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**Observações sobre a alimentação e sobrevivência de *Pseudolynchia canariensis* (Macquart, 1839) (Diptera, Hippoboscidae) em condições laboratoriais**

Alessandro Roberto Arcoverde da Silva<sup>1</sup> & Erik Daemon<sup>2</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.

<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. erik@artnet.com.br

**Abstract. Observations about feeding and surviving of *Pseudolynchia canariensis* (Macquart, 1839) (Diptera, Hippoboscidae) in laboratorial conditions.** This study aimed to evaluate the bionomic aspects of *Pseudolynchia canariensis*, blood sucking ectoparasitic of domestic pigeon, by collecting 174 flies in pigeons caught at Juiz de Fora count, state of Minas Gerais, Brazil. The catch were made by hand inside of a insectary and the flies were put on screened test tubes and remained there during all over the experiment in a temperature of 27°C, 80% relative humidity. Three pigeons free of infestations were kept up in screened cages to feed the flies. A new method to feed the flies was proposed to make it easier, to try to reduce the stress of the involved animals and to let the feeding of a bigger number of flies in a less time. To estimate the influence of the interval of time on feeding of *P. canariensis* at the laboratory, the flies were subjected of two treatments: the first group (24h) was fed daily and the second group (48h) was fed each two days. They were put over the pigeon for at least 10 minutes. The survival mean of the first group was  $17.33 \pm 17.77$  days (n=60) and for the second group was  $8.36 \pm 4.92$  days (n=61). The mean time of total blood meals for the first group was  $17' 15" \pm 17' 42"$ . The correlation between the time of blood meals and the survival time of the individuals of the first group was strong and highly significant ( $r_s=0.922$ ) different of the same correlation for the second group ( $r_s=0.738$ ). The present work allowed inferring about the influence of the interval of time on feeding and the survival of *P. canariensis* under laboratorial conditions.

**Keywords:** *Pseudolynchia canariensis*, feeding, maintenance.

**Diversidade e aspectos ecológicos e comportamentais de serpentes da Estação Ecológica de Anavilhanas, Amazônia Central, Brasil**Alexandre de Assis Hudson<sup>1</sup> & Bernadete Maria de Sousa<sup>2</sup><sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.<sup>2</sup> Orientadora, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. bernadete.sousa@ufjf.edu.br

**Abstract. Diversity and behavioral ecology of snakes from the Anavilhanas Ecological Station, Central Amazon, Brazil.** The present study was carried out aiming to broaden the knowledge about the composition, ecology, behavior and distribution of snake species from Central Amazon, mainly those from Anavilhanas Ecological Station. A line of interception traps with guide fence, pitfall and funnels traps was put up inside the conservation unit. We also collected specimens by occasional finding in dense ombrophilous forest of dry land ecosystem inside the reserve and its surrounding area, in the municipality of Novo Airão, Amazonas State, Brazil. In order to contribute with the study of the species' behavioral ecology, we observed and photographed these species' different defense behavior. The collection method with funnel traps proved to be an excellent alternative for snakes surveys, allowing more accurate verification of species richness and abundance. It has several advantages in comparison with the pitfall trap method, with an expressive capture rate and access to fauna that is distinct from visual search and occasional finding methods. In a sample of 108 snakes collected, we identified seven families totaling 34 species. The most abundant sampled snake species were *Boa constrictor* (16%), *Bothrops atrox* (15%), *Atractus torquatus* (7%), *Erythrolamprus aesculapii* (6%) and *Leptodeira annulata* (5%). We calculated the biogeographical resemblance coefficients in order to compare the similarity to other snake fauna studies and to other biomes. The species accumulation curve did not reach the asymptote. This indicates the need for further studies and collections in order to obtain a complete inventory of the region. The results of our study, together with analyses of other studies carried out on the region, which includes various distinct ecosystems, indicate that the Central Amazon, an almost unknown region, may be one of the richest regions of the world in snake species.

**Keywords:** Amazon, herpetofauna, richness, conservation units, funnel traps.

## Estrutura da comunidade de vespas sociais em uma área de caatinga arbórea aberta na Bahia

André Carneiro Melo<sup>1</sup> & Fábio Prezoto<sup>2</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.

<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. [fabio.prezoto@uff.edu.br](mailto:fabio.prezoto@uff.edu.br)

**Abstract. Community structure of social wasps in an arboreal caatinga area in Bahia.** The floral visitors' of the savanna entomofauna, in general, it has been a little studied, and enter the groups of more important insects in community's study they are Hymenoptera, in matter the social wasps. Although the studies of insects visitors of flowers focalize an or few species, a community perspective is important to point roads to understand the partition and competition for resources and your effects on the community's structure. In function of that, this work sought to characterize the community's of wasps social visitors of flowers of the savanna structure, identifying the vegetable species and the way of use of those resources. The field work was make of October from 2005 to September of 2006, being accomplished constituted monthly collections of two days of activities, being 10 hours of work by day. In every day of sampling, two collectors traveled along a trail which the flowery plants were inspected, where they were collected the species of social wasps that they visited the inflorescence, with an entomological net. The community of social wasps was characterized through different indexes: relative frequency, constancy and diversity ( $H'$ ) and the patterns of use of the floral resources for those insects were investigated through the comparison of the width of the trophic niches. 172 individuals of social wasps were registered, distributed in eight species. The monthly abundance of the number of individuals of wasps presented a significant variation ( $F = 169.16$ ;  $p < 0.0001$ ) and the diversity obtained in the present study it was of  $H' = 0,66$ , this diversity value was smaller than obtained them in other works with wasps in different places. That difference is due to the fact of the savanna it is subject to a wide seasonal variation. The wasps visited flowers of 26 vegetable species, of these, 11 (42%) they were visited for just an/or two individuals and 16 (61%) they were visited for just an or two species. The wasp *Polybia ignobilis* (Haliday, 1836) it visited 21 vegetable species, presenting a wider trophic niche (4.64). Already the species *Mischocyttarus cearensis* Richards, 1945 and *Brachygastra lecheguana* (Latreille, 1824), they presented the most narrow niches (0.76 and 0.67, respectively). The variation in the values of niche width for the species of wasps can be related the some factors that influence the foraging activity, as differences of the biomass of some species, that he/she reveals the capacity of I forage of these insects and the size of the population, that formed an alliance with the need of energy supply of the colony, it determines the level of consumption of the resources, what interferes in the width of forage of those species. The plasticity of those species in using countless floral sources reveals the importance of these insects in the collection of nectar of different vegetable species of the savanna, demonstrating the need of studies more perfected that seek to evaluate the efficiency of the social wasps in the process of pollination of the plants.

