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Insect Galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil)

VALÉRIA C. MAIA and BERNARDO MASCARENHAS

Departamento de Entomologia, Museu Nacional, Depto. De Entomologia, Quinta da Boa Vista, São Cristóvão, 20940-040 Rio de Janeiro, RJ, Brazil

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ABSTRACT

The Parque Nacional do Itatiaia (PNI) (Brazilian Southeast Region) was surveyed monthly for insect galls from February/2014 to December/ 2015. A total of 432 gall morphotypes were found. This number places the PNI as the richest Atlantic forest area in number of gall morphotypes. The galls were found on 47 plant families. Among them, Asteraceae were pointed out as the superhost. The gall richness in the lower part of the PNI is higher than that of the plateau. The insect galls were found in 154 native, 56 endemic and only one exotic plant species. Concerning the conservational status, the host plants include two vulnerable species with three morphotypes together. Several new botanical records were reported. Leaves were the most galled plant organ, followed by stems. Globoid, green, glabrous and one–chambered galls were the most frequent. Cecidomyiidae were the most common gallers. Parasitoids, successors and inquilines composed the associated fauna.

Key words: Atlantic forest, Cecidomyiidae, insect–plant interactions, multitrophic relations, new records.

INTRODUCTION

The Parque Nacional do Itatiaia (PNI) is a prioritary area for the biodiversity conservation of the Atlantic forest. It is situated in the Serra da Mantiqueira on the border of the states of Rio de Janeiro, Minas Gerais, and São Paulo (Fig. 1). It has an area of 28,000 hectares, characterized by mountains and rocky hills, with altitude ranging from 540 to 2,791 m. The flora and fauna exhibit high index of endemism. In the lowest gradients, the dense forest predominates, whereas in the highest there is a predominance of the altitude fields. About 1,328 plant species have been recorded in the PNI, among them, 163 are endemic. The fauna includes about 5,000 insect species, 25 reptile species, 67 amphibian species, 357 bird species and 67 mammalian species (ICMBIO 2016).

Although many inventories have been indicated a great richness of insect galls in the State of Rio de Janeiro (Maia 2013a), few gall morphotypes were recorded in the PNI (Gagné et al. 2001, Coelho et al. 2013a, Maia 2014). Furthermore, most surveys in the Atlantic forest were developed in restinga environments (Maia 2014). Other phytophysiognomies are still poorly studied, such as dense ombrophilous forest and altitude fields, both included in the PNI. In fact, only one long

Correspondence to: Valéria Cid Maia
E-mail: maiavcid@acd.ufrj.br

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term inventory was developed in areas of dense forest (Maia et al. 2014) and altitude fields (Maia 2014). Other records of these formations are due to scattered sampling.

Several hypotheses regarding richness and distribution of gall-inducing insects were proposed by different authors (Root 1973, Fernandes and Price 1988, Lawton 1983, Sáiz and Núñez 2000, Yukawa et al. 2001, Mendonça 2001). Among them, the present work approaches the plant richness hypothesis (Southwood 1960, 1961), the harsh environment hypothesis (Fernandes and Price 1988, 1992), and the plant architecture hypothesis (Lawton 1983). The first one predicts that the richest plant taxa comprise the greatest insect gall richness, the second proposes that insect galls are especially abundant in plant species found in hot and dry habitats, and the third predicts that the most complex plants host the highest gall richness, since they offer the greatest number of niches for the insects (Lawton 1983). These three hypotheses have been supported by several authors (Fernandes and Price 1988, Fernandes and Lara 1993, Sáiz and Núñez 2000, Gonçalves-Alvim and Fernandes 2001, Yukawa et al. 2001, Lara et al. 2002, Cuevas-Reyes et al. 2004).

The main goal of this research is to elaborate an inventory of the insect galls of the PNI and to contribute to the knowledge of their richness in two poorly studied physiognomies of the Atlantic forest.

MATERIALS AND METHODS

The PNI was investigated monthly by the authors from February/2014 to December/2015. Each campaign lasted three days performing 24 hours of field work. All campaigns together totaled 69 days with 1,656 hours of field work. All official trails were surveyed and their geographic coordinates, length, and altitude were obtained, using GPS (Table I). Each trail was investigated along all of its lenght by VCM and BM. This methodology has been adopted by several authors (Fernandes et al 1988, Urso-Guimarães et al. 2003, Santos et al. 2012).

Herbs, bushes and trees (until 2 m high) were examined. Leaves, buds, stems, tendrils, aerial roots, flowers, bud flowers, and fruits were investigated for galls. Preferentially fertile branches of each host plant species were removed, labeled, pressed and dried. The exsiccates were identified and deposited in the herbarium of the Universidade Federal Rural da Amazônia (UFRAM) and in the herbarium (R) of the Museu Nacional/Universidade Federal do Rio de Janeiro (UFRJ).

Galled branches were collected, packed and transported in labelled plastic bags. The galls were characterized in different morphotypes according to their shape, color, presence or absence of trichomes, and in which plant organ of occurrence. Each plastic bag contained samples of a single host plant and gall morphotype. The labels comprised the following data: trail name, date, number of the galled plant, and gall morphotype. Each host plant and gall morphotype were photographed.

In the laboratory, samples of each gall were dissected in order to observe the number of internal chamber, the food habit of the dwellers and to obtain the immature insects. Other samples were conditioned individually in labelled plastic pots to obtain the adults. Each pot was lined with a layer of toilet paper. All pots were checked daily. All obtained insects were preserved in 70% alcohol and identified by the authors. The galls were kept in the pots until the adults'emergence or until they began to putrefy.

The Cecidomyiidae specimens were later mounted on microscope slides, following the methodology of Gagné (1994), and identified in genus based on the keys of Gagné (op. cit.). The insects were deposited in the Entomological Collection of Museu Nacional (MNRJ).

TABLE I

Trail	Geographic coordinate		Altitude
	trailhead	trail end	
BR–485 (Headquarter – Maromba) (RJ)	S22°27’54” WO44°35’28”	22°25’49” 44°37’16”	837m 840m
Cachoeira Itaporani (RJ)	S22°25`42” WO44°37’10”	22°25’40” 44°37’20”	1,091m 1,157m
Cachoeira Véu da Noiva (RJ)	S22°25’43” WO44°37’11”	22°25’40” 44°37’12”	1,124m 1,154m
Lago Azul (RJ)	S22°26’58” WO44°36’37”	22°27’01” 44°36’52”	1,041m 879m
Ecoarte–Lago Azul (RJ)	S22°25’44” WO44°37’11”	22°27’01” 44°36’52”	739m 879m
Cachoeira Poranga (RJ)	S22°27’40” WO44°36’15”	22°26’32” 44°36’44”	947m 826m
Três Picos (incluing Cachoeira Bela Vista) (RJ)	S22°25’26” WO44°35’31”	22°25’31” 44°35’01”	1,541m 1,596m
Centro de Visitantes (RJ)	S22°27’04” WO44°6’37”	———	877m
Casa 16 (RJ)	S22° 27’16” WO44°36’20”	22°27’16” 44°36’20”	841m 853m
Hotel Donati (entrada–represa) (RJ)	S22°26’43” WO44°36’04”	22°26’36” 44°35’54”	935m 956m
Hotel Donati–Simon 1 (RJ)	S22°26’43” WO44°6’04”	22°26’19” 44°36’29”	935m 1,111m
Donati–Simon 2 (RJ)	S22°26’19” WO44°36’29”	22°26’22” 44°35’47”	1,111m 927m
Viúva Hansen (RJ)	S22°26’35” WO44°35’55”	22°26’46” 44°36’05”	948m 953m
Barbosa Rodrigues–Mirante do Último Adeus (RJ)	S22°27’19.0” WO44°36’31”	22°27’40” 44°36’15”	783m 765m
Barbosa Rodrigues (obelisk) (RJ)	S22°27’17” WO44°36’37”	22°27’09” 44°36’36”	736m 882m
Cachoeira do Pitu (RJ)	S22°26’33” WO44°36’44”	22°26’14” 44°36’49”	944m 902m
Casa 33 (RJ)	S22°24’01” WO44°39’12”	22°24’01” 44°39’12”	1,062m 1,062m
Casa 25 (RJ)	S22°27’18” WO44°36’37”	22°26’42” 44°36’50”	762m 813m
Pedra do Camelo (RJ)	S22°26’17” WO44°37’31”	———	2,194m
Casa de Pedra (RJ)	S22°22’07” WO44°42’43”	———	2,010m
Agulhas Negras (RJ)	S22°22’52” WO44°41’08”	22°23’06” 44°40’21”	1,041m 898m
Cachoeira do Aiuruoca (MG)	S22°23’06” WO44°40’21”	22°21’08” 44°40’07”	898m 2,382m
Posto Marcão–Abrigo Rebouças (RJ/MG)	S22°23’02” WO44°40’06”	22°22’27” 44°42’04”	2,290m 2,469m
Pedra do Altar (RJ/MG)	S22°22’37” WO44°42’10”	22°22’27” 44°40’27”	2,501m 2,585m
Asa de Hermes	S22°23’01” WO44°40’06”	22°22’33” 44°39’53”	2,340m 2,870m

TABLE I (continuation)

Trail	Geographic coordinate		Altitude
Pedra do Sino	S22°21'55"	22°22'13"	2,406m
	WO44°39'37"	44°39'45"	2,591m
Prateleiras (RJ)	S22°23'36"	22°23'56"	2,372m
	WO44°40'22"	44°40'16"	2,453m
Travessia Ruy Braga (RJ)	S22°25'49"	22°22'27"	840m
	WO44°37'16"	44°42'04"	2,469m
Água Branca–Ruy Braga (RJ)	S22°26'02"	22°25'15"	1,727m
	WO44°38'15"	44°38'26"	1,798m
Travessia Serra Negra (RJ/MG)	S22°21'44"	22°19'14"	2,381m
	WO44°40'09"	44°36'43"	1,524m
Morro do Couto (RJ)	S22°22'27"	_____	2,449m
	WO44°42'05"		
Pedra da Maçã, da Tartaruga and Assentada (RJ)	S22°23'51"	22°23'55"	2,380m
	WO44°40'15"	44°39'58"	2,384m
Cinco Lagos (RJ)	S22°22'23"	22°22'23"	2,344m
	WO44°42'11"	44°40'43"	2,533m
Ovos da Galinha (MG)	S22°22'23"	22°21'52"	2,248m
	WO44°42'11"	44°39'34"	2,430m

The botanic names and authors were checked in Flora do Brasil (2016), as well as the plant species distribution in Brazil, their conservational status (NE – not evaluated, LC – less concerning, VU – vulnerable), and classification as native, endemic or exotic. The biomes of occurrence of all endemic species were verified in the same site.

RESULTS AND DISCUSSION

A total of 432 gall morphotypes were found in the Parque Nacional do Itatiaia. Other gall morphotypes were recorded in the PNI: 19 by Coelho et al. 2013a, 38 by Maia 2014, both in the altitude fields, and two by Gagné et al. 2001 (no data on phytophysiognomy). Among them, only four were found in the present study. Adding our results with the previous ones, the PNI totalizes 487 gall morphotypes. This number places the PNI as the richest area of the Atlantic forest in number of insect galls, followed by Vale do Rio Doce (Minas Gerais), Santa Teresa (Espírito Santo) and Bertioga (São Paulo) (Table II). Comparing the gall richness of the PNI with data on other Brazilian biomes, we notice that the PNI remains in the first place (Table III).

But, these inventories (mentioned in tables II and III) have adopted different sampling methods, resulting in different sampling efforts. Furthermore, as none of them presented a rarefaction curve, one cannot conclude if the surveyed areas were well sampled. Several authors argue that insect galls are especially abundant in plant species found in hot and dry habitats (Fernandes and Price 1988, 1992, Lara and Fernandes 1996, Price et al. 1998), but many recent Brazilian inventories do not confirm that initial hypothesis (such as the present one), since a greater number of insect galls have been recorded in Amazonian and Atlantic forests (wet habitats) than in Cerrado and Caatinga (dry habitats).

In the present inventory, galls were found in 47 plant families. Among them, Asteraceae hosted the greatest gall richness (93 morphotypes), followed by Melastomataceae (with 66 morphotypes). All other families hosted less than 30 gall morphotypes. Five of them hosted from 29 to 20 gall morphotypes: Fabaceae (29), Myrtaceae (26), Solanaceae (23),

Piperaceae (20), and Sapindaceae (20); three from 16 to 10: Rubiaceae (16), Euphorbiaceae (14) and Apocynaceae (10). The great majority (76.5%) comprised less than ten morphotypes (Table IV). Two other host families, not found in the present study, were recorded by Maia 2014 in the PNI: Campanulaceae and Iracinaceae. Adding these two families to our data, the number of host plant families in the PNI reaches 49.

The host plants included 130 determined genera and 145 determined species. Seven plants were identified at family level due to the lack of fertile samples. Eight other host plants, identified only at genus, were previously recorded in the PNI by Maia 2014: *Centropogon* sp. (Campanulaceae), *Humiriantheca* sp. (Icacinaceae), *Hyptis* sp. (Lamiaceae), *Licania* (Lauraceae), *Mouriri* sp. (Melastomataceae), *Marlierea* sp. (Myrtaceae), *Homalium* sp. and *Xylosma* sp. (Salicacae), but we did not find these genera in our survey. Six other host plant species were previously recorded in the PNI by Coelho et al. 2013a: *Baccharis brevifolia* DC., *B. dubia* Deble and A.S. de Oliveira, *B. itatiaiae* Wawra, *B. pseudomyriocephala* Malag., *B. uncinella* DC. (Asteraceae), and *Croton dichrous* Müll. Arg. (Euphorbiaceae), (Coelho et al. 2013a), but they were not found by us. Adding the values, the PNI totalizes 151 galled plant species.

Although part of the host plants were identified until family and genus level, we believe that the number of gall morphotypes was satisfactorily estimate, as the comparison among the dried plant specimens allowed to segregate the different morphospecies.

Orchidaceae, Fabaceae, Asteraceae, Bromeliaceae, Poaceae, Myrtaceae, Melastomataceae, Euphorbiaceae, Rubiaceae, and Apocynaceae are the ten most speciose Angiospermae families of the Atlantic forest (Jardim Botânico do Rio de Janeiro 2016). These data confirm the plant richness hypothesis, which predicts that the richest plant taxa comprise the greatest insect gall richness (Southwood 1960, 1961). Although Orchidaceae, Bromeliaceae and Poaceae are among the most diverse plant families, they host few galls throughout the world, which can be explained by the hypothesis of the plant architecture. According to this hypothesis the most complex plants host the highest gall richness, since they offer the greatest number of niches for the insects (Lawton 1983). The architecture of Orchidaceae, Bromeliaceae and Poaceae are less complex in comparison to that of the other superhost families. So, these two hypotheses together explain our results.

The gall richness in the lower part of the PNI was higher than that of the plateau: 183 gall morphotypes were restricted to the former, while only 26 were restricted to the later (Table V). This result was already expected as the lower part comprises a greater diversity of flora as well as plants with higher architectural complexity than those of the plateau. Galls found in the Travessia Ruy Braga and Travessia Serra Negra were not considered as these crossings extend from the lower part of the PNI to the plateau.

The insect galls were found in 154 native and one exotic plant species. The former hosted 341 gall morphotypes and the latter only one. Among the native plants, 56 are endemic in Brazil and they hosted 88 gall morphotypes. Among the endemic plant species, 27 have been recorded exclusively in the Atlantic forest and they hosted 39 gall morphotypes. Adding to the previous data, the number of native hosts rises to 167 (seven in Coelho et al. 2013a and six in Maia 2014) and the number of endemic plants to 63 (all in Coelho et al. 2013a). The native plants recorded by these authors presented 15 and nine gall morphotypes, respectively, totalizing 365, while the endemic plants with 15 gall morphotypes recorded by Coelho et al. 2013a totalizing 103. As the galling insects are specific–species (Carneiro et al. 2009a, Joy and Crespi 2007, Price 2005, Yukawa and Rohfritsch

TABLE II

Locality	Nr. of insect galls	Reference
Parque Nacional do Itatiaia (Southeastern Brazil: RJ, MG)	487	Present inventory + Coelho et al. 2013a + Maia 2014 + Gagné et al. 2001
Vale do Rio Doce (Southeastern Brazil: MG)	273	Fernandes et al. 2001
Santa Teresa (Southeastern Brazil: ES)	265	Maia et al. 2014
Bertioga (Southeastern Brazil: SP)	233	Maia et al. 2008

TABLE III

Biome	Locality	Nr. of insect galls	Reference
Atlantic forest	Parque Nacional do Itatiaia (Southeastern Brazil: MG, RJ)	487	Present inventory + Coelho et al. 2013a + Maia 2014 + Gagné et al. 2001
Amazonian forest	Porto Trombetas (Northern Brazil; AM)	309	Almada and Fernandes 2011
Cerrado	Cadeia do Espinhaço (Southeastern Brazil: MG)	241	Carneiro et al. 2009
Pantanal	Corumbá (Midwestern Brazil: MS)	133	Julião et al. 2002
Caatinga	Several municipalities (Northeastern Brazil: PE)	64	Santos et al. 2011a
Pampa		no data	

TABLE IV

Family (n=47)	Number of gall morphotypes
Acanthaceae	05 (1.1%)
Anacardiaceae	03 (<1.0%)
Annonaceae	03 (<1.0%)
Apocynaceae	10 (2.3%)
Aquifoliaceae	02 (<1.0%)
Araceae	03 (<1.0%)
Asteraceae	**93 (21.5%)**

TABLE IV (continuation)

Family (n=47)	Number of gall morphotypes
Berberidaceae	01 (<1.0%)
Bignoniaceae	08 (1.8%)
Boraginaceae	01 (<1.0%)
Burseraceae	04 (<1.0%)
Cannabaceae	03 (<1.0%)
Combretaceae	02 (<1.0%)
Convolvulaceae	05 (1.1%)
Cunnoniaceae	02 (<1.0%)
Curcubitaceae	01 (<1.0%)
Dilleniaceae	04 (<1.0%)
Dioscoriaceae	03 (<1.0%)
Ebenaceae	01 (<1.0%)
Euphorbiaceae	14 (3.2%)
Fabaceae	**29 (6.7%)**
Lamiaceae	06 (1.4%)
Lauraceae	05 (1.1%)
Loranthaceae	09 (2.1%)
Malpighiaceae	03 (<1.0%)
Melastomataceae	**66 (15.8%)**
Meliaceae	04 (<1.0%)
Menispermaceae	01 (<1.0%)
Monimiaceae	01 (<1.0%)
Moraceae	01 (<1.0%)
Myrtaceae	**26 (6.0%)**
Nyctaginaceae	09 (2.1%)
Onagraceae	01 (<1.0%)
Orchidaceae	01 (<1.0%)
Piperaceae	20 (4.6%)
Polypodiaceae	01 (<1.0%)
Primulaceae	09 (2.1%)
Proteaceae	03 (<1.0%)
Pteridaceae	01 (<1.0%)
Rosaceae	02 (<1.0%)
Rubiaceae	16 (3.7%)
Salicaceae	03 (<1.0%)
Santalaceae	02 (<1.0%)
Sapindaceae	20 (4.6%)
Solanaceae	23 (5.3%)
Verbenaceae	01 (<1.0%)
Vitaceae	01 (<1.0%)
Total	432

TABLE V

Areas of the Parque Nacional do Itatiaia	Nr. gall morphotypes
Only in the lower part	183
Only in the plateau	26
In both areas	02

2005), we suggest the endemism of those gallers which are associated with endemic plants.

Concerning the conservational status, the host plants include two vulnerable species: *Chionolaena lychnophorioides* Sch. Bip. (Asteraceae) with one gall morphotype and *Eugenia bunchosiifolia* Nied. (Myrtaceae) with two gall morphotypes. The other plant species have not yet been evaluated. Considering again the high specifity of the galling insects, we suggest that the gallers responsible for the induction of these three morphotypes on vulnerable hosts are also vulnerable.

Several new botanical records were reported: 57 plant species and four plant genera were recorded for the first time hosting insect galls, one genera and 24 species were recorded for the first time in the Atlantic forest (being one genus and two species in ombrophilous forest and six species in altitude fields), one genus and 16 species in the Southeast Region of Brazil, one genus and 18 species in the State of Rio de Janeiro, and two species in the State of Minas Gerais.

The galls were found in leaves, stems, buds, flower buds, aerial roots and tendril. No fruit galls were observed. The leaves were the most galled plant organ, followed by stems and buds (Table VI). The highest frequency of galls on leaves is a world pattern, as already pointed out by Felt (1940). In Brazil, all published gall inventories confirm it. Leaves represent a frequent and abundant resource, especially in vegetal formations where there is no seasonal leaf loss. These features facilitate their use by herbivores.

Several distinct gall shapes were found, but the globoid and fusiform shapes were the most frequent, with 42.03% and 35.10%, respectively (Table VII). The fusiform shape occurred mainly in the stem, leaf petiole and leaf midvein, whereas globoid shape was in the blade leaf. These shapes have been indicated in other Brazilian inventories as the most commom (Carvalho-Fernandes et al. 2016), as well as in other areas of the Neotropical region (Isaias et al. 2013).

Green, brown, yellow, red, purple, orange and whitish galls were observed. The most common colors were green and brown (Table VIII), the same colors of most of the galled plant organs. Some morphotypes showed color variation: green/red, green/brown, green/yellow, yellow/red, green/red/brown, and reddish/green/yellow. This variation can be related to the gall and/or the host plant organ maturity, as well as to the sun exposure, oxidation and others (Fernandes et al. 2012, Maia et al. 2014).

Most morphotypes were glabrous (72.35%), while 27.65% exhibited trichomes or other indumentum. The majority of the galls were one–chambered (87.02%), whereas 9.39% were multichambered, and 3.59% showed a variable number of internal chambers (from one to several). The predominance of glabrous and one–chambered galls has been indicated in all Brazilian inventories. Generally, a single galling larva is found in one–chambered galls. We think that this can represent a strategy against predators and parasitoids: if the gall is attacked, only one individual dies, whereas in multichambered galls, several individuals die.

The galling guild was composed by Diptera (Cecidomyiidae and Tephritidae), Lepidoptera, Coleoptera, Hemiptera, Thysanoptera, and Hymenoptera (Table IX). Cecidomyiidae were the most frequent inducers, with about 65% of the total of the determined gallers, followed by Lepidoptera (with about 20%) and Hemiptera (with only about 7%). Coleoptera, Hymenoptera and Hemiptera were responsible together for less than 4% of the gall morphotypes. Cecidomyiidae are the most frequent gallers throughout the world (Felt 1940). Several gallers were not determined, as their galls had already been collected empty or occupied by natural enemies or by several different insects, which could be inducers or inquilines according to the literature.

The majority of the Dipteran and Hemipteran galls were found in the lower part of the PNI. Differing from them, the majority of the Lepidopteran galls occurred in the plateau. As few Coleopteran, Hymenopteran and Thysanopteran galls were found, we can not verify this. Cecidomyiidae (Diptera) and Hemiptera induced galls mainly on leaves, whereas Lepidoptera mainly in buds. Houard (1933) had already pointed this pattern out for the first two insect groups and Maia (2006) for Lepidoptera. Coleoptera, Hymenoptera and Thysanoptera were not evaluated, due to the low number of their galls.

The associated fauna comprised parasitoids, successors and inquilines (Table X). The first, represented exclusively by Hymenoptera, were the most frequent guild, found on 99 gall morphotypes. The successors included Thysanoptera (on two gall morphotypes), Formicidae (also on two) and Psocoptera (on a single gall morphotype). As inquilines, Diptera, Lepidoptera, Coleoptera, Thysanoptera, and Hemiptera were obtained from 30 gall morphotypes. Among them, Diptera were the most common. They were represented by three taxa: Cecidomyiidae on four morphotypes, Muscomorpha also on four and Sciaridae on two, totalizing 10 gall morphotypes. Two genera of Cecidomyiidae were identified: *Contarinia* Rondani, 1860 and *Clinodiplosis* Kieffer, 1894. Lepidoptera were the second most common inquilines, with occurrence on seven morphotypes, followed by Coleoptera, Thysanoptera and Hemiptera, obtained from six, five and four gall morphotypes, respectively.

Two morphotypes hosted different inquilines: Hemiptera (Aphidae) + Diptera (Muscomorpha) and Diptera (Cecidomyiidae: *Contarinia* sp. + *Clinodiplosis* sp.) + Coleoptera. Twelve morphotypes comprised different guilds, among them nine hosted parasitoids and inquilines (on *Fischeria* sp.1, *Mikania glomerata* Spreng., *Symphyopappus reticulatus* Baker, *Croton floribundus* Spreng., *Inga grandiflora* Ducke, *Clidemia* sp.1, *Neea oppositifolia* Ruiz and Pav., *Piper turbeculatum* Jacq., and *Serjania glutinosa* Radlk.), two hosted parasitoids, inquilines and successors (on *Fischeria* sp.1 and *Mikania glomerata* Spreng), and a single morphotype hosted inquilines and successors (on *Baccharis reticularia* DC). All mentioned insect taxa have been already recorded as associated fauna in other Brazilian inventories, as well as multitrophic relations.

Among the family Cecidomyiidae, gallers and inquilines are comprised 11 genera. The most diverse were *Clinodiplosis* (with eight species) and *Contarinia* (with five) (Table XI). Several species of gall midges were not determined due to the lack of material: male, female, larva, and pupa are necessary for their identification.

Nine species of gall midges were identified in the present work: *Asphondylia glomeratae* Gagné, 2001; *A. moehni* Skuhravá, 1989; *Alycaulus globulus* Gagné, 2001; *Liodiplosis conica* Gagné, 2001; *L. cylindrica* Gagné, 2001; *L. spherica* Gagné, 2001; *Neolasioptera eugeniae* Maia, 1993; *Perasphondylia mikaniae* Gagné, 2001; and *Schismatodiplosis lantanae* Rübsaamen 1916. Among them, only two have been previously recorded in the PNI, *Alycaulus globulus* and *Perasphondylia mikaniae* (Gagné et al. 2001), the others are recorded for the first time.

Besides, eigth galling genera, *Brugmmania*, *Clinodiplosis*, *Contarinia*, *Dasineura*, *Lopesia*, *Neolasioptera*, *Schismatodiplosis* and *Zalepidota* were also registered in the PNI for the first time.

Several new interactions between the Dipteran gallers and the host plants were reported: the family Cecidomyiidae is associated with 35 plant species (distributed in 12 botanical families) and six plant genera for the first time. Futhermore, the family Tephritidae is associated with galls on *Vernonanthura* H. Rob. (Asteraceae) and the infraorder Muscomorpha with galls on *Dolichandra unguis-cati* (L.) L. G.Lohmann (Bignoniaceae) and

TABLE VI

Galled plant organ	Number of gall morphotypes (n=432)
Leaf	221 (47.96%)
Stem	124 (28.06%)
Bud	99 (22.40%)
Tendril	03 (0.68%)
Root	03 (0.68%)
Flower bud	1 (0.22%)
Fruit	0 (0.0%)

TABLE VII

Gall shape	Nr. of gall morphotypes
Globoid	182 (42.03%)
Fusiform	152 (35.10%)
Conical	26 (6.00%)
Marginal roll	18 (4.16%)
Discoid	17 (3.94%)
Ovoid	10 (2.31%)
Cylindrical	08 (1.85%)
Rosette	08 (1.85%)
Fold	06 (1.38%)
Coalescent	1 (0.23%)
Pineapple-like	1 (0.23%)
Lineal	1 (0.23%)
Hemispherical	1 (0.23%)
Claviform	1 (0.23%)
Amorphous	1 (0.23%)

TABLE VIII

Gall color	Nr. of gall morphotypes
Green or greenish	300 (58.14%)
Brown or brownish	136 (26.35%) 26.36
Red or reddish	40 (7.75%)
Yellow or yellowish	33 (6.39%)
Whittish	05 (0.97)
Orange	01 (0.2%)
Purple	01 (0.2%)

TABLE IX

Galling insect	Nr. of gall morphotypes (n=234)
Diptera – Cecidomyiidae	152 (64.96%)
Diptera –Tephritidae	02 (0.85%)
Diptera – Muscomorpha	04 (1.71%)
Lepidoptera	52 (22.22%)

TABLE IX (continuation)

Galling insect	Nr. of gall morphotypes (n=234)
Hemiptera	16 (6.84%)
Coleoptera	03 (1.28%)
Hymenoptera	03 (1.28%)
Thysanoptera	02 (0.85%)

TABLE X

Guild	Insect taxon	Nr. of gall morphotypes (n=122)
Parasitoids	Hymenoptera	99 (81.1%)
Successors	Thysanoptera	02 (1.6%)
	Formicidae (Hymenoptera)	02 (1.6%)
	Psocoptera	01 (<1.0%)
Inquilines	Diptera	09 (7.3%)
	Lepidoptera	07 (5.7%)
	Coleoptera	06 (4.9%)
	Thysanoptera	05 (4.1%)
	Hemiptera	04 (3.3%)

TABLE XI

Cecidomyiidae genera	Number of species	
	determined	undetermined
Clinodiplosis Kieffer, 1894	0	8
Alycaulus Rübsaamen 1916	1	0
Asphondylia Loew, 1850	2	1
Brugmmania Tavares, 1906	0	2
Contarinia Rondani, 1860	0	5
Dasineura Rondani, 1840	0	2
Liodiplosis Gagné, 2001	3	0
Lopesia Rübsaamen, 1908	0	2
Neolasioptera Felt, 1908	1	2
Perasphondylia Möhn, 1960	1	0
Schismatodiplosis Rübsaamen, 1916	1	0
Zalepidota Rübsaamen, 1908	0	1
Total	9	23

TABLE XII

Host plant		Galling family
Family	***Genus or species***	
Apocynaceae	*Fischeria* DC.sp.	Cecidomyiidae
Apocynaceae	*Prestonia bahiensis* Müll.Arg.	Cecidomyiidae
Asteraceae	*Baccharis grandimucronata* Malag.	Cecidomyiidae
Asteraceae	*Chromolaena laevigata* (Lam.) R.M.King and H.Rob.	Cecidomyiidae
Asteraceae	*Critonia cf. morifolia* (Mill.) R.M.King and H.Rob.	Cecidomyiidae
Asteraceae	*Mikania buddleiaefolia* DC.	Cecidomyiidae
Asteraceae	*M. hirsutissima* DC.	Cecidomyiidae
Asteraceae	*M. lasiandra* DC.	Cecidomyiidae
Asteraceae	*M. pseudohoffmanniana* G. M. Barroso	Cecidomyiidae
Asteraceae	*Piptocarpha leprosa* (Less.) Baker	Cecidomyiidae
Asteraceae	*Verbesina glabrata* Hook. and Arn.	Cecidomyiidae
Asteraceae	*Vernonanthura* H. Rob.	Tephritidae
Bignoniaceae	*Dolichandra unguis-cati* (L.) L.G.	Muscomorpha
	Mansoa difficilis (Cham.) Bureau and K.Schum.	Cecidomyiidae
Convolvulaceae	*Dicranostyles* Benth. sp.	Cecidomyiidae
Convolvulaceae	*Ipomoea* L	Cecidomyiidae
Fabaceae	*Inga grandiflora* Ducke.	Cecidomyiidae
Fabaceae	*Inga cf. sessilis* (Vell) Mart.	Cecidomyiidae
Fabaceae	*Mimosa melanocarpa* Benth.	Cecidomyiidae
Lamiaceae	*Aegiphila* Jacq.	Cecidomyiidae
Loranthaceae	*Struthanthus pentamerus* Rizzini	Cecidomyiidae
Loranthaceae	*S. concinnus* (Mart.) Mart.	Cecidomyiidae
Melastomataceae	*Leandra hirta* Raddi	Cecidomyiidae
Melastomataceae	*Miconia ceramicarpa* (DC.) Cogn.	Cecidomyiidae
Melastomataceae	*M. chrysophylla* (Rich.) Urb	Cecidomyiidae
Melastomataceae	*M. cuspidata* Naudin	Cecidomyiidae
Melastomataceae	*T. semidecandra* (Schrank and Mart. ex DC.) Cogn.	Cecidomyiidae
Menispermaceae	*Disciphania* Eichler	Cecidomyiidae
Myrtaceae	*Eugenia schottiana* O.Berg.	Cecidomyiidae
Nyctaginaceae	*Neea oppositifolia* Ruiz and Pav.	Cecidomyiidae
Piperaceae	*Piper marginatum* Jacq.	Cecidomyiidae
Piperaceae	*P. richardiifolium* Kunth.	Cecidomyiidae
Primulaceae	*Myrsine lineata* (Mez) Imkhan.	Cecidomyiidae
Rosaceae	*Prunus myrtifolia* (L.) Urb.	Cecidomyiidae
Rubiaceae	*Borreria tenera* DC.	Cecidomyiidae
Rubiaceae	*Ixora* L.	Cecidomyiidae
Rubiaceae	*Cupania cinerea* Poepp. and Endl.	Cecidomyiidae
Sapindaceae	*Serjania deflexa* Gardner	Cecidomyiidae
Sapindaceae	*S. paucidentata* DC.	Cecidomyiidae
Solanaceae	*Acnistus arborescens* (L.) Schltd.	Cecidomyiidae
Solanaceae	*Solanum megalochiton* Mart.	Cecidomyiidae
Solanaceae	*S. scuticum* M.Ne or *piluliferum* Dunal	Cecidomyiidae
Solanaceae	*Solanum* L.	Muscomorpha

TABLE XIII

Cecidomyiidae	Life habit	Host plant	
Genera	**Galler**	**Family**	**Genera or species**
Asphondylia Loew, 1850	Galler	Apocynaceae	*Fischeria* DC.
Asphondylia	Galler	Apocynaceae	*Schubertia* Mart.
Asphondylia	Galler	Nyctaginaceae	*Neea oppositifolia* Ruiz and Pav.
Asphondylia	Galler	Salicaceae	*Casearia aculeata* Jacq.
Clinodiplosis Kieffer, 1894	Galler	Asteraceae	*Mikania* Willd.
Clinodiplosis	Galler	Primulaceae	*Myrsine* L.
Clinodiplosis	Galler	Solanaceae	*Solanum* L.
Clinodiplosis	Inquiline	Apocynaceae	*Fischeria* DC.
Clinodiplosis	Inquiline	Asteraceae	*Mikania glomerata* Spreng.
Contarinia Rondani, 1860	Galler	Melastomataceae	*Miconia* Ruiz and Pav.
Contarinia	Galler	Piperaceae	*Piper* L.
Contarinia	Inquiline	Asteraceae	*Mikania glomerata* Spreng.
Dasineura Rondani, 1840	Galler	Myrtaceae	*Myrcia sylvatica* (G.Mey.) DC.
Lopesia Rübsaamen, 1908	Galler	Melastomataceae	*Bellucia* Raf.
Lopesia	Galler	Melastomataceae	*Clidemia* D. Don
Zalepidota Rübsaamen, 1908	Galler	Piperaceae	*Piper tuberculatum* Jacq.

