AMERICAN ARACHNOLOGICAL SOCIETY

American Arachnology

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2021 American Arachnological Society Virtual Conference

Because of the ongoing challenges due to the global pandemic, the American Arachnological Society decided to host its second virtual conference instead of an in-person meeting. The 2021 virtual meeting of the AAS will be held from June 24th until July 1st. Information about this conference can be found at:

https://www.americanarachnology.org/aas-meetings/aas-meeting-2021/.

Although registration is now closed, many of the talks and other activities will be posted on YouTube after the meeting. The membership secretary will send a link to these talks to AAS members.

A Spider Says Hi to a Fly

By David Leatherman (daleatherman@msn.com)

Just as the Linnaean hierarchy of scientific names takes an order and subdivides it into families, then genera, then species, so go my passions. As a trained forest entomologist with a lifelong interest in birds, in the 1980s I got very curious about the arthropod diets of birds. Then, soon after beginning to catalogue anecdotal combinations of this bird eating that item, shrikes commanded special attention.

The loggerhead shrike's habit of impaling prey on sharp objects like thorns, branch stubs and barbed wire is well-known. The literature lists two reasons for this: 1) attracting mates ("look at me, I'm a good provider") and 2) caching/holding their food better than their weak feet can. In the one episode of a column I write in the journal "Colorado Birds" called "The Hungry Bird," the focus was shrike impaling. The introduction consisted of a concocted situation involving a natural resource agency in need of a seasonal biologist to survey smallish fauna on the eastern plains of Colorado. The article then detailed a litany of various vertebrates and invertebrates I had recorded having fallen under the gaze of shrikes. As such, a case was made for filling the technician vacancy with a shrike. I am convinced if one observes over a long enough period, shrikes will hang on the line about every diurnal (and sometimes nocturnal) creature present in their territory between the size of a honey bee and a hispid cotton rat. Grasshoppers and crickets are

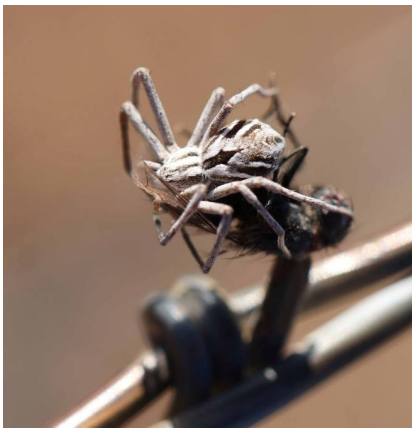
perhaps their most common prey, but lizards, snakes (including the occasional young prairie rattlesnake!), rodents, small birds, beetles, dragonflies, moths and, yes, spiders sometimes get skewered.

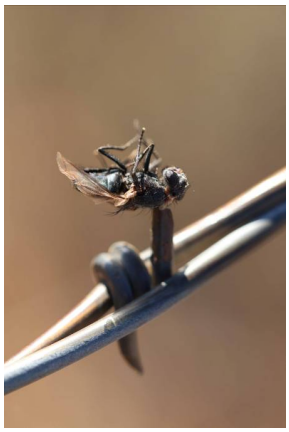
Spiders are not commonly impaled, with the ones I have found over the years all being large wolf spiders (*Geolycosa* spp.) except for one nursery web spider (*Pisaura* sp.). I have often wondered if shrikes ever impale tarantulas. Maybe time will tell.

This note details a spider-shrike find of a different sort on 29 March 2021 in Baca County. I was driving 2 mph (as searching for impaled objects on barbed wire dictates) down a remote dirt road northeast of the entrance to Picture Canyon when a "blip" appeared on the upper strand. Backing up, I got out and investigated. The first recognizable thing about the abnormality on the fence was that it was a spider. Then the spider moved. Because impaled objects frequently remain alive for minutes, hours, and even a few days after being detained, I remember thinking this was a fresh act, and that this striking spider was a new item for my shrike food list. But close examination revealed the true situation. The impaled object was a large fly (probably a calliphorid). This is both the first fly and smallest object I have ever found impaled. The spider was feeding on the abdominal end of a morsel the shrike intended for itself.

The fancy term for this drama is "kleptoparasitism". That is, the stealing of food by one organism from another. Since the fly was dead, maybe we could call this "kleptoscavenging". Over the years, I have seen an assortment of insects feeding on shrike-impaled objects. Examples are a stink bug feeding on a many-lined skink, flesh flies on lesser earless lizards, and many carrion beetles flying around impaled vertebrates. Interestingly, I sometimes find carrion beetles (*Nicrophorus* spp.) impaled and can envision the scenario where a shrike returns to feed on an impaled meal and then takes advantage of the interloper by adding it to the cache.

I photographed the spider atop the fly, the spider on my finger and finally the fly by itself (see photos below). The spider was collected alive for formal photography by my friend Janeal Thompson. Photos of the arachnid, a running crab spider in the family Philodromidae), were submitted to iNaturalist and the consensus seems to be it is *Rhysodromus histrio*. I would appreciate confirmation or correction of this determination from readers of this newsletter, and thanks to Paula Cushing for her preliminary confirmation it was a philodromid spider.





Spider Webs and Noise

By Dylan Gomes (Dylan.ge.gomes@gmail.com)

Research presented by Dylan Gomes at the 2020 virtual AAS conference, has now been published in Functional Ecology.

In this study, we sought to understand how orb-weaving spider abundance, behavior, insect capture success, and body condition is affected by whitewater river noise. We attempt to answer these questions by broadcasting whitewater river noise from speaker arrays for three summers (2017-2019). We carried roughly four tons (~3300 kg) of acoustic gear into the mountains and surveyed spiders at 78 locations within the Pioneer Mountains of Idaho to test the effects of whitewater noise exposure on two species of orb-weaving spiders (*Larinioides patagiatus* and *Tetragnatha versicolor*).

