

RARE VENEZUELAN DRAGONFLIES (ODONATA) EVALUATED FOR THEIR POSSIBLE INCLUSION IN THE NATIONAL RED DATA BOOK*

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This paper is dedicated to Philip S. Corbet on the occasion of his 70th birthday.

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Abstract

Of the 480 species and subspecies listed from Venezuela up to December 1996, 113 are “rare”, i.e. with three or less individual records, or are known from three or less localities. Thirty-eight of them are distributed north and northwest of the Orinoco where 90% of the human population lives and, hence, negative impact on the ecosystems is more evident. The status of conservation of these species was assessed by applying the criteria published by the World Conservation Union (IUCN), in 1994. Sixteen species and subspecies are proposed for inclusion in the Venezuelan Red Data Book, viz. four Polythoridae, four Megapodagrionidae, one Lestidae, one Pseudostigmatidae, four Gomphidae, one Aeshnidae and one Libellulidae. Of the evaluated taxa, one genus and seven species are Venezuelan endemics. Forest fires, deforestation, pollution, water catchment constructions and human invasion of protected areas are some of the main factors which threaten these taxa.

Introduction

Recently, Samways (1996) has shown that the new “*IUCN Categories of Threat*” (IUCN, 1994) work well with dragonflies (Odonata) in South Africa. In Venezuela knowledge on distribution and population density of the Odonata is extremely deficient and the discovery of new species is still in progress. Anthropogenic impact on the Venezuelan ecosystems is more conspicuous north of the Orinoco, i.e. along the caribbean coast and in the Andes, where almost 90% of the human population lives. Hence it is this region, which must be given priority when identifying possibly threatened Odonata for their inclusion in the national Red Data Book. Recently Moore (1997) lists some Venezuelan taxa under “priority species for status survey and conservation action plan”. These, however, are all restricted to the region south of the Orinoco and are, for the reasons given below, not of concern for the present work. In the special cases of *Rimanella arcana* and the genera *Iridictyon* and *Chalcothore* I have made some comments about their status of

conservation elsewhere (De Marmels, 1996).

The most recent Venezuelan checklist (De Marmels, 1990a) mentions 455 species and subspecies of dragonflies (including “damselflies”), but many more became listed since, so that by now at least 480 identified species and subspecies can be considered Venezuelan. Not included are another dozen or two which still await description, and 113 species were recorded only three times or less (often only once) from Venezuela, or are known from three or less Venezuelan localities only. However, about two thirds of them occur in the vast unexplored region south of the Orinoco, either in the lowland rainforest or in Pantepui (Guayana Highlands). As mentioned above, these species cannot at present be considered threatened, although the ever-increasing invasion of southern Venezuela by Brazilian gold and diamond diggers (the so-called “garimpeiros”) poses a growing menace to the headwaters of the Orinoco and the Rio Negro. The devastating mining practices of these intruders produce a permanent avalanche of sediments across entire drainage systems which, in addition, they pollute with lethal doses of mercury and cyanide. The noxious consequences of sedimentation on the respiratory system of gomphid larvae have recently been elucidated by Tobias (1996). Pantepui harbours numerous highly endemic taxa, which are often restricted to one single mountain, yet some may be common within their limited range and anthropogenic threat to their populations are not foreseeable within the near future. Pantepui as a whole qualifies for the status of a “World Heritage Site”, in view of the extremely high percentage of endemic plants and animals, especially insects, including Odonata.

About 34% (38 species and subspecies) of the “rare” taxa as defined above are thus distributed north and northwest of the Orinoco, i.e. in the “target region”.

Methods

This list of “rare” taxa was first scanned for species which should be excluded from further evaluation, either because their taxonomic affiliation or Venezuelan record is doubtful, or because their apparent rarity can most parsimoniously be interpreted as the result of simple lack of collecting. The remaining species were evaluated and categorized using the new IUCN (1994) Criteria. These were already well explained by different authors and successfully applied to numerous taxonomic groups (Samways, 1996; Palmer *et al.*, 1997, and authors cited therein). The data concerning distribution and/or abundance of the Venezuelan dragonflies were extracted from the insect collections of the “Museo de Zoología Agrícola (MIZA), Universidad Central de Venezuela”, Maracay, and the “Museo de Artrópodos (MALUZ), Universidad del Zulia”, Maracaibo. Field notes by the author and observations by other workers were also included. The available data do not allow for assessing figures such as absolute “numbers of mature individuals” or “reduction”, and quantitative analyses were therefore not possible. “Extent of occurrence” of most - but not all - species is roughly known, while the measuring of “Area of occupancy” on sufficiently small grid squares (i.e. 10x10 km, or smaller) would possibly lead to an underestimation of the actual percentage, because only an insignificant number of the resulting squares have actually been worked. By application of considerably larger grid squares, however, the results would become meaningless in the case of highly

habitat-specific dragonflies, as those studied here. The factors of actual or potential threat to the odonate populations found were identified mostly by direct observation in the field.

