Observations on *Cremastocheilus mentalis* Cazier

by William B. Warner and Barney Streit

Sandy areas in the western foothills of the Patagonia Mountains, Santa Cruz County, Arizona, are a great place to find *Cremastocheilus mentalis* Cazier.

Adults are apparently visually attracted to sandy areas.
This adult landed and remained motionless.

In just a few seconds it was discovered by *Aphaenogaster* ants.

More ants quickly arrived and attempted to drag the beetle to their nest. The beetle refused the free ride.

The North American genus *Cremastocheilus* (Cetoniinae: Cremastocheilini) is comprised of roughly 35 species which are mostly inquilines of ant nests. Here in Arizona, and like most inquilines, the species break out into two distinct groups: species that have a relatively long mating flight period of two to four weeks in the spring (usually March and April), and a second group whose species emerge for their mating flights in the mornings following the first soaking (2 cm or more) monsoon rains, which typically occur in late June or early July.

After mating, they (or at least the females) return to the ant nests (or rich humus away from ant nests, or in one species, rodent burrows) to lay their eggs. Once the eggs hatch, the larvae quickly develop, pupate and reach adulthood within the span of a few weeks. Here in southeastern Arizona, these freshly-eclosed adults emerge from the host ant nests and disperse to different nests. This “emergence flight” is not triggered by rain like the mating flights that will occur nine or ten months later, but instead are timed according to the development period interval from the mating flights of their parents, and may vary two to three weeks depending upon when the first heavy monsoon rain occurred.

These photographs were taken during this dispersal emergence of newly eclosed adults. The exact location is USA: Arizona, Santa Cruz County, Duquesne Road,
Sometimes *Aphaenogaster* (left) and *Pogonomyrmex* (right) nests can be found in close proximity.

5.35 miles east of Highway 82, F.R. 4667, 31° 21.74 N, 110° 47.47 W, September 3, 2011. This location is along the western foothills of the Patagonia Mountains.

Other interesting scarabs that have been collected here are *Hologymnetis argentiola* (Bates), *Megasoma punctulatus* Cartwright, and *Phyllophaga glavidula* Moser.

The species depicted here is *Cremastocheilus mentalis* Cazier. Its taxonomic status is subject to change once Bill publishes his revisionary work on this interesting genus, which is one of his favorites.

The host ants for this species are the brown *Aphaenogaster*; but unlike most other *Cremastocheilus*, they seem to not be killed by the stinging *Pogonomyrmex* harvester ants which kill most other species other than *Cremastocheilus hirsutus* Van Dyke, an obligate *Pogonomyrmex* inquiline. These two ants have an uneasy co-existence. Barney once observed three *Aphaenogaster* workers pulling on the legs of a freshly mated, wingless *Pogonomyrmex* queen. There was no way they were going to let her start a nest nearby!

As can be seen in the bottom photo on this page, the aggressive *Pogonomyrmex* workers often menacingly situate themselves along the edge of a nearby *Aphaenogaster* nest. Once Barney saw an *Aphaenogaster* grab a hind leg of one of these uninvited guests, pull it several inches away from the nest entrance, release it then enter the nest.

It is business as usual at the dual entrance of this *Pogonomyrmex* nest.

The entrance of the *Aphaenogaster* nest has *Pogonomyrmex* individuals situated nearby.
Adult *Cremastocheilus* are strong flyers. Our impression is that *C. mentalis* are visually attracted to sandy gullies since they look like a big ant nest. Many, but not all *Cremastocheilus* are attracted to bare areas of high reflectance as mating sites; the reflectivity and edaphic conditions required vary between species, but this generalization does not hold universally, so it should be used only for *C. mentalis* in this context. They land on the sand and either sit and wait to be discovered by the ants, walk around (perhaps increasing the chances they will encounter ants), or fly off to a different spot.