**Keywords:** Polistinae, sazonalidade, trophic niche, Caatinga, Bahia.

## Estudo etnobiológico comparativo do conhecimento popular de pescadores em diferentes regiões do litoral brasileiro e implicações para a conservação do boto-cinza *Sotalia guianensis* (van Bénédén, 1864) (Cetacea, Delphinidae)

Camilah Antunes Zappes<sup>1</sup>, Emygdio L. A. Monteiro-Filho<sup>2</sup> & Artur Andriolo<sup>3</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.

<sup>2</sup> Co-orientador, Universidade Federal do Paraná, Curitiba, PR.

<sup>3</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. artur.andriolo@uff.edu.br

**Abstract.** Comparative ethnobiologic study about popular fisherman knowledge in different regions of Brazilian coast and implications for conservation of boto-cinza *Sotalia guianensis* (van Bénédén, 1864) (Cetacea, Delphinidae). This study has as objective to describe and evaluate the state of knowledge, practice and beliefs of artisanal fishermen related to boto-cinza, besides to obtain information about the ecology and to describe the behavioural patterns exhibit by the species based on the informations of the fisherman and identify the relation between them and the boto during the fishery activities. The work was realized on the extreme south of the state of Bahia, at municipality of the Prado on the Fisherman's Colony Z-23 and Nova Viçosa on the Fisherman's Colony Z-29, on the state of Espírito Santo on the region of Barra do Riacho, municipality of Aracruz, on the Fisherman's Colony Z-7; at the state of Rio de Janeiro, at Baía de Sepetiba on the Fisherman's Colony Z-15 and on the extreme south of the state of São Paulo, on the area of the Complexo Estuarino-Lagunar of Iguape-Cananéia on the Fisherman's Colony Z-9. The informations were collected between the months of september of 2005 to april of 2006. We made 100 interviews with the fishermen, 20 on each fisherman community. The informations were collected through a pattern-questionnaire previously elaborated. We selected 77 informers that clearly identified *S. guianensis* through of characteristics defined by fishermen considering: color, length of the body, general behaviour and locality of occurrence of animals. We analysed the data concerned to fisherman participation at environment education, time of fishing on the local, local of fishing (sea, river, estuary), artifact or fishing's arts, boats, autonomy in the sea (embarkation's days). Whole data was submitted to statistical tests of Kruskal-Wallis and Mann-Whitney (BioEstat 2.0). The results showed that the artisanal fishing activities permit easy identification of boto by fishermen and also that they have some knowledge about its ecology and behaviour. There are positive interactions related to the fact of the animals aid the fishermen during the fishing and also negative interactions where the animals scare the fishes. The informers can distinguish juveniles individuals of adult through color, length of body and observation of the behavioural patterns. We registered incidental capture of the boto, caused by nets of wait used on the fishing. This captures are more frequent on the area of the 'open sea', occurring also on the bar, beach, estuary, coast and bay. The carcass that are found can be eaten; used like bait in the shark fishing or are discarded. In spite of capture occurrence there aren't apparent conflicts on the vision of the fishermen between their activity and the boto. This results intend to contribute to the conservation of the boto-cinza on the specific areas, together with the participation of the local population, subsidizing others works and proposals of the management to the diminution of the impacts about the populations of the species.

**Keywords:** boto-cinza, artisanal fishermen, behaviour, interaction, ethnobiology.

**Influência do nematóide entomopatogênico *Heterorhabditis indica* LPP1 (Poinar, Kranukar & David, 1992) (Rhabditida, Heterorhabditidae) sobre a biologia reprodutiva de fêmeas engurgitadas de *Boophilus microplus* (Canestrini, 1887) (Acari, Ixodidae)**

Edilena Rodrigues da Silva<sup>1</sup> & John Furlong<sup>2</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG. edilenars@yahoo.com.br

