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New documented records for two bird species in southernmost Brazil, including the first mention of *Agriornis murinus* for the country and comments on vagrancy

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RESUMO: Novos registros documentados de duas espécies de aves no extremo sul do Brasil, incluindo a primeira menção de *Agriornis murinus* para o país e comentários sobre vagância. Um indivíduo de *Porphyrio flavirostris* foi capturado na cidade de Pelotas, Rio Grande do Sul, em 03 de outubro de 2008. Este registro, documentado através de fotografia, comprova a ocorrência dessa espécie no estado. Um espécime de *Agriornis murinus*, observado e fotografado junto ao litoral em Rio Grande, Rio Grande do Sul, em 25 de abril e avistado novamente em 29 de julho de 2009, constitui o primeiro registro da espécie e do gênero para o Brasil. Utilizando informações previamente publicadas e avaliando a distribuição geográfica dessas espécies, inferimos que ambos os registros são mais parcimoniosamente associados à vagância do que pseudo-vagância.

PALAVRAS-CHAVE: registros além da área de ocorrência, pseudo-vagância, distribuição geográfica, Rio Grande do Sul, *Porphyrio flavirostris*.

KEY-WORDS: extralimital records, pseudo-vagrancy, geographical distribution, Rio Grande do Sul, *Porphyrio flavirostris*.

Distributional studies are fundamental in understanding the processes that shape species' ranges. Such studies, especially those focused on range shifts, are becoming increasingly prevalent and important in a world shaped by climate change and anthropogenic habitat modifications (Parmesan *et al.* 2005, Lomolino *et al.* 2006, Frey 2009).

An extralimital distribution record is the documentation of a species outside of the accumulated scatter of locality records or the inferred range border (Frey 2009). Discerning what constitutes an extralimital record depends on the perception of a species' range margin – the transition zone between where a species occurs and does not occur (Frey 2009). This task is complicated by the abstract essence of the concept of range limit, a fact related to the complex and dynamic nature of a species' range margin (Lomolino *et al.* 2006, Frey 2009). By definition, at a range edge, a species is encountering the boundary of its realized niche (Kanda *et al.* 2009). Therefore, a species'

abundance is expected to decrease and become increasingly patchy along the periphery of its range (Lomolino *et al.* 2006), minimizing the chances of encounter by an observer. Working with small mammals, Frey (2009) related extralimital records to either 1) an enlargement of a species range through dispersal and then the establishment of new populations (= range expansion) or 2) the discovery of previously undocumented populations (= range extension).

In highly mobile organisms like birds, extralimital records are sometimes located well outside the known range of a species. This situation, termed vagrancy, is more common in migratory species (Alerstam 1990, Berthold 1993, Gilroy and Lees 2003, Pfeifer *et al.* 2007, Lees and Gilroy 2004, 2009).

A series of mechanisms have been proposed to explain vagrancy in birds. In general terms, these can be grouped in three categories: 1) demographic dispersal (*sensu* Lomolino *et al.* 2006), which includes population

growth and expansion (Veit 2000, Thorup 1998, Lees and Gilroy 2009), dismigration, natal dispersion and spacing (Berthold 1993); 2) pursue of resources that are unpredictable in space and/or time (Berthold 1993, Lees and Gilroy 2009); and 3) disorientation, which can be related to exogenous factors such as magnetic anomalies, storms and winds (Baker and Catley 1987, Patten and Marantz 1996, Thorup 1998, Gilroy and Lees 2003, Lees and Gilroy 2004, 2009, McLaren *et al.* 2006, Pfeifer *et al.* 2007), or endogenous factors like genetic or physiological abnormalities (Rabøl 1969, Patten and Marantz 1996, Thorup 1998, Gilroy and Lees 2003, Pfeifer *et al.* 2007).

Vagrancy events comprise a gradient of hyperdispersal in migratory birds, with extreme vagrants representing the far end of this continuum (A. C. Lees *in litt.* 2010). As stated by Hengeveld (1989) and Veit (2000), “vagrants are simply the individuals that make up the long tails of leptokurtic frequency distributions typical of data on distances moved by animals”. Despite the fact that stray birds usually perish in unfamiliar habitat, vagrants occasionally constitute propagules for range expansion (Veit 2000, Gilroy and Lees 2003, Lomolino *et al.* 2006, Pfeifer *et al.* 2007).