For further reading, enthusiasts should read Mont Cazier’s papers on this group, as well as Gary Albert’s 1994 paper “A Comparative Study of the Symbiotic Relationships Between Beetles of the Genus *Cremastocheilus* (Coleoptera: Scarabaeidae) and their Host Ants (Hymenoptera: Formicidae).” *Sociobiology, 25*:1-276.
The leaf chafer tribe Anatistini (Coleoptera: Scarabaeidae: Rutelinae), formerly known as the Spodochlamyini, is exclusively Neotropical and includes 21 species and four genera. Species in the group are restricted to forested regions from Honduras in the north to Mato Grosso, Brazil in the south. The highest area of diversity for the group is Colombia with 45% of the species. A monographic revision of the genera and species of Anatistini is provided and includes a key (in English and Spanish), species diagnoses, distribution maps, and illustrations. The extensive number of color photos provide excellent images of adults, morphological characters, and habitats. Paperback, 2011, 100 pages, 7” x 10.” List price is $35.00 U.S.

For ordering information, see http://www-museum.unl.edu/pubs/jameson-ratcliffe.html. It is also available from Bioquip, order number 9255, http://www.bioquip.com.
Every scarab lover who searches for his or her favorite beetles regularly finds a larva instead of the adult. The challenge is then to breed it to determine the species.

Sometimes, the size of the larva permits us to know the answer before rearing; this is the case with *Oryctes nasicornis* L. This big dynastid (see *Scarabs* 28 and 47), also called “rhinoceros,” is not difficult to find in the south of France if one looks in the right place, and it is absolutely not necessary to wait for summer and the use of light traps.

It can be found throughout the year, as larvae or adults, by searching in decaying wood. In April 2010, I was in a sandy area of the southern French coast (department of Hérault) when I discovered three big larvae in a large piece of wood (Photos 1 & 2). One year later (April 2011), I found another one under a big log, always along the same coast but that time, near the Oriental Pyrenees.
While rearing this dynastid, I didn’t forget to take photos of the astonishing pupa (Photos 3-5).

Photo 3: Female pupa collected in June, 2010.

Photo 4: Profile view of the pupa.

Photo 5: Pupa and its cast skin.
It is always fantastic to see the metamorphosis, with this intermediary between the larva and the adult. In the last days of its larval life, *Oryctes nasicornis* seems to be very sick (Photo 6), and seemingly ready to die, but in fact, there is an incredible transformation going on inside the beast. When it is finished, the pupa moves to shed the larval skin which can be unfolded like an old coat (Photo 7).

Photo 6: The sluggish larva just before pupation.

Photo 7: Cast skin.
In November, 2009, I collected a big (40 mm) adult male in another southern region, not far from the Pyrenees Mountains. It was again in decaying wood. It was dead and in a bad state, with two legs lacking. But this specimen was really beautiful with its long horn, and if the photo is taken from the specimen’s left side, the problem of the missing legs disappears! (Photo 8)

Photo 8: *Oryctes nasicornis* male from the Oriental Pyrenees Mountains.
Although the larvae found in 2010 yielded only females, I had the chance to observe and photograph one of them emerging from its pupa (Photos 9-11).

Photo 9.

Photo 10.

Photo 11.
All the scarabs are evolved from a common ancestor of a very far past, and it is why they all share a similar type of larva, sometimes called “white worm.” It is always astonishing to see that the larvae have the same likeness across different species, and how the adults can be so different. I already presented some examples in past issues of Scarabs, and will continue here with some novelties not shown before. In February 2010, I found the little scarab (5-10 mm) Valgus hemipterus L. in the south of France. It was in the region of Provence but this species exists throughout my country, and I regularly see it on flowers, especially in May or June, but these specimens are always males.

That time, I discovered a couple in decaying wood. The female is remarkable with a ovipositor protruding from the body beyond the elytra. It is used to dig holes in the wood to lay eggs, which fall through the slit of the pygidium into the hole created by the female.

I did not find larvae or pupae that time, but remembered that 30 years ago I discovered a lot of them in the north of France. I also remembered that my father took a photo, so asked him to look for that image. He found again it and this is why I can present here the different aspects of the cetonid Valgus hemipterus (Photos 12-14).


Photo 13: Female.

Photo 14: Larva and two pupae. Photo by André Décobert, 1980.
Presently retired, my father often collects for me and when I visited him in southern France (Department of Lozère) in April 2010, he gave me larvae and adults of *Dorcus parallelipipedus* L. he found in decaying wood (Photos 15 & 16). One can see again this aspect of the "white worm" for the larva of this lucanid, confirming that this group of beetles belongs to Scarabaeoidea.

