrena</i>	19	<i>Argemone, Brassica, Ceanothus, Cowania, Descurainia, Lesquerella, Nerisyrenia, Prosopis, Prunus, Senecio</i>
<i>Calliopsis s.l.</i>		
<i>Calliopsis</i>	4	<i>Dalea, Erigeron, Machaeranthera</i>
<i>Hypomacrotera</i>	11	<i>Argemone, Nama, Senecio, Sphaeralcea, Thelocactus</i>
<i>Micronomadopsis</i>	3	<i>Dalea, Nama</i>
<i>Verbenapis</i>	1	<i>Glandularia</i>

Table 1.—Cont.

	SITES	PLANTS ON WHICH BEE GENUS WAS COLLECTED
<i>Perdia</i>	15	<i>Allionia</i> , <i>Chamaesaracha</i> , Cactaceae (several genera), <i>Cordia</i> , <i>Dalea</i> , <i>Fouquieria</i> , <i>Larrea</i> , <i>Lesquerella</i> , <i>Machaeranthera</i> , <i>Nama</i> , <i>Prosopis</i> , <i>Sphaeralcea</i>
<i>Heterosarus</i>	5	<i>Dalea</i> , <i>Machaeranthera</i> , <i>Maurandya</i>
HALICTIDAE		
<i>Conanthalictus</i>	2	<i>Nama</i>
<i>Dufourea</i>	18	<i>Erigeron</i> , <i>Lesquerella</i> , <i>Nama</i>
<i>Sphecodosoma</i>	2	<i>Nama</i>
<i>Nomia</i>	1	<i>Porlieria</i>
<i>Augochlora</i>	4	<i>Ceanothus</i> , <i>Larrea</i>
<i>Augochlorella</i>	5	<i>Dalea</i> , <i>Echinocereus</i> , <i>Lesquerella</i>
<i>Augochloropsis</i>	11	<i>Brassica</i> , <i>Ceanothus</i> , <i>Condalia</i> , <i>Cowania</i> , <i>Dalea</i> , <i>Senecio</i> , <i>Ungnadia</i>
? <i>Caenaugochlora</i>	2	<i>Ceanothus</i> , <i>Verbesina</i>
<i>Neocorynura</i>	1	
<i>Agapostemon</i>	20	<i>Astragalus</i> , <i>Echinocactus</i> , <i>Echinocereus</i> , <i>Larrea</i> , <i>Lesquerella</i> , <i>Machaeranthera</i> , <i>Malvastrum</i> , <i>Mimosa</i> , <i>Nerisyrenia</i> , <i>Opuntia</i> , <i>Prosopis</i> , <i>Sphaeralcea</i> , <i>Ungnadia</i>
<i>Halictus</i>	15+	<i>Baileya</i> , <i>Brassica</i> , <i>Erigeron</i> , <i>Larrea</i> , <i>Lesquerella</i> , <i>Machaeranthera</i> , <i>Nama</i> , <i>Senecio</i> , <i>Sphaeralcea</i> , <i>Verbesina</i> , and others
<i>Lasioglossum</i> s.l.		
<i>Lasioglossum</i>	28	<i>Agave</i> , <i>Arbutus</i> , <i>Arctostaphylos</i> , <i>Argemone</i> , <i>Berberis</i> , <i>Brassica</i> , <i>Cowania</i> , <i>Dalea</i> , <i>Larrea</i> , <i>Nama</i> , <i>Nerisyrenia</i> , <i>Opuntia</i> , <i>Prosopis</i> , <i>Prunus</i> , <i>Quincula</i> , <i>Senecio</i> , <i>Sphaeralcea</i>
<i>Evyllaes</i>	4	<i>Larrea</i> , <i>Senecio</i>
<i>Dialictus</i>	34	<i>Agave</i> , <i>Arctostaphylos</i> , <i>Argemone</i> , <i>Bahia</i> , <i>Brassica</i> , <i>Castilleja</i> , <i>Ceanothus</i> , <i>Chamaesaracha</i> , <i>Chenopodium</i> , <i>Cordia</i> , <i>Cowania</i> , <i>Dalea</i> , <i>Erigeron</i> , <i>Euphorbia</i> , <i>Fouquieria</i> , <i>Gilia</i> , <i>Larrea</i> , <i>Lesquerella</i> , <i>Maurandya</i> , <i>Nama</i> , <i>Nerisyrenia</i> , <i>Pinaropappus</i> , <i>Prosopis</i> , <i>Prunus</i> , <i>Quincula</i> , <i>Sphaeralcea</i> , <i>Verbesina</i>
<i>Ptilocleptis</i>	1	<i>Larrea</i> , <i>Prosopis</i> , <i>Prunus</i> , <i>Sphaeralcea</i>
<i>Sphecodes</i>	11	<i>Ungnadia</i>
MELITTIDAE		
<i>Hesperapis</i>	7	<i>Larrea</i> , <i>Prosopis</i>
MEGACHILIDAE		
<i>Lithurge</i>	3	<i>Argemone</i> , <i>Opuntia</i>
<i>Ashmeadiella</i>	13	<i>Acacia</i> , <i>Astragalus</i> , <i>Dalea</i> , <i>Echinocereus</i> , <i>Larrea</i> , <i>Machaeranthera</i> , <i>Maurandya</i> , <i>Nama</i> , <i>Opuntia</i> , <i>Prosopis</i>
<i>Coelioxys</i>	3	<i>Porlieria</i>
<i>Hoplitis</i> s.l.		
<i>Hoplitis</i>	5	<i>Larrea</i> , <i>Machaeranthera</i> , <i>Omphalodes</i>
<i>Anthocopa</i>	3	<i>Dalea</i> , <i>Nama</i>
<i>Proteriades</i>	1	<i>Dalea</i>
<i>Megachile</i>	20	<i>Acacia</i> , <i>Argemone</i> , <i>Cercis</i> , <i>Dalea</i> , <i>Machaeranthera</i> , <i>Maurandya</i> , <i>Opuntia</i> , <i>Porlieria</i> , <i>Prosopis</i> , <i>Sphaeralcea</i>
<i>Osmia</i>	12	<i>Cercis</i> , <i>Maurandya</i> , <i>Prosopis</i> , <i>Senecio</i>
<i>Anthidium</i>	14	<i>Acacia</i> , <i>Astragalus</i> , <i>Dalea</i> , <i>Larrea</i> , <i>Prosopis</i>
<i>Dianthidium</i>	2	<i>Echinocereus</i> , <i>Porlieria</i>
<i>Trachusa</i>	4	<i>Larrea</i>
<i>Dioxys</i>	1	<i>Machaeranthera</i>
ANTHOPHORIDAE		
<i>Anthophora</i>	9	<i>Astragalus</i> , <i>Cowania</i> , <i>Dalea</i> , <i>Erigeron</i> , <i>Machaeranthera</i> , <i>Phacelia</i>
<i>Centris</i>	3	<i>Krameria</i> , <i>Larrea</i> , <i>Prosopis</i>
<i>Diadasia</i>	23	<i>Argemone</i> , <i>Baileya</i> , <i>Echinocactus</i> , <i>Echinocereus</i> , <i>Machaeranthera</i> , <i>Malvastrum</i> , <i>Opuntia</i> , <i>Senecio</i> , <i>Sphaeralcea</i>
<i>Melissodes</i>	2	<i>Nerisyrenia</i> , <i>Hechtia</i>
<i>Exomalopsis</i>	1	<i>Machaeranthera</i>
<i>Melecta</i>	1	

Table 1.—Cont.

	SITES	PLANTS ON WHICH BEE GENUS WAS COLLECTED
<i>Epeolus</i>	2	<i>Larrea, Prosopis</i>
<i>Triepeolus</i>	2	<i>Hymenoxys</i>
<i>Holcopasites</i>	1	
<i>Neolarra</i>	2	
<i>Nomada</i>	5	<i>Prunus</i>
<i>Townsendiella</i>	1	
<i>Ceratina</i>	11	<i>Dalea, Echinocereus, Erigeron, Fouquieria, Machaeranthera, Nama, Phacelia, Senecio, Teucrium</i>
<i>Xylcopa</i>	12	<i>Acacia, Astragalus, Fouquieria, Larrea, Prosopis, Senecio</i>
APIDAE		
<i>Plebeia</i>	1	<i>Ceanothus</i>
<i>Bombus</i>	6	<i>Dalea, Lathyrus, Prosopis, Sophora, Ungnadia</i>

Apis mellifera was also frequently seen, but not usually collected.

would take time and would require people accustomed to hiking in rough habitat. However, the same attributes that make this inland chaparral habitat relatively inaccessible should also make it less threatened than other habitats in Mexico.

Although bee diversity was not as high on this trip as on the first PCAM expedition (cf. Fig. 1), which also involved extensive collecting in desert shrub habitat but took place in late summer, collecting was nevertheless good at several localities. Table 1 presents a preliminary summary of the genera collected, along with the plants on which each genus was collected. These are field identifications and may well be modified as a result of more careful study.

Update on NSF Mexican Bee Inventory

Wallace E. LaBerge
Illinois Natural History Survey
607 East Peabody Drive
Champaign, Illinois 61820, USA

[Wally LaBerge sent the following letter, dated September 30, 1992, to the PCAM participants. It is reproduced here with his permission — R. McGinley].

Dear PCAMista: This letter is being written to advise you all of a decision made, I believe, to further the interests of PCAM and to fulfill our obligations to NSF, as outlined in our proposal of 1990. In the grant ensuing from that proposal were funds to support a graduate student from Mexico to work on a PhD in Entomology using native bees systematics in his/her dissertation. We have not been able to attract such a student. The two or three persons we had expected might apply decided not to do so for one reason or another.

