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The dragonfly's face of the multidimensional Dr. Angelo Barbosa Monteiro Machado: a short bio-bibliography

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Abstract

In this special issue celebrating the Brazilian researcher Dr. Angelo Barbosa Monteiro Machado's 80th birthday, I present a very short biographical overview focused on his prolific career as odonatologist. The doctor, professor, children's book writer, conservationist, comedian, neuroanatomist, and eventually odonatologist Professor Angelo has published more than 110 papers, of which 79 are on dragonflies. He erected 97 new names, an impressive number for a small and relatively well-known order of insects. Here are presented annotated checklists of his publications on dragonflies (from 1953 to September of 2015), and nomina, as well as few comments of his impact on Neotropical odonatology as a whole.

Key words: Amazonia, odonatologist, Odonata, biography, Brazil

Introduction

How to define a multifaceted object which contains numerous irregular surfaces? Should it be defined based on its shape, on its structure, or on the materials of which it is composed? The Brazilian researcher Dr. Angelo Barbosa Monteiro Machado represents a case such as that, in which a few words are not enough to define him. Professor Angelo, as he is respectfully known among his colleagues and by the swarm of children who read his fictional books, is more than a multidisciplinary person; his interests embrace varied and distinct fields from theater to brain anatomy, making him unorthodox from all points of view. Such cases have become rarer in the currently overspecialized scientific milieu. Maybe it is better to refer to Angelo using a fuzzy logic, as nothing about his career is clear cut as would be expected for a scientist.

The first time that I heard about him was as undergraduate student in 2000 at Pontific Catholic University of Rio Grande do Sul (PUCRS), southern Brazil, during an academic meeting promoted by the biological sciences faculty. In a crowded amphitheater, without even a place to sit, hundreds of students were laughing their heads off during a lecture by a charismatic doctor with a comical voice (due to his myopathy, a neuromuscular illness), entitled "Animals and fear". This unusual subject reflected two of his numerous sides, the conservationist and the children's book writer. Speaking in a very catchy way, Angelo highlighted the importance of environmental education, including how unfortunately society induces negative attitudes about animals into children's minds from fictional stories about a Big Bad Wolf or a hungry and frightful jaguar (*Onça-pintada* in Portuguese). Indeed Angelo as a speaker knows, as few do, how to capture the attention of audiences, with skills to simultaneously educate and entertain, as good as any stand-up comedian. However, only a couple of years later, when I decided to study dragonflies, I could then realize the relevance of that funny gentleman with white hair, that he is one of the most important researchers on dragonflies in the world!

After that lecture, I met him personally no more than a couple of times, but since our first encounter our mutual interest in the wonderful dragonflies has connected us forever. Our first personal conversation occurred in 2006, during the Brazilian Congress of Zoology at Londrina, Paraná State. A few months later, in 2007, I visited him in Belo Horizonte to examine his collection for my ongoing master's degree project on the "Erythemismorpha" group of genera. At that time he showed me two extraordinary works in progress, one was about the still undescribed species in this group *Carajathemis simone* (Machado 2012e), a big Amazonian libellulid, and another important paper on South American damselflies since published in ZOOTAXA describing two new genera and ten new

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species (Machado 2009a). Curiously, at that time my knowledge of Zygoptera taxonomy was so vague that I didn't fully understand his scanning electron microscope photos, unfortunately most of them still unpublished.

The popular image of an ordinary scientist is of a nerdy stereotype. Angelo can be considered entirely the opposite of this view, notwithstanding his glasses and button downed shirts. Few people, especially from Academia, have such a strong appeal through the mass media as he does. A simple internet search will return results with several videos containing interviews with Angelo, addressing varied subjects including conservation issues, theatre, children's fictional literature, biology, and neuroanatomy. One of his funniest appearances on television occurred on the most popular Brazilian late-night talk show, hosted by Jô Soares. Invited to promote an adaptation of his famous and humorous book *Manual de sobrevivência em recepções e coquetéis com bufê escasso* for a theatrical play (Machado 1998b; freely translated as "Survival manual for poor buffet receptions and cocktail parties"), Angelo loudly presented a poem entitled *Im Frühling* (In Spring) using a dubious German accent in seemingly military commands, which was almost simultaneously and fictitiously translated to Portuguese by the actor of his play (Carlos Nunes), and contrary to the military tone, it versed kindly, sweetly, and pleasingly on love for nature. Again, he received lots of laughs from the audience.

These passages illustrate briefly the prestige, popularity and charism of Professor Angelo among his peers, colleagues and friends. In recent years several profiles about different aspects of his life have appeared elsewhere, being one of the most important published in English as a supplement of Volume 6 of the journal Lundiana, dedicated on the occasion of his 70th birthday (Mitre 2005). However, likely the best-detailed and comprehensive profile was published in Portuguese in the journal *CiênciaHoje* (De Carvalho 2013). Angelo helped create that periodical, dedicated to popularize scientific research, at the beginning of the 1980s, and was a member of its editorial board from 1983 to 1999. I invite readers to consult these profiles for additional information.

As part of this special issue celebrating Angelo Machado's 80th birthday, completed in 2014, I feel honored to have the opportunity to present a very short overview focused on his prolific career as odonatologist and on his dragonfly collection. A list of his publications and comments on his impact on Neotropical odonatology as a whole are also given.

Methodology

This short text expresses my own point of view, thus I assume responsibility for omissions, misinterpretations, or errors. The data and events presented here were based on his published profiles and interviews (Mitre 2005; Marcolin 2007; Dores 2009; De Carvalho 2013), his curriculum vitae, through informal talks with zoologist colleagues, and with Angelo himself. On August of 2014 during a visit to Angelo, a short interview was recorded on video, which resulted into a very interesting record of stories about Amazonian Indian tribes, dragonflies, researchers, and collections, unfortunately a very minor portion of which appears here.

Statistical summary for Brazilian dragonflies is based on the Taxonomic Catalog of the Fauna of Brazil (Pinto, in prep.), an official database of metazoan diversity to that country that will soon be freely available online. References authored by Angelo were compiled up to September 2015; however, it will be out of date quickly as at least two new genera and several new species from distinct genera such as *Acanthagrion*, *Heteragrion*, *Perilestes*, *Minagrion*, and *Oxyagrion* are in press or have been submitted. High-level administrative divisions for countries (e.g., state, province, and department) used in the annotated checklist of the dragonfly names introduced by Dr. Angelo were abbreviated following the International Organization for Standardization (ISO 2012).

Odonata classification was based in Dijkstra et al. (2013, 2014), collection acronyms on the updated version of Arnett *et al.* (1993) by Evenhuis (2014) as follows:

ABMM	Angelo B. M. Machado personal collection, Belo Horizonte, MG, Brazil (Angelo B. M. Machado, donated to the Departamento de Zoologia, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil);
FSCA	Florida State Collection of Arthropods, Division of Plant Industry, Gainesville, Florida, USA (William Mauffray);
FAAL	Frederico A. A. Lencioni private collection, Jacareí, São Paulo, Brazil (Frederico A. A. Lencioni);
MNRJ	Departamento de Entomologia, Museu Nacional, Universidade Federal do Rio do Janeiro, Rio de Janeiro, RJ, Brazil (Leonardo H. Gil Azevedo);
MUSM	Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru (Gerardo Lamas Müller);
UMMZ	University of Michigan, Museum of Zoology, Ann Arbor, Michigan, U.S.A. (Mark O'Brien).

FIGURE 1. Professor Angelo B. M. Machado collecting and collection. A. around fourteen years old in 1948 with a entomological net at side of his mother Laura B. M. Machado visiting the Atlantic Forest at his father's farm in Rio Doce Valley, municipality of Açucena, state of Minas Gerais, Brazil; B. front cover of the unpublished monograph of 1950 on dragonflies from Lagoa Santa, state of Minas Gerais, Brazil by Newton D. Santos (1916–1989) first reference used by Angelo; C. card from Angelo Machado's collection depicting one the very first dragonflies which has been collected at sixteen years old in 1950, a common libellulid *Brachymesia furcata*; D. part of Angelo's collection cabinets with drawers containing papered dragonflies specimens, above of cabinets containers of thousands of unsorted material from distinct genera.

