The importance of addressing different Red Lists in conservation studies: an analysis comparing the conservation status of Brazilian mammals

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Abstract
The importance of addressing different Red Lists in conservation studies: an analysis comparing the conservation status of Brazilian mammals. Red Lists are important conservation tools because they attempt to estimate the extinction risks of species. We compared the conservation status of Brazilian mammals presented in the Brazilian Red Book with those presented in the IUCN Red List, highlighting the importance of each list and why they should be used jointly. Out of 636 species, 181 were considered endemic to Brazil and 121 were considered threatened by at least one of the lists. Considering the complete database, 86 % of the species had the same status on both lists, whereas only 48 % of the threatened species had the same status. Some possible factors responsible for variations are the period in which the evaluations were carried out, the evaluation process and the fact that a species threatened nationally may not be threatened globally. We recommend that communication should be improved, that lists should be kept updated, and that both the type of information and the data itself to be used in the assessments should be standardized.

Key words: Brazilian Red Book of Threatened Fauna, IUCN Red List, Mammalia, Biodiversity, Endemic species, Threatened species

Resumen
La importancia de abordar diferentes Listas Rojas en los estudios de conservación: un análisis que compara el estado de conservación de los mamíferos brasileños. Las Listas Rojas son importantes herramientas de conservación porque intentan estimar el riesgo de extinción de las especies. Comparamos los estados de conservación de los mamíferos brasileños presentados en el Libro Rojo de Brasil con los presentados en la Lista Roja de la Unión Internacional para la Conservación de la Naturaleza (UICN) y destacamos la importancia de cada lista y el motivo por el que se deberían usar conjuntamente. De 636 especies, 181 se consideraron endémicas del Brasil y 121 se consideraron ameazadas en al menos una de las listas. Considerando la base de datos completa, el 86 % de las especies tenía el mismo estado en ambas listas; no obstante, esto solo ocurrió en el 48 % de las especies amenazadas. Las variaciones se explican, entre otros factores, por el período en el que se realizaron las evaluaciones, el proceso de evaluación y el hecho de que una especie amenazada a nivel nacional puede no estarlo a nivel mundial. Recomendamos que se mejore la comunicación, que las listas se mantengan actualizadas y que se estandaricen tanto el tipo de información como los propios datos que se utilizarán en las evaluaciones.

Palabras clave: Libro Rojo de Fauna Amenazada de Brasil, Lista Roja de la UICN, Mammalia, Biodiversidad, Especies endémicas, Especies amenazadas

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Introduction

Biodiversity conservation is one of the biggest challenges facing the current generation (Vale et al., 2009). Megadiverse countries, such as Brazil, therefore have an enormous responsibility when it comes to protecting endangered species (Brandon et al., 2005). The richness of Brazil’s mammal species, for example, is considered by some authors to be the highest in the world, with over 700 species and a high degree of endemism at the national level (Mittermeier et al., 1997; Costa et al., 2005; Lewinsohn and Prado, 2005; Quintela et al., 2020).

When species are assigned to categories (known as conservation status) that represent their degree of threat, their risk of extinction can be estimated, making it easier to infer which species need urgent conservation actions (Peres et al., 2011), evaluate the state of biodiversity, identify sites for conservation action, and inform policy and management (Rodrigues et al., 2006). Red Lists of threatened fauna are, from this point of view, important conservation tools. Having already assessed the global risk of extinction of more than 116,000 species (including more than 5,000 mammals), the International Union for Conservation of Nature (IUCN) has played a major role in making these lists known worldwide. Some of the criteria used in those assessments are restricted geographic distribution, small and declining population size, and, based on quantitative analysis, a high probability of extinction in nature. Its scheme of species classification according to threat status uses the following categories: Not Evaluated (NE), Data Deficient (DD) (when there is no adequate information to assess the risk), Least Concern (LC) (when the species is evaluated but does not fall into the other categories; usually encompassing abundant and widely distributed taxa), Near Threatened (NT) (when the species is close to qualifying as threatened or when it is expected to be classified as such soon), Vulnerable (VU) (when the species faces a high risk of extinction in the wild), Endangered (EN) (when the species faces a very high risk of extinction in the wild), Critically Endangered (CR) (when the species face an even higher risk of extinction in the wild), Extinct in the Wild (EW) and Extinct (EX).

In Brazil, the Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio), a Brazilian government institution from the Ministry of Environment, periodically publishes the so-called Red Books of Threatened Fauna. These Red Books have a similar role to the IUCN Red Lists, listing the species considered to be threatened nationally, classifying them according to their conservation status, and providing ecological information about them. The most recent Red Book was published in 2018, representing a huge effort to evaluate all described vertebrate taxa occurring in the country and listing 680 mammal species officially known to occur in Brazil. Of these, 108 (15.9 %) were considered nationally threatened (ICMBio/MMA, 2018).

In the present study, we compared the conservation status of Brazilian mammal species listed in the Brazilian Red Book of Threatened Fauna with those presented in the IUCN Red List, highlighting the importance of each list and why they should be used jointly in order to generate even more accurate assessments. We expected to find some differences in the status of species whose geographic distribution was broad and exceeded the country’s territorial limits (i.e. non–endemic species). However, as the national distribution of species that occur exclusively in Brazil (i.e. endemic species) corresponds to their global distribution, we postulated that the status of those species would not vary between lists. In case some endemic species (especially those considered to be threatened) had a different conservation status in each list, we would emphasize the need for special attention the next time their conservation status is assessed.

Material and methods

We compiled a database (see table 1s in supplementary material) containing all Brazilian mammal species (regardless of subspecies) according to the Brazilian Red Book of Threatened Fauna (ICMBio/MMA, 2018), their national (obtained from the Brazilian Red Book itself) and global conservation status (obtained from the IUCN Red List of Threatened Species platform, 2019–3 version), and the year in which the species’ status was assessed in each of the lists. In the Brazilian Red Book, however, the pampas deer (Ozotoceros bezoarticus) and some primates were evaluated only at the subspecific level. In these cases, to standardize our analysis, we chose to consider the status of the least threatened subspecies as the status of the species. Using the data found in the ‘Geographic Range’ section of the IUCN Red List and the Brazilian Red Book, we also added the information of whether a species was endemic to Brazil or not. The lists were then compared according to the conservation status of each species to observe which species differed in status between lists.

We also observed whether each species had the same status on both lists or if it had a lower conservation status (i.e. less threatened) on one of the lists. For example, if a species was assessed as not threatened (i.e. Least Concern or Near Threatened) by the Brazilian Red Book but as threatened (i.e. Vulnerable, Endangered or Critically Endangered) by the IUCN Red List, we considered it had a lower status in the national list. Similarly, if a species was classified as Critically Endangered in the Brazilian Red Book and as Vulnerable in the IUCN Red List, we considered that it had a lower status in the global list, despite being considered threatened by both lists. We made those comparisons considering four different scenarios: a) all species present in our database; b) only the endemic species; c) only the species considered to be threatened (i.e. species classified as either Vulnerable, Endangered or Critically Endangered) by at least one of the lists; d) species considered, simultaneously, as endemic and threatened. These analyses did not include species that were categorized as Data Deficient in either of the lists.
In order to better analyze the differences between the lists, we divided the analyzed species into eight groups based on taxonomy (Order rank) and/or ecological characteristics: Aquatic Mammals (comprising cetaceans and sirenians), Carnivora, Chiroptera, Didelphimorphia, Glires (comprising Rodentia and Lagomorpha), Primates, Ungulates (comprising Artiodactyla and Perissodactyla) and Xenarthra (comprising Pilosa and Cingulata). For each group, we compared the proportions of species classified in each conservation status with lists using Fisher’s exact test (only the species classified as Near Threatened, Vulnerable, Endangered and Critically Endangered were considered). The analyses were performed in R version 4.0.2.

Results

According to the Brazilian Red Book of Threatened Fauna, 680 mammal species were known to occur in Brazil. Since we chose not to include taxa that were not evaluated by the IUCN Red List, as well as those that IUCN considers as subspecies (as opposed to full species), and the candango mouse (Juscelinomys candango), classified as extinct by IUCN, our database comprised 636 species. Additionally, 181 species present in our database (28.5 % of the total) were considered endemic to Brazil, and three other groups presented a low number of endemic species: Carnivora (the hoary fox, Lycalopex vetulus, was the only endemic species), Ungulates (the small red brocket deer, Mazama bororo, was the only endemic species), and Xenarthra (the three–banded armadillo, Tolypeutes tricinctus, and the maned three–toed sloth, Bradypus torquatus, were the only endemic species).

One hundred and twenty–one species (19.0 % of the total) were considered threatened by at least one of the lists (table 1). Of these, 104 were considered threatened according to the Brazilian Red Book, with 54 (51.9 %) being classified as Vulnerable, 40 (38.5 %) as Endangered and 10 (9.6 %) as Critically Endangered. In the IUCN Red List, 40 species (47.1 %) were classified as Vulnerable, 32 (37.6 %) as Endangered and 13 (15.3 %) as Critically Endangered, totaling 85 threatened species. Considering only the endemic species, 70 (38.7 %) are threatened to some level. According to the Brazilian Red Book, 23 (39.0 %) of these endemics are classified as Vulnerable, 29 (49.1 %) as Endangered and seven (11.9 %) as Critically Endangered, totaling 59 species. According to the IUCN Red List, 19 species (35.2 %) are classified as Vulnerable, 23 (42.6 %) as Endangered and 12 (22.2 %) as Critically Endangered, totaling 54 species.