Vagrancy records may, however, also be attributed to the encounter of previously unknown migratory populations. Gilroy and Lees (2003) coined the term “pseudo-vagrant” for “nominally” extralimital individuals that might actually be using previously unknown migration routes to unknown wintering grounds albeit at very low densities. Such term is analogous to range extension *sensu* Frey (2009).

Distinguishing range expansions from extensions is crucial in order to correctly determine a species' geographic distribution and interpret range shifts. Frey (2009) advocated the use of background data – records of species other than the taxon of interest that are likely to be documented using the same sampling methods – as a method to determine if an extralimital record refers to range expansion or extension. In migratory organisms, an analysis of the species' known distribution outside the breeding season should also be conducted in order to interpret if new extralimital records are most parsimoniously attributable to vagrancy or pseudo-vagrancy.

In this note we report documented records for two bird species in Rio Grande do Sul, Brazil's southernmost state. We used background data and available distributional information to evaluate if these extralimital records are most parsimoniously attributable to vagrancy or pseudo-vagrancy.

SPECIES ACCOUNTS

Azure Gallinule (*Porphyrio flavirostris*)

This gallinule is known from central and southern Colombia, Trinidad, central and southern Venezuela,

the Guianas, northern, mid-western and eastern Brazil, northeastern Ecuador, northeastern and southeastern Peru, north Bolivia, Paraguay, and northeastern Argentina (Remsen and Parker 1990, Taylor 1996, Taylor and van Perlo 1998). In Brazil the species is mentioned from the states of Roraima, Amapá, Pará, Amazonas, Mato Grosso, Mato Grosso do Sul, Goiás, São Paulo, Minas Gerais, Paraná and Rio Grande do Sul (Remsen and Parker 1990, Taylor 1996, Taylor and van Perlo 1998, Mikich and Bérnils 2004). A Rio de Janeiro record in Sick and Pabst (1968) and Sick (1993) was later omitted in Sick (2001) due to lack of adequate information (Pacheco and Parrini 1998, J. F. Pacheco *in litt.* 2009). The species is rare in southern and southeastern Brazil, being known from one locality in São Paulo, four in Paraná and one in Rio Grande do Sul (Willis and Oniki 1993, Anjos and Schuchmann 1997, Bencke 2001, Bornschein 2001, Mikich and Bérnils 2004). There are no records from Santa Catarina (Rosário 1996). All records from southern Brazil are undocumented and should be treated with caution because of possible confusion with immature Purple Gallinules (*Porphyrio martinica*).

The only record for the state of Rio Grande do Sul concerns the observation of an adult by T. A. Parker, III on 26 November 1986 in a flooded short grass pasture near extensive *Typha* beds, 1 km south of the Taim Ecological Station (32°30'S, 52°35'W), Rio Grande do Sul (Remsen and Parker 1990). Bencke (2001) questioned the exact position of this observation, stating that this coordinate corresponds to a point immediately north of the reserve, and listed the species among taxa whose records need documentation and/or additional confirmation in the state.

Around 08:45 h on 03 October 2008, an unidentified soldier of the environmental battalion of the military police of the state of Rio Grande do Sul left a gallinule at



FIGURE 1: Adult Azure Gallinule (*Porphyrio flavirostris*) captured on 03 October 2008 in the city of Pelotas, Rio Grande do Sul, Brazil. Photograph by Marco Antônio Afonso Coimbra.

NURFS (Núcleo de Reabilitação de Fauna Silvestre) – a wildlife rehabilitation center maintained by the Universidade Federal de Pelotas. According to the soldier, the bird was taken to the battalion's headquarters at 08:00 h by an unidentified person who had discovered the bird earlier that day somewhere in the urban area of the city of Pelotas (31°46'S, 52°20'W), c. 90 km north of Taim Ecological Station. An examination performed by the staff (including MAAC) indicated that the bird was in an overall good condition, with no fractured bones or external injuries. A hematological examination revealed no problems. The bird was photographed (Figure 1) and housed in a cage at the NURFS for observation. Since the bird showed no signs of infirmity or weakness, it was released c. 17:45 h the next day in an artificial marshy lake (31°48'08"S, 52°25'12"W) at the campus of the Universidade Federal de Pelotas, municipality of Capão do Leão, close to extensive marshes of the Canal São Gonçalo floodplain. The bird was not seen again and its fate is unknown. Photographs were later sent to RAD who identified the bird as an adult Azure Gallinule based on the blue-grey tint on the sides of the head, neck and breast, the pale greenish yellow bill and frontal shield, and reddish iris, in accordance with Taylor (1996) and Taylor and van Perlo (1998).

