

Curlew Sandpipers *Calidris ferruginea* in the western Atlantic: the first, second, and third Brazilian records from Ceará and Maranhão

Lukas J. Musher^{1,2,8}, Alexander C. Lees³, Bruno Jackson M. Almeida⁴, Roberta C. Rodrigues⁵,
Carmen E. Fedrizzi⁶, João M. Holderbaum⁶ and David Mizrahi⁷

¹ Department of Ornithology, American Museum of Natural History, Central Park West at 79th Street, New York, New York 10024, USA.

² Department of Ecology, Evolution, and Environmental Biology, Columbia University, 10th Floor Schermerhorn Extension, New York, NY 10027, USA.

³ Cornell Lab of Ornithology, Cornell University, 159 Sapsucker Woods Rd, Ithaca, NY 14850, USA.

⁴ Fundação Mamíferos Aquáticos, Núcleo de Pesquisa, Rua Dr. Jorge Cabral 60, CEP 49032-420, Aracaju, SE, Brazil & Programa de Pós-graduação em Desenvolvimento e Meio Ambiente, Universidade Federal de Sergipe, São Cristóvão, SE, Brazil.

⁵ Programa de Pós-Graduação em Ciência Animal, Centro de Ciências Agrárias, Campus II, Universidade Federal da Paraíba, CEP 58397-000, Areia, PB, Brazil.

⁶ AQUASIS, Avenida José de Alencar, 150, CEP 61627-010, Caucaia, CE, Brazil.

⁷ New Jersey Audubon Society, Center for Research and Education, Route 47 North, Cape May Court House, NJ, 08210, USA.

⁸ Corresponding author: lmusher@amnh.org

Received on 02 November 2015. Accepted on 26 January 2016.

ABSTRACT: Curlew Sandpiper (*Calidris ferruginea*) is a rare spring migrant along the east coast of North America and a casual visitor to Central America and the Caribbean. Here we present documentation for the first, second, and third Brazilian records of *C. ferruginea* from Icapuí, Ceará, and Coroa dos Ovos, Maranhão. In addition, we provide insight into this species' current status and distribution in the western Atlantic in the context of these new records. The appearance of *C. ferruginea* on the Atlantic coast of North America, the Caribbean, Central America, and now, Brazil, suggests that individuals may be displaced from their regular southbound migration along the Palearctic-Afrotropical flyway by northeastern trade winds. Given that *C. ferruginea* is regularly detected on northbound migration throughout the United States, and in light of these three new records for South America, it seems likely that small numbers of this species may be wintering annually undetected in the Atlantic coast of South America.

KEY-WORDS: migration, shorebirds, trade winds, transatlantic vagrancy.

The Curlew Sandpiper (*Calidris ferruginea*) is a monotypic shorebird species (Scolopacidae) that breeds in coastal regions of central Siberia, and migrates through Europe and Asia to wintering grounds spanning from West Africa to New Zealand (O'Brien *et al.* 2006). Fall movements through Europe generally take place in a southeasterly direction between July and October, and occur predominantly via the eastern Atlantic, Black, Caspian, and Mediterranean Seas (Hayman *et al.* 1986). Northbound migration generally occurs from April through May following similar routes.

Hanson (2006) summarizes the historical status of *C. ferruginea* within North America, noting that the species is a regular spring migrant along the Atlantic coast. Despite the regularity of *C. ferruginea* in North America, there have been relatively few Western Atlantic records from outside the USA and Canada. *Calidris ferruginea*

is a casual visitor to Central America and the Caribbean (Hayman *et al.* 1986, Stiles & Skutch 1989, Raffaele *et al.* 1998). In the Caribbean, records exist from the western islands extending from Puerto Rico to Trinidad and Tobago (Raffaele *et al.* 1998, Kenefick & Hayes 2006, Buckley *et al.* 2007, Sullivan *et al.* 2009). Despite the frequency of records in Central America, there are only three records from South American countries: two from the Pacific coast in Ecuador and Peru, and one from the Atlantic coast of Chubut in Argentina (Graves & Plenge 1978, Ridgely & Greenfield 2001, Kovacs *et al.* 2005).

