

# SCARABS

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## *Trapping Pocket Gopher Insects*

*by Paul Skelley*

Beetle collectors have long known that many interesting and "rare" scarabs are associated with rodents. Pocket gophers, with their completely subterranean existence, pose problems to collectors which are not easily overcome. Many people, including myself, have excavated burrows hoping to find the Mother Lode. From personal experience, I can confirm all of the horror stories told about excavations. Both in length and depth, excavations of these burrows can approach the dimensions of the Panama Canal. Luckily, some rodents give us a break and have the pot-o-gold near the surface, only a foot deep.

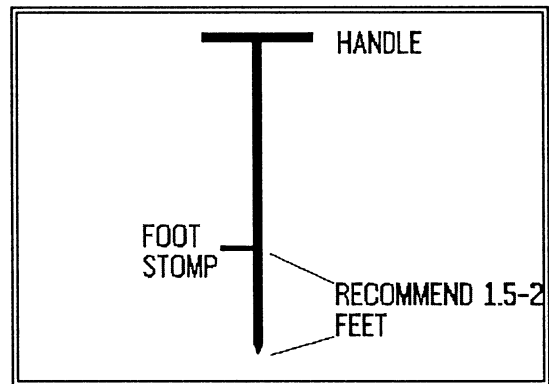
In hopes of arousing some interest, I have written about a collecting technique used by Hubbell and Goff in their 1939 work (see "Florida Pocket-Gopher Burrows and Their Arthropod Inhabitants," *Proceedings of the Florida Academy of Sciences*, 4:127-166) with pocket gophers in Florida. This method is quick, simple, easier than excavating burrows, and can produce a fair amount of specimens. The technique is simply pitfall trapping in the burrows.

### *Finding the Burrow and Opening the System*

Method 1: Find several mounds in a row and dig a trench. Most of the burrow system is 0.5 to 3 feet deep. Nest and fecal chambers are deeper in Florida, although I have seen shovels in California worn to the nub.

Method 2: Find a mound, slowly scrape away the dirt and find a softer or differently colored area under the mound. This will be the plugged tunnel. Carefully follow this plugged tunnel back to the burrow.

Method 3: Use the tool (Figure 1) by poking it into the ground around the mound until the burrow is hit. It will feel like the ground gave way. Dig a hole there and open the burrow.



*Figure 1*

Method 4: Use Method 2, only follow the tunnel to see what direction the rodent came from. Move over a foot or two in that direction and dig a hole. With luck, you will find the burrow.

### *Trapping the Rodent(s) Out of the Burrow*

This is optional, but if the burrow is active, the rodent(s) will find and bury the disturbance you have made... trap and all.

Use any of several types of commercially available pocket gopher killer traps. Chain it to a stake before setting it in the burrow. I have the best luck with these traps; about 60-70% of the traps set have caught the rodent.

Alternately, make some live traps and release the rodents down the road, or use them for your next barbecue. Several varieties of live traps can be

made. See "A Live Trap For Pocket Gophers," by R.J. Baker, and S.L. Williams, *Journal of Wildlife Management*, 36(4):1320-1322. This is more elaborate than the trap I am working with, but it gives you the idea. I have little success with live traps.

### *Setting a Pitfall Trap in the Exposed Burrow*

A pitfall trap (I bait with dung and malt) with some sort of funnel covering the top works best. This is because there can be more than one rodent per burrow, or another rodent may find and take over the burrow. If this happens, it will bury your trap. The funnel allows the insects to get trapped, but helps keep the sand from filling in your trap. If you use a liquid preservative in the pitfall, the funnel is not necessary because the insects are killed and can be floated out of the sand/dirt filling the trap. If you are trapping insects alive, some form of a funnel is a must to salvage the material.

### *Covering the Hole You Dug with a Board and Dirt*

This is necessary to keep surface dwelling insects out of the trap and to maintain the burrow conditions (temperature, humidity and darkness) so the burrow insects will get caught. See Figure 2.