Primates and Glires made up most of the threatened species (table 1). Only one species classified as Critically Endangered according to the IUCN Red List did not belong to one of these two groups: the single–striped opossum (Monodelphis unistriata) (Didelphimorphia). The Brazilian Red Book, however, classified one didelphimorph (the black–shouldered opossum, Caluromysiops irrupta) and two cetaceans (the blue whale, Balaenoptera musculus, and the Franciscana dolphin, Pontoporia blainvillei) as Criti-
Tabla 1. Number of species per group classified under each conservation status according to the Brazilian Red Book (national scale) and the IUCN Red List (global scale).

| Group             | DD  | LC  | NT  | VU  | EN  | CR  |
|-------------------|-----|-----|-----|-----|-----|-----|
| Aquatic Mammals   | 8   | 14  | 2   | 3   | 5   | 2   |
| Carnivora         | 1   | 13  | 1   | 12  | 1   | 0   |
| Chiroptera        | 41  | 126 | 1   | 6   | 1   | 0   |
| Didelphimorphia   | 6   | 38  | 2   | 2   | 1   | 1   |
| Glires            | 23  | 158 | 5   | 8   | 16  | 2   |
| Primates          | 9   | 55  | 10  | 14  | 15  | 5   |
| Ungulates         | 3   | 2   | 0   | 6   | 0   | 0   |
| Xenarthra         | 4   | 10  | 0   | 3   | 1   | 0   |
| Total (%)         | 95 (14.9) | 416 (65.4) | 21 (3.3) | 54 (8.5) | 40 (6.3) | 10 (1.6) |

Tabla 1. Número de especies por grupo clasificadas en cada estado de conservación según el Libro Rojo de Brasil (escala nacional) y la Lista Roja de la UICN (escala global).

| Group             | DD  | LC  | NT  | VU  | EN  | CR  |
|-------------------|-----|-----|-----|-----|-----|-----|
| Aquatic Mammals   | 4   | 19  | 3   | 5   | 3   | 0   |
| Carnivora         | 0   | 18  | 7   | 2   | 1   | 0   |
| Chiroptera        | 29  | 140 | 4   | 0   | 2   | 0   |
| Didelphimorphia   | 4   | 42  | 2   | 1   | 0   | 1   |
| Glires            | 38  | 150 | 4   | 5   | 12  | 3   |
| Primates          | 4   | 56  | 7   | 18  | 14  | 9   |
| Ungulates         | 1   | 4   | 1   | 5   | 0   | 0   |
| Xenarthra         | 0   | 12  | 2   | 4   | 0   | 0   |
| Total (%)         | 80 (12.6) | 441 (69.3) | 30 (4.7) | 40 (6.3) | 32 (5.0) | 13 (2.1) |

Tabla 1. Número de especies por grupo clasificadas en cada estado de conservación según el Libro Rojo de Brasil (escala nacional) y la Lista Roja de la UICN (escala global).

| Group             | DD  | LC  | NT  | VU  | EN  | CR  |
|-------------------|-----|-----|-----|-----|-----|-----|
| Aquatic Mammals   | 0   | 0   | 0   | 0   | 0   | 0   |
| Carnivora         | 0   | 0   | 0   | 1   | 0   | 0   |
| Chiroptera        | 5   | 5   | 1   | 2   | 0   | 0   |
| Didelphimorphia   | 1   | 5   | 1   | 2   | 0   | 0   |
| Glires            | 16  | 50  | 3   | 8   | 15  | 2   |
| Primates          | 5   | 25  | 5   | 8   | 13  | 5   |
| Ungulates         | 0   | 0   | 0   | 1   | 0   | 0   |
| Xenarthra         | 0   | 0   | 0   | 1   | 1   | 0   |
| Total (%)         | 27 (14.9) | 85 (47.0) | 10 (5.5) | 23 (12.7) | 29 (16.0) | 7 (3.9) |
cally Endangered nationally. Proportionally, however, the most threatened groups (i.e. the groups in which the proportion of species classified as Vulnerable, Endangered or Critically Endangered was greater) were Ungulates, Carnivora and Primates (with, respectively, 54.5%, 46.4%, and 39.8% of the species considered threatened in at least one of the lists).

Regarding the conservation status of species by group, the Least Concern status was the one in which most of the species of any group were classified. The group Carnivora, however, presented the most significant difference between the lists, with 13 species considered threatened according to the national list but only three according to the global one (table 1). Statistically significant differences between the proportions of species classified in each conservation status (excluding Least Concern) between the two lists were only observed for the groups Carnivora (p-value = 0.001) and Chiroptera (p-value = 0.01). While the Brazilian list has more species classified as Vulnerable, IUCN classifies more species as Near Threatened. Considering only the endemic species (and also excluding species classified as Least Concern), on the other hand, no statistically significant difference was observed between lists for any group. Although the two lists are similar when considering the total number of species classified in each conservation status; further analysis shows that the equivalence may be apparent, since the status of many species varies between the two lists.

Considering the complete lists and excluding the species that are classified as Data Deficient in either assessment, 420 species (85.7% of the total) had the same conservation status on both lists, whereas 27 (5.5%) had a lower status according to the national assessment, and 43 (8.8%) had a lower status on the global list (table 2). However, when only the endemic species were considered, we observed that 100 species (79.4%) were classified with the same status on both lists, while 16 (12.7%) had a lower status on the national list and 10 (7.9%) had a lower status on the global list (table 2). Nevertheless, divergence between lists was even more pronounced when we restricted our analysis to threatened species. In this case, 51 species (47.7%) had the same conservation status on both lists, 21 (19.6%) had a lower status according to the national assessment, and 35 (32.7%) had a lower status on the global list (table 2). Finally, considering the endemic species that are also threatened, 35 species (60.4%) had the same status on both lists, whereas 13 (22.4%) had a lower status on the national list and 10 (17.2%) on the global list (table 2).

Considering the species analyzed by group, the Carnivora, once again, stands out: of the 13 analyzed species considered to be threatened, 11 (84.6%) had a lower status according to the global assessment. Aquatic Mammals also presented a tendency of divergence between lists: only half of the six species considered had the same conservation status on both lists. The average difference between the years in which species evaluations took place in each list was 2.73 years, with 21 species evaluated in the same year on both lists, six evaluated one year apart, 341 two years apart, 153 three years apart, 17 four years apart, 67 five years apart, 30 six years apart and one that was evaluated seven years apart.

Discussion

Although the two lists pursue the same goal (i.e. to evaluate extinction risks of species and classify them accordingly) and use the same categories of threat and the same criteria on their assessments, the conservation status of more than half of the threatened taxa differed between lists, and this variation was more marked in some mammal groups than in others. Since a species threatened nationally may not be threatened globally (Gädendorfs, 2001), one...
Table 2. Number of species (out of a total of 490) that have either the same or lower conservation status according to the analyzed lists.

| All species | Same status in both lists | Lower status in Brazilian Red Book | Lower status in IUCN Red List |
|-------------|---------------------------|-----------------------------------|------------------------------|
| Aquatic Mammals | 14 | 1 | 7 |
| Carnivora | 15 | 1 | 11 |
| Chiroptera | 114 | 4 | 3 |
| Didelphimorphia | 35 | 1 | 5 |
| Glires | 148 | 3 | 8 |
| Primates | 74 | 17 | 7 |
| Ungulates | 7 | 0 | 1 |
| Xenarthra | 13 | 0 | 1 |
| Total (%) | 420 (85.7) | 27 (5.5) | 43 (8.8) |

| Endemic species | Same status in both lists | Lower status in Brazilian Red Book | Lower status in IUCN Red List |
|----------------|---------------------------|-----------------------------------|------------------------------|
| Aquatic Mammals | 0 | 0 | 0 |
| Carnivora | 0 | 0 | 1 |
| Chiroptera | 4 | 2 | 0 |
| Didelphimorphia | 3 | 1 | 2 |
| Glires | 46 | 3 | 6 |
| Primates | 45 | 10 | 0 |
| Ungulates | 1 | 0 | 0 |
| Xenarthra | 1 | 0 | 1 |
| Total (%) | 100 (79.4) | 16 (12.7) | 10 (7.9) |

| Threatened species | Same status in both lists | Lower status in Brazilian Red Book | Lower status in IUCN Red List |
|--------------------|---------------------------|-----------------------------------|------------------------------|
| Aquatic Mammals | 4 | 0 | 6 |
| Carnivora | 1 | 1 | 11 |
| Chiroptera | 1 | 1 | 3 |
| Didelphimorphia | 0 | 1 | 4 |
| Glires | 13 | 3 | 6 |
| Primates | 24 | 15 | 3 |
| Ungulates | 5 | 0 | 1 |
| Xenarthra | 3 | 0 | 1 |
| Total (%) | 51 (47.7) | 21 (19.6) | 35 (32.7) |
of the main reasons why the conservation status of many non–endemic species differ between the two lists becomes clear. If we look at mammal groups composed mostly of species with wide geographic distributions, in which rates of endemism are low (such as the orders Carnivora and Cetacea), this becomes even more evident. Indeed, the groups Carnivora and Aquatic Mammals were those with the greatest proportion of threatened species having a lower status in the global list than on the national list. The puma (Puma concolor), for example, can be found across much of the American continent, from Canada to southern Argentina (Nielsen et al., 2015) and it is classified as Least Concern globally, even though it is considered Vulnerable in Brazil. Similarly, the southern right whale (Eubalaena australis) has a circumpolar distribution across the entire Southern Hemisphere (Cooke and Zerbini, 2018) and is also classified as Least Concern globally, but as Endangered in Brazil. In such cases, the IUCN recommends that national assessments evaluate species as if they were endemic or completely isolated from other populations to obtain a preliminary status. After taking this first step, the status of the species can either be changed or subsequently maintained, considering the possibility of migration of individuals into and out of the region under analysis (IUCN, 2012).

Endemic species, on the other hand, present a more delicate situation. As an endemic species only occurs within a restricted area, its regional population also corresponds to the global one. Therefore, it was expected that the conservation status of endemic species would not differ between national and global lists. However, our analysis has shown that this was not always the case, as the conservation status of 20.6% of the endemic species and of 39.6% of the species that were both threatened and endemic varied between lists. One possible factor responsible for variation in status between lists is the period in which the evaluation of the status of taxa was carried out. However, if we consider the time interval between the national and global evaluations of a given species, it is noteworthy that this never exceeded seven years. Furthermore, the Brazilian three–banded armadillo (Tolypeutes tricinctus) was classified as Endangered according to the Brazilian Red Book and as Vulnerable according to the IUCN Red List, despite being endemic to Brazil and both assessments taking place in 2013. This could indicate that the period in which the evaluation was carried out may not be the only reason for the divergences observed, nor the main reason for all of them. Nonetheless, we recognize that changes in the conservation status of a given species can occur within short periods of time, following new publications concerning reassessments of its geographic distribution and of major changes undergone by its habitat (e.g. Fernandes et al., 2007; Attias et al., 2009; Hirsch and Chiarello, 2012), and taxonomic revisions (especially in cases where a single species is divided into two or more, e.g. Agapow et al., 2004; Nascimento and Feijó, 2017; Ang et al., 2020). The Brazilian Red Book (ICMBio/MMA, 2018) also mentions that more recent and accurate information (especially regarding declines or recoveries of populations) and adjustments in the method itself may be responsible for changes in the conservation status of species, sometimes even resulting in their removal from the list of threatened taxa (i.e. when a species classified as Vulnerable, Endangered or Critically Endangered is re–classified as Least Concern or Near Threatened). This was the case of the humpback whale (Megaptera novaeangliae): previously classified as nationally threatened, the prohibition of whaling activities by the Brazilian government in 1987 resulted in an increase in the number of individuals in national waters (Andriolo et al., 2010; Bortolotto et al., 2016) and led to the re–classification of the species under the Near Threatened status (ICMBio/MMA, 2018).
A possible additional cause of divergences may be the evaluation process itself. Although both lists are based on expert opinion and follow a strict process to have assessments performed as accurately as possible, it should be considered that there may be a subjective component in assessing the risk of losing species (especially if the methods are not strictly followed). Costa et al. (2005) stated that national lists could also benefit from scientific knowledge generated by unpublished data, including theses, dissertations, local journals, and personal field experience. However, we observed that global lists can also use this type of data to assess species extinction risks. Therefore, some divergences between lists may not be related to the type of publication used, but as we have mentioned, to the data and to the process itself.