In northeastern Brazil, the mangroves and mudflats of the Gulf of Maranhão, and the salt marshes and beaches around Icapuí, Ceará are well known to be major refuges for many wintering migratory shorebirds (Morrison & Ross 1989, Rodrigues 2000, Rodrigues 2007, De Luca *et al.* 2009). The region hosts internationally important

populations of Semipalmated Plover (*Charadrius semipalmatus*), Black-bellied Plover (*Pluvialis squatarola*), Short-billed Dowitcher (*Limnodromus griseus*), Red Knot (*Calidris canutus*), Semipalmated Sandpiper (*C. pusilla*), Sanderling (*C. alba*), Hudsonian Whimbrel (*Numenius hudsonicus*), and Spotted Sandpiper (*Actitis macularius*) among others (Rodrigues 2000). With such large concentrations of shorebirds regularly wintering in northeastern Brazil, it is likely that the region hosts many vagrant, or even “pseudo-vagrant” (*sensu* Gilroy & Lees 2003) shorebirds. Critically, northeastern Brazil’s eastward protrusion into the Atlantic and relatively close geographic proximity to West Africa (<2,900 km), makes it a logical and predictable conduit for transatlantic vagrancy. Some vagrant Palearctic waterbirds such as Bar-tailed Godwit (*Limosa lapponica*), Eurasian Whimbrel (*Numenius phaeopus*), and Ruff (*Calidris pugnax*), among others, have been observed in the states of Maranhão, Ceará, and Pará, as well as in the Atlantic islands of Fernando de Noronha, Atol das Rocas, and the Saint Peter and Saint Paul Archipelago (Girão *et al.* 2006, Kober *et al.* 2006, Silva & Olmos 2006, Fedrizzi *et al.* 2007, Almeida *et al.* 2013, Lees *et al.* 2014).

Despite the increasing frequency of detection of vagrant *C. ferruginea* in the western Atlantic in recent

years, especially in the Caribbean, there have been no published records from Brazil. Furthermore, we are aware of only one documented record from the South American Atlantic coast (see Kovacs *et al.* 2005). Here we present documentation for the first, second, and possibly third records of *C. ferruginea* for Brazil. We additionally provide insight into this species’ current status and distribution in the western Atlantic in the context of these new records.

On 12 December 2010, CEF and JMH accompanied by Fabio Nunes located a *C. ferruginea* while conducting shorebird surveys on the Banco dos Cajuais, Icapuí, state of Ceará, Brazil, (04°41’S; 37°21’W) (Figure 1). The bird was seen foraging with *C. pusilla* before flying east over the ocean.

On 25 January 2013, LM photographed a *C. ferruginea* in basic plumage feeding with *C. pusilla* on the beach at low tide on the island of Coroa dos Ovos, state of Maranhão, Brazil (Figure 2; 01°26’S; 45°9’W). The bird was recorded at the same place again on 28 and 29 January (Figure 3) roosting high on the beach with *C. pusilla* during the high tide. One year later, on 12 January 2014, Thomas Magarian discovered a *C. ferruginea* (either a returning bird or another individual) at the same location (Figures 4 and 5).



FIGURE 1. Curlew Sandpiper, *Calidris ferruginea* (center), with Ruddy Turnstone, *Arenaria interpres*, on 12 December 2010 on Banco dos Cajuais, Icapuí, State of Ceará, Brazil. Note long decurved bill, long legs, gray breast, and white supercilium. Photo: Fabio Nunes.



FIGURE 2. Curlew Sandpiper, *Calidris ferruginea* (center right), with Semipalmated Sandpipers, *Calidris pusilla*, in flight, taken at Coroa dos Ovos on 25 January 2013. Note clean white rump. Photo: Lukas Musher.



FIGURE 3. Curlew Sandpiper, *Calidris ferruginea* (center), with Semipalmated Sandpipers, *Calidris pusilla* (background), on Coroa dos Ovos, photographed on 29 January 2013. Note long decurved bill that is pointed at the tip, long legs, gray mantle and breast. Photo: Lukas Musher.



FIGURE 4. Curlew Sandpiper, *Calidris ferruginea* (center), with Semipalmated Sandpipers, *Calidris pusilla*, roosting at high tide on Coroa dos Ovos, photographed on 12 January 2014. Photo: Lukas Musher.