After discussing this situation with some of the PCAM members at the 1991 Reno ESA meetings, I came to the conclusion that we should use these funds to hire a person to aid in setting up a computer system for the Mexican bee data and to at least begin the work of computerizing our rapidly accumulating data. Dr. Douglas A. Yanega has been hired as a postdoc to do this enormous job.

We have supported three collecting trips to Mexico thus far (Fig. 1). A fourth trip is being planned for January of 1992. I hope that our funds will be sufficient to support a fifth trip and perhaps a sixth in 1992.

Most PCAM members who were participants in the first two trips have sent specimens to me. They have, so far as I can tell, identified to species most of the groups that they had previously committed themselves to do. I hope that now we can count on the other members of PCAM who have agreed to identify specimens to find time to do this between now and next spring. We would like to be able to show NSF real progress, not only in collecting bees, but in processing, naming and computerizing the resulting data. I believe that this is essential for the success of a request for continued NSF support here or at some other University. We will need to start preparing an NSF very soon.

We will write or call each of you during the next few months and give you some idea of the magnitude of the request for your time, after we have sorted things to genus and have an accurate count. If any of you have questions, please contact me or Doug Yanega at the above address.

Proposed PCAM Survey Areas

Robert W. Brooks
Snow Entomological Museum
University of Kansas
Lawrence, KS 66045

The third PCAM expedition was in Northeastern Mexico in the Chihuahuan Desert. Many undescribed bees and significant range extensions were discovered on this and the previous two expeditions. The following places according to Ricardo Ayala should be considered for future PCAM expeditions due to endangered habitat and areas heretofore unsampled. These are rated more or less according to areas most urgent to least urgent for visitation. Plans are now being made for a trip to Chiapas for January 1993 (No. 3 below).

1. **Oaxaca** (mountains) - Sierra de Juarez (Northern Oaxaca). Tropical, subdeciduous forest - pine, oak. There are few hotels. Optimum time is July to November but any time would be good.
 2. **Chiapas (lowlands)** - Cuenca de Valsas (Michoacán). August.
 3. **Chiapas - Chajul**. New station administered by the Centro de Ecología, can only be reached by plane. La Lacandona Forest (NE Chiapas). Few hotels in this area. January to March.
 4. **Puebla, Veracruz, and Hidalgo** (high desert areas). No hotels in Hidalgo. April to May (Spring) and again in July to August (rainy season). One can spend their nights at Bachuca and drive out to the desert each day.
 5. **Queretaro and San Luis Potosí** (high desert, cloud and pine forests). Hotels are available. Quer. - July to August. SLP - perhaps July to September.
 6. **Guerrero** - Sierra Madre Sur. Sierra de Atoyac de Alvarez. Many kinds of forests such as tropical dry forest, tropical forest, pine-oak forest, pine forest, oak forest, cloud forest (rains all the time). There is camping only in the mountains since there are no hotels at Atoyac. One can collect in the lowlands with hotels available. Best time is September to October but be sure to always talk to people first before collecting. Checking with nearby people first is very important in this area.
 7. **Cuenca de Valsas** - Michoacán through Guerrero - Morelos - Puebla following the Rio Valsas and Rio Tepalcatepec (southern Michoacán). Sept to Oct.
 8. **Baja California** - March (dry season with Spring following). Rainy season is July to August (S. Baja). Steve Bullock in Ensenada is a good contact for B.C. Norte and Roy Snelling has had considerable experience throughout B.C.
 9. **Sierra Madre Occidental** between Chihuahua to Sonora. August. Camping with some hotels. Pine and Pine-Oak forest (high).
 10. **Sierra Madre Sur** (Chiapas). Cañon Sumidero. Camping with some hotels. Tapachula. Collect in Jan. to Feb. and/or Aug. to Sept. Tropical, pine and cloud forests. East side of the mountains is tropical.
- As one can see there are many places that need work with special attention to careful host plant vouchers while painstakingly keeping bees (even if you have only one specimen!) associated with host plant data.

Collecting on Guana Island, British Virgin Islands and Puerto Rico

Roy R. Snelling

Department of Entomology
Natural History Museum of L.A. Co.
900 Exposition Boulevard
Los Angeles, California 90007

As in 1991, I spent the month of October, 1992, collecting on Guana Island in the British Virgin Islands. A few other islands were visited briefly during that month, but my main focus was on Guana. As reported in SPHECOS 23 (July 1992), Guana is a small (340 hectares) island lying to the north of the east end of Tortola. Although some sugar cane was grown there long ago, little trace remains of that era and the island has largely reverted to dry forest.

My collecting report in SPHECOS-23 listed 12 species of bees then known to occur there (but failed to include *Apis mellifera*, present but not abundant). Last year I got only two females of the *Hylaeus* (the first *Hylaeus* for the entire Puerto Rico Bank); this year I managed to get a good series of both sexes, mostly on *Capparis cynophallophora*. Much of my bee interest this year was in attempting to garner some data on floral visitation by the various bee species on Guana. Fortunately for me, George Proctor, a botanist with the Departamento de Recursos Naturales in Puerto Rico, was on hand to name stuff for me!

Coelioxys abdominalis Guérin is a lovely little bee. It was much more abundant than any *Megachile*, not only this year, but last year as well. Question: how is it that a cleptoparasite is more abundant than its presumed host? My best guess at this point would be that it hits the nests of *Centris lanipes*. Recall that Friese (1923, Die Europäischen Bienen (Apidae), I:45) asserted that both *Megachile* and *Anthophora* are hosts for *Coelioxys*. While he has been pooh-poohed since then, maybe, just maybe, he was on to something.

There appears to be only one *Exomalopsis* on Guana and it mostly visits *Solanum persicifolium*, which it "buzzes." But I can't identify the darned thing! Timberlake's key (1980) simply does not work for the Greater Antillean *Exomalopsis*. Somebody needs to look at these more critically than Tim did.

I had an opportunity to see a couple of nesting sites of *Centris decolorata* on Puerto Rico. One very populous site was on a beach near Aguada. Thousands of males cruising through the site. They would sometimes land and walk around for a bit, then resume flying. They paid absolutely no attention to the females! On the other hand, females attempting to gather nectar and/or pollen from flowers of *Canavalia rosea* were fair game. Are males present at the site to discourage parasites such as *Mesoplia rufipes* or bombyliids? In any case, this beach-nesting *Centris* seems worth studying - maybe a good student project? Among the thousands of males I found one metander!

Also spent five days collecting on Mona Island. Wonderful place. I hope next year to go back and get onto the nearby island of Monito (essentially uncollected).

In the following list, species newly collected on both Guana and Mona Islands are marked (*).

Bees of Guana Island, BVI

COLLETIDAE

Hylaeus (Hylaeana) sp. (undescribed). Collected on *Capparis cynophallophora*, *Cardiospermum micranthum* and *Schaefferia frutescens*.

HALICTIDAE

Lasioglossum (Dialictus) sp. 1: on *Coccoloba uvifera*, *Cakile lanceolatum*, *Jacquemontia pentantha*, *Cardiospermum micranthum*, *Schaefferia frutescens*, *Capparis cynophallophora* and *Ipomoea pes-capri braziliensis*.

Lasioglossum (Dialictus) sp. 2: on *Capparis cynophallophora*, *Jacquemontia pentantha*, *Antigonon leptopus* and *Schaefferia frutescens*.

**Habralictellus* sp.: on *Capparis cynophallophora* and *Schaefferia frutescens*.

Augochlora sp. 1

Augochlora sp. 2: on *Ipomoea pes-capri braziliensis* and *Jacquemontia pentantha*.

MEGACHILIDAE

Megachile (Pseudocentron) undescribed sp near *poeyi* Guérin: on *Ipomoea pas-capri braziliensis*, *Jacquemontia pentantha*, *Antigonon leptopus* and *Cardiospermum micranthum*.

**Megachile (Eutricharaea)* *concinna* F. Smith: on *Ipomoea pes-capri braziliensis*.

Coelioxys abdominalis Guérin: on *Ipomoea pes-capri braziliensis*, *Antigonon leptopus*, *Cardiospermum micranthum*, *Jacquemontia pentantha*, *Solanum persicifolium* and *Cakile lanceolatum*.

Coelioxys abdominalis (Guérin).

ANTHOPHORIDAE

Exomalopsis (E.) sp.: on *Solanum persicifolium*, and *Jacquemontia pentantha*.

**Centris smithii* Cresson.

Centris haemorrhoidalis (Fabr.): on *Solanum persicifolium*, *Caesalpinia bonduc* and *Stigmaphyllon periplocifolium*.

Centris lanipes (Fabr.): on *Solanum persicifolium* and *Caesalpinia bonduc*.

Anthophora tricolor (Fabr.): on *Solanum persicifolium*, *Ipomoea pes-capri braziliensis*, *Antigonon leptopus* and *Caesalpinia bonduc*.

**Melissodes trifasciata* Cresson: on *Ipomoea pes-capri braziliensis* and *Antigonon leptopus*.

Xylocopa mordax F. Smith: on *Canavalia rosea*, *Jacquemontia solanifolia*, *Ipomoea pes-capri braziliensis*, *Coccoloba*

uvifera, *Caesalpinia bonduc*, *Tecoma stans*, *Centrosema virginianum* and *Cardiospermum micranthum*.