Results

The 38 “rare” taxa found in the “target” region using the “three records/three localities” criterium include 14 otherwise widespread species, where the apparent scarcity of Venezuelan records is here provisionally explained by insufficient collecting. The species are: *Cacoides latro* (Erichson, 1848), *Progomphus superbus* Belle, 1973, *Gynacantha interioris* Williamson, 1923, *G. tibiata* Karsch, 1891, *Staurophlebia wayana* Geijskes, 1959, *Gynothemis venipunctata* Calvert, 1909; *Macrodiplax balteata* (Hagen, 1861), *Macrothemis extensa* Ris, 1913, *Micrathyria dictynna* Ris, 1919, *Planiplax arachne* Ris, 1912, *Zenithoptera viola* Ris, 1910 and, perhaps, *Phyllogomphoides cornutifrons* (Needham, 1944), *Erythrodiplax parvimaculata* Borror, 1942 and *Macrothemis mortoni* Ris, 1913. These taxa are best categorized as “Not Evaluated” and should not at present be considered for inclusion into the Venezuelan Red Data Book.

Similarly, the following five species, each with one single Venezuelan record, are, for the reasons given below, best categorized as “Not Evaluated”. Future research may, of course, lead to a change in their status:

Not evaluated taxa (for reasons other than those given above)

Heteragrion macilentum Selys, 1862

This is a truly “mysterious” taxon, known from the type only (from Puerto Cabello), which could not be located for re-examination. Therefore, the taxonomic status of this species remains doubtful until its possible future rediscovery in the wild.

Palaemnema nathalia Selys, 1886

A single male was recorded from Venezuela (Macuto?) by Calvert (1903), but the species has never been found since and the record is highly questionable.

Leptagrion siqueirai Santos, 1968

Mentioned from north central Venezuela by Lounibos *et al.* (1987), this species was, however, originally described from Pernambuco (Brazil), while an as yet undescribed, but closely similar species has recently been found in south eastern Venezuela and French Guyana (unpubl. observ.). Therefore, the true taxonomic identity of the Venezuelan specimens identified as “*L. siqueirai*” can be established only after reexamination and comparison with the undescribed species.

Progomphus polygonus Selys, 1879

Two teneral and crushed females from Mérida is all what is known of this species (Belle, 1973). Its true taxonomic status should also be reviewed when more material (male) becomes available.

Brechmorhoga innupta Racenis, 1954

Described on the basis of a single female from the Sierra de Perijá this species has never been found since. I have examined the type and concluded that *B. innupta* is a probable synonym of *B. flavopunctata* (Martin, 1897), a species known from Bolivia to Colombia. However, also in this case fresh material from Venezuela, especially males, should be examined before a final conclusion can be drawn.

Andean taxa evaluated

Five stenecious Andean taxa with extended range through Colombia and, partly, Ecuador and Peru, enter Venezuela only at its extreme western corner (except for *Cora xanthostoma*, which reaches the Venezuelan Coastal Cordillera), and are, therefore, of high local interest:

Cora inca Selys, 1873.

Status. The only recent record of this species is also the unique one from Venezuela (1989, Sierra de Perijá) (De Marmels, 1991). It was last recorded from Colombia in 1909/1910 (Ris, 1918), from Ecuador in 1970 (Bick & Bick, 1990). The Sierra de Perijá, part of which is protected (“Sierra de Perijá” National Park), is located at the uneasy frontier between Colombia and Venezuela. The mountain forest is being cleared for cultivation of poppy, coca and marihuana by Colombian intruders, the clearings later usually polluted by herbicide spraying by the Venezuelan armed forces. Prospecting activities by Venezuelan coal mining companies increasingly degenerate in conflicts with local Indian tribes. Due to the dangerous conditions prevailing in that region, including occasional clashes between the Colombian narco-guerilla and Venezuelan National Guard, as well as kidnapping of foreign visitors or wealthy farmers by Colombian irregulars, there is at present little fun in searching for more localities with *Cora inca*. Therefore, the true status of conservation of this species must remain unclear.