Biographical sketch

Angelo Barbosa Monteiro Machado, son of Paulo Monteiro Machado and Laura Barbosa Monteiro Machado, born on 22 May 1934 in Belo Horizonte, capital of the state of Minas Gerais, southeastern Brazil. The state's native people are known as "*mineiros*" (miners in English), in Brazil, popularly known as low-profile, secretive people who do not exhibit achievements easily or work outside of the spotlight.

Despite young Angelo's always having shown a deep interest by natural history and animals in general, he graduated in medicine from the Universidade Federal de Minas Gerais (UFMG) in 1958. However, due to his inclination for scientific research he never practiced medicine and published only few papers on human anatomy during his career. Soon after graduation, starting in 1959, he worked as a teacher of anatomy at the same university, becoming Assistant Professor in 1966. Angelo concluded his Ph.D. at UFMG in 1963 with a dissertation entitled "Morphology of *eminentia ilealis* in some Brazilian primates, with 36 observations in vivo". During his early years as professor and researcher on neuroanatomy at UFMG he met and married Conceição Ribeiro da Silva (1936–2007), recognized by him as the "best research finding" of his life. Together they engaged in a postdoctoral project for two years (1965–1967) at Northwestern University, Chicago, USA. There they worked on pineal gland and autonomic nervous system using histochemical techniques for monoamines and transmission electron microscopy, resulting in important papers published in prestigious journals such as Science (Machado et al. 1969). Both become renowned scientists and members of the *Academia Brasileira de Ciências* (Brazilian Academy of Sciences), and were recognized as pioneers in several aspects of their research, especially by their histo-anatomical studies on the

pineal gland and by creating the scanning electron microscopy center at UFMG. Again, Angelo's passion for dragonflies ironically resulted in the first paper illustrated with photos from the new SEM equipment at UFMG being his description of a new genus of damselfly (Machado 1980). Conceição and Angelo have four children, Lúcia, Flávia, Paulo Augusto, and Eduardo, all properly honored with dragonflies' eponyms by his father.

One of the major legacies from his biomedical research and lectures in the course of neuroanatomy was the textbook Functional Neuroanatomy (original title *Neuroanatomia Funcional*). Since its first edition in the 1970s it has been the standard reference on this subject for medical courses in Brazil and recently in 2014 published an entirely updated edition, coauthored by his daughter Lúcia.

At the end of the 1980s, recently retired as Full Professor from the Department of Morphology, Angelo applied for a position as Associate Professor in the Department of Zoology of UFMG, and has taken the opportunity to work as a teacher of entomology until his retirement in 2004. Indeed, apparently his major "research field" since his youth only became official after his retirement from biomedical activities. Currently, as Professor Emeritus, a title received in 2005, Angelo is still visiting the Zoology Department, working as a volunteer and advising students on dragonflies.

As a conservationist Angelo's contribution is also relevant with his intense activism since the 1970s, mainly as founder of the Fundação Biodiversitas, a non-governmental organization (NGO) focused on biodiversity conservation, in which he occupied leading positions as president and, after 2014, member of the presidential council. Among his achievements with the organization are the creation of conservation units in the State of Minas Gerais and the organization and publication of Red Lists of Threatened Species of the Brazilian Fauna, with collaborations from a large number of researchers (Machado et al. 1998a, 2008).

Angelo's family consists of many artists, including as book writers his uncle Aníbal Monteiro Machado (1894–1964) and principally his aunt Lúcia Machado de Almeida (1910–2005), who enchanted young readers of my generation with her series of books "*Vaga-Lume*," mystery novels that were very popular in Brazil. Following family tradition, Angelo, the scientist, published his first children's book in 1989 entitled "*O menino e o rio*" (freely translated as The boy and the River) and never stopped his adventures in literature. Today he has published almost forty books, receiving the most prestigious prize for Brazilian literature, the Jabuti award, several times in the illustration category, while the book "*O velho da montanha: uma aventura amazônica*" (The old man from the mountain: an Amazonian adventure) received "best children's book of the year" in 1993. In several of his books dragonflies appear furtively as secondary characters. Throughout his career Angelo also received several other awards from his activities as teacher, conservationist and researcher from institutions including the *Sociedade Brasileira de Zoologia* (Brazilian Society of Zoology).

This is a very short overview of Angelo's career, due his so many interests and skills donated to society there is not space to depict all of his activities. Again, I invite the reader to consult the profiles published by Mitre (2005) and De Carvalho (2013).

The odonatologist Angelo B. M. Machado

An interest in nature arose very early for young Angelo, stimulated by curiosity and nurturing a true passion for animals in particular, a passion which was never lost and it still vivid today. As a teenager, he began to collect insects in localities near Belo Horizonte and mainly in his parents' farm in Rio Doce Valley, located in the Atlantic Forest Domain (Figs 1A, C). At that time it could not be predicted that such an unpretentious interest would lead the boy to become the most prolific Brazilian dragonfly expert. His enthusiasm would result in one of the biggest and important collections of dragonflies from the Americas.

Such initial spark from the insects was strongly encouraged by Francisco Silvério Pereira (1913–1991), an amateur researcher, specialist on Scarabaeidae, and priest in the church where Angelo assisted as altar server. Their common interest in insects rapidly made them friends and expedition partners. Angelo was initially trained in entomology by Father Pereira, and together they made at least five long expeditions to Amazonia, most of them thanks to Colonel Moacir Alvarenga (1915–2010), an amateur specialist on beetles of the family Erotylidae, who was serving in the mail service of the Brazilian Air Force (FAB, *Força Aérea Brasileira*) during the 1960s. With his help, Angelo visited places almost inaccessible, especially before the adoption of predatory policies to occupy Amazonia established after 1970 by the Brazilian military dictatorship; up to that time the forest was almost untouched and populated by indigenous peoples.

FIGURE 2. Professor Angelo B. M. Machado flashes from his career. A. at the Swiss Alps in field trip during the Sixth International Symposium of Odonatology, in Chur, 1981, from left to right Professor Angelo with Philip S. Corbet, Milan Boštjan (Bastiaan) and Marianne Kiauta; B. among an "assemblage of dragonflies" (his family) during the party of his 80th birthday in 2014; follow between parentheses the name of the species of dragonfly which has been named after him, from left to right, first row—Leonardo (*Neoneura leonardoi*), Letícia (*Erythrodiplax leticia*), Lucas (*Neoneura lucas*), Ana Clara (*Neoneura anaclara*), second row—Flávia (*Lauromacromia flaviae*), Mariana (*Mnesarete mariana*), Lucia (*Forcepsioneura lucia*), Cristina, Luiz Felipe (*Heteragrion luizfelipei*), third row—Marcelo, Luiz (*Forcepsioneura haerteli*), Paulo (*Rhionaeschna pauloi*), Eduardo (*Rhionaeschna eduardoi*); C. talking to children about books and dragonflies in the 25th Miami Book Fair International in Florida, USA 2008 (note a giant model of *Heteragrion petiense*); D. with odonatologist colleagues Werner Piper (Germany), Günther Peters (Germany), and Lucio C. Bedê (Brazil), during a visit to his collection in Belo Horizonte in the beginning of 1980s; E. talking at front of Alcimar L. Carvalho (left) poster during the XIV Brazilian Congress of Zoology in Juiz de Fora, Brazil, 1987; F. at his laboratory and collection in Belo Horizonte, 2015.

From these earliest collecting expeditions in Minas Gerais, Angelo published his first paper when just 19 years old (Machado 1953), describing the hitherto unknown female of *Micrathyria almeidai* Santos, 1945, and it also enabled him to describe his first new species in honor of his mentor on dragonflies, Newton Dias dos Santos (1916–1989), the small libellulid *Elga santosi* (Machado 1954a). Decades after, when it was proven by him to be a junior synonym of *Elga leptostyla* Ris, 1911, he renamed the misidentified specimens to *Elga newtonsantosi* to

maintain his homage to Newton (Machado 1992a). This trivial mistake was due to a misidentification by Newton of the species already described by Ris, so in this case the pupil surpassed his master.