APIDAE

Apis mellifera Linne

Bees of Mona Island

HALICTIDAE

Lasioglossum (Dialictus) sp. 1: some collected on *Croton* sp.

**Lasioglossum (Dialictus)* sp. 2

[Presumably one of these is the same as the bee recorded by Ramos (1946, The Insects of Mona Island (West Indies), Jour. Agric. Univ. P. Rico, 30:1-74) as "*Halictus* sp." collected at Playa Sardinera.]

Agapostemon vieguesensis Cockerell [= *A. portoricensis* in Ramose, 1946]

MEGACHILIDAE

Megachile (Pseudocentron) undescribed sp near *poeyi* Guérin [= *Megachile* n. sp. in Ramose, 1946]. Has been reported from flowers of *Moringa moringa* and *Pisonia albida* on Mona and I got it on *Caesalpinia bonduc*. This is the bee reported by Wolcott (1941, suppl. to "Insectae Borinquensis," Jour. Agric. Univ. P. Rico, 25:33-150) as *M. vitrasi* Pérez, a misidentification. This bee is common on Puerto Rico and in the Virgin Islands.

Megachile (Eutricharaea) *concinna* F. Smith.

ANTHOPHORIDAE

Melissodes trifasciata Cresson [Recorded by LaBerge 1956].

Anthophora tricolor (Fabr.) [= *A. krugii* Cresson of Ramose; reported on *Moringa moringa* and *Colubrina colubrina*.]

Centris haemorrhoidalis Fabr. [teste Ramose, 1946]

**Centris decolorata* Lepeletier [= *C. versicolor* Fabr. of Ramose; misident.]. Ramose reported it from *Lantana* sp. and *Moringa moringa*; I got it also on *Caesalpinia bonduc* and *Canavalia rosea*.

**Centris smithii* Cresson, on *Caesalpinia bonduc*. First record outside of Virgin Islands.

Centris lanipes Fabricius. Ramose reported it from *Moringa moringa*, *Colubrina colubrina* and *Pisonia albida*; additionally, I collected it at *Malpighia* sp. and *Caesalpinia bonduc*.

Xylocopa mordax F. Smith [= *X. brasilianorum* of Ramose]

APIDAE

No specimens of *Apis mellifera* have been found on Mona. If we're lucky nobody will bring in any colonies. What a delight to work in an area without honeybees!

RESEARCH NEWS

Possible Range Extension or Increase in Abundance of the Parasitic Bee *Leiopodus singularis*

Charles D. Michener
Snow Entomological Museum
University of Kansas
Lawrence, KS 66045, USA

Leiopodus singularis (Linsley & Michener), formerly placed in the genus *Protepeolus*, is a cleptoparasite of certain small species of the genus *Diadasia* that has probably become more abundant or more widespread in recent decades than in the last century and early in this century. It is now known from numerous localities from coastal southern California to south Texas from Albuquerque, New Mexico to Guatemala (Eickwort & Linsley, 1978), but is especially associated with xeric areas of the southwestern United States and northern Mexico. Eickwort and Linsley (1978) had 48 specimens before them and others, mostly collected recently, are in various collections. Rozen, Eickwort, and Eickwort (1978) described its behavior, immature stages (all stadia), and relations to its host.

A substantial amount of collecting was done in the southwestern states in the last century and early in the present century. F.H. Snow collected insects in New Mexico and Arizona at the season when this bee is active (April to September) on trips in the period between 1880 and 1907 (Hyder, 1953:279, 280); his localities included Albuquerque, the type locality of *L. singularis*, and parts of southern Arizona where the species occurs. He collected many bees, now in the Snow Entomological Museum, University of Kansas, but not *L. singularis*. T.D.A. Cockerell specialized in collecting and studying bees in and around Las Cruces, New Mexico, another locality from which *L. singularis* is known, from 1893 to 1903 (Weber, 1965). He never found *L. singularis*, although he found many much less conspicuous forms such as *Neolarra*. Both Snow and Cockerell collected its hosts.

L. singularis is a moderate-sized (6.5-10.0 mm long), conspicuously marked bee. If it was present in the time of Snow and Cockerell, it must have been rare.

The first known specimen was collected by me in a patch of sunflowers at Albuquerque in 1935. When it was described by Linsley and me in 1937, our genus *Protepeolus* was known from only a single specimen.

If it was actually rare in earlier times and has become relatively abundant or more widespread since 1935, what could account for this change over an area about 2,300 km in width from southern California to south Texas? This is a region of substantial climatic and vegetational diversity, and it is not likely that any single climatic factor could be responsible.

My unverified suspicion is that roads and perhaps cattle grazing are responsible. Although the cleptoparasite is not, so far as know, a floral specialist, its hosts (*Diadasia* species)

are oligolectic on Malvaceae, especially *Sphaeralcea*. This plant is abundant in xeric areas, and especially so in disturbed soils (e.g., along roadsides and embankments). Perhaps human activities increased the abundance of *Sphaeralcea*, thus of the small *Diadasia* species, and therefore of the parasitic *Leiopodus*.

These speculations may have broader significance for bee distributions. In most seasons of the year one sees enormous stretches of desert that are essentially flowerless. A highway across the desert, however, is frequently margined by small patches of flowers. The disturbed soil along the road and the runoff of limited rain from the pavement result in growth and flowering of herbaceous plants at seasons and in places where they would otherwise not be present. Bee abundance is enhanced, and distributions may be extended, by such conditions.

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Decline in *Bombus terrestris* (L) Populations in Turkey

Hikmet Özbek
Atatürk University
Faculty of Agriculture, Plant Protection Department
25240 Erzurum, TURKEY

Bombus terrestris is confined to the lowlands, areas below 1000 m s.m., it exists in abundance in the coastal areas in the country. However, the populations of this species, like other wild bees, has declined recently because of the increased cultivation of land, intensive and irregular use of pesticides and the rapid increase in the population and urbanization in Mediterranean and Aegean regions. *B. terrestris* is now very rare in some important cultivated areas, such as Çukurova, Antalya and several parts of Anatolia.

Bombus terrestris is one of the most efficient pollinators of many cultivated plants and has vital importance upon pollination of native plants.

Since 1988 tomato growers have started using *B. terrestris* for pollination in glasshouses on a large scale in Netherlands and Belgium. Two companies from the Netherlands with local partners obtained a license from Government agencies to breed *B. terrestris* in Turkey for export. But our observations and investigations have shown that these two companies are simply collecting overwintered queens in early

spring and shipping them directly abroad. It has been estimated that about 3000-4000 queens have been collected every year since 1989. Sometimes they take the queen with its nest.

This irresponsible activity will result in the elimination of this valuable species from its natural environment.

It should be pointed out that at the age of increasing awareness about the delicate balance of nature of the planet earth, this kind of irresponsible activity cannot be condoned. I think these companies should abide by the terms of their licence and take necessary measures to replace the bees that they collect from nature.

As was indicated in the World Summit on June 5th, 1992 in Rio de Janeiro, we have "only one earth - care and share." Everybody should feel the responsibility toward the natural environment and act accordingly.

Solitary Bee Research Sponsored by NASA

The Editors

We have recently learned that Dr. Jerome G. Rozen (American Museum of Natural History, NY, NY) and Dr. George C. Eickwort (Cornell University, Ithaca, NY) will be included in a Top Secret flight of the space shuttle Atlantis sometime next year. Rumor has it that NASA is launching a last ditch effort to correct the problems of the Hubble Space Telescope by investigating the possibility that solitary bees are nesting in the telescope's hydraulic tubing. If the unconfirmed reports of *Osmia* nesting on the Hubbel Space Telescope are indeed true this would set the record for solitary (and social) bee foraging trip distances. We wish Drs. Rozen and Eickwort luck in their efforts.

Notes on Nesting by Megachilid Bees

Fred W. Gess and Sarah K. Gess

Department of Entomology
Albany Museum, Somerset Street
Grahamstown 6140
Republic of South Africa

Our attention has been drawn to the fact that our notes on nesting by bees apart from those in Gess (1) and Gess and Gess (9) are effectively hidden by having been included under "associated insects" in papers concerning the nesting of the wasps, the burrows of which are used by the bees as nesting galleries either after abandonment by the wasps or usurpation by the bees.

As the bee names do not occur in the titles and/or the abstracts of the papers they are not picked up by abstracting journals. They are therefore listed below for the convenience of those who may be interested.

Key to papers by number:

ANTHIDIINI

Capanthidium capicola (Friese) - 5

Immanthidium junodi (Friese) - 5

MEGACHILINI

Chalicodoma sinuata (Friese) - 5

Megachile (Eutricharea) alicae Cockerell - 4, 5, 6, 7 and 10

Megachile (Eutricharea) meadewaldoi Brauns - 3, 4 and 11

Megachile spinarum Cockerell - 5

Megachile (Eutricharea) stellarum Cockerell - 2, 4 and 7

Megachile (Eutricharea) semiflava Cockerell - 4

Creightoniella dorsata (Smith) - 4

Hoplitis sp. - 8

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Update on the Hymenoptera Database System (HDS)

Ronald J. McGinley
Department of Entomology
NMNH, Smithsonian Institution
Washington, D.C. 20560, USA

I recently sent the following letter to Padre J. S. Moure, Departamento de Zoologia, Universidade Federal do Parana, Caixa Postal 19020, CEP 81531, Curitiba, Parana, BRASIL. This provides a bit of an update on where the bee section of the HDS currently stands.

"Dear Padre Moure: I was delighted hear via C.D. Michener of your positive response regarding the bee catalogue initiative. You and Paul Hurd provided the leadership that resulted in the New World halictid volume - your involvement will be critical for additional coverage in South America.