Some previous works have attempted to evaluate and compare Red Lists in a similar way to ours. However, contrary to what we expected, publications focusing on Brazilian mammals are not that common. Costa et al. (2005) briefly compared the conservation status of threatened Brazilian mammals using the 2003 national list. Nonetheless, in addition to the current list being much more comprehensive than the previous ones, those authors did not carry out as many analyses as we did. The Brazilian national species list was also compared with the IUCN Red List by Brito et al. (2010) in a work that addressed various taxa from three other countries besides Brazil: Colombia, China, and the Philippines. Other relevant works dealing with vertebrate groups other than mammals are those of Garcia and Marini (2006), who focused on threatened species.
Brazilian birds, Morais et al. (2012), who addressed threatened Brazilian amphibians, and Bender et al. (2012), who focused on Brazilian reef fishes. As in our study, these studies found divergences between lists that needed to be resolved because they could raise doubts on the credibility and usefulness of these important conservation tools.

Nonetheless, there is little point in debating whether one list is better than the other. The main goal of our study was to draw attention to the fact that differences in the conservation status of species may exist between global and national lists and that such differences do not necessarily represent errors or outdated information. The two lists are based on different spatial scales and, consequently, have distinct potential uses. The national list (i.e. the Brazilian Red Book), at least in Brazil, is the one used to define which species of Brazilian fauna are considered threatened, so that those species can be fully protected under the Brazilian laws, and actions such as their capture, transportation and commercialization be prohibited. The IUCN, on the other hand, aims to show what actions are needed to save species from extinction and where they should be directed (Rodrigues et al., 2006). The IUCN Red List therefore plays a fundamental role in guiding scientific research, influencing allocation of resources for conservation, and informing policies and conventions (especially international ones) (Rodrigues et al., 2006). Both lists also provide useful information about the assessed species, including their geographic range, ecology, natural history, and the main threats to their survival. It seems reasonable to assume that while regional lists are critical to decision makers within a given country, serving as a basis for the elaboration of national public policies and during the creation of conservation units and other legally protected areas, global lists, which can also guide such actions within a bigger scenario, may function as a “barometer of life” (an expression the IUCN often uses to describe its own potential) at a global scale. The global list gains a greater visibility than national lists, since it is internationally recognized, and is fundamental for the conservation of species with wide geographic distribution.

Assessing the extinction risk of a species is not an easy task since there are uncertainties and predictions throughout the process. We thus recognize the quality of the work that is done by the authorities responsible for evaluations and recommend that communication and information exchange between authorities and researchers be improved. Perhaps the best way to avoid future divergences between lists (especially for endemic species) would be to undertake a joint assessment between the authorities responsible for the national and global assessments. It is also extremely important to keep the lists updated so that they always reflect the current status of each species. Standardizing both the type of information and the data itself to be used in those assessments would, if possible, also be of great value, as would be the presentation, by the Brazilian Red Book, of the conservation status of all species at the specific level (as we have mentioned, some species were evaluated only at the subspecific level).

We also recommend special attention when making future conservation status assessments of species that, although endemic, were classified with different status in each of the lists (see table 3). Additionally, it is important to focus on species classified as Data Deficient since the main reason that leads a species to be classified as such is the lack of adequate information about its distribution and/or its population (ICMBio/MMA, 2018). Thus, the possibility that a given species classified as Data Deficient is threatened should not be overlooked.

Finally, we would like to mention that, while we focused on two main lists in this article, several other lists could be similarly analyzed. The larger the scale, the harder it is to detect and identify eventual regional discrepancies. Thus, state and biome lists, for example, can also be important, especially in a country of continental dimensions like Brazil. Indeed, while a few Brazilian states have their own lists of threatened fauna, most states still lack these (see Brito, 2008). Analyses at smaller scales may allow more accurate conclusions and, when interpreted together, tend to promote a better understanding of how threatened a species really is. In this regard, some recent studies deserve to be highlighted because they have proposed novel approaches related to conservation status assessments using, for example, data on habitat preference and population abundance (e.g. Santini et al., 2019), or on ecological traits (e.g. Davidson et al., 2009). It is also important to highlight that endemism is a relative measure related to the idea of habitat restriction. Since all species end up being endemic to a certain area (although this area may be large enough to correspond to several countries, for example), care must be taken when using this concept. Still, we believe that national lists may be easier to incorporate into effective conservation strategies than international lists. Conflicts in conservation policy can be avoided if the evaluation process is not confounded by processes that do not operate within the study area. Nonetheless, we believe that the use of both global and national lists in a complementary way (or at least the mention, in the publications, of how threatened the studied species is, both at the global level and where the corresponding study took place) tends to make conservation studies and publications more comprehensible, providing readers with a better understanding of how threatened the studied species is.

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Supplementary material

Table 1s. Mammal species, their conservation status according to the Brazilian Red Book (BR status) and to the IUCN Red List (IUCN status), whether they are endemic or not to Brazil, and the year in which their conservation status was analyzed: E, endemic; * species that were evaluated only as subspecies by the Brazilian Red Book.