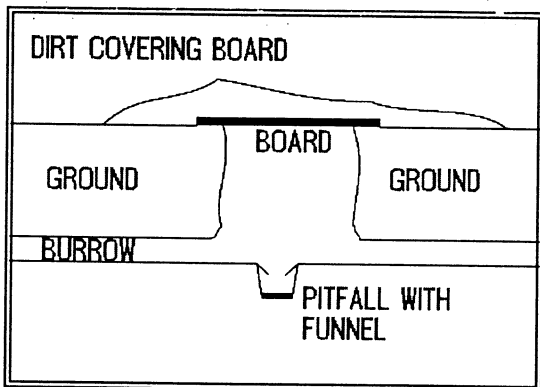


Figure 2

### *Checking Your Trap as Often as Deemed Necessary*

I have found that most of the insects to be trapped, will show up within a week. After that, the amount captured starts to decrease.

### *Notes*

Setting pitfall traps in burrows with the rodent still in it has variable results. If the rodent is asleep, hibernating, whatever... the pitfall will last for awhile and may produce a few insects. If the burrow is recently abandoned, the trap will produce. If the rodent is not caught, setting two traps several feet apart may work. The idea here is to allow the rodent to bury one trap, giving the second trap a chance to catch insects before it is buried. This may increase your chances of getting something for your efforts. I have had little luck with this technique.

There may be more than one rodent per burrow. According to local mammalogists, the southeastern pocket gopher is solitary except for mating season (which seems to be year round), but they will take over an abandoned burrow if it is discovered. The lucky rodent who finds an unoccupied burrow will bury your traps as fast as the original owner. Out west, the rodents have been reported to live in family (?) groups, so several rodents can inhabit the same burrow. These living arrangements produce quite a dilemma if you want to trap the rodents out and set pitfalls. I have no solution, yet.

I recommend catching a least one rodent per locality for preservation and identification. This way you'll know what rodent you are working with. Most pocket gophers are geographically isolated, but there are three genera, several species and numerous subspecies found in the U.S. Much historical, evolutionary, zoogeographical, and ecological information can be gained by knowing

the identity of the rodent you are working with and putting their name on your specimen labels.

Do not give up after one try. Not every burrow has the exact same fauna, number of species or number of individuals. There are many possible reasons, like: 1) size or age of burrow, 2) locality and soil type, 3) local migration, extinction or speciation events, 4) geographic variations and/or histories, 5) sex of rodent in burrow, 6) number of rodents in burrow, 7) productivity of rodent(s) in burrow, etc.

Another important factor to consider is the time of year. I have observations and records showing seasonality in the burrow fauna. There is a summer and "winter" (late fall, early spring) fauna. Your geographic locality will effect the exact timing of what is active. The best way to discover when they are active in your area is to sample the burrows for an entire year, a month at a time. The largest number of scarab species appear to be "winter" active, but there may still be some activity we do not know about.

The mammalogy literature abounds with papers on rodent habitats, habits and activities. There are even some on burrow structure and mounding activity. Ask your local mammalogist about localities and other information which might help in your efforts. Next to nothing is known about the insects associated with burrows. Most of these insects are rarely collected or are new species.

Do not be too surprised at the diversity of material you catch. There are spiders, rove beetles (Staphylinidae), hisster beetles (Histeridae), dung beetles (Scarabaeidae: *Aphodius*), leptodirid beetles, flies (various families), springtails, camel crickets, millipedes, centipedes, mites, etc. Many of the groups are studied or are being studied right now.

I wish you luck in your efforts. Except for the efforts of a collector like now near-legendary James Saulnier, and various deceased coleopterists, this seems to be a relatively untouched microhabitat that could produce a lot of interesting specimens and studies. I will continue sampling whenever the opportunity arises and welcome the chance to exchange specimens with others interested in these burrow associates. I can be reached at Florida State Collection of Arthropods, P.O. Box 147100, 1911 SW 34th Street, Gainesville, FL 32614-7100. Home (904) 336-4246. Office (904) 372-3505.

