

First record of *Telebasis filiola* Perty (Odonata: Coenagrionidae) preying on small web-building spiders (Arachnida: Tetragnathidae)

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At a wetland in southeastern Mexico a female of *Telebasis filiola* was observed and photographed preying on a small web-building spider of the genus *Leucauge*. This is the first record of gleaning by a representative of the genus *Telebasis*. A brief discussion on this subject in other odonates is provided.

Keywords: Odonata; damselfly; *Telebasis*; Araneae; Tetragnathidae; *Leucauge*; gleaning

Introduction

It is well known that dragonflies are generalist and opportunistic foragers, catching living prey using two main strategies: (1) chasing them actively in the air or in short flights from a perch; and (2) by gleaning (Corbet, 1999). Anisoptera and those Zygoptera that usually perch with open wings employ the first strategy, while most zygopterans are gleaners (Paulson, 2004). According to Corbet (1999), only pseudostigmatids are unequivocal specialist foragers, preying on orb-weaver spiders (Clausnitzer, 2004; Fincke, 1992), all others are generalists. However, Corbet (1999) emphasizes the ability of some odonates to become temporary specialists in response to high availability of one kind of prey. Here, we report for the first time a record of *Telebasis filiola* Perty (Coenagrionidae) preying on small web-building spiders. We assume this observation could be a case of temporary specialization.

Observations

While taking photographs of adult odonates in a wetland at La Mancha Biological Station (19°36'00" N, 96°22'40" W, 10 m elevation), Veracruz, Mexico, on 9 May 2013, well within the dry season, we observed one female of *Telebasis filiola* Perty (Coenagrionidae) perching on the tip of a vertical stem, when she suddenly made a short flight to catch a small spider (*Leucauge*

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Figure 1. A female of *Telabasis filiola* starting to consume a small web-building spider, *Leucauge* sp.



Figure 2. *Leucauge* sp. resting on the underside of its web.

sp., Tetragnathidae) while it was resting horizontally on the underside of its web. The female *T. filiola* returned immediately to the perch in order to consume its prey (Figure 1). We tried to observe more events of this behavior but we saw none. Nevertheless, we could observe there were many spider webs on the vegetation with their respective spider on the underside (Figure 2).

At the moment of this observation, the weather reached the day's maximum temperature (29.7°C) (data from La Mancha climatological station) and the wetland's water table was reduced, with the exception of some channels of 1 m depth but densely covered with *Nymphaea ampla* (Salisb.) (Nymphaeaceae) and *Salvinia auriculata* Aubl. (Salviniaceae). Under these conditions, very few insects were observed on the wing, and even odonate activity was limited.

Discussion

We cannot be certain whether the feeding behavior exhibited by *T. filiola* was opportunistic or a true temporary specialization. Temporary specialization according to Corbet (1999) “offers the benefit of reducing time devoted to searching and recognition.” Given the limited prey activity observed at La Mancha and the extreme climatic conditions above described, which are prevalent in the dry season, we reasonably speculate that the observed behavior could be a case of temporary specialization.

On the other hand, preying on spiders by odonates is apparently not rare, although most of the records are anecdotal, and mostly pertain to Zygoptera. In Anisoptera, only representatives of Aeshnidae and Libellulidae have been recorded preying on spiders, plucking them from vegetation, as observed in *Erythemis simplicicollis* (Say) (Edwards, 1987), and *Epiaeschna heros* (Fab.) (Young & Lockley, 1988), or taking spiders while falling on a thread of silk as occurred with *E. simplicicollis* (Edwards, 1987), and supposedly with *Pantala flavescens* (Fab.) (Warren, 1915). Only one individual of *Aeshna* sp. has been reported plucking a spider directly from a web (Jones, 1986). Several zygopterans have been observed feeding on tiny orb-weaver spiders gleaned from a web, e.g. the coenagrionids *Pyrrhosoma nymphula* (Sulzer) on *Mangora acalypha* (Araneidae) (Hein & Kunz, 2008), and *Ischnura elegans* (Vander L.) on *Araniella cucurbitina* or *A. incospicua* (Araneidae) (Grangier, 2000), or attempting to glean spiders from webs, as mentioned by Ingley, Bybee, Tennessen, Whiting, and Branham (2012) for *Acanthagrion aepiolium* Tennessen, *A. ascendens* Calvert and *A. gracile* (Rambur). Likewise, *I. elegans* has been recorded gleaning an undetermined spider from a leaf (Hein & Kunz, 2008), as well as *Megalagrion* sp. on salticids (Williams 1936 cited by Young & Lockley, 1988), or even devouring a harvestman (Opiliones: Phalangidae) as recorded for *Coenagrion puella* (L.) (Hein & Kunz, 2008). Alternatively, Parr and Parr (1996) recorded a gleaning behavior in *Ischnura elegans* trying to steal dipterans trapped on a spider's web but not actually trying to prey on the spider itself. Höllusa (1998) reported *Lestes virens* (Charpentier) (Lestidae) successfully stealing a spider's prey by plucking a leafhopper from the web.

