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Predation on *Todirostrum cinereum* (Tyrannidae) by the orb-web spider *Nephilengys cruentata* (Aranae, Nephilidae)

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RESUMO: **Predação de *Todirostrum cinereum* (Tyrannidae) pela aranha-de-jardim *Nephilengys cruentata* (Aranae, Nephilidae).** Relatamos a predação de um ferreirinho-relógio *(Todirostrum cinereum)* pela aranha *Nephilengys cruentata.* Embora a predação de vertebrados por artrópodes esteja bem documentada na literatura, aranhas tecedoras de teias raramente estão envolvidas em eventos desse tipo. A nossa observação adiciona um importante exemplo de predação de ave por artrópode e reabre a discussão sobre o aproveitamento de presas de grande porte por aranhas da família Nephilidae.

PALAVRAS-CHAVE: *Todirostrum cinereum, Nephilengys,* Predação, Nephilidae, ferreirinho-relógio.

KEY WORDS: *Todirostrum cinereum, Nephilengys,* Predation, Nephilidae, Common Tody-flycatcher.

Vertebrate consumption by arthropods is not uncommon and many examples are available in the literature (*e.g.* Glegg 1947, Teixeira *et al.* 1991, Pianka and Vitt 2003, Toledo 2005). Arthropods having birds as prey are rarely observed but, as pointed out by Teixeira *et al.* (1991), this kind of interaction might be more common than it appears. In a review of arthropod predation on Brazilian birds, Teixeira *et al.* (1991) mentioned crustaceans, chilopods, insects, especially fire ants of the genus *Solenopsis* (Formicidae), and spiders, particularly of the family Theraphosidae, as potencial predators.

Spiders and birds have a long history of coexistence, including predator-prey interactions. Usually the spider is the prey, as many bird species feed on arthropods and commonly include arachnids in their diet (Sick 1997). Some species even use spider webs as "useful traps" to capture insects and other prey (*e.g.* Waide and Hailman 1977, Petit and Petit 1988, Stiles 1995, Sick 1997). Other birds use spider webs as sources of material for nest building (Sick 1997, Lopes and Marini 2005). Predation of birds by spiders has been mentioned by many authors, but most observations are speculative and no actual consumption of trapped animals was observed (Teixeira *et al.* 1991). The majority of the observations of bird predation events are from tarantulas (Theraphosidae) which are very large bodied spiders that actually prey on a wide variety of invertebrates and small vertebrates such as frogs, lizards, small mammals (including bats), and birds (Gallon 2000). Tarantulas are also known as bird-eating spiders, being the origin of the name based on early nineteenth century observations (Gallon 2000). Documentation and extensive discussion on theraphosid spiders predating on birds is available from Berland (1932), Gertsch (1949), Glegg (1947), Haverschmidt (1970) and Shear (1986).

Observations of avian predation events involving web building spiders are much scarcer. Occasionally some birds might get accidentally caught in a spider's web and be unable to get loose. Entrapment in a web can be caused by three basic means: while foraging on insects trapped in the web, while gathering material for nest building or accidentally, just by flying trough an unseen web. To avoid such incidents some spider species have ornamentations on the web that supposedly are visible to birds and could avoid accidental bird trapping (Bruce *et al.* 2005) and consequent web destruction. The vast majority of the observations of birds trapped in spider webs do not result in any action by the spider. In some cases the spider even retreats until the "undesired prey" gets loose (Teixeira *et al.* 1991). Other species just don't care what is on the web, they just want to feed. Birds trapped in spider webs commonly die from starvation (Stiles 1992, Graham 1997) and this may lead unaware observers to credit the death to the spider (Teixeira *et al.* 1991, our personal observation).

Here we report on an actual predation event of a Common Tody-flycatcher *Todirostrum cinereum* (Tyrannidae) by an orb-web spider *Nephilengys cruentata* (Figure 1). The observation was made at the visitor's center of Parque Estadual Paulo César Vinha, state of Espírito Santo, Brazil (aprox. 20°35'S and 40°26'W).