Solanum L. (Solanaceae) for the first time (Table XII).

New interactions among six genera of Cecidomyiidae (gallers and inquilines) and host plants were also reported and they include determined and undetermined species. The later probably are undescribed gall midges (Table XIII).

The gall morphological characterization (host plant organ, gall shape, color and number of internal chambers), as well as the inducers, associated fauna, paths and dates of collection are presented below. The data was organized by family plant, genus and species in alphabetical order. The number of gall morphotypes for each botanical taxon is given in brackets, as in the following example: Acanthaceae (n=5). New records of the geographical distribution of plant genera and species as well as those of the host plants are indicated. The previous gall records in each plant species or genus were added, following this sequence: biome, host plant (when applicable), reference, number of recorded gall morphotypes, locality and Brazilian state), as in this example: in Pampa: on *Justicia* sp. – Tavares 1909 (n=1/São Leopoldo/RS).

ACANTHACEAE (N=5)

Justicia L. sp. (native genus) (n=2)

Gall (Fig. 2): on stem, fusiform, green, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014, 16/III/2015.

Gall (Fig. 3): on leaf, conical, green, with trichomes, apically opened, and one–chambered. Galler: Hemiptera. Path: BR–485, 26/01/2015.

Previous gall records on this genus: 1) in Pampa: on *Justicia* sp. – Tavares 1909 (n=1/ São Leopoldo/RS), 2) no biome data: on *Justicia brasiliana* Roth – Mendonça et al. 2014 (n=2/RS)

Mendoncia hoffmannseggiana Nees (native species, NE) (n=2)

(first plant record in Southeast Region and in Atlantic forest)

Gall (Fig. 4): on leaf and stem, globoid, green, with trichomes, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (02 adults). Path: Lago Azul, 18/III/ 2014.

Gall (Fig. 5): on stem, globoid, brown, glabrous, and one–chambered. Galler: not determined. Path: Donati–Simon 1, 08/IX/2014.

No previous gall records on this plant species.

Ruellia L.sp. (native genus) (n=1)

Gall (Fig. 6): on leaf vein, fusiform, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Travessia Ruy Braga, 04/VIII/2014.

Previous gall records on this plant genus: no bioma data, on *Ruellia* sp. – Mendonça et al. 2014 (n=1/RS).

ANACARDIACEAE (N=3)

Spondias L. sp. (native genus) (n=1)

Gall (Fig. 7): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: Hemiptera. Path: Travessia Ruy Braga, 16/III/2015.

No previous gall records on this plant genus.

Tapirira guianensis Aubl. (native species, NE) (n=2)

Gall (Fig. 8): on stem, globoid, brown, glabrous, and one–chambered. Galler: not determined. Path: Viúva Hansen, 10/IX/2014.

Gall (Fig. 9): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: not determined. Inquilines: Hemiptera (03 specimens). Paths: Ecoarte–Lago Azul, 08/IV/2014; Donati–Simon 2, 08/IX/2014; Viúva Hansen, 10/IX/2014.

Previous gall records on this plant species: 1) in Atlantic forest: Maia et al. 2008 (n=1/Bertioga/SP), Santos et al. 2011b (n=1/six municipalities/PE) in Cerrado: Saito and Urso-Guimarães 2012 (n=1/Jataí/SP), Urso-Guimarães et al. 2003 (n=1/Delfinópolis/MG), Urso-Guimarães and Scareli-Santos 2006 (n=1/Santa Rita do Passa Quatro/MG), 3) in Amazonian forest: Almada and Fernandes 2011 (n=1/Oriximiná/PA).

ANNONACEAE (N=3)

Duguetia A. St.-Hill. sp. (native genus) (n=2)

Gall (Fig. 10): on leaf midvein, fusiform, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Cachoeira Poranga, 07/IV/2014.

Gall (Fig. 11): on leaf, globoid gall, one–chambered, yellow, reddish or green. Galler: not determined (empty galls). Paths: Cachoeira Poranga, 07/IV/2014; Travessia Ruy Braga, 10–12/XI/2014; Casa 33, 16/VI/2015.

Previous gall records on this plant genus: 1) in Atlantic forest: on *Duguetia furfuracea* (A.St.-Hil.) Saff. – Maia 2013b (n=1/São Tomé das Letras/MG), Fernandes et al. 1997 (n=2/Vale do Jequitinhonha/MG), 2) in Cerrado: on *D. furfuracea* – Urso-Guimarães et al. 2003 (n=1/Delfinópolis/MG), Saito and Urso-Guimarães 2012 (n=5/Jataí/SP), Malves and Frieiro-Costa 2012 (n=1/Luiz Antonio/MG), Coelho et al. 2013b (n=1/Serra do Cabral/MG), Urso-Guimarães and Scareli-Santos 2006 (n=3/Santa Rita do Passa Quatro/MG), Araújo et al. 2015 (n=1/GO), 3) in Caatinga–Cerrado transition: on *D. furfuracea* – Costa et al. 2015 (n=1/Caetité/BA), 4) in Amazonian forest: on *Duguetia stelechantha* (Diels) R.E.Fr. – Almada and Fernandes 2011 (n=1/Oriximiná/PA), on *Duguetia* sp. – Araújo et al. 2012 (n=1/ Oriximiná/PA).

Guatteria latifolia (Mart.) R. E. Fr (endemic in Brazil, only in Atlantic forest, NE) (n=1)

Gall (Fig. 12): on leaf, globoid, green or reddish, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (1 adult). Path: Casa 33, 16/VI/2015.

No previous gall records on this plant species.

APOCYNACEAE (N=10)

Ditassa crassifolia Decne. (endemic in Brazil, Cerrado and Atlantic forest, NE) (n=1)

(first record in RJ and ombrophylous forest)

Gall (Fig. 13): on stem, fusiform, brown, glabrous, and one–chambered. Galler: not determined. Path: Hotel Donati, 04/VIII/2014.

No previous gall records on this plant species.

Fischeria DC. sp.1 (native genus) (n=2)

Gall (Fig. 14): on leaf petiole and vein, fusiform, green, hairy, and one–chambered or multichambered. Galler: Cecidomyiidae (03 young larvae). Parasitoids: Hymenoptera (01 larva, 02 pupas). Inquilines: Coleoptera (01 larva). Successors: Psocoptera (01 adult). Paths: Três Picos, 13/V/2014, 08/IX/2014; Água Branca–Ruy Braga, 18/VI/2014, 14/IV/2015, 17/III/2015; Travessia Ruy Braga, 08/VII/2014; Casa 33, 16/VI/2015.

Gall (Fig. 15): on leaf, globoid, green, micropubescent, and one or two-chambered. Galler: *Asphondylia* sp. (Cecidomyiidae) (01 larva). Parasitoids: Hymenoptera (01 adult, 01 larva, 02 pupae). Inquilines: *Clinodiplosis* sp. (Cecidomyiidae) (03 larvae). Paths: Três Picos, 13/V/2014, 08/IX/2014; Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 08/VII/2014, 04/VIII/2014, 14/IV/2015; Donati–Simon 2, 08/IX/2014; Viúva Hansen, 10/IX/2014; Casa 33, 16/VI/2015.

Fischeria DC. sp.2 (n=1)

Gall (Fig. 16): on stem, globoid, green, glabrous, and with longitudinal grooves. Galler: Muscomorpha (02 puparia) Path: BR–485, 12/XI/2014.

No previous gall records on this plant genus.

Prestonia bahiensis Müll.Arg. (endemic in Brazil, Caatinga, Cerrado and Atlantic forest, LC) (first record in RJ and ombrophilous forest) (n=1)

Gall (Fig. 17): on stem and leaf petiole, fusiform, brown, and with brown pubescence. Galler: Cecidomyiidae (05 adults). Path: Cachoeira Véu da Noiva, 17/III/2014.

No previous gall records on this plant species.

Schubertia Mart. sp. (native genus) (first occurrence in RJ and in ombrophilous forest) (n=4)

Gall (Fig. 18): on bud, globoid, unilateral, brown, and one–chambered. Galler: *Asphondylia* sp. (Cecidomyiidae) (03 pupae, 02 females). Paths: Travessia Serra Negra, 14-15/X/2014; BR–485, 23/II/2015; Cachoeira do Pitu, 25/II/2015.

Gall (Fig. 19): on stem, fusiform, brown, with trichomes, and multichambered. Galler: not determined. Parasitoids: Hymenoptera (01 adult). Path: Três Picos, 08/IX/2014.

Gall (Fig. 20): on leaf vein, globoid, green, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (01 larva, 01 pupa). Paths: Cachoeira Itaporani, 12/V/2014; Travessia Ruy Braga, 24/II/2015.

Gall (Fig. 21): on leaf petiole and vein, fusiform, greenish, and glabrous. Galler: not determined. Parasitoids: Hymenoptera (01 larva). Paths: Travessia Serra Negra, 14–15/X/2014; Travessia Ruy Braga, 24/II/2015.

Previous gall records on this plant genus: 1) in Atlantic forest: on *Schubertia grandiflora* Mart. – Santos et al. 2012 (n=1/PE).

Tabernaemontana L. sp. (native genus) (n=1)

Gall (no fig.): on leaf, globoid, yellow, with basally white and apically red trichomes, and one–chambered. Galler: not determined (empty galls). Path: Três Picos, 11/XI/2014.

Previous gall records: 1) in Atlantic forest: on *Tabernaemontana* sp. – Maia et al. 2014 (n=1/Santa Teresa/ES), Fernandes et al. 2001 (n=1/Vale do Rio Doce/MG), 2) in Amazonian forest: on *Tabernaemontana catharinensis* A. DC. – Araújo et al. 2012 (n=1/Oriximiná/PA).

AQUIFOLIACEAE (N=2)

Ilex taubertiana Loes. (endemic in Brazil, only in Atlantic forest, NE) (n=1)

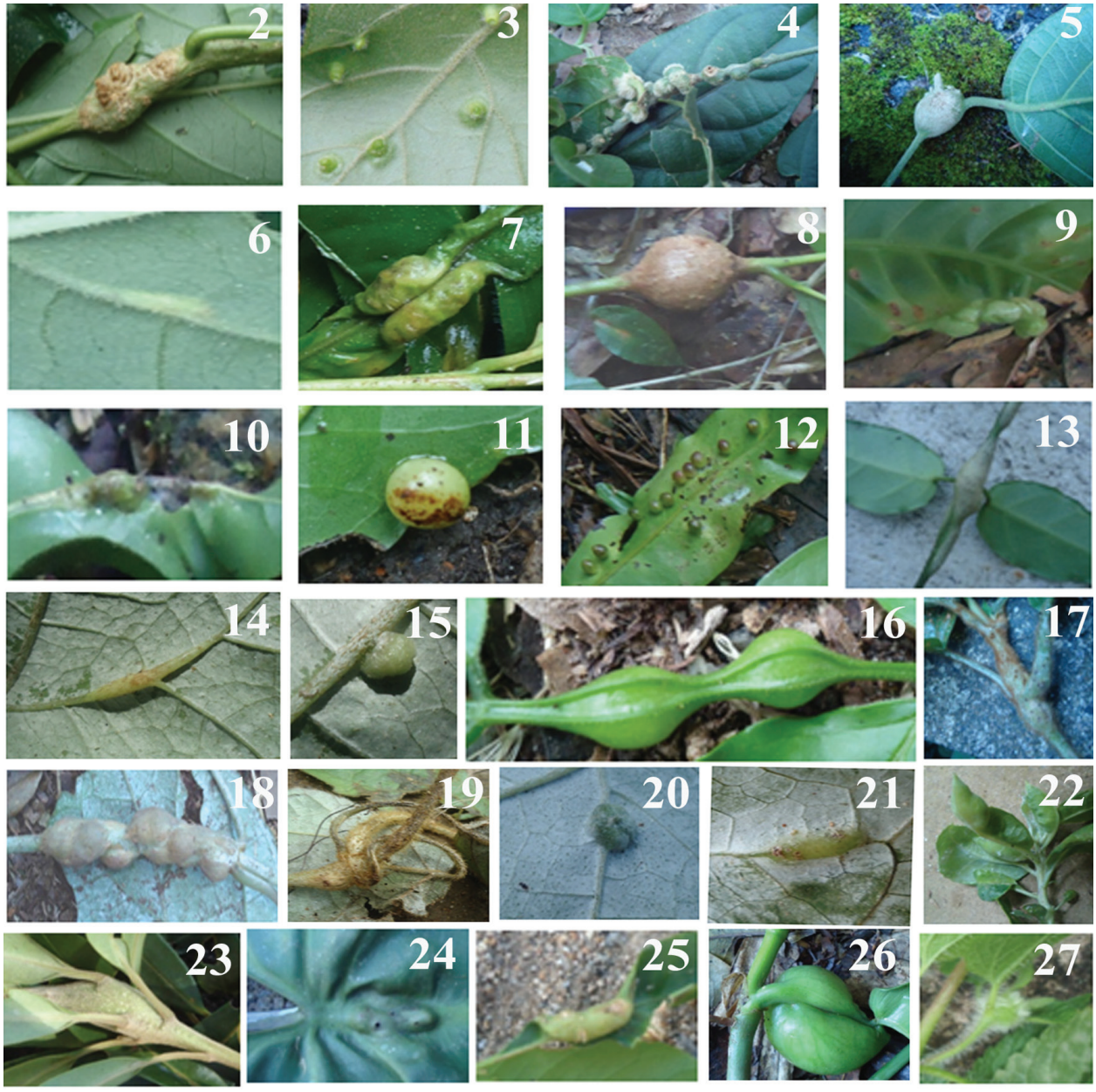

Figure 2-27 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), 2-6, on Acanthaceae, 2-3, *Justicia* sp., 2, fusiform stem gall, 3, conical leaf gall, 4-5, *Mendoncia hoffmannseggiana*, 4, globoid leaf and stem gall, 5, globoid stem gall, 6, *Ruellia* sp., globoid stem gall, 7-9, on Anacardiaceae, 7, *Spondias* sp., marginal leaf roll, 8-9, *Tapirira guianensis*, 8, stem globoid gall, 9, marginal leaf roll, 10-12, on Annonaceae, 10-11, *Duguetia* sp., 10, fusiform leaf gall, 11, globoid leaf gall, 12, *Guatteria latifolia*, globoid leaf gall, 13-21, on Apocynaceae, 13, *Ditassa crassifolia*, fusiform stem gall, 14-15, *Fischeria* sp.1, 14, fusiform leaf petiole and vein gall, 15, globoid leaf gall, 16, *Fischeria* sp.2, globoid stem gall, 17, *Prestonia bahiensis*, fusiform stem and leaf petiole gall, 18-21, *Schubertia* sp., 18, globoid bud gall, 19, fusiform stem gall, 20, globoid leaf vein gall, 21, fusiform leaf petiole and vein gall, 22-23, on Aquifoliaceae, 22, *Ilex taubertiana*, marginal leaf roll, 23, *Ilex* sp., fusiform bud gall, 24-26, on Araceae, 24, *Philodendron cordatum*, fusiform leaf vein gall, 25, *P. rudgeanum*, marginal leaf roll, 26, *Philodendron* sp., fusiform bud gall, 27, on Asteraceae, *Ageratum conyzoides*, globoid bud gall.

Gall (Fig. 22): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: Hemiptera. Path: Três Picos, 17/III/2015.

No previous gall records on this plant species.

Ilex L. sp. (native genus) (n=1)

Gall (Fig. 23): on bud, fusiform, brown, with brown trichomes, and one–chambered. Galler: Lepidoptera (01 catterpilar). Paths: Casa de Pedra, 25/II/2014; Pedra do Camelo 14/IX/2015.

Previous gall records on this genus plant: 1) in Atlantic forest: on *I. ceracifolia* Reiss. – Fernandes et al. 2001 (n=1/Vale do Rio Doce/MG), on *Ilex microdonta* Reiss. – Toma and Mendonça 2013 (n=3/São Francisco de Paula/RS), on *Ilex pseudobuxus* Reissek – Maia et al. 2008 (n=2/Bertioga/SP), on *Ilex theezans* Mart. – Maia et al. 2008 (n=3/Bertioga/SP), on *Ilex* sp. – Bregonci et al. 2010 (n=1/Guarapari/ES), Maia and Oliveira 2010 (n=1/Angra dos Reis/RJ), Maia et al. 2014 (n=1/Santa Teresa/ES), 2) in Amazonian forest: on *Ilex inundata* Poepp. ex Reissek – Almada and Fernandes 2011 (n=1/Oriximiná/PA), 3) in Cerrado: on *Ilex amara* (Vell.) Loes. – Carneiro et al. 2009b (n=1/Cadeia do Espinhaço/MG), on *Ilex brasiliensis* Loes. – Carneiro et al. 2009b (n=1/Cadeia do Espinhaço/MG), 4) no biome data: on *Ilex brevicuspis* Reissek (n=2/RS), *I. microdonta* Reissek, *I. theezans* Mart. ex Reissek (n=2/RS) (Mendonça et al. 2014).

ARACEAE (N=3)

Philodendron cordatum Kunth ex Schott (endemic in Brazil, only in Atlantic forest, NE) (n=1)

Gall (Fig.24): on leaf vein, fusiform, green, glabrous, and multichambered. Galler: Hymenoptera. Paths: Lago Azul, 18/III/2014; BR–485, 28/I/2015.

No previous gall records on this plant species.

Philodendron rudgeanum Schott (native species, NE) (first record in RJ) (n=1)

Gall (Fig. 25): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: Hemiptera. Parasitoids: Hymenoptera. Paths: Cachoeira Itaporani, 12/V/2014; Travessia Ruy Braga, 14/IV/2015, 15/IX/2015.

No previous gall records on this plant species.

Philodendron Schott. sp. (n=1)

Gall (Fig. 26): on bud, fusiform, green, glabrous, and multichambered. Galler: Muscomorpha (01 adult). Parasitoids: Hymenoptera (01 pupa, 02 adults). Path: Três Picos, 11/XI/2014.

No previous gall records on this plant genus.

ASTERACEAE (N=93)

Ageratum conyzoides L. (native species, NE) (confirmed occurrence in RJ) (n=1)

Gall (Fig. 27): on bud, globoid, green, with trichomes, and three-chambered. Galler: Cecidomyiidae (03 larvae, 01 pupa, 01 adult). Inquilines: Aphidae (20 specimens), Muscomorpha (01 larva). Path: Ecoarte–Lago Azul, 08/IV/2014.

Previous gall records on this plant species: in Cerrado – Maia and Araújo 2016 (n=1/Dores do Indaiá/MG).

Baccharis altimontana G. Heiden et al. (endemic in Brazil, only in Atlantic forest, exclusively in altitude fields, NE) (n=1)

Gall (Fig. 28): on vein, fusiform, green, glabrous, and one–chambered. Galler: Lepidoptera (01 catterpilar). Path: Travessia Ruy Braga, 13/V/2015.

No previous gall records on this plant species.

Baccharis grandimucronata Malag. (endemic in Brazil, only in Atlantic forest, exclusively in altitude fields, LC) (n=1)

Gall (Fig. 29): on leaf, globoid, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 pupa). Path: Morro do Couto, 05/X/2015.

No previous gall records on this plant species.

Baccharis reticularia DC. (endemic in Brazil, Caatinga, Cerrado and Atlantic Forest, NE) (n=1)

Gall (Fig. 30): on bud and stem, ovoid, brown, glabrous, and one–chambered. Galler: Lepidoptera (02 catterpilars). Inquilines: Sciaridae (01 pupal exuvia, 01 adult). Successors: Formicidae (Hymenoptera) (01 adult). Paths: Agulhas Negras, 18/III/2014; Cachoeira do Aiuruoca, 19/III/2014; Pedra do Altar, 08/IV/2014; Prateleiras, 09/IV/2014; Morro do Couto, 13/V/2014; Travessia Serra Negra, 14–15/X/2014; Pedra da Maçã, Tartaruga and Assentada, 27/I/2015; Cinco Lagos, 11–12/V/2015; Travessia Ruy Braga, 13/V/2015; Ovos da Galinha, 13/V/2015; Pedra do Camelo, 14/IX/2015; Asa de Hermes, 16/IX/2015.

Previous gall records on this plant species: in Cerrado – Maia and Fernandes 2004 (n=3/Serra de São José/MG), Carneiro et al. 2009b (n=7/Cadeia do Espinhaço/MG).

Baccharis L. sp. (n=5)

Gall (Fig. 31): on leaf, globoid, green, with trichomes, and one–chambered. Galler: Cecidomyiidae (03 pupal exuviae, 03 adults). Parasitoids: Hymenoptera (01 larva, 04 adults). Paths: Travessia Serra Negra, 14–15/X/2014; Travessia Ruy Braga, 18/VI/2014, 17/III/2015, 14/IV/2015, 15/IX/2015.

Gall (Fig. 32): on bud, rosette, green, glabrous, and one–chambered. Galler: Cecidomyiidae (02 larvae). Parasitoids: Hymenoptera (01 larva). Paths: Casa de Pedra, 25/ II/2014; Travessia Serra Negra, 14–15/X/2014; Travessia Ruy Braga, 18/VI/2014, 14/IV/2015.

Gall (Fig. 33): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: not determined (empty galls) (Fig.). Path: Travessia Ruy Braga, 18/VI/2014, 14/IV/2015.

Gall (Fig. 34): on leaf petiole, midvein, and stem, globoid or fusiform, green or yellowish, glabrous, and multichambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 18/VI/2014, 14/IV/2015, 15/IX/2015.

Gall (Fig. 35): on stem and leaf petiole, fusiform, brown, and glabrous. Galler: not determined (eggs) (Fig.). Path: Casa de Pedra, 25/II/2014.

Previous gall records on not determined species of *Baccharis*: 1) in Atlantic forest – Maia and Oliveira 2010 **(**n=1/Angra dos Reis/RJ), Maia 2013b (n=3/São Tomé das Letras/MG), Toma and Mendonça 2013 (n=1/São Francisco de Paula/RS), Maia 2014 (n=2/Itamonte/MG), 2) in Cerrado – Carneiro et al. 2009b (n=1/Cadeia do Espinhaço/MG), 3) no bioma data – Mendonça et al. 2014 (n=6/RS).

Barrosoa organensis (Gardner) R.M.King and H. Rob. (endemic in Brazil, Cerrado and Atlantic forest, NE) (n= 1)

Gall (Fig. 36): on stem, fusiform, green, glabrous, and one–chambered. Galler: not determined. Path: Casa de Pedra, 25/II/2014.

No previous gall records on this plant species.

Bidens segetum Mart. ex Colla (native species, NE) (first record in ombrophilous forest (n=1)

Gall (Fig. 37): on stem, fusiform, green and brown, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 24/II/2015.

No previous gall records on this plant genus.

Bidens L. sp. (native genus) (n= 1)

Gall (Fig. 38): on bud, globoid, green, glabrous, and one–chambered. Galler: not determined. Path: Casa 16, 07/VII/2014.

No previous gall records on this plant genus.

Calea pinnatifida (R. Br.) Less (native species, NE) (n= 1)

Gall (Fig. 39): on bud, globoid, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: BR–485, 09/XII/204.

Previous gall records on this plant species: no biome data – Mendonça et al. 2014 (n=2/RS).

Chionolaena lychnophorioides Sch.Bip. (endemic in Brazil, Cerrado, VU) (first record in RJ and Atlantic forest) (n= 1)

Gall (Fig. 40): on stem, globoid, brown, glabrous, and one–chambered. Galler: not

determined (empty galls). Path: Cachoeira do Aiuruoca, 19/III/2014.

No previous gall records on this plant species.

Chromolaena laevigata (Lam.) R.M.King and H.Rob. (native species, NE) (n= 2)

Gall (Fig. 41): on leaf vein, fusiform, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 young larva). Inquilines: Lepidoptera (01 catterpilar). Paths: Travessia Ruy Braga, 08/XII/2014, 14/IV/2015; Travessia Serra Negra, 14–15/X/2014; Asa de Hermes, 16/IX/2015.

Gall (Fig. 42): on stem, fusiform, green or brown, pubescent, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 08/XII/2014, 14/IV/2015.

No previous gall records on this plant species.

Chromolaena odorata (L.) R.M.King and H.Rob. (native species, NE) (n=3)

Gall (no fig.): on leaf vein, fusiform, green, micropubescent, and one–chambered. Galler: Cecidomyiidae (01 larva). Parasitoids: Hymenoptera (02 pupae). Path: Travessia Ruy Braga, 07/III/2015.

Gall (Fig. 43): on stem, globoid, brown, micropubescent, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 14/IV/2015.

Gall (Fig. 44): on stem, fusiform, green, with white trichomes, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 14/IV/2015.

Previous gall records on this plant species: in Amazonian forest – Gagné 1977, 1994 (n=1/Pará).

Critonia cf. morifolia (Mill.) R.M.King and H.Rob. (native species, NE) (first record in RJ/MG and Atlantic forest) (n= 1)

Gall (Fig. 45): on leaf petiole, fusiform, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Paths: Posto Marcão–Abrigo Rebouças, 24/II/2014.

No previous gall records on this plant species.

Dasyphyllum spinescens (Less.) Cabrera (native species, NE) (n= 1)

Gall (Fig. 46): on leaf petiole, fusiform, brown, and micropubescent. Galler: Coleoptera (02 larvae). Path: Casa 33, 16/VI/2015.

Previous gall records on this plant species: no biome data – Mendonça et al. 2014 (n=2/RS).

Dendrophorbium fruticosum (Vell.) C.Jeffrey (native species, NE) (n=2)

Gall (Fig. 47): on stem, fusiform, green, and glabrous. Galler: Lepidoptera. Path: Travessia Ruy Braga, 15/IX/2015.

Gall (Fig. 48): on leaf, globoid, green, glabrous, and multichambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 15/IX/2015.

No previous gall records on this plant species.

Eupatorium L. sp. 1 (native genus) (n= 4)

Gall (Fig. 49): on stem, fusiform, green or brown, glabrous, and one–chambered or multichambered. Galler: *Neolasioptera* sp. (Cecidomyiidae) (01 larva). Parasitoids: Hymenoptera (01 larva, 02 pupae). Paths: Três Picos, 13/V/2014, 11/XI/2014; Hotel Donati, 04/VIII/2014; Donati–Simon 2, 08/IX/2014; Travessia Ruy Braga, 08/XII/2014, 16/III/2015, 17/III/2015.

Gall (Fig. 50): on stem, globoid, brown, glabrous, and one–chambered. Galler: *Contarinia* sp. (Cecidomyiidae) (01 larva). Path: Travessia Ruy Braga, 14/IV/2015.

Gall (Fig. 51.): on midvein, globoid, green, micropubescent, and one–chambered. Galler: Cecidomyiidae (03 larvae). Parasitoids: Hymenoptera (02 pupae). Paths: Casa de Pedra, 25/II/2014; Cachoeira Itaporani, 17 /III/2014; Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 16/III/2015.

Gall (Fig. 52): on leaf petiole and midvein, fusiform, green, micropubescent, one–chambered. Galler: not determined (empty galls). Path: Hotel Donati, 04/VIII/2014.

Eupatorium L. sp. 2 (n= 1)

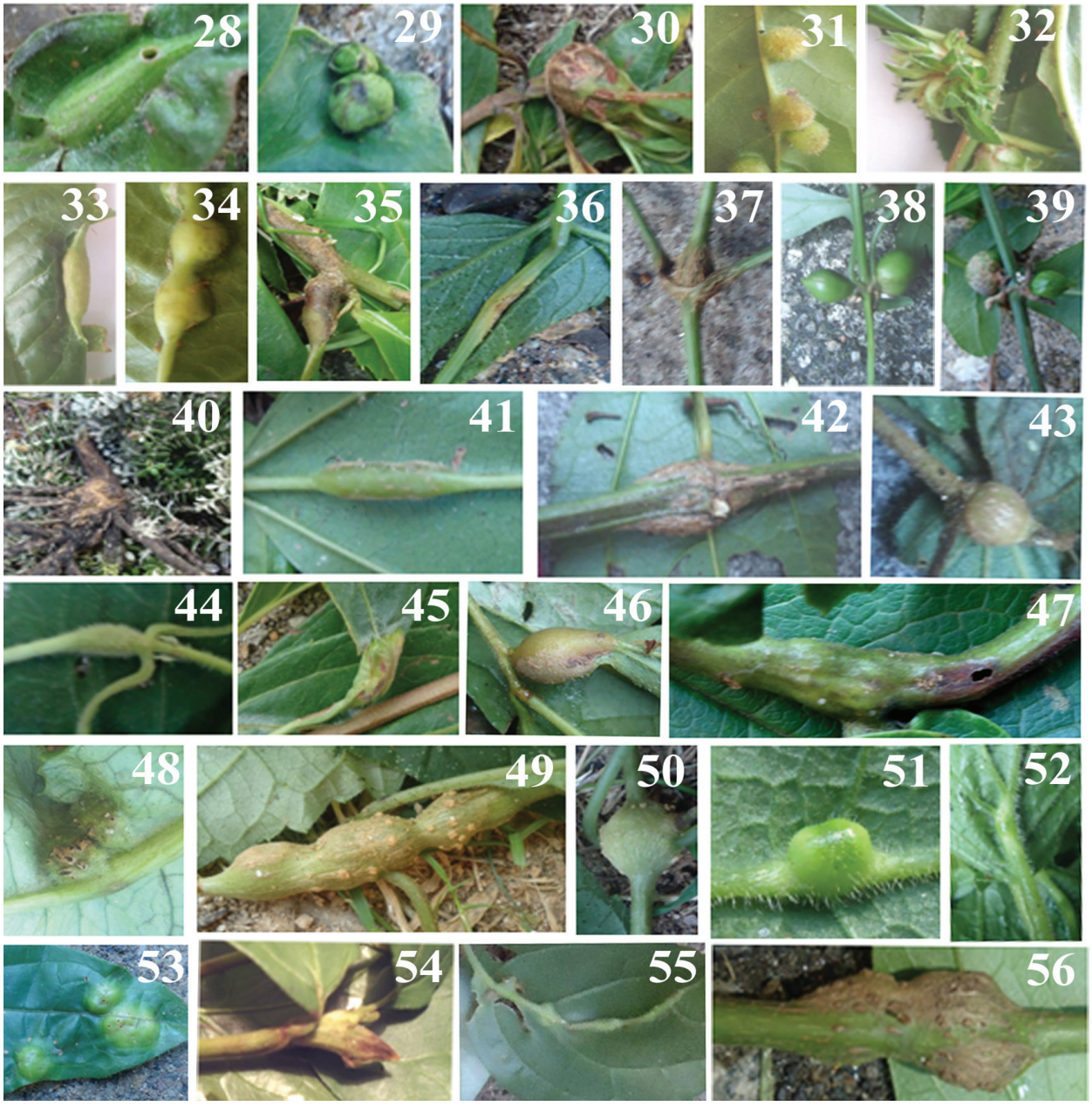

Figure 28-56 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), on Asteraceae, 28, *Baccharis altimontana*, fusiform leaf vein gall, 29, *B. grandimucronata*, globoid leaf gall, 30, *B. reticularia*, ovoid bud and stem gall, 31-35, *Baccharis* sp., 31, globoid leaf gall, 32, rosette bud gall, 33, marginal leaf gall, 34, globoid midvein gall, 35, fusiform stem and leaf petiole gall, 36, *Barrosoa organensis*, fusiform stem gall, 37, *Bidens segetum*, fusiform stem gall, 38, *Bidens* sp., globoid bud gall, 39, *Calea pinnatifolia*, globoid bud gall, 40, *Chiomolaena lychnophorioides*, globoid stem gall, 41-42, *Chromoalena laevigata*, 41, fusiform leaf vein gall, 42, fusiform stem gall, 43-44, *C. odorata*, 43, globoid stem gall, 44, fusiform stem gall, 45, *Critonia* cf. *morifolia*, fusiform leaf petiole gall, 46, *Dasyphyllum spinescens*, fusiform leaf petiole gall, 47-48, *Dendrophorbium fruticosum*, 47, fusiform stem gall, 48, globoid leaf gall, 49-52, *Eupatorium* sp.1, 49, fusiform stem gall, 50, globoid stem gall, 51, globoid midvein gall, 52, fusiform leaf petiole and midvein gall, 53, *Eupatorium* sp.2, discoid leaf gall, 54-56, *Eupatorium* sp.3, 54, cylindrical bud gall, 55, fusiform leaf vein gall, 56, fusiform stem gall.

Gall (Fig. 53): on leaf, discoid, green or purple, and glabrous. Galler: Cecidomyiidae (01 pupal exuvia, 02 larvae). Paths: Lago Azul, 18/III/ 2014; Cachoeira Itaporani, 12/V/2014; Travessia Ruy Braga, 08/XII/2014; 24/II/2015; BR–485, 09/ XII/2014; Cachoeira do Pitu, 25/II/2015.