<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. john@cnpqgl.embrapa.br

**Abstract.** Influence of the entomopathogenic nematode *Heterorhabditis indica* lpp1 (Poinar, Kranukar & David, 1992) (Rhabditida, Heterorhabditidae) on the reproductive biology of engorged females of *Boophilus microplus* (Canestrini, 1887) (Acari, Ixodidae). The cattle tick *Boophilus microplus* (Canestrini, 1887) (Acari: Ixodidae) is an ectoparasite associated with various diseases that can reduce animals' production or even cause their death. The main control method is application of carrapaticides, which can lead to resistant tick populations. Entomopathogenic nematodes have been indicated as excellent candidates for biological control of insects, and recent studies have shown their efficacy against ticks. The objective of this study was to assess the effects of the LPP1 isolate (from the city of Monte Negro, Rondônia, Brazil) of the species *Heterorhabditis indica* (Poinar, Karanukar & David, 1992) on the reproductive biology of ingurgitated *B. microplus* females. Different nematode concentrations were tested, with 75, 150, 300, 600, 1200, 2400 and 4800 infective juveniles dispersed in distilled water per female. Each group of 30 females was separated into six Petri dishes containing sand, each with five females, for a total of eight groups including the control. [I am guessing here because there are 7 concentrations and 8 groups.]. The Petri dishes were then kept in a climate controlled chamber at  $27 \pm 1^\circ\text{C}$  and UR>80% for 48 hours. After the exposure time, the females that were still alive were placed individually in plastic cups and observed daily until the last one died. The start and end of laying was observed for females that laid eggs, and the date of death and post mortem aspect were noted for all females. The other parameters recorded were initial weight, pre-laying period, laying period, survival period, egg mass weight, change in weight and final weight of the female ticks, egg incubation period (EIP), larval hatching rate (%HR), egg production index (EPI), nutritional index (NI) and control percentage (%C). There were no differences observed in the initial weight and pre-laying period between the control group and all the treatments. There was a difference in the final weight of the control group and treated groups, but none among the treatments. In relation to female weight and nutritional index, there was a difference between the control group and treated groups, which increased as the concentration of infective juveniles went up. There was an evident reduction in the treated groups both in laying period and survival period. The egg mass and hatching percentage were smaller in the treated groups. The egg production index was similar in the control group and the treated group with the lowest concentration, and different for the other concentrations. All the treatments with nematodes showed efficacy greater than 95% in controlling the ticks.

**Keywords:** *Heterorhabditis indica*, *Boophilus microplus*, biological control, entomopathogenic nematodes.

**Helminths of *Cerdocyon thous* Linnaeus, 1766 (Carnivora, Canidae) in the region of Juiz de Fora, Minas Gerais**Fabrício Horta Duarte<sup>1</sup>, Sueli de Souza Lima<sup>2</sup> & Fábio Prezoto<sup>3</sup><sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.<sup>2</sup> Co-orientadora, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG.<sup>3</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. [fabio.prezoto@ufjf.edu.br](mailto:fabio.prezoto@ufjf.edu.br)

**Abstract. Helminths of *Cerdocyon thous* Linnaeus, 1766 (Carnivora, Canidae) in Juiz de Fora region, Minas Gerais State.** The crab-eating fox (*Cerdocyon thous*) is a neotropic canid that has twilight and nocturnal habits and is widespread over Brazilian territory. This work aimed to enhance the knowledge on taxonomy of helminth species occurring in *C. thous*. Six *C. thous* specimens had been captured after dying on Juiz de Fora roads (Minas Gerais state) and were analyzed between 2001 and 2004. The helminthes were collected and stored in both dry and wet ways. For specific identification the helminthes were disposed in permanent and temporary assemblies. A total of 468 helminthes were found and identified as following: *Angiostrongylus vasorum* (Baillet, 1866) Kamensky, 1905 (Nematoda, Angiostrongylidae), a prevalence of 50% (P=50%), mean abundance of  $4 \pm 4.47$  (MA =  $4 \pm 4.47$ ), mean intensity of  $8 \pm 3.00$  (MI =  $8 \pm 3.00$ ) and spatial distribution aggregated (ID = 5.70 and K = 0.36); species is secondary in this community being found in heart and lungs of three hosts; *Platynosomum illiciens* (Braun, 1901) Kossack, 1910 (Digenea, Dicrocoeliidae) (P = 16.7%; MA =  $6 \pm 14.69$ ; MI = 36) in liver of one host, and this species is satellite in this community, found in one host, *Ancylostoma buckleyi* Le Roux and Biocca, 1957 (Nematoda, Ancylostomatidae) (P = 33.4%; MA =  $2 \pm 3.09$ ; MI = 6) and spatial distribution aggregated (ID = 0.57; K = 6.32), and this species is secondary in this community, found in small intestine and stomach of two hosts, *Pterygodermatites affinis* (Jägerskiöld 1904) Quentin, 1969 (Nematoda, Rictulariidae) (P = 66.7%; MA =  $5 \pm 7.64$ ; MI =  $7.5 \pm 8.5$ ) show spatial distribution aggregated (ID = 0.56 e K = 0.44), and this species is central in this community, being found in intestine and stomach of four hosts, *Athesmia heterolecitodes* (Braun, 1899) Looss, 1899 (Digenea, Dicrocoeliidae) (P = 33.4%; MA =  $59.83 \pm 140.76$ ; MI =  $179.5 \pm 236.88$ ) and this species is secondary in this community, registered parasitizing the liver of two hosts and one species of Capillariidae family non-identified in one host. This study is the first record of *A. heterolecitodes*, *P. affinis*, *P. illiciens* in *C. thous*.

**Keywords:** *Cerdocyon thous*, *Platynosomum illiciens*, *Athesmia heterolecitodes*, *Pterygodermatites affinis*, *Ancylostoma buckleyi*, *Angiostrongylus vasorum*.

## **Oligochaeta (Annelida, Clitellata) em riachos de baixa ordem do Parque Estadual de Campos do Jordão**

Guilherme Rossi Gorni<sup>1</sup> & Roberto da Gama Alves<sup>2</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.

<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. [gama.alves@ufjf.edu.br](mailto:gama.alves@ufjf.edu.br)

**Abstract. Oligochaeta (Annelida, Clitellata) in low order streams of the Parque Estadual de Campos do Jordão (São Paulo, Brazil).** This study aims to survey species and to better understand the spatial distribution of the Class Oligochaeta in low order streams at Campos do Jordão State Park (PECJ) in the state of São Paulo, Brazil. For this purpose, three aspects were examined and presented as chapters in this dissertation: 1) a survey of the variety of Oligochaeta; 2) spatial and temporal distribution of Oligochaeta species; 3) mesoscale distribution (mesohabitats) of Oligochaeta species. Samples of the fauna were collected between May 2005 and May 2006 in stretches of Galharada, Campo do Meio and Serrote streams using a Surber sampler. In general, our results indicate that: 1) despite the peculiar characteristics of PECJ's low order streams, the Oligochaeta fauna was considered quite rich; 2) the use of fine techniques in sample processing resulted in satisfactory sample coverage, making this use necessary for surveys of Oligochaeta species in environmental conservation areas; 3) apparently, the main factors influencing the Oligochaeta community composition are hydrological processes in the streams and food intake; 4) Tubificidae species showed greater affinity for non-flowing habitats with organic debris, while Naididae species showed greater affinity for flowing habitats where vegetable debris are retained. Our findings point to the importance of maintaining preserved areas for the conservation of biodiversity, as any alteration to these environments may cause drastic losses in the communities' composition.