FIGURE 5. Curlew Sandpiper, *Calidris ferruginea* (center back), with two Semipalmated Sandpipers, *Calidris pusilla*, in flight at Coroa dos Ovos on 12 January 2014. Photo: Lukas Musher.

After all three observations, the authors quickly decided that the bird in question could safely be identified as *C. ferruginea*. There are no regularly occurring similar species in Brazil (Piacentini *et al.* 2015), but separation from Dunlin (*Calidris alpina*) can be difficult. *Calidris alpina* is not unprecedented in Atlantic South America including a type specimen from Cayenne, French Guyana (Greenwood 1983), and sight records from Venezuela and Argentina (Lesterhuis & Clay 2003). It is normally a short distance migrant wintering in higher northern latitudes throughout its range, although Lesterhuis & Clay (2003) list 16 records from South America.

All three individuals can be readily separated from *C. alpina* by looking at 1) bill structure, 2) relative leg length, and 3) plumage characteristics. These individuals differ from typical *C. alpina* by having 1) a long, thin, decurved bill with a pointy tip, 2) relatively long legs, 3) gray upperparts with a pale white breast, and 4) a prominent white rump. *Calidris alpina* should have 1) a heavy bill decurved primarily at the rostral end, 2) relatively short legs, 3) brownish gray upperparts with a dark breast, and 4) a black vertical stripe on the rump (O'Brien *et al.* 2006). White-rumped Sandpiper (*C. fuscicollis*) is also superficially similar in having a white rump, but has a much shorter beak and very different structure with a squat appearance and long primary projection.

Given the difficulty of access and infrequent observer coverage of coastal regions of northeastern Brazil, vagrant and "pseudo-vagrant" species must be highly under-recorded (Lees *et al.* 2014). We are only just beginning to understand the status of many Palearctic and rare Nearctic shorebirds in Brazil including Bar-tailed and Marbled Godwits (*L. fedoa*), and Ruff, among others (Kober *et al.* 2006, Girão *et al.* 2006, Dias *et al.* 2013), including *C. ferruginea*. With *C. ferruginea* regularly moving through eastern North America (Hanson 2006), there may be small numbers wintering undetected on the South American Atlantic coast. Birders and ornithologists in Brazil should check for this species wherever large numbers of shorebirds congregate in migration and winter, especially when *C. pusilla* is present (O'Brien *et al.* 2006).

The regular appearance of *C. ferruginea* in the western Atlantic and now in northeastern Brazil suggests that individuals may be displaced from their regular southbound migration along the Palearctic-Afrotropical flyway rather than West-Pacific flyway, which likely accounts for records in Ecuador and Peru (Graves & Plenge 1978, Ridgely & Greenfield 2001). It is possible that northeastern trade winds regularly displace *C. ferruginea* across the Atlantic to Central and South Americas. This hypothesis is supported by the regularity of *C. ferruginea* in Barbados, the easternmost island in the Lesser Antilles, which included a record from September

1969 of an individual banded only 14 days prior in Belgium (Hayman *et al.* 1986). Northeast and southeast Trade Winds meet along the equator and blow from east to west, potentially concentrating the landfall of *C. ferruginea* and other Palearctic migrants in coastal regions of northeastern Brazil (see also Fedrizzi *et al.* 2007).

These basic-plumaged birds are difficult to detect on wintering grounds in South America due to their scarcity, inconspicuous plumage, and low birder density. In spring these individuals, now in breeding plumage, follow coastlines north and are detected by birders at well-watched coastal hotspots in the USA and Canada, facilitated by their unmistakable plumage (Howell *et al.* 2014). This hypothesis, albeit speculative, may explain the relative rarity of the species as an autumn vagrant in North America.

Similar patterns are found in other transatlantic vagrants, such as the Little Egret (*Egretta garzetta*; Murphy 1992), Western Reef-Heron (*Egretta gularis*; Fedrizzi *et al.* 2007), and White Wagtail (*Motacilla alba*; Ingels *et al.* 2010). If small numbers of Palearctic shorebirds have established wintering "pseudo-vagrant" populations in the Neotropics, then understanding the links between Palearctic breeding grounds, migration routes, and South American wintering grounds may have important implications for shorebird conservation and management (see Lees & Gilroy 2004). With shorebird numbers at all time lows and falling annually (Prÿs-Jones *et al.* 1994, Bart *et al.* 2007, Sutherland *et al.* 2012), it is of paramount importance to understand the status and distributions of shorebirds globally. Species and regions of high conservation importance and ecological value can then be prioritized for management.