| Species          | Order            | Status  | Year | BR   | IUCN | E  |
|------------------|------------------|---------|------|------|------|----|
| Caluromys lanatus| Didelphimorphia  | LC      | 2013 | 2013 | 2015 | No |
| Caluromys philander| Didelphimorphia | LC      | 2013 | 2013 | 2015 | No |
| Caluromysiops irrupta | Didelphimorphia | CR      | 2013 | 2013 | 2015 | No |
| Chironectes minimus | Didelphimorphia | DD      | 2013 | 2013 | 2015 | No |
| Cryptonanus agricolai | Didelphimorphia | LC      | 2013 | 2013 | 2016 | Yes|
| Cryptonanus chacoensis | Didelphimorphia | DD      | 2013 | 2013 | 2016 | No |
| Cryptonanus guahybae | Didelphimorphia | DD      | 2013 | 2013 | 2016 | Yes|
| Didelphis albiventris | Didelphimorphia | LC      | 2013 | 2013 | 2015 | No |
| Didelphis aurita  | Didelphimorphia  | LC      | 2013 | 2013 | 2015 | No |
| Didelphis imperfecta | Didelphimorphia | LC      | 2013 | 2013 | 2015 | No |
| Didelphis marsupialis | Didelphimorphia | DD      | 2013 | 2013 | 2016 | No |
| Glironia venusta  | Didelphimorphia  | LC      | 2013 | 2013 | 2015 | No |
| Gracilinanus agilis | Didelphimorphia | LC      | 2013 | 2013 | 2015 | No |
| Gracilinanus emilae | Didelphimorphia | LC      | 2013 | 2013 | 2015 | No |
| Gracilinanus microtarsus | Didelphimorphia | LC      | 2013 | 2013 | 2015 | No |
| Hyladelphys kalinowskii | Didelphimorphia | LC      | 2013 | 2013 | 2016 | No |
| Lutreolina crassicaudata | Didelphimorphia | LC      | 2013 | 2013 | 2016 | No |
| Marmosa constantiae | Didelphimorphia | DD      | 2013 | 2013 | 2016 | No |
| Marmosa demerarai | Didelphimorphia  | LC      | 2013 | 2013 | 2015 | No |
| Marmosa lepida    | Didelphimorphia  | LC      | 2013 | 2013 | 2016 | No |
| Marmosa murina    | Didelphimorphia  | LC      | 2013 | 2013 | 2015 | No |
| Marmosa paraguayana | Didelphimorphia | LC      | 2013 | 2013 | 2015 | No |
| Marmosa regina    | Didelphimorphia  | LC      | 2013 | 2013 | 2015 | No |
| Marmosops bishopi | Didelphimorphia  | LC      | 2013 | 2013 | 2016 | No |
| Marmosops impavidus | Didelphimorphia | LC      | 2013 | 2013 | 2015 | No |
| Marmosops incanus | Didelphimorphia  | LC      | 2013 | 2013 | 2015 | Yes|
| Marmosops neblina | Didelphimorphia  | LC      | 2013 | 2013 | 2015 | No |
| Marmosops noctivagus | Didelphimorphia | LC      | 2013 | 2013 | 2015 | No |
| Marmosops ocellatus | Didelphimorphia | NT      | 2013 | 2013 | 2016 | No |
| Marmosops parvidens | Didelphimorphia | LC      | 2013 | 2013 | 2016 | No |
| Marmosops paulensis | Didelphimorphia | VU      | 2013 | 2013 | 2016 | Yes|
| Species                  | Order              | BR | IUCN | BR | IUCN | E |
|-------------------------|--------------------|----|------|----|------|---|
| Marmosops pinheiroi     | Didelphimorphia    | LC | LC   | 2013 | 2015 | No |
| Metachirus nudicaudatus | Didelphimorphia    | LC | LC   | 2013 | 2015 | No |
| Monodelphis americana   | Didelphimorphia    | LC | LC   | 2013 | 2016 | No |
| Monodelphis brevicaudata| Didelphimorphia    | LC | LC   | 2013 | 2015 | No |
| Monodelphis dimidiata   | Didelphimorphia    | LC | LC   | 2013 | 2016 | No |
| Monodelphis domestica   | Didelphimorphia    | LC | LC   | 2013 | 2016 | No |
| Monodelphis emiliae     | Didelphimorphia    | LC | LC   | 2013 | 2015 | No |
| Monodelphis glorina     | Didelphimorphia    | LC | LC   | 2013 | 2016 | No |
| Monodelphis iheringi    | Didelphimorphia    | NT | DD   | 2013 | 2016 | Yes |
| Monodelphis kunsi       | Didelphimorphia    | LC | LC   | 2013 | 2015 | No |
| Monodelphis scalops     | Didelphimorphia    | LC | LC   | 2013 | 2016 | No |
| Monodelphis unistrata   | Didelphimorphia    | DD | CR   | 2013 | 2016 | No |
| Philander andersoni     | Didelphimorphia    | LC | LC   | 2013 | 2016 | No |
| Philander frenatus      | Didelphimorphia    | LC | LC   | 2013 | 2016 | No |
| Philander mcilhennyi    | Didelphimorphia    | LC | LC   | 2013 | 2015 | No |
| Philander opossum       | Didelphimorphia    | LC | LC   | 2013 | 2016 | No |
| Thylamys karimii        | Didelphimorphia    | LC | VU   | 2013 | 2016 | Yes |
| Thylamys macrurus       | Didelphimorphia    | EN | NT   | 2013 | 2014 | No |
| Thylamys velutinus      | Didelphimorphia    | VU | NT   | 2013 | 2016 | Yes |
| Bradypus torquatus      | Pilosa             | LC | LC   | 2013 | 2013 | Yes |
| Bradypus variegatus     | Pilosa             | LC | LC   | 2013 | 2013 | No |
| Cyclopes didactylus     | Pilosa             | LC | LC   | 2013 | 2013 | No |
| Choleopus didactylus    | Pilosa             | LC | LC   | 2013 | 2013 | No |
| Choleopus hoffmanni     | Pilosa             | DD | LC   | 2013 | 2013 | No |
| Myrmecophaga tridactyla | Pilosa             | VU | VU   | 2013 | 2013 | No |
| Tamandua tetradactyla   | Pilosa             | LC | LC   | 2013 | 2013 | No |
| Cabassous tatouay       | Cingulata          | DD | LC   | 2013 | 2013 | No |
| Cabassous uncininctus   | Cingulata          | LC | LC   | 2013 | 2013 | No |
| Dasypus hybridus        | Cingulata          | DD | NT   | 2013 | 2013 | No |
| Dasypus kappleri        | Cingulata          | LC | LC   | 2013 | 2013 | No |
| Dasypus novemcinctus    | Cingulata          | LC | LC   | 2013 | 2013 | No |
| Dasypus septemcinctus   | Cingulata          | LC | LC   | 2013 | 2013 | No |
| Euphractus sexcinctus   | Cingulata          | LC | LC   | 2013 | 2013 | No |
| Priodontes maximus      | Cingulata          | VU | VU   | 2013 | 2013 | No |
| Tolypeutes matacus      | Cingulata          | DD | NT   | 2013 | 2013 | No |
| Tolypeutes tricinctus   | Cingulata          | EN | VU   | 2013 | 2013 | Yes |
| Tapirus terrestris      | Perissodactyla     | VU | VU   | 2012 | 2018 | No |
| Blastocerus dichotomus  | Artiodactyla       | VU | VU   | 2012 | 2016 | No |
| Mazama americana        | Artiodactyla       | DD | DD   | 2012 | 2015 | No |
| Species            | Order              | Status | Year | E  |
|--------------------|--------------------|--------|------|----|
| Mazama bororo      | Artiodactyla       | VU VU  | 2012 | 2015 Yes |
| Mazama gouazoubira | Artiodactyla       | LC LC  | 2012 | 2015 No  |
| Mazama nana        | Artiodactyla       | VU VU  | 2012 | 2015 No  |
| Mazama nemorivaga  | Artiodactyla       | DD LC  | 2012 | 2016 No  |
| Odocoileus virginianus | Artiodactyla  | DD LC  | 2012 | 2015 No  |
| Ozotoceros bezoarticus | *Artiodactyla  | VU NT  | 2012 | 2015 No  |
| Pecari tajacu      | Artiodactyla       | LC LC  | 2012 | 2011 No  |
| Tayassu pecari     | Artiodactyla       | VU VU  | 2012 | 2012 No  |
| Trichechus inunguis | Sirenia            | VU VU  | 2012 | 2016 No  |
| Trichechus manatus | Sirenia            | EN VU  | 2012 | 2008 No  |
| Eubalaena australis | Cetacea            | EN LC  | 2012 | 2017 No  |
| Balaenoptera acutorostrata | Cetacea  | LC LC  | 2012 | 2018 No  |
| Balaenoptera bonaerensis | Cetacea  | DD NT  | 2012 | 2018 No  |
| Balaenoptera borealis | Cetacea            | EN EN  | 2012 | 2018 No  |
| Balaenoptera edeni | Cetacea            | DD LC  | 2012 | 2017 No  |
| Balaenoptera musculus | Cetacea          | CR EN  | 2012 | 2018 No  |
| Balaenoptera physalus | Cetacea           | EN VU  | 2012 | 2018 No  |
| Megaptera novaeangliae | Cetacea          | NT LC  | 2012 | 2018 No  |
| Delphinus delphis  | Cetacea            | DD LC  | 2012 | 2008 No  |
| Feresa attenuata   | Cetacea            | LC LC  | 2012 | 2017 No  |
| Globicephala macrorhynchus | Cetacea  | LC LC  | 2012 | 2018 No  |
| Globicephala melas | Cetacea            | LC LC  | 2012 | 2018 No  |
| Grampus griseus    | Cetacea            | LC LC  | 2012 | 2018 No  |
| Lagenodelphis hosei | Cetacea            | DD LC  | 2012 | 2018 No  |
| Orcinus Orca       | Cetacea            | LC DD  | 2012 | 2017 No  |
| Peponocephala electra | Cetacea         | LC LC  | 2012 | 2019 No  |
| Pseudorca crassidens | Cetacea            | LC NT  | 2012 | 2018 No  |
| Sotalia fluviatilis | Cetacea            | NT DD  | 2012 | 2010 No  |
| Sotalia guianensis | Cetacea            | VU NT  | 2012 | 2017 No  |
| Stenella attenuata | Cetacea            | LC LC  | 2012 | 2018 No  |
| Stenella clymene   | Cetacea            | LC LC  | 2012 | 2018 No  |
| Stenella coeruleoalba | Cetacea          | LC LC  | 2012 | 2018 No  |
| Stenella frontalis | Cetacea            | DD LC  | 2012 | 2018 No  |
| Stenella longirostris | Cetacea           | DD LC  | 2012 | 2018 No  |
| Steno bredanensis  | Cetacea            | LC LC  | 2012 | 2018 No  |
| Tursiops truncatus | Cetacea            | DD LC  | 2012 | 2018 No  |
| Inia geoffrensis   | Cetacea            | EN EN  | 2012 | 2018 No  |
| Kogia breviceps    | Cetacea            | LC DD  | 2012 | 2012 No  |
| Kogia sima         | Cetacea            | LC DD  | 2012 | 2008 No  |
| Physeter macrocephalus | Cetacea      | VU VU  | 2012 | 2008 No  |
| Species                        | Order       | Status | Year  | BR | IUCN | E  |
|-------------------------------|-------------|--------|-------|----|------|----|
| Pontoporia blainvillei       | Cetacea     | CR     | 2012  | 2017 | No   |    |
| Ziphius cavirostris           | Cetacea     | DD     | 2012  | 2008 | No   |    |
| Aotus azarae*                 | Primates    | DD     | 2013  | 2015 | No   |    |
| Aotus nancymae                | Primates    | LC     | 2013  | 2017 | No   |    |
| Aotus nigriceps               | Primates    | LC     | 2013  | 2015 | No   |    |
| Aotus trivirgatus             | Primates    | LC     | 2013  | 2015 | No   |    |
| Aotus vociferans              | Primates    | LC     | 2013  | 2015 | No   |    |
| Alouatta belzebul             | Primates    | VU     | 2013  | 2019 | Yes  |    |
| Alouatta caraya               | Primates    | NT     | 2013  | 2008 | No   |    |
| Alouatta discolor             | Primates    | VU     | 2013  | 2008 | Yes  |    |
| Alouatta guariba*             | Primates    | VU     | 2013  | 2008 | No   |    |
| Alouatta juara                | Primates    | LC     | 2013  | 2008 | No   |    |
| Alouatta macconnelli          | Primates    | LC     | 2013  | 2008 | No   |    |
| Alouatta nigerimina           | Primates    | LC     | 2013  | 2015 | Yes  |    |
| Alouatta puruensis            | Primates    | NT     | 2013  | 2008 | No   |    |
| Alouatta ululata              | Primates    | EN     | 2013  | 2008 | Yes  |    |
| Ateles belzebuth              | Primates    | VU     | 2013  | 2019 | No   |    |
| Ateles chamek                 | Primates    | VU     | 2013  | 2008 | No   |    |
| Ateles marginatus             | Primates    | EN     | 2013  | 2019 | Yes  |    |
| Ateles paniscus               | Primates    | LC     | 2013  | 2019 | No   |    |
| Brachyteles arachnoides       | Primates    | EN     | 2013  | 2019 | Yes  |    |
| Brachyteles hypoxanthus       | Primates    | CR     | 2013  | 2019 | Yes  |    |
| Lagothrix cana                | Primates    | EN     | 2013  | 2008 | No   |    |
| Lagothrix lagotricha          | Primates    | VU     | 2013  | 2008 | No   |    |
| Lagothrix poeppigii           | Primates    | VU     | 2013  | 2008 | No   |    |
| Callibella humilis            | Primates    | LC     | 2013  | 2015 | Yes  |    |
| Callimico goeldii             | Primates    | LC     | 2013  | 2008 | No   |    |
| Callithrix aurita             | Primates    | EN     | 2013  | 2015 | Yes  |    |
| Callithrix flaviceps          | Primates    | EN     | 2013  | 2008 | Yes  |    |
| Callithrix geoffroyi          | Primates    | LC     | 2013  | 2015 | Yes  |    |
| Callithrix jacobus            | Primates    | LC     | 2013  | 2015 | Yes  |    |
| Callithrix kuhlii             | Primates    | NT     | 2013  | 2015 | Yes  |    |
| Callithrix penicillata        | Primates    | LC     | 2013  | 2015 | Yes  |    |
| Cebuella pygmaea*             | Primates    | LC     | 2013  | 2015 | No   |    |
| Leontopithecus caissara       | Primates    | EN     | 2013  | 2008 | Yes  |    |
| Leontopithecus chrysomelas    | Primates    | EN     | 2013  | 2008 | Yes  |    |
| Leontopithecus chrysopygus    | Primates    | EN     | 2013  | 2008 | Yes  |    |
| Leontopithecus rosalia        | Primates    | EN     | 2013  | 2015 | Yes  |    |
| Mico acariensis               | Primates    | LC     | 2013  | 2015 | Yes  |    |
| Mico argentatus               | Primates    | LC     | 2013  | 2015 | Yes  |    |
Table 1s. (Cont.)