**Keywords:** Oligochaeta, low order streams, species inventory and distribution patterns, Campos do Jordão State Park.

**Variação estacional das populações de protozoários ciliados (Protista, Ciliophora) do rúmen de ovinos (*Ovis aries* L.) mantidos em pastagens naturais no semi-árido de Pernambuco, Brasil**Isabel Martinele Corrêa<sup>1</sup> & Marta D'Agosto<sup>2</sup><sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. marta.dagosto@ufjf.edu.br

**Abstract. Seasonal variation of ciliate protozoan populations (Protista, Ciliophora) of ovine rumen (*Ovis aries* L.) maintained in natural pastures at semi-arid of Pernambuco, Brasil.** The ciliate protozoan of the rumen are part of the ruminal microbiota, and together with bacteria, fungus and flagellate protozoa, they participate of the fermentative digestion of ruminants. However, there are controversial aspects about the role of these microorganisms in the metabolism of the host, in part due to the complexity of the population dynamics, and also to the interrelations among protozoan, host and other ruminal microorganisms. The objective of this work was to characterize the ciliate protozoa populations in the rumen of Santa Inez crossbred sheep, verifying the effects of the seasonality and also aspects related to the diurnal changes of these populations. We used five sheep fistulated in the rumen, maintained in natural pasturage of caatinga (scrubland) vegetation at Pernambuco state, Brazil. The samples were collected in July 2005 (rainy season) and January 2006 (dry season). The composition of animals diet was determined through the extrusa analysis. The samples were obtained at intervals of two hours, being the first sample taken before the releasing of the animals (T0), in a total of six samples, noted as T2, T4, T6, T8 and T10. The feed composition of the sheep during the rainy season was predominantly composed of herbaceous species, and at the dry season by shrub species, denoting the seasonality effect on sheep feed habits. It was identified and quantified *Dasytricha*, *Diplodinium*, *Diploplastron*, *Entodinium*, *Eodinium*, *Elytroplastron*, *Enoploplastron*, *Epidinium*, *Eremoplastron*, *Eudiplodinium*, *Isotricha*, *Metadinium* e *Ophryoscolex*. *Eodinium* and *Enoploplastron* were observed just at the rainy season. *Diplodinium*, *Elytroplastron*, *Metadinium* and *Ophryoscolex* didn't show variations in the population concentration as a function of the season. It was observed the predominance of *Entodinium* at both seasons; however, at the dry season it was noted significant decrease in the concentration of this genus, and increase in greater Ophryoscolecidae and Isotrichidae. The total number of protozoa was significantly reduced during the dry season. *Diploplastron* and *Entodinium* showed variations in their populations concentrations, due to the time of sampling. The number of ciliates undergoing division was not correlated with the sampling times. Stable division rate appears to contribute to maintenance of ciliates concentrations in the rumen. The ruminal pH was negatively correlated with sampling times, and was not correlated with the number of protozoa, probably because the variations observed included parameters considered ideal for establishment and maintenance of protozoa populations of rumen. It was observed predatory behavior of *Elytroplastron* on *Enoploplastron*, *Epidinium* and *Entodinium*; besides cannibalism between *Elytroplastron*. The registration of fiber ingestion and starch granules formation at the cytoplasm indicates cellulolytic and amilolytic activities, attributed to these microorganisms in the ruminal environment.

**Keywords:** Caatinga, dry season, rainy season, ciliates protozoa, diurnal changes.

**Comportamento de gatos domésticos (*Felis catus* Linnaeus, 1758):  
orquiectomia e desenvolvimento**José Olimpio Tavares de Souza<sup>1</sup>, Gelson Genaro<sup>2</sup> & Artur Andriolo<sup>3</sup><sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.<sup>2</sup> Co-orientador, Centro Universitário Barão de Mauá, Rua Ramos de Azevedo, 423, Jd Paulista, 14090-180, Ribeirão Preto, SP<sup>3</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. artur.andriolo@ufjf.edu.br**Abstract. Behavior of domestic cats (*Felis catus* Linnaeus, 1758): orchiectomy and development.**

Domestic cats (*Felis catus*) are becoming increasingly popular. The process of domestication of cats has been unique. It is believed that cats underwent a "self-domestication," i.e., that humans did little or nothing to influence those changes. Male cats develop until they are 12-month-old, a period that corresponds to puberty. As cats' behavior is sexually dimorphic, one may expect that, if patterns of behavior are controlled (especially by testosterone in males), castration will alter the behavior of domestic felines. Thus, this paper aimed at deepening the knowledge of the influence of orchiectomy on the social behavior and weight gain of domestic cats. We used 25 mongrel male cats aged 4 to 11 month-old. These cats were grouped into 5 groups of 5 animals. Two groups underwent orchiectomy (supergroup A) in the period before puberty and the others formed the control groups (B). These groups underwent 2 tests for behavioral assessment, namely: the *box test*, and the *person test*. In the first test the cats were exposed to rich food whose access was difficult, while in the second test their behavior in the presence familiar and non-familiar people was assessed. The tests were carried out in periods before and after castration. The development was followed up by weighting the cats monthly and by calculating the BMI. In the *box test* we observed differences in the time of contact with the box between individuals. After the analysis of the tests, no statistical differences were found. In the *person test* we observed that the animals showed a greater frequency of affiliative behavior with familiar people. Few agonistic behavior manifestations were observed. As to weight analysis, there were no statistical differences between noncastrated and castrated cats.