IUCN Categorization. “Data Deficient” (DD).

Cora xanthostoma Ris, 1918

Status. This rare Andean species, described from the eastern Cordillera between Bogotá and Villavicencio, has not been recorded from Colombia ever since its description. It is unknown from the Venezuelan Andes, but can still be found then and when in the central Coastal Cordillera (last record 1990), where it lives in protected areas (“Henri Pittier” and “El Avila” National Parks).

IUCN Categorization. “Least Concern” (lc), because the frequent, man-made forest fires,

which so much characterize the dry season in Venezuela, do not stop at the limits of National Parks. The altitudinal range of this species overlies that of coffee cultivation, a potential factor of threat in unprotected areas where the species may still occur.

Euthore fastigiata fastigiata (Selys, 1859)

Status. In Venezuela this subspecies is known exclusively from the northern Tamá massif, between 1700-2300 m (De Marmels, 1988, and unpubl. observ., the last from 1997). In Colombia this taxon is (or was?) widespread across the eastern Cordillera south to Villavicencio, but no one knows about its present status in that country.

IUCN Categorization. “Near Threatened” (nt). In view of the restricted range occupied by this subspecies in Venezuela, I include it here into the national Red Data Book, provisionally.

Polythore terminata Fraser, 1946

Status. A single male was caught by J. W. Williamson near Táchira Station (now San Félix; State of Táchira) in April 1920 (Bick & Bick 1985). In spite of intense searching in this region by myself, the species could not be rediscovered. It may have become extinct since. On the other hand the lack of records of this conspicuous Ecuadoran and Peruvian damselfly from Colombia could suggest that there is some (although admittedly remote) possibility, that J.H. Williamson has somehow mislabeled his specimen, *P. terminata* therefore perhaps not being a Venezuelan species.

IUCN Categorization. “Data Deficient” (DD). The species may be included into the national Red Data Book provisionally.

Phyllogomphoides brunneus Belle, 1981

Status. Described from the eastern Andes of Ecuador, this gomphid has been found in Venezuela only at two neighbouring, small, forested streams in the eastern Tamá region (550 m) (De Marmels, 1988). The species was still present there in June 1996 (pers. observ.), but deforestation, pollution and deviation of the water by water catchment devices may expose the species to concrete threat, even in this protected area (“El Tamá” National Park).

IUCN Categorization. “Evolutionary Significant Unit” (ESU). The Venezuelan specimens differ slightly in colour pattern from the Ecuadoran populations. Therefore, and following the suggestion by Samways (1996), I include this species into the National Red Data Book, provisionally.

Two recently described species from the Venezuelan Andes are so far unknown from anywhere else and, therefore, listed provisionally:

Andaeschna timotocuica De Marmels, 1994

Status. Occurs at small streams in montane forest. The only known locality lies within a protected area (“Guaramacal” National Park).

IUCN Categorization. “Least Concern” (lc). The Páramo of Guaramacal is an isolated

range within the Cordillera of Mérida. Therefore, the species may be endemic in this area. It is, however, not apparently threatened and its current status may be revised when more localities become known.

Sympetrum evanescens De Marmels, 1992

Status. This largest South American member of *Sympetrum* Newman has been found at an artificial, apparently still fishfree lake, and at an also man-made pond, with introduced rainbow trout (*Salmo gairdneri*). Larvae were found only at the former site. Neither locality lies within any protected area and the omnipresence in the Venezuelan Andes of the rainbow trout may exercise a very negative impact upon this dragonfly. Its primary natural habitat is unknown.

IUCN Categorization. “Least Concern” (lc). Also this, presumably endemic, species may be included in the national Red Data Book, provisionally and its status revised in the future.