| Species          | Order          | Status | Year |       |
|------------------|----------------|--------|------|-------|
|                  |                | BR     | IUCN |       |
| Mico chrysoleucos| Primates       | LC     | LC   | 2013  |
| Mico emiliae     | Primates       | LC     | LC   | 2013  |
| Mico humeralifer | Primates       | LC     | DD   | 2013  |
| Mico intermedius | Primates       | LC     | LC   | 2013  |
| Mico leucippe    | Primates       | LC     | VU   | 2013  |
| Mico marcai      | Primates       | DD     | DD   | 2013  |
| Mico mauesi      | Primates       | LC     | LC   | 2013  |
| Mico melanurus   | Primates       | NT     | LC   | 2013  |
| Mico nigripicep  | Primates       | LC     | NT   | 2013  |
| Mico rondoni     | Primates       | VU     | VU   | 2013  |
| Mico saterei     | Primates       | LC     | LC   | 2013  |
| Saguinus bicolor | Primates       | CR     | CR   | 2013  |
| Saguinus fuscicollis* | Primates | LC     | LC   | 2013  |
| Saguinus fuscus  | Primates       | LC     | LC   | 2013  |
| Saguinus imperator* | Primates | LC     | LC   | 2013  |
| Saguinus inustus | Primates       | LC     | LC   | 2013  |
| Saguinus labiatus* | Primates | LC     | LC   | 2013  |
| Saguinus martinsi* | Primates | NT     | NT   | 2013  |
| Saguinus midas   | Primates       | LC     | LC   | 2013  |
| Saguinus mystax* | Primates       | LC     | LC   | 2013  |
| Saguinus niger   | Primates       | VU     | VU   | 2013  |
| Saguinus nigricollis | Primates | DD     | LC   | 2013  |
| Cebus albifrons  | Primates       | LC     | LC   | 2013  |
| Cebus cuscins    | Primates       | DD     | NT   | 2013  |
| Cebus kaapori    | Primates       | CR     | CR   | 2013  |
| Saimiri boliviensis | Primates | LC     | LC   | 2013  |
| Saimiri sciuereus| Primates       | LC     | LC   | 2013  |
| Saimiri ustus    | Primates       | NT     | NT   | 2013  |
| Saimiri vanzolini | Primates     | VU     | VU   | 2013  |
| Sapajus apella   | Primates       | LC     | LC   | 2013  |
| Sapajus cay      | Primates       | VU     | LC   | 2013  |
| Sapajus flavius  | Primates       | EN     | CR   | 2013  |
| Sapajus libidinosus | Primates | NT     | NT   | 2013  |
| Sapajus macrocephalus | Primates | LC     | LC   | 2013  |
| Sapajus nigritus* | Primates     | NT     | NT   | 2013  |
| Sapajus robustus | Primates       | EN     | EN   | 2013  |
| Sapajus xanthosternos | Primates | EN     | CR   | 2013  |
| Cacajao ayresi   | Primates       | DD     | VU   | 2013  |
| Cacajao calvus*  | Primates       | LC     | VU   | 2013  |
| Cacajao hosomi   | Primates       | EN     | VU   | 2013  |
Table 1s. (Cont.)

| Species                     | Order          | Status | Year | E |
|-----------------------------|----------------|--------|------|---|
| *Cacajao melanocephalus*    | Primates       | LC     | 2013 | 2015 | No |
| *Callicebus baptista*       | Primates       | DD     | 2013 | 2015 | Yes |
| *Callicebus barbarabrownae* | Primates       | CR     | 2013 | 2008 | Yes |
| *Callicebus bernhardi*      | Primates       | LC     | 2013 | 2015 | Yes |
| *Callicebus brunnneus*      | Primates       | NT     | 2013 | 2008 | No |
| *Callicebus caligatus*      | Primates       | LC     | 2013 | 2015 | Yes |
| *Callicebus cinerascens*    | Primates       | LC     | 2013 | 2015 | Yes |
| *Callicebus coimbrai*       | Primates       | EN     | 2013 | 2008 | Yes |
| *Callicebus cupreus*        | Primates       | LC     | 2013 | 2015 | No  |
| *Callicebus donacophilus*   | Primates       | DD     | 2013 | 2015 | No  |
| *Callicebus dubius*         | Primates       | LC     | 2013 | 2016 | No  |
| *Callicebus hoffmannsi*     | Primates       | LC     | 2013 | 2015 | Yes |
| *Callicebus lucifer*        | Primates       | LC     | 2013 | 2015 | No  |
| *Callicebus lugens*         | Primates       | LC     | 2013 | 2015 | No  |
| *Callicebus melanochir*     | Primates       | VU     | 2013 | 2008 | Yes |
| *Callicebus moloch*         | Primates       | LC     | 2013 | 2008 | Yes |
| *Callicebus nigrifrons*     | Primates       | LC     | 2013 | 2008 | Yes |
| *Callicebus personatus*     | Primates       | VU     | 2013 | 2008 | Yes |
| *Callicebus purinus*        | Primates       | LC     | 2013 | 2015 | Yes |
| *Callicebus regulus*        | Primates       | LC     | 2013 | 2015 | Yes |
| *Callicebus stephennashi*   | Primates       | DD     | 2013 | 2015 | Yes |
| *Callicebus torquatus*      | Primates       | LC     | 2013 | 2015 | Yes |
| *Callicebus vieirai*        | Primates       | DD     | 2013 | 2015 | Yes |
| *Chiropotes albinasus*      | Primates       | NT     | 2013 | 2008 | Yes |
| *Chiropotes chiroptes*      | Primates       | LC     | 2013 | 2015 | No  |
| *Chiropotes satanas*        | Primates       | CR     | 2013 | 2008 | Yes |
| *Chiropotes utahickae*      | Primates       | VU     | 2013 | 2008 | Yes |
| *Pithecia albicans*         | Primates       | LC     | 2013 | 2015 | Yes |
| *Pithecia monachus*         | Primates       | LC     | 2013 | 2015 | No  |
| *Pithecia pithecia*         | Primates       | LC     | 2013 | 2015 | No  |
| *Atelocynus microtis*       | Carnivora      | VU     | 2012 | 2011 | No  |
| *Cerdocyon thous*           | Carnivora      | LC     | 2012 | 2015 | No  |
| *Chrysocyon brachyurus*     | Carnivora      | VU     | 2012 | 2015 | No  |
| *Lycalopex gymnocercus*     | Carnivora      | LC     | 2012 | 2016 | No  |
| *Lycalopex vetulus*         | Carnivora      | VU     | 2012 | 2008 | Yes |
| *Speothos venaticus*        | Carnivora      | VU     | 2012 | 2011 | No  |
| *Leopardus colocolo*        | Carnivora      | VU     | 2012 | 2014 | No  |
| *Leopardus geoffroyi*       | Carnivora      | VU     | 2012 | 2014 | No  |
| *Leopardus guttulus*        | Carnivora      | VU     | 2014 | 2014 | No  |
| *Leopardus pardalis*        | Carnivora      | LC     | 2012 | 2014 | No  |
Table 1s. (Cont.)

