Case of the Mystery Insect

The picture above was taken on July 18, 2009 on a seep willow tree branch at the Monahans Sandhills State Park, this was one of many I took that day but this one forced me explore a more obscure aspect of entomology to solve the mystery. I had only a few details to go with, but good clues that I needed to identify this insect as a larvae of a common lacewing (Neuroptera – Planipennia – Chrysopidae).

The larvae uses a not to common, but still common, form of protective device called a debris packet; therefore this makes it known as a debris-carrier or trash-carrier. My larvae in question was roughly 6mm and could have been one of three stages in a larval stage before it forms a cocoon to pupate. The debris-packet will remain on the cocoon even when the insect becomes immobile. The question I had to answer beyond the fact I found a debris-carrier was how was it done?

My answer was found in a study at http://www.biosci.missouri.edu/carrel/publication/pdf-article/neuroptera.pdf of a specific common lacewing (*Ceraeochrysa lineaticornis*) on a sycamore tree in Arizona. The larval form has lateral setigerous tubercles and dorsal series of hooked setae to grip and secure the packet of debris being created. Using its sickle like mandibles seen in the picture above it can gather debris as varied as its own cast off cuticle (old external skin) from moulting, remains of its prey, or vegetable or other matter on hand. As I understand it the gathered material is pitch forked by the mandibles and it raises its head backward to throw the load onto the tubercles and side hooks to form a foundation. Like any structure once started it can flex its body to shape and build the complete packet for initial construction and future repairs as needed. It seems once a larvae loses its packet (or is denuded) it immediately starts to repair or create a new packet.

The packet is bound to have many uses, but I can only summarize a defensive purpose presented in the study. While I without any difficulty spotted the larvae trying to hide in plain sight, the predators can be more easily tricked. The test used 12 larvae with a

debris-packet and 12 without a packet with reduviids (assassin bugs) as the predators in a controlled environment, the results showed 9 of the 12 without a packet were preyed upon and only 3 of the 12 with the packet met the same fate. Another fact I found interesting was the extra space provided by the debris-packet could stop the penetration of the beak (mouth part) of the attacker even if the larvae was captured some of the time.

This insect was not out of place or rare, I was lucky enough to see and photograph it in an environment that has many wonders but sparse vegetation to really support an excess. The larvae of common lacewings are also called aphidlions since the prey on aphids that infect any of the grasses, weeds, or tree and bush foliage where an egg can be laid. The next picture shows one more behavior of the aphidlion, when it is at rest it pulls itself under the packet for more protective cover and while moving around resembles the previous picture.

I learned so much just from a simple photo taken amongst many on July 18, 2009 and I would encourage everyone to explore and take as many photos as you can to get your

“What is that shot?”. My e-mail is **malcolmm9789@gmail.com** and I’ll be glad help you out however I can in your search to identify insects.

Sources:
http://en.allexperts.com/q/Entomology-Study-Bugs-665/Dirt-mimic.htm - the first link that lead me to a more refine search.
http://books.google.com/books?id=iIHSqAgnmUIC&pg=PA62&lpg=PA62&dq=insect+debris-carriers&source=bl&ots=G3JdN5JXWr&sig=1_FLySeDCOQvg1e3ei21pl3uV8A&hl=en&ei=4wppSuGjOIaPtgeogJmyCw&sa=X&oi=book_result&ct=result&resnum=7 an excerpt from an really specialized book.
http://www.biosci.missouri.edu/carrel/publication/pdf-article/neuroptera.pdf - the study I referenced.