The emblematic encounter between Angelo and Newton D. Santos was narrated in few articles published elsewhere, including by Angelo himself (Machado & Costa 1990), and certainly was the most relevant to his career as odonatologist. Indeed, Newton should be considered the very first founder of odonatological research in Brazil and deserves the title credited to him as "The Father of Brazilian Odonatology" (Machado & Costa 1990). He has inspired subsequent generations and left an important legacy. The turning point to Angelo as odonatologist occurred when he returned to his parents' farm from a collecting trip with five dragonflies in a small cigarette box. At that time, only sixteen years old, through suggestion of his aunt Lucia M. de Almeida, Angelo went to talk to Newton, who was in Belo Horizonte lecturing on natural sciences. Guesstimating that the great specialist would give names to his dragonflies, Angelo was astonished when Newton did not comply with his request, but instead gave him a manuscript of his monograph on dragonflies from the Lagoa Santa region, presented as application for full professor (Fig. 1B). Deeply grateful, Angelo sees Newton as responsible for introducing him to odonatology and indisputably the great master in this field. Regrettably, Santos' manuscript is still unpublished.

Interestingly, in Santos' monograph there appeared a new species of the libellulid genus *Oligoclada* under the name "*warmingi*" which was formally published as *Oligoclada calverti* Santos, 1951, named after Philip Powell Calvert (1871–1961) in a special issue of Entomological News as a tribute to him. A few years afterwards, Angelo published his second paper on dragonflies with the first description of the female and additional notes on male of *O. calverti* (Machado 1954b). In that publication Angelo used terms "allotypus" and "homeotypus", both not governed by the International Code of Zoological Nomenclature (ICZN 1999) even from its earliest versions (e.g., Gloyd 1982), fact demonstrating his still early development as a taxonomist at that time.

Gradually Angelo gathered literature on dragonflies, forming an important library, with the help of his family. For example, one of his uncles gave him a strange gift for a teenager: the essential three volumes in German of the revision of Libellulidae by Friedrich Ris (1867–1931). Probably, at the time, there were only two other copies in Brazilian libraries, one in Museu de Zoologia, Universidade de São Paulo, in São Paulo, and the other in Museu Nacional, Universidade Federal do Rio de Janeiro, in Rio de Janeiro. However, his collection was still small, but he initially received great support from his friend Carlos Alberto Campos Seabra. He was essential to the beginning of Angelo's collection, including the sponsorship of an expedition by Angelo and Father Pereira to Amapá State in extreme northern Brazil. Carlos Seabra also requested that his hired collectors, for example José Brasilino Ferreira, hunt dragonflies, and in this way Angelo estimated to have received around 5,000 dragonfly specimens which became the embryo of his huge collection.

The size and importance of his collection were augmented as much as many other collections, by receiving specimens from different sources, including his own collecting expeditions, purchase of other collections, exchange with collectors and researchers around the world, and by donations from several colleagues, as the lepidopterists Olaf H. H. Mielke and Mirna M. Casagrande. As almost all modern dragonfly collections, Angelo's material consists of papered specimens with a minor portion pinned. From the beginning with five specimens collected at sixteen years old, his collection now has 35,250 specimens and about 1,050 worldwide species, with the impressive number of 105 holotypes, undoubtedly one the most important even when compared with other large South American collections as for example MNRJ which houses 71 holotypes (Costa & Mascarenhas 1998, strongly out of date). Today his collection contains about 160 drawers (Fig. 1D) and has been a critical source of material for several taxonomic revisions, including master's and doctoral dissertations of Brazilian students such as Janira Martins Costa, Alcimar do Lago Carvalho, José Roberto Pujol-Luz and myself. It also has been visited by specialists from Brazil and other countries, for example Gerhard Jurzitza (1929–2014), Werner Piper, Günther Peters and Lúcio Cadaval Bedê (Fig. 2D). Although Jean Belle (1920–2001), the foremost specialist on dragonflies of the family Gomphidae from the neotropics, never visited the Machado collection in Belo Horizonte, Angelo visited him in Velp, The Netherlands, as reported in the journal Selysia (Westfall & Westfall 1980). His entire collection was donated to the Universidade Federal de Minas Gerais (UFMG) in 2014, a public institution that will guarantee its preservation and access to present and future generations of odonatologists.

During his amateur career as odonatologist (while he was a full professor of medicine) Angelo always occupied leading positions and made many friendships, his generosity apparent in publications at least as old as 1950–1960 papers by N. D. Santos and Janis Rácenis (1915–1980), as well as Douglas St. Quentin (1899–1982) papers on South American Gomphidae (e.g., St. Quentin 1973). Probably Angelo's collection is the largest of South American Gomphidae. One of his friendships highly praised by him is with Milan Boštjan Kiauta or simply Bastiaan (Fig. 2A), the founder of Societas Internationalis Odonatologica (SIO). Bastiaan is the non-Brazilian researcher with whom he maintained the longest correspondence, and Angelo honored his friend by naming two dragonflies after him in the genera *Navicordulia* and *Neoneura*.

FIGURE 3. Official photo of Eighth International Symposium of Odonatology, Paris, 1985, dedicated to Maurits A. Lieftinck (1904–1985), highlighting some participants (B–G); B. Peter L. Miller (1931–1996); C. Angelo B. M. Machado; D. Michael J. Parr; E. Minter J. Westfall Jr. (1916–2003); F. Elliot C. G. Pinhey (1910–1990); G. Dirk C. Geijskes (1907–1985).

The SIO began promoting international symposiums after its foundation in 1971. Angelo participated of three international congresses; his first was the Fourth International Symposium of Odonatology (Gainesville, FL, USA, 1977). In that he presented an abstract on the life history of the small protoneurid *Roppaneura beckeri* (Machado 1977), and jokingly he took with him the still undescribed *Progomphus perithemoides*, the world's smallest known gomphid, which can be confused with species of the libellulid genus *Perithemis* (Belle 1980). Among the odonatologists present Minter Jackson Westfall Jr. (1916–2003) was one of the few to immediately identify it as in the family Gomphidae based only on the wings. Angelo also attended the sixth symposium in Chur, Switzerland, 1981, and travelled on a field expedition to the Swiss Alps together with other eminent odonatologists (Fig. 2A). However, it was the Eighth International Symposium of Odonatology, in Paris, 1985, in Memory of Maurits Anne Lieftinck (1904–1985), which Angelo affectionately remembers having a good time with his fellow colleagues (Fig. 3). In many editions of the Brazilian Congress of Zoology he was invited as a speaker to talk about different subjects, and it was fairly common to meet him during these congresses (Fig. 2E).

Professor Angelo published during his career more than 110 papers on different themes, receiving notoriety by his research on the pineal gland together with his wife. However, the majority of his papers are on dragonflies; from 1953 to September of 2015 he published 79 papers, of which he was the first author in 69 of them. Almost all of his first papers were taxonomic notes or descriptions, while more recently he has published more comprehensive studies, describing a higher number of new taxa per paper (Fig. 4). This is in part thanks to recent advances in generic concepts in Neotropical damselflies (cf., Garrison et al. 2010). Although the great majority of his works are on taxonomy, his few seminal works on territoriality in dragonfly larvae deserve to be highlighted. The respected odonatologist Philip Steven Corbet (1929–2008) realized the relevance of his work and cited Angelo several times in his monumental book (Corbet 1999). Angelo published most of his papers alone, but a few of them were coauthored by other researchers, being Janira Martins Costa, Lucio C. Bedê, and Frederico A. A. Lencioni the most frequent; even in these cases he has no more than five papers published with each one. Although he exchanged material and information with Jürg De Marmels and mainly Rosser W. Garrison, they never published paper together. Even with N. D. Santos he published only two small papers (Santos & Machado 1960, 1983).

