N O T E

Web Contents of *Nesticodes rufipes* and *Latrodectus geometricus* (Araneaea: Theridiidae) in a Brazilian Poultry House[1]

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Spiders are ubiquitous in terrestrial ecosystems and abundant in a variety of habitats. Young and Edwards (1990, J. Arachnol. 18:1-27) noted that spiders play a major role in suppressing insect pest populations. Yet, predation data are lacking and are not easily obtained.

Nesticodes (=*Theridion*) *rufipes* (Lucas) and *Latrodectus geometricus* (Koch) (Araneae: Theridiidae) are frequent and abundant inhabitants of poultry houses in Brazil. The impact of these theridiid species on arthropod pests in commercial egg production houses is unknown. Our objective in this study was to identify and quantify arthropods captured in the webs of *N. rufipes* and *L. geometricus* in a poultry house located in the city of Botucatu, State of São Paulo, Brazil, for one year.

An experimental poultry house located in the city of Botucatu (latitude: 22° 52′ 20″ S; longitude: 48° 26′ 37″) was used in the study. It was 105 m^2 (7 m × 15 m) in area and could support 700 chickens at maximum capacity. From September 2001 to August 2002, all areas in the poultry house (i.e., walls, door crevices, wood supports, chicken cages, etc.) were examined each month for *N. rufipes* and *L. geometricus* specimens and webs. When a web containing one of these spiders was found, all arthropod carcasses captured in the web were removed and placed in small glass tubes. Spiders were not removed from the webs to avoid diminishing their abundance and activity. We also did not attempt to distinguish between males and females or between spiderlings and adults that inhabited the webs. Collected carcasses were transported to the laboratory, where they were separated and sent to specialists for identification.

Over 90% of the spiders and webs observed during this study were either *N. rufipes* or *L. geometricus*; therefore, capture data from only these two species are presented here. During the study, *N. rufipes* was more abundant than *L. geometricus* (Fig 1). Numbers of spiders and their webs decreased during the winter months (May

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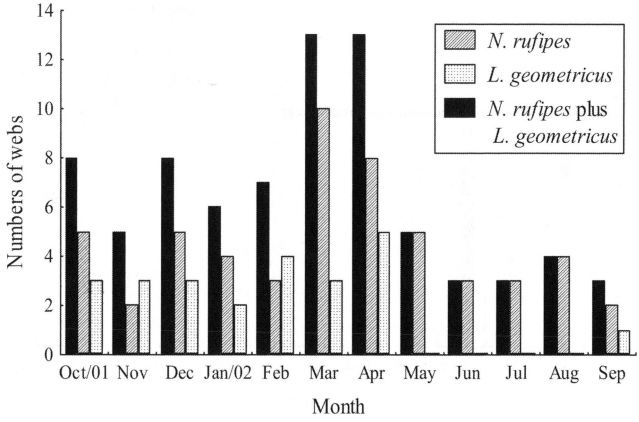

Fig. 1 Numbers of *N. rufipes* and *L. geometricus* webs observed monthly from October 2001 to September 2002 in a poultry house, Botucatu, State of São Paulo, Brazil.

–September), with no *L. geometricus* observed in May, June, July and August. The total number of insects captured in the webs of these 2 species also declined in the winter months (Fig. 2). In general, more insects were captured in *N. rufipes* webs than in *L. geometricus* webs (Fig. 3). *Latrodectus geometricus* webs captured more insects than *N. rufipes* webs in the poultry house in November 2001 and February 2002 (Fig. 3) because only in these months *L. geometricus* webs were more abundant than *N. rufipes* webs (Fig. 1).

The 244 insects collected during the study were from 6 orders, 24 families, 23 genera, and 16 species (Table 1). Some specimens were damaged or had degraded and could not be identified beyond the family level. Most insects collected represented either Coleoptera (48.4%) or Diptera (34%) with Hymenoptera (11.5%), Heteroptera (3.7%), Dermaptera (2%), and Lepidoptera (0.4%) also represented.

Of the insects collected, *Musca domestica* (L.) (Diptera: Muscidae) was the most numerous, representing 24.6% of the total insects captured in the webs. Other noteworthy genera or species collected were *Alphitobius diaperinus* (Panzer) (Coleoptera: Thenebrionidae) (20.9%), *Aphodius* spp. (Coleoptera: Scarabaeidae) (10.2%), *Gnathocerus* spp. (Coleoptera: Tenebrionidae) (6.1%), and *Dermestes ater* (De Geer) (Coleoptera: Dermestidae) (3.3%). Flies other than *M. domestica* represented only 9.4% of the total insects captured.

It is noteworthy that two pests in poultry houses, *M. domestica* and *A. diaperinus*, were captured in the webs constructed by *L. geometricus* and *N. rufipes*. The impact of natural predation by these spiders on these and other insect pests in poultry houses should be quantified in further studies. Use of these predators in combination with other biological control efforts including insect predators, parasitic mites, and microbial agents should be explored. Predation by these spiders on naturally-occurring and introduced beneficial arthropods, as evidenced in our study, could hinder biological control and natural suppression and should be examined.