Eupatorium L. sp. 3 (n= 4)

Gall (Fig. 54): on bud, cylindrical, green, with brown micropubescence, and one–chambered. Galler: *Clinodiplosis* sp. (Cecidomyiidae) (02 larvae by gall). Path: Viúva Hansen, 10/IX/2014.

Gall (Fig. 55): on leaf vein, fusiform or globoid, green or reddish, glabrous, and one–chambered. Galler: Cecidomyiidae (02 larvae, 01 pupa). Parasitoids: Hymenoptera (03 pupae, 01 adult). Paths: Lago Azul, 18/III/ 2014; Centro de Visitantes, 07-08/VII/2014; Viúva Hansen, 10/IX/2014; Barbosa-Rodrigues (obelisk), 10/ XII/2014.

Gall (Fig. 56): on stem, fusiform, green or brown, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (fragments). Paths: Barbosa-Rodrigues (obelisk) 10/XII/2014; BR–485, 28/I/2015.

Gall (Fig. 57): on leaf and stem, conical, green, glabrous, and one–chambered. Galler: not determined (empty galls). Paths: Lago Azul, 18/ III/ 2014; BR–485, 04/VIII/2014; Travessia Ruy Braga, 08/XII/2014; Barbosa-Rodrigues (obelisk), 10/XII/2014.

Eupatorium L. sp. 4 (n= 1)

Gall (Fig. 58): on leaf, globoid, yellow, and glabrous. Galler: Cecidomyiidae (01 young larva). Path: Três Picos, 08/IX/2014.

Eupatorium L. sp. 5 (n= 1)

Gall (Fig. 59): on stem, fusiform, brown, glabrous, and one–chambered. Galler: Cecidomiidae (01 larva). Parasitoids: Hymenoptera (02 pupae). Path: Travessia Serra Negra, 14–15/X/2014.

Previous gall records on this plant genus: 1) in Atlantic forest: on *Eupatorium squalidum* DC. – Fernandes et al. 1997 (n=1/Vale do Jequitinhonha/ MG), Maia et al. 2014 (n=1/Santa Teresa/ES), Maia 2014 (n=1/Itamonte/MG), on *Eupatorium serratum* Spreng. – Toma and Mendonça 2013 (n=1/São Francisco de Paula/RS), 2) no biome data – Mendonça et al. 2014 (n=2/RS).

Graphistylis itatiaiae (Dusén) B.Nord. (native species, NE) (n=1)

Gall (Fig. 60): on apical bud, brown (dried), glabrous, and multichambered. Galler: no determined. Parasitoids: Hymenoptera (fragments). Paths: Travessia Ruy Braga, 13/V/2015, Cinco Lagos, 11–12/V/2015.

No previous gall records on this plant species.

Grazielia gaudichaudeana (DC.) R.M.King and H.Rob. (native species, NE) (n=2)

Gall (Fig. 61): on leaf, globoid, green, and one–chambered. Galler: not determined. Inquilines: Lepidoptera (01 catterpilar, phytophagous free-living). Paths: Pedra da Maçã, Tartaruga and Assentada, 27/I/2015; Morro do Couto, 05/X/2015.

Gall (Fig. 62): on bud, rosette, green, glabrous, and one–chambered. Galler: Lepidoptera (03 catterpilars). Paths: Pedra da Maçã, Tartaruga and Assentada, 27/I/2015; Cinco Lagos, 12/05/2015; Travessia Ruy Braga, 13/V/2015, Pedra do Sino, 08/X/2015.

Previous gall records on this plant species: 1) in Atlantic forest (altitude fields) –Coelho et al. 2013a (n=1/Itatiaia).

Mikania buddleiaefolia DC. (endemic in Brazil, Atlantic forest, NE) (n=2)

Gall (Fig. 63): on leaf, globoid, adjacent to the midvein, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 pupa). Path: Travessia Ruy Braga, 08/XII/2014.

Gall (Fig. 64): on leaf petiole, globoid, brown, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 08/ XII/2014.

No previous gall records on this plant species.

Mikania glomerata Spreng. (native species, LC) (n=8)

Gall (Fig. 65): on stem, conical, green, glabrous, and one–chambered. Galler: *Asphondylia glomeratae* Gagné, 2001 (Cecidomyiidae). Path: Casa 33, 16/VI/2015.

Gall (Fig. 66): on leaf vein, fusiform, green, and one–chambered. Galler: *Alycaulus globulus* Gagné, 2001 (Cecidomyiidae) (01 pupa). Paths: BR–485, 04/VIII/2014, 12/XI/2014; Viúva Hansen, 10/IX/2014; Casa 25, 08/XII/2015; 23/II/2015. Previous records on the same gall morphotype on this plant species: in Atlantic forest – Gagné et al. 2001 (Silva Jardim, Poço das Antas and PNI/RJ), Oliveira and Maia 2005 (Grumari, Rio de Janeiro, RJ).

Gall (Fig. 67): on stem, fusiform, green, glabrous, and one or multi-chambered. Galler: *Asphondylia moehni* Skuhravá, 1989 (Cecidomyiidae) (02 larvae). Parasitoids: Hymenoptera (01 pupa, 04 adults). Inquilines: *Clinodiplosis* sp. (Cecidomyiidae) (01 larva). Paths: Cachoeira Poranga, 07/IV/2014, 24/II/2015; Donati–Simon 2, 08/IX/2014; Travessia Serra Negra, 14–15/X/2014; Centro de Visitantes, 09/XII/2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; BR–485, 28/I/2015, 23/II/2015; Casa 33, 16/VI/2015. Previous records on the same gall morphotype on this plant species: in Atlantic forest – Gagné et al. 2001 (Silva Jardim and Poço das Antas/RJ), Oliveira and Maia 2005 (Grumari, Rio de Janeiro, RJ).

Gall (Fig. 68): on leaf blade and petiole, conical, green, glabrous, and one–chambered. Galler: *Liodiplosis conica* Gagné, 2001 (Cecidomyiidae). Path: Ecoarte–Lago Azul, 08/IV/2014. Previous records on the same gall morphotype on this plant species: in Atlantic forest – Gagné et al. 2001 (Silva Jardim and Poço das Antas/RJ), Oliveira and Maia 2005 (Grumari, Rio de Janeiro, RJ).

Gall (Fig. 69): on leaf blade and petiole, globoid, green, glabrous, and one or multichambered. Galler: *Liodiplosis spherica* Gagné, 2001 (Cecidomyiidae) (07 larvae). Parasitoids: Hymenoptera (02 larvae, 01 adult). Inquilines: *Contarinia* sp. (Cecidomyiidae) (01 larva), *Clinodiplosis* sp. (Cecidomyiidae) (02 larvae), Coleoptera (01 larva). Successors: Thysanoptera (15 specimes). Paths: Ecoarte–Lago Azul, 08/IV/2014; Donati–Simon 2, 08/IX/2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; BR–485, 28/I/2015, 23/II/2015; Cachoeira Poranga, 24/II/2015; Travessia Ruy Braga, 24/II/2015; Casa 33, 16/VI/2015. Previous records on the same gall morphotype on this plant species: in Atlantic forest – Gagné et al. 2001 (Silva Jardim and Poço das Antas/RJ).

Gall (Fig. 70): on leaf, cylindrical, green, glabrous, and one–chambered. Galler: *Liodiplosis cylindrica* Gagné, 2001 (Cecidomyiidae) (04 larvae). Parasitoids: Hymenoptera (02 pupae, 01 adult). Paths: Ecoarte–Lago Azul, 08/IV/2014; Donati–Simon 2, 08/IX/2014; Viúva Hansen, 10/IX/2014; Travessia Ruy Braga, 10–12/XI/2014, 24/II/2015; BR–485, 12/XI/2014, 26/I/2015, 28/I/2015, 23/II/2015; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; Cachoeira Poranga, 24/II/2015; Casa 33, 16/VI/2015. Previous records on the same gall morphotype on this plant species: in Atlantic forest – Gagné et al. 2001 (Silva Jardim and Poço das Antas/RJ).

Gall (Fig. 71): on bud, globoid, brown, glabrous, and multichambered. Galler: *Perasphondylia mikaniae* Gagné, 2001 (Cecidomyiidae). Parasitoids: Hymenoptera (09 adults). Path: Donati–Simon 1, 10/IX/2014. Previous records on the same gall morphotype on this plant species: in Atlantic forest – Gagné et al. 2001 (Silva Jardim, Poço das Antas and PNI/RJ).

Gall (Fig. 72): on stem, cylindrical, brown, glabrous, and multichambered. Galler: not determined. Path: Casa 33, 16/VI/2015.

Mikania hirsutissima DC. (native species, NE) (n=2)

Gall (Fig. 73): on stem and leaf petiole, fusiform, green, pubescent, and one–chambered.

Galler: Cecidomyiidae (01 larva). Paths: BR–485, 09/XII/2014, Casa 25 08/XII/2015.

Gall (Fig. 74): on leaf blade, petiole and stem, globoid, green, with trichomes, and one–chambered. Galler: not determined. Dweller: Hemiptera (01 cochineal). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 14/IV/2015, BR–485, 09/XII/2014.

No previous gall records on this plant species.

Mikania lasiandra DC. (endemic in Brazil, Cerrado and Atlantic forest, NE) (n=1)

Gall (Fig. 75): on stem and leaf, unilateral, globoid, brown, and glabrous. Galler: Cecidomyiiidae (01 larva). Parasitoids: Hymenoptera (fragments). Path: Travessia Ruy Braga, 14/IV/2015.

No previous gall records on this plant species.

Mikania lindbergii Baker (endemic in Brazil, Caatinga, Cerrado and Atlantic forest, LC) (n=1)

Gall (Fig. 76): on leaf, conical, green, glabrous, and one–chambered. Galler: Cecidomyiidae (02 young larvae). Paths: Água Branca–Ruy Braga, 18/VI/2014; Viúva Hansen, 10/IX/2014; Cachoeira do Pitu, 25/II/2015.

Previous gall records on this plant species: in Cerrado – Maia and Fernandes 2004 (n=1/Serra de São José/MG).

Mikania micrantha Kunth (native species, NE) (n=1)

Gall (Fig. 77): on leaf, green, globoid, glabrous, and one to three-chambered. Galler: Cecidomyiidae. Path: Travessia Ruy Braga, 04/VIII/2014. Previous record of the same gall morphotype: in Cerrado – Maia and Fernandes 2004 (Serra de São José/MG).

Gall (Fig. 78): on leaf petiole, fusiform, green, glabrous, and one–chambered. Galler: Cecidomyiidae. Path: Água Branca–Ruy Braga, 18/VI/2014. Previous record of the same gall morphotype: in Atlantic forest – Maia et al. 2008 (Bertioga/SP).

Mikania periplocifolia Hook. and Arn. (native species, NE) (first record in RJ and Atlantic forest) (n=1)

Gall (Fig. 79): on leaf midvein, fusiform, green, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (01 pupa). Path: Centro de Visitantes, 97/VII/2014.

No previous gall records on this plant species.

Mikania pseudohoffmanniana G. M. Barroso (endemic in Brazil, Atlantic forest, NE) (first record in RJ) (n=2)

Gall (Fig. 80): on stem, fusiform, green, with tricomes, and one–chambered. Galler: Cecidomyiidae (01 young larva). Parasitoids: Hymenoptera (01 larva, 01 pupa). Paths: Travessia Ruy Braga, 08/VII/2014, 14/IV/2015, 15/IX/2015; Água Branca–Ruy Braga, 18/VI/2014; Centro de Visitantes, 07–08/VII/2014, 09/XII/2014.

Gall (Fig. 81): on bud, globoid, brown, and glabrous. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

No previous gall records on this plant species.

Mikania setigera Sch.Bip. (endemic in Brazil, Cerrado and Atlantic forest, NE) (n=1)

Gall (Fig. 82): on leaf vein, fusiform, yellowish, pubescent. Galler: not determined. Path: Travessia Ruy Braga, 14/IV/2015.

No previous gall records on this plant species.

Mikania Willd. sp.1 (native genus) (n=2)

Gall (Fig. 83): on leaf, globoid, green, and glabrous. Galler: Cecidomyiidae (04 larvae) (Fig.). Paths: Cachoeira Véu da Noiva, 17/III/2014; Três Picos, 13/V/2014; BR– 485, 23/II/2015.

Gall (no fig.): on leaf petiole, fusiform, green, glabrous, and one–chambered. Galler: Cecidomyiidae (08 larvae). Paths: BR–485, 23/II/2015.

Mikania Willd. sp.2 (n=1)

Gall (Fig. 84): on leaf midvein, fusiform, green, micropubescent, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Três Picos, 13/V/2014.

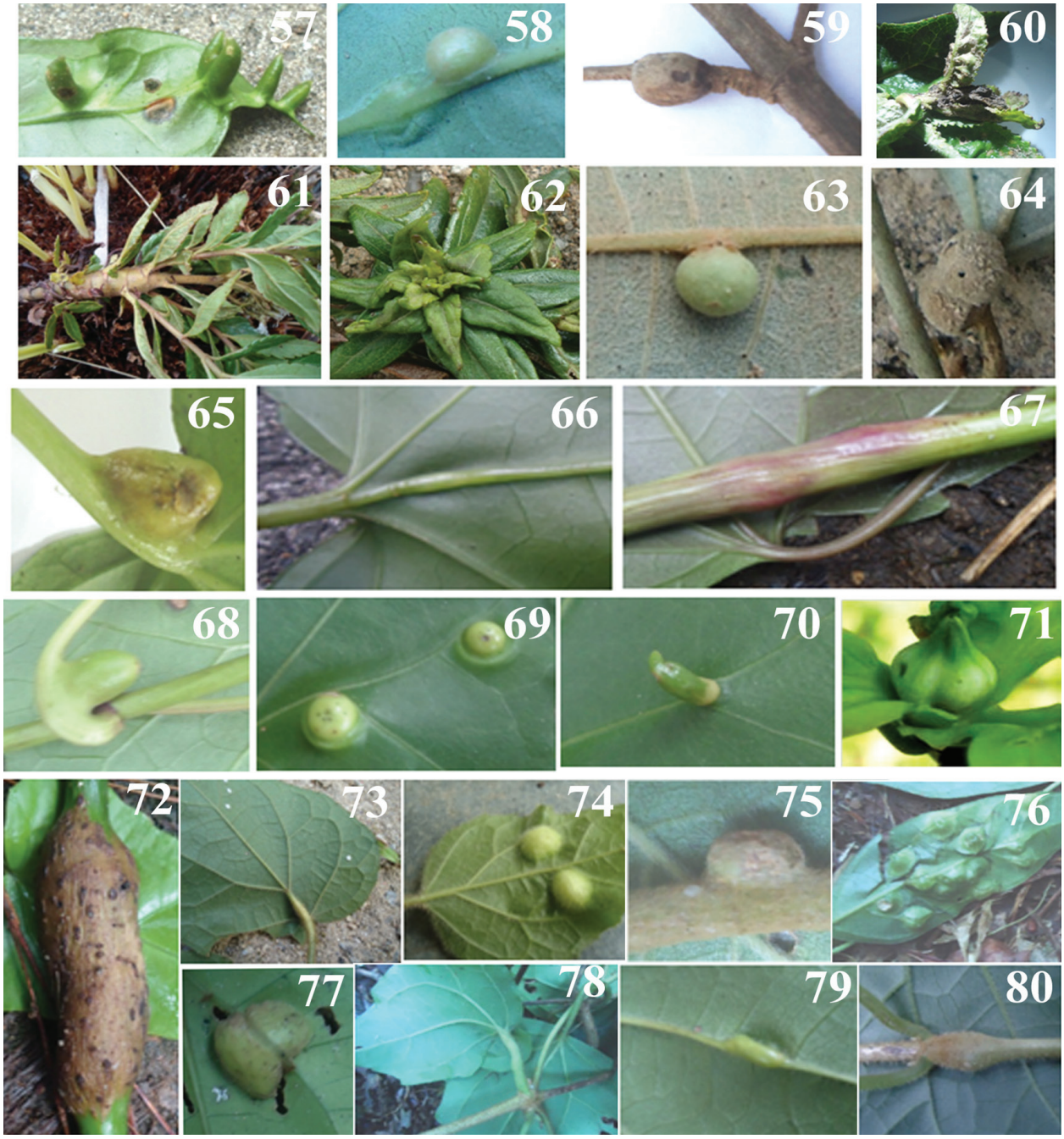

Figure 57-80 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), on Asteraceae, 57, *Eupatorium* sp.3, fusiform stem gall, 58, *Eupatorium* sp.4, globoid leaf gall, 59, *Eupatorium* sp.5, fusiform stem gall, 60, *Graphistylis itatiaiae*, apical bud gall, 61-62, *Grazielia gaudichaudeana*, 61, globoid leaf gall, 62, rosette bud gall, 63-64, *Mikania buddleiaefolia*, 63, globoid leaf gall, 64, globoid leaf petiole gall, 65-72, *M. glomerata*, 65, conical stem gall, 66, fusiform leaf vein gall, 67, fusiform stem gall, 68, conical leaf blade and petiole gall, 69, globoid leaf blade and petiole gall, 70, cylindrical gall, 71, globoid bud gall, 72, cylindrical stem gall, 73-74, *M. hirsutissima*, 73, fusiform stem and leaf petiole gall, 74, globoid leaf blade, petiole and stem gall, 75, *M. lasiandra*, globoid leaf and stem gall, 76, *M. lindbergii*, conical leaf gall, 77-78, *M. micrantha*, 77, globoid leaf, 78, fusiform leaf petiole, 79, *M. periplocifolia*, fusiform leaf midvein gall, 80, *M. pseudohoffmanniana*, fusiform stem gall.

Mikania Willd. sp. 3 (n=8)

Gall (Fig. 85): on subterraneous root, fusiform, brown, glabrous, and one–chambered. Galler: Lepidoptera. Path: Água Branca–Ruy Braga, 18/VI/2014.

Gall (Fig. 86): on leaf, discoid, green or reddish, glabrous, and one–chambered. Galler: Cecidomyiidae (01 young larva). Paths: Travessia Ruy Braga, 18/VI/2014; Água Branca–Ruy Braga, 18/VI/2014, 14/IV/2015, 15/IX/2015.

Gall (Fig. 87): on leaf, conical, green, glabrous, and one–chambered. Galler: Cecidomyiidae (02 young larvae). Parasitoids: Hymenoptera (05 larvae, 04 pupae). Path: Viúva Hansen, 10/IX/2014.

Gall (Fig. 88): on stem, fusiform or globoid, green or brown, and one–chambered. Galler: *Contarinia* sp. (Cecidomyiidae) (01 larva). Parasitoids: Hymenoptera (03 larvae, 01 pupa, 04 adults). Paths: Travessia Ruy Braga, 17/III/2015, 14/IV/2015, 18/VI/2014; Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 89): on leaf petiole and midvein, fusiform, reddish, pubescent, and one–chambered. Galler: not determined (empty galls). Path: Água Branca–Ruy Braga, 18/VI/2014.

Gall (Fig. 90): on leaf midvein, globoid, green, glabrous, and one–chambered. Galler: Cecidomyiidae (fragments of larva). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 08/VII/2014.

Gall (Fig. 91): on bud and stem, globoid, green, glabrous, and one–chambered. Galler: Lepidoptera (01 catterpilar) (Fig.). Path: Água Branca–Ruy Braga, 18/VI/2014, Três Picos, 11/XI/2014.

Gall (Fig. 92): on leaf petiole, fusiform, brown, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

Mikania Willd. sp. 4 (n=1)

Gall (Fig. 93): on stem, leaf petiole and vein, globoid, reddish, glabrous, and one–chambered. Galler: *Clinodiplosis* sp. (Cecidomyiidae) (1 larva). Path: Travessia Ruy Braga, 08/VII/2014.

Mikania Willd. sp. 5 (n=2)

Gall (Fig. 94): on stem, unilateral, green, globoid or fusiform, pubescent, and one–chambered. Galler: not determined (empty galls). Path: Hotel Donati, 04/VIII/2014.

Gall (Fig. 95): on leaf vein, globoid, green, pubescent, and one–chambered. Galler: not determined (empty gall). Paths: Hotel Donati, 04/VIII/2014; Travessia Serra Negra, 14–15/X/2014.

Mikania Willd. sp. 6 (n=1)

Gall (Fig. 96): on bud, rosette of leaves, green, glabrous, and one–chambered. Galler: not determined. Path: BR–485, 04/VIII/2014.

Mikania Willd. sp. 7 (n=1)

Gall (Fig. 97): on stem, fusiform, green, glabrous, and two-chambered. Galler: Cecidomyiidae (02 larvae). Parasitoids: Hymenoptera (02 larvae). Path: BR–485, 04/VIII/2014.

Previous gall records on undetermined species of *Mikania*: 1) in Atlantic forest – Maia and Oliveira 2010 (n=4/Angra dos Reis/RJ), Santos et al. 2011b (n=2/six municipalities/PE) Maia et al. 2014 (n=15/Santa Teresa/ES), Maia 2014 (n=4/Itamonte/MG), 2) in Cerrado – Malves and Frieiro-Costa 2012 (n=1/Ingaí/MG), 3) no biome data – Mendonça et al. 2014 (n=14/RS).

Pluchea sagittalis (Lam.) Cabrera (native species, NE) (n=1)

Gall (Fig. 98): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: not determined. Path: Posto Marcão–Abrigo Rebouças, 24/II/2014.

No previous gall records on this plant species.

Pentacalia desiderabilis (Vell.) Cuatred. (endemic in Brazil, Cerrado and Atlantic forest, NE) (n=1)

Gall (Fig. 99): on stem, globoid, brown, glabrous, and one–chambered. Galler: not determined. Paths: Morro do Couto, 05/I/2015; Travessia Ruy Braga, 15/IX/2015.

Previous gall records on this plant species: in Atlantic forest - Toma and Mendonça 2013 (N=1/ São Francisco de Paula/RS).

Piptocarpha leprosa (Less.) Baker (native species) (n=2)

Gall (Fig. 100): on midvein, fusiform, green, glabrous, and multichambered. Galler: Cecidomyiidae (02 larvae). Path: BR–485, 23/ II/2015.

Gall (Fig. 101): on leaf, globoid, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: BR–485, 23/ II/2015.

No previous gall records on this plant species.

Piptocarpha macropoda (DC.) Baker (endemic in Brazil, Cerrado and Atlantic forest, NE) (n=1)

Gall (no fig.): on leaf vein, globoid, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 24/II/2015.

No previous gall records on this plant species.

Pterocaulon virgatum (L.) DC. (native species, NE) (first record in RJ and Atlantic forest) (NE) (n=1)

Gall (Fig. 102): on stem, globoid, whittish, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (01 larva). Path: Pedra do Altar, 08/IV/2014.

No previous gall records on this plant species.

Senecio L. sp. (native genus) (n=1)

Gall (no fig.): on leaf vein, fusiform, yellowish, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (fragments). Path: Água Branca–Ruy Braga, 18/VI/2014.

No previous gall records on this plant genus.

Symphyopappus itatiayensis **(**Hieron.) R. M. King and H. Rod (endemic in Brazil, Cerrado and Atlantic forest, NE) (first record in altitude fields) (n=2).

Gall (Fig. 103): on leaf, amorphous, green, glabrous, and one–chambered. Galler: Lepidoptera (04 catterpilars). Paths: Pedra da Maçã, Tartaruga and Assentada, 27/I/2015; Cinco Lagos, 11/V/2015.

Gall (Fig. 104): on bud, ovoid, brown, glabrous, one or multi-chambered. Galler: not determined. Associated fauna: Coleoptera (03 larvae), Hymenoptera (01 pupa), 1 Tephritidae (01 adult). Paths: Cinco Lagos, 11/V/2015, Morro do Couto, 05/10/2015.

No previous gall records on this plant species.

Symphyopappus reticulatus Baker (endemic in Brazil, Cerrado, NE) (first record in MG and Atlantic forest) (n=3)

Gall (Fig. 105): on apical bud, globoid, with apical and cylindrical projections, brown, and glabrous. Galler: Cecidomyiidae (01 pupa). Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 106): on lateral bud, globoid, with a single apical projection, brown, glabrous, and one–chambered. Galler: Coleoptera (01 larva). Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 107): on stem and midvein, fusiform, green, glabrous, and one–chambered. Galler: Cecidomyiidae (larval fragments). Inquilines: Muscomorpha cfr. (03 larvae). Parasitoids: Hymenoptera (04 pupae). Path: Travessia Serra Negra, 14–15/X/2014.

Previous gall records on this plant species: 1) in Cerrado – Carneiro et al. 2009b (n=1/Cadeia do Espinhaço/MG), 2) no biome data: – Mendonça et al. 2014 (n=2/RS).

Verbesina glabrata Hook. and Arn. (native species, NE) (n=2)

Gall (Fig. 108): on bud, globoid, whittish, pubescent, and one–chambered. Galler: Cecidomyiidae (nine larvae). Path: Travessia Ruy Braga, 17/III/2015.

Gall (Fig. 109): on leaf, claviform, green, pubescent, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 17/III/2015.

No previous gall records on this plant species.

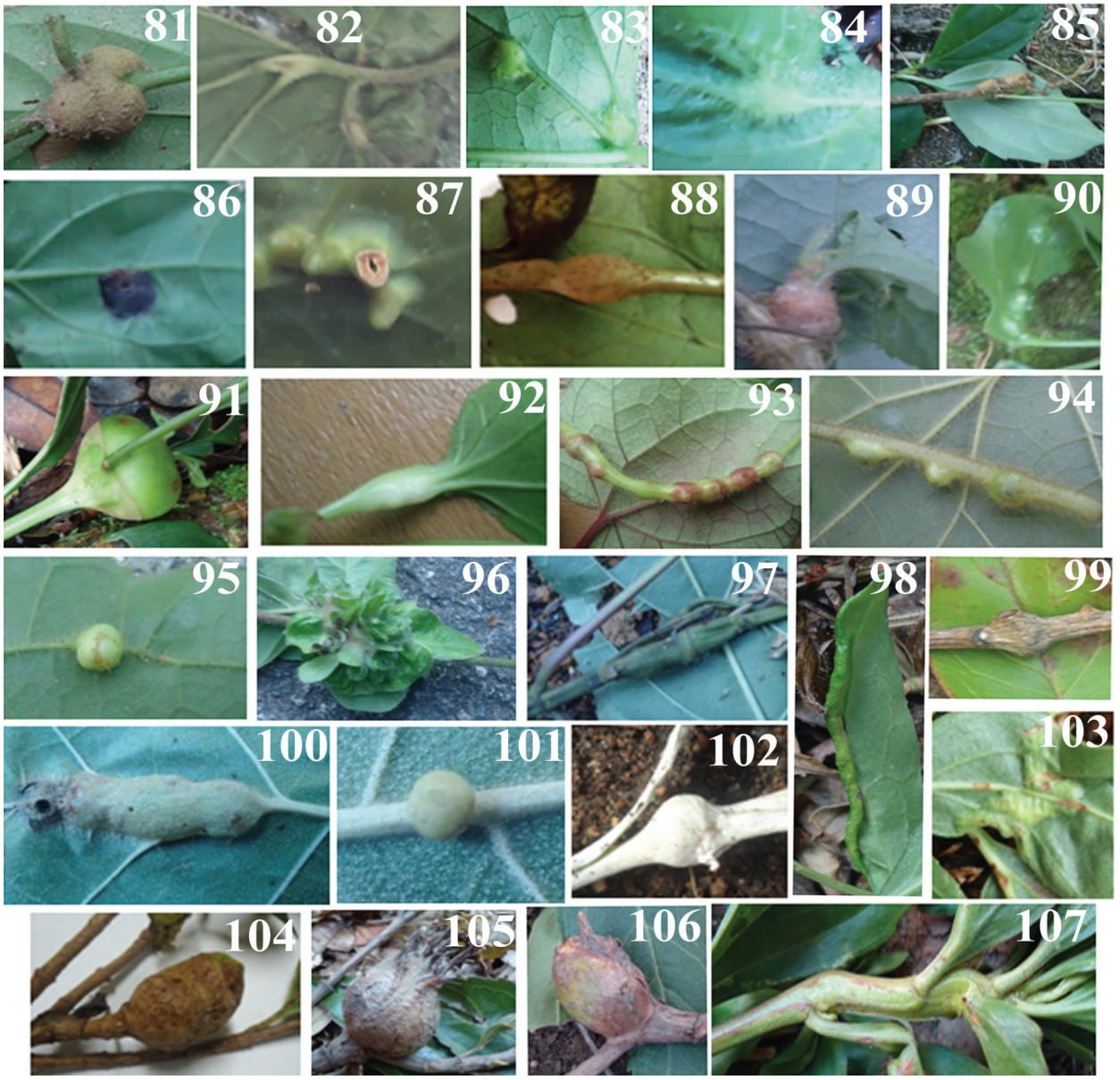

Fig 81-107 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), on Asteraceae, 81, *Mikania pseudohoffmanniana*, globoid bud gall, 82, *M. setigera*, fusiform leaf vein gall, 83, *Mikania* sp.1, globoid leaf gall, 84, *Mikania* sp.2, fusiform leaf midvein gall, 85-92, *Mikania* sp.3, 85, fusiform subterraneous root gall, 86, discoid leaf gall, 87, conical leaf gall, 88, fusiform stem gall, 89, fusiform leaf petiole and midvein gall, 90, globoid leaf midvein gall, 91, globoid stem and bud gall, 92, fusiform leaf petiole gall, 93, *Mikania* sp.4, globoid stem, leaf petiole and vein gall, 94-95, *Mikania* sp.5, 94, globoid and fusiform, unilateral stem gall, 95, globoid leaf vein gall, 96, *Mikania* sp.6, rosette bud gall, 97, *Mikania* sp.7, fusiform stem gall, 98, *Pluchea sagittalis*, marginal leaf roll, 99, *Pentacalia desiderabilis*, globoid stem gall, 100-101, *Piptocarpha leprosa*, 100, fusiform midvein gall, 101, globoid leaf gall, 102, *Pterocaulon virgatum*, globoid stem gall, 103-104, *Symphyopappus itatiayensis*, 103, amorphous leaf gall, 104, ovoid bud gall, 105-107, *S. reticulatus*, 105, globoid apical bud gall,106, globoid lateral bud gall, 107, fusiform stem and leaf midvein gall.

Vernonanthura membranacea (Gardner) H.Rob. (native species, NE) (first record in RJ and Atlantic Forest) (n=1)

Gall (Fig. 110): on bud, globoid, green, glabrous, and one or three-chambered. Galler: Tephritidae, Diptera (04 puparia, 02 adults). Parasitoids: Hymenoptera (01 adult). Paths: Cachoeira do Aiuruoca, 19/III/2014; Pedra da Maçã, Tartaruga and Assentada, 27/I/2015.

No previous gall records on this plant species.

Vernonanthura montevidensis (Spreng.) H.Rob. (native species, NE) (first record in RJ) (n=1)

Gall (Fig. 111): on leaf, lineal, yellow, glabrous, and one–chambered. Galler: Lepidoptera (01 catterpilar). Path: Pedra do Altar, 08/IV/2014.

Previous gall records on this plant species: Maia et al. 2014 (n=1/Santa Teresa/SP).

Vernonanthura H. Rob. sp. (n=2)

Gall (Fig. 112): on stem, fusiform, brown, glabrous, and one–chambered. Galler: Tephritidae. Path: BR–485, 23/II/2015.

Gall (Fig. 113): on vein, fusiform, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: BR–485, 23/II/2015

No previous gall records on this genus.

Vernonia Schreb. sp. 1 (native genus) (first occurrence in RJ) (n=1)

Gall (Fig. 114): on stem, fusiform, brown, glabrous, and one–chambered. Galler: Lepidoptera (01 catterpilar). Paths: Água Branca–Ruy Braga, 18/VI/2014, Viúva Hansen, 10/IX/2014.

Vernonia Schreb. sp. 2 (n=1)

Gall (Fig. 115): on stem, fusiform, brown, glabrous, and one–chambered. Galler: Lepidoptera. Successors: ants (Formicidae). Paths: Travessia Ruy Braga, 14/IV/2015, 15/IX/201; Travessia Serra Negra, 14–15/X/2014; Três Picos, 11/XI/2014.

Vernonia Schreb. sp.3 (n=1)

Gall (Fig. 116): on stem, leaf petiole and midvein, globoid or fusiform, green, with trichomes, and one–chambered. Galler: Cecidomyiidae. Path: BR–485, 28/01/2015.

Previous gall records on undetermined species of *Vernonia*: 1) in Atlantic forest – Maia et al. 2014 (n=1/Santa Teresa/ES), Maia 2013b (n=2/São Tomé das Letras/MG), Maia 2014 (n=4/Itamonte/MG), 2) in Cerrado – Maia and Fernandes 2004 (n=1/Serra de São José/MG), Gonçalves-Alvim and Fernandes 2001 (n=1/MG)

BERBERIDACEAE (N=1)

Berberis laurina Billb. (native species, Atlantic forest, NE) (n=1)

Gall (Fig. 117): on leaf, globoid, red, glabrous, and one–chambered. Galler: Psyllidae (Hemiptera). Path: Pedra do Camelo, 14/IX/2015.

Previous gall records on this plant species: no biome data – Mendonça et al. 2014 (n=2/RS).

BIGNONIACEAE (N=8)

Fridericia Mart. sp. (native genus) (n=1)

Gall (Fig. 118): on stem and leaf vein, fusiform, green, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (02 pupae, 01 adult). Paths: Lago Azul 18/III/ 2014, BR–485, 28/I/2015.

Previous gall records on this plant genus: as *Arrabidaea* (sin. het.):1) in Cerrado – Santos et al. 2010 (n=2/Goiânia/GO), Araújo et al. 2011 (n=1/Serra dos Pireneus/GO), Gonçalves-Alvim and Fernandes 2001 (n=1/MG), Saito and Urso-Guimarães 2012 (n=4/Jataí/SP), 2) in Amazonian forest – Almada and Fernandes 2011 (n=1/Oriximiná/PA), Maia 2011 (n=3/ Oriximiná/PA); 3) in Atlantic forest: as *Fridericia* sp. – Fernandes et al. 2001 (n=5/Vale do Rio Doce/MG).