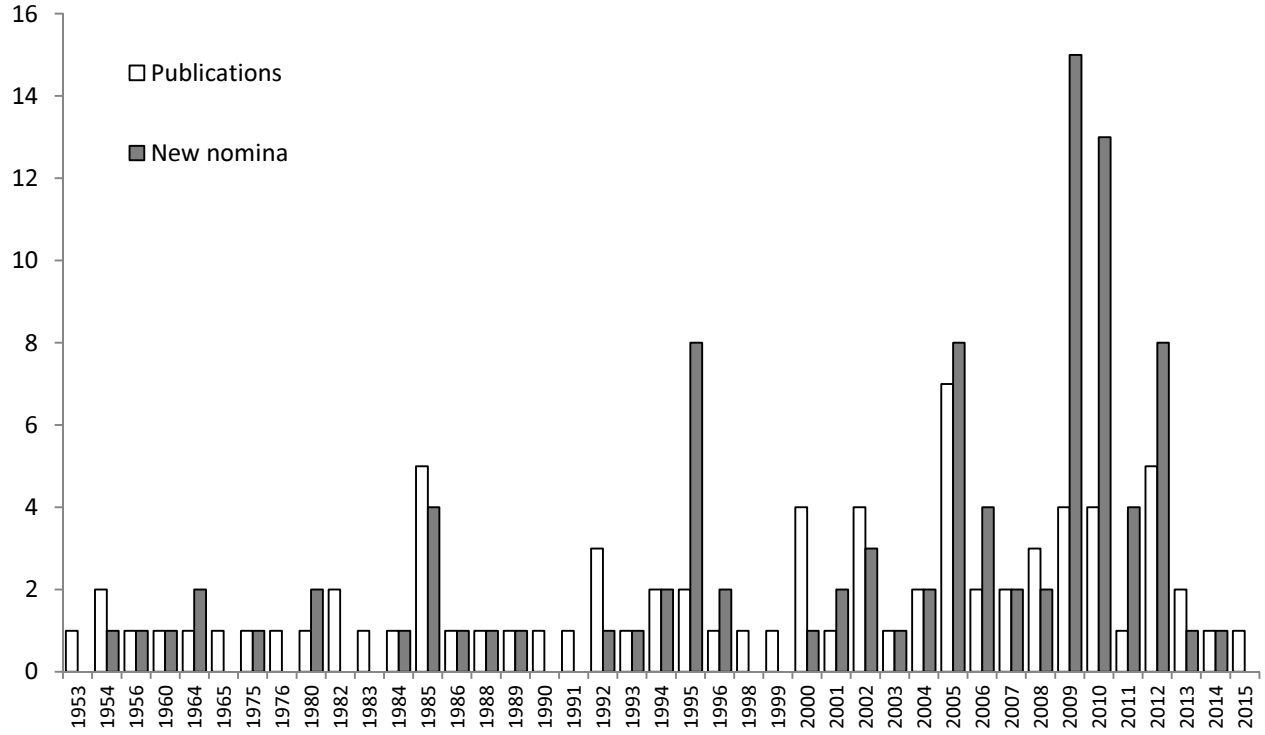

FIGURE 4. Number of papers and new species names (nomina) published by Dr. Angelo B. M. Machado from 1953 to September of 2015.

For a long time he was the only researcher able to confidently identify the small damselflies from South America included in the "family" Protoneuridae, a group on which he published several papers describing types, poorly known and even undescribed species, in his series "Studies on Neotropical Protoneuridae" (see bibliographical list below). Although Angelo himself illustrated his first papers, in other than a few other papers the illustrator Myrian Morato Duarte became his official illustrator, hence standardizing his descriptions and making them readily comparable.

The description of a new caddisfly species is one of his few papers about an insect order other than Odonata and has a funny background story. This paper was the first study on taxonomy of Trichoptera published by a Brazilian, as before him only the great naturalist Fritz Müller (1821–1897) had published on caddisflies, which makes Angelo also a pioneer in this group (see Holzenthal et al. in this volume). In the earliest years of the 1950s, Angelo was invited to work in the laboratory of his friend Dr. Wladimir Lobato Paraense (1914–2012) in the Special Public Health Service (SESP). Through a schistosomiasis control program, they received from health agents some small "snail shells" from putative freshwater snails of the family Planorbidae, known as vectors of the parasitic worm *Schistosoma mansoni*. Angelo, skeptical about a mistake, identified them as caddisflies and, intrigued, decided to rear their larvae in the laboratory to emergence. Surprisingly, the emerged adults pertained to an undescribed species which was named *Helicopsyche planorboides* in reference to the mistaken identity. This event led him to write papers about the possible confusion between these insects with the snail vectors of schistosomiasis (Machado 1957a–b). The type series was recently donated to the Coleção Entomológica Prof. José Alfredo Pinheiro Dutra, Departamento de Zoologia, IB-UFRJ, Rio de Janeiro, RJ, Brazil (DZRJ).

During my compilation of Angelo's publications, it was revealed that he is the second main researcher in number of valid species occurring in Brazil, surpassing Philip P. Calvert and only behind Michel Edmond de Selys Longchamps (1813–1900), considered by many the greatest odonatologist of all time (Table 1). Besides the great number of Brazilian species described, Angelo also shares with Selys a similar confusion in the spelling of his name, with inclusion or suppression of graphic accent (cf., Wasscher & Dumont 2013 for a Selys overview). The original spelling of the given name Angelo from Italian origin does not have graphic accent, such in the correct spelling for Angelo Machado. However, proparoxytone words (accent or stress over the antepenultimate syllable) in Portuguese obligatorily are accentuated, this way his name sometimes is mistakenly spelled with circumflex on the first letter.

TABLE 1. Current number of valid species-group names of Odonata occurring in Brazil listed by researcher as first author, highlighting the ten most productive researchers. Subspecies were computed as full species in order of simplicity.

Author	Number of names	Percentage (%)
Michel E. de Selys Longchamps (1813–1900)	121	14.49
Angelo B. M. Machado (1934–nowadays)	**79**	**9.46**
Philip P. Calvert (1871–1961)	71	8.50
Hermann A. Hagen (1817–1893)	61	7.31
Jean Belle (1920-2001)	49	5.87
Friedrich Ris (1867–1931)	46	5.51
Newton D. Santos (1916-1989)	45	5.39
Edward B. Williamson (1877–1933)	27	3.23
Janira M. Costa (1941– nowadays)	26	3.11
Jules P. Rambur (1801–1870)	23	2.75
Remainder researchers (1758–2015)	287	34.37
Total	835	100

He introduced 97 new names of dragonflies, of which nine are genus-group names and 88 are species-groups names; only seven of these species were not recorded from Brazil, resulting in 79 valid Brazilian species-group names (Table 1). To be expected from such prolific work, the etymology of the names erected by Angelo is strongly diverse, nevertheless several names represent eponyms (or patronyms). When describing new dragonfly species, Angelo did not overlook his first advisors, friends and researchers who have helped with entomology, and he honored each one, for example: F. S. Pereira (*Epipleoneura*), M. Alvarenga (*Austrotepuibasis*), D. Albuquerque (*Epipleoneura*), W. L. Paraense (*Telebasis*), C. A. Seabra (*Chalcopteryx*), M. M. Duarte (*Telebasis*), O. H. H. Mielke (*Navicordulia*), and M. M. Casagrande (*Oxyagrion*). In honor of fellow odonatologists, he erected about twenty names, including J. M. Costa (*Epipleoneura*), R. W. Garrison (*Denticulobasis*), D. C. Geijskes (*Tuberculobasis*), J. Belle (*Peruviogomphus*), P. S. Corbet (*Tukanobasis*), L. C. Bedê (*Lauromacromia*), and J. De Marmels (*Austrotepuibasis*) (see the annotated checklist list below and also Hämäläinen 2015 for a full list of eponyms).

