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Transatlantic vagrancy in northern South America: eight Old World bird taxa new to French Guiana

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SUMMARY.—We document the first records in French Guiana of eight Old World taxa during the period 2018–24: Common Swift *Apus apus*, Wood Sandpiper *Tringa glareola*, Eurasian Whimbrel *Numenius phaeopus phaeopus*, Audouin's Gull *Ichthyæetus audouinii*, Purple Heron *Ardea purpurea*, Squacco Heron *Ardeola ralloides*, Black Kite *Milvus migrans* and Yellow-billed Kite *M. aegyptius*. Most of these occur very rarely in South America and sometimes anywhere in the New World. Indeed, the record of Yellow-billed Kite is the first in the Americas. With these discoveries, French Guiana confirms its high potential for Eurasian vagrants and is now the South American country with the second-largest number of records of Old World species. Factors and meteorological events that might have led to these remarkable observations are discussed.

Vagrant species sometimes represent a significant proportion of the local birdlife, as is the case for Great Britain and the Azores, for which 49.8% and 77.5% of the avifauna comprises vagrants (Barcelos *et al.* 2015, BOU 2022). Their observation is a major motivation for many birdwatchers. Due to their geographic location, certain countries or regions are more favourable to the discovery of vagrants: islands and localities sited on major avian flyway are more likely than others to receive such lost birds (Lovette & Fitzpatrick 2016, Lees & Gilroy 2021).

Prevailing winds also play a major role: because of the prevalence of westerly winds over the North Atlantic during post-nuptial migration, sightings in western Europe of vagrants from North America are far more numerous than records in the latter continent of Old World birds (Ebels 2002). In South America, interest in the potential for Palearctic vagrants appears to be less for a variety of reasons: the year-round presence of a rich avifauna, large gaps in knowledge for many resident birds, the difficulty of identifying potential vagrant hotspots, much lower observer numbers, and simple lack of awareness of the potential for very rare migrants to occur. Nevertheless, several remarkable records of Palearctic and Afrotropical species have been documented in South America, demonstrating that transatlantic wandering does not only occur west to east. The impact of prevailing south-easterly winds between West Africa and South America should not be overlooked as long-range over-water vagrancy is most frequent where coast-hugging flyways pass through regions with prevailing offshore winds (Lees & Gilroy 2021). Some remarkable examples of Old World migrants found in Brazil include: Corn Crake *Crex crex*, Collared Pratincole *Glareola pratincola*, Eurasian Hobby *Falco subbuteo*, Redwing *Turdus iliacus* and Common Cuckoo *Cuculus canorus* (Soto & Filippini 2003, Brito *et al.* 2013, Burgos & Olmos 2013, Whittaker *et al.* 2019, Pallinger *et al.* 2023).

Although these observations may be considered anecdotal and insignificant, vagrancy is a powerful biological phenomenon that can provide information on the distribution and

behaviour of species, particularly in the context of climate change, including changes in migration routes, evolution of new breeding and wintering sites, the influence of extreme weather events, and population demography (Tostain & Dujardin 1989, Veit 2008, Lees & Gilroy 2021, Dufour *et al.* 2022), which can possess implications for conservation (Jiguet *et al.* 2013). In some cases, repeat vagrancy can lead to colonisation, as with Squacco Heron *Ardeola ralloides* on the Fernando de Noronha archipelago in Brazil (Silva e Silva & Olmos 2006, Davis 2010, Whittaker *et al.* 2019), Little Egret *Egretta garzetta* in Barbados (Massiah 1996, Buckley *et al.* 2009) and Antigua (Kushlan & Prosper 2009) and Cattle Egret *Bubulcus ibis*, which colonised South America from Africa and thereafter the rest of the New World (Massa *et al.* 2014).

Here, we present records in French Guiana of seven species and one subspecies native to Eurasia or Africa between 2018 and 2024 that are new to the country and sometimes to the continent. All these records have been documented with photographs and accepted by the French Guiana rarities committee. They raise the number of Old World species to 20 (in addition to a Eurasian subspecies *Numenius p. phaeopus*), and the number of bird species recorded in French Guiana to 748 as of 11 February 2024 (CHG 2024).