On November 06 at around 10:00 h our attention was drawn to a bird trapped in a spider web. The spider, a large female *N. cruentata,* was standing on a relatively large wound on the right flank of the bird (Figure 1B). We noted that the spider was actually feeding from the dead bird. When disturbed the spider quickly retreated, but came back to consuming the bird less than 15 minutes later. The spider was still feeding from

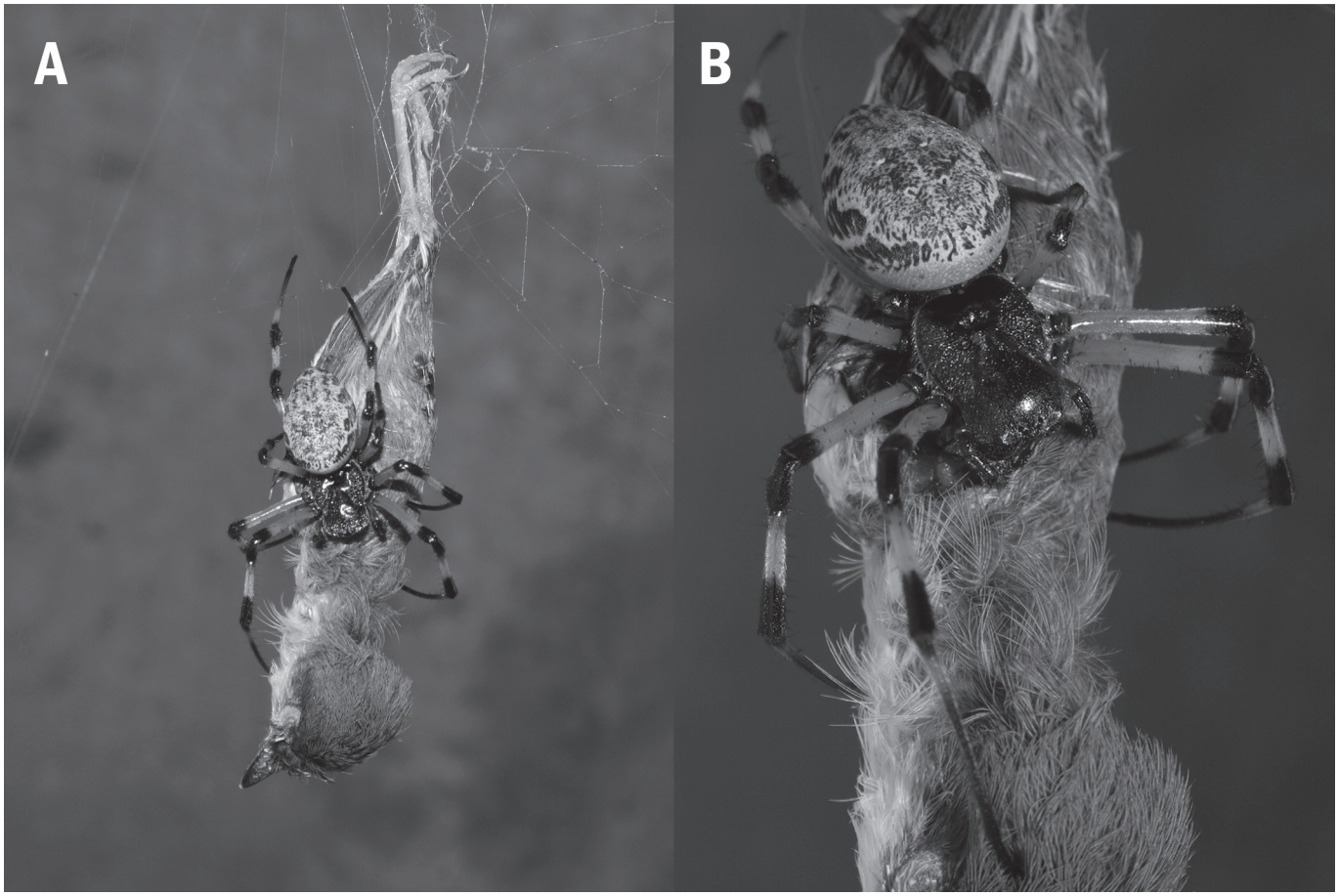

FIGURE 1. *Nephilengys cruentata* predating on a *Todirostrum cinereum* captured on its web. (A) The Flycatcher hanging from the spider's web and (B) detail of the spider actually consuming the bird.

the bird at 20:00 h when we ceased observation. The bird was hanging only from its feet and had fallen to the ground when we checked the web early on the next day.

We do not know whether the Flycatcher got trapped while gathering material for nest building, while feeding on insects trapped in the web, or by just flying through it. Lima *et al.* (2005) reported no spider webs on six nests of *T. cinereum* examined in detail so this hypothesis is weakened. Although the foraging and food habits of the Common Tody-flycatcher need further study, we know that it is an insectivore and can catch flying insects. This behavior can lead the bird to get trapped when investing against an insect already trapped in a web or it can also lead it to get trapped in an unnoted web nearby a flying prey.