We found that both species of orb-weaving spiders increase dramatically in areas with intense whitewater river noise. It is not clear why there are more spiders in these areas, but it is possible that they are attracted to river sounds because they serve as cues for suitable habitat, spider predators are avoiding the same areas (which we demonstrate in another paper currently in press at Nature Communications), or prey are distracted or more abundant near noisy streams. Interestingly, spider body condition did not seem to be affected by river noise, even though insect capture (not necessarily prey) and web size were affected. This research highlights that the natural acoustic environment can shape animal abundance and behavior.

For more information, see the article cited below and this Functional Ecology blog:

https://functionalecologists.com/2021/01/26/dylan-gomes-how-the-acoustic-environment-shapes-spider-abundance-and-behaviour/

Gomes, D. G., Hesselberg, T., & Barber, J. R. (2021). Phantom river noise alters orb-weaving spider abundance, web size and prey capture. *Functional Ecology*, *35*(3), 717-726.

A Feeding Aid for Web-Building Spiders Reluctant to Build a Web

By Keizo Takasuka (keizaf@gmail.com)

Rearing aerial web-building spiders such as araneoids and uloborids is generally more difficult than rearing cursorial or ground web-building spiders, such as those in the RTA-clade, in terms of a necessity of aerial web building for artificial feedings. Non-feeding spiders, due to no web-building, eventually starve to death. To feed web-building spiders the researcher needs to make them build their new webs, while to make spiders build their new webs the researcher needs them to feed so they have the physical capacity to build the webs.

Large species such as *Araneus ventricosus* (L. Koch 1878) and *Argiope bruennichi* (Scopoli 1772) (both Araneidae), and even some midsize species such as *Yaginumia sia* (Strand 1906) (Araneidae) and *Tetragnatha praedonia* L. Koch 1878 (Tetragnathidae) sometimes can be fed by providing live prey directly to their mouth (the handover-feeding) without the presence of a capture web in my own experience (supplementary video 1: https://youtu.be/OaI586OBUqc). However, most tiny species are frequently too timid to be directly fed without their webs. When they are directly fed by the handover technique, they often run away in surprise through an already laid temporal thread or via the substrate regardless of whether a prey is live or killed (supplementary video 2: https://youtu.be/h7jQKk6wpM0).

Because I study ichneumonid spider-ectoparasitoids (the *Polysphincta* genus-group), I have many opportunities to rear timid spiders like *Cyclosa argenteoalba* Bösenberg & Strand 1906 (Araneidae) (Takasuka et al. 2015). To solve the problem described above, I invented a new way to feed them. Soaking freshly killed prey in water or honey solution before feeding is very effective for making them attractive prey. The spiders immediately react to and suck the liquid clinging to an unknown object that is the actual prey (supplementary video 2, link above). Spiders seem to have stronger response to honey solution than water. During sucking, the spiders notice that the object is a prey and wrap it to feed. In the next day of the handover-feeding with a soaked prey,

many individuals built their original webs in case of *C. argenteoalba*. The efficacy of the method was also confirmed using a tetragnathid, *Leucauge subblanda* Bösenberg & Strand 1906 and a uloborid, *Octonoba sybotides* (Bösenberg & Strand 1906) (supplementary video 2, link above). The method would be applicable to other timid spiders across phylogenetically wide lineages regardless of whether web-building or cursorial types.

When handing over the soaked prey to the spider, I recommend exposing the prey to the spider's mouth, but not to the spider's legs because the spider gets frightened and runs away. The prey's legs also preferably should not be exposed to the spider because the legs can hardly bear liquids, but sometimes it does not matter. The best way is to get the soaked prey body (not legs and wings) exposed to the spider's mouth (not legs), while it hangs with its dorsum in the air from a horizontal temporal thread (not huddling on a substrate). The primary problem is the difficulty in smoothly detaching the tweezers from the sticky soaked prey after handover. I have no ideas for solving this so far.

Takasuka, K., T. Yasui, T. Ishigami, K. Nakata, R. Matsumoto, K. Ikeda et al. 2015. Host manipulation by an ichneumonid spider ectoparasitoid that takes advantage of preprogrammed web-building behaviour for its cocoon protection. Journal of Experimental Biology 218:2326-2332.

Newly Redesigned AAS Website and Membership Section

Thanks to AAS President, Greta Binford, AAS Webmaster, Daniel Gloor, and Heiko Metzner of PSBrands, the society website has been completely redesigned. Check out all the new pages at https://www.americanarachnology.org/home/. Explore the grant opportunities for students and non-students; explore the new arachnology-related information pages; and create your own login to access members-only information. For AAS website related inquiries, you can reach out via email: webmaster@americanarachnology.org. AAS website content updates or corrections can also be sent to the AAS Secretary who will work closely with the webmaster.

Deadline for Next American Arachnology Submissions

Apologies from the *American Arachnology* editor for the late publication of this issue of *American Arachnology*. The editor (Paula Cushing) was allowed to carry out fieldwork this past Spring and was so excited to be back in the field that she completely forgot to complete this issue prior to her departure! The deadline for the Spring issues of *American Arachnology* is April 15th and items for the Fall issue of *American Arachnology* should be sent to the society Secretary by October 15th. The newsletters will be posted on the AAS website. You can also follow society news on Twitter and Facebook. And for news-you-can-use about the world of arachnology, consider joining the AAS listserv.