Dolichandra unguis-cati (L.) L.G.Lohmann (native species, NE) (n=2)

Gall (Fig. 119): on stem, fusiform, green, glabrous, and multichambered. Galler: Muscomorpha (19 puparia). Paths: Cachoeira

Itaporani, 17 /III/2014, 12/V/2014; Três Picos, IX/2014; Travessia Ruy Braga, 10–12/XI/2014, 08/XII/2014, 16/III/2015; BR–485, 12/XI/2014.

Gall (Fig. 120): on bud and stem, globoid, brown, glabrous, and multichambered. Galler: not determined (empty galls). Path: BR–485, 12/XI/2014.

No previous gall records on this plant species.

Jacaranda copaia (Aubl.) D. Don (native species, NE) (first record in Southeast Region and Atlantic forest) (n=1)

Gall (Fig. 121): on stem and leaf petiole, fusiform, brown, and glabrous. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 10–12/XI/2014.

No previous gall records on this plant species.

Mansoa difficilis (Cham.) Bureau and K.Schum. (native species, NE) (n=1)

Gall (Fig. 122): on stem, fusiform, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (02 larvae). Path: BR–485, 28/01/2015.

No previous gall records on this plant species.

Mansoa DC.sp. (native genus) (n=1)

Gall (Fig. 123): on stem, fusiform, brown, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

No previous gall records on this plant genus.

Not determined 1 (n=1)

Gall (Fig. 124): on bud, fusiform, reddish, glabrous, and one–chambered. Galler: not determined. Path: Agulhas Negras, 08/VII/2014.

Not determined 2 (n=1)

Gall (Fig. 125): on leaf, discoid, green, glabrous, and one–chambered. Galler: not determined. Path: Casa 25, 08/XII/2015.

BORAGINACEAE (N=1)

Cordia L. sp. (native genus) (n=1)

Gall (Fig. 126): on stem, fusiform, brown, pubescent, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (fragments). Path: Centro de Visitantes, 07–08/VII/2014.

Previous gall records on undetermined species of *Cordia*: 1) in Cerrado – Araújo et al. 2012 (n=1/GO), Maia and Fernandes 2004 (n=1/Serra de São José/MG), 2) Caatinga–Cerrado – Costa et al. 2015 (n=1/Caetité/BA), 3) in Amazonian forest – Almada and Fernandes 2011 (n=2/Oriximiná/PA), Maia 2011 (n=1/ Oriximiná/PA).

BURSERACEAE (N=4)

Protium crassipetalum Cuatrec. (native species, NE) (first record in Southeast Region and Atlantic forest) (n=1)

Gall (Fig. 127): on leaf, globoid, opened, green, glabrous, and one–chambered. Galler: Hemiptera. Path: Ecoarte–Lago Azul, 08/IV/2014.

No previous gall records on this plant species.

Protium tenuifolium (Engl.) Engl. (native species, NE) (first record in Southeast Region and Atlantic forest) (n=1)

Gall (Fig. 128): on leaf, discoid, opened, green, glabrous, and one–chambered. Galler: Hemiptera. Path: Ecoarte–Lago Azul, 08/IV/2014.

Previous gall records on this plant species: in Amazonian forest – Almada and Fernandes 2011 (n=1/Oriximiná/PA).

Protium Burm. f. sp. (native genus) (n=2)

Gall (Fig. 129): on leaf, marginal roll, green, glabrous, one–chambered. Galler: Cecidomyiidae. Paths: Viúva Hansen, 10/IX/2014; Barbosa Rodrigues (obelisk), 10/XII/2014; BR–485, 23/II/2015.

Gall (Fig. 130): on leaf, hemispherical, green, glabrous, and one–chambered. Galler: Hemiptera. Paths: Viúva Hansen, 10/IX/2014; BR–485, 23/II/2015.

Previous gall records on undetermined species of *Protium*: 1) in Amazonian forest – Almada and

Fernandes 2011 (n=5/Oriximiná/PA), Araújo et al. 2012 (n=4/Oriximiná/PA), 2) in Cerrado – Araújo et al. 2015 (n=3/GO).

CANNABACEAE (N=3)

Celtis iguanaea (Jacq.) Sarg. (native species, NE) (n=1)

Gall (Fig. 131): on leaf vein, fusiform, green, with trichomes, and one–chambered. Galler: Cecidomyiidae (03 larvae). Path: Casa 25, 08/XII/2015.

Previous gall records on this plant species: 1) in Cerrado – Coelho et al. 2009 (n=1/Serra do Cipó/MG), Santos et al. 2010 (n=1/Goiânia/GO), 2) no biome data – Mendonça et al. 2014 (n=3/RS).

Celtis L. sp. (native genus) (n=2)

Gall (Fig. 132): on stem, fusiform, green, with brow micropubescence. Galler: not determined. Path: Travessia Ruy Braga, 04/VIII/2014.

Gall (no fig.): on leaf petiole, globoid, brown, glabrous, and one–chambered. Galler: Lepidoptera (01 catterpilar). Path: Travessia Ruy Braga, 04/VIII/2014.

Previous gall records on undetermined species of *Celtis*: in Atlantic forest –Fernandes and Negreiros 2006 (n=1/Aimorés/MG).

COMBRETACEAE (N=2)

Combretum fruticosum (Loefl.) Stuntz (native species, NE) (first record in altitude fields) (n=1)

Gall (Fig. 133): on leaf midvein, fusiform, green, glabrous, and one–chambered. Galler: not determined (empty gall). Path: Prateleiras, 09/IV/2014.

No previous gall records on this plant species.

Combretum Loefl. sp. (native genus) (n=1)

Gall (Fig. 134): on leaf, globoid, green, glabrous, and one–chambered. Galler: not determined. Path: Centro de Visitantes, 07-08/VII/2014.

Previous gall records on *Combretum*: 1) in Caatinga: on *C.leprosum* Mart. – Tavares 1925 (n=1/Ceará), 2) in Amazonian forest on *C. laxum* Jacq. – Almada and Fernandes 2011 (n=1/Oriximiná/Pará).

CONVOLVULACEAE (N=5)

Dicranostyles Benth. sp. (native genus) (n=2)

Gall (Fig. 135): on stem, fusiform, green, glabrous, and one or multichambered. Galler: Cecidomyiidae (01 pupa, 01 pupal exuvia, 03 adults). Parasitoids: Hymenoptera (01 pupa). Paths: Cachoeira Itaporani, 17/III/2014; Donati–Simon 2, 08/IX/2014; Três Picos, 08/IX/2014; Travessia Ruy Braga, 16/III/2015.

Gall (no fig.): on leaf, discoid, green, and glabrous. Galler: not determined (empty galls). Path: Cachoeira Itaporani, 17 /III/2014, 12/V/2014.

No previous records on this plant genus.

Ipomoea L. sp1. (native genus) (n=2)

Gall (Fig. 136): on leaf, discoid, green, glabrous, and one–chambered. Galler: not determined. Path: Hotel Donati, 04/VIII/2014.

Gall (no fig.): on stem, globoid, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (03 larvae). Path: Hotel Donati, 04/VIII/2014.

Ipomoea L. sp2. (n=1)

Gall (Fig. 137): on stem, globoid, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (03 larvae). Path: Hotel Donati, 04/VIII/2014.

No previous records on this plant genus.

CUNONACEAE (N=2)

Lamanonia ternata Vell. (endemic in Brazil, Cerrado and Atlantic forest, NE) (first record in altitude fields) (n=1)

Gall (no fig.): on leaf petiole, fusiform, brown, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 14/IV/2015.

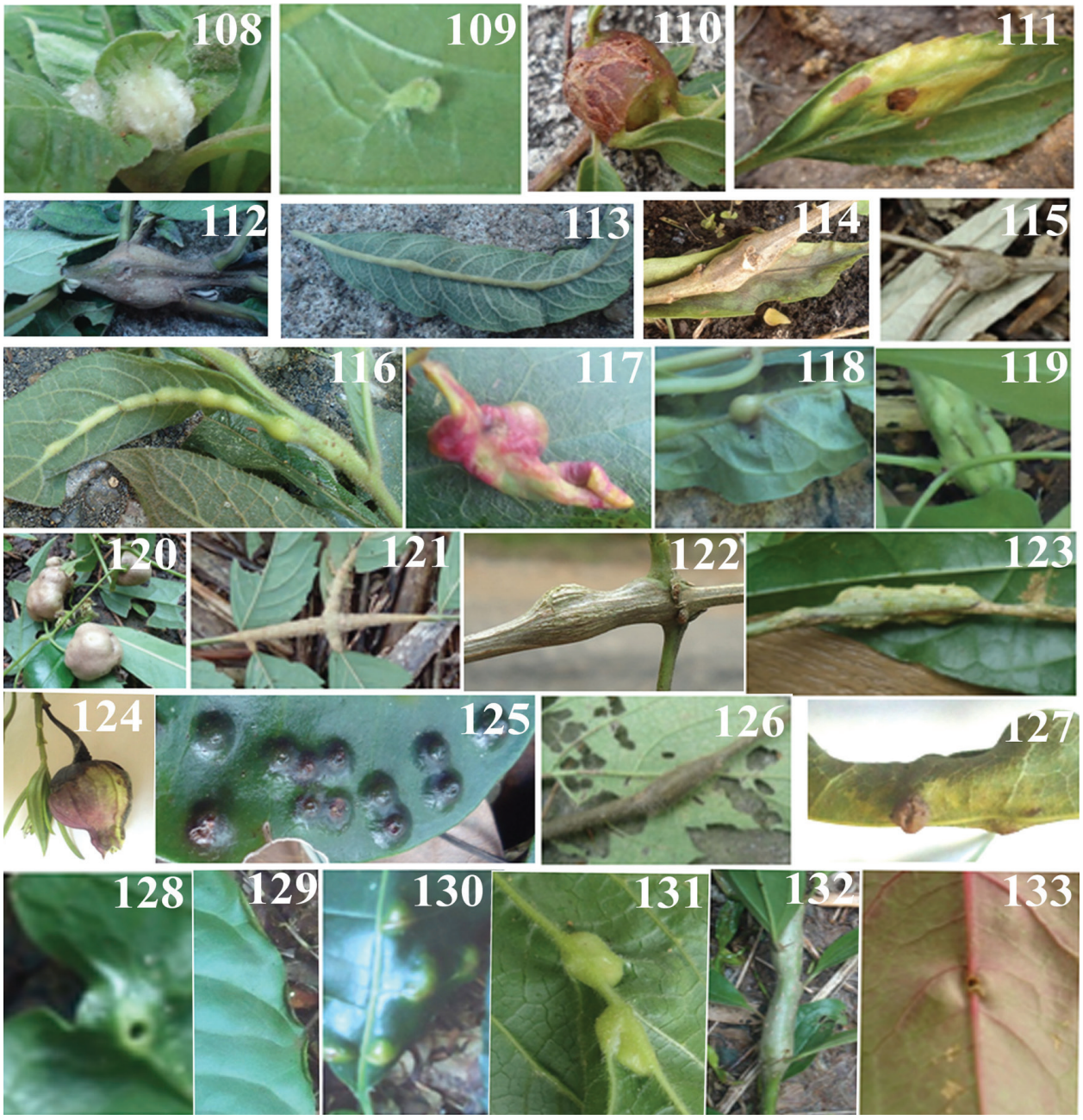

Figure 108-133 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), 108-109, *Verbesina glabrata*, 108, globoid bud gall, 109, claviform leaf gall, 110, *Vernonanthura menbranacea*, globoid bud gall, 111, *V. montevidensis*, lineal leaf gall, 112-113, *Vernonanthura* sp., 112, fusiform stem gall, 113, fusiform vein gall, 114, *Vernonia* sp.1, fusiform stem gall, 115, *Vernonia* sp.2, fusiform stem gall, 116, *Vernonia* sp.3, leaf petiole and midvein, globoid or fusiform, 117, on Berberidaceae, *Berberis laurina*, globoid leaf gall, 118-125, on Bignoniaceae, 118, *Fridericia* sp., fusiform stem and leaf vein gall, 119-120, *Dolichandra unguis-cati*, 119, fusiform stem gall, 210, globoid bud and stem gall, 121, *Jacaranda copaia*, fusiform stem and leaf petiole gall, 122, *Mansoa difficilis*, fusiform stem gall, 123, *Mansoa* sp., fusiform stem gall, 124, Bignoniaceae sp.1, fusiform bud gall, 125, Bignoniaceae sp.2, discoid leaf gall, 126, on Boraginaceae, *Cordia* sp., fusiform stem gall, 127-130, on Burseraceae, 127, *Protium crassipetalum*, globoid leaf gall, 128, *P. tenuifolium*, discoid leaf gall, 129-130, *Protium* sp., 129, marginal leaf roll, 130, hemispherical leaf gall, 131-132, on Cannabaceae, 131, *Celtis iguana*, fusiform leaf vein gall, 132, *Celtis* sp., fusiform stem gall, 133, on Combretaceae, *Combretum fruticosum*, fusiform leaf midvein gall.

No previous gall records on this plant genus.

Weinmannia humilis Engl. (endemic in Brazil, Atlantic forest, NE) (first record in altitude fields) (n=1)

Gall (Fig. 138): on bud, globoid, green, micropubescent, and one–chambered. Galler: Hemiptera. Paths: Prateleiras, 09/IV/2014, Asa de Hermes, 16/IX/2015.

No previous gall records on this plant species.

CURCUBITACEAE (N=1)

Cayaponia pilosa (Vell.) Cogn. (native species, NE) (n=1)

Gall (Fig. 139): on bud, cylindrical, green, with five green filiform projections, scattered trichomes, and one–chambered. Galler: Lepidoptera (02 catterpilars). Path: BR–485, 26/I/2015.

No previous gall records on this plant species. Previous records on this plant genus: 1) in Atlantic forest: on *Cayaponia* sp. – Toma and Mendonça 2013 (n=2/SFP/RS).

DILLENIACEAE (N=4)

Davilla Vand. sp. (native genus) (n=1)

Gall (Fig. 140): on bud, pineapple-like, green, glabrous, and imbricated. Galler: Lepidoptera. Paths: Travessia Ruy Braga, 24/II/2015; BR–485, 23/II/2015.

Previous records of the same gall morphotype: 1) in Atlantic forest – on *Davilla* sp.: Maia et al. 2014 (Santa Teresa/ES), 2) in Cerrado – on *Davilla braziliana* DC: Maia and Fernandes 2004 (Serra de São José/MG).

Doliocarpus Rol. sp.1 (native genus) (n=1)

Gall (Fig. 141): on vein, fusiform, yellowish, pubescent, and one–chambered. Galler: not determined (empty galls). Path: Hotel Donati, 04/VIII/2014.

Doliocarpus Rol. sp.2 (n=2)

Gall (Fig. 142): on bud, globoid, brown, glabrous, and one–chambered. Galler: not determined. Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 143): on stem, fusiform, brown, glabrous, and multichambered. Galler: probably Hymenoptera (03 larvae). Path: Travessia Ruy Braga, 14/IV/2015.

Previous gall records on this plant genus: in Cerrado – Maia et al. 2010 (n=1/ Dores do Indaiá/MG).

DIOSCOREACEAE (N=3)

Dioscorea L. sp. (native genus) (n=3)

Gall (Fig. 144): on leaf blade and petiole, globoid, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Centro de Visitantes, 07–08/VII/2014.

Gall (Fig. 145): on leaf, cylindrical, green, glabrous, and one–chambered. Galler: not determined. Successors: Thysanoptera (3 nymphs). Path: Centro de Visitantes, 07–08/VII/2014.

Gall (Fig. 146): on leaf vein, fusiform, greenish, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Centro de Visitantes, 07–08/VII/2014.

Previous gall records on this plant genus: 1) in Atlantic forest – Santos et al. 2013 (n=1/PE), 2) no biome data – Mendonça et al. 2014 (n=2/RS).

EBENACEAE (N=1)

Diospyros L. sp. (native genus) (n=1)

Gall (Fig. 147): on bud, globoid, green, with red pubescence, and one–chambered. Galler: Lepidoptera (pupa fragments). Path: Três Picos, 11/XI/2014.

Previous gall records on this plant genus: in Atlantic forest – Maia 2013b (n=1/ São Tomé das Letras/MG).

EUPHORBIACEAE (N=14)

Acalypha communis Müll. Arg. (native species, NE) (n=1)

Gall (Fig. 148): on leaf, conical, green, hairy, and one–chambered. Galler: not determined. Path: BR–485, 26/I/2015.

Previous gall records on this plant genus: 1) in Atlantic forest: on *Acalypha* sp.– Tavares 1918 (n=1/RJ), 2) in Pantanal: on *Acalypha* cf. *communis* – Julião et al. 2002 (n=1/MS).

Croton campanulatus Caruso and Cordeiro (endemic in Brazil, Atlantic forest, NE) (n=1)

Gall (Fig. 149): on stem, fusiform, brown, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (01 adult). Path: BR–485, 26/I/2015.

No previous gall records on this plant species.

Croton floribundus Spreng. (endemic in Brazil, Caatinga, Cerrado and Atlantic forest, NE) (n=4)

Gall (Fig. 150): on leaf, globoid, green or yellow, hairy, and one–chambered. Galler: Cecidomyiidae (02 larvae, 13 pupae). Parasitoids: Hymenoptera (08 larvae, 03 pupae, 01 adult). Inquilines: Lepidoptera (02 catterpilars). Paths: Lago Azul, 18/III/ 2014; Ecoarte–Lago Azul, 08/IV/2014; Centro de Visitantes, 07–08/VII/2014; Casa 16, 07/VII/2014; BR–485, 04/VIII/2014, 09/XII/2014, 26/I/2015, 23/II/2015; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014, Barbosa Rodrigues (obelisk), 10/XII/2014.

Gall (Fig. 151): on leaf, discoid, green, glabrous, and one–chambered. Galler: Cecidomyiidae (02 larvae). Paths: Lago Azul, 18/III/ 2014; Ecoarte–Lago Azul, 08/IV/2014; BR–485, 23/II/2015.

Gall (Fig. 152): on stem, fusiform, brown, glabrous, and multichambered. Galler: not determined (empty gall). Path: BR–485, 23/II/2015.

Gall (Fig. 153): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: BR–485, 04/VIII/2014.

Previous gall records on this plant species: 1) in Atlantic forest – Maia et al. 2014 (n=1/Santa Teresa/ES), Rodrigues et al. 2014 (n=3/Ilha da Marambaia/RJ), 2) in Cerrado – Urso-Guimarães et al. 2003 (n=1/Delfinópolis/MG), Maia and Fernandes 2004 (n=5/Serra de São José/MG)

Croton L. sp. 1 (native genus) (n=1)

Gall (Fig. 154): on stem, globoid, brown, and glabrous. Galler: not determined. Path: Travessia Serra Negra, 14–15/X/2014.

Previous gall records on undetermined species of *Croton* L.: 1) in Atlantic forest – Rübsaamen 1905 (n=2/ Itabininha/RJ), Fernandes et al. 2001 (n=1/Vale do Rio Doce/MG), Maia 2013b (n=2/São Tomé das Letras/ES), Maia 2014 (n=5/Itamonte/MG), Maia et al. 2014 (n=1/Santa Teresa/ES), Toma and Mendonça 2013 (n=1/São Francisco de Paula/RS), 2) in Cerrado – Malves and Frieiro-Costa 2012 (n=4/Ingaí/MG)

Dalechampia scandens L. (native species, NE) (first record in RJ) (n=1)

Gall (Fig. 155): on leaf and bud, globoid, yellow, with white trichomes, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (02 larvae, 05 pupae, 01 adult). Path: Viúva Hansen, 10/IX/2014.

No previous gall records on this plant species.

Manihot esculenta Crantz (native species) (first record in RJ and Atlantic forest, NE) (n=1)

Gall (Fig. 156): on stem, globoid, brown, and glabrous. Galler: not determined. Path: Donati–Simon 2, 08/IX/2014.

Previous gall records on this plant species: as *Manihot utilissima* Pohl (sin. het), in Atlantic forest – Rübsaamen 1908 (n=1/RJ).

Pachystroma longifolium (Nees) Im. Johnst (native species, NE) (n=1)

Gall (Fig. 157): on leaf, conical, green, glabrous, and one–chambered. Galler: Hemiptera (01 nymph). Path: BR–485, 26/I/2015.

Previous gall records on this plant species: 1) in Atlantic forest – Maia and Carvalho-Fernandes 2016 (n=3/São Francisco de Itabapoana/RJ).

Sapium Jacq. sp.1 (native genus) (n=2)

Gall (Fig. 158): on leaf blade and petiole, globoid, green, glabrous, and one–chambered.

Galler: Hemiptera. Path: Hotel Donati, 04/VIII/2014.

Gall (Fig. 159): on bud, conical, wide, brown, glabrous, and one–chambered. Galler: Lepidoptera. Path: Hotel Donati, 04/VIII/2014.

Sapium Jacq. sp.2 (n=1)

Gall (Fig. 160): on leaf vein, globoid, green, glabrous, and one–chambered. Galler: Coccoidea (Hemiptera). Path: Travessia Ruy Braga, 10–12/XI/2014.

Previous gall records on this plant genus: 1) no biome data: on *Sapium glandulosum* (L.) Morong (n=1/RS) and on *S. haematospermum* Mull. Arg. (n=1/RS) – Mendonça et al. 2014

Sebastiania Spreng. sp. (native genus) (n=1)

Gall (Fig. 161): on leaf midvein, globoid, brownish, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Água Branca–Ruy Braga, 18/VI/2014.

Previous gall records on this plant genus: 1) in Cerrado – Araújo et al. 2011 (n=1/Pireneus/GO), 2) no biome data: on *Sebastiania brasiliensis* Spreng. (n=1/RS) and on *S. commersonianna* (Baill.) L.B.Sm. and Downs (n=1/RS) – Mendonça et al. 2014.

FABACEAE (N=29)

Calliandra brevipes Benth (native species, NE) (n=1)

Gall (Fig. 162): on bud, ovoid, brown, glabrous, and multichambered. Galler: Hymenoptera (16 adults). Path: Casa 25, 08/XII/2015.

Previous gall records on this plant: no biome data – Mendonça et al. 2014 (n=2/RS).

Centrosema sp. (DC.) Benth. (native genus) (n=1)

Gall (Fig. 163): on stem, fusiform, brown or reddish, and glabrous. Galler: not determined. Path: Travessia Ruy Braga, 15/IX/2015.

Previous gall records on this plant genus: 1) in Atlantic forest: on *C. virginianum* (L.) Benth – Carvalho-Fernandes et al. 2016 (n=1/RL/RJ).

Dahlstedtia pinnata (Benth.) Malme (endemic in Brazil, Atlantic forest, NE) (n=1)

Gall (Fig. 164): on stem, fusiform, green, glabrous, and one–chambered. Galler: not determined. Sucessors: Sciaridae (06 adults, 04 pupae, 05 pupal exuviae and 06 larvae). Path: BR–485, 28/I/2015.

No previous gall records on this plant species.

Dalbergia foliosa (Benth.) A.M. Carvalho (native species, NE) (first record in Southeast region and Atlantic forest) (n=1)

Gall (Fig. 165): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 24/II/2015.

Previous gall records on this plant species: 1) in Atlantic forest – Maia 2013b (n=3/STL/MG).

Dalbergia subcymosa Ducke (native species, NE) (first record in Southeast Region and Atlantic forest) (n=1)

Gall (Fig. 166): on leaf, coalescent, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Três Picos, 11/XI/2014.

No previous gall records on this plant species.

Derris Lour. sp. (native genus (n=2)

Gall (Fig. 167): on leaf, fold, green, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

Gall (Fig. 168): on leaf vein, fusiform, brown, glabrous, and one–chambered. Galler: not determined (egg). Path: Travessia Ruy Braga, 08/VII/2014.

Previous gall records on this plant genus: 1) in Atlantic forest – Santos et al. 2011b: on *Derris guilleminiana* (Tul.) J.F. Macbr (n=1/six municipalities/PE).

Grazielia gaudichaudeana (DC.) R.M.King and H.Rob. (endemic in Brazil, Cerrado and Atlantic forest, NE) (n=3)

Gall (Fig. 169): on stem, fusiform, brown, and glabrous. Galler: Lepidoptera. Inquilines:

Figure 134-164 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), 134, on Combretaceae, *Crombretum* sp., globoid leaf gall, 135-137, on Convolvulaceae, 135, *Dicranostyles* sp., fusiform stem gall, 136, *Ipomoea* sp.1, discoid leaf gall, 137, *Ipomoea* sp.2, fusiform stem gall, 138, on Cunonaceae, *Weinmannia humilis,* globoid bud gall, 139, on Curcubitaceae, *Cayaponia pilosa*, cylindrical bud gall, 140-143, on Dilleniaceae, 140, *Davilla* sp., pineapple-like bud gall, 141, *Doliocarpus* sp.1, fusiform leaf vein gall, 142-143, *Doliocarpus* sp.2, 142, globoid bud gall, 143, fusiform stem gall, 144-146, on Dioscoreaceae, *Dioscorea* sp., 144, globoid leaf blade and petiole gall, 145, cylindrical leaf gall, 146, fusiform leaf vein gall, 147, on Ebenaceae, *Diospyros* sp., globoid bud gall, 148-161, on Euphorbiaceae, 148, *Acalypha communis*, conical leaf gall, 149, *Croton campanulatus*, fusiform stem gall, 150-153, *C. floribundus*,150, globoid leaf gall, 151, discoid leaf gall, 152, fusiform stem gall, 153, marginal leaf roll, 154, *Croton* sp., globoid stem gall, 155, *Dalechampia scandens*, globoid leaf and bud gall, 156, *Manihot esculenta*, globoid stem gall, 157, *Pachystroma longifolium*, conical leaf gall, 158-159, *Sapium* sp.1, 158, globoid leaf blade and petiole gall, 159, conical bud gall, 160, *Sapium* sp.2, globoid leaf vein gall, 161, *Sebastiania* sp., globoid leaf midvein gall, 162-164, on Fabaceae, 162, *Calliandra brevipes*, ovoid bud gall, 163, *Centrosema* sp., fusiform stem gall, 164, *Dahlstedtia pinnata*, fusiform stem gall.

Coleoptera (01 larva). Paths: Pedra da Maçã, Tartaruga and Assentada, 27/I/2015, Cinco Lagos, 12/V/2015, Travessia Ruy Braga, 15/IX/2015.

Gall (no fig.): on leaf, fold, green, glabrous, and one–chambered. Galler: Lepidoptera (03 catterpilars). Path: Travessia Ruy Braga, 13/V/2015.

Gall (Fig. 170): on bud, rosette, green, glabrous, and one–chambered. Galler: not determined (empty galls). Paths: Pedra da Maçã, Tartaruga and Assentada, 27/I/2015, Cinco Lagos, 12/V/2015.

No previous gall records on this plant species.

Inga barbata Benth (endemic in Brazil, Cerrado and Atlantic forest, NE) (n=1)

Gall (Fig. 171): on leaf, globoid, green, with red trichomes, and one–chambered. Galler: not determined (empty galls). Path: Barbosa Rodrigues (obelisk), 10/X/2014, 10/XII/2014.

No previous gall records on this plant species.

Inga gracilifolia Ducke (native species, NE) (first record in Southeast Region and Atlantic forest) (n=1)

Gall (Fig. 172): on apical and lateral bud, globoid, whittish, glabrous, and multichambered (Fig.). Galler: not determined. Parasitoids: Hymenoptera (01 larva/chamber). Path: Três Picos, 08/IX/2014.

Previous gall records on this plant species: in Amazonian forest – Almada and Fernandes 2011 (n=1/Oriximiná/PA).

Inga grandiflora Ducke (native species, NE) (first record in Southeast Region and Atlantic forest) (n=3)

Gall (Fig. 173): on stem, leaf petiole and vein, fusiform, brown, and glabrous. Galler: Cecidomyiidae (12 larvae, 06 pupal exuviae, 02 males) Parasitoids: Hymenoptera (03 larvae, 05 pupae, 06 adults). Inquilines: Thysanoptera (01 adult). Paths: Cachoeira Poranga, 17/III/2014, 07/IV/2014; Três Picos, 13/V/2014, 11/XI/2014, 28/I/2015; Travessia Ruy Braga, 14/V/2014, 08/VII/2014, 24/II/2015, 16/III/2015; Água Branca–Ruy Braga, 18/VI/2014; Donati–Simon 2, 08/IX/2014; Viúva Hansen, 10/IX/2014; BR–485, 12/XI/2014; Cachoeira do Pitu, 25/II/2015; Travessia Ruy Braga, 24/II/2015.

Gall (Fig. 174): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: not determined (empty galls). Paths: Viúva Hansen, 10/IX/2014; Travessia Ruy Braga, 08/XII/2014, 16/III/2015.

Gall (no fig.): on leaf, globoid, hairy, brown, and one–chambered. Galler: Cecidomyiidae (01 larva). Parasitoids: Hymenoptera (03 larvae, 02 adults). Path: Donati–Simon 2, 08/IX/2014.

No previous gall records on this plant species.

Inga marginata Willd. (native species, NE) (n=2)

Gall (Fig. 175): on leaf midvein, fusiform, yellow, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Centro de Visitantes, 07–08/VII/2014.

Gall (Fig. 176): on leaf, globoid, green, glabrous, and one–chambered. Galler: not determined. Path: BR–485, 04/VIII/2014.

Previous gall records on this plant species: 1) in Cerrado – Araújo et al. 2015 (n=1/GO), 2) no biome data – Mendonça et al. 2014 (n=2/RS).

Inga cf. sessilis (Vell) Mart. (endemic in Brazil, Cerrado, Amazonian and Atlantic forest, NE) (n=1)

Gall (Fig. 177): on leaf midvein, fusiform, brown, with brown pubescence, and one–chambered. Galler: Cecidomyiidae (01 young larva). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 18/VI/2014.

No previous gall records on this plant species.

Luetzelburgia auriculata (Allemão) Ducke (endemic in Brazil, Cerrado, Amazonian and Atlantic forest, NE) (first record in RJ and Atlantic forest) (n=1)

Gall (Fig. 178): on bud, globoid, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 08/VII/2014.

No previous gall records on this plant species.

Machaerium nyctitans (Vell.) Benth. (native species, LC) (n=2)

Gall (Fig. 179): on stem, unilateral, globoid, brown, glabrous, and one–chambered. Galler: Lepidoptera (silk in the internal chamber). Paths: Viúva Hansen 10/IX/2014; BR–485, 12/XI/2014, 26/I/2015.

Gall (Fig. 180): on bud and leaf, globoid, red, hairy, and one–chambered. Galler: not determined. Paths: Travessia Ruy Braga, 08/VII/2014; BR–485, 26/I/2015.

No previous gall records on this plant species.

Machaerium Pers. sp. (n=1)

Gall (Fig. 181): on bud, conical, flattened, green, and glabrous. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

Previous gall records on undetermined species of *Machaerium*: 1) in Atlantic forest – Rübsaamen 1908 (n=1/Tubarão/SC, n=1/Rio de Janeiro/RJ), Tavares 1916 (n=1/Friburgo/RJ), Tavares 1920 (n=2/ Friburgo/RJ), Fernandes et al. 2001 (n=1/ Vale do Rio Doce/MG), Fernandes and Negreiros 2006 (n=1/Aimorés/MG), Maia 2013b (n=1/ São Tomé das Letras/MG), Maia et al. 2014 (n=1/ Santa Teresa/ES), Maia and Carvalho-Fernandes 2016 (n=6/São Francisco de Itabapoana/RJ), 2) in Amazonian forest: – Almada and Fernandes 2011 (n=2/Oriximiná/PA).

Mimosa candollei R.Grether (native species, NE) (n=1)

Gall (Fig. 182): on bud, globoid, brown, and glabrous. Galler: not determined. Path: Travessia Serra Negra, 14–15/X/2014.

No previous gall records on this plant species.

Mimosa itatiaiensis Dusén (endemic in Brazil, Atlantic Florest, NE) (n=1)

Gall (Fig. 183): on apical and lateral bud, globoid, brown, pubescent, and multichambered (Fig.). Galler: not determined. Parasitoids: Hymenoptera (adult fragments). Path: Cinco Lagos, 11–12/V/2015.

No previous gall records on this plant species.

Mimosa melanocarpa Benth. (endemic in Brazil, Cerrado, NE) (first record in RJ and Atlantic forest) (n=4)

Gall (Fig. 184): on stem, fusiform, rusty, glabrous, and curved. Galler: not determined. Inquilines: Hemiptera. Paths: BR–485, 09/ XII/2014; Ecoarte–Lago Azul, 08/IV/2014.

Gall (Fig. 185): on stem, fusiform, green or brown, straight, with brown grooves and small spines. Galler: Cecidomyiidae (02 larvae). Paths: BR–485, 09/XII/2014; Travessia Ruy Braga, 08/ VII/2014; Mirante do Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014.

Gall (Fig. 186): on leaf and bud, globoid, yellow, with trichomes (red basally and green apically), and one–chambered. Galler: Cecidomyiidae (01 larva, 01 pupal exuviae). Parasitoids: Hymenoptera (01 adult). Paths: Centro de Visitantes, 07-08/VII/2014; Três Picos, 11/XI/2014; BR–485, 23/II/2015.

Gall (Fig. 187): on leaf, globoid, brown, glabrous, and one–chambered. Galler: not determined (empty galls). Path: BR–485, 23/ II/2015.

No previous gall records on this plant species.

Mimosa L. sp. (n=1)

Gall (Fig. 188): on bud, conical, widest apically, with string projections, greenish, glabrous, and one–chambered. Galler: Cecidomyiidae (02 larvae). Path: Viúva Hansen, 10/IX/2014.