**Keywords:** development, domestic cats, behavior, obesity, castration, nutrition, development.

**Sociometria e comportamento de rainhas de saúva (*Atta sexdens* Linnaeus, 1758) (Hymenoptera, Formicidae) mantidas em laboratório**Juliana de Oliveira Augustin<sup>1</sup> & Juliane Floriano Lopes<sup>2</sup><sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. [juliane.lopes@ufjf.edu.br](mailto:juliane.lopes@ufjf.edu.br)

**Abstract. Sociometry and behavior of saúvas queens (*Atta sexdens* Linnaeus, 1758) (Hymenoptera, Formicidae) in laboratory.** Knowing both biology and behavior of newly-mated founding ant queens may be extremely useful for understanding the evolutionary adaptations experienced by many social insect societies. The aim of the present study was to investigate the influence of weight loss of *A. sexdens* founding queens on the mortality and on the production of eggs, larvae, pupae and workers, during both the founding and ergonomic periods, as well as to describe the behavior repertoire performed by the queens. Individual queen weight and number of eggs, larvae, pupae and workers per colony were taken weekly. Laboratory conditions were kept in  $25 \pm 5^\circ\text{C}$ , 70 to 80 % of relative umidity and 12 hour fotoperiod. By the end of 168 days, mortality had reached 95,7% of the young queens, mainly in the pre-incubation phase (58.3% of mortality). On average, newly-mated queens weighed  $0.7 \pm 0.05\text{g}$  after the nuptial flight, losing, on average, 22.5% of weight during the founding period, and 44.7% in the ergonomic period. On average, the pre-incubation, incubation, larval and pupal phases lasted, respectively, 3, 26, 23 and 21 days. The relative frequencies of reproductive eggs, larvae and pupae in the founding period were significantly different from the ergonomic period. Forty-nine behavioral acts were identified and they could be distributed into seven categories, according to their seemingly deducible biological function. The newly-mated queens were found to be comparatively more active during the founding period, in relation to the ergonomic period. Contrary to what one could expect for Attini queens with claustral foundation, the most frequent behaviors registered for *A. sexdens* queens in this study were those related not to the care with the offspring or to the simbiotic fungus, but rather to the self-grooming. This result is a strong indication that self-grooming may function as preventing colony contamination by potential parasites, having been possibly played an important role in the establishment of the obligatory ant-fungus mutualism. Data obtained from the conclusion of this study can be used in comparative studies among ant species, eventually helping in the understanding of their evolutionary processes.

**Keywords:** leaf-cutting ants, biology, colony founding, incipient colony ergonomics, behavior, sociometry.

**Comportamento de fuga do lagarto endêmico *Tropidurus montanus* Rodrigues, 1987 (Squamata, Tropiduridae): efeitos do sexo, tamanho corporal em machos, contexto social e níveis de ameaça**

Leonardo Lopes Machado<sup>1</sup>, **Conrado Aleksander Barbosa Galdino<sup>2</sup>**  
& Bernadete Maria de Sousa<sup>3</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.

<sup>2</sup> Co-orientador,

<sup>3</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. [bernadete.sousa@ufjf.edu.br](mailto:bernadete.sousa@ufjf.edu.br)

**Abstract. Escape behavior of the endemic lizard *Tropidurus montanus* Rodrigues, 1987 (Squamata, Tropiduridae): effects of sex, male body size, social context and risk levels.** The defensive behavior of the lizard *Tropidurus montanus* was studied at Serra do Cipó, Minas Gerais State, Brazil. Lizards were searched systematically through site study and then attached as they were sought. Attacks were performed by two ways. First, the simulated predator attack was walk directly towards the lizard. In other moment attacks were carried by two ways of simulation: by walking directly towards the lizard (high predation risk) or by walking slowly near but tangentially to the lizard (low predation risk). All exhibited behaviors were recorded during handling as well as approach and flight distances. Lizards relied on crypsis as the primary strategy of defense, using locomotor escape as secondary strategy. The first step was to analyze the effects of sex on the maximum flight distance and the effects of male body size and social context in maximum flight distance and time of flight. Males and females did not differ in maximum flight distance. Males with or without a nearly neighbor did not differ in maximum flight distance, but males close to neighbors increased time spent in flight. We found no effect of male body size on maximum flight distance neither for the duration of flight. During capture lizards exhibited threat display, bite, tail waving, tail brake, thanatosis, force freeing, inflate the body and cloacae discharge. In the second step we analyzed the variation in flight and approach distances, as well as destination substrates under two different levels of predation risk. Individuals that were submitted to high and low risk of predation did not differ in approach distances. As for flight distances, individuals that were exposed to attacks with high predation risk traveled shorter distances when compared with that exposed to attacks with low risk level. Destination substrates were similar in both groups. Lizards preferred the same stone that they were before as flight destination, returning to crypsis after. *T. montanus* did not use refuges as main flight tactics. Individuals prefer run short distances and return to crypsis. They tend to be more exposed or flee later, allowing similar approaching distances and avoiding losing unnecessary energy. Stay more may be advantageous to *T. montanus* because one precipitated flight can incurs in energetic costs and consequently decreasing optimal body conditions. To *T. montanus* traveling short distances, returning to crypsis and keeping vigilant keeps the predator under vigilance being sufficient to mislead it, additionally reducing energetic costs associated to flight. On the other hand, spend energy in a longer flight, to mislead the predator and guarantee survival may be an advantageous tactic when an attack does not impose a real mortality risk.