"Art"

by Ron McPeak

Have you ever been collecting with Dr. Art Evans, Ph.D.? It can be an adventure, even exciting. You never know what to expect. The following is a true story (and as such may not belong in this publication) and it happened while collecting with Art during February 1989.

I ran into Art by chance at Seven-Level Hill, Santa Rosa Mountains, in Riverside County, California. We were both after secretive *Paracotalpa puncticollis* and the not so secretive *Phobetus saylori*. As I recall, we collected a few *Paracotalpa* on Juniper and a nice series of the low flying *Phobetus* in the late afternoon, after about 2:30 PM.

When the sun began to set we headed down the hill to try for *Phobetus palpalis*, the beautiful black species with white pubescence. I had a favorite spot, and like a good scarabaeologist, wanted to share it with Art. Actually, my memory isn't too good. Art may have told me about the site years ago. The site is across from a trailer park, 2.5 miles west of Palm Desert, on Highway 78.

Art set up two blacklights and I set up one. The lights were in a line, evenly spaced across the flat desert floor. The beetles began to come to light soon after sunset. As I recall, more beetles flew to my light than Art's, and he was grumbling something about "those damned xxxxxx *Phobetus*."

We heard several people coming and they were calling for "Art" or, perhaps their exact words were something like "Art. Is that Art?" Dr. Evans said "Yeah, right over here." Four people, none of whom we recognized, came walking up. The two women and two men were holding Styrofoam cups full of wine. It was quite obvious that the cups had been filled several times before they arrived at this primo *Phobetus palpalis* collecting site. Art was still trying to figure who these people were when one of the guys said "These blue lights are really beautiful here in the desert. We knew it had to be some kind of art display."

These people actually thought we were artists doing our thing in the desert. Next time you see Dr. Art "Cristo" Evans Ph.D., ask him what he did with all the umbrellas. He should have been collecting scarabs, not playing with umbrellas.

### *Rare Manuscripts*

Old, scarce works such as the color versions of Bates' *Biologia Centrali Americana* are being offered at exorbitant prices - if you are lucky enough to find one for sale. An easier method of obtaining a copy is simply to borrow a copy and photocopy the text and photograph the plates.

Here is a method that will allow you to photograph the plates accurately. Lay the manuscript flat. If you cannot keep it flat, lay a piece of antireflection glass on top of it. Load your camera with color print film. An ISO speed of 100 will be ideal. It is assumed you will be using daylight film. Mount the camera

on a copy stand or tripod above the subject. Attach a cable release.

Carefully illuminate the subject with two lights, one from each side. Keep them fairly low in relation to the manuscript. If they are placed high, near the camera lens, glare and reflections could result. If you are using tungsten bulbs in your lights, attach two filters to the lens: an 80A and an 82C. If you are using halogen desk lamps, attach a single 80B filter. These filters are needed to bring the yellowish artificial light up to the same color temperature as daylight.

Focus carefully and set your camera on manual exposure. Set the aperture at f/8 for optimum sharpness. Setting the shutter speed to achieve proper exposure can be tricky because the insects on the plates are on a solid white background. The most accurate way to set the exposure is to place a Kodak gray card over the book and take a TTL (through the lens) reading with your camera. The correct exposure will depend on the reflectivity (darkness) of the original's paper. If the camera says 1/4 second and the original paper is old and faded to a dark yellowish brown, set your shutter to the indicated speed. If your original is of clean, white, new paper, increase your exposure by one full stop to 1/2 second.

If you do not wish to purchase a gray card, take a reading of the plate and increase your shutter speed by one stop for old brown colored originals and two stops for bright white originals. For example, if the meter indicates 1/16 second is proper and the book has plates with really white backgrounds, set the shutter at 1/4 second.

These examples are estimates only, based on whitish backgrounds, so it may be best to take test shots at various exposures and choose the shutter speed that best suits your taste. Using these guidelines, however, will put you very close to the ideal exposure.