COMMON SWIFT *Apus apus*

On 25 December 2021, a dead swift (Fig. 1) was found by V. Pontana and J. F. Szpigel on Montabo beach in Cayenne (04°56'33"N, 52°17'44"W). The bird's poor condition and its measurements did not permit the observers to distinguish between Common Swift *Apus apus* and Black Swift *Cypseloides niger*, but its identification as Common Swift was confirmed via DNA analysis (B. Mila *in litt.* 2022).

Common Swift is a Eurasian species that winters in Africa south of the equator (Chantler *et al.* 2020). This is the third record for South America. The first was of an individual



Figure 1. Common Swift *Apus apus* found dead on Montabo beach, Cayenne, French Guiana, 25 December 2021 (Jean-François Szpigel)

photographed at sea off Suriname on 12 July 2012 (de Boer *et al.* 2014). More recently, one was photographed on 3 May 2020 by S. Stapert at Belnem South, Bonaire, in the Leeward Antilles. It was photographed again by S. Schnoll on 5–6 May 2020 at the same site (<https://ebird.org/checklist/S68517041>, <https://ebird.org/checklist/S68517968>). Two reports have been mentioned for the West Indies: a likely record from Grenada in 1971 (Kirwan *et al.* 2019) and one documented in Puerto Rico on 9 November 2015 by J. Rosado (<https://ebird.org/pr/checklist/S25796337>). In North America, it has been observed on several occasions, mainly on the east coast, but also in Alaska, on St. Paul (Howell *et al.* 2014).

Common Swift is the 12th member of the Apodidae recorded in French Guiana (CHG 2024) and the second of Palearctic origin after the remarkable record of an Alpine Swift *Apus melba* (Otte 2004).

WOOD SANDPIPER *Tringa glareola*

On 11 September 2019, a first-year was photographed (Figs. 2–3) by PL feeding in wet pastures at Lambert equestrian centre, Montsinéry-Tonnégrande (04°52'58"N, 52°31'19"W). These pastures, still partially flooded at the start of the dry season, were highly attractive to migrant waders. Over a few weeks, 13 species were observed there including American Golden Plover *Pluvialis dominica* and Pectoral Sandpiper *Calidris melanotos*. The *Tringa* stayed at least three days, being seen again on 13 September by HF, PL & OT. There were no attempts to find it again thereafter and the site is known to have quickly dried out.



Figure 2. First-year Wood Sandpiper *Tringa glareola*, Montsinéry-Tonnégrande, French Guiana, 13 September 2019; note the long, prominent white supercilium reaching behind the eye, densely speckled upperparts, yellowish-green legs and diffusely spotted breast (indicating a first-year) (Olivier Tostain)



Figure 3. First-year Wood Sandpiper *Tringa glareola* (behind) with Solitary Sandpiper *T. solitaria*, Montsinéry-Tonnégrande, French Guiana, 13 September 2019; note the white supercilium and speckled upperparts versus the more uniform upperparts of the Solitary Sandpiper (Hugo Foxonet)

Wood Sandpiper is a migratory Eurasian wader that winters in Africa, South and South-East Asia and as far south as Australia (van Gils *et al.* 2020). This is the first documented mainland record and only the third in South America, following one on Tobago during December 1996–February 1997 (Kenefick & Hayes 2006) and a March 2018 record on Fernando de Noronha, Brazil (Whittaker *et al.* 2019). In addition, there is a more recent photographic record, again on Tobago, on 17 February 2020 (M. Kenefick *in litt.* 2024). However, the species has already been seen many times on both coasts of North America (Howell *et al.* 2014) as well as in the Caribbean (Levesque & Jaffard 2002, Buckley *et al.* 2009, Kirwan *et al.* 2019).

The species becomes the 40th species of shorebird (CHG 2024) and sixth Eurasian wader recorded in French Guiana, after Terek Sandpiper *Xenus cinereus* (Mazar Barnett *et al.* 2005), Common Greenshank *Tringa nebularia* (Claessens *et al.* 2015), Bar-tailed Godwit *Limosa lapponica* (Claessens *et al.* 2015), Curlew Sandpiper *Calidris ferruginea* (Rufraay *et al.* 2019) and Ruff *C. pugnax* (GEOG 2023).