Previous gall records on this plant genus: in caatinga – Maia et al. 2010 on *Mimosa tenuiflora* (Willd.) Poir (as *Mimosa hostiles*) (n=2/ Parnamirim/PE).

LAMIACEAE (N=6)

Aegiphila Jacq. sp. (native genus) (n=1)

Gall (Fig. 189): on leaf, globoid, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (02 larvae). Path: Viúva Hansen, 10/IX/2014.

No previous records on this plant genus.

Hesperozygis myrtoides (A. St.-Hil. Ex Benth.) Epling (endemic in Brazil, Atlantic forest, NE) (n=1)

Gall (Fig. 190): on bud, ovoid, brown, glabrous, and one–chambered. Galler: Lepidoptera. Path: Travessia Ruy Braga, 13/V/2015.

No previous gall records on this plant.

Rhabdocaulon coccineum (Benth.) Epling (endemic in Brazil, Atlantic forest, NE) (n=1)

Gall (Fig. 191): on bud, fusiform, green, glabrous, spongy internally, and multichambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 13/V/2015.

No previous gall records on this plant.

Salvia oligantha Dúsen (endemic in Brazil, Atlantic forest, NE) (n=1)

Gall (Fig. 192): on leaf, globoid, yellow, pubescent, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 17/III/2015.

No previous gall records on this plant.

Salvia sellowiana Benth. (endemic in Brazil, Atlantic forest, NE) (n=2)

Gall (Fig. 193): on leaf vein, fusiform, orange, and one–chambered. Galler: not determined. Associated fauna: Hymenoptera (01 adult). Path: Casa 33, 16/VI/2015.

Gall (Fig. 194): on leaf, cylindrical, green, pubescent, and onechambered. Galler: not determined. Path: Casa 33, 16/VI/2015.

No previous gall records on this plant.

LAURACEAE (N=5)

Nectandra membranacea (Sw.) (native species, NE) (n=1)

Gall (no Fig.): on leaf, globoid, reddish, with trichomes, and one–chambered. Galler: not determined. Path: Barbosa Rodrigues, 09/XII/2014.

No previous gall records on this plant species.

Nectandra Rol. ex Rottb. sp. (native genus) (n=1)

Gall (Fig. 195): on leaf, globoid, yellow, and glabrous. Galler: not determined. Path: Travessia Serra Negra, 14–15/X/2014.

Previous gall records on undetermined species of this genus: 1) in Atlantic forest – Maia 2014 (n=1/Itamonte/MG), Maia et al. 2014 (n=1/Santa Teresa/ES), 2) no biome data – Mendonça et al. 2014 (n=2/RS).

Ocotea Aubl. sp. (native genus) (n=2)

Gall (Fig. 196): on leaf, globoid, greenish, glabrous, and one–chambered. Galler: Hemiptera. Path: Casa de Pedra, 25/II/2014.

Gall (no fig.): on bud, globoid, reddish, glabrous, and multichambered. Galler: not determined. Path: Travessia Ruy Braga, 24/II/2015.

Previous gall records on undetermined species of this genus: 1) in Atlantic Forest – Maia 2013b (n=1/São Tomé das Letras/MG), Maia et al. 2014 (n=1/Santa Teresa/ES), 2) in Cerrado – Maia and Fernandes 2004 (n=1/Serra de São José/MG), 3) in Amazonian forest – Almada and Fernandes 2011 (n=1/Oriximiná/PA), Araújo et al. 2012 (n=6/Oriximiná/PA, 4) no biome data – Mendonça et al. 2014 (n=2/RS).

Phyllostemonodaphne geminiflora (Mez) Kosterm (native species, LC) (n=1)

Gall (no fig.): on leaf, globoid, green, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (01 adult, 03 pupae). Path: Travessia Ruy Braga, 24/II/2015.

No previous gall records on this plant species.

LORANTHACEAE (N=09)

Phthirusa Mart. sp. 1 (native genus) (n=4)

Gall (Fig. 197): on aerial root, conical, brown, and glabrous. Galler: not determined. Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 198): on leaf, conical, reddish, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (02 pupae,

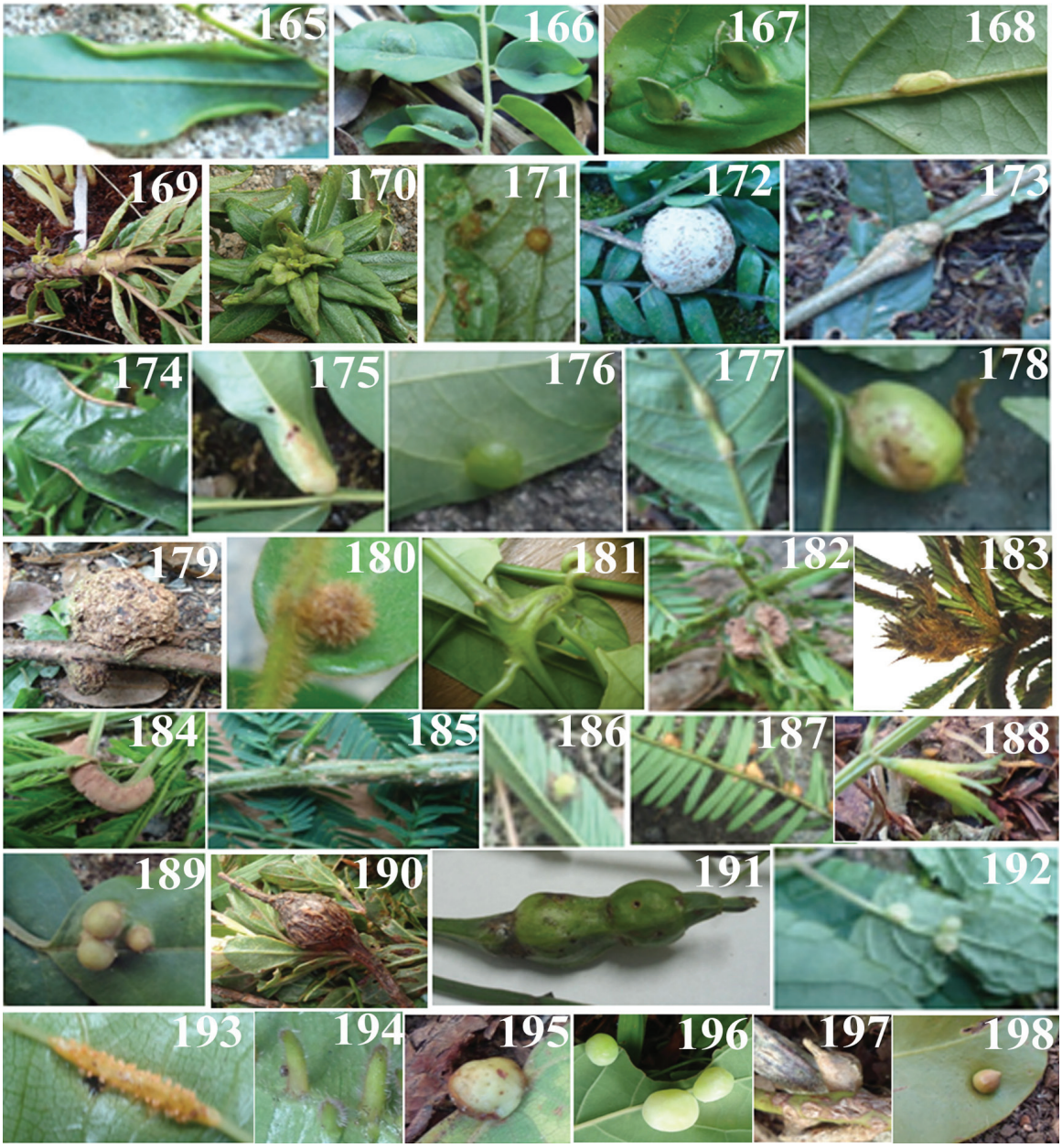

Figure 165-198 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), 165-188, on Fabaceae, 165, *Dalbergia foliosa*, marginal leaf roll, 166, *D. subcymosa*, coalescent leaf gall, 167-168, *Derris* sp., 167, leaf fold, 168, fusiform leaf vein gall, 169-170, *Grazielia gaudichaudeana*, 160, fusiform stem gall, 170, rosette bud gall, 171, *Inga barbata*, globoid leaf gall, 172, *I. gracilifolia*, globoid bud gall, 173-174, *I. grandiflora*, 173, fusiform stem, leaf petiole and vein gall, 174, marginal leaf roll, 175-176, *I. marginata*, 175, fusiform leaf midvein gall, 176, globoid leaf gall, 177, *Inga cf. sessilis*, fusiform leaf midvein gall, 178, *Luetzelburgia auriculata*, globoid bud gall, 179-180, *Machaerium nyctitans*, 179, globoid stem gall, 180, globoid bud and leaf gall, 181, *Machaerium* sp., conical bud gall, 182, *Mimosa candollei*, globoid bud gall, 183, *M. itatiayensis*, globoid bud gall, 184-174, *M. melanocarpa*, 184, fusiform stem gall, 185, fusiform stem gall, 186, globoid bud and leaf gall, 187, globoid leaf gall, 188, *Mimosa* sp., conical bud gall, 189-194, on Lamiaceae, 189, *Aegiphila* sp., globoid leaf gall, 190, *Hesperozygis myrtoides*, ovoid bud gall, 191, *Rhabdocaulon coccineum*, fusiform bud gall, 192, *Salvia oligantha*, globoid leaf gall, 193-194, *S. sellowiana*, 193, fusiform leaf vein gall, 194, cylindrical leaf gall, 195-196, on Lauraceae, 195, *Nectandra* sp., globoid leaf gall, 196, *Ocotea* sp., globoid leaf gall, 197-198, on Loranthaceae, *Phthirusa* sp.1, 197, conical aerial root gall, 198, conical leaf gall.

01 adult). Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 199): on bud and leaf, globoid, green, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (02 pupae, 01 adult). Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 200): on leaf, globoid, brown, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (01 pupa). Path: Água Branca–Ruy Braga, 18/VI/2014.

Phthirusa Mart.sp. 2 (n=2)

Gall (Fig. 201): on leaf, globoid, green, and glabrous. Galler: not determined. Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 202): on stem, fusiform, brown, and glabrous. Galler: not determined. Path: Travessia Serra Negra, 14–15/X/2014.

Previous gall records on this genus: in Atlantic forest – Maia 2014 (n=4/Itamonte/MG).

Struthanthus concinnus (Mart.) Mart. (endemic in Brazil, Caatinga, Cerrado, Amazonian and Atlantic forest, NE) and ***Struthanthus pentamerus*** Rizzini (endemic in Brazil, Atlantic forest, occurrence only in RJ) (NE) (n=3)*

Gall (Fig. 203): on leaf and bud, globoid, yellow, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Travessia Ruy Braga, 15/IX/2015.

Gall (Fig. 204): on bud, ovoid, with a leaf-like apical projection, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Inquilines: Lepidoptera. Path: Travessia Ruy Braga, 15/IX/2015.

Gall (Fig. 205): on leaf, fusiform, yellowish, with trichomes, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 15/IX/2015.

* As both species were collected as they were a single taxon, we could not determine which one hosted which gall morphotype.

Previous gall records on *S. concinnus*: Rodrigues et al. 2014 recorded other two morphoypes, one on root induced by Cecidomyiidae and the other on leaf and stem induced by *Asphondylia* sp. (Cecidomyiidae) in Marambaia, RJ.

No previous gall records on *S. pentamerus*.

MALPIGHIACEAE (N=3)

Byrsonima Rich. ex Kunth. sp. (native genus) (n=1)

Gall (Fig. 206): on leaf, conical, rusty, pubescence, and one–chambered. Galler: not determined (empty galls). Path: BR–485, 04/VIII/2014.

Previous gall records on undetermined species of this genus: 1) in Atlantic forest – Fernandes et al. 1997 (n=3/Vale do Jequitinhonha/MG), Santos et al. 2011b (n=1/six municipalities/PE), Maia et al. 2014 (n=3/Santa Teresa/ES), 2) in Cerrado – Maia and Fernandes 2004 (n=1/Serra de São José/MG), Araújo et al. 2011 (n=1/ Pirenópolis, GO), Carneiro et al. 2009b (n=3/Serra do Espinhaço/MG), Coelho et al. 2013b (n=1/ Serra do Cabral/MG), Araújo et al. 2015 (n=4/GO), 3) in Amazonian forest – Almada and Fernandes 2011 (n=1/Oriximiná/PA), 4) in Caatinga – Santos et al. 2011a (n=1/PE).

Heteropterys Kunth. sp. (native genus) (n=1)

Gall (Fig. 207): on aerial root, fusiform, brown, and glabrous. Galler: not determined. Path: Água Branca–Ruy Braga, 18/VI/2014.

Previous gall records on this genus: in Atlantic forest – on *H. nitida*: Maia 2001 (n=1/Maricá/RJ).

Niedenzuella acutifolia (Cav.) W.R.Anderson (native species, NE) (n=1)

Gall (Fig. 208): on leaf, globoid, yellow, glabrous, and one–chambered. Galler: not determined (empty galls). Paths: Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; BR–485, 28/I/2015, 23/II/2015.

No previous gall records on this genus.

MELASTOMATACEAE (N=66)

Bellucia Raf. sp. (native genus) (first record in Southeast Region and Atlantic forest) (n=3)

Gall (Fig. 209): on bud, rough, globoid, green, glabrous, and one–chambered. Galler: *Lopesia* sp. (Cecidomyiidae) (01 larva). Path: Travessia Ruy Braga, 04/VIII/2014.

Gall (Fig. 210): on leaf midvein, fusiform, green, glabrous, and one–chambered. Galler: Lepidoptera (01 pupa). Parasitoids: Hymenoptera (01 larva). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 04/VIII/2014, Três Picos, 09/IX/2014.

Gall (Fig. 211): on leaf, fold, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 04/VIII/2014.

Previous gall records on this genus: in Amazonian forest – on *B. grossularioides* (L.) Triana: Almada and Fernandes 2011 (n=1/ Oriximiná/PA), Maia 2011 (n=1/ Oriximiná/PA), on *B. imperialis* Saldanha and Cogn. – Almada and Fernandes 2011 (n=1/Oriximiná/PA/Amazonian forest).

Clidemia D. Don. sp.1 (native genus) (n=2)

Gall (Fig. 212): on bud, leaf blade and petiole, globoid, hairy, green, and one–chambered. Galler: *Lopesia* sp. (Cecidomyiidae) (04 pupae, 01 pupal exuvia, 09 larvae). Parasitoids: Hymenoptera (01 larva, 04 adults). Inquilines: Thysanoptera (02 adults). Paths: Cachoeira Itaporani, 17/III/2014, 12/V/2014; Cachoeira Véu da Noiva, 17/III/2014; Três Picos, 13/V/2014; 11/XI/2014; Casa 16, 07/VII/2014; Travessia Ruy Braga, 08/VII/2014, 08/XII/2014, 05/VIII/2014; 16/III/2015; Donati–Simon 2, 08/IX/2014; Viúva Hansen, 10/IX/2014; Travessia Serra Negra, 14–15/X/2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; Barbosa Rodrigues (obelisk), 10/XII/2014; BR–485, 26/I/2015, 23/II/2015; Cachoeira do Pitu, 25/II/2015.

Gall (Fig. 213): on bud and leaf, fusiform, green, with many long brown trichomes, and one–chambered. Galler: Lepidoptera (03 catterpilars). Path: Travessia Ruy Braga, 08/VII/2014.

Clidemia D. Don. sp. 2 (n=1)

Gall (Fig. 214): on bud, globoid, green, with red pubescence, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Hotel Donati, 04/VIII/2014.

Clidemia D. Don. sp.3 (n=1)

Gall (Fig. 215): on leaf blade and petiole, globoid, hairy, rusty, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: BR–485, 12/XI/2014.

Previous gall records on undetermined species of *Clidemia*: 1) in Atlantic forest – Santos et al. 2011b (n=1/six municipalities/PE), Maia 2013b (n=3/São Tomé das Letras/MG), Maia et al. 2014 (n=1/Santa Teresa/ES), Maia 2014 (n=4/Itamonte/MG).

Leandra hirta Raddi (endemic in Brazil, Atlantic forest, NE) (n=2)

Gall (Fig. 216): on stem, fusiform, brown, with trichomes, and one–chambered. Galler: Cecidomyiidae (1 adult). Path: BR–485, 26/I/2015.

Gall (Fig. 217): on leaf, globoid, green, with trichomes, and one–chambered. Galler: not determined (empty galls). Path: BR–485, 26/I/2015.

No previous gall records on this plant species.

Leandra sericea DC. (endemic in Brazil, Atlantic forest, NE) (n=1)

Gall (Fig. 218): on leaf, globoid, with trichomes. Galler: Cecidomyiidae. Path: BR–485, 26/I/2015.

No previous gall records on this plant species.

Leandra sulfurea (Naudin) Cogn. (endemic in Brazil, Cerrado and Atlantic forest, NE) (n=1)

Gall (no fig.): on leaf midvein, fusiform, green, glabrous, and one–chambered. Galler: Lepidoptera (01 pupa). Path: Pedra do Camelo, 14/IX/2015.

No previous gall records on this plant species.

Maieta guianensis Aubl (native species) (first record in Southeast Region and Atlantic forest, NE) (n=1)

Gall (Fig. 219): on leaf vein, fusiform, reddish, glabrous, and one–chambered. Galler: Lepidoptera (02 catterpilars). Paths: Lago Azul, 18/III/2014; Cachoeira Poranga, 07/IV/2014.

No previous gall records on this plant species.

Miconia ceramicarpa (DC.) Cogn. (native species, NE) (first record in Southeast Region and Atlantic forest) (n=2)

Gall (Fig. 220): on stem, fusiform, brown, glabrous, and multichambered. Galler: *Contarinia* sp. (Cecidomyiidae) (01 larva). Paths: Ecoarte–Lago Azul, 08/IV/2014; Cachoeira Itaporani, 12/V/2014.

Gall (Fig. 221): on leaf, globoid, green or red, with wittish or greenish trichomes, and one–chambered. Galler: Cecidomyiidae (01 pupa). Path: Três Picos, 08/XI/2014.

No previous gall records on this plant species.

Miconia chrysophylla (Rich.) Urb. (native species, NE) (first record in Southeast Region and Atlantic forest) (n=1)

Gall (Fig. 222): on leaf, globoid, yellow, with brown trichomes, and one–chambered. Galler: Cecidomyiidae (01 larva). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 18/VI/2014.

No previous gall records on this plant species.

Miconia cuspidata Naudin (native species, NE) (first record in RJ) (n=1)

Gall (Fig. 223): on bud, conical, flattened, green, glabrous, and one–chambered. Galler: Lopesiini (Cecidomyiidae) (02 larvae). Parasitoids: Hymenoptera (02 adults). Paths: Travessia Ruy Braga, 08/VII/2014; Viúva Hansen, 10/IX/2014; Centro de Visitantes, 09/XII/2014; BR–485, 26/I/2015.

No previous gall records on this plant species.

Miconia myriantha Benth. (native species, NE) (first record in Southeast Region and Atlantic forest) (n=3)

Gall (Fig. 224): on stem and leaf petiole, globoid, brown, glabrous, and one–chambered. Galler: Lepidoptera (01 catterpilar). Path: Travessia Ruy Braga, 08/VII/2014.

Gall (Fig. 225): on bud, globoid, green, glabrous, with rough surface, and one–chambered. Galler: Lepidoptera (01 catterpilar). Paths: BR–485, 04/VIII/2014, 12/XI/2014; Viúva Hansen, 10/IX/2014.

Gall (Fig. 226): on leaf, globoid, green, glabrous, and one–chambered. Galler: not determined (empty galls). Paths: Cachoeira Véu da Noiva, 17/III/2014; Viúva Hansen, 10/IX/2014.

No previous gall records on this plant species.

Miconia paucidens DC. (endemic in Brazil, Cerrado, LC) (first record in RJ and Atlantic forest) (n=2)

Gall (Fig. 227): on bud, globoid, green, with green or red micropubescence. Galler: Lepidoptera (2 catterpilars). Path: Ecoarte–Lago Azul, 08/IV/2014.

Gall (Fig. 228): on leaf, globoid, green, with red trichomes, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

No previous gall records on this plant species.

Miconia pusilliflora (DC.) Naudin (native species, NE) (n=1)

Gall (Fig. 229): on stem, globoid, green, glabrous, and one–chambered. Galler: Lepidoptera (02 catterpilars). Path: Travessia Ruy Braga, 08/VII/2014.

Previous gall records in this plant species: in Atlantic forest – Maia et al. 2008 (n=1/Bertioga), Toma and Mendonça 2013 (n=1/São Francisco de Paula/RS).

Miconia urophylla DC. (endemic in Brazil, Atlantic forest, NE) (n=2)

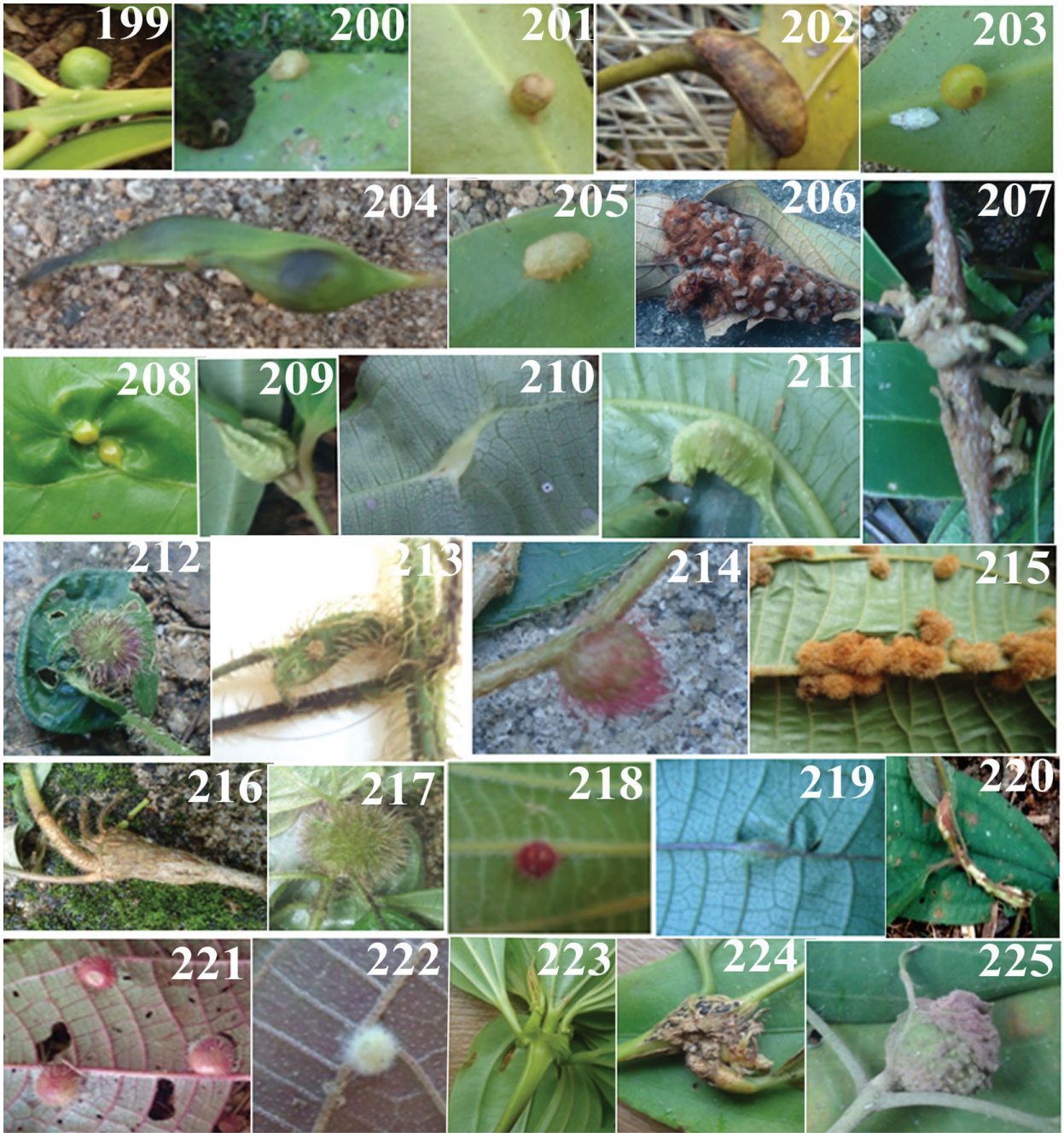

Figure 199-225 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), 199-205, on Loranthaceae, 199-200, *Phthirusa* sp.1, 199, globoid bud and leaf gall, 200, globoid leaf gall, 201-202, *Phthirusa* sp.2, 201, globoid leaf gall, 202, fusiform stem gall, 203-205, *Struthanthus concinnus* and *S. pentamerus*, 203, globoid bud and leaf gall, 204, ovoid bud gall, 205, fusiform leaf gall, 206-208, on Malpighiaceae, 206, *Byrsonima* sp., conical leaf gall, 207, *Heteropterys* sp., fusiform aerial root gall, 208, *Niedenzuella acutifolia*, globoid leaf gall, 209-225, on Melastomataceae, 209-211, *Bellucia* sp., 209, globoid bud gall, 210, fusiform leaf midvein gall, 211, leaf fold, 212-213, C*lidemia* sp.1, 212, globoid bud gall, 213, fusiform bud gall, 214, *Clidemia* sp.2, globoid bud gall, 215, *Clidemia* sp.3, globoid leaf blade and petiole gall, 216-217, *Leandra hirta*, 216, fusiform stem gall, 217, globoid leaf gall, 218, *L. sericea*, globoid leaf gall, 219, *Maieta guianensis*, fusiform leaf vein gall, 220-221, *Miconia ceramicarpa*, 220, fusiform stem gall, 221, globoid leaf gall, 222, *M. chrysophylla*, globoid leaf gall, 223, *M. cuspidata*, conical bud gall, 224-225, *M. myriantha*, 224, globoid stem and leaf petiole gall, 225, globoid bud gall.

Gall (Fig. 230): on bud, ovoid, reddish, glabrous, and multichambered. Galler: not determined (empty gall). Path: Casa 25, 08/XII/2015.

Gall (Fig. 231): on stem, fusiform, brown, and glabrous. Galler: not determined (empty gall). Path: Casa 25, 08/XII/2015.

No previous gall records on this plant species.

Miconia Ruiz and Pav. sp.1 (n=2)

Gall (Fig. 232): on leaf midvein, fusiform, green, glabrous, and one–chambered. Galler: Lepidoptera (04 catterpilars). Parasitoids: Hymenoptera (02 larvae). Paths: Três Picos, 13/V/2014, 11/XI/2014; Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 24/II/2015. Similar gall recorded on *Miconia* sp. by Maia 2014 in the PNI (Brejo da Lapa).

Gall (Fig. 233): on leaf petiole, conical, green, and glabrous. Galler: not determined (empty gall). Path: Cachoeira Itaporani, 17 /III/2014.

Miconia Ruiz and Pav. sp.2 (n=2)

Gall (Fig. 234): on leaf, conical, green, glabrous, and one–chambered. Galler: Cecidomyiidae (02 gregarious larvae). Path: Cachoeira Itaporani, 12/V/2014.

Gall (Fig. 235): on leaf, globoid, rust, brown with brown pubescence, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (02 larvae, 02 pupae). Paths: Cachoeira Véu da Noiva, 17/III/2014; Cachoeira Poranga, 07/IV/2014.

Miconia Ruiz and Pav. sp.3 (n=2)

Gall (Fig. 236): on bud, globoid, green, with red pubescence, and one–chambered. Galler: Lepidoptera (03 catterpilars). Inquilines: Muscomorpha (01 larva). Paths: Cachoeira Poranga, 07/IV/2014; Casa 16, 07/VII/2014; Travessia Ruy Braga, 08/VII/2014; Viúva Hansen, 10/IX/2014.

Gall (Fig. 237): on stem, fusiform, woody, brown, glabrous, and one–chambered. Path: Viúva Hansen, 10/IX/2014.

Miconia Ruiz and Pav. sp.4 (n=4)

Gall (Fig. 238): on stem, fusiform, whittish, and one–chambered. Galler: Cecidomyiidae (01 young larva). Paths: Travessia Serra Negra, 14–15/X/2014; Travessia Ruy Braga, 17/III/2015.

Gall (Fig. 239): on leaf vein, fusiform, green, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 14/IV/2015, 15/IX/2015.

Gall (Fig. 240): on leaf, ovoid, green, with thin projections, and one–chambered. Galler: not determined Parasitoids: Hymenoptera (01 pupa). Paths: Água Branca–Ruy Braga, 18/VI/2014, 14/IV/2015; Travessia Serra Negra, 14–15/X/2014; Três Picos, 11/XI/2014; Travessia Ruy Braga, 24/II/2015, 17/III/2015, 16/IV/2015.

Gall (Fig. 241): on bud, ovoid, green, glabrous, and multichambered. Galler: not determined (empty galls). Paths: Travessia Serra Negra, 14–15/X/2014; Travessia Ruy Braga, 17/III/2015.

Miconia Ruiz and Pav. sp.5 (n=1)

Gall (Fig. 242): on leaf, globoid, thorny, green, and one–chambered. Galler: Cecidomyiidae (02 young larvae). Paths: Água Branca–Ruy Braga, 18/VI/2014, 14/IV/2015; Travessia Serra Negra, 14–15/X/2014.

Miconia Ruiz and Pav. sp.6 (n=1)

Gall (Fig. 243): on stem, fusiform, green, pubescent, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

Miconia Ruiz and Pav. sp.7 (n=1)

Gall (Fig. 244): on leaf vein, fusiform, reddish, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Serra Negra, 14–15/X/2014.

Miconia Ruiz and Pav. sp. 8 (n=1)

Gall (Fig. 245): on leaf, globoid or cylindrical, yellow, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva, 01 pupa). Parasitoids: Hymenoptera (02 larvae, 04 adults). Paths: Travessia Ruy Braga, 24/II/2015; Cachoeira do Pitu, 25/II/2015.

Previous gall records on undetermined *Miconia*: 1) in Atlantic forest – Santos et al. 2012 (n=1/PE), Maia 2013b (n=6/São Tomé das Letras/MG), Maia et al. 2014 (n=5/Santa Teresa/ES), Maia 2014 (n=8/Itamonte/MG), 2) in Cerrado – Maia and Fernandes 2004 (n=1/ Serra de São José/MG), Carneiro et al. 2009b (n=4/Serra do Espinhaço/MG), Malves and Frieiro-Costa 2012 (n=5/Ingaí/MG), 3) in Amazonian forest – Almada and Fernandes 2011 (n=2/Oriximiná/PA/), Araújo et al. 2012 (n=3/Oriximiná/PA).

Tibouchina estrellensis (Raddi) Cogn. (endemic in Brazil, Atlantic forest, NE) (n=2)

Gall (Fig. 246): on bud rosette, green, glabrous, and one–chambered. Galler: Lepidoptera (01 catterpilar, 01 pupa). Paths: BR–485, 28/I/2015, Casa 25, 08/XII/2015.

Gall (Fig. 247): on leaf midvein, fusiform, brown, pubescent, and one–chambered. Galler: not determined (empty galls). Path: Casa 25, 08/XII/2015.

No previous gall records on this plant species.

Tibouchina fothergillae (Schrank and Mart. ex DC.) Cogn. (endemic in Brazil, Atlantic forest, NE) (n=1)

Gall (Fig. 248): on leaf midvein, fusiform, green, glabrous, and one–chambered. Galler: Lepidoptera (fragments). Path: Água Branca –Ruy Braga, 18/VI/2014.

No previous gall records on this plant species.

Tibouchina hospita Cogn. (endemic in Brazil, Atlantic forest, NE) (n=3)

Gall (Fig. 249): on bud, globoid, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Travessia Ruy Braga, 13/V/2015.

Gall (Fig. 250): on stem, fusiform, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Parasitoids: Hymenoptera. Path: Asa de Hermes, 16/IX/2015.

Gall (Fig. 251): on bud, fusiform, green or reddish, pubescent, and one–chambered. Galler: Lepidoptera (01 catterpilar). Path: Travessia Ruy Braga, 13/V/2015.

Previous record of this plant species: 1) in Atlantic forest (altitude fields) – Coelho et al. 2013a (n=1/Itatiaia).

Tibouchina cf. martiusiana (DC.) Cogn. (endemic in Brazil, Cerrado and Atlantic forest, NE) (n=2)

Gall (Fig. 252): on leaf vein, ovoid, yellowish, and one–chambered. Galler: Lepidoptera (01 pupa). Paths: Prateleiras, 09/IV/2014; Pedra do Camelo, 14/IX/2015.

Gall (Fig. 253): on bud, fusiform, red, micropubescent, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (04 adults). Path: Travessia Serra Negra, 14–15/X/2014.

Previous gall records on this plant species: in Atlantic Forest – Fernandes et al. 2001 (n=2/Vale do Rio Doce/MG).

Tibouchina semidecandra (Schrank and Mart. ex DC.) Cogn. (endemic in Brazil, Cerrado and Atlantic forest, NE) (n=6)

Gall (Fig. 254): on bud, rosette, green or yellow with red pubescenc. Galler: Cecidomyiidae (01 larva). Inquilines: Coleoptera (01 larva). Path: Água Branca–Ruy Braga, 18/VI/2014.

Gall (Fig. 255): on bud, conical, red, with trichomes, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Água Branca–Ruy Braga, 18/VI/2014.

Gall (Fig. 256): on bud, globoid, reddish, with trichomes, and one–chambered. Galler: Lepidoptera (01 catterpilar). Path: Água Branca–Ruy Braga, 18/VI/2014.

Gall (Fig. 257): on leaf, ovoid, green, with reddish trichomes, and one–chambered. Galler: not determined. Path: Água Branca–Ruy Braga, 18/VI/2014.

