The Red-vented Bulbul *Pycnonotus cafer* (Linnaeus, 1766) – a new invasive bird species breeding in Europe

Jacek J. Nowakowski* and Beata Dulisz
Department of Ecology and Environmental Protection, University of Warmia and Mazury in Olsztyn, Olsztyn 10-727, Plac Lodzki 3, Poland
*Corresponding author
E-mail: jacek.nowakowski@uwm.edu.pl

**Abstract**

The Red-vented Bulbul *Pycnonotus cafer* (Linnaeus, 1766) is an Asian bird species classified as one of the hundred most invasive species in the world. The breeding of the species (adults feeding the fledglings) was observed in 2018 in Costa Calma (Fuerteventura, Canary Islands, Macaronesia). This is the first breeding record for Europe of this species. The first observation of the species was made in Corralejo (Fuerteventura) in 2003. In the period 2013–2018, an important range expansion of the species was recorded in Fuerteventura. In 2018, the species was also recorded in Valencia (Spain) for the first time.

**Key words:** alien birds, animal invasion, introduced species, introduced birds, global invasive species, Canary Islands avifauna

**Introduction**

The occurrence of bird species outside their natural range may be an accidental natural occurrence, resulting from widening their geographical range and adaptation to new environments, or it may be the result of escape from breeding places (zoological and botanic gardens, wildfowl collection, pets in captivity) or an intentional introduction (Shieh et al. 2006; Brochier et al. 2010; Fàbregas et al. 2010; Cassey and Hogg 2015; Canning-Clode 2015). Accidental escapees and single individuals usually survive in the environment quite briefly, and they are not likely to breed in the wild. Local populations, fairly persistent and increasing in number, may be formed in the case of pairs or groups of birds, in favorable circumstances that allow nesting and feeding young to reproductive age. Sol et al. (2002) indicated that the urban environment is conducive to the success of introduced species, and the features of this species often include larger brains. Innovation and plasticity of behavior allows species to adapt to new environmental conditions, develop new food-acquiring techniques and use various food resources. In European cities and natural habitats of Europe, there are more than a dozen introduced species that have developed breeding populations, e.g. waterfowl (Canada Goose *Branta canadensis*)
Nowakowski and Dulisz (2019), BioInvasions Records 8(4): 947–952, https://doi.org/10.3391/bir.2019.8.4.24

The Red-vented Bulbul *Pycnonotus cafer* breeding in Europe

Nowakowski and Dulisz (2019), *BioInvasions Records* 8(4): 947–952, https://doi.org/10.3391/bir.2019.8.4.24

Several species from the Pycnonotidae family are known to rapidly increase their range, easily adapting to new conditions, e.g. the White-eared Bulbul *Pycnonotus leucotis* (Gould, 1836) and the Red-vented Bulbul *Pycnonotus cafer* (Linnaeus, 1766) (del Hoyo et al. 2005). The family Pycnonotidae consists of 138 species from 27 genera spread in Africa, south Asia and the west Indian Ocean islands (del Hoyo et al. 2005). Among invasive birds, the Red-vented Bulbul is classified as one of the hundred invasive species in the world (Lowe et al. 2000). The Red-vented Bulbul is divided into eight subspecies and inhabits the area from the western Himalayas (Pakistan, Jammu, Kashmir and Nepal) to Sri Lanka, and from the Indus valley in the west to the Myanmar area, N Thailand and SW China in the east. In the area of its typical range in Asia, it is associated with dry deciduous woodlands, sparse secondary forest, dry scrub, orchards, gardens, plains and cultivated lands. It was introduced to Polynesia (Fiji, Samoa, Tongatapu, Niuafo‘ou), the Arabian Peninsula (Kuwait, Qatar, Bahrain, United Arab Emirates, Oman), Hawaii (Oahu), as well as to the United States of America and New Zealand, where it is spreading (del Hoyo et al. 2005; Shirihai and Svensson 2018; Fishpool and Tobias 2019). It has not been listed as a breeding species in the Palearctic beyond the Arabian Peninsula (near Persian Gulf), and the northern part of the range in Asia (https://avibase.bsc-eoc.org).

**Results**

On 27.07.–2.08.2018, we watched a pair of Red-vented Bulbul *Pycnonotus cafer* (Linnaeus, 1766) adult birds with three fledglings in the Costa Calma
The Red-vented Bulbul *Pycnonotus cafer* breeding in Europe

Nowakowski and Dulisz (2019), *BioInvasions Records* 8(4): 947–952, https://doi.org/10.3391/bir.2019.8.4.24

Figure 1. *Pycnonotus cafer* – A, B – male, C – a pair, D – a family. Photos by B. Dulisz.

town (Fuerteventura, Canary Islands, Macaronesia) in the gardens of SBH Monica Beach Resort and SBH Costa Calma Palace (28°09′41.7N; 14°13′33.7W). The male often sang, making a characteristic sound with repeated phrases. Adult birds regularly fed the fledglings. The coloration of the birds was typical of the subspecies ssp. *cafer* / *haemorrhous* (del Hoyo et al. 2005; Shirihai and Svensson 2018), with a distinctly cut-out black hood on the head, red undertail-coverts and whitish uppertail-coverts; a characteristic plumage of the breast and sides of the neck, where the feathers had distinct narrow, bright edges and wide, white ends of the bottom parts of the rectrices (Figure 1A–D). The birds were observed in the treestands (gardens) of a holiday resort composed of various trees: palm trees, fig trees, oleanders, yuccas, acacias and shrubs, and often visited the dry shrubs, typical for semi-arid vegetation of the open landscape of the island, located outside the resort’s gardens.