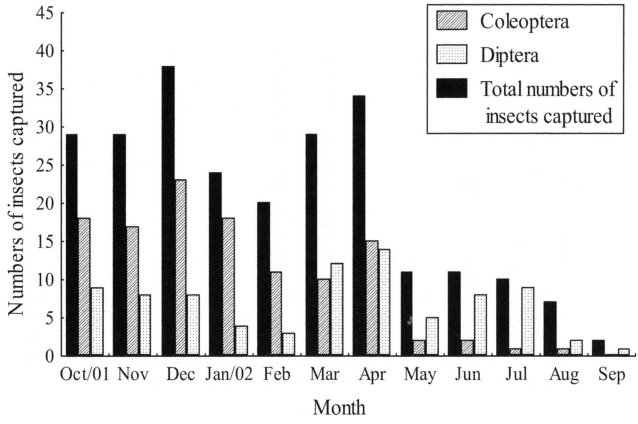

Fig. 2 Total numbers of Diptera and Coleoptera captured by month in the poultry house. Total numbers of insects are also presented.

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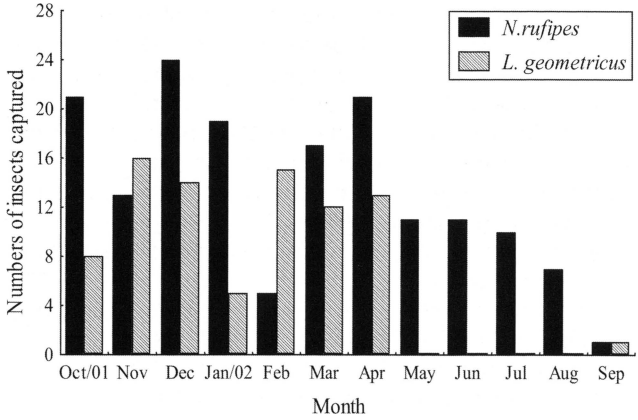

Fig. 3 Total numbers of insects captured in the webs of *N. rufipes* and *L. geometricus* by month in the poultry house.

Table 1. Insects captured by month in the webs of *N. rufipes* and *L. geometricus* in a poultry house, Botucatu, State of São Paulo, Brazil (2001-2002)

Order	Family	Genus/Species	Total number captured	Month(s) collected**
Coleoptera	Tenebrionidae	*Gnathocerus*	15	10-12, 2, 4, 5
	Tenebrionidae	–*	4	10, 12, 8
	Tenebrionidae	*Alphitobius diaperinus*	51	10-12, 1-4, 6, 7
	Scarabaeidae	*Alphodius*	25	10, 12, 1-4
	Scarabaeidae	–	2	11, 2
	Dermestidae	*Dermester ater*	8	10, 12, 1, 6
	Histeridae	–	6	11, 12, 1, 4
	Carabidae	*Solenophorus*	3	11, 12
	Carabidae	*Clivina*	1	12
	Geotrupidae	*Bolboceras*	1	12
	Byrrhydae	–	1	3
	Nitidulidae	–	1	4
Diptera	Limoniidae	*Teucholabis*	1	10
	Muscidae	*Neomyia*	1	10
	Muscidae	*Musca domestica*	60	10-12, 1-9
	Muscidae	*Stomoxys calcitrans* (L.)	1	12
	Muscidae	–	1	4
	Phoridae	–	1	11
	Phoridae	*Megaselia scalaris* (Loew)	1	11
	Anthomyiidae	–	4	11, 12, 2, 5
	Chironomidae	–	1	2
	Ulidiidae	–	2	3, 4
	Milichiidae	–	6	3-5
	Drosophilidae	–	3	3, 7
	Drosophilidae	*Microdrosophila*	1	8

Table 1. Continued.

Order	Family	Genus/Species	Total number captured	Month(s) collected**
Hymenoptera	Formicidae	*Solenopsis geminata* sp. 1 (Fabricius)	5	10, 12, 5, 8
	Formicidae	*Pheidole* sp. 2	4	10, 11, 8
	Formicidae	*Eciton* sp. 1	1	11
	Formicidae	*Tranopelta*	4	12, 2
	Formicidae	*Neivamyrmex* sp. 2	2	12, 1
	Formicidae	*Labidus* sp. 1	1	2
	Formicidae	*Acromyrmex* sp. 1	1	2
	Formicidae	*Ectatomma edentatum* (Roger)	1	3
	Formicidae	*Pheidole* sp. 5	2	3, 4
	Formicidae	*Pheidole* sp. 6	1	4
	Formicidae	*Pheidole* sp. 3	2	5
	Vespidae	–	3	1-3
	Braconidae	–	1	3
Heteroptera	Reduviidae	*Perigranator*	6	11, 12, 3-5
	Reduviidae	–	1	3
	Pentatomidae	–	1	11
	Lygaeidae	–	1	2
Dermaptera	Forficulidae	*Doru lineare* (Eschs)	5	12, 2, 3, 6, 9
Lepidoptera	Tineidae	–	1	4

* Could not be identified beyond Family.

** Numbers from 10 to 12 correspond to carcasses collected from October to December 2001, respectively, and numbers from 1 to 9 correspond to carcasses collected from January to September 2002, respectively.