Gall (Fig. 258): on stem, fusiform, brown, glabrous, and multichambered. Galler: not determined (empty galls). Path: Travessia Serra Negra, 14–15/X/2014.

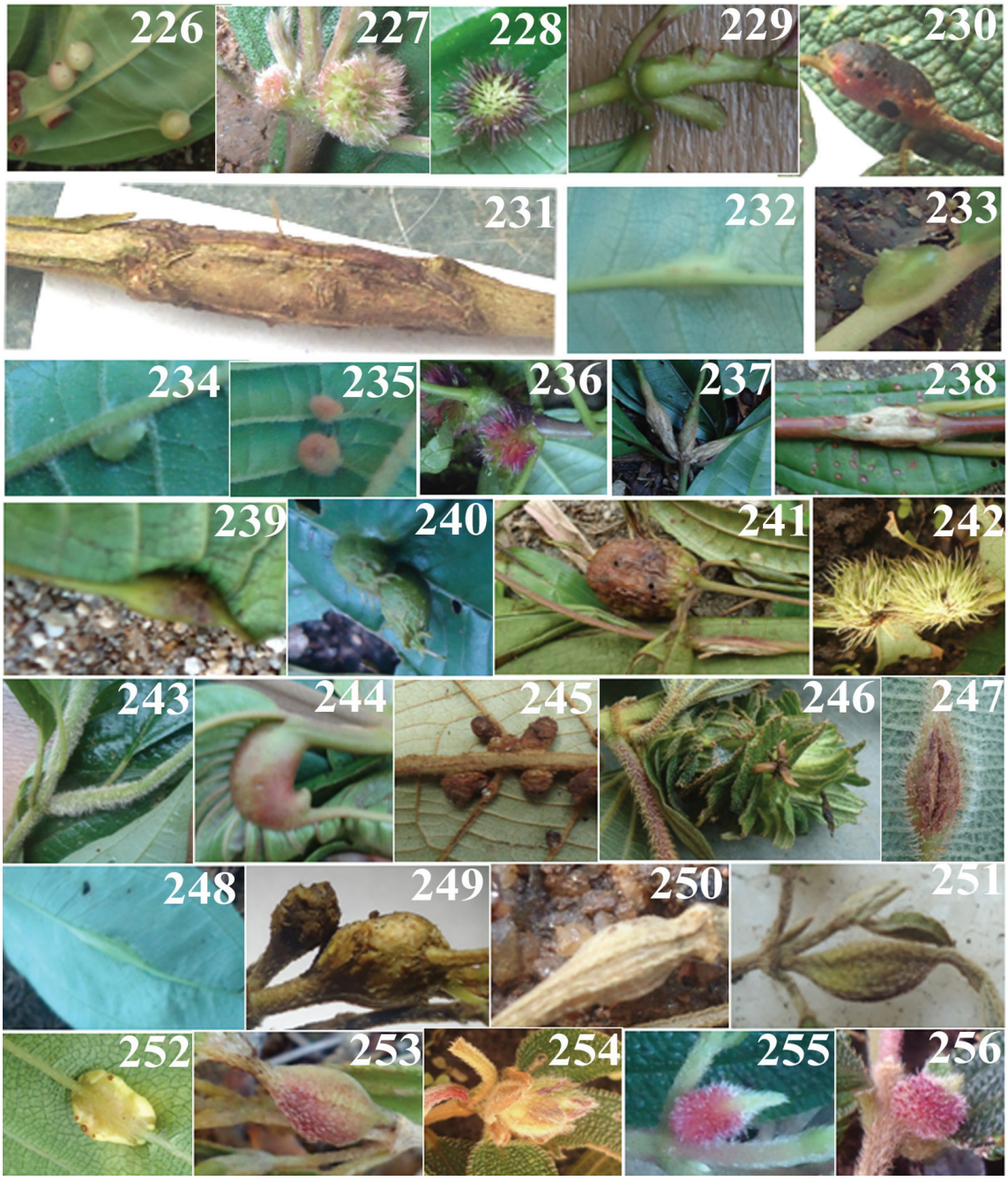

Figure 226-256 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), on Melastomataceae, 226, *Miconia cuspidata*, globoid leaf gall, 227-228, *M. paucidens*, 227, globoid bud gall, 228, globoid leaf gall, 229, *M. passiliflora*, globoid stem gall, 230-231, *M. cerophylla*, 230, ovoid bud gall, 231, fusiform stem gall, 232-233, *Miconia* sp.1, 232, fusiform leaf midvein gall, 233, conical leaf petiole gall, 234-235, *Miconia* sp. 2, 234, conical leaf gall, 235, globoid leaf gall, 236-237, *Miconia* sp. 3, 236, globoid bud gall, 237, fusiform stem gall, 238-241, *Miconia* sp. 4, 238, fusiform stem gall, 239, fusiform leaf vein gall, 240, ovoid leaf gall, 241, ovoid bud gall, 242, *Miconia* sp. 5, globoid leaf gall, 243, *Miconia* sp. 6, fusiform stem gall, 244, *Miconia* sp. 7, fusiform leaf vein gall, 245, *Miconia* sp. 8, globoid or cylindrical leaf gall, 246-247, *Tibouchina estrellensis*, 246, rosette bud gall, 247, fusiform leaf midvein gall, 248, *T. fothergillae*, fusiform leaf midvein gall, 249-251, *T. hospita*, 249, globoid bud gall, 250, fusiform stem gall, 251, fusiform bud gall, 252-253, T*ibouchina* cf. *martiusiana*, 252, ovoid leaf vein gall, 253, fusiform bud gall, 254-256, *T. semidecandra*, 254, rosette bud gall, 255, conical bud gall, 256, globoid bud gall.

Gall (Fig. 259): on apical bud, globoid, tapered apically, brown, glabrous, and solid. Galler: not determined. Path: Travessia Serra Negra, 14–15/X/2014.

No previous gall records.

Tibouchina Aubl. sp. 1 (n=2)

Gall (Fig. 260): on lateral bud, cylindrical, green, with trichomes. Galler: Lepidoptera (01 caterpillar). Path: Travessia Ruy Braga, 18/VI/2014, 14/IV/2015.

Gall (no fig.): on leaf, globoid, yellow with white trichomes, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Água Branca–Ruy Braga, 18/VI/2014.

Tibouchina Aubl. sp.2 (n=1)

Gall (Fig. 261): on stem, fusiform, brown, and multichambered. Galler: Cecidomyiidae (02 adults). Path: Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014.

Tibouchina Aubl. sp.3 (n=3)

Gall (Fig. 262): on bud, globoid, brown, with trichomes, and one–chambered. Galler: Lepidoptera. Path: Viúva Hansen, 10/IX/2014.

Gall (Fig. 263): on leaf, globoid, green or reddish, with white trichomes, and one–chambered. Galler: not determined. Path: Viúva Hansen, 10/IX/2014.

Gall (Fig. 264): on stem, fusiform, brown, glabrous, and one–chambered. Galler: not determined. Associated fauna: Hymenopteara (parasitoids – fragments). Paths: Viúva Hansen, 10/IX/2014; BR–485, 26/I/2015.

Tibouchina Aubl. sp.4 (n=3)

Gall (Fig. 265): on vein, fusiform, sinuous, green, glabrous, and one–chambered. Galler: Lepidoptera (01 pupa). Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 266): on leaf petiole, fusiform, irregular in width, green, glabrous, and one–chambered. Galler: Lepidoptera (silk and pupal exuvia fragments). Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 267): on leaf petiole, fusiform, regular in width, green, glabrous, and one–chambered. Galler: Lepidoptera (silk and pupal exuvia fragments). Path: Travessia Serra Negra, 14–15/X/2014.

Tibouchina Aubl. sp.5 (n=1)

Gall (Fig. 268): on bud, globoid, red, with yellow pubescence. Galler: Lopesiini (Cecidomyiidae) (01 larva). Path: Travessia Serra Negra, 14–15/X/2014.

Tibouchina Aubl. sp.6 (n=1)

Gall (Fig. 269): on stem, ovoid, grooved, green or red, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Serra Negra, 14–15/X/2014.

Previous gall records on undetermined *Tibouchina* Aubl.: 1) in Atlantic forest – Fernandes et al. 2001 (n=5/Vale do Rio Doce/MG), Maia et al. 2014 (n=1/Santa Teresa/ES), 2) no biome data – Mendonça et al. 2014 (n=2/RS).

Not determined 1 (n=2)

Gall (Fig. 270): on leaf, globoid, greenish, with long trichomes, and one–chambered. Galler: not determined. Path: BR–485, 04/VIII/2014.

Gall (Fig. 271): on leaf petiole and midvein, fusiform, green, and pubescent. Galler: not determined. Path: Água Branca–Ruy Braga, 18/VI/2014.

Not determined 2 (n=1)

Gall (Fig. 272): on bud, rosette, green, glabrous, and one–chambered. Galler: not determined. Path: Água Branca–Ruy Braga, 18/VI/2014.

MELIACEAE (N=4)

Guarea F. Allam. ex L. sp. (native genus) (n=1)

Gall (Fig. 273): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: Hemiptera. Paths: Lago Azul, 18/III/ 2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; BR–485, 28/I/2015; Travessia Ruy Braga, 16/III/2015.

Previous gall records on this plant genus: 1) in Atlantic forest: on *Guarea guidonia* (L.) Sleumer – Fernandes et al. 2001 (n=3/Vale do Rio Doce/MG), Rodrigues et al. 2014 (n=3/Mangaratiba/RJ), Maia et al. 2014 (n=1/ Santa Teresa/ES), on *G. macrophylla* Vahl. subsp *tuberculata* (Vell.) T. D. Penn – Maia et al. 2008 (n=3/Bertioga/SP), on *Guarea* sp.– Santos et al. 2012 (n=1/PE), Fernandes et al. 2001 (n=2//Vale do Rio Doce/MG), Santos et al. 2012 (n=2/PE), Maia et al. 2014 (n=1/Santa Teresa/ES), 2) in Pampa: on *Guarea* sp., possibly *G. trichilioides* L. – Tavares 1909 (n=1/São Leopoldo/RS).

Trichilia P. Browne sp. (native genus) (n=3)

Gall (Fig. 274): on stem, fusiform, green, glabrous, and one–chambered. Galler: Lepidoptera. Path: BR–485, 12/XI/2014.

Gall (Fig. 275): on leaf, fold, green, glabrous, and one–chambered. Galler: Hemiptera (14 specimens). Parasitoids: Hymenoptera (01 adult). Paths: Ecoarte–Lago Azul, 08/IV/2014; BR–485, 26/I/2015.

Gall (Fig. 276): on stem, globoid, brown, and glabrous. Galler: not determined (empty galls). Path: BR–485, 12/XI/2014.

Previous gall records on this plant genus: 1) in Atlantic forest: on *T. quadrijuga* (Miq.) Kunth – Santos et al. 2012 (n=1/PE), on *T. elegans* A. Juss. (n=1), *T. rubra* C. DC (n=1) and *Trichilia* spp. (n=7) – Maia and Carvalho-Fernandes 2016 (São Francisco de Itabapoana/RJ), 2) in Amazonian forest: on *T. appendiculata* (Triana and Planch.) C. DC. (n=1) and on *Trichilia* sp. (n=3) – Araújo et al. 2012 (Oriximiná/PA), 3) in Caatinga–Cerrado: on *T. emarginata* (Turcz.) C. DC. – Costa et al. 2015 (n=2/ Caetité/BA), 4) no biome data – Mendonça et al. 2014 (n=3/RS).

MENISPERMACEAE (N=1)

Disciphania Eichler sp. (native genus) (n=1)

Gall (Fig. 277): on stem, globoid, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: BR–485, 23/II/2015.

No previous gall records in this plant genus.

Previous gall records in this plant family: 1) in Pantanal: on *Hyperbaena hasslerii* Diels (n=1) and *Odontocarya fanoides* (DC.) Myers (n=1) – Julião et al. 2001 (MS), 2) in Amazonian forest: on *Abuta grandifolia* (Mart.) Sandwith – Maia 2011 (n=1/Oriximiná/PA).

MONIMIACEAE (N=1)

Mollinedia Ruiz and Pav. sp. (native genus) (n=1)

Gall (Fig. 278): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (02 adults). Sucessors: Formicidae (01 adult). Path: Travessia Ruy Braga, 17/III/2015.

Previous gall records on undetermined species of this plant genus: 1) in Atlantic forest – Santos et al. 2011b (n=1/six municipalities/PE), 2) no biome data – Mendonça et al. 2014 (n=1/RS).

MORACEAE (N=1)

Ficus L. sp. (native genus) (n=1)

Gall (Fig. 279): on leaf, discoid, yellow peripherically and reddish in the middle, glabrous, and one–chambered. Galler: Cecidomyiidae (exuvia fragments). Parasitoids: Hymenoptera (fragments). Path: Travessia Ruy Braga, 15/IV/2015.

Previous gall records on undetermined species of this plant genus: 1) in Atlantic forest – Tavares 1917 (n=2/Itaparica and São Antonio da Barra/BA and Friburgo/RJ), Rodrigues et al. 2014 (n=1/Mangaratiba/RJ), Maia and Carvalho-Fernandes 2016 (n=2/São Francisco de Itabapoana/RJ), 2) in Pantanal – Julião et al. 2001 (n=2/MS).

MYRTACEAE (N=26)

Calyptranthes Sw.sp. (native genus) (n=1)

Gall (Fig. 280): on leaf, globoid, near midvein, green, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (01 pupa). Paths: Cachoeira Véu da Noiva, 17/III/2014; BR–485, 23/II/2015.

Previous gall records on undetermined species of this plant genus: 1) in Atlantic forest – Monteiro et al. 2004 (n=1/Jurubatiba/RJ), Maia et al. 2008 (n=3/Bertioga/SP), Santos et al. 2012 (n=2/PE), 2) no biome data – Mendonça et al. 2014 (n=1/RS).

Eugenia bunchosiifolia Nied. (endemic in Brazil, Atlantic forest, VU) (n=2)

Gall (Fig. 281): on leaf, rounded and brown at basis, with a central green cylinder, glabrous, and one–chambered. When the gall dries, the cylinder falls and the basis remains. Galler: Cecidomyiidae (01 young larva). Paths: Viúva Hansen, 10/IX/2014; Mirante do Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; Cachoeira do Pitu, 25/II/2015.

Gall (Fig. 282): on bud, globoid, brown, glabrous, and four-chambered. Galler: not determined (empty gall). Path: Cachoeira Itaporani, 12/V/2014.

Previous gall records on this plant species: in Atlantic forest – Maia and Carvalho-Fernandes 2016 (n=2/São Francisco de Itabapoana/RJ).

Eugenia schottiana O.Berg. (endemic in Brazil, Caatinga and Atlantic forest, NE) (n=1)

Gall (Fig. 283): on leaf, discoid, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Travessia Ruy Braga, 24/II/2015.

No previous gall records on this plant species.

Eugenia uniflora L. (native species, NE) (n=1)

Gall (Fig. 284): on leaf, discoid, green, glabrous, and one–chambered. Galler: *Neolasioptera eugeniae* Maia, 1993. Path: BR 485, 23/II/2015.

Previous gall records of the same morphotype: in Atlantic forest – Maia 2001 (Maricá/RJ), Oliveira and Maia 2005 (Rio de Janeiro/RJ), Maia and Oliveira 2010 (Angra dos Reis/RJ), Maia 2013a (Paraty and Cabo Frio/RJ), Maia and Souza 2013 (Arraial do Cabo/RJ), Maia 2014 (Itamonte/MG), Maia and Silva 2016 (Rio de Janeiro/RJ).

Eugenia L. sp. 1 (native genus) (n=3)

Gall (Fig. 285): on bud, globoid, with reduced apical leaf, green or brown, and glabrous. Galler: Cecidomyiidae (03 pupal exuvia). Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 286): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 287): on stem, fusiform, brown, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 14/IV/2015.

Eugenia L. sp. 2 (n=1)

Gall (no fig.): on leaf, globoid, green, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (17 adults). Path: Cachoeira do Pitu, 25/II/2015.

Previous gall records on undetermined species of *Eugenia* L.: 1) in Atlantic forest – Tavares 1920 (n=1/Madre de Deus/Bahia), Oliveira and Maia 2005 (n=3/Rio de Janeiro/RJ), Maia and Oliveira 2010 (n=3/Angra dos Reis/RJ), Santos et al. 2011b (n=1/six municipalities/PE), Santos et al. 2012 (n=1/PE), Maia 2013b (n=1/São Tomé das Letras/MG), Maia et al. 2014 (n=2/Santa Teresa/ES), Maia and Carvalho-Fernandes 2016 (n=5/São Francisco de Itabapoana), 2) in Cerrado – Gonçalves-Alvim and Fernandes 2001 (n=3/Três Marias/MG), Malves and Frieiro-Costa 2012 (n=5/Ingaí/MG), Luz et al, 2012 (n=3/Januária/MG), Araújo et al. 2014 (n=1/Mineiros/GO).

Myrcia fenzliana O.Berg (native species, NE) (first record in RJ) (n=1)

Gall (no fig.): on leaf, globoid, green, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

No previous gall records on this plant species.

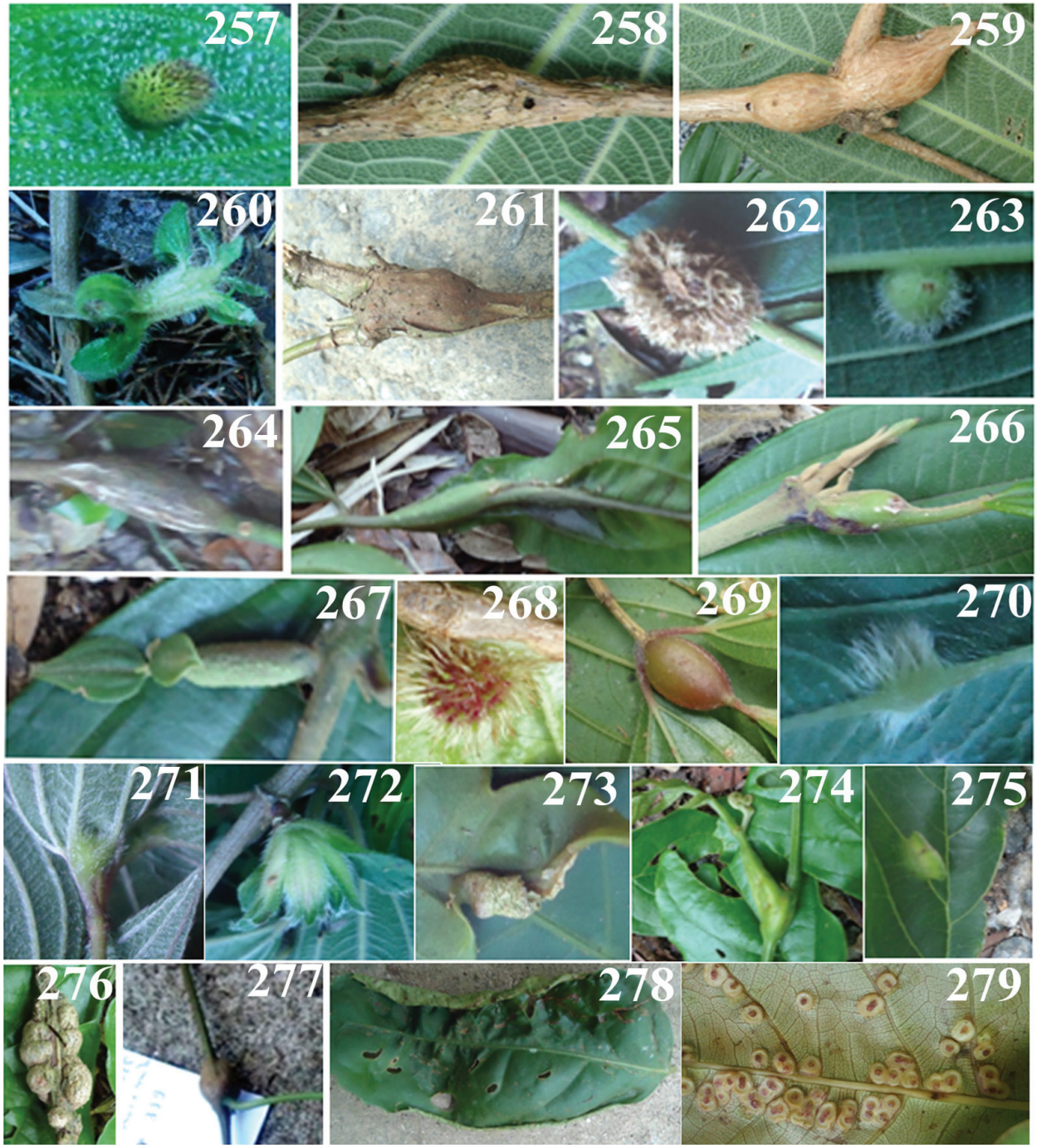

Figure 257-279 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), 257-272, on Melastomataceae, 257-259, *Tibouchina semidecandra*, 257, ovoid leaf gall, 258, fusiform stem gall, 259, globoid bud gall, 260, *Tibouchina* sp.1, cylindrical bud gall, 261, *Tibouchina* sp. 2, fusiform stem gall, 262-264, *Tibouchina* sp. 3, 262, globoid bud gall, 263, globoid leaf gall, 264, fusiform stem gall, 265-267, *Tibouchina* sp. 4, 265, fusiform leaf vein gall, 266, fusiform leaf petiole gall, 267, fusiform leaf petiole gall, 268, *Tibouchina* sp. 5, globoid bud gall, 269, *Tibouchina* sp. 6, ovoid stem gall, 270-271, Melastomataceae sp.1, 270, globoid leaf gall, 271, fusiform leaf petiole and midvein gall, 272, Melastomataceae sp. 2, rosette bud gall, 273-276, on Meliaceae, 273, *Guarea* sp., marginal leaf roll, 274-276, *Trichilia* sp., 274, fusiform stem gall, 275, leaf fold, 276, globoid stem gall, 277, on Menispermaceae, *Disciphania* sp., globoid stem gall, 278, on Monimiaceae, *Mollinedia* sp., marginal leaf roll, 279, on Moraceae, *Ficus* sp., discoid leaf gall.

Myrcia splendens (Sw.) DC. (endemic in Brazil, Caatinga, Cerrado, Pantanal. Amazonian and Atlantic forest, NE) (n=4)

Gall (Fig. 288): on leaf, globoid, green, with trichomes, and one or bi-chambered. Galler: Cecidomyiidae (02 pupal exuvia, 04 larvae). Paths: Cachoeira Poranga, 07/IV/2014; Ecoarte–Lago Azul, 08/IV/2014; Donati–Simon 2, 08/IX/2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014.

Gall (Fig. 289): on apical bud, globoid, green, glabrous, and three-chambered (01 larva by chamber). Galler: Cecidomyiidae (05 larvae). Paths: Três Picos, 01/IV/2014, 09/IX/2014, 11/XI/2014; Travessia Ruy Braga, 08/XII/2014.

Gall (Fig. 290): on bud and leaf, globoid, glabrous, and two-chambered. Galler: Cecidomyiidae (02 larvae). Parasitoids: Hymenoptera (04 larvae, 01 pupa, 01 adult). Path: Travessia Ruy Braga, 08/XII/2014, 16/III/2015, 17/III/2015, 14/IV/2015.

Gall (Fig. 291): on leaf, roll, green, glabrous, and one–chambered. Galler: not determined. Path: Centro de Visitantes, 07–08/VII/2014.

Previous gall records on this plant species: 1) in Atlantic forest – Maia 2013b (n=2/São Tomé das Letras/MG), 2) in Cerrado – Malves and Frieiro-Costa 2012 (n=2/ Ingaí/MG), 3) in Caatinga–Cerrado – Costa et al. 2015 (n=1/Caetité/BA).

Myrcia cf. splendens (Sw.) DC. (n=2)

Gall (Fig. 292): on bud, globoid, green or brown, glabrous, with apical thin projections, and one to three-chambered. Galler: Cecidomyiidae (02 larvae). Parasitoids: Hymenoptera (07 pupae, 01 adult). Paths: Água Branca–Ruy Braga, 18/VI/2014; Três Picos, 11/XI/2014; Travessia Ruy Braga, 18/VI/2014, 24/II/2015.

Gall (Fig. 293): on leaf, globoid, green, glabrous, and one to three-chambered. Galler: Cecidomyiidae (03 larvae). Paths: Travessia Ruy Braga, 24/II/2015; Cachoeira do Pitu, 25/II/2015.

Myrcia sylvatica (G.Mey.) DC. (native species, NE) (n=8)

Gall (Fig. 294): on leaf, marginal roll, red, glabrous, and one–chambered. Galler: Thysanoptera (22 specimens – adults and nymphs). Inquilines: Lepidoptera (02 catterpilars). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Serra Negra, 14–15/X/2014; Três Picos, 11/XI/2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; BR–485, 23/II/2015; Travessia Ruy Braga, 24/II/2015.

Gall (Fig. 295): on stem, fusiform, green, red or brown, glabrous, and two-chambered. Galler: not determined (empty galls). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 08/VII/2014; Três Picos, 11/XI/2014; Cachoeira do Pitu, 25/II/2015.

Gall (Fig. 296): on bud and leaf, globoid, with a central depression, green, glabrous, and one–chambered. Galler: not determined. Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 14/IV/2015.

Gall (Fig. 297): on bud, globoid, reddish, and glabrous. Galler: Thysanoptera. Paths: Água Branca–Ruy Braga, 18/VI/2014; Três Picos, 11/XI/2014.

Gall (Fig. 298): on bud and leaf basis, globoid, succulent, green, glabrous, and two-chambered. Galler: Cecidomyiidae (06 larvae, 02 pupal exuviae, 02 adults). Parasitoids: Hymenoptera (01 pupa, 06 adults). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 18/VI/2014; Três Picos, 09/IX/2014,11/XI/2014; Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 299): on bud, globoid, green, glabrous, and three-chambered (01 larva by chamber). Galler: *Dasineura* sp. (Cecidomyiidae) (01 male, 01 female, 02 pupal exuviae, 01 larva). Parasitoids: Hymenoptera (06 pupae). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Serra Negra, 14–15/X/2014; Travessia Ruy Braga, 08/XII/2014.

Gall (Fig. 300): on leaf midvein and petiole, globoid, woody, brown, glabrous, two-chambered. Galler: *Dasineura* sp. (Cecidomyiidae) (02 pupal exuviae, 02 females). Parasitoids: Hymenoptera (01 pupa). Path: Travessia Serra Negra, 14–15/X/2014.

Gall (Fig. 301): on leaf midvein, globoid, green or red, glabrous, and one–chambered to three-chambered. Galler: Cecidomyiidae (19 larvae). Parasitoids: Hymenoptera. Paths: Travessia Ruy Braga, 18/VI/2014, 08/VII/2014, 10–12/IX/2014, BR–485, 12/XI/2014; Três Picos, 11/XI/2014; Barbosa Rodrigues (obelisk), 10/XII/2014.

Previous gall records on this plant species: in Atlantic forest – Santos et al. 2012 (n=2/PE), Maia 2013b (n=7/São Tomé das Letras/MG).

Myrcia DC. sp.1 (native genus) (n=1)

Gall (Fig. 302): on leaf, globoid, red with brown pubescence adaxially, and green abaxially. Galler: not determined (empty galls). Paths: Cachoeira Poranga, 07/IV/2014; Donati–Simon 2, 08/IX/2014.

Myrcia DC. sp.2 (n=1)

Gall (Fig. 303): on stem, fusiform, brown, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

Previous gall records on undetermined species of *Myrcia* DC: 1) in Atlantic forest – Fernandes et al. 2001 (n=4/Vale do Rio Doce/MG), Santos et al. 2011b (n=4/six municipalities/PE), Santos et al. 2012 (n=1/PE), Maia 2013b (n=3/São Tomé das Letras/MG), Maia et al. 2014 (n=13/Santa Teresa/ES), Maia 2014 (n=2/Itamonte), 2) in Cerrado – Santos et al. 2010 (n=1/Goiânia/GO), Gonçalves-Alvim and Fernandes 2011 (n=4/Três Marias/MG), 3) in Caatinga –Santos et al. 2011a (n=1/PE).

NYCTAGINACEAE (N=9)

Bougainvillea spectabilis Willd. (endemic in Brazil, Amazonian and Atlantic forest, NE) (n=1)

Gall (Fig. 304): on stem, globoid, brown, and glabrous. Galler: not determined. Muscomorpha (01 larva) and Lepidoptera (01 catterpilar). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 16/III/2015.

No previous gall records on this plant.

Guapira Aubl. sp.1 (native genus) (n=3)

Gall (Fig. 305): on bud and leaf, globoid, green, glabrous, and one–chambered. Galler: *Bruggmannia* sp. (Cecidomyiidae) (01 larva). Path: Ecoarte–Lago Azul, 08/IV/2014.

Gall (Fig. 306): on leaf, globoid, glabrous, yellow, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Três Picos, 13/V/2014.

Gall (Fig. 307): on leaf, discoid, green, glabrous, and one–chambered. Galler: not determined (empty gall). Path: Cachoeira Itaporani, 12/V/2014.

Previous gall records on this genus: 1) in Atlantic forest: on *Guapira opposita* (Vell.) Reitz – Maia 2001 (n=5/Maricá and Arraial do Cabo/RJ), Bregonci et al. 2010 (n=1/ Guarapari/ES), Santos et al. 2012 (n=9/PE), Maia and Souza 2013 (n=4/ Arraial do Cabo/RJ), Maia et al. 2014 (n=8/Santa Teresa/ES), Maia and Carvalho-Fernandes 2016 (n=3/São Francisco de Itabapoana/RJ), Maia and Silva 2016 (n=2/Rio de Janeiro/RJ), on *Guapira pernambucensis* (Casar) Lundell. – Oliveira and Maia 2005 (n=1/Rio de Janeiro/RJ), Bregonci et al. 2010 (n=3/Guarapari/ES), Maia and Souza 2013 (n=1/Arraial do Cabo/RJ), on *Guapita nitida* (Mart. ex J.A.Schmidt) Lundell – Maia et al. 2008/ Bertioga/SP), on *Guapira* sp. – Bregonci et al. 2010 (n=1/Guarapari/ES), Rodrigues et al. 2014 (n=8/Mangaratiba/RJ), Santos et al. 2011b (n=14/ six municipalities/PE), Maia 2013b (n=1/São Tomé das Letras/MG), Maia and Carvalho-Fernandes 2016 (n=1/ São Francisco de Itabapoana/RJ), 2) in Cerrado: on *Guapira* sp. – Araújo et al. 2014 (n=3/ Mineiros/GO), Maia and Fernandes 2004 (n=2/ Serra de São José/MG).

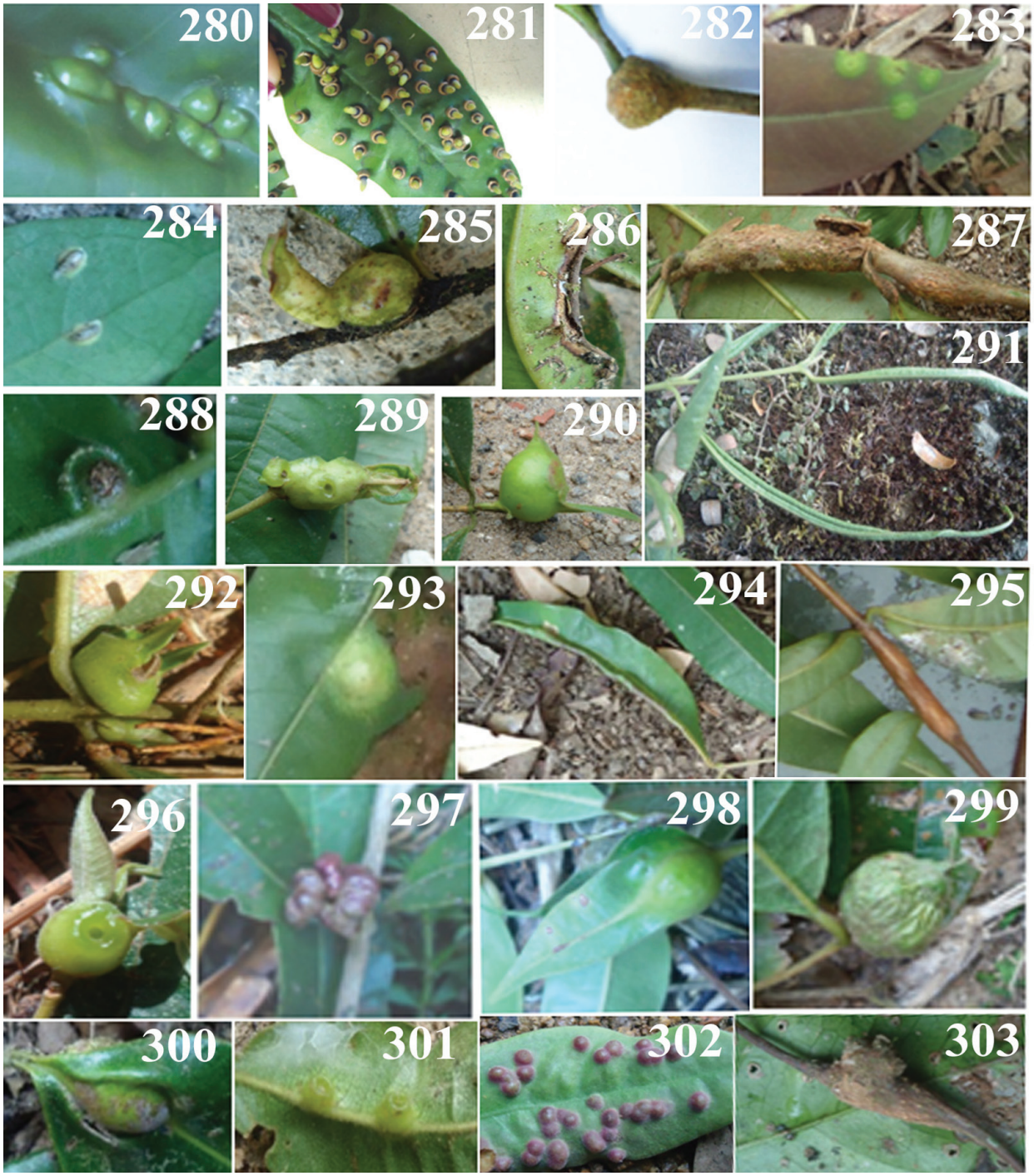

Figure 280-303 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), on Myrtaceae, 280, *Calyptranthes* sp., globoid leaf gall, 281-282, *Eugenia buchosiifolia*, 281, cylindrical leaf gall, 282, globoid bud gall, 283, *E. schottiana*, discoid leaf gall, 284, *E. uniflora*, discoid leaf gall, 285-287, *Eugenia* sp., 285, globoid bud gall, 286, marginal leaf roll, 287, fusiform stem gall, 288-291, *Myrcia splendens*, 288, globoid leaf gall, 289, globoid bud gall, 290, globoid bud and leaf gall, 291, leaf roll gall, 292-293, *Myrcia cf. splendens*, 292, globoid bud gall, 293, globoid leaf gall, 294-301, *M. sylvatica*, 294, marginal leaf roll, 295, fusiform stem gall, 296, globoid bud and leaf gall, 297, globoid bud gall, 298, globoid bud and leaf basis gall, 299, globoid bud gall, 300, globoid leaf petiole and midvein gall, 301, globoid leaf midvein gall, 302, *Myrcia* sp. 1, globoid leaf gall, 303, *Myrcia* sp. 2, fusiform stem gall.

