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Nepomorpha and Gerromorpha (Insecta: Heteroptera) from the Serra da Canastra, southwestern Minas Gerais state, Brazil

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Abstract

Water-bug species collected at several sampling sites at the Parque Nacional da Serra da Canastra, southwestern Minas Gerais state, Brazil, are listed. Habitat preferences are described and comments on taxonomy, geographic distribution and ecology of several species are also presented.

Key words: Heteroptera, Gerromorpha, Nepomorpha, habitat preference, Minas Gerais, Brazil.

Introduction

Insects are important members of aquatic environments and among them are the aquatic and semi-aquatic insects confined to freshwaters. Records of the geographic distribution, habitat preferences and other basic biological and ecological information on the aquatic and semi-aquatic Heteroptera found in the state of Minas Gerais are rare and several features remain for further consideration (Vianna & Melo, 2003; Goulart et al., 2003; Melo & Nieser, 2004). Nevertheless, taxonomic knowledge concerning aquatic and semi-aquatic Heteroptera from Minas Gerais state is increasing (Nieser, 1994; Nieser & Melo, 1997, 1999a, b; Nieser et al., 1997, 1999; Nieser & Polhemus, 1999; Nieser & Lopez-Ruf, 2001; Nieser & Chen, 2002).

In November 4-12, 1997, while the rainy season had not yet started and stream water levels were relatively low, we made a short collecting trip to the Parque Nacional da Serra da Canastra in southwestern Minas Gerais state, Brazil. As far as we know of, no previous records of water bugs of this area were published other than the descriptions of some species (Nieser & Pelli, 1994; Nieser et al., 1997, 1999; Nieser & Melo, 1997, 1999a,b; Nieser & Polhemus, 1999; Nieser & Lopez-Ruf, 2001; Nieser & Chen, 2002).

Material and methods

Study Area

The Parque Nacional da Serra da Canastra (46°15´-47°00´W, 20°00´-20°30´S) is located in the municipalities of São Roque de Minas, Sacramento and Delfinópolis, in southwestern Minas Gerais state. It has an area of 71,525 ha, with elevations varying from 900 m to 1,496 m a.s.l. The park protects the sources of the São Francisco river but also encompasses part of the basins of the Paranaíba and Grande rivers, which form the Paraná river that reaches Argentina. The maximum and minimum absolute temperatures in the region are 34°C and 0°C, respectively, with winter and summer averages of 17°C and 23°C, respectively. Fifty per cent of the precipitation is concentrated in December, January and February and the year is divided in two seasons: a rainy summer and a dry winter. The predominant vegetation is the "campo limpo" (open field), but different forms of forest and rocky fields are present.

Sampling was carried out in habitats considered representative for Heteroptera and to account for the ecological diversity of the aquatic sources within the Serra da Canastra (Table 1). Types of habitats where insects were collected were coded as shown in Table 2.

The insects were collected with entomological hand-nets, sweeping the water column, edges and bottom of water sources and, occasionally, through the inspection of the aquatic vegetation. The collected material was emptied into a plastic tray where the insects were sorted from organic matter, picked out and transferred to vials containing 80°GL ethanol for further identification.

Species identification was done basically according to Nieser & Melo (1997) and sampled material was deposited in the Entomological Collection of the Taxonomic Collections of UFMG (Currently housed at the Department of Parasitology of the Universidade Federal de Minas Gerais, DPIC – Belo Horizonte, MG, Brazil), and in the private collections of Nieser (NCTN – Tiel, The Netherlands and of A. Pelli (PCUB – Uberaba, MG, Brazil).

Results and Comments

Fifty-five species of aquatic Heteroptera were collected during this expedition, comprising about 28% of the total

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Table 1 - Main characteristics of sampling sites where specimens of Heteroptera were collected in the Parque Nacional da Serra da Canastra, southwestern Minas Gerais state, Brazil.