**Keywords:** Attack, *Tropidurus*, approach, flight, cripticity.

## Contribuição para o estudo da biologia de tripanossomas em anuros neotropicais

Moara Lemos<sup>1</sup> & Marta D'Agosto<sup>2</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.

<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. marta.dagosto@ufjf.edu.br

**Abstract.** Contribution to the study of the biology of trypanosomes in neotropical anurans. The present research had as its main goal, checking the infection through trypanosomes in Anuran around Mato Grosso and Rio de Janeiro States. For that purpose 20 species from Bufonidae, Microhylidae, Hylidae and Leptodactylidae families were collected during the fauna rescue activities at Guapore Power Station the border of Vale de São Domingos, Pontes Lacerda, MT and in Seropédia County, at the Rural Federal University Campus in Rio de Janeiro, RJ. Trypanosomes were found in blood smears and organs impressions in 36% of the *Osteocephalus* sp. studied hosts, 50% of *Leptodactylus chaquensis*, 100% of *Leptodactylus fuscus*, 100% of *Leptodactylus lineatus* and 100% of *Leptodactylus ocellatus*. Pleomorfism was verified on the founded species, splitting into *Trypanosoma* sp.1, *Trypanosoma* sp.2, *Trypanosoma chattoni*, *Trypanosoma rotatorium* (*lato sensu*) and *Trypanosoma* sp.3 that exhibit high pleomorphism. Peripheral blood samples were inoculated through diphasic blood Agar and LIBHIT-K, liquid fase. Isolates of *Trypanosoma* sp.3 were obtained from three out of four collected hosts. Trypanosomes were observed 4 days after the inoculation, kepted in cultures for 8 months and samples were taken for ultrastructural analysis. Epimastigotes, sphaeromastigotes and trypomastigotes were the culture forms founded. Binary fission was noticed in epimastigotes and in sphaeromastigotes only, trypomastigotes were not observed in reproduction. The ultrastructural analysis of *Trypanosoma* sp.3 confirmed its singularity through morphological characteristic such as elongated glicosomes. This research accomplishes its first record of the infection through trypanosomes in the Anuran *Osteocephalus* genre and in the species of *Leptodactylus fuscus*, *Leptodactylus lineatus* and the presence of *T. chattoni* in the *Leptodactylus* species in Brazil. The usage of LIBHIT-K as an effective mean for *Trypanosoma* sp.3 maintenance and the first records of ultrastructure anuran trypanosomes in Brazil.

**Keywords:** *Trypanosoma chattoni*, *Trypanosoma rotatorium*, morphology, isolation and maintenance, ultra-structure.

**Distribuição espacial e temporal de oligochaeta e insetos aquáticos na sub-bacia do Córrego São Pedro, Juiz de Fora, Minas Gerais, Brasil**Nilo Nélio Caixeiro Stephan<sup>1</sup> & Roberto da Gama Alves<sup>2</sup><sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. [gama.alves@uff.edu.br](mailto:gama.alves@uff.edu.br)

**Abstract.** The spatial and temporal distribution of aquatic Oligochaetes and insects of Córrego São Pedro Subbasin, Juiz de Fora, Minas Gerais, Brazil. In order to obtain information about the spatial and temporal variation of Oligochaeta fauna and aquatic insects and to use this information to characterize the environmental quality of Córrego São Pedro Subbasin (which is part of the drainage basin of Paraibuna River, Juiz de Fora city, Minas Gerais state, Brazil) we collected sediment samples at 5 spots along the course of this river. Sampling was carried out between May 2005 and May 2006, and we gathered a total of 143359 species distributed among 88 taxa. Oligochaeta were represented by 4 families (Tubificidae, Naididae, Opistocystidae, and Enchytraeidae) and 29 species. The Tubificidae family, the most abundant one, was composed of 7 species, among which *Limnodrilus hoffmeisteri* was the most representative in number. Immature individuals made up 57% of the total Tubificidae fauna. Insects were represented by 26 families, among which Chironomidae was the most abundant. Individuals from the genus *Chironomus* made up 98% of the entomofauna. The results of the non-parametric Kruskal-Wallis test showed a significant difference ( $P < 0.05$ ) in composition and structure of the fauna between collection spots. The Wilcoxon signal test indicated a significant difference ( $p < 0.05$ ) for the fauna during dry and rainy periods. Faunistic structure and composition, as well as the physical and chemical variables analysed showed the existence of anthropic impacts and changes in Córrego São Pedro Subbasin.

**Keywords:** Oligochaeta, Chironomidae, aquatic insects.

## Aspectos do parasitismo por carrapatos em Passeriformes na microrregião de Juiz de Fora, Zona da Mata de Minas Gerais

Patrícia Oliveira Costa Fazza<sup>1</sup> & Erik Daemon<sup>2</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.