The occurrence of the Azure Gallinule is seasonal in some South American regions, and its movements are probably timed to coincide with wet or high-water seasons (Remsen and Parker 1990). Most records from Peru, Bolivia, Paraguay, mid-western Brazil and possibly north-eastern Argentina are restricted to the austral spring and summer (Remsen and Parker 1990). The species is currently considered a breeding "northern" austral migrant in Paraguay, present from October to May (Guyra Paraguay 2005), and a partial austral migrant in Argentina (Barnett and Pearman 2001), recorded throughout the year with slight predominance in spring and summer (Olrog 1979, Contreras *et al.* 1990, López Lanús 1997, Chebez 1999, 2009, Blanco and Carbonell 2001, Fraga 2001, Di Giacomo 2005, J. C. Chebez *in litt.* 2009). Dated records for localities in southern and southeastern Brazil other than the above mentioned Rio Grande do Sul records refer to April and September in Minas Gerais (Remsen and Parker 1990), January in western São Paulo (Willis and Oniki 1993), October and November in eastern Paraná (Bornschein 2001), September and October and/or March in northern Paraná (Anjos and Schuchmann 1997) and October on the Paraná-Mato Grosso do Sul border (Gimenes *et al.* 2007, E. V. Lopes *in litt.* 2009). Winter and autumn records from Paraguay, Argentina and neighboring regions of Brazil may refer to early arrivals, as suggested by Hayes *et al.* (1994), or to partial migration, a more plausible hypothesis in light of the complex movements undertaken by waterbirds inhabiting wetlands along the mid Paraná and lower Paraguay Rivers (*see* Antas 1994).

Remsen and Parker (1990) emphasized the propensity of many rails, crakes and gallinules for vagrancy and their amazing capability for extreme long-distance dispersal events. These authors also stated that the Azure Gallinule is vagrancy-prone from August through December and in January and February. Considering 1) that this species was not recorded during intensive bird surveys conducted in the wetlands and rice paddies of Rio Grande do Sul (Nascimento 1995, Mähler Jr. *et al.* 1996, Dias and Maurício 1998, Dias and Burger 2005, Accordi and Barcellos 2006, Accordi and Hartz 2006, Bencke *et al.* 2007); 2) that other secretive rails such as the Rufous-sided Crake (*Laterallus melanophaius*), Red-and-white Crake (*Laterallus leucopyrrhus*), Dot-winged Crake (*Porzana spiloptera*), Ash-throated Crake (*Porzana albicollis*), Spotted Rail (*Pardirallus maculatus*), Plumbeous Rail (*Pardirallus sanguinolentus*) and especially the Purple Gallinule were recorded in these inventories; 3) that both state records fall within periods in which extralimital occurrences are expected; and 4) that Iberá marshes – the nearest locality where the species is regular (*see* Fraga 2001) – is located c. 570 km northwest of Pelotas and Rio Grande; we conclude that records of Azure Gallinules in the extreme south of Brazil likely refer to vagrancy rather than pseudo-vagrancy. Furthermore, the circumstances in which the Pelotas specimen was found suggests that it was probably flying at night and attracted by city lights, a phenomenon commonly recorded in migrating rails and gallinules. If properly confirmed, an overlooked record from Uruguay, based on an observation made in January or February 1992 at an unknown locality (Blanco and Canevari 1992), may also relate to a vagrant. These vagrant individuals are probably overshooters (*sensu* Gilroy and Lees 2003) – birds that fly beyond their intended destination, perhaps assisted by favorable tail-winds, and turn up in areas well beyond their normal range. Due to their relative proximity with Rio Grande do Sul, wetlands along the Paraná and Paraguay rivers in Argentina and Paraguay are the probable source of individuals recorded in the state. On the other hand, if the species is genuinely overlooked in Rio Grande do Sul, local populations of this tropical gallinule would most likely be found in poorly surveyed marshes and rice paddies in the north-western sector of the State, especially along the border with Argentina near Iberá marshes.