Code	Description
L01	Source area of the São Francisco river. Meadows with some marsh plants but dry at visit time; narrow gullies in the soil also dried up, some plants like *Sphagnum*. **A** - 0.25 m × 0.12 m, 0.05 m deep "waterhole". **B** - Open pool, 4 m × 1 m up to 0.5m deep, rocky bottom, dark water, hyaline, no current, fed by a trickle of water. **C** - Puddle hidden under vegetation, no current, shallow large rocks.
L02	Spring of the S. Francisco river, upstream bridge, grassy vegetation, 1 m deep, 1-4 m wide, only.
L03	Source region of first tributary of the S. Francisco. Narrow stream in "campo rupestre" (rocky field), stony bottom, light brown water, clear, hardly any current. 0.3-0.5 m wide, up to 0.5 m deep.
L04	First tributary of the S. Francisco, ca. 500 m downstream of L03, slow current hidden by tall grasses and some low shrubs, banks with black peat with some mosses, bottom with fine black mud, low water level (based on moss growth), free water 0.3–0.5 m deep, soft bottom, 0.5–0.7 m wide
L05	Spring of the S. Francisco at bridge, approximately 50 m downstream to 500 m upstream from bridge. Upstream – 0.5–1 m wide and deep, exposed, bottom without stones. Downstream – stream becomes slightly wider and the bottom stony, pothole on bridge.
L06	Tributary stream of the S. Francisco river, ca. 4 km east to fork road Casca d'Anta waterfall. Clear mountain-stream on rock, slightly brownish-yellow water, clear, 6–8 m wide, up to 1 m deep, weak water flow, very shallow at places and with subsequently strong stream. Specimens collected at the stream edge among floating plant debris.
L07	Tributary of the S. Francisco river at lef/tright margin, just upstream of the Casca d'Anta waterfall. Gravel bottom, up to 1 m deep, slow stream, clear water, hyaline, slightly yellowish.
L08	Top of the Casca d'Anta waterfall in the São Francisco river. Much broad, 15–20 m deep, somewhat slow stream, open with only a few shrubs at the edges.
L09	Base of the Casca d'Anta waterfall in the São Francisco river. Only large rocks, large water volume
L10	About 500 m downstream of the Casca d'Anta waterfall in the São Francisco river. Boulders, stones, small pebbles and gravel. Clear light brown water.
L11	Small tributary on wooded slope (near the São Francisco river). Up to 0.7 m wide, 0.2 m deep; rocky bottom, sandy bottom with fine gravel; weak stream, without aquatic vegetation; colourless water, hyaline, shaded area.
L12	Park station downstream of the Casca d'Anta waterfall in the São Francisco river about 20–30 m wide with small islands (submerged during rains) gravel, stones, boulders, variable depth, up to over 1 m. Rest collected at edge under overhanging vegetation. Clear light brown water.
L13	South of the Serra da Canastra in the São Francisco river; broad shallow river, partly disturbed by sand or gravel, somewhat turbid water, heavy silt load. Sampling at pebbles and stones, silty strong current.
L14	Peixe-river waterfall. River (20º15'12"S/ 46º24'24"W). Pond and marsh with poids, clear light brown water, boulders. **A** - Puddle next to large boulder **B** - Stones and gravel in streambed, strong current
L15	Peixe River. Approximately 5 km upstream the town of São Roque de Minas, (east to park) at a camping site, very broad river bed (probably artificial as result of mining prospection. Original bed mostly shaded with well-developed marginal vegetation, secondary canal mostly exposed to sun, bare margins except for sparse shrubs and trees, pebbly bottom.
L16	Peixe River. At São Roque de Minas (20º14'35" S/ 46º22'13" W); strong current, heavy silt load. Mountain stream in gorge with trees, 4-10 m wide, up to 0.7 m deep, rapids, riffles; at quiet parts, water clear to turbid (depending on distance to waste outlets) and enriched (algae growth), bottom with small boulders, sand, gravel or, sometimes, only on the edges, shaded with sunny patches.
L17	Cachoeira dos Rolinhos (Rolinhos waterfall). By the waterfall. Several pools formed by stones on top, rock and strips of vegetation on sand
L18	Cachoeira dos Rolinhos. By the waterfall. Big rocks, treeless gallery vegetation.
L19	Córrego da Parida (Parida creek). Stream. Grassy gallery vegetation between 1 - 2 m wide, 1.5 m deep maximum
L20	Córrego da Parida. Stream in small stand of gallery forest. Small shaded pools connected by trickles in stream bed, sandy bottom with humus and tree roots, clear colorless water, no aquatic plants, no current, largest one 5 × 0.5 m, 0.4 m deep. Gallery forest with a few well-grown trees, mossy banks (*Sphagnum*- like) with liverworts
L21	Rio Araguari (Araguari River). River at the town of São João Batista. Just outside the park but, apart from some recreational activity, apparently little disturbance of the stream. Many different rocks, gallery vegetation with some sparse tress.
L22	Rio Araguari. River at base of waterfall up to 400 m downstream from L21, similar to L20. **A** - Pond at waterfall base. **B** - 200-400m downstream of L22a
L23	Córrego do Passageiro (Passageiro creek). Stream, downstream bridge. Brown clear water in tall grass vegetation mixed with tall herbs and a few shrubs. Sample from stagnant edge with some aquatic plants
L24	Stream at the parks west entrance. Stream in well developed gallery forest, clear colourless water, hyaline, pools (some over 1m deep) connected by trickles of water, 1 m wide on average, 0.3-0.5 m deep on average. Mostly sandy bottom with leaf litter.