Photo 15: *Dorcus parallelipipedus* adult and larvae (April 2010).

Photo 16: *Dorcus parallelipipedus* larva.
To finish, I show my last (but not the least!) discovery: a larva I had never found before. At the end of June, 2011, I was on the northern French coast to again search for scarabs of the dunes (see Scarabs 39). I found a couple of the spectacular Polyphylla fullo L. (Photo 17). I was lucky enough to discover a larva in the sand (Photo 18). Because of its sandy habitat, its size (about 45 mm), and its general aspect (cockchafer larva), I can be sure that it belongs to this big melolonthid species.

Photo 17: Male and female Polyphylla fullo.

Photo 18: Polyphylla fullo larva.

In conclusion, I remind readers of Scarabs that they can see other French larvae and pupae photos in issues 42 (cetonids), 46 (rutelids), 47 (dynastids), and 53 (Aphodius).
In Past Years - XLVII - 2003-2005

by Henry F. Howden

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2003 - Texas

For some time we had had an open invitation from Dave Edmonds to visit him in Marfa, in west Texas. When he told us that they had some rain, we booked our flights and headed south. When we were clearing U.S. customs in Ottawa, we were asked where we were going and I said Marfa, expecting a second question - “Where is that?” Instead, the customs agent told me it was a great place and a major hub for the southern U.S. border security. Live and learn!

Our first stop was Newark, New Jersey, then on to Houston, Texas, and finally to El Paso, where we rented a car. The next day we drove eastward for several hours to reach Marfa (Photo 1). It was an interesting mixture of old (it was an early rail stop and is even mentioned in the *Biologia Centrali-Americana*) and new, with Dave’s house (I am tempted to call it a mansion) in a section of somewhat older houses on large treed lots. On Dave’s lot he had a second small building that had a guest suite complete with bath and kitchen and a separate large room with his collection and working area with a microscope! Perfect for entomological visitors.

We ate dinner with Dave, his wife Teresa, and other members of his family. Dave ran a black light in the yard that night, attracting some *Ataenius*, a small tiger beetle and some other small beetles. That evening I hung up a plastic bottle baited with fermenting bananas on a tree near our lodging. The next morning we went to the Davis Mountains (Photo 2), about a half-hour drive east of Marfa. The area between Marfa and the mountains was fenced, open range land.

In the mountains we visited Dave Marqua, who had a house near the top of a ridge at 5,900 feet in the oak-juniper zone. He owned the land near his house and had not disturbed it to any extent. We set up our Malaise trap and several fruit traps and then saw part of Dave’s extensive collection, which almost completely filled his small house. During the several times we visited Dave (Photo 3) he gave

Photo 1: Main street of Marfa, Texas, a pleasant small town, where I could easily find needed items, like 6-volt batteries for our head-lights.
us some of the less-common local species, including a specimen of the rare pink form of *Chrysina gloriosa* (LeC.), which was found in the Davis Mountains. In mid-afternoon we moved to a dry creek bed below Dave's house at 5,500 feet and collected in the fairly dense shrubs that lined the banks of the creek. The area was dry and we collected only one common *Cotinus* and some *Macrodactylus*; before we left, we placed one more fruit trap near the creek.

The rains that Dave had mentioned had stopped the day we had booked our flights, so the countryside was fairly dry. Since people in town water their lawns, we decided to set our black light on the grass beside the road near Dave's guest house. As suspected, watering near the houses supported a variety of insects that were not active in the drier areas outside of town. That evening we collected a variety of beetles, including small dynastines (*Cyclocephala*, to name one), aphodiines, melolonthines and even *Ochodaenus*. Dave E. (dmonds) had even collected *Eucanthus* on the well watered, local golf course! As a result, we occasionally ran our lights at different places on the edge of town where there were obvious indications of watering.