| Species                      | Order     | Status BR | Status IUCN | Year BR | Year IUCN | E |
|------------------------------|-----------|-----------|-------------|---------|-----------|---|
| *Leopardus tigrinus*         | Carnivora | EN        | VU          | 2014    | 2016      | No|
| *Leopardus wiedii*           | Carnivora | VU        | NT          | 2012    | 2014      | No|
| *Panthera onca*              | Carnivora | VU        | NT          | 2012    | 2016      | No|
| *Puma concolor*              | Carnivora | VU        | LC          | 2012    | 2014      | No|
| *Puma yagouroundi*           | Carnivora | VU        | LC          | 2012    | 2014      | No|
| *Conepatus chinga*           | Carnivora | LC        | LC          | 2012    | 2015      | No|
| *Conepatus semistriatus*     | Carnivora | LC        | LC          | 2012    | 2015      | No|
| *Eira barbara*               | Carnivora | LC        | LC          | 2012    | 2015      | No|
| *Galictis cuja*              | Carnivora | LC        | LC          | 2012    | 2015      | No|
| *Galictis vittata*           | Carnivora | LC        | LC          | 2012    | 2015      | No|
| *Lontra longicaudis*         | Carnivora | NT        | NT          | 2012    | 2014      | No|
| *Mustela africana*           | Carnivora | DD        | LC          | 2012    | 2015      | No|
| *Pteronura brasiliensis*     | Carnivora | VU        | EN          | 2012    | 2014      | No|
| *Otaria flavescens*          | Carnivora | LC        | LC          | 2012    | 2015      | No|
| *Bassaricyon allenii*        | Carnivora | LC        | LC          | 2012    | 2015      | No|
| *Nasua nasua*                | Carnivora | LC        | LC          | 2012    | 2015      | No|
| *Potos flavus*               | Carnivora | LC        | LC          | 2012    | 2015      | No|
| *Procyon cancrivorus*        | Carnivora | LC        | LC          | 2012    | 2015      | No|
| *Centronycteris maximiliani* | Chiroptera | LC       | LC          | 2013    | 2016      | No|
| *Cormura brevirostris*       | Chiroptera | LC       | LC          | 2013    | 2016      | No|
| *Cyttarops alecto*           | Chiroptera | DD       | LC          | 2013    | 2016      | No|
| *Diclidurus albus*           | Chiroptera | LC       | LC          | 2013    | 2016      | No|
| *Diclidurus ingens*          | Chiroptera | DD       | DD          | 2013    | 2016      | No|
| *Diclidurus isabella*        | Chiroptera | DD       | LC          | 2013    | 2016      | No|
| *Diclidurus scutatus*        | Chiroptera | DD       | LC          | 2013    | 2016      | No|
| *Peropteryx kappleri*        | Chiroptera | LC       | LC          | 2013    | 2016      | No|
| *Peropteryx leucoptera*      | Chiroptera | LC       | LC          | 2013    | 2015      | No|
| *Peropteryx macrotis*        | Chiroptera | LC       | LC          | 2013    | 2015      | No|
| *Peropteryx trinitatis*      | Chiroptera | DD       | DD          | 2013    | 2016      | No|
| *Rhynchonycteris naso*       | Chiroptera | LC       | LC          | 2013    | 2016      | No|
| *Saccopteryx bilineata*      | Chiroptera | LC       | LC          | 2013    | 2015      | No|
| *Saccopteryx canescens*      | Chiroptera | LC       | LC          | 2013    | 2015      | No|
| *Saccopteryx gymnura*        | Chiroptera | LC       | DD          | 2013    | 2016      | No|
| *Saccopteryx leptura*        | Chiroptera | LC       | LC          | 2013    | 2015      | No|
| *Furipterus horrens*         | Chiroptera | VU       | LC          | 2013    | 2016      | No|
| *Cynomops abrusus*           | Chiroptera | LC       | DD          | 2013    | 2016      | No|
| *Cynomops greenhalli*        | Chiroptera | DD       | LC          | 2013    | 2015      | No|
| *Cynomops paranus*           | Chiroptera | DD       | DD          | 2013    | 2016      | No|
| *Cynomops planirostris*      | Chiroptera | LC       | LC          | 2013    | 2015      | No|
| *Eumops auripendulus*        | Chiroptera | LC       | LC          | 2013    | 2015      | No|
| Species                  | Order     | Status | Year | BR   | IUCN | E  |
|-------------------------|-----------|--------|------|------|------|----|
| Eumops bonariensis      | Chiroptera| DD     | LC   | 2013 | 2016 | No |
| Eumops delticus         | Chiroptera| LC     | DD   | 2013 | 2016 | No |
| Eumops glaucinus        | Chiroptera| LC     | LC   | 2013 | 2016 | No |
| Eumops hansae           | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Eumops maurus           | Chiroptera| LC     | DD   | 2013 | 2016 | No |
| Eumops patagonicus      | Chiroptera| DD     | LC   | 2013 | 2015 | No |
| Eumops perotis          | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Eumops trumbulli        | Chiroptera| LC     | LC   | 2013 | 2018 | No |
| Molossops neglectus     | Chiroptera| LC     | DD   | 2013 | 2016 | No |
| Molossops temminckii    | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Molessus aztecus        | Chiroptera| DD     | LC   | 2013 | 2018 | No |
| Molessus coibensis      | Chiroptera| DD     | LC   | 2013 | 2016 | No |
| Molessus currentum      | Chiroptera| DD     | LC   | 2013 | 2016 | No |
| Molessus molossus       | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Molessus pretiosus      | Chiroptera| DD     | LC   | 2013 | 2018 | No |
| Molessus rufus          | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Neoplatymops mattogrossensis | Chiroptera| LC     | LC   | 2013 | 2018 | No |
| Nyctinomops aurispinosus| Chiroptera| LC     | LC   | 2013 | 2018 | No |
| Nyctinomops laticaudatus| Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Nyctinomops macrotis    | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Promops centralis       | Chiroptera| LC     | LC   | 2013 | 2018 | No |
| Promops nasutus         | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Tadarida brasiliensis   | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Pteronotus davyi        | Chiroptera| LC     | LC   | 2013 | 2018 | No |
| Pteronotus gymnnonotus  | Chiroptera| LC     | LC   | 2013 | 2018 | No |
| Pteronotus parnessii    | Chiroptera| LC     | LC   | 2013 | 2016 | No |
| Pteronotus personatus   | Chiroptera| LC     | LC   | 2013 | 2016 | No |
| Natalus macrourus       | Chiroptera| VU     | NT   | 2013 | 2016 | No |
| Noctilio albiventris    | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Noctilio leporinus      | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Ametrida centurio       | Chiroptera| LC     | LC   | 2013 | 2016 | No |
| Anoura caudifer         | Chiroptera| LC     | LC   | 2013 | 2016 | No |
| Anoura Geoffroyi        | Chiroptera| LC     | LC   | 2013 | 2016 | No |
| Artibeus concolor       | Chiroptera| LC     | LC   | 2013 | 2016 | No |
| Artibeus fimbriatus     | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Artibeus lituratus      | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Artibeus obscurus       | Chiroptera| LC     | LC   | 2013 | 2016 | No |
| Artibeus planirostris   | Chiroptera| LC     | LC   | 2013 | 2015 | No |
| Carolia benkeithi       | Chiroptera| LC     | LC   | 2013 | 2016 | No |
| Carolia brevicauda      | Chiroptera| LC     | LC   | 2013 | 2016 | No |
| Species                  | Order     | Status | Year 1 | Year 2 | E |
|--------------------------|-----------|--------|--------|--------|---|
| Carollia perspicillata   | Chiroptera| LC     | LC     | 2013   | 2015| No |
| Chiroderma doriae        | Chiroptera| LC     | LC     | 2013   | 2015| No |
| Chiroderma trinitatum    | Chiroptera| LC     | LC     | 2013   | 2016| No |
| Chiroderma villosum      | Chiroptera| LC     | LC     | 2013   | 2015| No |
| Chiroderma vizottoi      | Chiroptera| DD     | DD     | 2013   | 2016| Yes|
| Choeroniscus godmani    | Chiroptera| DD     | LC     | 2013   | 2015| No |
| Choeroniscus minor      | Chiroptera| LC     | LC     | 2013   | 2016| No |
| Chrotopterus auritus     | Chiroptera| LC     | LC     | 2013   | 2015| No |
| Dermanura anderseni     | Chiroptera| DD     | LC     | 2013   | 2016| No |
| Dermanura cinerea        | Chiroptera| DD     | LC     | 2013   | 2016| No |
| Dermanura glauca         | Chiroptera| DD     | LC     | 2013   | 2015| No |
| Dermanura gnoma          | Chiroptera| DD     | LC     | 2013   | 2015| No |
| Desmodus rotundus       | Chiroptera| LC     | LC     | 2013   | 2015| No |
| Diaemus youngii          | Chiroptera| LC     | LC     | 2013   | 2015| No |
| Diphylla ecaudata        | Chiroptera| LC     | LC     | 2013   | 2016| No |
| Dryadonycteris capixaba  | Chiroptera| DD     | DD     | 2013   | 2016| Yes|
| Glossophaga commissaris  | Chiroptera| LC     | LC     | 2013   | 2016| No |
| Glossophaga longirostris| Chiroptera| DD     | LC     | 2013   | 2017| No |
| Glossophaga soricina    | Chiroptera| LC     | LC     | 2013   | 2015| No |
| Glyphonycteris behnii    | Chiroptera| LC     | DD     | 2013   | 2016| No |
| Glyphonycteris davidii   | Chiroptera| LC     | LC     | 2013   | 2018| No |
| Glyphonycteris sylvestris| Chiroptera| LC     | LC     | 2013   | 2018| No |
| Hsunycteris thomasi      | Chiroptera| LC     | LC     | 2013   | 2015| No |
| Lampronycteris brachyotis| Chiroptera| LC     | LC     | 2013   | 2018| No |
| Lichonycteris degener    | Chiroptera| DD     | LC     | 2013   | 2016| No |
| Lionycteris spurrelli    | Chiroptera| LC     | LC     | 2013   | 2018| No |
| Lonchophylla bokermanni  | Chiroptera| NT     | EN     | 2014   | 2016| Yes|
| Lonchophylla dekeyseri   | Chiroptera| EN     | EN     | 2013   | 2016| No |
| Lonchophylla mordax      | Chiroptera| LC     | NT     | 2013   | 2016| Yes|
| Lonchophylla perachil    | Chiroptera| LC     | LC     | 2014   | 2016| Yes|
| Lonchorhina aurita       | Chiroptera| VU     | LC     | 2013   | 2015| No |
| Lonchorhina inusitata    | Chiroptera| DD     | DD     | 2013   | 2016| No |
| Lophostoma brasiliense   | Chiroptera| LC     | LC     | 2013   | 2016| No |
| Lophostoma carrikeri     | Chiroptera| LC     | LC     | 2013   | 2016| No |
| Lophostoma schulzi       | Chiroptera| LC     | LC     | 2013   | 2016| No |
| Lophostoma silvicola     | Chiroptera| LC     | LC     | 2013   | 2016| No |
| Macrophyllum macrophyllum| Chiroptera| LC     | LC     | 2013   | 2015| No |
| Mesophylla macconnelli   | Chiroptera| LC     | LC     | 2013   | 2015| No |
| Micronycteris brossetii | Chiroptera| DD     | DD     | 2013   | 2016| No |
| Micronycteris hirsuta    | Chiroptera| LC     | LC     | 2013   | 2016| No |
| Species                  | Order          | Status | Year       | IUCN | Year       | E  |
|-------------------------|----------------|--------|------------|------|------------|----|
| *Micronycteris megalotis* | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Micronycteris microtis* | Chiroptera     | LC     | 2013       | LC   | 2019       | No |
| *Micronycteris minuta*   | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Micronycteris sanborni* | Chiroptera     | LC     | 2013       | LC   | 2017       | Yes|
| *Micronycteris schmidtorum* | Chiroptera   | LC     | 2013       | LC   | 2016       | No |
| *Mimon bennettii*        | Chiroptera     | LC     | 2013       | LC   | 2018       | No |
| *Mimon crenulatum*       | Chiroptera     | LC     | 2013       | LC   | 2018       | No |
| *Neonycteris pusilla*    | Chiroptera     | DD     | 2013       | DD   | 2016       | Yes|
| *Phyllostoma stenops*    | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Phyllostomus discolor*  | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Phyllostomus elongatus* | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Phyllostomus hastatus*  | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Phyllostomus latifolius*| Chiroptera     | LC     | 2013       | LC   | 2016       | No |
| *Platyrrhinus aurarius*  | Chiroptera     | LC     | 2013       | LC   | 2016       | No |
| *Platyrrhinus brachynephalus* | Chiroptera | LC     | 2013       | LC   | 2015       | No |
| *Platyrrhinus fusciventris* | Chiroptera | LC     | 2013       | LC   | 2016       | No |
| *Platyrrhinus incarum*   | Chiroptera     | LC     | 2013       | LC   | 2016       | No |
| *Platyrrhinus infuscus*  | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Platyrrhinus lineatus*  | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Platyrrhinus recifinus* | Chiroptera     | LC     | 2013       | LC   | 2016       | Yes|
| *Pygoderma biliatum*     | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Rhinophylla fischerae*  | Chiroptera     | LC     | 2013       | LC   | 2016       | No |
| *Rhinophylla pumilio*    | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Scleronycteris ega*     | Chiroptera     | DD     | 2013       | DD   | 2016       | No |
| *Sphaeronycteris toxophyllum* | Chiroptera | DD     | 2013       | LC   | 2017       | No |
| *Sturnira lilium*        | Chiroptera     | LC     | 2013       | LC   | 2016       | No |
| *Sturnira magna*         | Chiroptera     | DD     | 2013       | LC   | 2015       | No |
| *Sturnira tildae*        | Chiroptera     | LC     | 2013       | LC   | 2016       | No |
| *Tonatia bidens*         | Chiroptera     | DD     | 2013       | LC   | 2016       | No |
| *Tonatia saurophila*     | Chiroptera     | LC     | 2013       | LC   | 2018       | No |
| *Trachops cirrhosus*     | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Trinectes nicefori*     | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Uroderma bilobatum*     | Chiroptera     | LC     | 2013       | LC   | 2019       | No |
| *Uroderma magnirostrum*  | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Vampyressa pusilla*     | Chiroptera     | LC     | 2013       | DD   | 2016       | No |
| *Vampyressa thyone*      | Chiroptera     | LC     | 2013       | LC   | 2015       | No |
| *Vampyriscus bidens*     | Chiroptera     | LC     | 2013       | LC   | 2016       | No |
| *Vampyriscus brocki*     | Chiroptera     | LC     | 2013       | LC   | 2016       | No |
| *Vampyrodes caraccioli*  | Chiroptera     | LC     | 2013       | LC   | 2016       | No |
| *Vampyrum spectrum*      | Chiroptera     | LC     | 2013       | NT   | 2018       | No |
Table 1s. (Cont.)