Table 2 - Types of habitats where aquatic Heteroptera were collected at the Parque Nacional da Serra da Canastra, southwestern Minas Gerais state, Brazil. These habitats are referred to in the text by the codes presented here.

Code	Description
H01	Humid to wet water body bank.
H02	Wet rock at base or on waterfall sidewall.
H03	Small isolated puddle with area up to 1 m^2.
	A - Rocky pools.
	B - Other puddles.
H04	Isolated pool areas over 1 m^2.
H05	Small puddles, nearly stagnant, connected by trickles of water.
	A - In open field or with some shrubs
	B - Shaded by gallery forest.
H06	Nearly stagnant pools connected to a stream.
	A - Area 1-20m^2.
	B - Area over 20m^2
	C - Pool edge with algae or moss
H07	Narrow stream near origin(?), little or no current
H08	Stream edge with slow current (under 0.5m/min).
	A - Open water body
	B - Shallow edges, with emergent or overhanging vegetation between water and land.
	C - Edge with algae growth
	D - Shallow edge with layer of leaf litter
H09	Stream edge with distinct water flow (over 0.5m/min)
H10	Current with mainly sandy, gravely, pebbly or stony bottom
	A - Weak current, sandy or gravely bottom
	B - Strong current (riffles), gravely, pebbly/ stony bottom
H11	Midstream open water body, weak current

number of species known to occur in Minas Gerais (Nieser & Melo, 1997). They are presented in Table 3 with information on the sites and types of habitats where they were found at the park. Three species typical of mountain environments have been found in the present study: *Ranatra montei*, *Buenoa oreia* and *Tenagobia schreiberi*. Some of the poorly known species (notably *Carvalhoiella stysi* and some of the species of *Microvelia* and *Rhagovelia*) may also show to be mountain species when their ecology is better known. Remarks and comments on the ecology of some relevant species collected are presented below.

Ochterus aeneifrons surinamensis is a subspecies from Suriname (representatives of this genus are known to live in humid places, notably at the edge of water bodies. They are reported to prefer habitats directly exposed to sunlight. This may be mainly because of two of the most widespread species: *O. marginatus* Latreille (tropics and subtropics of the Eastern Hemisphere) and *O. perbosci* (Guérin) (tropics and subtropics of the Western Hemisphere) usually prefer places exposed to sunshine. Other species, especially in tropical regions live in shaded or otherwise cool places (Gapud & San Valentin, 1977; Nieser, 1975).

Carvalhoiella stysi was described based on the two specimens collected at the base of the Rio do Peixe waterfall at São Roque de Minas and one from crevices in a steep wall under the spray of the waterfall. Ambrysinae of Minas Gerais have been discussed in a paper by Nieser et al. (1999).

Cryphocricos vianai. Species of *Cryphocricos* are found in strong current in streams. So far, this species has only been found in streams around the Serra da Canastra but not in the mountains themselves. However, it is also known from several mountain streams in the Serra do Cipó, similar in size to those found in Serra da Canastra.

Limnocoris spp. Most species of this genus are widely distributed in Minas Gerais, living at the bottom of small-to-medium size streams, usually at places with constant currents but weaker than those where species of *Cryphocricos* are found. *Limnocoris maculiceps* is an exception, being found mainly in stagnant stream edges. Nieser & Lopez Ruf (2001) have discussed synonymy and specific location records in a revision of *Limnocoris*.