When we mentioned that we were looking for wet places, Dave E. suggested a leaky cattle watering tank on a farm south of town. When we visited the place, 19 miles SSE of Marfa, we found that the tank had been leaking or overflowing for some time as there were several moderately large trees close to the tank. Afternoon collecting produced cerambycids, buprestids, a meloid and one common *Canthon*. Night collecting using our black light was more productive, the light attracting *Onthophagus*, *Ataenius*, a few small dynastines and many cerambycids. There were many aquatics, most we didn't collect, particularly the numerous mosquitoes. On our way back to Marfa, we were stopped at a customs check point, explained what we were doing and checked around their lights. During our
stay we passed the check point several times; I would have liked to hear what was said about the “bug collectors”!

We returned to the dry creek (Photo 4) below Dave M’s house the next day. While we were collecting, two Mexicans came walking up the creek bed and were obviously “wet-backs”. I was somewhat concerned, because both had the usual machete, but wished them “good day” in my usual Spanglish. They seemed delighted that I spoke some Spanish and asked how far it was to the nearest town, which was Ft. Davis. I told them the direction and that it would be faster by road, but off they went up the creek. We were surprised that they had not even asked us for water! We later went to Dave M’s house and he told us that seeing “wet-backs” was not too common and we were lucky not to have been bothered. At least they made the day different, as the collecting was not exciting!

A day or so later, Dave E. took us to the Hip-O-Ranch (Photo 5), which was a wildlife refuge; Dave had a key to the gate and permission to collect insects. The ranch had some hills with rocky outcrops with some small acacia or mesquite - home to some pack-rats. The remainder of the ranch was mostly grassland with many scattered, small, flowering herbs intermixed. Sweeping the mixed vegetation was quite productive, yielding numerous cerambycids, some buprestids and even a few flower feeding scarabs. Dave’s
dung traps were also productive, producing not only the expected dung fauna, but several *Onthophagus velutinus* Horn, and more surprising, specimens of *Onthophagus knausi* Brown (Photo 6), a species I thought ranged from Kansas to eastern Texas. Live and learn! At night the ranch was a great place to run lights. On one of the few nights we were there, our lights attracted *Onthophagus velutinus*, *Ochodaeus*, several species of *Phyllophaga* and *Ataenius*, and numerous other beetles. The diversity was much greater than one might expect from a grassland (Photo 7) habitat!

We made several trips into the Davis Mountains, collecting some of Anne’s *Pandeleteius*, but nothing unexpected in the scarab line. When we returned to the water tank on the ranch 19 miles SSE of Marfa, we found the cattle had torn up our flight intercept trap and stepped on some of our other traps. We picked up what was left and did not go back there again.

One area that I had wanted to visit since 1959 when a group of us had been in Big Bend was in the vicinity of the Chinati Mountains along the Rio Grande River west of Presidio, Texas. There was now a paved road along the Rio Grande west of Presidio and Dave E. knew of a collecting site called Chinati Hot Springs. Anne and I drove to Presidio and booked a motel room there. As I mentioned earlier, we appreciated comfort when we could get it and an air-conditioned room was great when the outside temperature was about 110 F (or 46 C). Dave E. met
us that afternoon and we drove west to Ruidosa, where we took a series of dirt roads to the Hot Spring near the base of the mountains. The owner’s house was near the spring, along with a series of huts that were for rent. Except for the small stream from the spring, the area (Photo 8) was dry. There were a few cottonwood trees and mesquite near the stream. Collecting on those in the afternoon produced one cerambycid and a few true bugs. The evening was still hot, windy and there was a full moon; I ran a black light until 10:30 PM. The catch consisted of a few small beetles, mostly aquatics, so we picked up our light and started to drive back to Presidio, leaving Dave to overnight at the spring. Once we reached the paved road, we expected to take about an hour to reach our motel. It took a lot longer because of birds! For some reason the road attracted two or more species of night hawks, most resting along the roadside by the dozens. Our car headlights disturbed them and most flew toward our car lights. The slaughter was disturbing, to say the least, and the only solution seemed to be to slow down. We finally found that about 20 miles per hour was an optimum speed to avoid most of the birds, but not every one. When we finally reached our motel we had quite an accumulation of feathers on the car grill! The motel lights attracted one Diplotaxis and a Calosoma; better than my black light. The next morning we collected east of Presidio along the Rio Grande (Photo 9), finding a few buprestids on flowers but not much else. By mid afternoon it was very hot, so we headed back to Marfa.