Discussion

This is the first report of this species breeding in the Palaearctic west of the Persian Gulf. The first record of the Red-vented Bulbul from Fuerteventura, Canary Islands was on 28.11.2003 in Corralejo, the next observations took place on 29.07.2006 in the same region of the island (https://avibase.bsc-eoc.org). There were 48 observations of 1 to 5 birds between 2013 and 2019 from Fuerteventura (https://avibase.bsc-eoc.org), but the species has not thus far been recorded as breeding – there are no records on the list of observations in the database. In 2013, it was recorded in Fuerteventura only in one region (La Lajita), in 2014, in two (La Lajita, Costa Calma). In
The Red-vented Bulbul *Pycnonotus cafer* breeding in Europe

Nowakowski and Dulisz (2019), *BioInvasions Records* 8(4): 947–952, https://doi.org/10.3391/bir.2019.8.4.24

2015, one bird was observed in Embalsa de los Molinos, in 2016, the birds inhabited also Tarajelejo, and in 2017, the next regions – La Pared and Pajara. In 2018, it was also observed south from Costa Calma in Playa Sotavento (Figure 2). On 25.03.2018, the Red-vented Bulbul were observed also in Valencia (Spain): one and four individuals in two separate observations (https://avibase.bsc-eoc.org) – Figure 2.

Probably, the first birds on Fuerteventura are escapees from captivity or introduced birds. Bulbuls are popular birds kept in captivity, e.g. the Red whiskered Bulbul *Pycnonotus jocosus* (Linnaeus, 1758) is a common pet bird in Thailand (Mongkolphan et al. 2017). Shieh et al. (2006) reported that the Pycnonotidae, Sturnidae, Timaliidae and Cacatuidae families has significantly high probabilities of escaping from captivity in Asia, in comparison to other birds families. Escape from captivity, especially from zoos is one of the most common ways of spreading alien species of birds (Fàbregas et al. 2010; Cassey and Hogg 2015). One of the first documented information on Red-vented Bulbuls in Fuerteventura in wild is the observation of birds in Corralejo (2003) and in the zoological garden of La Lajita (2013). It seems likely that they started to create a breeding population around 2014–2015, when 4–5 individuals were observed in La Lajita. In the following years, they began to settle in other available areas. The species is classified as a sedentary species, showing possible movements depending on environmental conditions (del Hoyo et al. 2005). Thibault et al. (2019) reported that in New Caledonia, tropical archipelago of the South Pacific Ocean, the Red-vented Bulbul, which was introduced in 1983, expanded its range mainly in urban and suburban areas.
In Fuerteventura, which is a semi-arid island, there are not many habitats available for this species; they are limited only to cities and holiday resorts with gardens and parks, but also may inhabit agricultural plantation.

The situation may be different in the continent (Spain), where the species may spread in more typical, dry deciduous woodlands or in urban tree stands. In Spain in Tarifa (Cadiz) another representative of Pycnonotidae family was noted as breeding, the Common Bulbul *Pycnonotus barbatus* (Desfontaines, 1789), first reported in 2013 (Van der Berg and Haas 2013). The Red-vented Bulbul is classified as the world’s worst invasive species in the IUCN-ISSG list (Thibault et al. 2018). Invasive species are considered to be one of the major threats to native biodiversity, and the impact of invasive alien species is a key component of global change of biodiversity (Sala et al. 2000; Simberloff et al. 2013). The Red-vented Bulbul often hybridizes with White-eared Bulbul *Pycnonotus leucotis* (Gould, 1836) and other species of the genus (Roberts 1992; Grimmett et al. 1998) and is competitive in relation to other species (Thibault et al. 2019). Similar to the Common Myna, the Red-vented Bulbul is aggressive and may outcompete native species (Navjot et al. 2011). These bulbuls can affect the reduction of reproductive success of critically endangered Tahiti Flycatchers *Pomarea nigra* (Sparrman, 1786) (Blanvillain et al. 2003).

It is a generalist and opportunist species; its diet includes fruits, nectar, buds, invertebrates and occasionally vertebrates. In Asia, this bird often comes into conflict with humans, as a species that damages fruit orchards (e.g. bananas and other soft fruits), flowers, beans, tomatoes and pea crops (Bhatt and Kumar 2001). They may also help in the spread of seeds of other invasive plant species (Brochier et al. 2010).

In an analysis of alien bird species impacts (Shirley and Kark 2009), species in the family Pycnonotidae were found to have moderately negative economic and biodiversity impacts. Generalist species from an Indo-Malayan native range such as the Red-vented Bulbul, particularly those forming flocks, were associated with higher impacts.

