Aramides saracura and Aramides cajaneus do not have a parapatric distribution, at least not in Paraguay: A reply to Marcondes and Silveira (Zookeys 500, 2015)

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ABSTRACT

A taxonomic review of the Grey-necked Wood-Rail Aramides cajaneus remarked on a “previously unnoted” parapatric distribution of this species with respect to Slaty-breasted Wood-Rail Aramides saracura. It was postulated that the two might act to exclude each other and that this isolating mechanism might have driven the evolution of a coastal species A. avicenniae Stotz, 1992. Here we demonstrate that Grey-necked and Slaty-breasted Wood-Rails are widely sympatric in Paraguay (a portion of the species range that was not discussed by the authors) and propose that this pattern probably extends to other areas of the species range too. We consider that the theory of parapatry between both species is an artefact of insufficient data, and that any proposed evolutionary processes based on that theory thus require re-evaluation.

A recent, much-needed, taxonomic review of Grey-necked Wood-Rail Aramides cajaneus [1] remarked on the supposed parapatric distribution of this species with respect to Slaty-breasted Wood-Rail Aramides saracura in southeastern Brazil and northeastern Argentina. It was postulated that, despite the differing habitat requirements of the two species (A. saracura in Atlantic Forest and A. cajaneus in wetlands), these ecological preferences might not be sufficiently different to allow sympathy of the two species, and that this pattern may have played a role in the evolution of a coastal species A. avicenniae Stotz, 1992. Clearly such an evolutionary hypothesis would not be confined by geopolitical boundaries.

The authors provided a map (Figure 12) of the range of the two species in southeastern South America which purports to show “almost perfectly parapatric distributions never before remarked on” (contra [2–6]). The map includes four clustered points in Paraguay, three for A. cajaneus and one for A. saracura, which clearly show that the ranges of the two species in Paraguay approach each other very closely, thus representing a challenge to the hypothesis of near-perfect sympathy. However, the distribution in Paraguay was then omitted from the rest of the Discussion, and the supplementary data did not clarify which A. saracura specimens were examined in order to determine the exact Paraguayan locality that was represented.

An examination of the literature indicates that there exists ample documentation of the two species occurring sympatrically across a broad band of the eastern Oriental region of Paraguay, and that the near-perfect parapatry reported by the authors is an artifact of their data sampling. Whilst we take the opportunity to recognize the value of specimen-based studies, and to express our support for the use of specimen data as a fundamental practice in ornithology, we add the caveat that it should not be to the exclusion of other published data. Below (Table 1), we provide a review of published examples of sympathy of the two species in Paraguay (some of which was published posterior to [1]), and additionally document several previously unpublished cases. To complement this information, we provide a map that illustrates the localities from where both species have been reported (exclusively), indicating a broad area of overlap of the two species in eastern Paraguay west to approximately 56.5°W (Figure 1) and corresponding roughly to the coverage of the Atlantic Forest ecoregion.

The taxonomic review of Aramides cajaneus by [1] is an important and valuable contribution to the literature for which we congratulate the authors. However, sympathy of the Grey-necked and Slaty-breasted Wood-Rail in Paraguay is a well-known and adequately published phenomenon, and the perceived parapatry of the distribution of these two species is an artifact of the sampling method employed. Whilst we concede that the extent of global sympathy does require clarification, there is ample indication that the two species are indeed widely sympatric in southeastern South America.

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Table 1. Records of Aramides cajaneus and A. saracura occurring in sympathy in the Oriental region of Paraguay. *Both species are listed as part of the avifauna of San Rafael National Park [12], the specific localities within the park are documented in [13].