As a conservationist he also dedicated species names related to the environmental movements, for example Amazonian damselflies after Chico Mendes (*Acanthagrion*) and Marina Silva (*Philogenia*), who dedicated their lives to protect Amazonian rainforest and local communities, acting politically for their conservation. Another source of Angelo's dragonfly names was his experience living among indigenous people in Amazonia during his long expeditions to the primary forested areas. Some natives helped him in collecting dragonflies, and Angelo became interested in the dragonfly names based on indigenous languages. From these experiences he described about twenty species after Brazilian Indians, for example the Tariana, Desana, Wai-wai, and Karaja, and erected the genus *Tukanobasis*.

He also honored his sons and grandsons (Fig. 2B), but his critical view about pronunciation of scientific names precluded honoring his wife Conceição with a dragonfly species name, as the letter "ç" (*cê-cedilha* in Portuguese) does not have equivalents in most other languages, which results in an odd name formation as a consequence.

On the other hand, his prestige among zoologist colleagues is also apparent through several species named after him. Adding the names erected in this special issue, the number will surpass sixty taxa, of which 16 are dragonflies (Hämäläinen 2015, updated).

This short overview accompanying the nomina and bibliography of the career of my friend Professor Angelo as an entomologist and especially as an odonatologist is to celebrate his inspiring enthusiasm and tireless energy in studying our favorite animals (Fig. 2F). It is not my intention to be complete, and I present information primarily centered on his odonatological studies. Finally, I end it paraphrasing Angelo's words, when I asked him "What is the dragonfly's value?" Unhesitatingly, he answered "to make Angelo a happy old man!"

Annotated checklist of new taxa of Odonata published by Dr. Angelo B. M. Machado

A complete list of names erected by Dr. Machado from 1953 to September of 2015, including their taxonomic status, type locality, distribution, original publication, and associated information, is presented. Data from type localities were transcribed from original descriptions. The status of each taxon expresses my own taxonomic opinion, except when clearly stated.

Zygoptera (Damselflies)

Platystictidae (Palaemnematinae)

Palaemnema brasiliensis **Machado, 2009**. Status: Valid. Type locality: "Brazil, State of Amapá, Serra do Navio". Distribution: Brazil (AM, AP). Original description: Machado (2009c). Holotype repository: ABMM (male).

Calopterygidae (Hetaerininae)

Mnesarete mariana **Machado, 1996**. Status: Questionable, likely a junior synonym of *Mnesarete guttifera* (Selys, 1873) (Garrison 2006). Type locality: "BRASIL, Bahia: Chapada Diamantina, Rio de Contas, 1300m". Distribution: Brazil (MG). Original description: Machado (1996). Holotype repository: ABMM (male).

Heteragrionidae

Heteragrion cyane **Machado & Souza, 2014.** Status: Valid. Type locality: "Mata do Baú, Barroso (21°11'13"S, 43°58'34"W) Minas Gerais State". Distribution: Brazil (MG). Original description: Machado & Souza (2014). Holotype repository: ABMM (male).

Heteragrion gracile **Machado 2006**. Status: Valid. Type locality: "Brazil, Minas Gerais: Carmo do Rio Claro". Distribution: Brazil (ES, MG). Original description: Machado (2006). Holotype repository: ABMM (male).

Heteragrion luizfelipei **Machado, 2006**. Status: Valid. Type locality: "Brazil, Santa Catarina: Urubuci (1.300 m)". Distribution: Brazil (PR, SC). Original description: Machado (2006). Holotype repository: ABMM (male).

Heteragrion mantiqueirae **Machado, 2006**. Status: Valid. Type locality: "Brazil, São Paulo: Campos do Jordão (State Park of Campos do Jordão, 1600 m)". Distribution: Brazil (SP). Original description: Machado (2006). Holotype repository: ABMM (male).

Heteragrion petiense **Machado, 1988**. Status: Valid. Type locality: "Brazil, Minas Gerais, Caeté". Distribution: Brazil (ES, MG). Original description: Machado (1988). Holotype repository: ABMM (male).

Heteragrion tiradentense **Machado & Bedê, 2006**. Status: Valid. Type locality: "BRAZIL, Minas Gerais State; Tiradentes. Libélulas da Serra de São José State Wildelife Refuge (Chafariz creek at the Mãe D'-Água forest)". Distribution: Brazil (MG, SP). Original description: Machado & Bedê (2006). Holotype repository: ABMM (male).

Philogeniidae

Philogenia marinasilva **Machado, 2010**. Status: Questionable, likely a junior synonym of *Philogenia mangosisa* Bick & Bick, 1988 (R.W. Garrison, unpublished). Type locality: "Brazil, State of Acre, Mancio Lima (7°21'23" S / 73°40'41"W), Terra firma forest at the left bank of the Moa river". Distribution: Brazil (AC). Original description: Machado (2010b). Holotype repository: ABMM (male).

Philogenia nemesioi **Machado, 2013**. Status: Valid. Type locality: "PERU – Department of San Martín, municipality of Tarapoto, 'Biodiversidad' Park (06°27'42"S; 76°17'19"W; ca. 900 m a.s.l.)". Distribution: Peru (SAM). Original description: Machado (2013). Holotype repository: MUSM (male).

Polythoridae

***Chalcopteryx seabrai* Santos & Machado, 1960**. Status: Valid. Type locality: "Brasil, Território do Amapá, Porto Platon". Distribution: Brazil (AP). Original description: Santos & Machado (1960). Holotype repository: ABMM (male).

Coenagrionidae (Ischnurinae)

***Acanthagrion chicomendesi* Machado, 2012**. Status: Questionable, suggested synonym with *Acanthagrion apicale* Selys, 1876 (R.W. Garrison, N. von Ellenrieder, unpublished). Type locality: "BRAZIL: Mato Grosso state, SINOP (55°30'S, 11°51'W)". Distribution: Brazil (MT). Original description: Machado (2012c). Holotype repository: ABMM (male).

***Acanthagrion flaviae* Machado, 2012**. Status: Valid. Type locality: "BRAZIL: Amazonas state, Maribo Indian village at the Curuya river (4°75'S, 71°74'W)". Distribution: Brazil (AM). Original description: Machado (2012c). Holotype repository: ABMM (male).

***Acanthagrion kaori* Machado, 2012**. Status: Questionable, suggested synonym with *Acanthagrion apicale* Selys, 1876 (R.W. Garrison, N. von Ellenrieder, unpublished). Type locality: "BRAZIL: Amazonas state, Manaus (3°08'S, 60°01'W)". Distribution: Brazil (AM, PA). Original description: Machado (2012c). Holotype repository: ABMM (male).

***Acanthagrion triangulare* Machado, 2012**. Status: Questionable, suggested synonym with *Acanthagrion apicale* Selys, 1876 (R.W. Garrison, N. von Ellenrieder, unpublished). Type locality: "BRAZIL: Acre state, Mancio Lima; Divisor National Park (7°27'23" S, 73°38'17" W)". Distribution: Brazil (AC). Original description: Machado (2012c). Holotype repository: ABMM (male).

***Denticulobasis* Machado, 2009**. Status: Valid. Distribution: Brazil, Peru. Original description: Machado (2009a). Type species: *Denticulobasis garrisoni* Machado, 2009.

***Denticulobasis ariken* Machado, 2009**. Status: Valid. Type locality: "BRAZIL, Rondônia State: Rio Pardo and tributaries, ca. 13 Km NW of Fazenda Rancho Grande (62 Km SW of Ariquemes 10º50'S, 63º7'W), 187 m". Distribution: Brazil (RO). Original description: Machado (2009a). Holotype repository: MNRJ (female).

***Denticulobasis dunklei* Machado, 2009**. Status: Valid. Type locality: "PERU, Loreto Department. Explorama Lodge, 50 miles NE of Iquitos on Amazon River at the junction with Yanomano River (3º21'59"S, 72º47'56"W)". Distribution: PERU (LOR). Original description: Machado (2009a). Holotype repository: FSCA (male).