That evening Dave had visitors: Dana Price, a graduate student from Rutgers University working on Phanaeus (visiting Dave); and Bob Jones, interested in weevils, who had a one-year replacement teaching position at Sul Ross State University in Alpine before returning to his regular position in...
México. He had an interest in the ecology of some weevils and took us to the University in Alpine to see their collection. While the collection contained some good local beetles, none were of particular interest to us. In the afternoon we collected in Limpia Canyon on the eastern side of the Davis Mountains. In the late afternoon Bob Jones, Anne and I drove to just north of Presidio where we found a diversely vegetated, shrubby field that was accessible. I set up our black light near the road, while Anne and Bob, both with head lights, beat the mixed shrubs. I did not expect much to come to my light, since it was dry, hot and with a nearly full moon; I collected what I expected - not much - three Diplotaxis. Anne and Bob did better with their weevil collecting, finding some different small weevils and a series of a small Ophryastes. When most of the nearby bushes had been thrashed and it was getting late, we drove back to Marfa.

A couple of days passed with our picking up traps, saying farewell to Dave Marqua and packing. We took the Edmonds family out to dinner and the next morning left for El Paso. On August 14 we arrived at the El Paso airport for our 6:45 AM flight to Houston. All went well until we taxied out to the runway. There we sat for 40 minutes before finally taking off. Arriving at Houston with only 25 minutes to catch our next flight to Newark, New Jersey, we were lucky to be able to get a ride on one of their power carts, just making the Newark flight (and hoping that our luggage did). All went well until we started to land at Newark. It was getting dark when we landed and just then we noticed that the lights went out. Later we learned the entire east coast had a power failure, but at that time all we knew was that they couldn't get us off of the plane! It took about two hours to get enough of the airport emergency power up and running so that we could disembark. The airport itself was a madhouse - rumors abounded. Our flight to Ottawa was delayed, but no one
was sure of when it might leave. We finally found a place selling cold food, so we had supper about 9 PM. Finally it was concluded that nothing would fly that night, and we were told that a bus would take us to a motel. By then, all lodging near the airport was full, so after a long, slow ride, we arrived at our motel around midnight. We all had to be up about 5:30 the next morning to catch the bus back to the airport. If anything, the airport was in a worse mess than the night before. Everyone had to be issued new tickets, and the place was so crowded that there were no clear lines. Finally, after several hours they called for Air Canada passengers, gave us new tickets and loaded us on a plane via some movable stairs. Arriving in Ottawa, we found only emergency lights working, but wonder of wonders, our luggage was there! When we arrived home, we had power, so the trip, at least, ended well.

2004 - Australia

Photos and captions by Bruce Gill

The year 2004 was one of the years when the International Congress of Entomology (Photo 1) was held, this time in Brisbane, Australia. My introduction to Australia was in 1972 when I attended the Congress held in Canberra (part of the theme then was a “Bull ant”). This time Anne and I planned a relatively quick trip since, as usual, the Congress timing did not coincide with a good collecting season. Planning took longer than the actual trip! We wanted to break our trip into a number of segments, which meant going business class. By going Air Fiji, the cost for business class was little more than paying for separate segments of the trip tourist class.

Our first destination was Victoria, on Vancouver Island, to visit several of our daughters and their families. After four days we flew to Hawaii and spent a day at the Bishop Museum. Then on to Fiji and finally to Sydney, where we visited our friends, Geoff and Jan Holloway and family. From Sydney we flew to Brisbane, where we lodged (surprise!) in the same hotel as Bruce and Jocelyn Gill. We all attended the Congress (Photo 2) which was great, well organized, and with many entomologists interested in scarabs! I had not brought a camera with me, because I suspected there would be lots of pictures taken (Photo 3) by more modern equipment than I had. Near the end of the Con-

Photo 1: The symbol for the Congress - an ant made up of insects by Tony Hiller.
gress Bruce rented a camper van and the four of us went up nearby Mt. Glorious to visit Tony Hiller (Photo 4), whose home abutted the rain forest-clad summit. Tony had a great collection of local beetles and an Australia-wide collection of some groups of scarabs. There was not much beetle activity, since it was the off season, but there were several small piles of dirt near the forest edge that indicated something was burrowing. Upon investigation, the digger was *Cephalodesmius armiger* Westwood (Photo 5), an unusual scarab that rolled leaf balls instead of dung for its larvae (Geoff Monteith has published on the biology of this beetle).