| Species              | Order       | Status | Year | IUCN | E |
|----------------------|-------------|--------|------|------|---|
| Xeronycteris vieirai | Chiroptera  | VU     | DD   | 2013 | 2015 | Yes |
| Thyroptera devivoi   | Chiroptera  | DD     | DD   | 2013 | 2015 | No  |
| Thyroptera discifera | Chiroptera  | DD     | LC   | 2013 | 2018 | No  |
| Thyroptera lavali    | Chiroptera  | DD     | DD   | 2013 | 2016 | No  |
| Thyroptera tricolor  | Chiroptera  | LC     | LC   | 2013 | 2015 | No  |
| Eptesicus andinus    | Chiroptera  | LC     | LC   | 2013 | 2016 | No  |
| Eptesicus brasiliensis | Chiroptera  | LC     | LC   | 2013 | 2015 | No  |
| Eptesicus chiriquinus| Chiroptera  | LC     | LC   | 2013 | 2018 | No  |
| Eptesicus diminutus  | Chiroptera  | LC     | LC   | 2013 | 2016 | No  |
| Eptesicus furinalis  | Chiroptera  | LC     | LC   | 2013 | 2015 | No  |
| Eptesicus taddeii    | Chiroptera  | VU     | DD   | 2013 | 2016 | Yes |
| Histiotus alienus    | Chiroptera  | DD     | DD   | 2013 | 2016 | No  |
| Histiotus laephotis  | Chiroptera  | DD     | LC   | 2013 | 2019 | No  |
| Histiotus macrotus   | Chiroptera  | LC     | LC   | 2013 | 2016 | No  |
| Histiotus montanus   | Chiroptera  | LC     | LC   | 2013 | 2016 | No  |
| Histiotus velatus    | Chiroptera  | LC     | DD   | 2013 | 2016 | No  |
| Lasiurus blossevillii| Chiroptera  | LC     | LC   | 2013 | 2016 | No  |
| Lasiurus castaneus   | Chiroptera  | DD     | DD   | 2013 | 2016 | No  |
| Lasiurus cinereus    | Chiroptera  | LC     | LC   | 2013 | 2015 | No  |
| Lasiurus ebenus       | Chiroptera  | DD     | DD   | 2013 | 2016 | Yes |
| Lasiurus ega         | Chiroptera  | LC     | LC   | 2013 | 2016 | No  |
| Lasiurus egregius     | Chiroptera  | DD     | DD   | 2013 | 2016 | No  |
| Myotis albenscens    | Chiroptera  | LC     | LC   | 2013 | 2015 | No  |
| Myotis dinelli       | Chiroptera  | DD     | LC   | 2013 | 2016 | No  |
| Myotis izecksohni    | Chiroptera  | DD     | DD   | 2013 | 2016 | Yes |
| Myotis lavali        | Chiroptera  | DD     | LC   | 2013 | 2017 | No  |
| Myotis levis         | Chiroptera  | LC     | LC   | 2013 | 2016 | No  |
| Myotis nigricans     | Chiroptera  | LC     | LC   | 2013 | 2019 | No  |
| Myotis riparius      | Chiroptera  | LC     | LC   | 2013 | 2015 | No  |
| Myotis ruber         | Chiroptera  | LC     | NT   | 2013 | 2018 | No  |
| Myotis simus         | Chiroptera  | LC     | DD   | 2013 | 2016 | No  |
| Rhogeessa hussoni    | Chiroptera  | LC     | DD   | 2013 | 2016 | No  |
| Rhogeessa io         | Chiroptera  | DD     | LC   | 2013 | 2016 | No  |
| Cavia apera          | Rodentia    | LC     | LC   | 2014 | 2016 | No  |
| Cavia fulgida        | Rodentia    | LC     | LC   | 2014 | 2016 | Yes |
| Cavia intermedia     | Rodentia    | CR     | CR   | 2014 | 2016 | Yes |
| Cavia magna          | Rodentia    | NT     | LC   | 2014 | 2016 | No  |
| Galea spixii         | Rodentia    | LC     | LC   | 2014 | 2016 | Yes |
| Hydrochoerus hydrochaeris | Rodentia   | LC   | LC   | 2014 | 2016 | No  |
| Kerodon acrobata     | Rodentia    | VU     | DD   | 2014 | 2016 | Yes |
| Species                        | Order     | Status | Year | Status | Year | E  |
|--------------------------------|-----------|--------|------|--------|------|----|
| Kerodon rupestres             | Rodentia  | VU     | 2014 | LC     | 2014 | Yes |
| Abrawayaomys ruschii          | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Akodon azarae                 | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Akodon cursor                 | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Akodon lindberghi             | Rodentia  | LC     | 2014 | DD     | 2014 | Yes |
| Akodon mystax                 | Rodentia  | VU     | 2014 | DD     | 2014 | Yes |
| Akodon montensis              | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Akodon paranaensis            | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Akodon reigi                  | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Akodon sanctipaulensis        | Rodentia  | DD     | 2014 | DD     | 2014 | Yes |
| Bibimys labiosus              | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Blarinomys breviceps          | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Brucepattersonius griserufescens | Rodentia | LC     | 2014 | DD     | 2014 | Yes |
| Brucepattersonius heringi     | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Brucepattersonius igniventris | Rodentia  | DD     | 2014 | DD     | 2014 | Yes |
| Brucepattersonius soncinus    | Rodentia  | LC     | 2014 | DD     | 2014 | Yes |
| Calomys callidus              | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Calomys callosus              | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Calomys expulsus              | Rodentia  | LC     | 2014 | LC     | 2014 | Yes |
| Calomys laucha                | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Calomys tener                 | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Calomys tocantinsi            | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Cerradomys maracajuensis      | Rodentia  | LC     | 2014 | LC     | 2014 | Yes |
| Cerradomys marinus            | Rodentia  | LC     | 2014 | LC     | 2014 | Yes |
| Cerradomys scotti             | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Cerradomys subflavus          | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Delomys dorsalis              | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Delomys sublineatus           | Rodentia  | LC     | 2014 | LC     | 2014 | Yes |
| Deltamys kempii               | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Drymoreomys albimaculatus     | Rodentia  | DD     | 2014 | NT     | 2014 | Yes |
| Euryoryzomys lamia            | Rodentia  | EN     | 2014 | VU     | 2014 | Yes |
| Euryoryzomys russatus         | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Euryoryzomys emmonsae         | Rodentia  | LC     | 2014 | DD     | 2014 | Yes |
| Euryoryzomys macconnelli      | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Euryoryzomys nitidus          | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Holochilus brasiensis         | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Holochilus chacarius          | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Holochilus sciureus           | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Hylaeamys laticeps            | Rodentia  | LC     | 2014 | VU     | 2014 | Yes |
| Hylaeamys megacephalus        | Rodentia  | LC     | 2014 | LC     | 2014 | No  |
| Species                        | Order   | Status  | Year   | Status  | Year   | E   |
|-------------------------------|---------|---------|--------|---------|--------|-----|
| *Hylaeamys oniscus*           | Rodentia| NT      | 2014   | NT      | 2014   | Yes |
| *Hylaeamys perenensis*        | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Hylaeamys yunganus*          | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Juliomys pictipes*           | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Juliomys rimosfrons*         | Rodentia| NT      | 2014   | NT      | 2014   | Yes |
| *Kunsia tomentosus*           | Rodentia| DD      | 2014   | LC      | 2014   | No  |
| *Lundomys molitor*            | Rodentia| DD      | 2014   | LC      | 2014   | No  |
| *Microakodontomys transitorius* | Rodentia | EN    | 2014   | EN      | 2014   | Yes |
| *Neacomys minutus*            | Rodentia| LC      | 2014   | LC      | 2014   | Yes |
| *Neacomys dubosti*            | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Neacomys musseri*            | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Neacomys paracou*            | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Neacomys spinosus*           | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Necromys lasiurus*           | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Necromys lenguarum*          | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Nectomys apicalis*           | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Nectomys rattus*             | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Nectomys squamipes*          | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Neusticomys ferreirai*       | Rodentia| LC      | 2014   | DD      | 2014   | Yes |
| *Neusticomys oyapocki*        | Rodentia| LC      | 2014   | DD      | 2014   | No  |
| *Oecomys auyantepui*          | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oecomys bicolor*             | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oecomys catherinae*          | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oecomys cleberi*             | Rodentia| LC      | 2014   | DD      | 2014   | Yes |
| *Oecomys concolor*            | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oecomys mamorae*             | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oecomys paricola*            | Rodentia| LC      | 2014   | DD      | 2014   | No  |
| *Oecomys rex*                 | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oecomys roberti*             | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oecomys rutilus*             | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oecomys superans*            | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oecomys trinitatis*          | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oligoryzomys chacoensis*     | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oligoryzomys flavescens*     | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oligoryzomys microtis*       | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oligoryzomys moojeni*        | Rodentia| LC      | 2014   | DD      | 2014   | Yes |
| *Oligoryzomys nigripes*       | Rodentia| LC      | 2014   | LC      | 2014   | No  |
| *Oligoryzomys rupestris*      | Rodentia| EN      | 2014   | DD      | 2014   | Yes |
| *Oligoryzomys stramineus*     | Rodentia| LC      | 2014   | LC      | 2014   | Yes |
| *Oxymycterus amazonicus*      | Rodentia| LC      | 2014   | LC      | 2014   | Yes |
| Species                  | Order        | Status | Year | BR | IUCN | BR | IUCN | E |
|--------------------------|--------------|--------|------|----|------|----|------|---|
| Oxymycterus dasytrichus  | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | Yes |
| Oxymycterus delator      | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Oxymycterus inca         | Rodentia     | DD     | 2014 | LC |      | 2014 | LC   | No  |
| Oxymycterus nasutus      | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Oxymycterus quaestor     | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Oxymycterus rufus        | Rodentia     | DD     | 2014 | LC |      | 2014 | LC   | No  |
| Phaenomys ferrugineus    | Rodentia     | DD     | 2014 | EN |      | 2014 | EN   | Yes |
| Pseudoryzomys simplex    | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Rhagomys rufescens      | Rodentia     | LC     | 2014 | VU |      | 2014 | VU   | Yes |
| Reithrodon typicus      | Rodentia     | NT     | 2014 | LC |      | 2014 | LC   | No  |
| Rhipidomys cariri       | Rodentia     | VU     | 2014 | DD |      | 2014 | DD   | Yes |
| Rhipidomys emiliae      | Rodentia     | DD     | 2014 | LC |      | 2014 | LC   | Yes |
| Rhipidomys gardneri     | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Rhipidomys ipukensis    | Rodentia     | DD     | 2014 | DD |      | 2014 | DD   | Yes |
| Rhipidomys itoan        | Rodentia     | DD     | 2014 | LC |      | 2014 | LC   | Yes |
| Rhipidomys leucodactylus| Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Rhipidomys macrurus     | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | Yes |
| Rhipidomys mastacalis   | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | Yes |
| Rhipidomys nitelata     | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Rhipidomys tribei       | Rodentia     | EN     | 2014 | DD |      | 2014 | DD   | Yes |
| Scapteromys aquaticus   | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Scapteromys tumidus      | Rodentia     | DD     | 2014 | LC |      | 2014 | LC   | No  |
| Scolomys ucayalensis    | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Sigmodon alstoni        | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Sooretamys angouya      | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Thalpomys cerradensis   | Rodentia     | VU     | 2014 | LC |      | 2014 | LC   | Yes |
| Thalpomys lasiolis      | Rodentia     | EN     | 2014 | LC |      | 2014 | LC   | Yes |
| Thaptomys nigrita       | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Wedomys cerradensis     | Rodentia     | LC     | 2014 | DD |      | 2014 | DD   | Yes |
| Wedomys pyrrhorhinos    | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | Yes |
| Wilfredomys oenax       | Rodentia     | EN     | 2014 | EN |      | 2014 | EN   | No  |
| Zygodontomys brevicauda | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Ctenomys flamarioni     | Rodentia     | EN     | 2014 | EN |      | 2014 | EN   | Yes |
| Ctenomys ibicuiensis    | Rodentia     | NT     | 2014 | DD |      | 2014 | DD   | Yes |
| Ctenomys lami           | Rodentia     | EN     | 2014 | VU |      | 2014 | VU   | Yes |
| Ctenomys minutus        | Rodentia     | VU     | 2014 | DD |      | 2014 | DD   | Yes |
| Ctenomys nattereri      | Rodentia     | DD     | 2014 | LC |      | 2014 | LC   | No  |
| Ctenomys torquatus      | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Cuniculus paca          | Rodentia     | LC     | 2014 | LC |      | 2014 | LC   | No  |
| Dasyprocta azarae       | Rodentia     | LC     | 2014 | DD |      | 2014 | DD   | No  |
Table 1s. (Cont.)