Acknowledgements

We would like to thank the Liviu G. Pârâu, Piotr Tryjanowski and two anonymous reviewers for their insightful comments and suggestions which led to a significant improvement of the paper.

References

Bhatt D, Kumar A (2001) Foraging ecology of Red-vented Bulbul *Pycnonotus cafer* in Haridwar, India. *Forktail* 17: 109–110

Blanvillain C, Salducci JM, Tutururai G, Maeura M (2003) Impact of introduced birds on the recovery of the Tahiti flycatcher (*Pomarea nigra*), a critically endangered forest bird of Tahiti. *Biological Conservation* 109: 197–205, https://doi.org/10.1016/S0006-3207(02)00147-7

Brochier B, Vangeluwe D, Van der Berg T (2010) Alien invasive birds. Revue scientifique et technique (International Office of Epizootics) 29: 217–226, https://doi.org/10.20506/rst.29.2.1975

Canning-Clode J (2015) Biological Invasions in Changing Ecosystems. Vectors, Ecological Impacts, Management and Predictions. De Gruyter Open, 488 pp, https://doi.org/10.1515/9783110438666
The Red-vented Bulbul *Pycnonotus cafer* breeding in Europe

Nowakowski and Dulisz (2019), *BioInvasions Records* 8(4): 947–952, https://doi.org/10.3391/bir.2019.8.4.24

Cassey P, Hogg CJ (2015) Escaping captivity: The biological invasion risk from vertebrate species in zoos. *Biological Conservation* 181: 18–26, https://doi.org/10.1016/j.biocon.2014.10.023

del Hoyo J, Elliot A, Christie DA (2005) Handbook of the Birds of the World. Vol. 10. Cuckooshrikes to Thrushes. Lynx Edicions, Barcelona, 895 pp

Fàbregas MC, Guillén-Salazar F, Garcés-Narro C (2010) The risk of zoological parks as potential pathways for the introduction of non-indigenous species. *Biological Invasions* 12: 3627–3636, https://doi.org/10.1007/s10530-010-9755-2

Fishpool L, Tobias J (2019) Red-vented Bulbul (*Pycnonotus cafer*). In: del Hoyo J, Elliott A, Sargatal J, Christie DA, de Juana E (eds), *Handbook of the Birds of the World Alive*. Lynx Edicions, Barcelona. https://www.hbw.com/node/57945 (accessed 18 February 2019)

Grimmett R, Inskipp C, Inskipp T (1999) *Exoten in there Avifauna Nordhein-Westfalens*. *Charadrius* 35: 1–15

Haggemeijer WJM, Blair MJ (1997) The EBCC Atlas of European Breeding Birds. T & AD Poyser, 903 pp

Kretzschmar E (1999) *Factors influencing the distribution of exotic bird species in Communidad Valenciana* (Spain). *Ardeola* 48: 149–160

Navjot SS, Şekercioğlu CH, Barlow J, Robinson SK (2011) *Biotic Invasions and Tropical Birds*. In: Navjot SS, Şekercioğlu CH, Barlow J, Robinson SK (eds), Conservation of Tropical Birds. Blackwell Publishing Ltd, pp 126–151, https://doi.org/10.1002/9781444434261.ch6

Ogilvie M (2002) Rare Breeding Birds Panel, Non-Native birds breeding in the United Kingdom in 2000. *British Birds* 95: 631–635

Roberts TJ (1992) *Birds of Pakistan*. Vol. 2. Passeriformes. Oxford Univ. Press, Oxford, 682 pp

Shirihai H, Svensson L (2018) *Handbook of Western Palearctic Birds*. Vol. 1. Passerines: Larks to Warblers. Helm. Bloomsbury Publ. Plc, London, UK, 648 pp

Shirley SM, Kark S (2009) The role of species traits and taxonomic patterns in alien bird impacts. *Global Ecology and Biogeography* 18: 450–459, https://doi.org/10.1111/j.1466-8238.2009.00452.x

Sol D, Timmermans S, Lefebvre L (2002) Behavioral flexibility and invasion success in birds. *Animal Behaviour* 63: 495–502, https://doi.org/10.1006/anbe.2001.1953

Thibault M, Vidal E, Potter MA, Dyer E, Brescia F (2018) The red-vented bulbul (*Pycnonotus cafer*): serious pest or understudied invader? *Biological Invasions* 20: 121–136, https://doi.org/10.1007/s10530-017-1521-2

Thibault M, Vidal E, Potter MA, Masse F, Pujapujane A, Fogliani B, Lannuzel G, Jourdan H, Robert N, Demaret L, Barré N, Brescia F (2019) Invasion by the red-vented bulbul: an overview of recent studies in New Caledonia. In: Veitch CR, Clout MN, Martin AR, Russell JC, *Island invasions: scaling up to meet the challenge*. Occasional Paper SSC no. 62. Gland, Switzerland: IUCN, pp 309–316

Van den Berg AB, Bosman CAW (1999) Rare birds of the Netherlands. Pica press, East Sussex, 397 pp

Van der Berg AB, Haas M (2013) WP reports. *Dutch Birding* 35(4): 251–262