EURASIAN WHIMBREL *Numenius phaeopus phaeopus*

On 28 April 2020, a Eurasian Whimbrel was photographed (Figs. 4–5) in flight by OT at Pointe des Amandiers, Cayenne (04°56'37"N, 52°19'55"W). Accompanied by a Hudsonian Whimbrel *N. p. hudsonicus*, a common migrant in French Guiana (GEOG 2023), both were heading towards a roost further east. On 25 April 2021, one was observed by LK on a rocky islet near Montabo beach, Cayenne (04°56'57"N, 52°18'00"W) and on 13 May 2021, at the



Figures 4–5. Eurasian Whimbrel *Numenius phaeopus phaeopus* (right) with Hudsonian Whimbrel *N. p. hudsonicus*, Pointe des Amandiers, Cayenne, French Guiana, 28 April 2020; note the pale underwing-coverts contrasting with brown underwing-coverts of *hudsonicus* and white rump continuing onto the back (Olivier Tostain)

same site, OC, LK & OT photographed what was probably the same individual, both times being identified by the white rump and white underwing-coverts via direct comparison with Hudsonian Whimbrel (Skeel & Mallory 2020).

Eurasian Whimbrel is a migrant that breeds from north-east Greenland to north-east Siberia and winters in south-west Europe, Africa, the Middle East, India, south-east Asia and as far south as Australia (Skeel & Mallory 2020). Our records in French Guiana are among the few to be documented of this taxon in South America: there are two photographic records in Trinidad & Tobago in October 2001 and February 2020 (M. Kenefick *in litt.* 2024) and a specimen collected on Fernando de Noronha, Brazil, in 1973 (Olson 1981). Ours

therefore seems to be the first mainland record in South America. However, this subspecies is a more frequent visitor to the Caribbean and Atlantic coast of North America (Buckley *et al.* 2009, Kirwan *et al.* 2019, Skeel & Mallory 2020).

N. p. phaeopus is the seventh Eurasian wader (CHG 2024) to be reported in French Guiana.

AUDOUIN'S GULL *Ichthyæetus audouinii*

On 17 January 2021, a third-year individual was photographed (Figs. 6–7) by GC at the Pointe de la Roche Bleue in Saint-Laurent-du-Maroni (05°30'15"N, 54°01'59"W), a town bordering Suriname on the Maroni River, c.30 km inland of the coast. The bird was seen five times in the company of Laughing Gulls *Leucophaeus atricilla* and Large-billed Terns *Phaetusa simplex* on a rocky islet during 17–30 January 2021, and was probably the same bird seen in Suriname at Paramaribo on 25 February 2021 (M. van den Bergh; <https://ebird.org/checklist/S82961308>). Just over two years later, on 28 March 2023, an adult was photographed (Figs. 8–9) by GC at the same site as in 2021. It was observed daily until 3 April 2023 by GC, HF, T. Ferrieux & A. Grave, and was perhaps the immature seen in 2021. Finally, probably the same bird, now adult, was at the same site on 27 January–2 February 2024 (GC).

Distributed throughout the Mediterranean basin and on the North African Atlantic coast (Burger *et al.* 2020), this gull is extremely rare in the New World, with all other records also from South America. The first record was a first-year on 10 December 2016 at Brickfield on the west coast of Trinidad (Lallsing 2018). It was seen again on 14 January 2017, then on 30 March–3 April 2017 and in August at the same site (Lallsing 2018). On 22 March 2018, a third-year was photographed along the Suriname River, c.10 km north of Paramaribo, Suriname, where it remained until at least 15 April 2018; given the species' exceptional status in South America and the age agreement, it was assumed to be the same individual seen a year earlier in Trinidad (Kasius 2019). Under a similar scenario, the bird recorded in French Guiana and Suriname from 2021 to 2024 should be viewed as the second individual in the Americas.