***Denticulobasis garrisoni* Machado, 2009**. Status: Valid. Type locality: "BRAZIL, Rondônia State: Rio Pardo and tributaries, ca 13 Km NW of Fazenda Rancho Grande, 62 Km SW of Ariquemes (10º50'S, 63º7'W), 187 m". Distribution: Brazil (RO). Original description: Machado (2009a). Holotype repository: MNRJ (male).

***Ischnura mahechai* Machado, 2012**. Status: Valid. Type locality: "COLOMBIA, Department of Cundinamarca: municipality of Guatavita, (4°55'50"S, 73°49'59"W, 3,600 m)". Distribution: Colombia (CUN). Original description: Machado (2012d). Holotype repository: ABMM (male).

***Oxyagrion mirnae* Machado, 2010**. Status: Valid. Type locality: "Brazil, State of Minas Gerais, Virginia, [...] Fazenda dos Campos, 1500m". Distribution: Brazil (MG). Original description: Machado (2010d). Holotype repository: ABMM (male).

***Tuberculobasis* Machado, 2009**. Status: Valid. Distribution: Brazil, Peru, Suriname, Venezuela. Original description: Machado (2009a). Type species: *Leptobasis mammilaris* Calvert, 1909.

***Tuberculobasis arara* Machado, 2009**. Status: Valid. Type locality: "BRAZIL, Rondônia State, Ji-Paraná (8°03'N, 62°52'W)". Distribution: Brazil (RO). Original description: Machado (2009a). Holotype repository: ABMM (male).

***Tuberculobasis geijskesi* Machado, 2009**. Status: Valid. Type locality: "SURINAME, Republiek, Lelydorp (5°22'N, 57°30'W)". Distribution: Suriname (WA). Original description: Machado (2009a). Holotype repository: MNRJ (male)

***Tuberculobasis guarani* Machado, 2009**. Status: Valid. Type locality: "BRAZIL, São Paulo State, Ibitinga (21º45'S, 48º49'W), Fazenda Itaguaré". Distribution: Brazil (SP). Original description: Machado (2009a). Holotype repository: ABMM (male).

***Tuberculobasis karitiana* Machado, 2009**. Status: Valid. Type locality: "BRAZIL, Rondônia State, Porto Velho (8º46'S, 63º54'W)". Distribution: Brazil (RO). Original description: Machado (2009a). Holotype repository: ABMM (male).

***Tuberculobasis macuxi* Machado, 2009**. Status: Valid; Type locality: "BRAZIL, Roraima State, Maracá

Ecological Station, Maracá Island (3º25'N, 61º36'W)". Distribution: Brazil (RR). Original description: Machado (2009a). Holotype repository: ABMM (male).

Tuberculobasis tirio **Machado, 2009**. Status: Valid. Type locality: "BRAZIL, Pará State, Tumucumaque Indian Park, two days walk east from the Tirió Indian village". Distribution: Brazil (PA). Original description: Machado (2009a). Holotype repository: ABMM (male).

Tuberculobasis williamsoni **Machado, 2009**. Status: Valid. Type locality: "COLOMBIA, Fundación, State of Magdalena". Distribution: Colombia (MAG), Venezuela (V). Original description: Machado (2009a). Holotype repository: UMMZ (male).

Coenagrionidae (ridged-face complex)

Austrotepuibasis **Machado & Lencioni, 2011**. Status: Questionable, likely a junior synonym of *Tepuibasis* De Marmels, 2007 (A.P. Pinto, R.W. Garrison, N. von Ellenrieder, unpublished). Distribution: Brazil (PA, MT). Original description: Machado & Lencioni (2011). Type species: *Austrotepuibasis demarmelsi* Machado & Lencioni, 2011.

Austrotepuibasis alvarengai **Machado & Lencioni, 2011**. Status: Valid. Type locality: "Brazil, Mato Grosso State, SINOP (l3°15'42.6" S / 56°15 2.69" W, elevation 372 m)". Distribution: Brazil (MT). Original description: Machado & Lencioni (2011). Holotype repository: ABMM (male).

Austrotepuibasis demarmelsi **Machado & Lencioni, 2011**. Status: Valid. Type locality: "Brazil, Pará State, Fordlândia (3°51'19.8" S / 55°28'59.99" W, elevation 150-200 m)". Distribution: Brazil (PA). Original description: Machado & Lencioni (2011). Holotype repository: ABMM (male).

Austrotepuibasis manolisi **Machado & Lencioni, 2011**. Status: Valid. Type locality: "Brazil, Mato Grosso State, Alta Floresta - Cristalino Jungle Lodge - Rio Cristalino (9°35'41" S / 55°55'53" W)". Distribution: Brazil (MT). Original description: Machado & Lencioni (2011). Holotype repository: FAAL (male).

Helveciagrion **Machado, 1980**. Status: Junior synonym of *Telebasis* Selys, 1865 (Garrison 2009). Distribution: Brazil. Original description: Machado (1980). Type species: *Helveciagrion vulcanoae* Machado, 1980.

Phoenicagrion flavescens **Machado, 2010**. Status: Valid. Type locality: "BRAZIL, Amapá State, Serra do Navio (0° 59'S, 55° 50'W)". Distribution: Brazil (AP, PA). Original description: Machado (2010c). Holotype repository: ABMM (male).

Phoenicagrion ibseni **Machado, 2010**. Status: Valid. Type locality: "BRAZIL, Pará State, Conceição do Araguaia (8° 15'S, 49° 17'W)". Distribution: Brazil (PA). Original description: Machado (2010c). Holotype repository: ABMM (male).

Phoenicagrion karaja **Machado, 2010**. Status: Valid. Type locality: "BRAZIL, Pará State, Conceição do Araguaia (8° 15' S, 49° 17'W)". Distribution: Brazil (MT, PA). Original description: Machado (2010c). Holotype repository: ABMM (male).

Phoenicagrion megalobos **Machado, 2010.** Status: Valid. Type locality: "BRAZIL, Pará State, Cachimbo (8° 30'S, 55° 50'W)". Distribution: Brazil (PA). Original description: Machado (2010c). Holotype repository: ABMM (male).

Telebasis celiovallei **Machado, 2010**. Status: Valid. Type locality: "BRAZIL, Pará State, Carajás, Serra Norte (at Lake Canga), 2° 57' S, 51°52' W, 14 m". Distribution: Brazil (PA). Original description: Machado (2010a). Holotype repository: ABMM (male).

Telebasis divaricata **Machado, 2010**. Status: Valid. Type locality: "BRAZIL, Pará State, Cachimbo, 8° 57' S, 54° 54' W, 400m". Distribution: Brazil (PA). Original description: Machado (2010a). Holotype repository: ABMM (male).

Telebasis lenkoi **Machado, 2010**. Status: Questionable, likely a junior synonym of *Telebasis racenisi* Bick & Bick 1995 (Pinto & Carvalho 2012). Type locality: "BRAZIL, Mato Grosso State, Utiariti, 13° 02'S, 58° 17'W, 400m". Distribution: Brazil (MT). Original description: Machado (2010a). Holotype repository: ABMM (male).

Telebasis myrianae **Machado, 2010**. Status: Valid. Type locality: "BRAZIL, Bahia State, Itamaraju, 17° 4' S, 39° 32' W, 61m". Distribution: Brazil (BA, ES). Original description: Machado (2010a). Holotype repository: ABMM (male).

Telebasis pallida **Machado, 2010**. Status: Valid. Type locality: "BRAZIL, Mato Grosso State, Xavantina, 14° 40'S, 52° 21' W, 311m". Distribution: Brazil (GO, MT). Original description: Machado (2010a). Holotype repository: ABMM (male).

Telebasis pareci **Machado, 2010**. Status: Junior synonym of *Telebasis lenkoi* Machado, 2010 (Pinto & Carvalho 2012). Type locality: "BRAZIL, Mato Grosso State, Utiariti, 13° 02'S, 58° 17'W, 400m". Distribution: see *T. lenkoi*. Original description: Machado (2010a). Holotype repository: ABMM (male).