ACKNOWLEDGEMENTS

We thank the US Fish and Wildlife Service and Disney Worldwide Conservation Fund for financial support for LM, BA, and DM to conduct shorebird ecology and conservation research in northeastern Brazil in 2013 and 2014. We also thank two anonymous reviewers for their comments on an earlier version of this manuscript.

REFERENCES

- Almeida, B. J. M.; Rodrigues, R. C.; Mizrahi, D. & Lees, A. C. 2013. A Lesser Black-backed Gull *Larus fuscus* in Maranhão: the second Brazilian record. *Revista Brasileira de Ornitologia*, 21: 213-216.
- Bart, J.; Brown, S.; Harrington, B. & Morrison, R. I. G. 2007. Survey trends of North American shorebirds: population declines or shifting distributions? *Journal of Avian Biology*, 38: 73-82.
- Buckley, P. A.; Massiah, E. B.; Hutt, M. B.; Buckley, F. G. & Hutt, H. F. 2007. *The birds of Barbados*. British Ornithologists' Union Checklist No. 24. London: British Ornithologists' Union.

- De Luca, A. C.; Develey, P. F.; Bencke, G. A. & Goerck, J. M. (Eds.). 2009. Áreas importantes para a conservação das aves no Brasil. Parte II – Amazônia, Cerrado e Pantanal. São Paulo: SAVE Brasil.
- Dias, D. F.; Rocha, R. P. & Lees, A. C. 2013. First documented record of the Ruff *Philomachus pugnax* (Scolopacidae) in Brazil. *Revista Brasileira de Ornitologia*, 21: 126-128.
- Fedrizzi, C. E.; Carlos, C. J.; Vaske Jr., T.; Bugoni, L.; Viana, D. & Vêras, D. 2007. Western Reef-Heron *Egretta gularis* in Brazil (Ciconiiformes: Ardeidae) *Revista Brasileira de Ornitologia*, 15: 481-483.
- Gilroy, J. G. & Lees, A. C. 2003. Vagrancy theories: are autumn vagrants really reverse migrants. *British Birds*, 96: 427-438.
- Girão, W.; DiCostanzo, J.; Campos, A. & Albano, C. 2006. First record of Bar-tailed Godwit *Limosa lapponica* (Linnaeus, 1758) for the Brazilian mainland. *Revista Brasileira de Ornitologia*, 14: 468-469.
- Graves, G. R. & Plenge, M. A. 1978. First record of Curlew Sandpiper in Peru. *Condor*, 80: 455.
- Greenwood, J. G. 1983. Post-nuptial primary moult in Dunlin *Calidris alpina*. *Ibis*, 125: 223-228.
- Hanson, J. W. 2006. Status of Curlew Sandpiper *Calidris ferruginea* in Canada and the United States of America, excepting Alaska. *International Wader Studies*, 19: 28-30.
- Hayman, P.; Marchant, J. & Prater, T. 1986. *Shorebirds: an identification guide*. Boston: Houghton Mifflin Company.
- Howell, S. N.; Lewington, I. & Russell, W. 2014. *Rare birds of North America*. Princeton, NJ: Princeton University Press.
- Ingels, J.; Claessens, O.; Luglia, T.; Ingremeau, P. & Kenefick, M. 2010. White Wagtail *Motacilla alba*, a vagrant to Barbados, Trinidad and French Guiana. *Bulletin of the British Ornithologists' Club*, 130: 224-226.
- Kenefick, M. & Hayes, F. E. 2006. Trans-Atlantic vagrancy of Palearctic birds in Trinidad and Tobago. *Journal of Caribbean Ornithology*, 19: 61-72.
- Kober K.; Soares, R. K. P. & Rodrigues, A. A. F. 2006. First records of Marbled Godwit (*Limosa fedoa*) in Brazil. *Revista Brasileira de Ornitologia*, 14: 465-467.
- Kovacs, C. J.; Kovacs, O.; Kovacs, Z. & Kovacs, C. M. 2005. *Illustrated handbook of the birds of Patagonia*. Rio Negro: Museo Ornitológico Patagónico.