Audouin's Gull is the 28th species of Laridae recorded in French Guiana (CHG 2024) and the fifth from the Palearctic after Black-headed Gull *Chroicocephalus ridibundus* (GEOG



Figures 6–7. Third-year Audouin's Gull *Ichthyæetus audouinii*, Pointe de la Roche Bleue, Saint-Laurent-du-Maroni, French Guiana, 28 January 2021; note the red-and-black bicolored bill, dark primaries, tertials and patterned upperparts indicating a third-year (Grégory Cantaloube)



Figures 8–9. Adult Audouin's Gull *Ichthyaetus audouinii*, Saint-Laurent-du-Maroni, French Guiana, 29 March 2023; note the elegant, pale appearance, red bill, dark eye and olive-grey legs typical of this species (Grégory Cantaloube)

2023), Lesser Black-backed Gull *Larus fuscus* (GEPOG 2023), Common Gull *L. canus* (Rufraý et al. 2019) and White-winged Tern *Chlidonias leucopterus* (Rufraý et al. 2019, GEPOG 2023).

PURPLE HERON *Ardea purpurea*

One was seen three times in May 2018 along the Kaw River in Kaw-Roura Nature Reserve (at Régina; 04°26'19"N, 52°03'31"W): it was discovered by VB on 23 May and seen on 29 and 31 May by B. Ferlay. A subadult (Figs. 10), identified by its pale upperwing-coverts, it foraged in a marsh bordering the river. Five years later, on 5 December 2023, a first-year (Fig. 11) was photographed by JNW, again along the Kaw River in Kaw-Roura Nature Reserve, only c.3 km from the previous site (at 04°26'22"N, 52°05'08"W).

Purple Heron is widespread in Eurasia, Africa and Oceania (Martínez-Villata et al. 2020). These are the first mainland records in the New World and the sixth and eighth in South America; all the other sightings are from islands. The species has been reported twice on the Brazilian archipelago of Fernando de Noronha: an undocumented record of an immature in June 1986 (Teixeira et al. 1987, Piacentini et al. 2015) and a documented

record of a second-year (<http://www.wikiaves.com/2504428>) on the same island in March 2017–April 2018 (Ferreira *et al.* 2019). Four documented records are available for Trinidad & Tobago: in September 1999, September–October 2002, February–April 2010, and January 2020 (Kenefick 2004, Kenefick & Hayes 2006, Kenefick 2012, Behrstock & Kenefick 2012; M. Kenefick *in litt.* 2024). Finally, the six other New World records all come from Barbados in the Caribbean (Kirwan *et al.* 2019).

Purple Heron is the 20th species of Ardeidae recorded in French Guiana (CHG 2024).

SQUACCO HERON *Ardeola ralloides*

On 26 April 2019, a second-year was photographed (Fig. 12) in rice fields at Mana on the west coast of French Guiana (05°38'27"N, 53°40'59"W) by GC. The bird was foraging along a canal, probably on crabs, when it was flushed by GC. During the following days, several observers failed to find the bird in this vast and largely inaccessible area, but given the suitability of the habitat it is possible that the bird was still present. On 8 January 2023, an adult in basic plumage (Fig. 13) was photographed by C. Marty & A. Vinot in a regularly surveyed flooded pasture along the Guatemala Road near Kourou (05°06'14"N, 52°35'02"W). The bird was seen several times at the same location feeding on frogs, and was last reported on 12 January (M. Baumann, HF, T. Ferrieux & OT). Less than three months later, on 2 March 2023, an adult in nearly alternate plumage was photographed by I. Morisset at Panato wetland, Awala-Yalimapo (05°44'30"N, 53°55'54"W); it was photographed (Fig. 14) again next day by M. Baumann & GC. This site is *c.*160 km west of



Figure 10 (left). Subadult Purple Heron *Ardea purpurea*, Regina, Kaw-Roura National Nature Reserve, French Guiana, 29 May 2018; note the pale upperwing-coverts indicating a subadult (Benjamin Ferlay)

Figure 11 (right). First-year Purple Heron *Ardea purpurea*, Kaw-Roura National Nature Reserve, Regina, French Guiana, 5 December 2023; note the uniformly reddish-brown face and neck indicating a first-year (Johannes N. Wieggers)



Figure 12. Second-year Squacco Heron *Ardea ralloides*, Mana, French Guiana, 26 April 2019; note the large streaks on the head and neck and fairly dark mantle indicating a second-year (Grégory Cantaloube)



Figure 13. Adult Squacco Heron *Ardea ralloides* in basic plumage, Guatemala road, Kourou, French Guiana, 12 January 2023 (Olivier Tostain)



Figure 14. Adult Squacco Heron *Ardea ralloides* coming into alternate plumage, Panato wetland, Awala-Yalimapo, French Guiana, 3 March 2023 (Grégory Cantaloube)

where the individual was seen in January, but it is possible that the two records involved the same bird that had moulted in French Guiana.