***Telebasis paraensei* Machado, 1956**. Status: Valid. Type locality: "Pedra Corrida, Açucena, Minas Gerais, Brasil". Distribution: Brazil (MG). Original description: Machado (1956). Holotype repository: ABMM (male).

***Telebasis pataxo* Machado, 2010**. Status: Valid. Type locality: "BRAZIL, Bahia State, Itamaraju, 17° 4' S, 39° 32' S, 61m". Distribution: Brazil (BA). Original description: Machado (2010a). Holotype repository: ABMM (male).

***Telebasis vulcanoae* (Machado, 1980)**. (Original combination: *Helveciagrion vulcanoae*). Status: Valid. Type locality: "Parque Estadual do Rio Doce, Minas Gerais, Brasil (19°45'Lat. S e 42°35' Long) [...] lagoa Terceira". Distribution: Brazil (BA, MG). Original description: Machado (1980). Holotype repository: ABMM (male).

***Tukanobasis* Machado, 2009**. Status: Valid. Distribution: Brazil. Original description: Machado (2009d). Type species: *Tukanobasis corbeti* Machado, 2009.

***Tukanobasis corbeti* Machado, 2009**. Status: Valid. Type locality: "Brazil, Amazonas State, Taraquá (3°27'15"S, 62°51'05"W, 35 m)". Distribution: Brazil (AM). Original description: Machado (2009d). Holotype repository: ABMM (male).

Coenagrionidae (Protoneurinae)

***Amazoneura* Machado, 2004**. Status: Valid, revalidated by Machado (2009b). Distribution: Brazil, Ecuador, Peru. Original description: Machado (2004a). Type species: *Forcepsioneura westfalli* Machado, 2001.

***Amazoneura juruaensis* Machado, 2004**. Status: Valid. Type locality: "Brazil, *Acre*: Mancio Lima (in a strem [sic] within the forest)". Distribution: Brazil (AC). Original description: Machado (2004a). Holotype repository: ABMM (male).

***Amazoneura westfalli* (Machado, 2001)**. (Original combination: *Forcepsioneura westfalli*). Status: Valid. Type locality: "ECUADOR, Napo: Limoncocha on Rio Napo, 300m". Distribution: Ecuador (N). Original description: Machado (2001). Holotype repository: FSCA (male).

***Epipleoneura albuquerquei* Machado, 1964**. Status: Valid. Type locality: "rio Munhene (afluente do alto rio Paru de Oeste) a cêrca de 10 km da aldeia dos índios Tiriyó - Aramagóto, Município de Óbidos, Pará". Distribution: Brazil (PA). Original description: Machado (1964). Holotype repository: ABMM (male).

***Epipleoneura janirae* Machado, 2005**. Status: Valid. Type locality: "Brazil, State of Pará, Belterra". Distribution: Brazil (PA). Original description: Machado (2005c). Holotype repository: ABMM (male).

***Epipleoneura kaxuriana* Machado, 1985**. Status: Valid. Type locality: "Igarapé Sacarazinho (afluente do rio Trombetas), Porto Trombetas, município de Oriximiná, Pará". Distribution: Brazil (AM, PA, RO?). Original description: Machado (1985d). Holotype repository: ABMM (male).

***Epipleoneura pereirai* Machado, 1964**. Status: Valid. Type locality: "Igarapé Água Fria, Serra do Navio, Município de Macapá, Amapá". Distribution: Brazil (AP, PA). Original description: Machado (1964). Holotype repository: ABMM (male).

***Epipleoneura tariana* Machado, 1985**. Status: Valid. Type locality: "Taracuá, Amazonas". Distribution: Brazil (AM), Venezuela (Z). Original description: Machado (1985d). Holotype repository: ABMM (male).

***Epipleoneura waiwaiana* Machado, 1985**. Status: Valid. Type locality: "aldeia Mapuera, Pará, Brasil". Distribution: Brazil (PA), Venezuela (Z). Original description: Machado (1985d). Holotype repository: ABMM (male).

***Epipleoneura westfalli* Machado, 1986**. Status: Valid. Type locality: "Brazil, State of Rondonia, Giparana". Distribution: Brazil (MA, MT, RO). Original description: Machado (1986). Holotype repository: ABMM (male).

***Forcepsioneura grossiorum* Machado, 2005**. Status: Valid. Type locality: "BRAZIL, Rio de Janeiro State: Nova Friburgo". Distribution: Brazil (RJ). Original description: Machado (2005b). Holotype repository: ABMM (male).

***Forcepsioneura haerteli* Machado, 2001**. Status: Valid. Type locality: "BRAZIL, Santa Catarina: Blumenau, area of Atlantic Forest between the Monte Verde and Pastor Oswaldo Hess streets". Distribution: Brazil (SC). Original description: Machado (2001). Holotype repository: ABMM (male).

***Forcepsioneura lucia* Machado, 2000**. Status: Valid. Type locality: "Brazil, *Minas Gerais*, Ibirité (Parque Estadual do Rola Moça 1000 m)". Distribution: Brazil (MG, RJ). Original description: Machado (2000). Holotype repository: ABMM (male).

***Neoneura anaclara* Machado, 2005**. Status: Valid. Type locality: "BRAZIL, Paraná: Candido de Abreu (Fazenda do Conde, 500m)". Distribution: Brazil (PR). Original description: Machado (2005g). Holotype repository: ABMM (male).

***Neoneura desana* Machado, 1989**. Status: Valid. Type locality: "Igarapé Japu between the Desan village and the Uaupés riverm near the village of Jauareté ata the Colombian border, Amazonas, Brazil". Distribution: Brazil (AM). Original description: Machado (1989). Holotype repository: ABMM (male).

***Neoneura kiautai* Machado, 2007**. Status: Valid. Type locality: "Brazil, Minas Gerais, Açucena". Distribution: Brazil (ES, MG, RJ). Original description: Machado (2007b). Holotype repository: ABMM (male).

***Neoneura leonardoi* Machado, 2005**. Status: Valid. Type locality: "BRAZIL, Rio Grande do Sul: Erechim". Distribution: Brazil (RS, SC). Original description: Machado (2005g). Holotype repository: ABMM (male).

***Neoneura lucas* Machado, 2002**. Status: Valid. Type locality: "BRAZIL, Mato Grosso, Poconé, Pantanal region (Cuiabá River at the point where it is reached by the Transpantaneira Hwy)". Distribution: Brazil (MT). Original description: Machado (2002c). Holotype repository: ABMM (male).

***Neoneura moorei* Machado, 2003**. Status: Valid; Type locality: "BRAZIL, state of Rondonia, Ji-Paraná (on the Ji-Parana River near the homonymous city)". Distribution: Brazil (RO). Original description: Machado (2003). Holotype repository: ABMM (male).

***Neoneura schreiberi* Machado, 1975**. Status: Valid. Type locality: "Rio Amapari, Serra do Navio, TerritórioFederal do Amapá". Distribution: Brazil (AP). Original description: Machado (1975). Holotype repository: ABMM (male).

Coenagrionidae (Pseudostigmatinae)

***Leptagrion afonsoi* Machado, 2007**. Status: Questionable, likely a junior synonym of *Leptagrion vrieseanum* Santos, 1978 (A.P. Pinto, unpublished opinion). Type locality: "BRAZIL, Minas Gerais, Santa Bárbara, Caraça". Distribution: Brazil (MG). Original description: Machado (2006) [2007a]. Holotype repository: ABMM (male).

***Leptagrion cyanostigma* Machado, 2012**. Status: Valid. Type locality: "Brazil, State of Bahia, Lençois (12°34' S, 41°23' W), Chapada Diamantina". Distribution: Brazil (BA). Original description: Machado (2012b). Holotype repository: ABMM (male).

***Mecistogaster martinezi* Machado, 1985**. Status: Questionable, it is pending an investigation if it can be considered a publication or should be excluded based on amended version of the Article 9.10 from the code (ICZN 2012). Type locality: "Tacu, Pallilo, Prov. Ichilo, Buenavista, Dep. Of. St. Cruz, Bolívia". Distribution: Bolivia (S). Original description: Machado (1985, see general references). Holotype repository: ABMM (male).