Lesser Shrike-tyrant (*Agriornis murinus*)

This flycatcher breeds from October to March in open plains with scattered shrubs in northwestern and southcentral Argentina, and migrates to northern Argentina, western Paraguay and southern Bolivia during the austral autumn and winter (Ridgely and Tudor 1994, Andors and Vuilleumier 1996, Fitzpatrick 2004).

On 25 April 2009, while counting shorebirds along the beach at Cassino seaside resort, municipality of Rio Grande, *c.* 07:26 h, RAD and AG observed a mid-sized, grayish-brown flycatcher perched atop a small, sparsely vegetated frontal dune (coordinates 32°09'50.01"S, 52°06'58.96"W). The bird occasionally flew down from its perch in search of food, walking short distances on the sand before returning to the crest of the dune. We observed and photographed it at close range (Figure 2) for 13 minutes before leaving the area and resuming fieldwork. Its slender bill, white throat with dusky streaks, indistinct whitish supraloral, pale bars on the wing coverts and inner remiges, and slight cinnamon tinge on the flanks were clearly visible and allowed diagnosis. This record represents the first of any member of the genus *Agriornis* for Brazil. Since this bird has no vernacular name in Brazilian Portuguese, we propose the name *gauchinho* (Little Gaucho), a translation of *Gaúcho Chico*, its Spanish name in Argentina and Uruguay (Narosky and Yzurietta 2003). On 29 July 2009, *c.* 08:00 h, AG, RAD and S. E. A. Suárez observed an individual of this species only a few hundred meters north of the above-mentioned coordinate. We were unable to discriminate if we observed the same individual or not. If both observations refer to the same individual, then it most likely over-wintered in the region.

The Lesser Shrike-tyrant migrates between its breeding and wintering grounds along a north-south axis through the Argentinean Monte, Espinal and Chaco Zones, bypassing the northeastern portion of the Río de la Plata grasslands in Uruguay and southern Brazil (*see* maps in Ridgely and Tudor 1994 and Narosky and Yzurietta 2003). It is rare in Buenos Aires Province, Argentina (Narosky and Di Giacomo 1993), especially along the Río de la Plata, and absent from some well studied areas near the coast (Pereyra 1938, Babarskas *et al.* 2003, J. P. Isacch *pers. com.*, 2010). In neighboring Uruguay, the



FIGURE 2: Lesser Shrike-tyrant (*Agriornis murinus*) recorded on 25 April 2009 at Cassino seaside resort, Rio Grande do Sul, Brazil. Photograph by Andros Gianuca.

only country record refers to an observation at Laguna Negra, Rocha Department, on April 2001 (Rocha 2008).

Using the considerable amount of ornithological information available from Uruguay and Rio Grande do Sul (*see* Belton 1994, Arballo and Cravino 1999, Azpiroz 2001, Bencke 2001 and references within) as a baseline, and considering that other small to medium-sized ground-dwelling passerines, namely the Common Miner (*Geositta cunicularia*), Hudson's Canastero (*Asthenes hudsoni*), Bar-winged Cinclodes (*Cinclodes fuscus*), Austral Negrito (*Lessonia rufa*) and Hellmayr's Pipit (*Anthus hellmayri*), have been recorded in Rio Grande do Sul's coastal plain (Nascimento 1995, Mähler Jr. *et al.* 1996, Dias and Maurício 1998, Belton 1994, Bencke *et al.* 2007, Zimmer and Whitaker 2009), we infer that the presence of this tyrannid in southern Brazil is more parsimoniously attributable to vagrancy than pseudo-vagrancy. The fact that this species was never recorded during bird inventories conducted by AG in dune habitats at Cassino on a monthly basis from September 2008 to August 2009 also corroborates this hypothesis.

Populations that breed in coastal Patagonia (Andors and Vuilleumier 1996) are the most likely source of vagrants recorded in Uruguay and Brazil. As inferred from the distribution map in Ridgely and Tudor (1994), individuals from these populations probably migrate via an inland route west of the Paraná River, *c.* 800-1,000 km west and south-west of Cassino. Birds that follow the Atlantic coastline northwards and cross the Río de la Plata could easily turn up on the Brazil-Uruguay border. On the other hand, if these easternmost records are indeed attributable to pseudo-vagrancy, unknown wintering populations should be sought in a narrow fringe of shrubby coastal vegetation along the littoral of Rio Grande do Sul and Uruguay.