The current status of the North American catalogue is as follows:

1) Mainframe system.--The 1979 SELGEM version has been converted to INQUIRE - an IBM mainframe database system. Fields were expanded, added or refined. For example floral associations has been broken down to three separate fields, a) pollen records for "hard" pollen data; b) floral visitors for misc. floral records; c) floral text for comments, review, etc.

2) Front-end systems.--We find it cumbersome to work directly on the mainframe system for updating and editing. For this we are using front-end software, something called askSam on our PCs. AskSam is a dbase program that handles structured/unstructured data and allows for efficient text storage - costs under \$200 (see enclosed screen samples and user documentation notes written by Bryan Danforth). If we use the same data standards, individuals are free to use whatever front-end system they might care to use or develop on their own. In this way we can download a tribe, family, etc., from the mainframe file and do the upgrading on PCs at the office or at home. After editing, the mainframe file is then also upgraded. It is through the use of front-ends that we are proposing a cooperative cataloguing effort where individual authors are responsible for taxa in their area(s) of immediate interest. Hopefully we can maintain a central file that would allow for general search/report capability. A number of workers around the world are actively working on catalogues (for example, Alexander: world *Nomada*; Griswold: world colletids and megachilids; Eardley/Urban: Afrotropical Anthophoridae; Rasmont: european bees; Tadauchi: Oriental Apoidea; Williams: world *Bombus*). Incorporation of the "minimum critical fields" [names, authors, distribution] from

all our efforts would do much to promote a world checklist for bees (please see enclosed ICN article by Chris Thompson [Checklist of the Insects of Canada, United States and Mexico, *Insect Collection News*, No. 8, November 1992]). Ideally this would be available "on-line" and distributed as a CD-Rom product (hard-copy distribution would also be an important consideration). The major point being that all collaborators would be free to publish when and how they want, BUT we would try to maintain a central co-authored file for general use.

The following individuals have indicated interest in such a cooperative effort:

COLLETIDAE: Terry Griswold (colletid checklist of the world); Virginia Scott (*Hylaeus*).

HALICTIDAE: Ron McGinley, George Eickwort, José Cure.

ANDRENIDAE: Wallace LaBerge (Andreninae); Panurginae: ??

MEGACHILIDAE: Terry Griswold (developing world checklist)

ANTHOPHORIDAE: Byron Alexander (Nomadinae: *Nomada*); Arturo Roig (Nomadinae: except *Nomada*); Wallace LaBerge (Eucerini); Howell Daly (Xylocopinae); other taxa: ??

APIDAE: ??

I am sending copies of this letter to all those individuals listed so they can correct or modify their interests.

Given your extensive knowledge of all South American bee taxa and the excellence of your card-files I would imagine that you would be interested in collaborating on a variety of groups. Please let me know how you would like to proceed. As Mich indicates, your card-file information could be entered here in Washington or via contract to an associate of yours in Brasil. These are the details I will try to work out after I have a better feel for who wants to do what."

MELISSA readers who are interested in contributing to a world checklist of bees are urged to come forward.

Missing Bee Parts?

Saul Frommer
Department of Entomology
University of California
Riverside, CA 9252, USA

For some time I have been trying to return to the appropriate institution, a slide containing parts of a bee cotype. Perhaps the information which follows could be reported in the forthcoming MELISSA newsletter and in this way it may be possible to locate the appropriate institution.

The data on the slides is as follows:

Halictoides virgatus Cockerell, S. Calif. cotype.

Vince Lee of the California Academy has tried to locate the "owner" and he has consulted Sandy Shanks but neither can come up with anything.

Missing Bees?

Virginia Scott
Department of Entomology
Michigan State University
East Lansing, Michigan 48824-1115

"HELP !!!!! I will be helping to RETURN bee loans made to the late Roland Fischer at Michigan State University. If you know of any bees he had on loan which were never returned to your institution, please contact me. AND, pass this on to your collection manager so loan records can be checked. Among other things, he has had much of the North American *Tetralonia* since the early 1950's. Any information you could provide will expedite the return of your material (i.e., common collectors, localities, number of specimens, etc.). Thanks.

CURRENT PROJECTS

We hope the following will encourage other MELISSA readers to contribute similar reports for the next issue.

Byron Alexander, Snow Entomological Museum, University of Kansas, Lawrence, Kansas 66045, USA.--CURRENT PROJECTS: 1) Preparing species-group revision of *Nomada* for publication. It was all but done (or at least ready to send out to reviewers) until professor Michener came upon a specimen of the male of the South African species *N. whiteheadi*. Because South African *Nomada* have unusual character state distributions, the cladistic analysis will have to be done yet again. **HELP:** any other male specimens of *Nomada whiteheadi* (or undescribed species from southern Africa -- I hope there aren't any, and I assume Connal Eardley and Max Schwarz do as well, since they published a revision recently; but if anybody does know of one or more undescribed species, please tell me now). 2) Comparative morphological study of female reproductive systems of nomadine bees. **HELP:** adult female cleptoparasitic long-tongued bees preserved in Kahle's (Dietrich's) solution that you would be willing to let me dissect (all parts would be returned). Of special interest are any members of the tribe Osirini as recently redefined by Roig-Alsina (i.e. *Osiris*, *Epeoloides*, *Ecclitodes*, *Osirinus*, *Parepeolus*, *Protosiris*), *Coelioxoides*, and members of the tribes Isepeolini and Protepeolini. **COMMENTS:** I'm spending a lot of time working on bembicine wasps these days, but I haven't completely forgotten about or forsaken bees.

Michael E. Archer, The University College of Ripon & York, St. John, Lord Mayor's Walk, York YO3 7EX, ENGLAND.--CURRENT PROJECTS: 1) Study of solitary aculeate wasp and bee assemblages at stated localities and biotope type. Development of biological indices, e.g., cleptoparasitic load, aerial nester frequency, to characterize biotopes. 2) Development of a species-quality-score (S.Q.S.) for species of solitary aculeate wasps and bees so that the quality of localities and biotopes can be compared for conservation

purposes. I am keen to make contact with workers who are interested in similar problems.

Stephen Buchmann, USDA-ARS Carl Hayden Bee Research Center, 2000 East Allen Road, Tucson, Arizona 85721, USA.--CURRENT PROJECTS: 1) Continuing work on the nesting/mating biology of carpenter bees (*Xylocopa* spp.) with Alcock and Minckley. Engaged in evaluating native Arizona spp. as greenhouse pollinators of buzz-pollinated crops (tomato, eggplants, chile peppers). 2) Just studied *Bombus impatiens* in Wisconsin cranberry bogs as a commercial pollinator. 3) Continuing to work with Gort Linsley on publication of the monograph on bee visitors to desert trees and shrubs. 4) Developed and now field-testing a bidirectional IR counter for social bees and other central place foragers. 5) Worked with Dave Roubik (STRI in Panama) on foraging ecology of Africanized Honeybees and native stingless bees during March, 1992. 6) Directed by USDA-ARS to abandon honey bee research and conduct research on non-*Apis* crop pollinators (real bees ... at last!). 7) Finishing work on my long overdue pollination ecology book with the Univ. of Arizona Press. **COMMENTS:** Just elected to presidency of Sonoran Arthropod Studies, Inc., a non-profit membership organization dedicated to arthropod conservation, education and research. Join us, only \$20/yr.

James Cane, Department of Entomology, Auburn University, Auburn, Alabama 36849, USA.--CURRENT PROJECTS: 1) Completing pollination study that links pollen-foraging efficiencies of bees (*Habropoda laboriosa*, *Bombus* sp. and *A. mellifera*) to their pollination efficiencies at blueberries. 2) Completing manuscript that relates differences in the natural histories of these same bees at blueberries to differences in their regional (7 states), annual (7 years) and seasonal patterns of abundance as pollinators of flowering blueberries.- **HELP:** Collections of *H. laboriosa* are spotty at the northern limits of its range as reported by Mitchell. I would like label data for any specimens collected north of the Gulf Coast states of the U.S. 3) Initiating research with promising leaf-cutter bee as an alternative to *A. mellifera* for pollination of cranberries in New Jersey. **COMMENTS:** 1) Developing proposals that will relate consequences of global climate change to distributional and fitness changes in native bees of North America. 2) Is anyone interested in a collaborative biogeographic study that relates the fauna of bees in xeric coastal and inland regions of the Southeastern U.S. to western desert faunas? Representatives of many genera are common to both regions. **HELP:** seek experiences of melittologists that have attempted to implement a GIS system for pollinators, including bees.

Bryan Danforth, [NOTE NEW ADDRESS] Department of Entomology, Cornell University, Ithaca, New York 14853-0999.--CURRENT PROJECTS: 1) Completion of phylogenetic analysis of the *Perdita* subgenera *Cockerellula*, *Macrotera*, *Macroteropsis* and *Macroterella*, a monophyletic group of mallow and cactus specialists. Jack Neff has recently sent me many new specimens of the subgenus *Cockrellula*, which has lead to additional descriptions and revised analyses of the data matrix. 2) Completion, with Kirk Viss-

cher (UC Riverside), of research projects on the biology of *Calliopsis pugionis* and its parasite, *Holcopasites ruthae*, a recently described nomadine from southern California which we evaluated for endangered species status. 3) To begin a postdoc in early 1993 at Cornell on the nestmate relatedness, population genetics and sperm precedence of *Perdita* (*Macroteropsis*) *portalis*, a communal species with dimorphic males, using RAPD markers or DNA fingerprinting.