Neea oppositifolia Ruiz and Pav. (native species, NE) (first record in Southeast Region and in Atlantic forest) (n=4)

Gall (Fig. 308): on bud, globoid, green, glabrous, and one–chambered. Galler: *Asphondylia* sp. (Cecidomyiidae) (04 pupae, 01 larva). Parasitoids: Hymenoptera (05 pupae, 21 adults). Paths: Cachoeira Véu da Noiva, 17/III/2014; Três Picos, 11/XI/2014; Asa de Hermes; 16/IX/2015.

Gall (Fig. 309): on leaf, globoid, green or yellow, glabrous, and one–chambered. Galler: Shizomyiina (Cecidomyiidae) (07 males). Parasitoids: 03 Hymenoptera (02 pupae, 02 adults). Paths: Três Picos, 13/V/2014, 11/XI/2014; Lago Azul, 18/III/ 2014; Cachoeira Véu da Noiva, 17/III/2014; Donati–Simon 2, 08/IX/2014; BR–485, 12/XI/2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; Cachoeira do Pitu, 25/II/2015; Cachoeira Poranga, 07/IV/2014.

Gall (Fig. 310): on stem, globoid, green, glabrous, and one–chambered. Galler: Cecidomyiidae (06 larvae). Parasitoids: Hymenoptera (02 larvae, 06 pupae). Inquilines: Lepidoptera (01 catterpilar). Path: Travessia Ruy Braga, 08/XII/2014, 17/III/2015, 16/III/2015, 14/IV/2015, 15/IX/2015.

Gall (Fig. 311): on stem, globoid, green, and glabrous. Galler: *Bruggmannia* sp. (Cecidomyiidae) (01 larva). Path: Cachoeira Itaporani, 12/IV/2015.

No previous gall records on this plant species.

Neea Ruiz and Pav. sp. (native genus) (n=1)

Gall (Fig. 312): on leaf, globoid, yellow, with white trichomes, and one–chambered. Galler: not determined (empty galls). Path: Três Picos, 11/XI/2014.

Previous gall records on this genus: 1) in Atlantic forest: on *Neea* sp. – Kieffer 1913 (n=7/three in RJ, two in SC, one in RJ, SC and MG), Maia 2013b (n=2/São Tomé das Letras/MG), Maia 2014 (n=1/Itamonte/MG), 2) in Amazonian Forest: on *Neea* sp. – Kieffer 1913 (n=1/AM), 3) in Cerrado: on *Neea* sp. – Kieffer 1913 (n=1/MG), on *Neea theifera* Oerst – Gonçalves-Alvim and Fernandes 2011 (n=1//Três Marias/MG).

ONAGRACEAE (N=1)

Ludwigia L. sp. (native genus) (n=1)

Gall (Fig. 313): on bud, fusiform, green, with whittish pubescence. Galler: Cecidomyiidae (01 larva). Parasitoids: Hymenoptera (01 pupa). Path: Três Picos, 11/XI/2014.

Previous gall records on undetermined species of this plant genus: 1) in Atlantic forest – Maia et al. 2008 (n=1/Bertioga/SP), 2) in Caatinga – Tavares 1918 (n=1/Fortaleza/CE).

ORCHIDACEAE (N=1)

Not determined (n=1)

Gall (Fig. 314): on leaf, conical, pedunculated, green, and thorny. Galler: not determined. Parasitoids: Hymenoptera (01 pupa). Path: Ecoarte–Lago Azul, 08/IV/2014.

Previous gall records on this plant family: 1) in Atlantic forest – Bregonci et al. 2010 (n=1/Guarapari/ES), Kraus and Tanoe 1999 (n=1/São Paulo), Coelho et al. 2013a (n=2/Itatiaia/altitude field) and 2) no bioma data – Gagné 1994 (n=2/Brazil).

PIPERACEAE (N=20)

Piper aduncum L. (native species, NE) (n=1)

Gall (Fig. 315): on bud, fusiform, green, with trichomes, and one–chambered. Galler: not determined (empty galls). Path: Hotel Donati, 04/VIII/2014.

Previous gall records on this plant species: no biome data – Mendonça et al. 2014 (n=4/RS).

Piper arboreum Aubl. (native species, NE) (n=1)

Gall (Fig. 316): on bud, conical, red, hairy, with white trichomes, and one–chambered. Galler: not determined. Path: Viúva Hansen, 10/IX/2014.

Previous gall records on this plant species: 1) in Atlantic forest – Maia et al. 2008 (n=1/Bertioga/

SP), Maia et al. 2014 (n=2/Santa Teresa/ES), 2) in Cerrado – Araújo et al. 2011 (n=1/Pirineus/GO).

Piper chimonanthifolium Kunth (endemic in Brazil, Cerrado and Atlantic forest) (NE) (n=1)

Gall (Fig. 317): on leaf, globoid, green, with green trichomes. Galler: not determined. Path: Casa 33, 16/VI/2015.

No previous gall records on this plant species.

Piper cf. dilatatum Rich. (native species, NE) (n=3)

Gall (Fig. 318): on leaf petiole, fusiform, green, glabrous, and multichambered. Galler: *Contarinia* sp. (Cecidomyiidae) (05 larvae). Paths: Cachoeira Itaporani, 12/V/2014; Travessia Ruy Braga, 08/VII/2014.

Gall (Fig. 319): on leaf, globoid, green, with white trichomes, and one–chambered. Galler: Cecidomyiidae (03 larvae). Paths: Cachoeira Itaporani, 17 /III/2014, 12/V/2014; Casa 16, 07/VII/2014.

Gall (Fig. 320): on leaf petiole and stem, fusiform, green, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (06 adults). Paths: Travessia Ruy Braga, 04/VIII/2014, 10–12/XI/2014; Viúva Hansen, 10/IX/2014; BR–485, 28/I/2015; Casa 33, 16/VI/2015.

Previous gall records on this plant species: no biome data – Mendonça et al. 2014 (n=4/RS).

Piper marginatum Jacq. (native species, NE) (n=2)

Gall (Fig. 321): on leaf petiole, fusiform, green, with trichomes, and one–chambered. Galler: Lepidoptera (01 catterpilar). Path: Travessia Ruy Braga, 04/VIII/2014.

Gall (Fig. 322): on leaf, globoid, green, glabrous, and one–chambered. Galler: Cecidomyiidae (02 pupae). Inquilines: Thysanoptera (01 adult). Path: Três Picos, 11/XI/2014.

No previous gall records on this plant species.

Piper richardiifolium Kunth (endemic in Brazil, Caatinga, Cerrado, Amazonian and Atlantic forest, NE) (n=1)

Gall (Fig. 323): on leaf, globoid, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva, 01 pupa). Path: Cachoeira do Pitu, 25/II/2015.

No previous gall records on this plant species.

Piper tuberculatum Jacq. (native species, NE) (n=3)

Gall (Fig. 324): on bud, globoid, brown, glabrous, and multichambered. Galler: *Zalepidota* sp. (Cecidomyiidae) (02 pupal exuviae, 02 males). Parasitoids: Hymenoptera (19 adults). Inquilines: Sciaridae (18 adults). Paths: Donati–Simon 2, 08/IX/2014; Cachoeira Poranga, 10/IX/2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; BR–485, 28/I/2015, 23/II/2015.

Gall (Fig. 325): on leaf, discoid, green, glabrous, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (01 adult). Paths: Lago Azul, 18/III/ 2014; Cachoeira Poranga, 07/IV/2014; Ecoarte–Lago Azul, 08/IV/2014; Casa 16, 07/VII/2014; Viúva Hansen, 10/IX/2014; Donati–Simon 2, 08/IX/2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; Barbosa Rodrigues (obelisk), 10/XII/2014; Cachoeira do Pitu, 25/II/2015.

Gall (Fig. 326): on stem, fusiform, green, glabrous, and one–chambered. Galler: not determined (empty gall). Paths: BR–485, 28/I/2015; Travessia Ruy Braga, 114//IV/2015.

No previous gall records on this plant species.

Piper L. sp.1 (native genus) (n=2)

Gall (Fig. 327): on stem and bud, globoid, green, glabrous, and multichambered. Galler: Cecidomyiidae (01 larva by chamber, 03 young larvae). Inquilines: Coleoptera (01 larva). Paths: Donati–Simon 2, 08/IX/2014; Viúva Hansen, 10/IX/2014.

Gall (Fig. 328): on stem, globoid, brown, glabrous, and one–chambered. Galler: Lepidoptera (01 catterpilar). Paths: Lago Azul, 18/III/ 2014; Cachoeira Poranga, 07/IV/2014, Cachoeira Véu da

Noiva, 17/III/2014; Casa 33, 16/VI/2015, BR–485, 23/II/2015, 26/I/2015.

Piper L. sp.2 (n=1)

Gall (Fig. 329): on bud and leaf, conical, green or red, glabrous, and one–chambered. Galler: not determined (empty galls) (Fig.). Paths: Cachoeira Véu da Noiva, 17/III/2014; Donati–Simon 2, 08/IX/2014; Viúva Hansen, 10/IX/2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; Cachoeira do Pitu, 25/II/2015.

Piper L. sp. 3 (n=2)

Gall (Fig. 330): on bud, globoid, brown, glabrous, and multichambered. Galler: not determined (empty gall). Path: Cachoeira Poranga, 07/IV/2014.

Gall (Fig. 331): on bud, cylindrical, brown, glabrous, and one–chambered. Galler: not determined (empty gall). Path: Viúva Hansen, 10/IX/2014.

Piper L. sp. 4 (n=1)

Gall (Fig. 332): on stem, fusiform, green, glabrous, and multichambered. Galler: Cecidomyiidae (01 young larva). Path: Três Picos, 13/V/2014**.**

Piper L sp. 5 (n=1)

Gall (Fig. 333): on bud, globoid, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (01 young larva). Path: Três Picos, 13/V/2014.

Previous gall records on undetermined species of *Piper* L.: 1) in Atlantic forest – Rübsaamen 1908 (n=1/Rio de Janeiro/RJ), Maia 2014 (n=3/Itamonte/MG), 2) in Amazonian forest – Araújo et al. 2012 (n=1/Oriximiná/PA), 3) in Cerrado – Maia and Fernandes 2004 (n=2/Serra de São José/MG), 4) in Pampa – Kieffer 1913 (n=1/São Leopoldo/RS).

Not determined (n=1)

Gall (Fig. 334): on leaf, globoid, green, with green pubescence, and one–chambered. Galler: Cecidomyiidae (01 young larva). Path: Cachoeira Véu da Noiva, 17/III/2014.

POLYPODIACEAE (N=1)

Niphidium crassifolium (L.) Lellinger (native species, NE) (n=1)

Gall (Fig. 335): on leaf, globoid adaxially, conical abaxially, green, micropubescent abaxially and opened, one–chambered. Galler: Coccoidea, Hemiptera (15 adults). Parasitoids: Hymenoptera (01 adult). Paths: Cachoeira Poranga, 07/IV/2014, 24/II/2015; BR–485, 12/XI/2014, 28/I/2015; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014; Barbosa Rodrigues (obelisk), 10/XII/2014; Travessia Ruy Braga, 24/02/2015, 16/III/2015.

Previous gall records on this plant species: Houard 1933 (Brazil)

PRIMULACEAE (N=9)

Cybianthus Mart. sp. (native genus) (n=2)

Gall (Fig. 336): on bud, fusiform, brown, glabrous, and one–chambered. Galler: Lepidoptera. Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Serra Negra, 14–15/X/2014; Morro do Couto, 13/X/2014; Pedra do Camelo, 14/IX/2015.

Gall (Fig. 337): on stem, fusiform, brown, and glabrous. Galler: not determined. Path: Travessia Serra Negra, 14–15/X/2014.

Previous gall records on this plant genus: 1) in Amazonian forest: on *Cybianthus* sp.– Santos et al. 2011b (n=1/six municipalities/PE), on *Cybianthus guyanensis* (A. DC.) Miq. – Araújo et al. 2012 (n=1/ Oriximiná/PA), 2) in Cerrado: on *Cybianthus* sp. – Gonçalves-Alvim and Fernandes 2001 (n=2/Três Marias/MG).

Myrsine coriacea (Sw.) R.Br. ex Roem. and Schult. (=*Rapanea ferruginea* (Ruiz and Pav.) Mez. (native species, NE) (n=1)

Gall (no fig.): on stem, fusiform, brown, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 15/IX/2015.

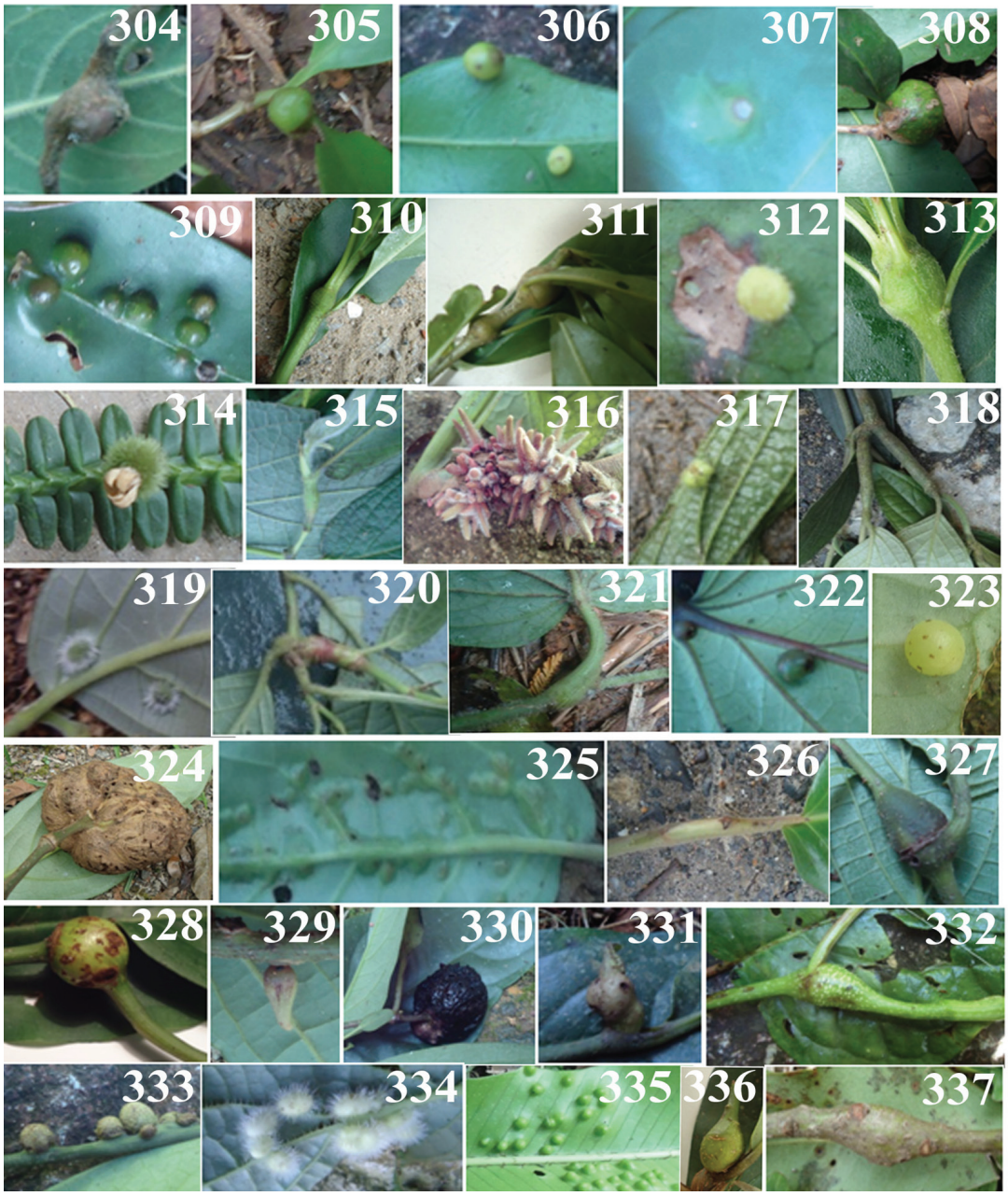

Figure 304-337 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), 304-312, on Nyctaginaceae, 304, *Bougainvillea spectabilis*, globoid stem gall, 305-307, *Guapira* sp., 305, globoid bud and leaf gall, 306, globoid leaf gall, 307, discoid leaf gall, 308-311, *Neea oppositifolia*, 308, globoid bud gall, 309, globoid leaf gall, 310, globoid stem gall, 311, globoid stem gall, 312, *Neea* sp. , globoid leaf gall, 313, on Onagraceae, *Ludwigia* sp., fusiform bud gall, 314, on Orchidaceae sp., conical leaf gall, 315-334, on Piperaceae, 315, *Piper aduncum*, conical bud gall, 316, *P. arboreum*, conical bud gall, 317, *P. chimonanthifolium*, globoid leaf gall, 318-320, *Piper cf. dilatatum*, 318, fusiform leaf petiole gall, 319, globoid leaf gall, 320, fusiform stem and leaf petiole gall, 321-322, *P. marginatum*, 321, fusiform leaf petiole gall, 322, globoid leaf gall, 323, *P. richardiifolium*, globoid leaf gall, 324-326, *P. tuberculatum*, 324, globoid bud gall, 325, discoid leaf gall, 326, fusiform stem gall, 327-328, *Piper* sp. 1, 327, globoid stem and bud gall, 328, globoid stem gall, 329, *Piper* sp. 2, conical bud and leaf gall, 330-331, *Piper* sp. 3, 330, globoid bud gall, 331, cylindrical bud gall, 332, *Piper* sp. 4, fusiform stem gall, 333, *Piper* sp. 5, globoid bud gall, 334, Piperaceae sp.1, globoid leaf gall, 335, on Polypodiaceae, *Niphidium crassifolium*, conical leaf gall, 336-337, on Primulaceae, *Cybianthus* sp., 336, fusiform bud gall, 337, fusiform stem gall.

Previous gall records on this plant species: 1) in Atlantic forest, as *Rapanea ferruginea* – Maia et al. 2008 (n=2/Bertioga/SP), Toma and Mendonça 2013 (n=1/São Francisco de Paula/RS).

Myrsine lineata (Mez) Imkhan. (endemic in Brazil, Atlantic forest, NE) (n=1)

Gall (Fig. 338): on leaf, discoid, green, glabrous, and one–chambered. Galler: Cecidomyiidae (06 larvae). Path: Travessia Ruy Braga, 16/III/2015.

No previous gall records on this plant species.

Myrsine parvula (Mez) Otegui (native species, NE) (first record in altitude fields) (n=1)

Gall (Fig. 339): on stem, globoid, reddish, glabrous, and one–chambered. Galler: Lepidoptera (03 catterpilars, 01 adult). Inquilines: Curculionidae (01 adult). Paths: Prateleiras, 09/IV/2014; Morro do Couto, 13/V/2014; Travessia Serra Negra, 14–15/X/2014; Travessia Ruy Braga, 14/IV/2015, 15/IX/2015; Asa de Hermes, 16/IX/2015; Posto Marcão–Abrigo Rebouças, 13/V/2015.

No previous gall records on this plant species.

Myrsine L. sp. 1 (native genus) (n=3)

Gall (Fig. 340): on leaf, discoid, reddish peripherally and green centrally, glabrous, and one–chambered. Galler: *Contarinia* sp. (Cecidomyiidae) (03 larvae). Parasitoids: Hymenoptera (01 pupa). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 17/III/2015, 14/IV/2015, 15/IX/2015.

Gall (Fig. 341): on apical and lateral bud, conical, green or brown, glabrous, and one–chambered. Galler: Lepidoptera (01 caterpillar). Path: Travessia Ruy Braga, 14/IV/2015.

Gall (Fig. 342): on bud, rosette, green, glabrous, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 14/IV/2015.

Myrsine L sp. 2 (n=1)

Gall (Fig. 343): on flower bud, conical, reddish, glabrous, and one–chambered. Galler: *Clinodiplosis* sp. (Cecidomyiidae) (02 larvae). Path: Travessia Ruy Braga, 04/VIII/2014.

Previous gall records on undetermined species of *Myrsine* L.: 1) in Atlantic forest – Maia and Oliveira 2010 (n=1/Angra dos Reis/RJ), Maia et al. 2014 (n=2/Santa Teresa/ES).

PROTEACEAE (N=3)

Roupala montana* Aubl. var. *montana (native species, NE) (n=3)

Gall (Fig. 344): on bud and stem, fusiform, brown, unilateral, glabrous, and one–chambered or multichambered. Galler: Lopesiini (Cecidomyiidae) (02 larvae). Parasitoids: Hymenoptera (adult fragments). Paths: Asa de Hermes, 16/IX/2015; Travessia Ruy Braga, 13/V/2015.

Gall (Fig. 345): on stem, globoid, brown, glabrous, and one–chambered. Galler: Lepidoptera. Paths: Prateleiras, 09/IV/2014; Morro do Couto, 13/V/2014; Travessia Serra Negra, 14–15/X/2014; Travessia Ruy Braga, 14/IV/2015, 13/V/2015.

Gall (Fig. 346): on bud, globoid, green, glabrous, and one–chambered. Galler: Lepidoptera. Paths: Prateleiras, 09/IV/2014; Pedra da Maçã, Tartaruga and Assentada, 27/I/2015.

Previous gall records: 1) in Atlantic forest – Gonçalves-Alvim and Fernandes 2001 (n=1/ Três Marias/MG), Toma and Mendonça 2013 (n=1/São Francisco de Paula/RS), Maia 2014 (n=2/ Itamonte/MG), Maia 2013b (n=1/São Tomé das Letras/MG), 2) in Cerrado – Araújo et al. 2011b (n=1/GO), Saito and Urso-Guimarães 2013 (n=2/Jataí/MG), Araújo et al. 2015 (n=6/GO).

PTERIDACEAE (N=1)

Adiantum latifolium Lam. (native species, NE) (n=1)

Gall (Fig. 347): on bud, globoid, brown, glabrous, and one–chambered. Galler: not determined. Path: Donati–Simon 2, 08/IX/2014.

No previous gall records on this plant species and genus.

ROSACEAE (N=2)

Prunus myrtifolia (L.) Urb. (native species, NE) (n=1)

Gall (Fig. 348): on stem, fusiform, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (01 young larva). Parasitoids: Hymenoptera (04 pupae, 01 adult). Path: Travessia Ruy Braga, 08/XII/2014.

No previous gall records on this plant species.

Rubus rosifolius Sm. (exotic species) (n=1)

Gall (Fig. 349): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: not determined. Inquilines: Lepidoptera (01 pupa). Path: Ecoarte–Lago Azul, 08/IV/2014.

Previous gall records on this plant genus: 1) in Atlantic forest: on *Rubus* sp. –Maia et al. 2014 (n=1/ Santa Teresa/ES), on *Rubus erythrocladus* Mart – Toma and Mendonça 2013 (n=1/São Francisco de Paula/RS), 2) in Cerrado: on *Rubus* sp. –Tavares 1908 (n=1/ Serra do Caraça/MG), 3) no biome data: on *R. erythroclados*Mart. Ex Hook.f. – Mendonça et al. 2014 (n=4/RS).

RUBIACEAE (N=16)

Borreria tenera DC. (native species, NE) (first record in Southeast Region and Atlantic forest) (n=1)

Gall (Fig. 350): on stem, globoid, green, glabrous, and one–chambered. Galler: Cecidomyiidae (02 larvae). Parasitoids: Hymenoptera (01 larva). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Serra Negra, 14–15/ X/2014; Travessia Ruy Braga, 16/III/2015.

No previous gall records on this plant species.

Borreria G. Mey sp. (native genus) (n=1)

Gall (Fig. 351): on stem, fusiform, brown, glabrous, and one–chambered. Galler: *Neolasioptera* sp. (Cecidomyiidae) (02 larvae). Parasitoids: Hymenoptera (02 larvae). Path: Três Picos, 08/IX/2014.

Previous records on *Borreria* spp.: 1) in Atlantic forest: on *Borreria* sp. – Rübsaamen 1905 (n=1/Rio de Janeiro/RJ), on *B. verticillata* (L.) Meyer – Maia 2013a (n=1/Maricá, Arraial do Cabo and Carapebus/RJ), on *Borreria cf. ocymifolia* (Willd. Ex Roem. and Schult) Bacigalupe and E.L. Cabral – Maia et al. 2008 (n=1/Bertioga/SP), on *Borreria cf. brachystemonoides* – Rodrigues et al. 2014 (n=1/Mangaratiba/RJ).

Cordiera myrciifolia (K.Schum.) C.H.Perss. and Delprete (native species, NE) (n=1)

Gall (Fig. 352): on bud, globoid, with crests, green, glabrous, and one–chambered. Galler: Lepidoptera (02 catterpilars). Path: BR–485, 12/ XI/2014.

No previous gall on this plant species. Previous gall records on this plant genus: in Cerrado: on *Cordiera concolor* (Cham.) Kuntze – Carneiro et al. 2009b (n=1/ Serra do Espinhaço/MG).

Ixora L. sp. (native genus) (n=1)

Gall (Fig. 353): on leaf, globoid, green, hairy, and one–chambered. Galler: Cecidomyiidae (01 pupa). Path: Cachoeira Poranga, 07/IV/2014.

No previous gall records on this plant genus.

Psychotria leiocarpa Cham. and Schltdl. (native species, NE) (n=1)

Gall (Fig. 354): on leaf, conical, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 08/XII/2014.

Previous gall records on this plant species: in Atlantic forest – Lima et al. 2000 (same gall morphotype/Bertioga/SP).

Psychotria L. sp.1 (native genus) (n=4)

Gall (Fig. 355): on bud, stem and leaf petiole, fusiform, reddish or green, glabrous, and one–chambered. Galler: Cecidomyiidae (02 young larvae). Parasitoids: Hymenoptera (07 adults). Paths: Três Picos, 10/IX/2014, 11/XI/2014; BR–485, 12/XI/2014; Travessia Ruy Braga, 17/ III/2015; 14/IV/2015; Casa 33, 16/VI/2015.

Gall (Fig. 356): on leaf, globoid, green, succulent, glabrous, and one–chambered. Galler: Cecidomyiidae (02 larvae, 01 pupa). Parasitoids: Hymenoptera (01 pupa, 03 adults). Paths: Cachoeira Véu da Noiva, 17/III/2014; Cachoeira Itaporani, 12/V/2014; Três Picos 13/V/2014, 10/IX/2014; Água Branca–Ruy Braga, 18/VI/2014; Travessia Serra Negra, 14–15/X/2014 (01 pupa); Três Picos 11/XI/2014; BR–485, 12/XI/2014; Travessia Ruy Braga, 18/VI/2014, 24/II/2015, 17/III/2015, 14/IV/2015.

Similar gall recorded by Maia 2014 in the PNI (Brejo da Lapa).

Gall (Fig. 357): on leaf, marginal roll, green, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Água Branca–Ruy Braga, 18/VI/2014.

Gall (Fig. 358): on leaf, globoid, yellowish, with trichomes, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 24/II/2015.

Psychotria L. sp.2 (n=1)

Gall (Fig. 359): on bud, globoid, brown, hairy, and one–chambered. Galler: Lepidoptera (fragments). Path: Três Picos, 08/IX/2014.

Previous gall records on undetermined species of *Psychotria* L.: in Atlantic forest – Tavares 1922 (n=1/Friburgo/RJ), Maia et al. 2014 (n=1/Santa Teresa/ES), Maia 2014 (n=1/Itamonte/MG), Maia and Carvalho-Fernandes 2016 (n=1/São Francisco de Itabapoana/RJ).

Randia L. sp. (native genus) (n=1)

Gall (Fig. 360): on leaf, fold, green, glabrous, and one–chambered. Galler: Hemiptera. Path: Casa de Pedra, 25/II/2014.

No previous records on this plant genus.

Remijia DC. sp. (native genus) (first record in RJ) (n=1)

Gall (Fig. 361): on leaf, globoid, whittish or greenish, hairy, and one–chambered. Galler: Lasiopteridi (Cecidomyiidae) (01 male). Parasitoids: Hymenoptera (01 larva, 04 adults). Path: Donati–Simon 2, 08/IX/2014.

Previous gall records: in Cerrado: on *Remijia ferruginea* (A. St.-Hil) DC. – Carneiro et al. 2009b (n=1/Serra do Espinhaço/MG).

Rudgea Salisb. sp. (native genus) (n=1)

Gall (Fig. 362): on leaf, discoid, yellow, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 08/VII/2014.

Previous gall records on this plant genus: in Atlantic forest: on *Rudgea parquioides* (Cham.) Müll. Arg. – Toma and Mendonça 2013 (n=1/São Francisco de Paula/RS), Mendonça et al. 2014 (n=1/RS).

Sabicea Aubl. sp. (native genus) (n=1)

Gall (Fig. 363): on leaf, globoid, yellow, hairy, and one–chambered. Galler: Cecidomyiidae (02 larvae). Path: Travessia Ruy Braga, 04/VIII/2014.

Previous records on this plant genus: in Atlantic forest: on *Sabicae brasiliensis* Wernham – Maia 2013b (n=1/São Tomé das Letras/MG).

Sipanea Aubl. sp.1 (native genus) (first record in RJ) (n=1)

Gall (Fig. 364): on stem, globoid, green, and micropubescent. Galler: Cecidomyiidae (01 young larva). Paths: Cachoeira Itaporani, 17/III/2014; Três Picos, 13/V/2014.

Sipanea Aubl. sp. 2 (n=1)

Gall (Fig. 365): on leaf, globoid, green, with green trichomes, and one–chambered. Galler: not determined (empty galls) (Fig.). Paths: Cachoeira Itaporani, 17/III/2014, 12/V/2014; Travessia Serra Negra, 14–15/X/2014.

Previous gall records on undetermined species of *Sipanea* Aubl: in Atlantic forest – Maia et al. 2014 (n=1/Santa Teresa/ES).

