

Editorial comment Paul French, Chair of BBRC, commented: ‘Nina O’Hanlon and Rob Hughes have described the main distinguishing feature of “Taiga Merlin”, and happily the photographs obtained showed the tail well. It was accepted in a single circulation of BBRC. The described size suggests that this bird was a 2CY male, as does the off-white colour of the tail-bands as assessed here <https://sora.unm.edu/sites/default/files/journals/jfo/v043n03/p0191-p0196.pdf>. However, Pyle (2008) gave less weight to the colour of the tail-band, so this individual was left unaged and unsexed beyond a 2CY+. With several records in the Western Palearctic and the seemingly ever-present promise of a split, a twitchable one will be widely appreciated.’

James Gilroy, BOURC Chair, commented: ‘This individual clearly displayed the key diagnostic features placing it among the Nearctic subspecies of Merlin, and the BOURC was satisfied that the plumage

characteristics were sufficient to allow identification as the nominate “Taiga Merlin” *F. c. columbarius*, rather than the paler *F. c. richardsonii*. Populations of Taiga Merlin are highly migratory, and the Committee judged the likelihood of this individual being an escape from captivity to be very low. As with all transatlantic vagrants, there is a possibility that ship assistance played a part in its arrival, but the Committee felt that natural unassisted vagrancy is highly plausible for this taxon – not least because Taiga Merlin is among the most frequently observed raptors on transoceanic migration across the western North Atlantic (Kerlinger *et al.* 1983), suggesting that they are more than capable of long overwater flight. The mid-winter timing of the Caithness record perhaps suggests that the bird arrived in Europe during the previous autumn, although a midwinter movement driven by hard weather is also a possibility.’

Genetic analysis reveals the origin of a Bearded Vulture in northern Europe in summer 2020

Abstract A second-calendar-year Bearded Vulture *Gypaetus barbatus* spent nearly four months in England in 2020, and settled in the Peak District for several weeks in the summer. DNA analysis of feathers collected from a preening site on 30th August revealed that the bird fledged from a French territory in the Bargy Massif, in the Haute-Savoie region of the northwest Alps, on 6th July 2019. Its parents were a wild-hatched male that fledged from the same area, and a female reared in La Garenne Zoo in Switzerland and released as a fledgling in 2006 in Italy.

A second-calendar-year Bearded Vulture *Gypaetus barbatus* was photographed near Balsall Common, West Midlands, during the afternoon of 26th June 2020 (Burrell 2020). Based upon matching plumage characteristics, the bird was identified as the same individual that had been observed in northern France, the Netherlands, Belgium and the Channel Islands during May and June 2020 (Burrell 2020). The vulture was then observed on several days in the southern Peak District before travelling farther north, where it used different roost sites in the vicinity of Derwent Edge throughout July. From 2nd August it settled in an area around Crowden and

Woodhead Reservoir (Viles 2020), before departing the Peak District on 19th September. The vulture was subsequently seen in several counties of central, eastern and southern England, before arriving on the Sussex coast on 14th–15th October. It was last observed from the Beachy Head area, heading out across the Channel towards France on the last date (plate 12). This is the second record of a Bearded Vulture in Britain, the previous record being of another second-calendar-year individual, in southeast Wales and southwest England in May 2016 (McInerny & Stoddart 2019).

On 30th August, the vulture was observed by DB perched and preening on a rocky



12. Bearded Vulture *Gypaetus barbatus* with Common Buzzard *Buteo buteo* in 12a, circling over Beachy Head, Sussex, in the early afternoon of 15th October 2020 before embarking on a Channel crossing.

Roger Charlwood

Roger Charlwood



13. Bearded Vulture feathers collected from a preening rock north of Crowden, Peak District National Park, Derbyshire, on 30th August 2020.

Louis Phipps/Vulture Conservation Foundation

outcrop to the north of Crowden, in Derbyshire, a short distance from the Pennine Way. After the vulture had taken off and flown out of view, DB walked to the outcrop, where he found and collected two feathers (plate 13). These were stored in paper envelopes and passed to LP a few days later. Although the origin and species of the feathers could not be verified by visual inspection alone, the circumstances of the observation and colour, size and shape of the feathers indicated that they might be from the Bearded Vulture. They were subsequently sent to Switzerland for further analysis.

Genetic monitoring of the captive-bred Bearded Vulture population as well as the wild population in the Alps started in 1998 (Gautschi 2001). Blood samples are collected from all captive birds, while targeted searches below nest sites and feathers found opportunistically are used to monitor the wild population and acquire the genotypes of the wild-fledged birds. When possible, wild-hatched chicks are marked in the nest or during rescue missions involving birds that fall from the nest or fledge early. Currently, some 640 genotypes are stored in the International Bearded Vulture Monitoring (IBM) database: 200 captive-bred birds remaining in captivity, 249 captive-bred birds released to the wild, 137 birds hatched in the