Many reports of bird entrapment on *Argiope* and *Nephila* webs do exist but no actual bird consumption is reported (see Baird *et al.* 1905, Bent 1964, McCook 1889, Skutch 1973, Teixeira *et al.* 1991, Sick 1997 for examples). Teixeira *et al.* (1991) reported an actual attack of a *Nephila* species on an entrapped *Sporophila caerulescens,* but the bird escaped from the web after the spider bitted him, so no consumption was possible there (Teixeira *et al.* 1991). Graham (1997) mentioned that the prey usually consumed by *Nephila* (see Rypstra 1985 and Higgins 1987 for *Nephila* food habits) are much smaller than a relative small hummingbird, and stated that "it is unlikely that *Nephila* prey on birds". We still cannot confirm that *Nephila* prey on birds, but, based on our observation on *Nephilengys* (closely related to *Nephila* according Kuntner (2007), we do think it is possible that *Nephila* also consume larger animals trapped in its webs.

Our observation adds an important example of vertebrate consumption by a web building spider and confirms that orb-web spiders *(Nephilengys)* might actually consume birds accidentally trapped on their webs.

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REFERENCES

Baird. S. F., T. M. Brewer, and R. Ridgeway (1905) *A history of North American birds,* v. II, Land birds. Boston: Little, Brown, and Company.

Bent, A. C. (1964) *Life histories of North American cuckoos, goatsuckers, hummingbirds and their allies.* Part II. New York: Dover Publications, Inc.

Berland, L. (1932) *Les arachnids.* Paris: Paul Lechevailer et Fils.

Bruce, M. J., A. M. Heiling and M. E. Herberstein (2005) Spider signals: are web decorations visible to birds and bees? *Biol. Lett.* 1:299-302.

Gallon, R. C. (2000) *The Natural History of tarantula spiders.* London: The British Tarantula Society.

Gertsch, W. E. (1949) *American spiders.* New York: D. van Nostrand.

Glegg, W. E. (1947) Des dangers que represent pour les oiscaux les araingnée et leurs toiles. *Alauda* 10:55-67.

Graham, D. L. (1997) Spider webs and windows as potentially important sources of hummingbird mortality. *J. Field Ornithol.* 68:98-101.

Haverschmidt, F. (1970) Les mygales se nourrissent-elles dóiscaux? *Alauda* 38:274-277.

Higgins, L. E. (1987) Time budget and prey of *Nephila clavipes* (Linnaeus) (Araneae, Araneidae) in southern Texas. *J. Arachnol.* 15:401-417.

Kuntner, M. (2007) A monograph of *Nephilengys,* the pantropical 'hermit spiders' (Araneae, Nephilidae, Nephilinae). *Syst. Entom.* 32:95-135.

Lima, P. C., S. S. dos Santos, B. G. Pita and D. C. Santos (2005) Reprodução de *Todirostrum cinereum* em área de cerrado noeste da Bahia, Brasil. *Atual. Ornit.* 124:1-33.

Lopes, L. E. and M. Â. Marini. (2005) Biologia reprodutiva de *Suiriri affinis* e *S. islerorum* (Aves: Tyrannidae) no Cerrado do Brasil central. *Pap. Avuls. Zool.* 45:127-141.

McCook, M. C. (1889) *American spiders and their spinning-work,* v. 1. Philadelphia: Allen, Lane and Scott.

Petit, L. J. and D. R. Petit (1988) Continuous feeding from a spider´s web by a prothonotary warbler. *J. Field. Ornithol.* 59:278-279.

Pianka, E. R. and L. J. Vitt (2003) *Lizards: windows to the evolution of diversity,* 1 ed. Berkeley: Academic Press.

Rypstra, A. L. (1985) Aggregations of *Nephila clavipes* (L.) (Araneae, Araneidae) in relation to prey availability. *J. Arachnol.* 13:71-78.

Shear, W. A. (1986) *Spiders.* Stanford: Stanford University Press.

Sick, H. (1997) *Ornitologia brasileira.* Rio de Janeiro: Nova Fronteira.

Skutch, A. E. (1973) *The life of the hummingbird*. 1 ed. New York: Crown Publishers, Inc.

Stiles, F. G. (1992) Effects of a severe drought on the population biology of a tropical hummingbird. *Ecology* 73:1375-1390.

Stiles, F. G. (1995) Behavioral, ecological and morphological correlates of foraging for arthropods by the hummingbirds of tropical wet forest. *Condor* 97:853-878.

Teixeira, D. M., G. Luigi and I. M. Schloemp (1991) Aves brasileiras como presas de artrópodes. *Ararajuba* 2:69-74.

Toledo, L. F. (2005) Predation of juvenile and adults anurans by invertebrates: current knowledge and perspectives. *Herpetol. Rev.* 36:395-400.

Waide, R. B. and J. P. Hailman. (1977) Birds of five families feeding from spider webs. *Wilson Bull.* 89:345-346.