<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. erik@artnet.com.br

**Abstract. Aspects of parasitism by ticks in Passeriformes in Juiz de Fora, Zona da Mata of Minas Gerais.** The objective of the present study was to analyze aspects of the interaction between wild ticks and birds, correlating some variable (corporal mass, time of collection, habitat), with parasitologicals data (prevalence, average abundance, local average intensity and of infestation). The collections had been carried through in particular country property in one break up of located secondary Atlantic Mata in the southwestern region of the city of Coronel Pacheco, MG, in the months of January and February (summer or rainy station), and July and June (winter or dry station), of the year of 2006. After carried through the collections of the ectoparasites the birds were set free. The analyzed hosts had been grouped in categories (species, family and habitat), and compared between itself, inside of the categories. For the comparison for habitat, the birds had been separate in: trunk and foliage, soil birds. We captured 489 of birds, being 251 captures in summer and 238 in the winter. The most abundant species in both the stations was *Platyrinchus mystaceus*, with 46 and 36, respectively. The period of the winter had greater number of species. The Tyrannidae family was represented by 93 individuals in the captures of summer and 75 in winter. Each station had eight families with 10.152 birds of foliage in the summer had been captured and 124 in the winter, while of soil they had been 102 and 87 and of trunk had been 12 and seven. The data of the infestations gotten in the winter had been superior to the ones of the summer. Fact confirmed by Mann-Whitney test, that indicated significant difference for all the analyzed species, families and habitats. The  $\chi^2$  test showed that there is no uniformity in the distribution of ticks, comparing species, families or habitats. The correlation between the corporal mass and the number of ticks was significant, in the collections of summer, only for *Basileuterus culicivorus*, Dendrocolaptidae and Parulidae. In the winter collections, the significance occurred only for Furnariidae and the species of foliage and trunk. The coefficients indicate a negative correlation ( $r_s < 0$ ) for *B. culicivorus* and the Parulidae family in the summer and for species of trunk, in the winter, with reduction of body mass with the increase in the number of ticks. Already for Dendrocolaptidae in the summer and Furnariidae and birds of foliage, in the winter, the correlation was positive ( $r_s > 0$ ), indicating the increasing tendency of number of ticks with the weight increase. Regarding different places of the body, the highest percentages, in the samples of the summer and the winter, had been found in regions of the head, to put, the highest percentage in accordance with varied the station of the year. In the summer the highest percentage was for periocular region (41%), in the winter was in the nape of the neck (63%). The majority of the families followed the total trend.

**Keywords:** birds, ticks.

**Efeito do nematóide entomopatogênico *Steinernema glaseri* (Steiner, 1929) (Rhabditida, Steinernematidae) isolado Santa Rosa sobre os parâmetros biológicos de ninfas ingurgitadas de *Amblyomma cajennense* (Fabrícus, 1787) (Acari, Ixodidae)**

Ricardo Nunes Cardoso<sup>1</sup> & John Furlong<sup>2</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.

<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. john@cnpqgl.embrapa.br

**Abstract.** Effect of entomopathogenic nematode *Steinernema glaseri* (Steiner, 1929) (Rhabditida, Steinernematidae) strain Santa Rosa on biological parameters of ingorged nymphs of *Amblyomma cajennense* (Fabrícus, 1787) (Acari, Ixodidae). *Amblyomma cajennense* (Fabrícus, 1787) (Acari, Ixodidae) is an ectoparasitic of horse, widely distributed in south and central America. The indiscriminate use of acaricides has taken this animals population to a critical resistence to drugs and the exclusive use of acaricides is just viable in pratical and economical terms making necessary the search for alternative control method. The nematodes entomopathogenic has being indicated as sucessfull agents to ticks control, however is lower the number of the studies about that, the target was to analyse the potential of *Steinernema glaseri* strain Santa Rosa as biological agent control of *A. cajennense*. The experiment was made at EMBRAPA GADO DE LEITE, Parasitology Laboratory – Juiz de Fora (MG), between october of 2005 and january of 2006. Has been tested differents concentrations of *S. glaseri* (0, 156, 325, 650, 1250, 2500, 5000 e 10000 infectives juveniles (IJ)per tested unity (UT). Each one of this treatment was composed by 10 UT created in Petri dish sterilized, 4 ml of destilated water and 10 nynphs in total of 100 types for treatment. The Petri dish was closed with parafilm and kepted in BOD (27±1°C and RH>80%) for 72 hours. After that period the engorged nynphs of *A. cajennense* were washed with destilated water and removed to a Petri dish without sand or IJ and observed 24±1 hour during 20 days, with the objetive to observe alterations in biological parameters: ecdysis period (EP), pre-ecdysis period (PEP), ecdysis percentual (%Ec), and mouthing period (MP). Each parameter was analysed over adults connections, comprising male and female and for each sex separated by tested unities. The statistic data treatment was done with Variance Analyse, Tukey-Kramer Test, Kruskal-Wallis and Dunn's (p<0.05). On the treatment with 5000 IJ/UT there was a significant reduction of PEP totally, such as MP, in connections with control and considering only the males. The MP had suffer the significant reduction too. On the treatment with 10000 IJ/UT there was a significant increase of PEP totally and the EP totally was reduced highly expressive in this treatment by connection with control. The male ecdysis period had present a significant increase in four of the seven treatments (treatments with 156, 612, 2500 and 5000 IJ). The mortality such as the percentual reduction of ecdysis just was significant on the treatment with 10000 IJ/UT. Until without genital hole of *A. cajennense* nynphs, *S. glaseri* was able to make the deleterious action in concentration up 5000 IJ/UT. The treatment of 5000 and 10000IJ/UT was deleterious by determined process of no parasitary phase of *A. cajennense*. However new studies are necessary, *in vitro* yet, with superior doses than 10000 IJ/UT, this dose is considered satisfactory for females ingorged of *Boophilus microplus*.

**Keywords:** ticks control, biological control, entomopathogenic nematoda.

**Protistas Ciliados (Protista, Ciliophora) encontrados no Córrego São Pedro (Bacia do Rio Paraibuna), município de Juiz de Fora, Minas Gerais: taxonomia, morfologia, biomonitoramento e relações epibióticas**

**Roberto Junio Pedroso Dias<sup>1</sup>, Alfredo Hannemann Wieloch<sup>2</sup>,  
Inácio Domingos da Silva-Neto<sup>3</sup> & Marta D'Agosto<sup>4</sup>**

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.