Finally, it can be pointed out that to our present knowledge, preying on web-building spiders is restricted to a few groups of odonates, most of them coenagrionids. As can be seen, *I. elegans* exhibits the three variations of this opportunistic behavior: plucking spiders from leaves, attempting to steal insects trapped in spider webs, and gleaning spiders from orb-webs. Thus, as mentioned by Ingley et al. (2012), this “opportunistic feeding may represent behavioural stepping-stones towards the apparent obligatory spider feeding observed in Pseudostigmatidae.”

These arguments could give additional support to the recent reclassification of pseudostigmatids into the family Coenagrionidae (Paulson, pers. comm.).

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References

- Clausnitzer, V. (2004). *Ecology and biogeography of the dendrolimnetic Coryphagrion grandis (Odonata)*. 2. Paper presented at the Symposium der A.F.W. Schimper-Stiftung, Hohenheim.
- Corbet, P. S. (1999). *Dragonflies. Behavior and Ecology of Odonata*. Ithaca: Cornell University Press.
- Edwards, G. B. (1987). Predation by adult *Erythemis simplicicollis* (Say) on spiders (Anisoptera: Libellulidae). *Notulae odonatologicae*, 2, 153–154.
- Fincke, O.M. (1992). Behavioural ecology of the giant damselflies of Barro Colorado Island, Panama (Odonata: Zygoptera: Pseudostigmatidae). In D. Quintero & A. Aliello (Eds.), *Insects of Panama and Mesoamerica: Selected studies* (pp. 102–113). Oxford: Oxford University Press.
- Grangier, C. (2000). Des araignées au menu de ces demoiselles. *Sympetrum*, 15, 3–4.
- Hein, A. T., & Kunz, B. (2008). Damselflies as predators of arachnids (Odonata: Coenagrionidae; Arachnida). *Libellula*, 27, 253–257.
- Hölusa, O. (1998). An interesting gleaning behaviour by *Lestes virens* (Charp.) (Zygoptera: Lestidae). *Notulae odonatologicae*, 5, 19–20.
- Ingle, S. J., Bybee, S. M., Tennessen, K. J., Whiting, M. F., & Branham, M. A. (2012). Life on the fly: Phylogenetics and evolution of the helicopter damselflies (Odonata: Pseudostigmatidae). *Zoologica Scripta*, 41, 637–650. doi: 10.1111/j.1463-6409.2012.00555.x
- Jones, R. A. (1986). A spider-eating dragonfly. *The Entomologist's Record and Journal of Variation*, 98, 255–256.
- Parr, M. J. & Parr, M. (1996). Risky gleaning behaviour by *Ischnura elegans* (Vander L.) (Zygoptera: Coenagrionidae). *Notulae Odonatologicae*, 4, 124.
- Paulson, D. R. (2004). Why do some zygopterans (Odonata) perch with open wings? *International Journal of Odonatology*, 7, 505–515. doi: 10.1080/13887890.2004.9748235
- Warren, A. (1915). Food habits of Hawaiian dragon-flies. *College of Hawaii Publications Bulletin*, 3, 1–45.
- Young, O. P., & Lockley, T. C. (1988). Dragonfly predation upon *Philippus audax* (Araneae, Salticidae). *Journal of Arachnology*, 16, 121–122.