| Species               | Order   | Status | Year | IUCN | E  |
|-----------------------|---------|--------|------|------|----|
| Dasyprocta croconota  | Rodentia| LC     | 2014 | 2016 | Yes|
| Dasyprocta fuliginosa | Rodentia| LC     | 2014 | 2016 | No |
| Dasyprocta iacki      | Rodentia| LC     | 2014 | 2016 | Yes|
| Dasyprocta leporina   | Rodentia| LC     | 2014 | 2016 | No |
| Dasyprocta prymnolopha| Rodentia| LC     | 2014 | 2016 | Yes|
| Myoprocta acouchy     | Rodentia| LC     | 2014 | 2016 | No |
| Myoprocta pratti      | Rodentia| LC     | 2014 | 2016 | No |
| Dinomys branickii     | Rodentia| DD     | 2014 | 2016 | Yes|
| Callistomys pictus    | Rodentia| EN     | 2014 | 2016 | Yes|
| Carterodon sucidens   | Rodentia| DD     | 2014 | 2016 | Yes|
| Clyomys laticeps      | Rodentia| LC     | 2014 | 2016 | No |
| Dactylomys boliviensis| Rodentia| LC     | 2014 | 2016 | No |
| Dactylomys dactylinus | Rodentia| LC     | 2014 | 2016 | No |
| Echimys chrysurus     | Rodentia| LC     | 2014 | 2016 | No |
| Echimys vieirai       | Rodentia| DD     | 2014 | 2016 | Yes|
| Euryzygomatomys spinosus| Rodentia| LC    | 2014 | 2016 | No |
| Isothrix bistriata    | Rodentia| LC     | 2014 | 2016 | No |
| Isothrix negensis     | Rodentia| LC     | 2014 | 2016 | No |
| Isothrix pagueros     | Rodentia| LC     | 2014 | 2016 | Yes|
| Isothrix sinnamariensis| Rodentia| LC    | 2014 | 2016 | No |
| Kannabateomys amblyonyx| Rodentia| LC    | 2014 | 2016 | No |
| Lonchothrix emiliae   | Rodentia| DD     | 2014 | 2016 | Yes|
| Makalata didelphoides| Rodentia| LC     | 2014 | 2016 | No |
| Makalata macrura     | Rodentia| LC     | 2014 | 2016 | No |
| Makalata obscura      | Rodentia| DD     | 2014 | 2016 | Yes|
| Mesomys hispidus      | Rodentia| LC     | 2014 | 2016 | No |
| Mesomys occultus      | Rodentia| LC     | 2014 | 2016 | Yes|
| Mesomys stimulax      | Rodentia| LC     | 2014 | 2016 | Yes|
| Myocastor cupus       | Rodentia| LC     | 2014 | 2016 | No |
| Phyllomys brasiliensis| Rodentia| EN     | 2014 | 2016 | Yes|
| Phyllomys dasythrix   | Rodentia| LC     | 2014 | 2016 | Yes|
| Phyllomys kerri       | Rodentia| DD     | 2014 | 2016 | Yes|
| Phyllomys lamarum     | Rodentia| DD     | 2014 | 2016 | Yes|
| Phyllomys lundi       | Rodentia| EN     | 2014 | 2016 | Yes|
| Phyllomys mantiqueirensis| Rodentia| DD  | 2014 | 2016 | Yes|
| Phyllomys medius      | Rodentia| LC     | 2014 | 2016 | Yes|
| Phyllomys nigrispinus | Rodentia| LC     | 2014 | 2016 | Yes|
| Phyllomys pattoni     | Rodentia| LC     | 2014 | 2016 | Yes|
| Phyllomys sulinus     | Rodentia| LC     | 2014 | 2016 | Yes|
| Phyllomys thomasi     | Rodentia| EN     | 2014 | 2016 | Yes|
| Species                  | Order       | Status | Year       | BR   | IUCN   | E |
|-------------------------|-------------|--------|------------|------|--------|---|
| Phyllomys unicolor      | Rodentia    | CR     | 2014       | 2016 | Yes    |   |
| Proechimys brevicauda   | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Proechimys cuvieri      | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Proechimys echinothrix  | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Proechimys gardneri     | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Proechimys goeldii      | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Proechimys guyannensis  | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Proechimys kuliniae     | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Proechimys longicaudatus| Rodentia    | LC     | 2014       | 2016 | No     |   |
| Proechimys pattoni      | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Proechimys quadruplicatus| Rodentia    | LC     | 2014       | 2016 | No     |   |
| Proechimys roberti      | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Proechimys simonsi      | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Proechimys steerei      | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Thrichomys apereoides   | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Thrichomys laurentius   | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Thrichomys inermis      | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Thrichomys pachyurus    | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Toromys grandis         | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Trinomys albispinus     | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Trinomys dimidatus      | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Trinomys eliasi         | Rodentia    | VU     | 2014       | 2016 | Yes    |   |
| Trinomys iheringi       | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Trinomys mirapitanga    | Rodentia    | EN     | 2014       | 2016 | Yes    |   |
| Trinomys moojeni        | Rodentia    | EN     | 2014       | 2016 | Yes    |   |
| Trinomys paratus        | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Trinomys setosus        | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Trinomys yonenagae      | Rodentia    | EN     | 2014       | 2016 | Yes    |   |
| Chaetomys subspinus     | Rodentia    | VU     | 2014       | 2016 | Yes    |   |
| Coendou bicolor         | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Coendou baturitensis    | Rodentia    | DD     | 2014       | 2016 | Yes    |   |
| Coendou insidiosus      | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Coendou melanurus       | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Coendou nycthemera      | Rodentia    | LC     | 2014       | 2016 | Yes    |   |
| Coendou prehensilis     | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Coendou roosmalenorum   | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Coendou speratus        | Rodentia    | EN     | 2014       | 2013 | Yes    |   |
| Coendou spinosus        | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Guerlinguetus aequans    | Rodentia    | LC     | 2014       | 2016 | No     |   |
| Hadrosciurus igniventris| Rodentia    | LC     | 2014       | 2016 | No     |   |
| Species                | Order      | Status | Year | BR | IUCN | BR | IUCN | E |
|------------------------|------------|--------|------|----|------|----|------|---|
| Hadrosciurus pyrrhinus | Rodentia   | LC     | DD   | 2014 | 2016 | No |
| Hadrosciurus spadiceus | Rodentia   | LC     | LC   | 2014 | 2016 | No |
| Microsciurus flaviventer | Rodentia   | LC     | LC   | 2014 | 2016 | No |
| Sciurillus pusillus    | Rodentia   | LC     | LC   | 2014 | 2016 | No |
| Sylvilagus brasiliensis | Lagomorpha | LC     | EN   | 2014 | 2018 | Yes |