Ranatra montei. So far, has been collected only in mountainous areas between 800-1200 m a.s.l. in Minas Gerais Brumadinho (Retiro das Pedras, Serra da Moeda), Diamantina, Mariana, Serra da Canastra, Serra do Cipó (Nieser & Melo, 1997; Vianna & Melo, 2003; Sousa et al., 2006) and Goiás (Veadeiros, Machris Brazilian expedition – Los Angeles County Museum, California, USA –, unpublished). It is a typical inhabitant of small mountain streams with weak currents and nearly stagnant stream pools.

Neotrephes spp. Almost anything is known about their habitat preferences. They appear to be attracted to streams with little or no current associated to vegetation like Chlorophyta and Bryophyta. A recent paper by Nieser & Chen (2002) summarizes specific locality records and presents the species recently found in Minas Gerais state.

Buenoa oreia. This is also a species associated to mountain areas, so far only found in Serra da Canastra, Serra do Cipó,

Table 3 - Species of aquatic Heteroptera collected in the Parque Nacional da Serra da Canastra, southwestern Minas Gerais state, Brazil, in November 4-12, 1997. The sampling sites and types of habitats where the species were collected are given according to the codes presented in Tables 1 and 2.

Taxa	Habitats	Sites
Ochteridae Kilkardy, 1906		
Ochterus aeneifrons surinamensis Nieser, 1975.	H02	L22
Gelastocoridae Champion, 1901		
Gelastocoris flavus (Guérin - Méneville,1853)	H01	L16; L21
Montandonius angulatus Melin, 1929	H02	L14; L22
Naucoridae Fallén, 1814		
Ambrysus obscuratus Montandon, 1898	H07	L04
Ambrysus teutonius La Rivers, 1951	H03B	L09; H10B:L16
Carvalhoiella stysi Nieser, Pelli & Melo,1999	H02	L14
Cryphocricos vianai De Carlo, 1951	H10B	L09; L10; L13; L16
Limnocoris lanemeloi Nieser & Lopez-Ruf, 2001	H10A	L07, L12, L22;
	H10B	L16, L21
	H05A	L01B
	H05B	L24
	H06A	L05
	H07	L03;L08
	H08	L06
	H08B	L16; L23
Limnocoris maculiceps Montandon, 1898	H09	L21
	H10A	L09
Limnocoris pusillus Montandon, 1897	H10B	L15
	H10A	L07, L12, L22
Limnocoris saphis Nieser & Lopez-Ruf, 2001	H10B	L16, L21
	H10A	L07, L12, L22
Limnocoris submontandoni La Rivers, 1974	H10B	L16, L21
	H10A	L07, L12, L22, L16,
	H10B	L21
Belostomatidae Leach, 1815		
Belostoma aurivillianum (Montandon, 1899)	H03B	L01, L24
Belostoma testaceopallidum Latreille, 1807	H03	L01
	H07	L03
	H08	L15, L16, L21, L22
Nepidae Latreille, 1802		
Ranatra montei De Carlo, 1946	H04	L01B
	H07	L03, L05
Helotrephidae Esaki & China, 1927		
Neotrephes fragosus Nieser & Chen, 2002	H03A	L08
	H08C	L09
Neotrephes jaczewskii China, 1940	H03A	L08A
	H08B	L01
	H08C	L09
Neotrephes lanemeloi Nieser & Chen, 2002	H03A	L08
Neotrephes minutus Nieser & Chen, 2002	H08C	L09
	H03A	L08
Neotrephes plaumanni China, 1940	H08C	L09
	H05A	L01C
	H06C	L10, L17
	H08A	L08;
	H08B	L15
Neotrephes variegatus Nieser & Chen, 2002	H08C	L09
	H03A	L08
	H08C	L09
Notonectidae Latreille, 1802		
Buenoa oreia Nieser, Melo, Pelli & Barbosa, 1997	H05A	L01B, L01C
	H07	L05
Enithares braziliensis Spinola, 1837	H05A	L01C
	H05B	L11, L24
Martarega uruguayensis (Berg, 1883)	H06	L08, L14, L17, L22
	H07	L03
	H08A	L15, L16

(cont.)