## Collecting Locality For Some Rare Mexican *Plusiotis*

by Don Thomas

In his wonderful book on *Plusiotis*, Miguel Moron (1990) described two new species from Chiapas, Mexico: *Plusiotis quetzalcoatl* and *Plusiotis halffteri*. The type locality for the two new species is the same, "La Selva Negra, km 103, Bochil-Tapilula." Under the description of *quetzalcoatl*, additional information on the type locality identifies the town of Rayon. The "carr 195" means *carreterra* or highway. Highway 195 is the main road between the capitals of Tabasco, Villahermosa and Chiapas, Tuxtla Gutierrez, which many of you know was my home for the last seven years. Miguel tells me that the locality at km 103 is a canyon opening in a curve of the highway with dense tropical forest. Kilometer markers do occur at regular intervals on this highway, but curiously Rayon is at about km 150. Chiapas is mountainous, so when traveling from north to south on this highway, one passes through lowland tropical forest up through montane rain forest (at Tapilula), eventually passing into a pine-oak forest at Bochil. At the top of the pass of this highway, at an elevation of 1700 m, occurs a narrow strip of cloud forest. This is the typical situation in Chiapas. The cloud forest occurs on the ridges of the Sierra Madre and the Central Massif, of which this is a part.

Right at the top of the pass is an overlook with ample parking called the *Mirador Camionero*, which means "Truckdrivers' Overlook." Actually, some of my Mexican friends call it the *Mierdador Camionero*, a name which in many respects is more appropriate. Suffice it to, say there is an abundant scarabaeine population there. Two species of *Ontherus*, *mexicanus* and *didymus*, were the most common beetles in my pitfalls. Right in the parking lot itself are several grand

specimens of Guatemalan fir trees, *Abies guatemalensis*, and stands of sycamore are visible on the slopes. There are not many places where such a vegetation type is accessible to vehicle.

On the night of 30 June 1991, Jeff Burne, myself and my boy Raul had the opportunity to run a mercury vapor and a black light at opposite ends of the overlook. We collected a total of 15 individual *Plusiotis*. Four were of the common (for Chiapas) species *quetzalcoatl*. Seven were of the rare *Plusiotis halffteri*, reported previously only from the types. Of course we were right up the road from the type locality. The town of Rayon lies just below the overlook and is brightly lit up at night. However, the closest town, Rincon de Chamula, is about 5 km in the opposite direction. One of the *halffteri* we collected was of the copper-red phase.

The other four specimens were of an unknown species. One specimen was immediately forwarded to Miguel Moron, who was then visiting Brett Ratcliffe in Nebraska. Moron determined the specimen to be *Plusiotis rodriguezi* Boucard. This species was only known (to Moron) from the single female type found near Guatemala City and one subsequent male specimen from Baja Verapaz, Guatemala, for which it had achieved the distinguished appellation "*muy raro*" in Miguel's book.

This locality was noteworthy for the associated scarab fauna as well. That same night we took *Ancognatha sellata*, *Orizabus clunalis*? and *Cyclocephala forsteri*? none of which I have collected at other locales in Chiapas. We also took *Dynastes hyllus* and a long series of *Cyclocephala alexi*, neither of which is particularly common. In fact, we collected no species of scarab which could be described as humdrum, with the possible exception of *Anomala vidua*, whose two distinct color phases

(red and metallic blue) were abundant in the daytime on roadside weeds.

However, before anyone schedules a collecting trip to this locality, the following information may be noteworthy. On the night in question, the fog was so thick (this is cloud forest, after all) that we could not see the lights of Rayon at all, and even our lights at the opposite ends of the overlook were visible from the other only intermittently. On four subsequent attempts about a week apart in the following months of July and August, on only one night were we not completely shut out because of high winds and rain. On the one good night, we were only able to run the lights for about two hours before the high winds and rain shut us down. We got more *P. halffteri* that night but no *P. rodriguezi*. I suspect that windy, cold and rainy is the typical weather at this locality since it is situated on the top of the ridge. I have also collected a few kilometers on either side in more sheltered forest (still cold and rainy, but out of the wind), but collected only *P. quetzalcoatli*. Warm, calm nights might be pretty rare on this ridge.