SALICACEAE (N=3)

Casearia aculeata Jacq. (native species, NE) (first record in RJ and altitude fields) (n=1)

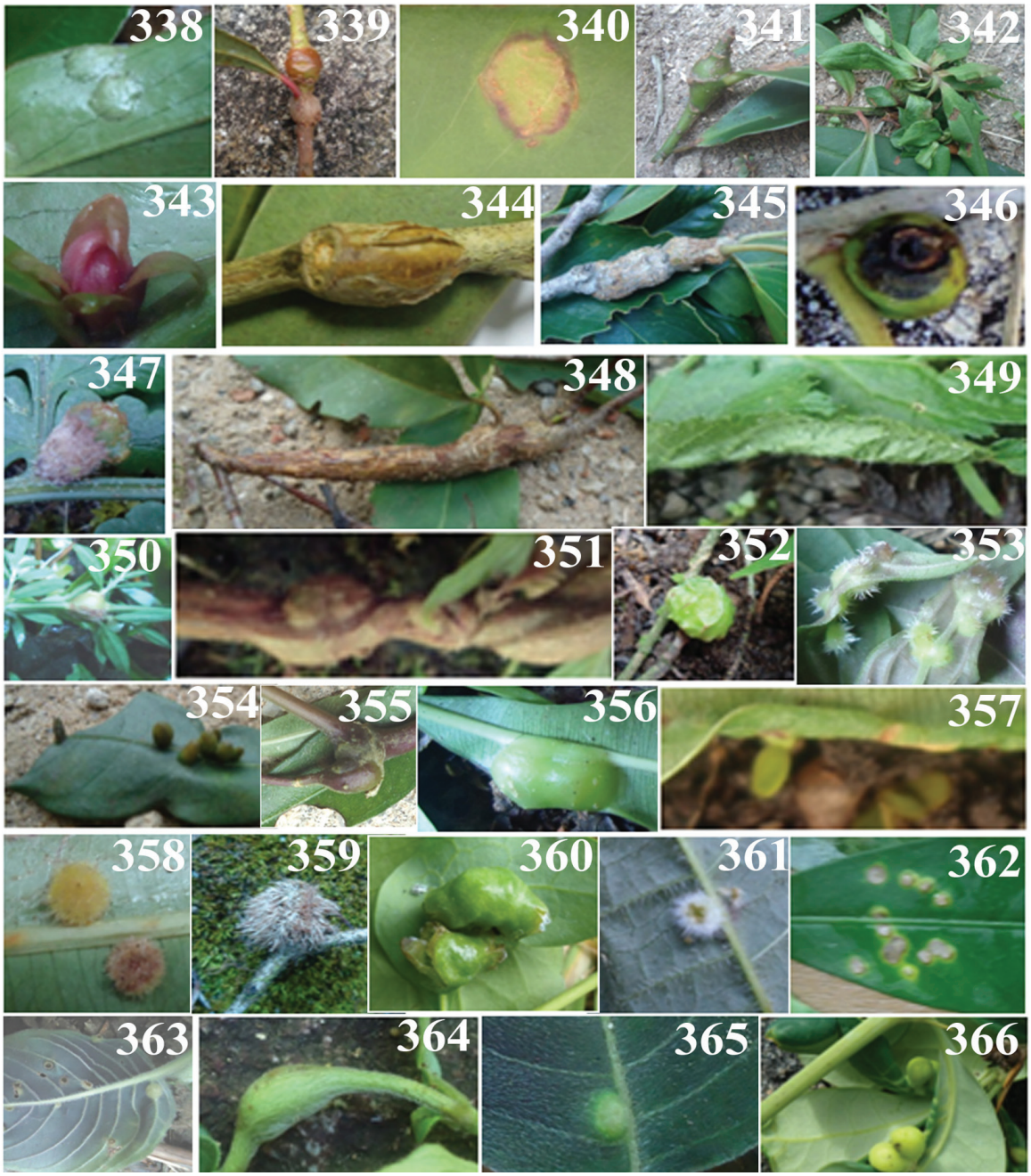

Figure 338-366 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), 338-343, on Primulaceae, 338, *Myrsine lineata*, discoid leaf gall, 339, *M. parvula*, globoid stem gall, 340-342, *Myrsine* sp. 1, 340, discoid leaf gall, 341, conical bud gall, 342, rosette bud gall, 343, *Myrsine* sp. 2, conical flower bud gall, 344-346, on Proteaceae, *Roupala montana montana*, 344, fusiform bud and stem gall, 345, globoid stem gall, 346, globoid bud gall, 347, on Pteridaceae, *Adiantum latifolium*, globoid bud gall, 348-349, on Rosaceae, 348, *Prunus myrtifolia*, fusiform stem gall, 349, *Rubus rosifolius*, marginal leaf roll, 350-365, on Rubiaceae, 350, *Borreria tenera*, globoid stem gall, 351, *Borreria* sp., fusiform stem gall, 352, *Cordiera myrciifolia*, globoid bud gall, 353, *Ixora* sp., globoid leaf gall, 354, *Psychotria leiocarpa*, conical leaf gall, 355-358, *Psychotria* sp.1, 355, fusiform bud, stem and leaf petiole gall, 356, globoid leaf gall, 357, marginal leaf roll, 358, globoid leaf gall, 359, *Psychotria* sp. 2, globoid bud gall, 360, *Randia* sp., leaf fold, 361, *Remijia* sp., globoid leaf gall, 362, *Rudgea* sp., discoid leaf gall, 363, *Sabicea* sp., globoid leaf gall, 364, *Sipanea* sp. 1, globoid stem gall, 365, S*ipanea* sp. 2, globoid leaf gall, 366, on Salicaceae, *Casearia aculeata*, globoid leaf gall.

Gall (Fig. 366): on leaf, globoid, green, glabrous, and one–chambered. Galler: *Asphondylia* sp. (Cecidomyiidae) (1 pupa). Inquilines: Coccoidea (Hemiptera). Path: Posto Marcão–Abrigo Rebouças, 24/II/2014.

Previous gall records on this plant species: in Atlantic forest: on *Casearia* cf. *aculeata* – Fernandes and Negreiros 2006 (n=1/Aimorés/MG)

Casearia arborea (Rich.) Urb. (native species, NE) (n=1)

Gall (Fig. 367): on leaf vein, fusiform, green, glabrous, and one–chambered. Galler not determined. Path: Travessia Ruy Braga, 08/VII/201.

Previous gall records on this plant species: 1) in Atlantic forest – Maia et al. 2014 (n=1/Santa Teresa/ES), 2) in Amazonian forest – Almada and Fernandes 2011 (n=2/Oriximiná/PA).

Casearia sylvestris Sw. (native species, NE) (n=1)

Gall (Fig. 368): on stem, fusiform, green, glabrous, and one–chambered. Galler: not determined. Path: BR–485, 09/XII/2014.

Previous gall records on this plant species: 1) in Atlantic forest – Santos et al. 2012 (n=2/PE), 2) in Amazonian forest – Maia 2011 (n=1 / Oriximiná/PA), 3) in Cerrado – Araújo et al. 2011 (n=2/Pirineus/GO), 4) in Caatinga–Cerrado – Luz et al. 2012 (n=1/Januária/MG), 5) no data biome – Mendonça et al. 2014 (n=3/RS).

SANTALACEAE (N=2)

Phoradendron Nutt. sp. (native genus) (n=1)

Gall (Fig. 369): on leaf, globoid, brown, glabrous, and two-chambered. Galler: Cecidomyiidae (01 young larva). Path: Travessia Ruy Braga, 10 –12/XI/2014.

Previous gall records on this plant genus: 1) in Atlantic forest: on *Phoradendron* sp. – Maia 2014 (n=1/Santa Teresa/ES), on *P. piperoides* (Kunth) Trel. – Monteiro et al. 1994 (n=1/Maricá/RJ), 2) in Cerrado: on *P.crassifolium* (Pohl ex DC) Eichler – Carneiro et al. 2009b (n=1/Serra do Espinhaço/MG).

Not determined (n=1)

Gall (Fig. 370): on stem, fusiform, brown, and glabrous. Galler: not determined. Path: Casa de Pedra, 25/II/2014.

SAPINDACEAE (N=20)

Cupania cinerea Poepp. and Endl. (native species, NE) (first record in the Southeast Region and Atlantic forest) (n=1)

Gall (Fig. 371): on stem, fusiform, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Centro de Visitantes, 07–08/VII/2014.

No previous gall records on this plant species.

Cupania scrobiculata Rich. (native species, NE) (first record in the Southeast Region) (n=1)

Gall (Fig. 372): on leaf, globoid, red or green, with yellow trichomes, and one–chambered. Galler: Cecidomyiidae (03 larvae). Parasitoids: Hymenoptera (01 larva). Path: Donati–Simon 2, 08/IX/2014.

Previous gall records on this plant species: in Amazonian forest – Maia 2011 (n=1/Oriximiná/PA).

Paullinia L. sp. (native genus) (n=1)

Gall (Fig. 373): on stem, unilateral, fusiform, brown, glabrous, and one–chambered. Galler: Cecidomyiidae (01 adult). Path: Travessia Ruy Braga, 10–12/XI/2014.

Previous gall records on undetermined species of *Paullinia* L.: 1) in Atlantic forest – Maia et al. 2008 (n=6/Bertioga/SP), 2) in Cerrado – Maia and Fernandes 2004 (n=1/Serra de São José/MG).

Serjania communis Cambess. (native species, NE) (n=1)

Gall (Fig. 374): on stem, tendril, leaf petiole, and vein, fusiform, green, micropubescent, and one–chambered. Galler: not determined. Path: BR–485, 26/I/2015, 28/I/2015.

Previous gall records on this plant species: in Atlantic forest – Maia et al. 2008 (n=1/Bertioga/SP).

Serjania deflexa Gardner (native species, NE) (n=1)

Gall (Fig. 375): on stem, tendril, leaf petiole, and vein, fusiform, green, pubescent, and one–chambered. Galler: Cecidomyiidae (05 larvae). Paths: Casa 33, 16/VI/2015; BR–485, 28/I/2015.

No previous gall records on this plant species.

Serjania glutinosa Radlk. (native species, NE) (first record in RJ) (n=2)

Gall (Fig. 376): on leaf vein, fusiform, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Parasitoids: Hymenoptera (fragments). Inquilines: Muscomorpha (01 larva). Paths: Hotel Donati, 04/VIII/2014; Travessia Ruy Braga, 10–12/XI/2014.

Gall (Fig. 377): on leaf petiole, tendril and stem, fusiform, green with brown trichomes, and one–chambered. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

Previous gall records on this plant species: in Atlantic forest – Maia 2013b (n=1/São Tomé das Letras/MG).

Serjania lethalis A.St.-Hil. (native species, NE) (n=1)

Gall (Fig. 378): on bud and stem, fusiform, unilateral, brown, and one–chambered. Galler: not determined (empt galls). Paths: Hotel Donati, 04/VIII/2014; Donati–Simon 2, 08/IX/2014.

Previous gall records: in Cerrado – Luz et al. 2012 (n=1/Januária/MG), Araújo et al. 2015 (n=1/GO/).

Serjania meridionalis Cambess. (native species, NE) (n=2)

Gall (Fig. 379): on stem, leaf petiole and midvein, fusiform, brown, and one–chambered. Galler not determined (empty galls). Paths: Viúva Hansen, 10/IV/2014; Água Branca–Ruy Braga, 18/VI/2014.

Gall (Fig. 380): on bud, globoid, brown, unilateral, and glabrous. Galler: not determined. Path: Travessia Ruy Braga, 08/VII/2014.

Previous gall records on this plant species: 1) in Atlantic forest – Maia 2013b (n=1/São Tomé das Letras/MG), 2) no biome data – Mendonça et al. 2014 (n=3/RS).

Serjania paucidentata DC. (native species, NE) (first record in RJ) (n=5)

Gall (Fig. 381): on leaf vein, fusiform, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Parasitóides: Hymenoptera (fragments). Path: Travessia Ruy Braga, 18/VI/2014, 14/IV/2015.

Gall (Fig. 382): on stem, fusiform, brown, glabrous, and one–chambered. Galler: Lepidoptera. Path: Travessia Ruy Braga, 18/VI/2014, 14/IV/2015.

Gall (Fig. 383): on leaf petiole, globoid, brown, and glabrous. Galler: Coleoptera (01 larva). Parasitoids: Hymenoptera (fragments). Path: Travessia Ruy Braga, 14/IV/2015.

Gall (Fig. 384): on leaf, marginal roll, reddish, glabrous, and one–chambered. Galler: not determined (empty galls). Path: Travessia Ruy Braga, 14/IV/2015.

Gall (Fig. 385): on leaf, discoid, with central concavity, brown, glabrous, and one–chambered. Galler: not determined. Inquilines: Thysanoptera (02 nimphs). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 14/IV/2015.

No previous record on this plant.

Serjania Mill. sp.1 (native genus) (n=1)

Gall (Fig. 386): on leaf, marginal fold, green or red, irregular, glabrous, and one–chambered. Galler: not determined. Path: Casa de Pedra, 25/II/2014.

Serjania Mill. sp.2 (n=1)

Gall (Fig. 387): on stem, globoid, brown, glabrous, and one–chambered. Galler: not determined (empty galls). Paths: Lago Azul, 18/III/ 2014.

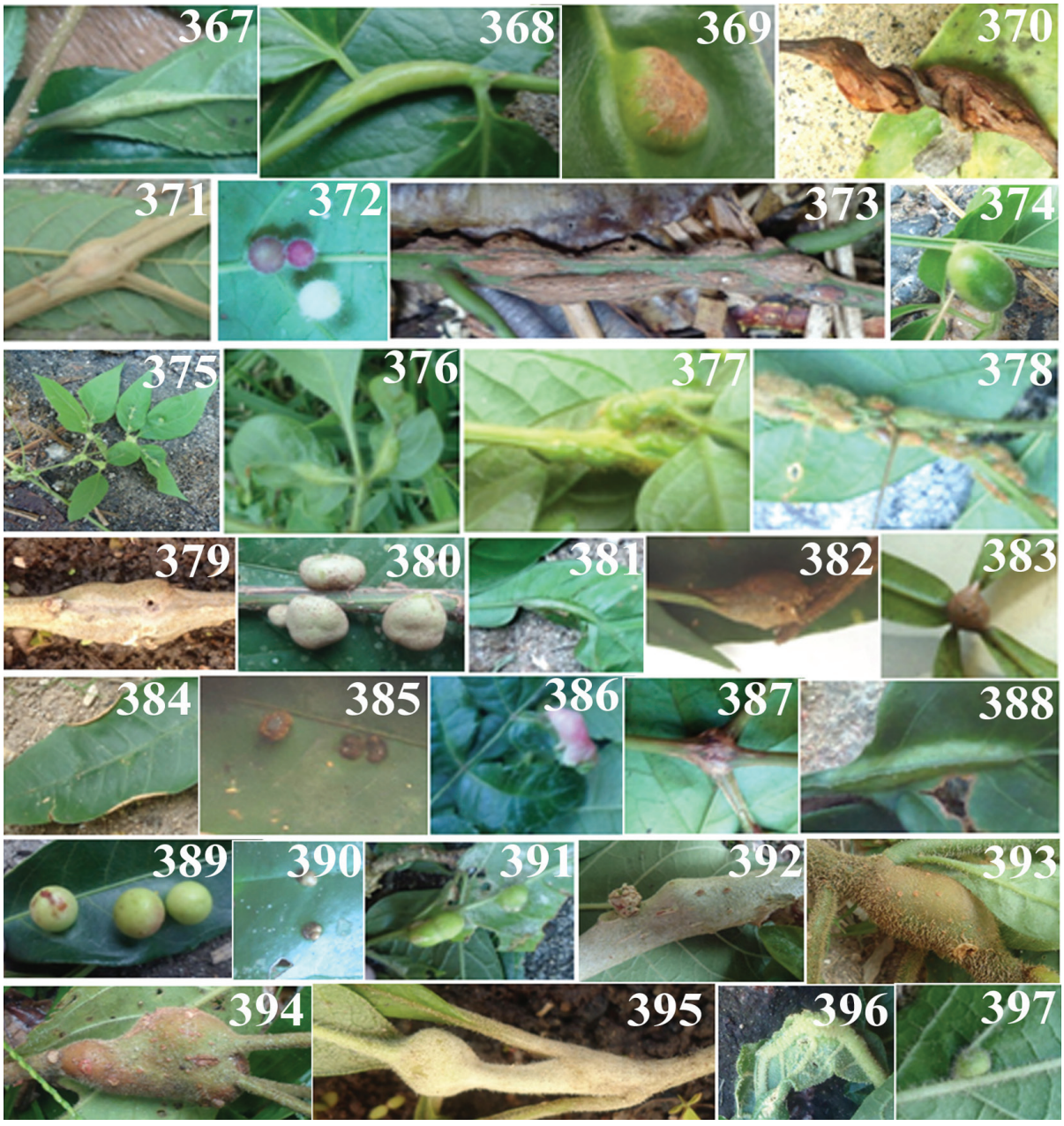

Figure 367-397 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), 367-368, on Salicaceae, *Casearia arborea*, 367, fusiform leaf vein gall, 368, *C. sylvestris*, fusiform stem gall, 369-370, on Santalaceae, 369, *Phoradendron* sp., globoid leaf gall, 370, Santalaceae sp., fusiform stem gall, 371-390, on Sapindaceae, 371, *Cupania cinerea*, fusiform stem gall, 372, *C. scrobiculata*, globoid leaf gall, 373, *Paullinia* sp., fusiform stem gall, 374, *Serjania communis*, fusiform stem, tendril, leaf petiole and vein gall, 375, *S. deflexa*, fusiform stem, tendril, leaf petiole and vein gall, 376-377, *S. glutinosa*, 376, fusiform leaf vein gall, 377, fusiform stem, tendril, leaf petiole, 378, *S.lethalis*, fusiform bud and stem gall, 379-380, *S. meridionalis*, 379, fusiform stem, leaf petiole and midvein gall, 380, globoid bud gall, 381-385, *S. paucidentata*, 381, fusiform leaf vein gall, 382, fusiform stem gall, 383, globoid leaf petiole gall, 384, marginal leaf roll, 385, discoid leaf gall, 386, *Serjania* sp. 1, marginal leaf roll, 387, *Serjania* sp. 2, globoid stem gall, 388, *Serjania* sp. 3, fusiform leaf midvein gall, 389, *Serjania* sp. 4, globoid leaf gall, 390, *Toulicia* sp., globoid leaf gall, 391-397, on Solanaceae, 391-392, *Acnistus arborescens*, 391, globoid leaf gall, 392, fusiform stem gall, 393, *Aureliana anonacea*, fusiform stem gall, 394, *Aureliana* sp., fusiform bud and stem gall, 395, *Solanum asperum*, globoid stem and leaf petiole gall, 396, *S. incinellum*, fusiform leaf vein gall, 397, *S. megalochiton*, globoid leaf gall.

Serjania Mill. sp.3 (n=1)

Gall (Fig. 388): on leaf midvein, fusiform, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Parasitoids: Hymenoptera (02 pupae, 02 adults). Paths: Lago Azul, 18/III/2014; Cachoeira Poranga, 07/IV/2014; Travessia Ruy Braga, 10–12/XI/2014; BR–485, 09/XII/2014, 23/II/2015; Viúva Hansen, 10/IX/2014; Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014.

Serjania Mill. sp.4 (n=1)

Gall (Fig. 389): on leaf, globoid, green or red, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Path: Hotel Donati, 04/VIII/2014.

Previous gall records on undetermined species of *Serjania* Mill.: 1) in Atlantic forest – Maia et al. 2014 (n=2/Santa Teresa/ES), Rodrigues et al. 2014 (n=6/Marambaia/RJ), Maia 2014 (n=1/Itamonte/MG), Maia 2013b (n=1/São Tomé das Letras/MG), Maia and Carvalho-Fernandes 2016 (n=7/São Francisco de Itabapoana/RJ), 2) in Amazonian forest – Rübsaamen 1916 (n=1/AM), Almada and Fernandes 2011 (n=1/Oriximiná/PA), Araújo et al. 2012 (n=1/ Oriximiná/PA), 3) in Cerrado – Coelho et al. 2009 (n=7/Serra do Cipó/MG), Araújo et al. 2015 (n=7/ /Goiás), 4) in Cerrado-Caatinga – Costa et al. 2015 (n=1/Caetité/BA).

Toulicia Aubl. sp. (native genus) (n=1)

Gall (Fig. 390): on leaf, globoid, brown, glabrous, and one–chambered. Galler: not determined. Path: Viúva Hansen, 10/IX/2014.

Previous gall records on this plant genus: in Cerrado: on *Toulicia tomentosa* ***Radlk.*** – Urso-Guimarães and Scareli-Santos 2006 (n=1/Santa Rita do Passa Quatro/MG).

SOLANACEAE (N=23)

Acnistus arborescens (L.) Schltd. (native species, NE) (first record in altitude fields) (n=2)

Gall (Fig. 391): on leaf, globoid, green, with white trichomes, and one–chambered. Galler: Cecidomyiidae (01 larva). Inquilines: Thysanoptera (01 adult and 03 nymphs). Paths: Casa de Pedra, 25/II/2014; Travessia Serra Negra, 14–15/X/2014; Travessia Ruy Braga, 24/II/2015, 17/III/2015; 14/IV/2015.

Gall (Fig. 392): on stem, fusiform, brown, glabrous, and one–chambered. Galler: not determined. Path: Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2014.

No previous gall records of galls on this plant.

Aureliana anonacea (Sendtn.) I.M.C.Rodrigues and Stehmann (endemic in Brazil, Atlantic forest, NE) (n=1)

Gall (Fig. 393): on stem, fusiform, brown, and pubescent. Galler: not determined. Path: Travessia Ruy Braga, 14/IV/2015.

No previous gall records of galls on this plant.

Aureliana Sendtn. sp. (native genus) (n=1)

Gall (Fig. 394): on bud and stem, fusiform, green or reddish, glabrous, and one–chambered. Galler: Lepidoptera (01 catterpilar). Path: Travessia Ruy Braga, 16/III/2015.

Previous gall records on this plant genus: in Atlantic forest: on *Aureliana fasciculata* (Vell.) Sendtn – Maia 2013b (n=4/Bertioga/SP), Maia 2001 (n=1/Carapebus/RJ), on *A. glomultiflora* Sendtn – Maia 2013a (n=1/Bertioga/SP).

Solanum asperum Rich. (native species, NE) (n=1)

Gall (Fig. 395): on leaf petiole and stem, globoid, yellowish, with trichomes, one–chambered. Galler: not determined (empty galls). Path: Água Branca–Ruy Braga, 18/VI/2014.

No previous gall records on this plant.

Solanum incinellum Lindl (not found in Flora do Brasil, 2016) (n=1)

Gall (Fig. 396): on leaf vein, fusiform, greenish, with trichomes, and one–chambered. Galler: *Clinodiplosis* sp. (Cecidomyiidae). Path: Três Picos, 13/V/2014, 08/IX/2014; Travessia Ruy Braga, 15/IX/2015.

No previous gall records on this plant.

Solanum megalochiton Mart. (native species, NE) (n=1)

Gall (Fig. 397): on leaf, globoid, green, pubescent, and one–chambered. Galler: Cecidomyiidae. Paths: Barbosa Rodrigues–Mirante do Último Adeus, 09/XII/2015; BR–485, 09/XII/2014.

No previous gall records on this plant species.

Solanum scuticum M.Ne (native species, NE) or ***piluliferum*** Dunal (endemic in Brazil, Atlantic forest, NE) (n=2)

Gall (Fig. 398): on leaf, globoid, green, with trichomes, and one–chambered. Galler: Cecidomyiidae (04 larvae). Path: Casa 33, 16/VII/2015.

Gall (Fig. 399): on leaf, discoid, green, and one–chambered. Galler: not determined. Path: Casa 33, 16/VII/2015.

No previous gall records on this plant species.

Solanum swartzianum Roem. and Schult. (native species, NE) (n=1)

Gall (Fig. 400): on leaf vein, fusiform, brown, woody, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva, 01 pupa). Paths: Hotel Donati, 04/VIII/2014; Travessia Ruy Braga, 10–12/XI/2014, 16/III/2015, 17/III/2015; BR–485, 28/I/2015; Casa 33, 16/VI/2015.

Previous gall records on this plant species: in Atlantic forest – Maia et al. 2014 (n=1/Santa Teresa/ES).

Solanum L. sp.1 (native genus) (n=1)

Gall (Fig. 401): on stem, fusiform, green, glabrous, and one–chambered. Galler: Cecidomyiidae (02 larvae, 01 pupal exuvia, 02 adults). Parasitoids: Hymenoptera (03 adults). Paths: Cachoeira Véu da Noiva, 17/III/2014; Três Picos, 13/V/2014, 11/IX/2014; Viúva Hansen, 10/IX/2014.

Solanum L. sp. 2 (n=1)

Gall (Fig. 402): on stem, leaf petiole and vein, fusiform, green, glabrous, and one–chambered (Fig.). Galler: *Asphondylia* sp. (Cecidomyiidae) (01 young larva, 07 pupal exuviae, 08 females). Parasitoids: Hymenoptera (03 adults). Paths: Três Picos, 13/V/2014; Água Branca–Ruy Braga, 18/VI/2014; Travessia Serra Negra, 14–15/X/2014.

Solanum L. sp.3 (n=1)

Gall (Fig. 403): on leaf vein, petiole, and stem, fusiform, green, micropubescent, and one–chambered. Galler: Cecidomyiidae (01 pupal exuvia, 01 young larva). Parasitoids: Hymenoptera. Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 08/VII/2014, 14/IV/2015, 15/IX/2015; Donati–Simon 2, 08/IX/2014.

Solanum L. sp.4 (n=1)

Gall (Fig. 404): on leaf vein, fusiform, yellowish, micropubescent, and one–chambered. Galler: not determined. Parasitoids: Hymenoptera (01 pupa). Path: Travessia Ruy Braga, 17/III/2015.

Solanum L. sp.5 (n=3)

Gall (Fig. 405): on stem, fusiform, green, glabrous, and multichambered. Galler: not determined (empty galls). Path: Três Picos, 13/V/2014.

Gall (Fig. 406): on leaf petiole, fusiform, tubular or globoid, green or brownish, with white pubescence. Galler: *Clinodiplosis* sp. (Cecidomyiidae) (01 larva). Parasitoids: Hymenoptera (02 adults). Path: Três Picos, 11/XI/2014.

Gall (Fig. 407): on leaf petiole and vein, fusiform, green, pubescent, and one–chambered. Galler: Cecidomyiidae (01 young larva). Paths: Três Picos, 13/V/2014: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 24/II/2015.

Solanum L. sp.6 (n=2)

Gall (no fig.): on leaf, globoid, green, glabrous, and multichambered. Galler: *Clinodiplosis* sp. (Cecidomyiidae) (08 larvae). Paths: Travessia Ruy Braga, 18/VI/2014, Água Branca–Ruy Braga, 18/VI/2014.

Gall (Fig. 408): on leaf, globoid, green, glabrous, and one–chambered. Galler:

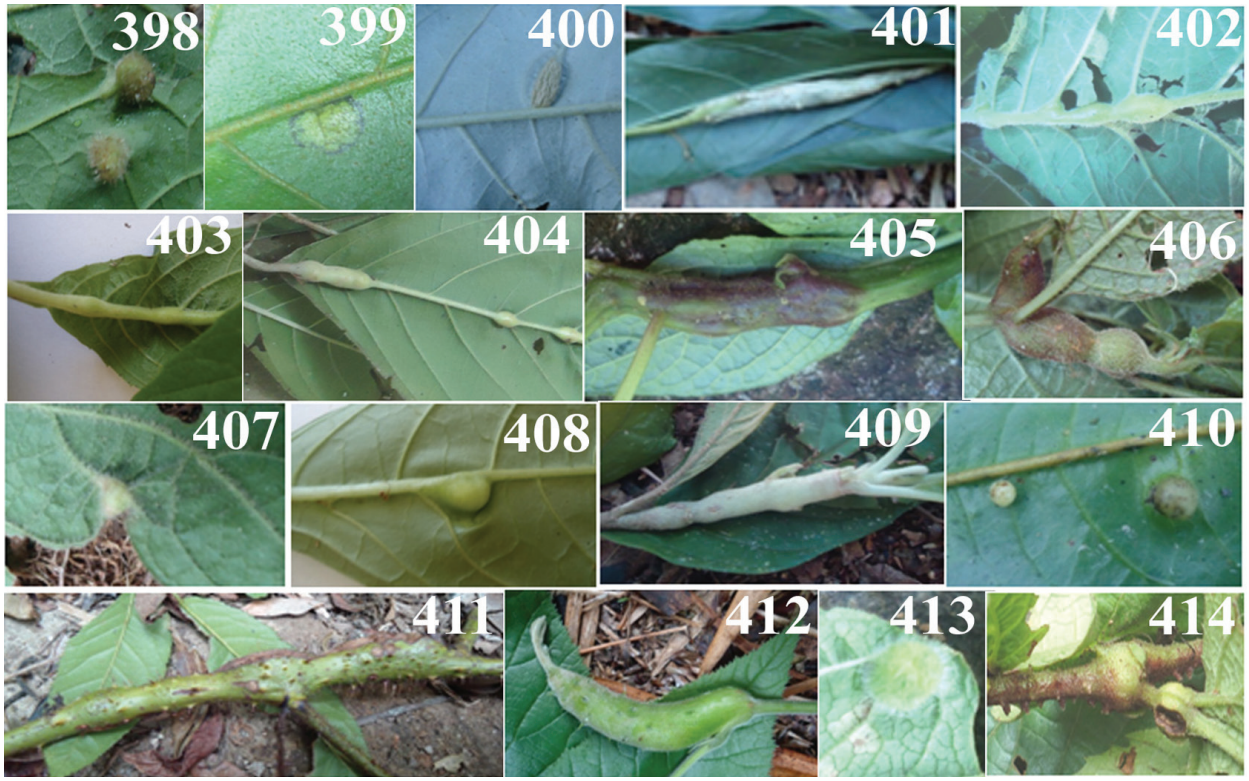

Figure 398-414 - Insect galls of the Parque Nacional do Itatiaia (Southeast Region, Brazil), 398-412, on Solanaceae, 398-399, *Solanum scuticum* or *S. piluliferum*, 398, globoid leaf gall, 399, discoid leaf gall, 400, *S. swartzianum*, fusiform leaf vein gall, 401, *Solanum* sp. 1, fusiform stem gall, 402, *Solanum* sp. 2, fusiform stem, leaf petiole and vein gall, 403, *Solanum* sp. 3, fusiform stem, leaf petiole and vein gall, 404, *Solanum* sp. 4, fusiform leaf vein gall, 405-407, *Solanum* sp. 5, 405, fusiform stem gall, 406, fusiform leaf petiole gall, 407, fusiform leaf petiole and vein gall, 408, *Solanum* sp. 6, globoid leaf gall, 409, *Solanum* sp. 7, fusiform stem gall, 410, *Solanum* sp. 8, globoid leaf gall, 411-412, *Solanum* sp. 9, 411, globoid or fusiform stem gall, 412, fusiform bud gall, 413, on Verbenaceae, *Lantana camara*, globoid leaf gall, 414, on Vitaceae, *Cissus albida*, globoid leaf petiole gall.

Cecidomyiidae (02 larvae). Paths: Água Branca–Ruy Braga, 18/VI/2014; Travessia Ruy Braga, 18/VI/2014.

Solanum L. sp.7 (n=1)

Gall (Fig. 409): on stem, fusiform, green or brown, with micropubescence, and one or multichambered. Galler: Muscomorpha (01 larva, 01 puparium). Paths: Água Branca–Ruy Braga, 18/VI/2014, 10–12/XI/2014.

Solanum L. sp.8 (n=1)

Gall (Fig. 410): on leaf, globoid, green, glabrous, and one–chambered. Galler: Cecidomyiidae (01 larva). Parasitoids: Hymenoptera (01 larva). Path: Hotel Donati, 04/VIII/2014.

Solanum L. sp. 9 (n=2)

Gall (Fig. 411): on stem, fusiform or globoid, green, thorny, and one–chambered. Galler: Cecidomyiidae (02 larvae). Paths: Travessia Ruy Braga, 14/IV/2015; Travessia Serra Negra, 14–15/X/2014; BR–485, 23/II/2015.

Gall (Fig. 412): on bud, fusiform, green, thorny, and pubescent. Galler: not determined. Path: Travessia Ruy Braga, 10–12/XI/2014.

Previous gall records on undetermined species of *Solanum* L.: 1) in Atlantic forest – Fernandes and Negreiros 2006 (n=1/Aimorés//MG), Toma and Mendonça 2013 (n=1/ São Francisco de Paula/RS), Maia 2013b (n=2/São Tomé das Letras/MG), Maia 2014 (n=1/Itamonte/MG), Maia et al. 2014 (n=2/Santa Teresa/ES), Rodrigues et al. 2014 (n=2/

Mangaratiba/RJ), 2) in Amazonian forest – Maia 2011 (n=1/Oriximiná/PA), 3) in Cerrado – Araújo et al. 2015 (n=1/GO).

VERBENACEAE (N=1)

Lantana camara L. (native species, NE) (n=1)

Gall (Fig. 413): on leaf, globoid, green, with trichomes, and one–chambered. Galler: *Schismatodiplosis lantanae* (01 larva) (Cecidomyiidae). Parasitoids: Hymenoptera (01 larva). Paths: Ecoarte–Lago Azul, 24/V/2014, L. S. Barbosa col.; Centro de Visitantes, 07–08/VII/2014.

Previous records of the same gall morphotype: 1) in Atlantic forest – Rübsaamen 1908 (Cabo Frio/RJ and Tubarão/SC), Maia 2001 (Maricá/RJ), Monteiro et al. 1994 (Maricá/RJ), Fernandes and Negreiros 2006 (Aimorés/MG), Proença and Maia 2014 (Rio das Ostras, Casimiro de Abreu, Valença/RJ), Rodrigues et al. 2014 (Mangaratiba/RJ), 2) in Caatinga – Santos et al. 2001a (PE), 3) in Amazonian forest – Proença and Maia 2014 (Oriximiná/PA, Campo Novo de Rondônia/RO), 4) no data biomea – Mendonça et al. 2014 (n=1/RS).

VITACEAE (N=1)

Cissus albida Cambess. (endemic in Brazil, Caatinga, Cerrado and Atlantic forest, NE) (n=1)

Gall (Fig. 414): on leaf petiole, globoid, green, glabrous, and one–chambered. Galler: not determined (empty galls) Path: BR–485, Ecoarte–Lago Azul, 28/I/2015.

No previous gall records on this plant species. Previous records on this plant genus: 1) in Pantanal: on *C. spinosa* – Julião et al. 2001 (n=1/MS), 2) in Atlantic forest: on *Cissus* sp. – Tavares 1918 (n=1/RJ), Rübsaamen 1908 (n=1/ RJ), 3) no biome data: on *C. striata* Ruiz and Pav. – Mendonça et al. 2014 (n=1/RS).

CONCLUSIONS

Among all of the already surveyed areas of the Brazilian biomes, the PNI showed the greatest richness of insect galls.This park included 167 native host plants, being 63 endemic in Brazil, and two vulnerable species. The first hosted 365 gall morphotypes, the second 103 and the third three. The inducers of these galls were also proposed respectively as native, endemic and vulnerable. The gall richness of the lower part of the PNI was widely higher than that of the plateau. Asteraceae and Melastomataceae were the superhost families, as already pointed out in other Brazilian inventories. Our results confirmed the plant richness hypothesis and the plant architecture hypothesis, but they did not favor the harsh environment hypothesis.

Leaves were the most frequent galled plant organ and Cecidomyiidae (Diptera) were the most common galling taxon, as in the entire world. Most galls were globoid, green, glabrous and one–chambered, which confirms the most frequent gall morphology in Brazil.

The associated fauna included parasitoids, inquilines and successors, the first were the most frequent, as in other Brazilian inventories. Predators were not found.

Several new records of host plants and gallers were found, contributing to the knowledge of their geographic distribution.

Our data highlight the PNI importance for the Atlantic forest biodiversity conservation.

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