(Table 3 - cont.)

Taxa	Habitats	Sites
Corixidae Leach, 1815		
Tenagobia schadei Lundblad, 1928	H03A	L17
Tenagobia schreiberi Espinola, 1975	H03A	L08, L08A L17
	H04	L01B
	H05A	L01B, L01C
	H06B	L18
	H07	L03
Tenagobia sp.	H03A	L08A; L17
Hebridae Amyot & Serville, 1843		
Hebrus sp. "obscurus group"	H03B	L09
Hydrometridae Billberg,1820		
Hydrometra argentina Berg, 1879	H03B	L09
Veliidae Amyot & Serville, 1843		
Microvelia braziliensis McKinstry, 1937	H03B	L09
Microvelia hinei Drake, 1920	H03	L01
M. mimula White, 1879	H03B	L09
	H06B	L18
M. pulchella Westwood, 1834	H06A	L17
Microvelia sp. 1	H03B	L01C, L09
	H05A	L01C
	H07	L03
Microvelia sp. 2	H03A	L01A
	H03B	L01A, L01C
	H07	L03
Microvelia sp. 3	H07	L04, L05
Microvelia sp. 4	H05A	L01C
Microvelia sp. 5	H06A	L17
Microvelia sp. 6	H07	L05
	H08A	L06
Microvelia sp. 7	H08D	L22B
Microvelia sp. 8	H05B	L11
Microvelia sp. 9	H06C	L10
	H03A	L01A
Paravelia sp.:	H05B	L20
Rhagovelia sp. indet. crassipes-group	H05B	L24
Rhagovelia hambletoni Drake, 1858	H08A	L15
Rhagovelia paulana Drake, 1953	H09	L16, L21
Rhagovelia tenuipes Champion, 1898	H06A:	L17
R. whitei Breddin, 1898	H09	L16
Rhagovelia sp. 1	H05B	L20
Rhagovelia sp. 2	H09	L10
Gerridae Leach, 1815		
Brachymetra furva Drake, 1957	H05B	L11, L24
	H05B	L24
	H06B	L21, L22
	H08A	L08, L15, L16
Halobatopsis delectus Drake & Harris, 1941	H08A/09	L16, L21
	H05B	L20, L24
	H06B	L10, L12, L14, L22A
	H08A	L06, L15
Halobatopsis platensis (Berg, 1879)	H11	L07
	H06A	L05, L06
	H06B	L09, L12, L17, L18,
Tachygerris celocis (Drake & Harris, 1934)	H08A	L22A
	H05B	L08, L15, L16; L21
		L11

Serra da Moeda and Retiro das Pedras, where it lives in nearly stagnant parts of small streams such as potholes or other pools. Its closest relative, *B. machrisi* Truxal, 1957 lives in similar habitats in Goiás.

Enithares braziliensis until now this is the only species of this genus recorded in Brazil. It is found in nearly stagnant pools in streams with clear water.

Martarega uruguayensis lives in virtually stagnant streams. It differs from the two preceding species in that, although also occurring in potholes and ponds in the stream bed, it is often found deeper in slow currents at the stream edges, a habitat not occupied by the other two.

Tenagobia schreiberi and *Tenagobia* sp. The status of the unidentified *Tenagobia* is uncertain. It may be a separate undescribed species or a distinctive color form of *T. schreiberi*, a species typical of rock pools in mountain areas. It has been described from rock pools at Diamantina and has been found in similar habitats in the Serra da Canastra, Serra do Cipó, Serra da Moeda and Retiro das Pedras.

Microvelia spp. This area is home for a rich fauna of *Microvelia*. A few of the unidentified species may bee already described, but the majority will represent new species and at least one (*Microvelia* sp. 7) may turn out to belong to a different genus, which is not surprising, as *Microvelia*, as presently conceived, is considered to be polyphyletic (Andersen & Weir, 2001). They all live in marshy environments, in all kinds of shallow, nearly-stagnant waters.

Rhagovelia species prefer to live in permanent running waters at places with fair to quite strong currents. As shown by our findings, they are not common in elevated plateaus, such as the Serra da Canastra, with narrow sluggish streams. A few species however are adapted to small streams which may largely dry out during the dry season.