Connal Eardley, Plant Protection Research Institute, Private Bag X134, Pretoria 0001, SOUTH AFRICA.—CURRENT PROJECTS: 1) Revisory studies of the Afrotropical Ammobatini, the Afrotropical species of *Pachymelus*, and the southern African species of *Amegilla*. Manuscripts virtually complete. 2) Together with Ros Urban, a catalogue of the Afrotropical Anthophoridae. 3) A revision of *Scapter* (Colletidae). 4) A study of the Madagascan *Lithurge*. 5) Pollination of subtropical fruit. COMMENTS: My move into pollination biology has much to do with a changing South Africa. I welcome this change because little research is done on non-*Apis* bees in this part of the world and I hope it will give me a chance to demonstrate the importance of these little creatures. HELP: 1) Material of *Scapter*, and Madagascan *Lithurge* needed. 2) I am primarily concerned with the systematics of the southern African Apoidea, although I often revise the entire Afrotropical fauna of the groups I undertake to study. Anyone with holdings of Afrotropical bees who would like their material incorporated into my studies is welcome to contact me. I will then write for the loan of material as I systematically undertake the revision of each taxon.

Gordon Frankie, Department of Entomology, University of California, Berkeley 94720, USA.—CURRENT PROJECTS: 1) Studying nesting ecology and habitat preferences of *Centris*, *Epicharis* and several genera of the Megachilidae in Costa Rica. Just beginning intensive work on the parasites and predators associated with these genera. HELP: need to know of other workers in this area. 2) Studying nesting ecology and habitat preferences of several megachilid genera in northern California. 3) Developing visual displays for visitor centers in Costa Rica and California that show close-ups of bees and flowers. HELP: Looking for innovative display ideas. 4) Gearing up for a new tropical plant phenology study in Costa Rica that will be linked to seasonal bee activity. COMMENTS: In addition to bee and plant work, I am also devoting considerable time to conservation biology projects in Costa Rica and California.

Terry Griswold, USDA-ARS Bee Biology & Systematics Laboratory, Utah State University, UMC 5310, Logan, Utah 84322, USA.—CURRENT PROJECTS: 1) Developing computerized checklists of Colletidae and Megachilidae for the world (3180 and 6212 names entered). 2) Completing revision of Nearctic *Stelis* with Frank Parker - HELP: need any additional specimens of these rare beasts. 3) Completing revision of *Protodufourea* with Ned Bohart - HELP: need additional material. 4) Conducting faunal study of bees of the eastern Mojave Desert in northeastern San Bernardino County, California. 5) Continuing work on generic-subgeneric revision of Osmiini (*Osmia* s.l. and *Heriades* s.l.) and re-

visions of some genera and subgenera - HELP: need additional material from Africa, eastern Palearctic, Middle East, and the Orient. COMMENTS: I have taken on additional identification responsibilities by taking on bees for the USDA Systematic Entomology Laboratory Taxonomic Services Unit so the above may just be a dream list.

Roj Lowe, Department of Zoology, La Trobe University, Bundoora, 3083, AUSTRALIA.—Ph.D. PROJECT: The effect of parasitism on two species of Australian native bees (*Exoneura* spp.). *Exoneura bicolor*, which is semisocial, is attacked by an ichneumonid parasitoid, a microbial disease of the ovaries, and an inquiline allodapine bee. The second species, *E. richardsoni*, is eusocial. These bees are attacked by a nematode and also an inquiline allodapine bee. The host-parasite relationships in both species will be studied using field sampling and manipulations of caged colonies. An interesting aspect of this study will be the phylogenetic relationships of the host bees and their inquiline parasites. It would therefore be of great use to be able to include other allodapini and/or their inquiline parasites in the analysis, and I would appreciate any offers of samples suitable for use in this analysis. (E-mail: GENRML@lure.latrobe.edu.au)

Ron McGinley, Department of Entomology, NMNH, Smithsonian Institution, Washington D.C. 20560, USA.—CURRENT PROJECTS: 1) Completing revision of *Sphecodogastra* - manuscript finished except for inclusion of a new species from Texas and Mexico - HELP: need any additional *Sphecodogastra* specimens for inclusion in monograph. 2) Continuing work on New World *Evylaeus* species; to date approximately 45,000 specimens are on loan and have been sorted - no additional specimens requested at present time (maybe later when project is wrapping up). 3) Update of bee section in Hymenoptera Database System (North American Catalog) in cooperation with other bee specialists (see separate contribution on page 9 in this issue of MELISSA) - HELP: need clarification of potential cooperation and responsibilities. 4) Development of computerized Bee Expert System based on Michener et al., in press [*Bee Genera of North and Central America*; see contribution on page 15] - HELP: will need additional quality photos and other illustrative support - need to enlarge geographic coverage through greater international collaboration. COMMENTS: After serving five years as department chair I am now back to full time bee research.

Charles Michener, Department of Entomology, University of Kansas, Lawrence, Kansas 66045, USA.—CURRENT PROJECTS: 1) A book-length summary of bee phylogeny and classification worldwide, with keys to the subgenus level, and with synonymies, type species, descriptive comments, references to revisions, distributions, etc., for each genus and subgenus. HELP: If you have new genera, subgenera, etc., describe them soon, send me a reprint or preprint, and lend me specimens so that I can provide as comprehensive an account as possible. HELP: There are still some genera and subgenera for which specimens are not available. If you have specimens that might be such rarities, I would appreciate a letter indicating what you have that I might borrow

for study. **HELP:** If you have new keys to genera or subgenera (either worldwide or for a particular continent), I would like to consider incorporating them (under your name) in the manuscript. 2) As building blocks for the above, a phylogeny to the tribal level (with Roig-Alsina) for long-tongued bees and 3) a phylogeny to the tribal level for short-tongued bees.

Robert L. Minckley, Department of Entomology, University of Kansas, Lawrence, Kansas 66045, USA.--**CURRENT PROJECTS:** 1) completing Ph. D. work, a revision of the tribe Xylocopini; 2) soon thereafter will be finishing and submitting manuscript on *Nomia/Helianthus* system.

Pierre Rasmont, [NOTE NEW ADDRESS] Laboratoire de Zoologie, Université de Mons-Hainaut, Avenue Maisotiau, B-7000 Mons, BELGIUM.--**CURRENT PROJECTS** (in order of completion): 1) Microbanque Faune-Flore, version 3: a software for management and interpretation of faunistic and floristic data banks; this software is now well established in Belgium and France but it needs hard maintenance (with Drs. Y. Barbier and A. Empain); 2) *Apoidea Gallica*, a catalog of Apoidea of France, Belgium, Switzerland and Grand-Duché de Luxembourg; 3) Key of Bumblebees of the West-Palearctic Region; 4) development of bumblebee rearing (more precisely, study of dietetic of *Bombus terrestris*); 5) study of interactions between bumblebees and plants in the post-glacial dispersion in the Mediterranean islands; 6) survey of Apoidea of Belgium and France (now 300.000 data on line); the next step after the bumblebees will be the Anthophoridae; 7) Key of Anthophorini of Occidental Europe (with revision of the types). **COMMENTS:** I'm now professor of Zoology and Ecology. My new academic responsibilities do not allow enough time to identify all the bumblebees and *Anthophora* that friends are sending! Sorry, sorry.

Arturo Roig Alsina, Museo Argentino de Ciencias Naturales "Bernardino Rivadavia," Av. A. Gallardo 470, 1405 Buenos Aires, ARGENTINA.--**CURRENT PROJECTS:** 1) The generic revision of the tribe Epeolini is in the stage of final analysis and preparation of illustrations. 2) Revision of *Odyneropsis*. Three species groups have been identified, two of them including several new species. Planning to complete manuscript during 1993. **HELP:** *Odyneropsis* are scarce in collections - any additional specimens for study will be very welcome! 3) Generic study of the tribe Emphorini. After a preliminary approach, now re-working and expanding character analysis. 4) Revision of the South American *Ptilothrix* in collaboration with L. Moffatt. The study will complement T.J. Zavortink's work on the North American species. **HELP:** People willing to have their South American *Ptilothrix* identified are welcome to send their specimens. 5) Gathering specimens for a revision of the genera *Tapinotaspis*, *Chalepogenus* and *Lanthanomelissa*. **COMMENTS:** After finishing my Ph.D. with C.D. Michener in Kansas, I am back to a research position in the Museo Argentino de Ciencias Naturales, Buenos Aires.

David W. Roubik, Smithsonian Tropical Research Institute, APO Miami, Florida 34002-001, USA.--**CURRENT**

PROJECTS: Spending most of 1993 based in Utah at the USDA bee lab and on sabbatical, doing systematics and pollination projects. Recently written up population genetics studies of African *Apis* in Panama and also euglossine bees. Awaiting publication of my 14 year study on negative impact of honeybees on native bees in the neotropics. Recently revised *Trigona* s. str.; working on *Scaptotrigona* with Camargo, and a description of new genus of stingless bee from cloud forest. Putting together a key to corbiculate apid bees of Brunei - for Brunei Rainforest Expedition of 1991-92; editing FAO book on pollination in tropical agriculture, also editing book on Diversity and Flexibility of Biotic Communities in Fluctuating Environments (IGBP symposium, 1991). Continuing research with R. Cano and the Poinars on fossil DNA from amber-preserved stingless bees and its application to contemporary phylogeny of *Plebeia* and other groups. Recently completed lengthy paper on ethology of the robber bee, *Lestrimelitta limao* with Sakagami and Zucchi, another paper was an 8-year study reviewing data on canopy and understory foraging by tropical bees and their explanation. Have upcoming field work in Gabon and Kenya in January, also in eastern Costa Rica and Panama in February, and possibly another trip to Brunei and a trip to AMNH to organize the stingless bee collection in March and April. Will be chairing a session on population dynamics of tropical pollinators in the Bangalore meetings in August, 1993 and need more contributors with more than one year's data on actual numbers of pollinators of any kind found in the field.