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REFERENCES

- Accordi, I. A. and Barcellos, A. (2006). Composição e conservação da avifauna em oito áreas úmidas da Bacia Hidrográfica do Lago Guaíba, Rio Grande do Sul. *Revista Brasileira de Ornitologia*, 14:103-117.
- Accordi, I. A. and Hartz, S. M. (2006). Distribuição espacial e sazonal da avifauna em uma área úmida costeira do sul do Brasil. *Revista Brasileira de Ornitologia*, 14:117-135.

- Alerstam, T. (1990).** *Bird migration*. Cambridge: Cambridge University Press.
- Andors, A. V. and Vuilleumier, F. (1996).** Breeding of *Agriornis murinus* (Aves: Tyrannidae) in Patagonia, with comments on its habitat preferences and taxonomic position. *Ornitología Neotropical*, 7:109-118.
- Antas, P. T. Z. (1994).** Migration and other movements among the lower Paraná River Valley wetlands, Argentina and the south of Brazil/Pantanal wetlands. *Bird Conservation International*, 4:181-190.
- Anjos, L. and Schuchmann, K. L. (1997).** Biogeographical affinities of the avifauna of the Tibagi river basin, Paraná drainage system, southern Brazil. *Ecotropica*, 3:43-66.
- Arballo, E. and Cravino, J. (1999).** *Aves del Uruguay. Manual ornitológico – Tomo I*. Montevideo: Editorial Hemisferio Sur.
- Azpiroz, A. B. (2001).** *Aves del Uruguay. Lista e introducción a su biología y conservación*. Montevideo: Aves Uruguay – GUPECA.
- Babarskas, M.; Haene, E. and Pereira, J. (2003).** Aves de la Reserva Natural Otamendi, p. 47-113. In: Haene, E. and Pereira, J. (eds.) *Fauna de Otamendi. Inventario de los Animales Vertebrados de la Reserva Natural Otamendi, Campana, Buenos Aires, Argentina*. Buenos Aires: Aves Argentinas/AOP (Temas de Naturaleza y Conservación, 3).
- Baker J. K. and Catley, G. P. (1987).** Yellow-browed warblers in Britain and Ireland 1968-1985. *British Birds*, 80:93-109.
- Barnett, J. M. and Pearman, M. (2001).** *Annotated checklist of the birds of Argentina*. Barcelona: Lynx Edicions.
- Belton, W. (1994).** *As aves do Rio Grande do Sul: distribuição e biologia*. São Leopoldo: Editora Unisinos.
- Bencke, G. A. (2001).** *Lista de referência das aves do Rio Grande do Sul*. Porto Alegre: Fundação Zoobotânica do Rio Grande do Sul (Publicações Avulsas FZB, 10).
- Bencke, G. A.; Burger, M. I.; Dotto, J. C. P.; Guadagnin, D. L.; Leite, T. O. and Menegheti, J. O. (2007).** Aves, p. 316-355 In: Becker, F. G.; Ramos, R. A. and Moura, L. A. (orgs.). *Biodiversidade. Regiões da Lagoa do Casamento e dos Butiazaís de Tapes, Planície Costeira do Rio Grande do Sul*. Brasília: Ministério do Meio Ambiente.
- Berthold, P. (1993).** *Bird migration, a general survey*. Oxford: Oxford University Press.
- Blanco, D. E. and Carbonell, M. (eds.) (2001).** *El Censo Neotropical de Aves Acuáticas. Los primeros 10 años: 1990-1999*. Buenos Aires: Wetlands Internacional & Memphis, USA: Ducks Unlimited Inc.
- Blanco, D. E. and Canevari, P. (1992).** *Censo Neotropical de Aves Acuáticas 1991*. Buenos Aires, Argentina: Programa de Ambientes Acuáticos Neotropicales (NWP).
- Bornschein, M. R. (2001).** *Formações pioneiras do litoral centro-sul do Paraná: identificação, quantificação de áreas e caracterização ornitofaunística*. Master thesis. Curitiba: Universidade Federal do Paraná.
- Chebez, J. C. (1999).** *Los que se van, especies argentinas en peligro*. Buenos Aires: Editora Albatros.
- Chebez, J. C. (2009).** *Otros que se van*. Buenos Aires: Editora Albatros.
- Contreras, J. R.; Berry, L. M.; Contreras, A. O.; Bertonatti, C. C. and Utges, E. E. (1990).** *Atlas Ornitogeográfico de la Provincia de Chaco. República Argentina. I. No Passeriformes*. Corrientes: Cuadernos Técnicos Félix de Azara I.
- Di Giacomo, A. G. (2005).** Aves de la Reserva El Bagual, p. 201-465. In: A. G. Di Giacomo and S. F. Krapovickas (eds.) *Historia natural y paisaje de la Reserva El Bagual, Provincia de Formosa, Argentina. Inventario de la fauna de vertebrados y de la flora vascular de un área protegida del Chaco Húmedo*. Buenos Aires: Aves Argentinas/Asociación Ornitológica del Plata (Temas de Naturaleza y Conservación 4).