- Lees, A. C. & Gilroy, J. J. 2004. Pectoral Sandpipers in Europe. *British Birds*, 97: 638-646.
- Lees, A. C.; Thompson, I. & Moura, N. G. 2014. Salgado Paraense: an inventory of a forgotten coastal Amazonian avifauna. *Boletim do Museu Paraense Emílio Goeldi, Ciências Naturais*, 9: 135-168.
- Lesterhuis, A. J. & Clay, R. P. 2003. The first record of Dunlin (*Calidris alpina*) in Paraguay and a summary of South American records of the species. *Hornero*, 18: 65-67.
- Morrison, R. I. G. & Ross, R. K. 1989. *Atlas of Nearctic shorebirds on the coast of South America*. v. 2. Ottawa: Canadian Wildlife Service.
- Murphy, W. L. 1992. Notes on the occurrence of the Little Egret (*Egretta garzetta*) in the Americas, with reference to other Palearctic vagrants. *Colonial Waterbirds*, 15: 113-123.
- O'Brien, M.; Crossley, R. & Karlson, K. 2006. *The shorebird guide*. Boston, MA: Houghton Mifflin Company.
- Piacentini, V. D. Q.; Aleixo, A.; Agne, C. E.; Maurício, G. N.; Pacheco, J. F.; Bravo, G. A.; Brito, G. R. R.; Naka, L. N.; Olmos, F.; Posso, S.; Silveira, L. F.; Betini, G. S.; Carrano, E.; Franz, I.; Lees, A. C.; Lima, L. M.; Pioli, D.; Schunck, F.; Amaral, F. R.; Bencke, G. A.; Cohn-Haft, M.; Figueiredo, L. F.; Straube, F. C. & Cesari, E. 2015. Annotated checklist of the birds of Brazil by the Brazilian Ornithological Records Committee. *Revista Brasileira de Ornitologia*, 23: 90-298.
- Prŕys-Jones, R. P.; Underhill, L. G. & Waters, R. J. 1994. Index numbers for waterbird populations. II. Coastal wintering waders in the United Kingdom, 1970/71-1990/91. *Journal of Applied Ecology*, 31: 481-492.
- Raffaele, H.; Wiley, L.; Garrido, O.; Keith, A. & Raffaele, J. 1998. *A guide to the birds of the West Indies*. Princeton, NJ: Princeton University Press.
- Ridgely, R. S. M. & Greenfield P. J. 2001. *The birds of Ecuador*. v. 1. Status, distribution, and taxonomy. Ithaca, NY: Cornell University Press.
- Rodrigues, A. A. F. 2000. Seasonal abundance of Nearctic shorebirds in the Gulf of Maranhão, Brazil. *Journal of Field Ornithology*, 71: 665-675.
- Rodrigues, A. A. F. 2007. Priority areas for conservation of migratory and resident waterbirds on the coast of Brazilian Amazonia. *Revista Brasileira de Ornitologia*, 15: 209-218.
- Silva, R. S. & Olmos, F. 2006. Noteworthy bird records from Fernando de Noronha, northeastern Brazil. *Revista Brasileira de Ornitologia*, 14: 470-474.
- Stiles, F. G. & Skutch, A. F. 1989. *A guide to the birds of Costa Rica*. Ithaca, NY: Cornell University Press.
- Sullivan, B. L.; C. L. Wood; M. J. Iliff; R. E. Bonney; D. Fink & S. Kelling. 2009. eBird: A citizen-based bird observation network in the biological sciences. *Biological Conservation*, 142: 2282-2292.
- Sutherland, W. J.; Alves, J. A.; Amano, T.; Chang, C. H.; Davidson, N. C.; Finlayson, C. M.; Gill, J. A.; Gill R. E. Jr.; González, P. M.; Gunnarsson, T. G.; Kleijn, D.; Spray, C. J.; Székely, T. & Thompson, D. B. A. 2012. A horizon scanning assessment of current and potential future threats to migratory shorebirds. *Ibis*, 154: 663-679.

Associate Editor: Marcos P. Dantas