Jerome G. Rozen, Jr., American Museum of Natural History, New York, NY, USA.--**CURRENT PROJECTS:** 1) Completing study of nesting biology and mature larva of *Euherbstia* (Andrenidae). 2) Completing investigations on nesting biology and mature larvae of the Rophitinae. 3) Beginning studies of biologies and larvae of *Chilimalopsis* and *Tapinotaspis*. 4) Describing the mature larvae of *Kelita* and *Brachynomada* (Nomadinae). 5) With Jack Neff, describing larva and pupa of *Anthemurgus* (Panurginae). 6) With Luisa Ruz, treating nesting biology and immature stages of a new genus of long-tongued Chilean panurgine. 7) With Arturo Roig-Alsina, describing mature larva and pupa of *Leiopodus* (Protepeolini). **HELP:** Would greatly appreciate immature stages of any and all bees for deposit in the collection of the American Museum of Natural History, where they will be available to the community of melittologists. **HELP AGAIN:** Especially interested in receiving first and last stage larvae of the following parasitic bees or information about the whereabouts of the nesting sites of hosts: *Hexepeolus*, *Rhopalolemma*, *Isepeolini*, *Osirini*, *Coelioxoides*, *Exaerate*, and *Aglae*.

Shoichi F. Sakagami, Kita-ku, Ainosato, 1-6, 2-2-610, Sapporo 002, JAPAN.--**CURRENT PROJECTS:** 1) Comparative behavioral studies of the oviposition process of stingless bees (with R. Zucchi, L.R. Bego, etc). 2) Comparative studies of social behavior of *Ceratina* bees (with Y. Maeta, etc.). 3) Social behavior of the temperate semisocial bee, *Lasioglossum problematicum* (with L. Packer). 4) Taxonomic studies of the Indo-Pacific stingless bees (with A. Dollin,

etc.). 5) Taxonomic studies of the halictine bees of Sri Lanka (with K.V. Krombein).

Mike Schwarz, Department of Zoology, La Trobe University, Bundoora, 3083, AUSTRALIA.—**CURRENT PROJECTS:** 1) Assessment of ecological and genetic bases to intra-specific variation in sociality in an allodapine bee. I am looking at two populations of *Exoneura bicolor* - one of which shows much higher levels of cooperative nesting. The differences are reflected in different patterns of sex allocation (greater female bias in the more social population), as well as different founding patterns under uniform conditions. Breeding experiments will be used to investigate possible genetic bases to this variation, and this will be followed up by subjecting caged populations to various predator levels and by manipulating resource availability. Results so far suggest that populations with high levels of cooperation are characterized by predator (ant) abundance and very low brood survival in single-female nests. 2) Together with Roj Lowe, I am beginning work on a bivoltine eusocial allodapine in which there is a potential for Local Resource Enhancement to elevate worker-brood relatedness through female-biased sex ratios. 3) Resource competition between *Apis* and native bees in temperate Eucalypt forests. Fieldwork for this 2-year project, in collaboration with Penny Kukuk and Caroline Gross, has just been finished and the final report and several manuscripts are in prep.

Virginia Scott, Department of Entomology, Michigan State University, East Lansing, Michigan, 48824-115, USA.—**CURRENT PROJECTS:** 1) Adding last summer's *Megachile* data (ELF Project) to our data sets so we can begin our data analysis. 2) Looking at *Coelioxys* parasitism in our *Megachile* nests. Trying to answer some general questions about *Coelioxys* "nesting biology" including such things as oviposition (placement of egg and time of egg laying), sex ratios, arrangement of the sexes within a nest, and host response and defence. 3) Reorganizing Michigan State University's Apoidea collection. (I will submit a review/description of our collection for the next MELISSA.) 4) Finally writing up the nesting biologies of *Hylaeus basalis*, *H. ellipticus* and *H. verticalis* and working up the data on the parasites associated with them (*Gasteruption*, *Anthrax*, *Coelopenecyrtus*).

Roy R. Snelling, Department of Entomology, Natural History Museum of Los Angeles County, 900 Exposition Boulevard, Los Angeles, California 90007, USA.—**CURRENT PROJECTS:** 1) Completing revision of Melittinae - manuscript finished and a few figures to be done. 2) Ditto for North American *Diadasia*, subgenus *Dasiapis* (3 spp.). 3) Trying to complete revision of *Hesperapis* (had hoped to have it done by now), shooting now for end of 1993 - **HELP:** need to see material from anywhere in Mexico and anywhere east of the Mississippi (one undescribed species in NW Florida). 4) Still working on North and Central American *Hypochrotaenia* (Anthophoridae) and *Hylaeus* (Colletidae); keys are done, but that's about all - **HELP:** material of both from Central America (including Mexico) would be welcome. 5) Completing revisions of Subsaharan Hylaeinae -

Nothylaeus and *Deranchylaeus*, mainly now working on illustrations, a slow business. Sincerely hope to have all the above done before I retire in 5 or 6 years!

Allan C. Spessa, Department of Zoology, La Trobe University, Bundoora, 3083, AUSTRALIA; EMAIL: zooas@zoom.latrobe.edu.au.—**PhD project. OBJECTIVES:** 1) Experimentally investigate possible resource competition between the native bee *Amphylaeus morosus* (Smith) (Colletidae, subfamily Hylaeinae) and the introduced honeybee *Apis mellifera*, and 2) Investigate the life-cycle, population biology and resource utilization of the native Hylaeinae bee, *A. morosus*, which shows an incipient form of sociality. **BACKGROUND:** Honeybees were introduced to Australia some 160 years ago and since that time have been widely utilized in many natural areas for commercial honey production. They have also proliferated as a feral species. Continuation of current levels of access by beekeepers may be under some doubt because honeybees have the potential to negatively impact upon native fauna and flora since their host requirements overlap with many native bee species. **METHODS:** Over 2 flowering seasons (Sept. '92 - March '94) set up 4 experimental sites (each containing 6 honeybee hives) and 4 control sites (sites without hives) and monitor reproductive performance and brood production of *A. morosus*; pollen utilization of *A. morosus* and honeybees; and vegetation phenology. An additive experiment was chosen because it is virtually impossible to remove feral honeybees from natural areas to create control sites that are 'honeybee-free.' Electrophoresis and dissections of adult females will be used to examine the level of sociality in *A. morosus*.

Karen Strickler, Department of Entomology, Michigan State University, East Lansing, Michigan 48824-1115, USA.—**CURRENT PROJECTS:** 1) Still supervising the Navy's Extremely Low Frequency (ELF) Communication System Ecological Monitoring Project on megachilid bees. The project is winding down. The summer of 1992 was the last summer for collecting *Megachile* nests in the field. Next summer we collect emergence data only. Final report on the effects of ELF electromagnetic fields on nesting ecology is due Sept. 1994, and will be published in *Environmental Monitoring and Assessment*. So far no effects of ELF, but some interesting differences between the two *Megachile* species (*M. relativa* and *M. inermis*) under study. The first in a series of about 5 papers comparing the two species is currently in preparation. The database from the ELF project includes information on over 5000 nests of these species, and we are willing to share data with anyone who has a hypothesis to test about nesting biology. 2) Helping Virginia Scott reorganize MSU's Apoidea collection. She's in charge, so see her entry for more information. This project is entirely voluntary for both of us. 3) Planning a study of *Osmia corniformis* and *O. lignaria* in Michigan apple orchards, to start this summer if funds can be obtained.

Evan A. Sugden, Honey Bee Research Unit, 2413 East Highway 83, Weslaco, Texas 78596, USA.—**CURRENT PROJECTS:** 1) Recently completed: compilation and summary of "State of the Guild" survey conducted at Interna-

tional Workshop on Non-*Apis* Bees and Their Role as Crop Pollinators (10-13 August, 1992, Utah State University). Also a review of the Workshop, both now in review for publication. 2) Nearing completion: study of Africanized honey bee stinging incidents in Texas. 3) Underway: various ongoing studies centering on the process of Africanization of feral honey bee populations in south Texas. 4) Underway: list of bees of Kickapoo Caverns State Park (Texas) with ecological notes. 5) Underway: study of nesting biology of Africanized honey bees in coastal farmland of Puntarenas Prov., Costa Rica. 6) Completed: Co-investigator on field trials of Africanized bee selective abatement technology utilizing Acephate sugar baits and toxification of drones with A/Ivermectin.

Osamu Tadauchi, Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka 812, JAPAN.--CURRENT PROJECTS: 1) Producing image database of Japanese Apoidea. 2) Finishing international cooperative study of South Korean insects and preparing several papers on bees. 3) Starting work on Japanese *Lasioglossum* and sorting a large collection of this group; I hope to revise every subgenus. 4) Have plans for an international cooperative study of Chinese *Andrena*, starting May, 1993. 5) Surveying pollinating insects of crops, vegetables and fruits in Bangladesh from January to March, 1993. **HELP:** Exchanging information concerning *Andrena* and *Lasioglossum*. **COMMENTS:** After finishing production of a database checklist of Japanese insects (including about 29,000 species), I am now returning to the study of bees.