Lake Maracibo basin taxa

Lake Maracaibo basin in western Venezuela marks the eastern range limit of several species with a similar distribution pattern, i.e. Mexico or Central America, across Colombia to the western slopes of the Cordillera of Mérida, which borders this lake to the east. Such species are: *Cora marina* Selys, 1868, *Hetaerina miniata* Selys, 1879, *Heteragrion mitratum* Williamson, 1919, *Palaemnema mutans* Calvert, 1931, *Acanthagrion trilobatum* Leonard, 1977, *Micrathyria dictynna*, and several rare species which are listed in continuation:

Mecistogaster modesta Selys, 1860

Status. Known (in Venezuela) from isolated colonies east and west of Lake Maracaibo, the most recent record being from 1994 (Trujillo State). This bromeliad-breeding species seems to depend on montane forest, which is being cut and burnt, especially in the foothills around Lake Maracaibo.

IUCN Categorization. “Least Concern” (lc).

Agriogomphus jessei Williamson, 1918

Status. This elusive gomphid was recorded only twice from Venezuela, the last record being from 1992 (De Marmels, 1993). Its apparent rarity probably does not simply reflect lack of collecting. As an inhabitant of lowland streams in primary forest this species is very exposed to habitat loss by expanding agriculture with resulting deforestation and pollution.

IUCN Categorization. “Least Concern” (lc).

Erpetogomphus sabaleticus Williamson, 1918

Status. The first (and last) record is from 11 April 1920 near Táchira Station (now San Félix), by J.W. Williamson (De Marmels, 1988). The species could not be rediscovered in

spite of intense searching in January, April and June 1996 along the streams in the vicinity of the old locality. It may, however, still be present somewhere within the river system which drains to Lake Maracaibo.

IUCN Categorization. “Data Deficient” (DD).

Phyllogomphoides semicircularis (Selys, 1854)

Status. The most recent of only two Venezuelan records is from 1982 (De Marmels, 1990b). This species was found along forested streams in the piedmont south and west of Lake Maracaibo.

IUCN Categorization. “Least Concern” (lc), because of the severe anthropogenic pressure upon the last primary forests, which border the small streams in the mountains around Lake Maracaibo.

Endemic northern Venezuelan taxa

The last five species to be evaluated are four megapodagrionids and a lestid, all endemics of northern Venezuela. Two of them, viz. *Archilestes tuberalatus* Williamson, and *Philogenia polyxena* Calvert, are the only Odonata already included in the Venezuelan Red Data Book (Rodríguez & Rojas-Suárez, 1995).

Archilestes tuberalatus Williamson, 1921

Status. Williamson (1921) collected the type series at two small, rocky forest streams. The locality lies in the northern foothills of the central Coastal Cordillera, back of the village of San Esteban. The spot has grown since, its huts by now having invaded much of the neighbouring hills. Ten years ago the forests behind the village were included into “San Esteban” National Park, but the type locality of *A. tuberalatus* falls partly outside its limits. I visited the place in March 1997, without finding either adults or larvae of this precious lestine. The forest is reduced to a narrow stripe bordering the sides of the stream. Except for the far upper course, the place now seems to be strongly intervened and exposed to the sun (in 1920 Williamson described it as “somber”). Over large stretches of the “quebrada” there was little flowing surface water, or none, but numerous small pools with indigenous fish and shrimp. Dragonflies observed were *Protoneura amatoria* Calvert, 1907, *Argia oculata* Selys, 1865, *A. orichalcea* Selys, 1865 and *Dythemis m. multipunctata* Kirby, 1894. In the far upper course a male of each, *Heteragrion chrysops* Selys, 1862 and *Philogenia cassandra* Selys, 1862 was taken.

After the type series, only one additional specimen entered the records, i.e. a male taken by J. Racenis at “Rancho Grande” in 1961 (De Marmels, 1982). However, on 27 March 1997 Mr. Francisco Romero M., Maracay, collected a female near Choroni (“Henri Pittier” National Park). I visited the place on 5 May 1997. The small stream (350 m elevation) is seemingly similar to the type locality in Williamson’s times, e.g. with little flowing surface water, smaller and larger pools with overhanging bushes, and occasionally steeper, stony stretches. On one bush I observed a male hanging from a twig at about 1.8 m above a small pool. At the same place a male exuviae clinging to an aerial root hanging from a steep

rocky wall, about two meters away from water, could be secured. At another pool, less than hundred meters further downwards on the same stream, a recently emerged female was captured and again released.

The species, therefore, still survives and should be present along other similar streams somewhere within either “Henri Pittier” (= Rancho Grande) or adjacent “San Esteban” National Parks. In any case, total extent of occurrence seems to be less than 500 km². Forest fires during dry season (December to May, viz. within the known flight season of *A. tuberalatus*), deviation of fresh water by water catchment devices in the upper courses of the streams, projected developments of tourist infrastructure, official plans to intensify cacao plantations throughout the region, and simple invasion of the forest by human (campesino) settlements, accompanied by clearing of forest and pollution of the lower water courses, actually and potentially pose serious threats to this species.