- Dias, R. A. and Maurício, G. N. (1998).** Lista preliminar da avifauna da extremidade sudoeste do saco da Mangueira e arredores, Rio Grande, Rio Grande do Sul. *Atualidades Ornitológicas*, 86:10-11.
- Dias, R. A. and Burger, M. I. (2005).** A assembléia de aves de áreas úmidas em dois sistemas de cultivo de arroz irrigado no extremo sul do Brasil. *Aranajuba*, 13:63-80.
- Fitzpatrick, J. W. (2004).** Family Tyrannidae (Tyrant-flycatchers), p. 170-462. In: del Hoyo, J.; Elliott, A. and Christie, D. (eds.). *Handbook of the birds of the world. Vol. IX. Cotingas to Pipits and Wagtails*. Barcelona: Lynx Edicions.
- Fraga, R. (2001).** The avifauna of Estancia San Juan Poriahú, Iberá Marshes, Argentina: checklist and some natural history notes. *Cotinga*, 16:81-86.
- Frey, J. K. (2009).** Distinguishing range expansions from previously undocumented populations using background data from museum records. *Diversity and Distributions*, 15:183-187.
- Gimenes, M. R.; Lopes, E. V.; Loures-Ribeiro, A.; Mendonça, L. B. and Anjos, L. (2007).** *Aves da planície alagável do alto rio Paraná*. Maringá: Editora da Universidade Estadual de Maringá.
- Gilroy, J. J. and Lees, A. C. (2003).** Vagrancy theories: are autumn vagrants really reverse migrants? *British Birds*, 96:427-438.
- Guyra Paraguay. (2005).** *Atlas de las aves de Paraguay*. Asunción: Asociación Guyra Paraguay.
- Hayes, F. E.; Scharf, P. A. and Ridgely, R. S. (1994).** Austral bird migrants in Paraguay. *Condor*, 96:83-97.
- Hengeveld, R. (1989).** *Dynamics of biological invasions*. London: Chapman and Hall.
- Kanda, L. L.; Fuller, T. K.; Sievert, P. R. and Kellogg, R. L. (2009).** Seasonal source-sink dynamics at the edge of a species' range. *Ecology*, 90:1574-1585.
- Lees, A. C. and Gilroy, J. J. (2004).** Pectoral Sandpipers in Europe: vagrancy patterns and the influx of 2003. *British Birds*, 97:638-646.
- Lees, A. C. and Gilroy, J. J. (2009).** Vagrancy mechanisms in Passerines and Near-Passerines. Pp. 124-209. In: Slack, R. (ed.). *Rare birds, where and when: an analysis of status and distribution in Britain and Ireland*. York: Rare Birds Books.
- Lomolino, M. V.; Riddle, B. R. and Brown, J. H. (2006).** *Biogeography*. 3rd ed. Sunderland: Sinauer Associates.
- López Lanús, B. (1997).** *Inventario de las aves de Parque Nacional Pilcomayo, Formosa, Argentina*. Monog. Esp. LOLA n° 4, Buenos Aires.
- Mähler Jr., J. K. F.; Kindel, A. and Kindel, E. A. I. (1996).** Lista comentada das espécies de aves da Estação Ecológica do Taim, Rio Grande do Sul. *Acta Biologica Leopoldensia*, 18:69-103.
- McLaren, A.; Lees, A. C.; Field, C. and Collins, K. J. (2006).** Origins and characteristics of Nearctic landbirds in Britain and Ireland in autumn: a statistical analysis. *Ibis*, 148:707-726.
- Mikich, S. B. and Bérnils, R. S. (2004).** *Livro vermelho da fauna ameaçada no estado do Paraná*. Curitiba: Instituto Ambiental do Paraná.
- Nascimento, I. L. S. (1995).** As aves do Parque Nacional da Lagoa do Peixe. Brasília: IBAMA.
- Narosky, T. and Di Giacomo, A. G. (1993).** *Las aves de la Provincia de Buenos Aires: distribución y status*. Buenos Aires: Asociación Ornitológica del Plata, Vázquez Mazzini & L.O.L.A.
- Narosky, T. and Yzurieta, D. (2003).** *Birds of Argentina and Uruguay: a field guide*. Buenos Aires: Vazquez Mazzini Editores.
- Olog, C. C. (1979).** Nueva lista de la avifauna argentina. *Opera Lilloana*, 27.
- Pacheco, J. F. and Parrini, R. (1998).** Registros questionáveis de aves do Estado do Rio de Janeiro I – Non-Passerer. *Atualidades Ornitológicas*, 81:5.
- Parmesan, C.; Gaines, S.; Gonzalez, L.; Kaufman, D. M.; Kingsolver, J.; Peterson, A. T. and Sagarin, R. (2005).** Empirical perspectives on species borders: from traditional biogeography to global change. *Oikos*, 108:58-75.
- Patten, M. A. and Marantz, C. A. (1996).** Implications of vagrant southeastern vireos and warblers in California. *The Auk*, 113:911-923.