Squacco Heron occurs in southern and central Europe, east to Iran and Kazakhstan, and is widespread in Africa (Martínez-Villata *et al.* 2020). These records constitute the second, third and fifth continental records in the New World. In South America, the species is almost uniquely known from Fernando de Noronha, Brazil, where the first sighting was in June 1986, but given the large and growing number of records it appears to have colonised the archipelago, with birds carrying nesting material observed on several occasions (Silva e Silva & Olmos 2006, Davis 2010, Whittaker *et al.* 2019). The first mainland South America record appears to be an adult documented with photos by R. Amaya and F. Tavora on 18 and 20 March 2018 at Parque Estadual do Coro, Ceará, north-east Brazil (<https://ebird.org/checklist/S43817860>). This site is on the coast c.600 km from Fernando de Noronha. Another was photographed on 15 February 2023 on the mainland at Porto de Galinhas, Pernambuco, Brazil (U. Rêgo, <https://ebird.org/brasil/checklist/S128742678>). Elsewhere in South America, one was recorded in Trinidad & Tobago on 23 May 2019, just 27 days after the first French Guiana bird (Kenefick 2020; M. Kenefick *in litt.* 2024).

Finally, there are two other documented records in the New World, both in the Lesser Antilles: one seen by A. Levesque on Guadeloupe on 10 November 2018 (<https://ebird.org/caribbean/checklist/S49838084>; Gerbracht & Levesque 2019) and the other by R. Chenery and G. Foley on 26–27 November 2021 in Barbados (<https://ebird.org/checklist/S98087082>). The French Guiana records could emanate from the population on Fernando de Noronha, but the possibility of lost transatlantic migrants cannot be rejected as a hypothesis.

Squacco Heron becomes the 21st species of Ardeidae and the third from the Palearctic after Purple Heron (see above) and Little Egret *Egretta garzetta* to be recorded in French Guiana (CHG 2024, GEPOG 2023).

BLACK KITE *Milvus migrans*

On 10 May 2018, QO observed a Black Kite in flight several times around the Iles du Salut, an archipelago of three islets 14 km off Kourou (05°17'15"N, 52°35'20"W). Several photos (Figs. 15–16) were taken, confirming the specific identity. Given the bird's worn plumage, it is difficult to age with certainty based on the photos, but it was probably a second-year and probably of the subspecies *migrans*, which breeds in Europe and winters in West Africa (Davis *et al.* 2021), but certainty is impossible given the quality of the documentation.

Black Kite is a migratory raptor found in Eurasia, Africa and Australasia (Davis *et al.* 2021). This is the third documented record for South America but the first on the mainland. The first record was in 2014, when an adult remained on the Brazilian archipelago of São Pedro e São Paulo, c.1,100 km offshore, during 16 April to 17 May (Nunes *et al.* 2015). Still in 2014, two sightings were documented on eBird (<https://ebird.org/checklist/S20788342>) in November and December by N. Hassanali and J. Mohammed at Pointe-à-Pierre, Couva-Tabaquite-Talparo, Trinidad (Kenefick *et al.* 2019; M. Kenefick *in litt.* 2024). This bird was aged and identified by D. Forsman as a second-year *M. m. migrans* (M. Kenefick *in litt.* 2024). More recently, one was documented in November 2020, March 2022 (M. Kenefick *in litt.* 2024) and on 1 April 2022 at Vega Estate, Couva-Tabaquite-Talparo by V. A. Rangersammy (<https://ebird.org/checklist/S106342486>). There is a strong possibility that all three Trinidad sightings involved the same individual as the different sites are within a few minutes flight of a large garbage dump in south-central Trinidad (M. Kenefick *in litt.* 2024).

Other records have been documented in the West Indies, in the Bahamas, Dominica, Guadeloupe, Barbados, Grenada (K. Carter, <https://ebird.org/checklist/S93838051>) and the British Virgin Islands (Norton 2000, Buckley *et al.* 2009, Kirwan *et al.* 2019; A. Levesque *in litt.* 2022).