IUCN Categorization. “Endangered” (EN).

Philogenia ferox Racenis, 1959

Status. This species is known only from the type locality, a short stretch of a stony stream in cloud forest. Single specimens are still found then and when, at the same spot (last record 1996). *P. ferox* is doubtless an endemic of the central Coastal Cordillera. The sole known locality lies within “Henri Pittier” National Park, but the spot is an attractive place for weekend visitors, who cause considerable disturbance by cooking, bathing, trampling and garbage deposits in and around the stream proper.

IUCN Categorization. “Endangered” (EN), because estimated maximum extent of occurrence is, even in the improbable case that several more localities will become known in the future, much less than 5000 km², more probably less than 500 km².

Philogenia polyxena Calvert, 1924

Status. This species is an endemic of the Sierra de Aroa, an isolated mountain between the extreme northeastern escarpments of the Cordillera of Mérida and the Coastal Cordillera. Parts of the higher reaches of the mountain are protected (“Yurubi” National Park), but *P. polyxena* has so far been found only outside the limits of the park, along small, forested streams. The expansion of cultivated areas and pasture land, forest fires and deviation of fresh water from the small mountain streams with the resulting pollution or desiccation of the lower courses, are potential threats to this species. Currently, *P. polyxena* is still present in the area (last record 1996).

IUCN Categorization. “Vulnerable” (VU) is appropriate. Even if maximum extent of occurrence is less than 600 km² (which is about the extension of the Sierra de Aroa), “severe fragmentation” of the habitats has not so far been demonstrated and the species may be present within the limits of the Park.

Sciotropis cyclanthorum Racenis, 1959

Status. This is another endemic of the central Coastal Cordillera, so far known from three localities (De Marmels, 1994) where it inhabits somber spots with seeping water,

between rocks and leaf litter, on steep slopes which border rocky streams in cloud forest. The western outpost in Carabobo State does not lie within any protected area, and clearing of the forest for coffee and citrus plantations progresses at an alarming rate. The other two localities are within “Henri Pittier” National Park, but even here forest fires get closer to its habitats every year, putting a potentially serious threat to this species. With the burnt areas extending upwards, the remaining forest seems to become dryer, seeping waters and small streamlets disappearing as the limit of the cloud forest is retreating to higher elevations. **IUCN Categorization.** “Vulnerable” (VU) is justified, as the known extent of occurrence is much less than 2000 km² (but may be found extending more eastwards in future searches). The species is at present known from less than ten locations and its future decline can be projected if current threats are not stopped.

Sciotropis latkei De Marmels, 1994

Status. This recently discovered species is known only from Cerro El Humo, a mountain of the eastern Coastal Cordillera situated in the Paria peninsula. Its habitat requirements are similar to those of its unique congener. The threats are also identical, although yet more pronounced, in spite of the locations being situated within a protected area (“Peninsula de Paria” National Park). *S. latkei* may also be, but probably is not, present in the “Serrania de Turimiquire”, the south western portion of the oriental Coastal Cordillera. This mountainous range is, however, severely deforested.

IUCN Categorization. “Endangered” (EN), as the known extent of occurrence is only about 100 km², its possible presence at additional sites is entirely speculative and future localities will, therefore, hardly approach ten in total. “Severe fragmentation” of the area of occupancy and “Continuing decline” can be projected. An additional argument for Red-Listing this and the previous species is that the genus *Sciotropis* Racenis, 1959 as such is an endemic of the Venezuelan Coastal Cordillera.

Discussion

Samways (1996: 353) estimates that his sample of South African odonate species evaluated using the new *IUCN Categories of threat* is “in terms of knowledge of them and accessibility of their locations, (...) probably about midway between a situation in Europe and one in the remote parts of South America”. This statement is still optimistical with respect to Venezuela, as even for the not too “remote” parts of the country quantitative figures on the status of the Red list-species can not be given: mapping schemes have never been implemented; there are no local dragonfly observers to permanently or regularly survey any odonate species or population, or to search for “rare” species in any “grid square”. Therefore, a true monitoring of the species here proposed for inclusion into the national Red Data Book is not expected to be feasible in the foreseeable future. An aggravating point is that the global status of those Venezuelan dragonflies, which also occur in other South or Central American countries (e.g. non-endemic Venezuelan species), is usually difficult to assess, as the available records from these countries are often yet more casual than those from Venezuela, or largely out-dated.