Vince Tepedino, USDA-ARS Bee Biology & Systematics Laboratory, Utah State University, UMC 5310, Logan, Utah 84322, USA.--CURRENT PROJECTS: 1) Continuation of research on pollinators of threatened and endangered plants of the Intermountain West; 2) Work on developing *Megachile rotundata* as a commercial pollinator of carrots and onions proceeds; 3) Winding up study, with Terry Griswold, on differences in range of body size of bee species according to their nesting habits; 4) Continuing, with Seger and Stubblefield, work on size-distributions of bees in various communities.

Phil Torchio, USDA-ARS Bee Biology & Systematics Laboratory, Utah State University, UMC 5310, Logan, Utah 84322, USA.--CURRENT PROJECTS: 1) Completing studies on the prosternum of Apidae and wish to expand the project to the Apoidea - **HELP:** need 1-2 specimens of *Aglae* (either sex) on pins or, preferably, in preservative (unfortunately, dissection of material is required). 2) Completed first year of cross-breeding studies of *Osmia* subspecies (*O. lignaria propinqua* x *O. lignaria lignaria*; *O. rufa cornigera* x *O. rufa rufa*) and *Osmia* "species" (*O. clarescens* x *O. sanrafaelae*) in the greenhouse - **HELP:** need a few live specimens (10 males & 10 females) of *O. cornuta quasirufa* (I have *O. cornuta cornuta*) for inclusion in this study. 3) Detailed studies on foraging behavior, in-nest biologies, embryogenesis, and immature development of "twig-nesting" bees plus some parasites are continuing in glasshouse environments. **HELP:** I would very much like to communicate

with anyone who has observed the following: flight interactions between small- and large-bodied *Anthidium* males; female *Anthidium* collecting cadavers of other bees or body parts of dead *Anthidium* males for use in constructing nest plugs; or, anyone having knowledge of social behavior expressed by masarid wasps, especially *Pseudomasaris*. I would also like to hear from anyone who has recently net-collected long series of *Osmia ribifloris* in the western U.S.

Bill Wcislo, Department of Entomology, Cornell University, Ithaca, New York 14853-0999, USA.--CURRENT PROJECTS: 1) In early stages of a revision of *Paralictus*; numerous specimens are already on loan (thanks to George Eickwort), and are now sorted- **HELP:** need any additional *Paralictus* specimens, especially any from the southwest. 2) Continuing work on the mating and nesting behavior of halictine and nomiine bees; manuscript on *Nomia heteropoda* and *N. tetrazonata* is nearly finished- **HELP:** a wealthy benefactor to give me money to escape the up-coming Ithaca winter. 3) Continuing work on quantitative studies of antennal olfactory receptors in bees with different life-histories. **HELP:** seeking collaborators to preserve and make volumetric measurements of bee brains to examine correlations between brain size and ecology. 4) Have nearly finished entering the data from Robertson's *Flowers and Insects* into a computer data base for use in a study of levels of analyses in ecology and evolution, in this case as it relates to specialization. 5) Have finished a review of neural correlates of diet breadth specialization in phytophagous insects (with Liz Bernays, Univ. Arizona), except for incorporating comments from friendly reviewers. - **HELP:** would be delighted to learn of any obscure references relating to information overload for bees.

Vin Whitehead, Department of Entomology, South African Museum, P.O. Box 61, Cape Town, SOUTH AFRICA 8000.--CURRENT PROJECTS: 1) Completing field work on oil-collecting bee *Rediviva* (Melittidae) host plant relationships, distribution, pollination biology (with Kim Steiner, Botanical Research Institute, Kirstenbosch, Cape Town). 2) Description of new *Rediviva* species and review of the genus. 3) Review of the genera and species of the Fideliidae.

Paul Williams, Department of Entomology, The Natural History Museum, Cromwell Road, London SW7 5BD, ENGLAND.--CURRENT PROJECTS: The following projects are medium to long-term because I have heavy commitments to the museum biodiversity project. 1) Mapping the world-wide distribution of all bumble bees, using a graphical database program, WORLDMAP. 2) Collaborative study with Dr. Wang and Mr. Yao of the bumble bees of China. 3) Continuing work on a catalogue of bumble bee names. 4) Continuing cladistic analysis of bumble bees.

Douglas Yanega, Section of Faunistics, Illinois Natural History Survey, Champaign, Illinois 61820, USA.--CURRENT PROJECTS: 1) Designing and entering data for the PCAM (Programa Cooperativa de la Apifauna de Mexico) database on Mexican Bee Biodiversity, as a Research Associate at the Illinois Natural History Survey under Wallace

LaBerge. The original version of this database will be designed to include data from the PCAM field trips, but will hopefully be expanded in future grants to include an inventory of as many museum specimens and published records as possible. 2) Completing various publications dealing with sociality and demography in halictine bees. 3) Completing other miscellaneous publications and cooperative projects, particularly involving pollination biology and general natural history of bees (*Anthidium*, *Nomia*, *Trigona*, *Euglossa*, *Sphecodes*). **HELP:** looking for any data on mutillid parasites of euglossines. 4) Description of new bee species from Mexico, also some redescrptions and descriptions of unknown sexes of other species. 5) Considering a revision of parasitic augochlorine genus *Temnosoma*. **HELP:** need to know which institutions have specimens of *Temnosoma* in advance, to gauge the scope of the project and facilitate the loan process, should I decide to go ahead with the revision. **COMMENTS:** seeking a position/postdoc involving pollination biology and/or bee biodiversity; alternatively, behavioral ecology/sociobiology, or possibly bee systematics. Particularly interested in anything to do with development of computerized resources, especially databases and networking.

ANNOUNCEMENTS

Bee Genera of North and Central America

The manuscript for the *Bee Genera of North and Central America* by C.D. Michener, R.J. McGinley and B.N. Danforth was recently completed and submitted after review to the Smithsonian Press on July 30, 1992. This will be published as a soft-cover book and should be available by September, 1993. Price has not been established at this time (projected royalties were redirected into production costs in an attempt to reduce the purchase price). The Abstract for the book follows: "This work is to facilitate identification to the genus level of bees (the apiformes, i.e., Apoidea in the usual narrow sense, not including sphecoid wasps) of North and Central America. It includes an illustrated artificial key to genera and a key to families, in both English and Spanish versions. Locators and a guide to the genera of each family feed into the main key so that many bees may not have to be run through that long key. The keys are followed by Notes on each genus, giving (for North and Central America) it range, number of species, references to revisional studies (if any), subgenera if any, and often distinguishing features. Keys to subgenera are given for genera whose subgenera have often received generic status. Nest sites are indicated for those that do not nest in the ground. Hosts are indicated for socially parasitic and cleptoparasitic genera. A list of recent classificatory and nomenclatural changes accepted herein is included, as is a list of genera and subgenera to summarize the current classification. The preoccupied subgeneric name (in *Megachile*) *Carinella* Pasteels is replaced by *Carinula* new name."

McGinley is currently reworking this hardcopy version to a computerized Expert System with help from F.C. Thompson (SEL/USDA), who recently completed an Expert System for Fruit Flies. Plans are currently underway to enlarge the scope of geographic coverage. It is hoped that this work will be available on disk or CD-Rom. For further information and potential collaboration please contact Ron McGinley, Department of Entomology, Smithsonian Institution (202-357-2834/MNHEN011@SIVM).

Report on the International Workshop on Non-*Apis* Bees

USDA-ARS Bee Biology & Systematics Laboratory
Utah State University
Logan, Utah 84322-5310
August 10-13, 1992

The Workshop on Non-*Apis* Bees, sponsored by the USDA-ARS Bee Biology & Systematics Lab and held in Logan, Utah last August was, by all accounts, a great success. A number of reports on the meeting are in various stages of being published:

Daphne Faurey. 1992. International Workshop on Non-*Apis* bees and their role as crop pollinators. *BumblebeeQuest*, 2(2):4-5.

Karen Strickler. Promoting pollen bees for crop pollination: Honey bees may not be sufficient. What are the alternatives. *American Entomologist*, Commentary, submitted.

Evan Sugden. Non-*Apis* workshop turns a page. *Bee World*, in press.

James D. Thomson. The queen of forage, the Bumble bee revolution, and a conference with an attitude. *Trends in Ecology and Evolution*, submitted.

Over 120 people participated in the meetings. Most of the papers dealt with the use of non-*Apis* bees as pollinators, as these reviews indicate. For the isolationist Americans in the audience the recent explosion in the commercial use of Bumble bees as pollinators of green house tomatoes in Europe came as a big surprise.

A good deal of basic bee biology was presented at the meeting as well, including interesting papers on *Megachile* and its parasite *Coelioxys* in Michigan (Strickler & Scott, and vice versa), the numerous parasites of *Osmia rufa* in Europe (O'Toole), the biology of *Nomia* oligolectic on *Helianthus* (Yanega, Minckley, Wcislo & Buchmann), to mention just a few.

The final day of the meetings was devoted to systematics, evolution and conservation of bees. Michener and Roig-Alsina's revised classification of the long-tongued bees indicated that the (former) Exomalopsini is a collection of not particularly closely related taxa, and that, as Michener had suspected, the Apidae makes the Anthophoridae paraphyletic. All speakers following Michener took great care to refer to "the Anthophor-, I mean Apidae," in the new,

broader sense, although with insufficient time to change their slides the ghost of the Anthophoridae past continued to haunt many of them.