- Pereyra, J. A. (1938).** Aves de la zona ribereña nordeste de la Provincia de Buenos Aires. *Memorias del Jardín Zoológico de La Plata*, 9:1-304.
- Pfeifer, R.; Stadler, J. and Brandl, R. (2007).** Birds from the Far East in Central Europe: a test of the reverse migration hypothesis. *Journal of Ornithology*, 148:379-385.
- Rabøl, J. (1969).** Reversed migration as the cause of westward vagrancy by four *Phylloscopus* warblers. *British Birds*, 62:89-92.
- Remsen Jr., J. V.; and Parker, III, T. A. (1990).** Seasonal distribution of the Azure Gallinule (*Porphyryla flavirostris*), with comments on vagrancy in rails and gallinules. *Wilson Bulletin*, 102:380-399.
- Ridgely, R. S. and Tudor, G. (1994).** *The Birds of South America. Volume II, The Suboscine Passerines*. Austin, Texas: University of Texas Press.
- Rocha, G. (2008).** *Aves del Uruguay. El país de los pájaros pintados*. Volume III. Montevideo: Banda Oriental.
- Rosário, L. A. (1996).** *As aves em Santa Catarina: distribuição geográfica e meio ambiente*. Florianópolis: FATMA.
- Sick, H. (1993).** *Ornitologia brasileira: uma introdução. Vol. 1*. Brasília: Editora Universidade de Brasília.
- Sick, H. (2001).** *Ornitologia brasileira*. Rio de Janeiro, Brazil: Editora Nova Fronteira.
- Sick, H. and Pabst, L. F. (1968).** As aves do Rio de Janeiro (Guanabara). Lista sistemática anotada. *Arquivos do Museu Nacional*, 53:99-160.
- Taylor, P. B. (1996).** Family Rallidae (rails, gallinules and coots). Pp. 108-209. In: del Hoyo, J.; Elliott, A. and Sargatal, J. (eds.). *Handbook of the birds of the world. Vol. III. Hoatzin to Auks*. Barcelona: Lynx Edicions.
- Taylor, B. and van Perlo, B. (1998).** *Rails. A guide to the rails, crakes, gallinules and coots of the world*. Yale University Press, New Haven, Connecticut and London: UK.
- Thorup, K. (1998).** Vagrancy of Yellow-browed (*Phylloscopus inornatus*) and Pallas's Warbler (*Ph. proregulus*) in north-west Europe: misorientation on great circles? *Ringing and Migration*, 19:7-12.
- Veit, R. R. (2000).** Vagrants as the expanding fringe of a growing population. *The Auk*, 117:242-246.
- Willis, E. O. and Oniki, Y. (1993).** New and reconfirmed birds from the state of São Paulo, Brazil, with notes on disappearing species. *Bull. Br. Ornithol. Club.*, 113:23-34.
- Zimmer, K. J. and Whittaker, A. (2009).** Records of Hudson's Canastero *Asthenes hudsoni* from Rio Grande do Sul, Brazil. *Cotinga*, 31:44-46.