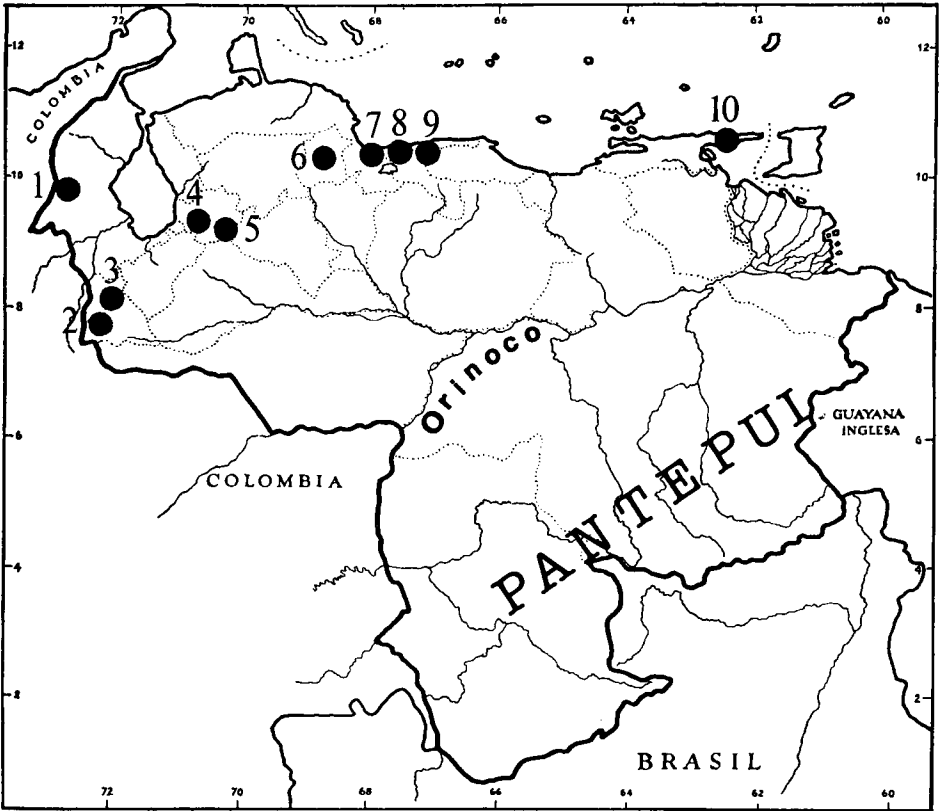


Figure 1. Map of Venezuela showing sites (occasionally several clustered) harbouring Red List species.

Lake Maracaibo drainage system:

1. Sierra de Perijá (*Cora inca*, *Mecistogaster modesta*, *Phyllogomphoides semicircularis*)
2. Mount Tamá (*Euthore f. fastigiata*, *Phyllogomphoides brunneus*)
3. San Félix-Táchira (*Polythore terminata*, *Agriogomphus jessei*, *Erpetogomphus sabaleticus*, *Phyllogomphoides semicircularis*)
4. western slopes of Andes of Trujillo (*Mecistogaster modesta*)

Orinoco drainage system:

5. eastern slopes of Andes of Trujillo (*Andaeschna timotocuica*, *Sympetrum evanescens*)

Caribbean drainage system:

6. Sierra de Aroa (*Philogenia polyxena*)
9. Central Coastal Cordillera (*Cora xanthostoma*)
10. Eastern Coastal Cordillera-Cerro El Humo (*Sciotropis latkei*)

Caribbean and/or Lake Valencia drainage system:

- 7., 8. Central Coastal Cordillera (*Cora xanthostoma*, *Philogenia ferox*, *Sciotropis cyclanthorum*, *Archilestes tuberalatus*)

Table 1. Venezuelan Odonata recommended for inclusion in the national Red Data Book (DD = “data deficient”; EN = “endangered”; ESU = “evolutionary significant unit”; lc = “least concern”; nt = “near threatened”; VU = “vulnerable”; *) = endemic in Venezuela)