Figures 15–16. Probable second-year Black Kite *Milvus migrans*, Iles du Salut, Kourou, French Guiana, 10 May 2018; note worn plumage without visible forked tail, pale greyish head, black bill contrasting with yellow cere, dirty streaked belly (suggesting a second-year) and pale area at the base of the primaries (Quentin d'Orchymont)

Black Kite is the second Palearctic raptor observed in French Guiana, after Eurasian Kestrel *Falco tinnunculus* (Renaudier *et al.* 2010, GEPOG 2023).

YELLOW-BILLED KITE *Milvus aegyptius*

Five years after the Black Kite sighting in Kourou, another Old World kite was identified in French Guiana. On 3 May 2023, a Yellow-billed Kite, probably an adult, was seen in flight by LE in Cayenne (04°56'22"N, 52°20'01"W). Forty-five minutes later, it was photographed (Fig. 17) c.500 m east of the first site by HF & A. Grave. The uniformly pale bill, slender jizz with five visible primaries, chocolate-brown mantle and reddish-brown belly are diagnostic criteria that separate this species from Eurasian *M. migrans* (Clark & Davies 2018). Although still usually considered a subspecies of the latter (David *et al.* 2021), Yellow-billed Kite is increasingly treated as a separate species (Clark & Davies 2018, Gill *et al.* 2024). Distinguishing between the two subspecies of Yellow-billed Kite, *aegyptius* (Egypt, south-west Arabia and the East African coast) and *parasitus* (West, Central and southern Africa, Madagascar and the Comoros) is impossible based on the photos. Unlike Black Kite, Yellow-billed Kite is not a long-distance migrant. *M. a. aegyptius* is usually considered resident, whereas *parasitus* undertakes complex movements influenced by the rainy season (Davis *et al.* 2021). Records of vagrancy far outside the known range of both subspecies are few and poorly documented (eBird 2023) but include the first record on the Canary Islands in March 2020 (Velasco *et al.* 2022).

This record is almost certainly the first documented Yellow-billed Kite in the New World; when treated as a subspecies of Black Kite, it is the sixth record for South America and the first Afrotropical taxon recorded in French Guiana (CHG 2024).



Figure 17. Probable adult Yellow-billed Kite *Milvus aegyptius*, Cayenne, French Guiana, 3 May 2023; note adult-type yellow bill distinguishing it from Black Kite *M. migrans* and the slightly forked tail (Hugo Foxonet)

Discussion

Six species mentioned herein and the Eurasian Whimbrel subspecies have populations that migrate between their breeding grounds in Europe and wintering grounds in Africa and are common on this major flyway (Billerman *et al.* 2022). Yellow-billed Kite, however, is an Afrotropical species that performs only intra-Africa movements (Davis *et al.* 2021).

Black Kite migrates in large numbers through the Strait of Gibraltar between mid-July and late September and between late January and late May (Davis *et al.* 2021). Purple Heron crosses the Mediterranean in autumn between July and October, and in spring from March to May (Martínez-Vilalta *et al.* 2020a). This species is capable of non-stop long-distance flights, as demonstrated by a GPS-tracked bird that migrated 5,600 km south-west from

the Netherlands over the Atlantic Ocean until its signal was lost (van der Winden *et al.* 2010). Squacco Heron moves from Europe to its African wintering grounds during August–November, while its spring migration lasts from February to May (Martínez-Vilalta *et al.* 2020b). Wood Sandpiper migrates south in autumn mainly between mid-July and October, and moves north in March–June (van Gils *et al.* 2020); some individuals are capable of direct flights over 3,500–4,000 km (Tree 2014). Common Swift migrates mainly in late July–October and March–May (Chantler *et al.* 2020). Eurasian Whimbrel is a long-distance migrant that crosses Western Europe mainly between early July and late August, arriving in Africa from late July to early October, while its spring migration is from late February to May (Skeel & Mallory 2020). Birds nesting in Iceland undertake long direct flights over the Atlantic Ocean to Africa. Four Icelandic birds tracked in 2012 completed non-stop flights of 3,900–5,500 km in five days to their wintering grounds (Alves *et al.* 2016). Finally, Audouin's Gull is only a partial migrant; some migrate from the Mediterranean basin to the Atlantic coast of Western Sahara, Mauritania and Senegal via the Strait of Gibraltar between late June and October, returning to their breeding grounds mainly in February–April (Burger *et al.* 2020).