Most papers on bee biodiversity and conservation painted a pretty grim picture. Roubik's long term studies of bee abundances in the tropics was characteristically fascinating -- the El Niño really does do something to bee abundances.

Copies of the proceedings (abstracts of all talks) are available from John Vandenberg at Logan.

Research Journal is Rejuvenated

For nearly 30 years the Journal of Apicultural Research has been the International Bee Research Association's journal for reporting experimental science - becoming respected as a prestigious outlet for publishing scientific studies of bees in general and honey bees in particular.

Now the Journal of Apicultural Research has been re-vamped with a more modern look and a much more readable format. But behind the new image are fundamental changes in management, that will ensure JAR's place as the flagship of apicultural research journals.

An international editorial team now works on this publication. Dr Thomas Rinderer, research leader at the US Department of Agriculture's Honey Bee Breeding, Genetics and Physiology Laboratory, heads a team at Baton Rouge which selects, reviews and arranges the refereeing of manuscripts, approving only those reaching the required standard of scientific merit. Three staff at IBRA - the International Bee Research Association - in Cardiff, United Kingdom, edit these papers and manage the production of a complete journal from the collection of manuscripts.

"The size of the editorial team will ensure that manuscripts receive prompt attention, regardless of the work commitments of individual editors," said Dr Rinderer. "Time limits have been set for each stage of the editorial and production process, and combined with an efficient manuscript tracking system, no undue delays will occur."

Andrew Matheson, Director of the International Bee Research Association, welcomes the co-operation between the USDA and IBRA in producing the journal: "The editorial team is committed to bringing our colleagues a journal respected for its quality and the speed of review and production."

Guidelines for authors, sample copies of the journal and information on subscriptions are available to anyone interested, from: IBRA, 18 North Road, Cardiff CF1 3DY, UK. Fax (+44) 222-665522.

International Symposium on Pollination in Tropics

August 8-13, 1993

Bangalore, INDIA

The symposium has been organized under the auspices of IUSSI, IBRA and ICPBR. It is planned to cover the following topics:

1. Flower biology in relation to pollination (organized by R. Uma Shaanker and K.N. Ganeshaiah, India).
2. Insect behaviour in relation to pollination (organized by J.A. Nunes, awaiting confirmation).
3. Pollination by insects and other animals in natural communities (organized by K.S. Bawa, USA).
4. Insect pollination in commercial production of seeds and fruits (organized by S.W.T. Batra, USA).
5. Pollination problems in tropical crops (organized by M. Mardan, Malaysia).
6. Conservation and management of pollinating insects (organized by A.G. Matheson, UK).
7. Population dynamics of pollinators (organized by D.W. Roubik, USA).

For more information contact:

Dr. K.N. Ganeshaiah

Secretary

International Symposium on Pollination in Tropics

Department of Genetics and Plant Breeding

University of Agricultural Sciences

G.K.V.K. Campus

Bangalore 560 065, INDIA

NEWSLETTER NEWS

International Commission for Plant-Bee Relationships

J.N. Tasei, Secretary ICPBR

Laboratoire de Zoologie, INRA

86600 Lusignan, FRANCE

phone:(33)49-55-60-90

FAX:(33)49-55-60-88

Bombus

c/o Dr. D.T. Fahey

Box 411, Beaverlodge

Alberta, CANADA

T0H 0C0

\$20.00 subscription fee.

PASSINGS

Remembering Iosip Khalifman

Christopher K. Starr

Department of Zoology
The University of the West Indies
St. Augustine, Trinidad

Recently I received from Moscow science writer Viktor Pekelis notice of the death of the entomologist I.A. Khalifman. As part of his last will and testament, Khalifman had asked Pekelis to send me greetings and a book. It was the culmination of a friendship that began while I was a student of Charles Michener in 1973.

Khalifman had at that time already written several popular and semi-popular books on social and solitary insects, which he was in the habit of sending to Michener. Some were translated into English or other western languages, but the majority remained available in Russian only. The most popular and widely translated seems to have been his *Bees*. As I was studying Russian at that time (a one-year effort that came to nothing much), it was my pleasure to practice on Michener's copies of Khalifman. That led to a letter to the author, and after that hardly a year passed without greetings each way.

Khalifman seems to have consistently overrated my understanding of his language. On more than one occasion he sent one of his books and a note to look at such-and-such a chapter or page and tell him what I thought. This represented quite a chore, as my reading speed at its best was never above one page per hour. And then he took to writing me letters by hand in Russian. I had never learned to read handwriting, and his was absolutely dreadful. I was forced to give Khalifman an ultimatum: Either use a typewriter or a western language. Lacking a typewriter or a strong command of English, Khalifman proposed that we communicate in French. That worked well. After I casually remarked that he had become a sort of grandfather to me, we somehow adopted each other and took to addressing each other solemnly as "Grandfather" and "Grandson," although still with the formal "vous." At the time of his death, Khalifman was past 80 years old and may have been closer to 90. He was already retired when I first knew him, and of his earlier life and research I know only scraps. I once compiled a biographical note for *Melissa* from newspaper articles and responses to my questions, but he found fault ("a load of errors") with my draft, which I duly suppressed. I could never get him to tell me what was wrong with the note, but I suspect it had partly to do with Khalifman's past association with T.D. Lysenko, another Ukrainian. I had written something to the effect that his view of Lysenko was much more positive than that current in western science, and Khalifman may have been offended either that I linked him with Lysenko or that I had disparaged the latter.

The book that Pekelis sent me was his own *A Cybernetic Miscellany* (Moscow: Znaniye 1991), with attention drawn to the chapter on "Bees, Ants and Cybernetics." Much of the

chapter consists of biographical and memorial remarks about Khalifman, and toward the end I even find myself mentioned. Pekelis wisely quoted directly from Khalifman at that point, taking no responsibility for the latter's (inflated) estimate of my importance.

Khalifman seems to have had wide exposure as a popular writer. I have much less idea of his impact within Russian-speaking entomology, but his influence upon one leading researcher/teacher has been key. Vladilen Kipyatkov tells me that it was his reading of those popular books as a child that turned him to insects and then to social insects. Vladilen is almost exactly my age, so I guess he too is one of Khalifman's grandchildren.

Jack van der Vecht

Karl Krombein received the following communication from Dr. Ing. C. van Achterberg, dated March 23, 1992.

"Saturday I attended the cremation of Jack van der Vecht. He died after a very difficult period on the 15th. With him the last of the old generation of Hymenopterists in the Netherlands died at the age of 85. No need to tell you about his international importance, but also within Indonesia and the Netherlands (not the least with the Hymenoptera department in Leiden). He had an enormous impact on the study of many groups of insects."

Karl adds that Jack called his home in Putten, "Andrena."

Tsing Chao Maa

Ron McGinley received the following communication from Dr. Carl Yoshimoto, dated May 20, 1992.

"On April 27, my late husband Tsing Chao Maa was hospitalized for loss of consciousness. Based on the CT scanning results, the doctors diagnosed it as a cerebrovascular accident. He passed away peacefully at 10 pm on the 28th in Memorial Hospital Southwest of Houston."—Chuen-Mei Maa

CORRECTIONS

In MELISSA-5 we included "A Revised Checklist of Polish Colletidae and Halictidae" by T. Pawlikowski, Copernicus University, Torun, Poland. It has come to our attention that a complete list of Polish Apoidea was published by Dr. Józef Banaszak (Banaszak, J. 1991. A checklist of the bee-species (Apoidea) of Poland with remarks on their taxonomy and zoogeography. *Acta Univ. Lodz., Folia zool. anthr.* 7:15-66). Dr. Banaszak's address is: Józef Banaszak, Wyższa Szkoła Pedagogiczna, 85-667 Bydgoszcz, ul. Chodkiewicza 51, POLAND (tel. 41-32-86). We apologize to Dr. Banaszak for this oversight.

RECENT APOID 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 data base (CAB), Zoological Record, and Agricola, the Agriculture Library's own survey of literature of a specifically agricultural bent. Second, we have gone electronic and now receive some references directly from Biosis of the Biological Abstracts data base 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, papers dealing specifically with the commercial aspects of *Apis mellifera* or *Megachile rotundata* have not been included, but papers of general biological interest have been.

We apologize in advance for the heterogeneous format (upper and lower cases for authors and journal names in some citations) 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.

At present the roughly 350 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 contains over 2000 references in a single file. We would like to make these lists available to other Pro-Cite users, or users of other, compatible, bibliographic programs. We hope in the future to send out the complete bibliography on disk to readers with access to ProCite who agree to add references or check those already input. We are now in the process of supplementing the bibliography with references gathered from Biological Abstracts, which should extend the list back to 1980.

As a preliminary step towards making this reference list available to MELISSA readers on disk, we are willing (for now) to send copies of the "master" bibliography plus the references listed below in the form of a WordPerfect 5.0 text file to anyone who sends us a request and a blank 3.5 or 5.25 inch diskette.

Please send us comments on the utility of the reference list and how we might make it more generally available to researchers. And please continue to send reprints and reference lists to Ron McGinley for inclusion in upcoming lists.

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Of Walruses and Bees

Evan A. Sugden
Honey Bee Research Unit
2413 East Highway 83
Weslaco, Texas 78596, USA

Oh hail, Carroll, a looking glass,
Your words will always be;
A shrinking girl, a deck of fools,
A rabbit late for tea;
All while the hapless oysters wait
Beside the boiling sea.

But no lines as true, the walrus warned,
Well did he prophesy;
The strangest bugs, no gnatty joke,
In boxes multiply;
Our floral realm they o'erwhelm
Pigs do have wings ... and fly!