Brachymetra furva. This species usually lives in streams with slow currents and some shade. The latter condition may be the cause for the poor representation of this otherwise common species in Minas Gerais, as the shaded locations in the Serra da Canastra are generally too small for its survival.

Halobatopsis delectus and *H. platensis* have habitat preferences similar to those of *Brachymetra furva*, although not as dependent on shade. Moreover, *H. platensis* also occurs on several ponds and small lakes, being the most common gerrid in Minas Gerais.

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References

Andersen, N. M. & Weir, T. A. 2001. New genera of Veliidae (Hemiptera: Heteroptera) from Australia, with notes on the generic classification of the subfamily Microveliinae. **Invertebrate Taxonomy,** 15: 217-258.

Gapud, V. P. & San Valentin, H. O. 1977. The Ochteridae (Hemiptera) of the Philippines. **Journal of Biology,** 6: 269-300.

Goulart, M.; Melo, A. L. & Callisto, M. 2002. Qual a relação entre parâmetros ambientais e a diversidade de heterópteros aquáticos em nascentes de altitude? **Bios**, **10**:63-76.

Melo, A. L. & Nieser, N. 2004. Faunistical notes on aquatic Heteroptera of Minas Gerais (Brazil). An annotated list of Gerromorpha and Nepomorpha collected near Januária, MG, **Lundiana, 5:** 43-49.

Nieser, N. 1975. The Water Bugs (Heteroptera: Nepomorpha) of the Guyana region. **Studies of the Fauna of Suriname and the other Guyanas**, **16**: 1-308, 24 pls.

Nieser, N. 1994. A new species and new status in *Neogerris* Matsumura (Heteroptera: Gerridae) with a key to American species. **Storkia, 3:** 27-37.

Nieser, N. & Chen, P. P. 2002. Six new species of *Neotrephes* China (Heteroptera: Helotrephidae) from Brazil, with a key to Neotropical Helotrephidae. **Lundiana, 3**: 21-40.

Nieser, N. & Lopez-Ruf, M. 2001. A review of *Limnocoris* Stål (Heteroptera: Naucoridae) in Southern South America east of the Andes. **Tijdschrift voor Entomologie, 144**: 261-328.

Nieser, N. & Melo, A. L. 1997. **Os Heterópteros Aquáticos de Minas Gerais**. Belo Horizonte, UFMG. 180pp.

Nieser, N. & Melo, A. L. 1999a. A new species of *Halobatopsis* (Heteroptera: Gerridae) from Minas Gerais (Brazil), with a key to species. **Entomologische Berichten, Amsterdam, 59**:97-102.

Nieser, N. & Melo, A. L. 1999b**.** *Limnocoris bergi* De Carlo, a new synonym of *L. Brasiliensis* De Carlo (Heteroptera, Naucoridae). **Revista Brasileira de Zoologia., 16**: 1235-1236.

Nieser, N.; Melo, A. L.; Pelli, A. & Barbosa, N. D. C. 1997. A new species of *Buenoa* (Heteroptera: Notonectidae) from Minas Gerais (Brazil). **Entomologische Berichten, Amsterdam**, 57: 129-135.

Nieser, N. & Pelli, A.1994. Two new *Buenoa* (Heteroptera: Notonectidae) from Minas Gerais (Brazil). **Storkia**, **3**: 1-4.

Nieser, N., Pelli, A. & Melo, A. L. 1999. Two new Ambrysinae (Heteroptera: Naucoridae) from Minas Gerais, Brazil. **Acta Societatis Zoologicae Bohemicae, 63**:157-163.

Nieser, N. & Polhemus, D. A. 1999. Four new species of *Rhagovelia* (Heteroptera: Veliidae) from Minas Gerais (Brazil), with a key to the regional species of the *angustipes* complex. **Aquatic Insects, 21**:53-76.

Souza, M. A. A.; Melo, A. L. & Vianna, G. J. C. 2006. Heterópteros aquáticos oriundos do Município de Mariana, MG. **Neotropical Entomology, 35**, In press.

Vianna, G. J. C. & Melo, A. L. 2003. Distribution patterns of aquatic and semi aquatic Heteroptera in Retiro das Pedras, Brumadinho, Minas Gerais, Brazil. **Lundiana, 4**:125-128.