Proposed IUCN Category of threa	Species	Locality	Year last seen
Polythoridae			
DD	<i>Cora inca</i>	in Venezuela only Sierra de Perijá	1989
lc	<i>Cora xanthostoma</i>	in Venezuela only central Coastal Cordillera	1990
nt	<i>Euthore f. fastigiata</i>	in Venezuela only northern Tamá	1997
DD	<i>Polythore terminata</i>	in Venezuela only south of Lake Maracaibo	1920
Megapodagrionidae			
EN	<i>Philogenia ferox*</i>	central Coastal Cordillera (southern slope) (endemic)	1996
VU	<i>Philogenia polyxena*</i>	Sierra de Aroa (endemic)	1996
VU	<i>Sciotropis cyclanthorum*</i>	central Coastal Cordillera (endemic)	1994
EN	<i>Sciotropis latkei*</i>	eastern Coastal Cordillera (Cerro El Humo) (endemic)	1993
Lestidae			
EN	<i>Archilestes tuberalatus*</i>	central Coastal Cordillera (Caribbean slope) (endemic)	1997
Pseudostigmatidae			
lc	<i>Mecistogaster modesta</i>	in Venezuela only Lake Maracaibo region	1994
Gomphidae			
lc	<i>Agriogomphus jessei</i>	in Venezuela only Lake Maracaibo region	1992
DD	<i>Erpetogomphus sabaleticus</i>	in Venezuela only south of Lake Maracaibo	1920
ESU	<i>Phyllogomphoides brunneus</i>	in Venezuela only Tamá	1996
lc	<i>Phyllogomphoides semicircularis</i>	in Venezuela only Lake Maracaibo region	1982
Aeshnidae			
lc	<i>Andaeschna timotocuica*</i>	Cordillera of Mérida (Guaramacal)	1993
Libellulidae			
lc	<i>Sympetrum evanescens*</i>	Cordillera of Mérida (Guaramacal)	1991

In view of these deficiencies one may ask why a Red List (Red Data Book) for the Venezuelan Odonata is at all being proposed and how such a list could promote dragonfly conservation in this country. In many countries of the northern hemisphere Red Lists (of any life forms) have demonstrably been crucial references in the conservation struggle. This will not be different in Venezuela, even if the local Red Lists rarely match European standards. Here, total area of National Parks and “Natural Monuments” did, in 1994, already cover 15.07 % of the Venezuelan territory. Several additional protected areas were created since, although rarely supported by Red Lists, but usually considering general aspects such as “high general biodiversity”, “life zones”, “representative sections of

certain ecosystems”, “scenic beauty”, or “conservation of headwaters” (INPARQUES, 1978). Well-worked Red Lists with exact data, especially on localized and habitat-specific taxa such as many dragonflies, would, however, significantly improve the way in which park limits are traced. In Venezuela, these often simply follow arbitrarily fixed isolevel lines, presumably to exclude populated or cultivated areas, but thereby letting important habitats in the canyons, along the lower course of the streams out of the park’s limits. In the case of the Odonata this is exactly what could happen (or already has happened) to Red List-species such as *Archilestes tuberalatus*. This species, together with *Heteragrion macilentum* (here not evaluated), was of some concern in supporting the creation of “San Esteban” National Park in 1987 (L. D. Otero, pers. comm.), but probably not for tracing its limits.

Samways (1996: 353) emphasizes that “(...) local endemism per se does not qualify a species [for being Red-listed], as some of these can be locally very common”. Nevertheless, the preservation of local endemic species should be seen as a first-class responsibility for any country, and local authorities may be blamed directly if such taxa become extinct. With this in mind, it seems preferable to include such species provisionally and later remove them when more localities become known, instead of undergoing the risk of them becoming extinct, just because they appear, here and now, “very common”. A Red List, or Red Data Book, once published, not only becomes a scientific instrument in the hands of conservationists to inform local authorities and to exercise pressure on them, but is also a valuable tool in the hands of these authorities to impose conservation measures against different pressure groups and lobbies with antagonizing economic and particular interests.

None of the Venezuelan “endangered” and “vulnerable” endemic Odonata is common. Most survive, at least with part of their populations, within protected areas. The crucial issue must be to definitely withhold any anthropogenic disturbance from their forested habitats, at least within these protected areas, a seemingly difficult task in Venezuela: “being present in reserves does not guarantee preservation” (Samways, 1996: 349).

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