| Department     | Locality                             | Species                  | Relative abundance | Co-ordinates          | Source                      |
|----------------|--------------------------------------|--------------------------|--------------------|-----------------------|-----------------------------|
| Alto Paraná    | Area Itaipú/Estancia Arakanguy        | *cajaneus*: rare; *saracura*: frequent |                    | −24 55 00 − 55 10 00 | Unpublished field data      |
| Alto Paraná    | Estancia San Antonio                 | *cajaneus*: rare; *saracura*: uncommon |                    | −25 18 00 − 55 20 00 | Unpublished field data      |
| Alto Paraná    | Refugio Biológico Limoy             | *cajaneus*: rare; *saracura*: frequent |                    | −24 43 00 − 54 22 00 | Unpublished field data      |
| Alto Paraná    | Refugio Biológico Itabó              | *cajaneus*: rare; *saracura*: scarce | both species present, no abundance data | −25 02 00 − 54 42 00 | Unpublished field data      |
| San Pedro      | Vivero Forestal Itapuí, Hemandarias  | *cajaneus*: rare; *saracura*: extremely rare; | both species present, no abundance data | −25 20 00 − 54 40 00 | Unpublished field data      |
| Amambay        | Reserva Natural Privada Arroyo Blanco| *cajaneus*: rare; *saracura*: rare |                    | −22 27 30 − 56 09 02 | Unpublished field data      |
| Caaguazú      | Estancia Mainunby                     | *cajaneus*: rare; *saracura*: rare | both species present, no abundance data | −25 13 26 − 56 10 38 | Unpublished field data      |
| Caaguazú      | Estancia Santa Rosa                  | *cajaneus*: rare; *saracura*: rare | both species present, no abundance data | −25 16 02 − 56 09 22 | Unpublished field data      |
| Caazapá        | Estancia Tapyta                      | *cajaneus*: rare; *saracura*: rare | both species present, no abundance data | −26 15 00 − 55 45 00 | Unpublished field data      |
| Caazapá        | Reserva Quinto Potrero               | *cajaneus*: rare; *saracura*: rare | both species present, no abundance data | −25 14 38 − 56 10 28 | Unpublished field data      |
| Caaguazú      | Reserva Ypetí                        | *cajaneus*: rare; *saracura*: rare | both species present, no abundance data | −25 38 00 − 55 29 00 | Unpublished field data      |
| Caaguazú      | Arroyo Yhú                           | *cajaneus*: rare; *saracura*: rare | both species present, no abundance data | −25 15 00 − 55 56 00 | [12,13]*                    |
| Canindeyú      | Reserva Natural Bosque Mbaracayú     | *cajaneus*: extremely rare; *saracura*: common |                    | −24 07 00 − 55 16 00 | [15]                        |
| Canindeyú      | Refugio Biológico Mbaracayú          | *cajaneus*: rare; *saracura*: rare | both species present, no abundance data | −24 03 21 − 54 17 56 | [16]                        |
| Canindeyú      | Estancia Itabó                       | *cajaneus*: rare; *saracura*: frequent | −24 16 00 − 54 22 00 | Unpublished field data      |
| Guairá         | Reserva de Recursos Manejados Yvyryusu| *cajaneus*: rare; *saracura*: frequent | −25 31 00 − 54 38 00 | Unpublished field data      |
| Itapúa         | Estancia Nueva Gambach                | *cajaneus*: rare; *saracura*: rare | −25 30 00 − 54 10 00 | Unpublished field data      |
| Itapúa         | San Pedro Mi                         | *cajaneus*: rare; *saracura*: rare | −26 38 00 − 55 39 00 | [12,13]*                    |
| Itapúa         | Kanguery                             | *cajaneus*: rare; *saracura*: rare | −26 31 39 − 55 47 31 | [12,13]*                    |
| Itapúa         | Guyra Retá                          | *cajaneus*: rare; *saracura*: rare | −26 31 39 − 55 47 31 | [12,13]*                    |
| San Pedro      | Rancho Adela                         | *cajaneus*: rare; *saracura*: rare | −26 26 33 − 55 47 47 | [17,18] A specimen of *A. cajaneus* from this locality is preserved in the Colección Zoológica Para La Tierra (28 July 2011; A. Oxley leg.; CZPLT 0003) |
| San Pedro      | Rancho Laguna Blanca                 | *cajaneus*: rare; *saracura*: rare | −23 47 56 − 56 17 32 | Unpublished field data      |
| San Pedro      | Yaguarete Forests                    | *cajaneus*: rare; *saracura*: rare | −23 45 00 − 56 14 00 | Unpublished field data      |

America as previous authors have suggested. The extent of sympathy is perhaps not as ubiquitous as generalist works on the subject might infer (as A. cajaneus is possibly restricted in its distributions by the tablelands of southern Brazil), but there is undoubtedly a broad zone of co-existence of the species that should not be defined as parapatry.

Contrary to popular belief, the Paraguayan avifauna is as well documented as any of its neighbours, but it is repeatedly ignored or overlooked, presumably because much of the available data is published in obscure publications that are not widely “found” by traditional literature search methods. We strongly encourage international researchers working on such publications to make an effort to reach out to Paraguayan-based researchers and to confirm whether the perceived gaps in their data are real or a product of the difficulties involved in accessing the relevant information, thus potentially avoiding unnecessarily erroneous conclusions.

Whilst it is beyond the scope of our knowledge to discuss in detail the potential sympathy of the two species beyond the borders of the country in which we work, we would add that distribution of the two species in Argentina is also potentially less “perfectly parapatric” than the presented data suggests and that Aramides cajaneus is not “absent from the Argentine province of Misiones”. We note, for example, that Chebez [7] reports “Aramides cajanea cajanea” from Misiones in the departments of San Pedro, Candelaria, Iguazú, Guarani, Oberá, 25 de Mayo, San Ignacio and El Dorado, representing a broad sweep of the province from east to west. Aramides saracura is reported as present in Iguazú, General Belgrano, San Ignacio, San Pedro, Oberá, El Dorado, Guarani, Candelaria, Caingüás, Capital, 25 de Mayo, Montecarlo, Liberator General San Martín and Apóstoles, representing potential 100% range overlap of the two species, at least at the departmental level, within Misiones Province [8]. On the other hand, Aramides saracura has been reported as occurring
marginally in the avifauna of Provincia Corrientes further west [9–11] than mapped by Marcondes and Silveira [1], and we note that the published area of overlap in Argentina approximates in its western limits very closely to that reported in Paraguay.

We have not attempted to verify the Argentinian data that we repeat here, but clearly, it exists. There is thus good cause to re-evaluate the claims of parapatry within the Argentinian and likely also the inland Brazilian distribution of the two species, and to thoroughly investigate the unlikely possibility that sympatry of the two species is limited to the Paraguayan range. In the meantime, any evolutionary hypotheses based on presumed parapatry of the two taxa might also benefit from a re-examination of the available data.

**Disclosure statement**

No potential conflict of interest was reported by the authors.

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