The dates these taxa were discovered in French Guiana are spread over January–May, September and December, which suggests that Palearctic species can be found in French Guiana during their autumn and spring migrations as well as in the boreal winter, i.e., almost year-round. It must be noted that the date a species was first recorded in French Guiana does not necessarily correspond to arrival in the New World. It is possible that some arrived from the Old World weeks or even months earlier, then wandered to various countries before being seen in French Guiana. This uncertainty complicates the analysis of factors, particularly meteorological ones, that might explain their arrival in South America.

Numerous factors are mentioned in the literature to explain the natural occurrence of species outside their normal range: extreme weather, reverse migration, compass errors, magnetic anomalies, overshooting, natural long-distance dispersal or random orientation error by young birds, etc. (Cottridge & Vinicombe 1996, Phillips 2000, Gilroy & Lees 2003, de Juana 2008, Lovette & Fitzpatrick 2016, Lees & Gilroy 2021). Although this subject does not seem to have been specifically discussed for east–west transatlantic crossings, the same factors are probably involved. Many cases of vagrancy are probably the result of multiple processes occurring simultaneously (Lees & Gilroy 2021). Thus, understanding the precise causes in any given region or species will always be difficult, due to a plethora of likely mechanisms. In the case of French Guiana, this is reinforced by the fact that records are from different times of year and involve both nocturnal and diurnal migrants flying at different altitudes (Billerman *et al.* 2022).

Several combined hypotheses appear credible and likely explain the arrival of such birds in French Guiana. Inexperience among young individuals may be an important factor. Experienced birds are better at analysing orientation cues compared to juveniles, which must rely solely on genetically inherited tools (Lovette & Fitzpatrick 2016, Lees & Gilroy 2021). Of the minimum of ten individuals mentioned herein, five were certainly immature (both Purple Herons, the first Squacco Heron, Wood Sandpiper and first Audouin's Gull) and the Black Kite was probably immature.

It is also possible that meteorological events in north-west Africa and Spain divert birds on autumn or spring migration westwards as far as South America or the Caribbean due to the trade winds, which blow from the north-east. Of all meteorological variables, wind has the greatest impact on a migrant's performance and navigation (Lovette & Fitzpatrick 2016).

The near-simultaneous Black Kite and Purple Heron records in May 2018 in coastal French Guiana suggests their arrival was possibly influenced by the same meteorological event. The 'cut-off low' phenomenon, often associated with violent winds and sometimes

intense rainfall, can occur at any season in southern Europe and north-west Africa, and can impact the migration of some birds. In May 2018, 'cut-off lows' occurred on the Iberian Peninsula and in Morocco (<http://www.geoclimat.org/2018/06/mai-printemps-2018-Europe.html>, <https://climate.copernicus.eu/>) and may have affected birds on spring migration between Africa and Western Europe, leading (perhaps in combination with other factors) to the discoveries in French Guiana.

Another meteorological phenomenon of variable intensity can significantly impact the migration of Palearctic species in western North Africa: the 'Calima'. This episodic easterly to south-easterly, sand-laden wind from the Sahel reaches the Canary Islands (Spain), c.100 km off the coast of Africa, and sometimes even the Guiana Plateau and the Caribbean (<https://www.atmo-guyane.org/rapport-dactivite-2022/>). The most intense storms, as in February 2020, can include winds in excess of 120 km/h, driving many Palearctic migrants, as well as African species, west over the Atlantic. During the February 2020 Calima, and in the days and weeks thereafter, an unprecedented influx of African species and unusually large number of trans-Saharan migrants were recorded on the Canaries (Gutiérrez *et al.* 2022). The Eurasian Whimbrel at Cayenne in April 2020 may have been another consequence of this episode. However, the Calima phenomenon occurs annually in French Guiana to some extent; during 2003–22, these events occurred mainly in January–March, although they can also occur in April–June and more rarely in October–December (M. Aous *in litt.* 2023). These singular meteorological conditions could be one of the factors responsible for the appearance of certain Old World species in the Western Hemisphere.