### *Musings On The Value Of An Insect Collection*

The little guy sat in the corner with his life's work snuggled in his lap: a single Schmidt box. It was an informal social gathering before tomorrow's big meeting. From all over the world they came: France, Brazil, Guatemala, England, Canada, Mexico. Nobody paid attention to him, but he was happy just to be in the presence of those professional coleopterists he had admired for so long.

As more names were mentioned, the little guy was left in a state of awe. Here were people who had traveled to the very ends of the earth countless times, people who had penned dozens of fascinating papers. Moreover, even the amateurs like himself talked of their

synoptic collections containing well in excess of two hundred drawers with more taxa than he knew existed.

He looked down at his collection, housed within the borders of four short strips of redwood. He pried open the lid and peeked inside. Nothing exciting here, just a few adults of a local beetle, accompanied by eggs, grubs and pupae preserved in vials of alcohol.

The little guy wondered, "Compared to these guys, is my collection worth anything?" He smiled as he thought about his upcoming paper, the fruit of several years research. His subject was a bug fairly common in all collections. However, the little guy knew everything there was to know about this insect. He had all the size and color variations. He had all life stages. He had countless photographs of the critter in its natural habitat, all keyed to pin labels and profuse, minutely detailed notes. He knew its exact distribution, and why the range boundaries are where they are. The exact complex of environmental factors, such as rain, humidity, barometric pressure, temperature, light, etc., that triggered emergence had all been figured out. He could now predict a flight from his armchair. He knew just how the bug survived a particularly stressful season, as well as a succession of stressful seasons of drought or flooding. The foodplants, predators, parasites and diseases were all now known. He knew the beetle's micro-niche and how it competed with similar beetles for the food source. He knew why each body part was the shape and color it was, and how it helped the bug compete. He knew the precise reasons for its sexual dimorphism.

In short, there was nothing about this insect he did not know. At that moment, he was the only one who knew these things. When published, his paper would further mankind's knowledge in some small way. To his way of thinking, his collection had real

value: it was the signature of fresh, new-found information, something those expansive collections of others could offer very little of.

### *Article Review*

by *Scott E. Haskins*

"An Annotated Checklist of Dung Associated Beetles of the Savanna Ecosystem. Project Study Area, Nylsvley." By S. Endrody-Younga. *South African National Scientific Programmes Report No. 59*. September 1982.

Any scarab collector considering a trip to South Africa should obtain a copy of this paper. This work will be a valuable aid in collecting dung beetles in the area covered, and also will be a good identification guide, especially for collectors new to the area or unfamiliar with African dung beetles. While only 34 pages in length, it covers a wide range of natural history for each species including abundance, period of activity (month by month), period of non-activity, habitat preference, micro-habitat (type of dung or carrion), and geographical range. It has 22 good-quality photos, and has accounts on 77 species of dung scarabs in several genera, and one dermestid. The size is 8.25 X 13.75 inches and can be ordered free of charge from:

Cooperative Scientific Programmes  
Council for Scientific and Industrial  
Research  
P.O. Box 395  
Pretoria 0001 South Africa

or

Foundation for Research Development  
P.O. Box 2600  
Pretoria 0001 South Africa

Telex 3-21356 FRD SA

## *Nebraska Scarabs*

Every once in a while a publication comes forth that quickly becomes a "must have" for all scarab workers, teachers and general naturalists. One such example is Brett Ratcliffe's "The Scarab Beetles of Nebraska." Although both of your editors feel unqualified to properly review such a work, we feel obligated to let everyone know a little about this book. Spanning 333 pages, "The Scarab Beetles of Nebraska" covers all 13 subfamilies (including the recently erected Glaresinae) and 197 species known to occur in Nebraska.