We returned to Brisbane for two more days of meetings. Then Bruce and Jocelyn drove south to see some of eastern Australia while Anne and I flew north to Cairns, where we rented a car. The next day we drove inland to Mareeba, rented a motel room and then visited Ross Storey. Ross was still at “Emerald Hill”, but his health was gradually worsening; however, Ross remained his cheerful self. Not in all the years we knew him did he ever complain, despite years of declining health. We knew this was almost our last visit to Australia, so spent most of our time visiting. Collecting was poor; traps set in the Tolga Scrub collected one common *Onthophagus*, the only scarab we collected at Mareeba.

After four days, we drove back to Cairns, flew to Sydney, overnighted there, then retraced our route to Ottawa. Toward the end of the year we attended the Entomological Society of America meetings in Ft. Lauderdale, Florida. People-wise it was a great year; beetle wise, not much.
Photo 3: Geoff Monteith with his burrowing cockroach exhibit. The adults care for their young by feeding them dead leaves or other surface litter in the burrows.

Photo 4: Tony Hiller showing a few of his visitors part of his collection.

Photo 5: The best beetle that I collected on the trip: *Cephalodesmius armiger* Westwood. Photo by Jocelyn Gill.
**2005 - Maine**

Photos by François Génier.

We had not made any plans for the year, so when François Génier asked us if we would join him in going to the Maine “beetle bash” in Acadia National Park, we gladly accepted his invitation. The “bash” was organized by Don Chandler and the Park had agreed to our insect collecting as long as they received a list of species taken. We were housed in old Navy quarters which were very comfortable. We did not expect anything unusual in collecting beetles, but we enjoyed general collecting (Photo 1) and met a number of new, enthusiastic collectors. Although the trip was brief, it was a fun weekend (Photo 2) and we returned to Ottawa happy that we had gone.

In May of the following year we flew to visit our daughters on Vancouver Island. During the flight I felt my right arm going numb and realized I was having a stroke. There is not much that one can do at 32,000 feet, so I got off the plane in Victoria in a wheel chair and wound up in the local hospital for two weeks before going to the rehab unit of the Victoria Hospital. After six weeks in Victoria I was transferred to the Ottawa General Hospital where I spent the rest of the summer until they finally let me go home. A short time later Anne and I moved to a “Senior’s Residence”, where we are today.

The stroke, along with an age of 80+ years, ended serious work in scarabs, and resulted in this series, which ends here.

There are still new species of scarabs to collect. Get after them!
The End to “In Past Years”?
by Barney Streit

This issue of *Scarabs* contains the final installment of Henry Howden’s epic series “In Past Years.” We are all going to miss Henry’s accounts of his struggles with bureaucracy (both Canadian and foreign), his clever trapping techniques (such as a flight intercept trap over the entrance of an *Atta* nest), struggles with unreliable vehicles and terrible roads, and the vast galaxy of friends he made along the way.

When Henry first started submitting these episodes from his travels, they were not in chronological order. It was only after Bill Warner and I informed Henry of the popularity of his articles and beseeched him to write up all of his trips that Henry decided to start from the beginning.

The earlier installments did not include any specimen photographs. When travel photos did appear, the original scans were often of poor quality. Some of the slides went missing at the time he needed them. Knowing this, Henry has already collected the text from his articles and arranged them in chronological order. Presently, he is embellishing the text and adding more anecdotes that did not see their way into *Scarabs*.

We are hoping that more and higher-quality photographs can be added, including more specimen photos. We are also hoping Henry can record a couple videos as well as some audio files covering some of his experiences.

What would become of a bigger, better, color colorful version of “In Past Years”? That remains to be seen. There is always the possibility of converting this wonderful series to play interactively on a tablet device. This way, specimen photos could appear in the text flow where they are mentioned, we could hear audio flies of Henry and see video files of him.

If any of you have any suggestions or words of encouragement, please contact Henry (henry.howden@rogers.com) or me.