The majority of the species reported for the first time in French Guiana herein are long-distance migrants that winter as far as South Africa (eBird 2023), and four (Black Kite, Purple and Squacco Herons, Eurasian Whimbrel) were observed in April or May. These may have crossed the Atlantic Ocean during their spring migration following the trade winds.

The provenance of the Squacco Heron is uncertain. The dates of two of the records in French Guiana (2 March, 26 April) are consistent with the hypothesis of birds originating from the Old World having been blown off course during their spring migration. However, we cannot eliminate the possibility of birds emanating from the colony apparently established on Fernando de Noronha, off Brazil (Silva e Silva & Olmos 2006, Davis 2010, Whittaker *et al.* 2019), 'only' 2,600 km from French Guiana.

Although several of the species mentioned herein appear capable of crossing the Atlantic Ocean unaided, we cannot eliminate the possibility that some individuals were ship-assisted in crossing east to west. This does not invalidate the 'natural' arrival of these birds in French Guiana and inclusion of these species in category A of the French Guiana bird list (CHG 2024).

With 20 species and one subspecies of Old World vagrants belonging to seven families (CHG 2024), French Guiana is the country with the second-largest number of such records in South America, after Brazil (Pacheco *et al.* 2021). To these can be added three pelagic species: Swinhoe's Storm Petrel *Hydrobates monorhis*, Fea's Petrel *Pterodroma feae* and Great Skua *Stercorarius skua* (Flood *et al.* 2017, CHG 2024). Most of these species are non-passerines, which often occur in open habitats making them easier to detect than small passerines in dense or forested habitats.

Other vagrants whose distribution is mainly Eurasian also have small populations in North America, which makes the origin of individuals seen in French Guiana uncertain. This is the case, for example, with Black-legged Kittiwake *Rissa tridactyla*, Great Black-backed Gull *Larus marinus* and Little Gull *Hydrocoloeus minutus* (Ewins & Weseloh 2020, Good 2020, Hatch *et al.* 2020). Also, individuals of European origin, of species widely

distributed in both America and Europe, can be recorded on the west side of the Atlantic Ocean, for example a Common Tern *Sterna hirundo* ringed as a nestling in Finland in 1968 and recovered in Trinidad & Tobago in 1970 (French 1991).

French Guiana's privileged geographical position partly explains the number of records of Palearctic species: it is in the path of easterly trade winds and ideally placed on the Atlantic Flyway, along a major migratory route for North American waders, which Eastern Hemisphere species may use on reaching the Americas. But the dynamism of the French Guiana ornithological community and its familiarity with European species are also factors in the frequency of these observations (Renaudier *et al.* 2011). Lastly, some of these vagrants may have been aided by sea traffic between Europe and the Caribbean or South America, e.g., Eurasian Kestrel *Falco tinnunculus* and White Wagtail *Motacilla alba* (Ingels *et al.* 2010, Renaudier *et al.* 2011).

How frequent would Palearctic species be in South America if observer effort was similar to that in North America or Western Europe, especially during migration periods? How many Palearctic species not recorded on the continent are likely to occur? The majority of such species seen in South America occur regularly in Western Europe, but the possibility of more eastern Eurasian migrants appearing in South America, such as Terek Sandpiper *Xenus cinereus*, plainly exists (White *et al.* 2006). Indeed, some unexpected records have been documented on the Atlantic coast of the USA and Canada, e.g., Red-necked Stint *Calidris ruficollis*, Citrine Wagtail *Motacilla citreola* and Brown Shrike *Lanius cristatus* (Foxall & McLaren 1998, Sibley 2000).

Afrotropical vagrants should not be ignored, as demonstrated by the record of an Allen's Gallinule *Porphyrio alleni* on Fernando de Noronha in Brazil (Bonfa & Plotecya 2020) and the record of Yellow-billed Kite in French Guiana described herein.

French Guiana confirms its high potential for Old World vagrants, and there is no doubt that additional such species will occur in the future. Little Stint *Calidris minuta*, Spotted Redshank *Tringa erythropus*, Little Bittern *Ixobrychus minutus* and European Bee-eater *Merops apiaster* are good candidates.

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