Each species is accompanied by: a list of known synonyms; a detailed description; distribution data (outside Nebraska); locality records (within the state); temporal distribution and remarks, which often includes a life history. For many species there are nice habitus drawings and distribution maps. There are both keys to adults and, when known, the larvae. There are many other interesting sections too numerous to list here, as well as many nice color plates.

Suffice it to say that "The Scarab Beetles of Nebraska" is written in an authoritative style, yet reads as if Dr. Ratcliffe is right there with you, standing by the fireplace, informally chatting about these wonderful critters. It follows then that this book accomplishes a neat and rare trick: dispensing information and research in a readable, enjoyable book. His fondness and life-long dedication to scarabs really shows through.

Order "The Scarab Beetles of Nebraska," which is Volume 12 of the *Bulletin of The University of Nebraska State Museum*, September, 1991, from Museum Publications, W436 Nebraska Hall, University of Nebraska Hall, University of Nebraska, Lincoln, NE 68588-0514. Cost is \$27.00.

## Label Paper

The ultimate paper for pin labels is one that will withstand the test of time. In other words, acid-free so that the ink or even the paper itself will not degenerate very fast over the years. Papers of this sort are commonly called *archival* in the printing business.

They are expensive as papers go. One such example is Starwhite Vicksburg Archiva, wove finish, 100 lb., text, 35408. To give you an example of just how expensive, 1000 sheets of 25" by 38" costs \$265.10.

If you have trouble finding a paper such as this, try Bioquip (310) 324-7931 or Zellerbach, 1100 Richards Blvd., Sacramento, CA 95814. The stock number is 419958. You can have them cut the above sheets to 8 1/2" by 11" for \$31.00, yielding 8000 sheets. By sure to request all paper waste. You can use that for hand-written labels.

## Letter To Editor Cunningham

Thank you for your recent issue of *Scarabs*. As with the previous two issues, it provided much food for thought. However, it has also raised a few questions which I hope you, or co-editor Streit, can answer:

Is it true that this Streit guy has been approached by Hollywood ("Hollyweird") moguls to author the screenplay to a *Terminator* sequel?

Is it also true that the director and producers of *Terminator 3* have asked Frank Hovore to step in for the comparatively feeble Arnold Whats-his-name in the title role? Perhaps I have my information confused, or was Frank asked to star in the upcoming sequel of *Superman*? I have also heard that Steven Spielberg and George Lucas are writing an electrifying new movie based on their Indiana Jones character especially for Frank: *Placerita Frank and the Cerambycid of Doom*.

I trust you will be able to satisfy my curiosity with the above inquiries. Nevertheless, I will keep my eye on the latest covers of *Hollywood Confidential*, *The Star*, and the *National Enquirer*.

Enclosed is my personal check in the amount of \$000,000,000,000,000.02 for another year's subscription to your honorable publication. Continue the good work.

Sincerely,  
Delbert A. La Rue  
(wanna-be scarab collector)  
or "Pleocomaniac"

## Cunningham Comment

No, although that Streit guy has not been approached, this screenplay you have heard about actually exists, but is not done yet. I can tell you this: its theme is about saving the environment, specifically Guatemalan rain forest and undiscovered Mayan ruins within (but begins and ends in Laguna Canyon, California), is a little like *Predator*, and even has a new species of *Plusiotis*.

As to your other question, Frank has been asked to star in a remake of the original version of *The Thing*. Well, not actually *star*, but rather be a stuntman *for* the star in the final scene. His agent would only comment that his take is well into six figures plus a good chunk of the movie's gross receipts.

## Scarabs Rated #1!

The Committee to Analyze Coleoptera Articles (CACA) recently voted *Scarabs* the best Coleoptera publication of 1991. Categories where *Scarabs* blew away the competition were forced humor, unfounded conjecture, lascivious character assassination, salacious scapegoating and puerile dribble. CACA consists solely of R.A. Cunningham and B.D. Streit, who denied any conflict of interest when they cast their secret ballots.