<sup>2</sup> Co-orientador, Departamento de Zoologia, ICB, Universidade Federal de Minas Gerais, Pampulha, 31270-901, Belo Horizonte, MG, Brasil. wieloch@mono.icb.ufmg.br

<sup>3</sup> Co-orientador, Departamento de Zoologia, CCS, Universidade Federal do Rio de Janeiro, Ilha do Fundão, 21941-590, Rio de Janeiro, RJ, Brasil. idsnet@biologia.ufrj.br

<sup>4</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. marta.dagosto@uff.edu.br

**Abstract. Ciliate Protists (Protista, Ciliophora) from São Pedro stream (Paraibuna Bay River), in the municipality of Juiz de Fora, Minas Gerais: taxonomy, morphology, biomonitoring and epibiotic relations.** In the present study, both taxonomy and morphology aspects of the ciliate protists found in São Pedro stream (Juiz de Fora-MG), as well as their potential as water quality indicators were studied together with the ecological aspects of the epibiotic relation between the ciliate and some benthic macroinvertebrates. In chapter 1, the survey of ciliate protists was obtained from samples of water and sediment from the stream, during a hole year, and the succession of these protists was observed in laboratory. Forty-two ciliate species were identified and *Apoamphisiella* sp. n. was morfologically characterized. In chapter 2, mirror-image doublet was described in *Gastrostyla setífera*. The Chapter 3 registers the presence of *Neobursaridium gigas* in the stream and presents a revision of the morphological aspects of this ciliate, as well as its ecological and geographical distribution. In chapter 4, the influence of the organic pollution on both the composition and the distribution of the taxocenose of ciliate protists along the stream had the aim of evaluating the water quality of this lotic system. During the one year study 39 ciliate protist species were found. The composition and the distribution of the taxocenose of ciliate protist varied both spatial and seasonally. The saprobic index and the valency methods were used to evaluate the water quality. Our results confirm that the organic load in watercourses may be a dominating factor capable of influencing the composition, distribution and trophic structure of the taxocenose of ciliate protist. The following chapters consider the epibiotic ciliate protist associations to mollusks, oligochaetes and insect larvae. In chapter 5, seven ciliate species were registered on the shells of *Pomacea figulina*, six of which belonging to the subclass Peritrichia and one belonging to the subclass Suctoria. Results are discussed in terms of the advantages and disadvantages of this relationship from the ciliate protist point of view, together with the ecological aspects involved in this association. In chapter 6, location ranch and both spatial and temporal distribution patterns of *Rhabdostyla* peritrichids were found colonizing limnic oligochaetes Tubificidae of the species *Limnodrilus hoffmeisteri* in the five amostral stations, during 11 months of collection. The occurrence pattern of the epibionts on the oligochaetes was spatial and seasonally heterogeneous. Finally, chapter 7 registers the occurrence of *Rhabdostyla chironomi* on *Chironomus decorus* larvae in the stream.

**Keywords:** biomonitoring, ciliates, epibiose, morphology, lotic system.

**Atividade anti-malária da 4-(9H-Purina-6-Ylthio)-7-Cloroquinolina em *Gallus gallus* Linnaeus, 1758 experimentalmente infectados por *Plasmodium (Novyella) juxtannucleare* Versiani & Gomes, 1941 (Apicomplexa, Plasmodiidae)**

Usha Vashist<sup>1</sup> & Marta D'Agosto<sup>2</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Biológicas: Comportamento e Biologia Animal, Universidade Federal de Juiz de Fora, MG.

<sup>2</sup> Orientador, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, MG. [marta.dagosto@ufjf.edu.br](mailto:marta.dagosto@ufjf.edu.br)

**Abstract.** Anti-malaric activity of 4-(9H-purin-6-ylthio)-7-cloroquinoline in *Gallus gallus* Linnaeus, 1758 experimentally infected by *Plasmodium (Novyella) juxtannucleare* Versiani & Gomes, 1941 (Apicomplexa, Plasmodiidae). *Plasmodium juxtannucleare* is the agent of the avian malarial that happens in several states of Brazil. This malaria is related to several clinical signs and it can cause damages in the poultry section. The model aviary was already used for the investigation of drugs in the combat to the malaria and nowadays the model more used is the *Plasmodium berghei* in rodents. The aim of this study was to accomplish experimental infections of *P. juxtannucleare* in *G. gallus* and to test a substance recently synthesized, the 4-(9H-purin-6-ylthio)-7-cloroquinoline, derived of the cloroquine, to verify their effects on the avian malarial and to improve the model aviary for these types of tests. For a bird donor's encounter, blood smears were made in 30 hens, with a prevalence of 100%. To verify which the best day to retreat the blood for infected hens, five of the six hens received in only dose the imunossupressor substance and one served as control. The parasitaemia was accompanied by 26 days after the day of the imunossupression, through blood smears. It was verified that at 10th day powder-imunossupression happened parasitaemia pick. There were fall of body weight, correlation with the parasitaemia and low variation in the body temperature and hematocrite but there was not correlation of these with the parasitaemia. In other eight acquired hens (15 days old), experimental infections were accomplished with blood inoculated through intramuscle and intraperitoneal. During one month the hens had the value of parasites accompanied to compare which the most effective route and difference among the doses tested in the establishment of the infection. Significant difference was not observed among the doses but it was possible to verify that the infection through intraperitoneal reaches the parasitemia pick more quickly, with higher averages of parasites, however to the end of the experiment the total number of parasites differed hardly between the doses and routes. To test the effect a derived drug of the cloroquine, 45 chicks were infected through intramuscle route. The hens were separate in four experimental groups, 15 chicks for group (Group 1 - no infected, Group 2 - infected and without treatment, Group 3 -infected and treated with the cloroquine and Group 4 - infected and treated with derived of the cloroquine) The drug was administered by four consecutive days in the 100mg/Kg of alive weight dose. For the evaluation of the antimalarial effect of the drug, the hens had the number of parasites accompanied by blood smears done each two days after the tenth day of the inoculation. Also the weight and corporal temperature were checked each two days and hematocrit each four days. Derived of the cloroquine had antimalarial activity, reducing the number of parasites and maintaining the lowest parasitaemia in relation to the group not treated and to the group treated with cloroquine.

**Keywords:** antimalarials, cloroquine, avian malarial.