Anisoptera (true dragonflies)

Aeshnidae

***Neuraeschna tapajonica* Machado, 2002**. Status: Valid, Type locality: "Brazil, Pará, Itaituba". Distribution: Brazil (PA). Original description: Machado (2002b). Holotype repository: ABMM (male).

***Rhionaeschna eduardoi* (Machado, 1985)**. (Original combination: *Aeshna* (*Hesperaeschna*) *eduardoi*). Status: Valid. Type locality: "BRAZIL, Minas Gerais-Brumadinho (S. of Belo Horizonte): Reserve of Catarina". Distribution: Brazil (MG). Original description: Machado (1985a) formal description and availability of the name that first appeared in Machado (1984) as *nomen nudum*. Holotype repository: ABMM (male).

***Rhionaeschna pauloi* (Machado, 1994)**. (Original combination: *Aeshna* (*Hesperaeschna*) *pauloi*). Status: Valid. Type locality: "Brazil. Minas Gerais, Santana do Riacho (Serra do Cipó, alt. 1300-1400 m)". Distribution: Brazil (MG, PR), Paraguay (9). Original description: Machado (1994b). Holotype repository: ABMM (male).

Gomphidae

***Archaeogomphus vanbrinki* Machado, 1994**. Status: Valid. Type locality: "Brazil, state of Mato Grosso, Diamantino from a stream in the middle of the Cerrado". Distribution: Brazil (MT). Original description: Machado (1994a). Holotype repository: ABMM (female).

***Peruviogomphus bellei* Machado, 2005**. Status: Valid. Type locality: "Brazil, state of Amazonas, Tefé". Distribution: Brazil (AM). Original description: Machado (2005a). Holotype repository: ABMM (male).

Corduliidae *s.s.*

***Navicordulia* Machado & Costa, 1995**. Status: Valid. Distribution: Brazil, Venezuela. Original description: Machado & Costa (1995). Type species: *Dorocordulia errans* Calvert, 1909.

***Navicordulia amazonica* Machado & Costa, 1995**. Status: Valid. Type locality: "BRAZIL, Mato Grosso, Sinop, 378 m". Distribution: Brazil (MT). Original description: Machado & Costa (1995). Holotype repository: ABMM (female).

***Navicordulia atlantica* Machado & Costa, 1995**. Status: Valid. Type locality: "BRAZIL, Santa Catarina, Joinville, 3–250 m". Distribution: Brazil (SC). Original description: Machado & Costa (1995). Holotype repository: ABMM (male).

***Navicordulia kiautai* Machado & Costa, 1995**. Status: Valid. Type locality: "BRAZIL, Minas Gerais, Belo Horizonte, 858 m, Ursulina de Andrade Melo Municipal Park". Distribution: Brazil (MG, RJ). Original description: Machado & Costa (1995). Holotype repository: ABMM (male).

***Navicordulia leptostyla* Machado & Costa, 1995.** Status: Valid. Type locality: "BRAZIL, Goiás: Mineiros (Parque Nacional das Emas, 650–1000 m)". Distribution: Brazil (DF, GO). Original description: Machado & Costa (1995). Holotype repository: MNRJ (male).

***Navicordulia longistyla* Machado & Costa, 1995**. Status: Valid. Type locality: "BRAZIL, Brasilia, (D.F.) 1171 m, Reserva Ecológica do IBGE (BR251, km 0)". Distribution: Brazil (DF). Original description: Machado & Costa (1995). Holotype repository: MNRJ (male).

***Navicordulia mielkei* Machado & Costa, 1995**. Status: Valid. Type locality: "BRAZIL, Santa Catarina, Joinville, 3–250 m". Distribution: Brazil (PR, SC). Original description: Machado & Costa (1995). Holotype repository: ABMM (male).

***Navicordulia miersi* Machado & Costa, 1995**. Status: Valid. Type locality: "BRAZIL, Santa Catarina, Joinville, 3–250 m". Distribution: Brazil (SC, SP). Original description: Machado & Costa (1995). Holotype repository: ABMM (female).

***Schizocordulia* Machado, 2005**. Status: Junior synonym of *Aeschnosoma* Selys, 1870 (Garrison *et al*. 2006; Fleck & Neiss 2012; but see Machado 2012a). Distribution: Brazil (BA). Original description: Machado (2005e). Type species: *Aeschnosoma rustica* Hagen *in* Selys, 1871.

Corduliidae *s.l.* (*incertae sedis*)

***Lauromacromia bedei* Machado, 2005**. Status: Valid. Type locality: "Brazil, Minas Gerais, São Gonçalo do Rio Preto (18° 00'S, 43°23'W)". Distribution: Brazil (MG). Original description: Machado (2005f). Holotype repository: ABMM (male).

***Lauromacromia flaviae* Machado, 2002**. Status: Valid. Type locality: "BRAZIL, Minas Gerais, Jaboticatubas [...] flying in front of the Cipó Veraneio Hotel at 11 am". Distribution: Brazil (MG). Original description: Machado (2002a). Holotype repository: ABMM (male).

***Neocordulia* (*Neocordulia*) *fiorentini* Costa & Machado, 2008**. Status: Valid. Type locality: "Brazil, Rio Grande do Sul, São Francisco de Paula (Arroio, Lageado)". Distribution: Brazil (RS). Original description: Costa & Machado (2007) [2008]. Holotype repository: ABMM (male).

***Neocordulia* (*Neocordulia*) *gaucha* Costa & Machado, 2008**. Status: Valid. Type locality: "Brazil, Rio Grande do Sul, Soledade, Arroio do Naná, Camping Naná". Distribution: Brazil (RS). Original description: Costa & Machado (2007) [2008]. Holotype repository: ABMM (male).

***Neocordulia* (*Neocordulia*) *matutuensis* Machado, 2005.** Status: Valid. Type locality: "BRAZIL: Minas Gerais, Aiuruoca, Matutu Valley". Distribution: Brazil (MG). Original description: Machado (2005d). Holotype repository: ABMM (male).

Libellulidae

***Carajathemis* Machado, 2012**. Status: Valid. Distribution: Brazil. Original description: Machado (2012e). Type species: *Carajathemis simone* Machado, 2012.

***Carajathemis simone* Machado, 2012**. Status: Valid. Type locality: "Brazil, Pará, Parauapebas, Floresta Nacional (Flona) de Carajás (6° 03'S, 50° 03' W)". Distribution: Brazil (PA). Original description: Machado (2012e). Holotype repository: ABMM (male).

***Elga newtonsantosi* Machado, 1992**. Status: Valid. Type locality: "Ribeirão S. Vicente, Pirassununga, Sáo Paulo". Distribution: Brazil (ES, MG, RJ). Original description: Machado (1992a). Holotype repository: ABMM (male).

***Elga santosi* Machado, 1954**. Status: Junior synonym of *Elga leptostyla* Ris, 1911 (Machado 1992a). Type locality: "Açucena, Minas Gerais, Brasil". Distribution: Brazil (AP, ES, GO, MG, MT, PA, RJ). Original description: Machado (1954a). Holotype repository: ABMM (male).

***Erythrodiplax leticia* Machado, 1996**. Status: Valid. Type locality: "BRASIL, *Bahia*: Iraquara (Lagoa da Pratinha, 700m, Fazenda da Pratinha, Chapada Diamantina)". Distribution: Brazil (BA, CE, PB). Original description: Machado (1996); Holotype repository: ABMM (male).

***Oligoclada abbreviata limnophila* Machado & Machado, 1993**. Status: Valid. Type locality: "BRAZIL, State of Minas Gerais: Santa Bárbara, Reserve of Peti (on a large reservoir)". Distribution: Brazil (BA, ES, MG, PE, RJ). Original description: Machado & Machado (1993). Holotype repository: ABMM (male).

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