wild in the Alps, 40 individuals from Corsica and 14 individuals from the Pyrenees. A form of genetic fingerprinting can then be used to identify individuals and trace parentages by assessing the sequences of genetic markers within microsatellites (DNA segments composed of repetitive stretches of DNA base pairs) and comparing them to those from known individuals in the IBM database. All samples were genotyped with 24 microsatellite markers by the commercial lab Ecogenics (www.ecogenics.ch). Raw data were analysed by FL with GeneMapper 5.0 (Applied Biosystems) followed by manual proof-reading. All feathers, including the two feathers collected in Derbyshire, were analysed in triplets and only identical genotypes from the three repeats were considered. The genotypes obtained were compared with the

existing genotypes in the database in Cervus 3.0.7 (Marshall *et al.* 1998; Kalinowski *et al.* 2007). Both showed a 100% match with the genotype GT0169 obtained from a feather collected by EM on 10th July 2019, below the nest of the 'Bargy BIS' breeding pair, and analysed by FL on 11th December 2019. Sex was determined using the capillary electrophoresis method and species-specific primers (Morinha *et al.* 2012). GT0169 corresponds to the wild-hatched female chick with the identification code W0297 (also known as 'Flysch') in the database, which fledged from the Bargy BIS territory on 6th July 2019. This territory is in the Bargy Massif in the Haute-Savoie region of the northwest Alps, approximately 1,025 km southeast of where the Derbyshire feather samples were collected (fig. 1). After the extirpation of the species in the Bargy

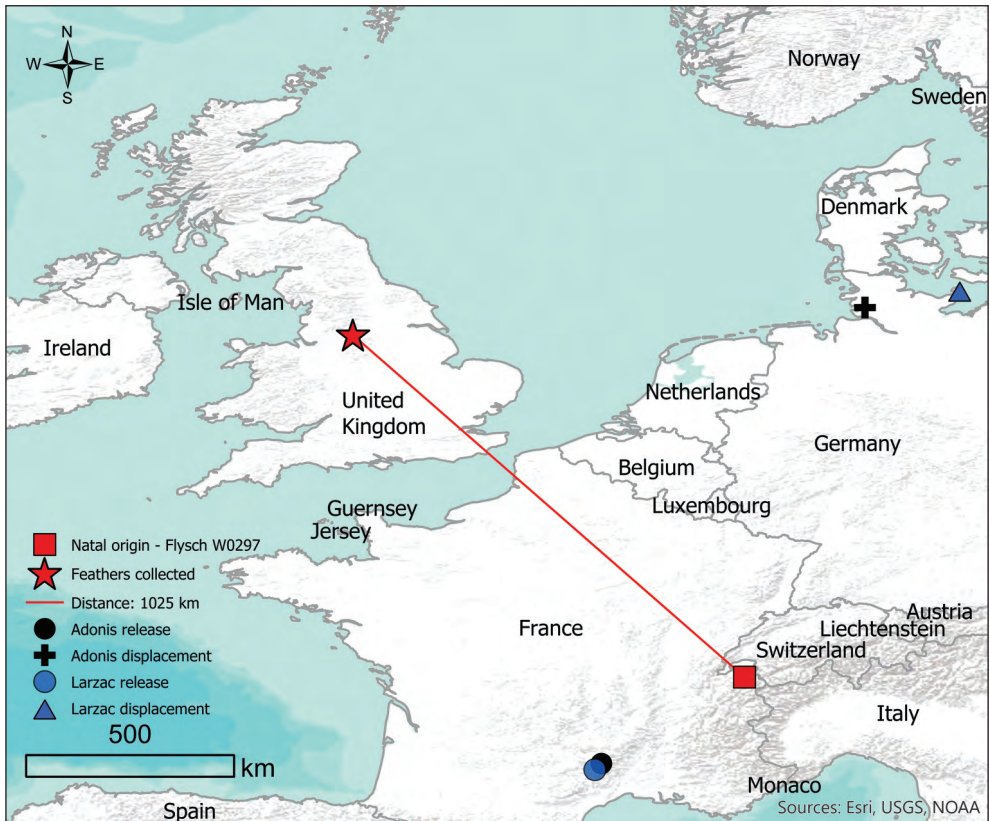


Fig. 1. Map showing the location of the nest site of the Bearded Vultures *Gypaetus barbatus* in 'Bargy BIS' territory in the Haute-Savoie region of the northwest Alps, France, from which GT0169 (W0297 – Flysch) fledged in 2019 (red square); and the location where the feathers were collected in Crowden, Derbyshire, on 30th August 2020 (red star; 1,025 km displacement). The release sites (circles) and most northerly displacement locations for two Bearded Vultures, 'Adonis' (black cross; 1,176 km displacement) and 'Larzac' (blue triangle; 1,290 km displacement), released in Grands Causses, France, in 2014 and 2015, respectively, are also shown.

Massif at the beginning of the twentieth century, Bearded Vultures were first released there in 1987 and the first wild-hatched bird fledged in 1997 (Mingozzi & Estève 1997).

The parents of GT0169 were identified as a wild-hatched male (GT0099) that fledged from the territory ‘Bargy’, approximately 250 m east of the Bargy BIS territory; and a female (BG0493, ‘Zufall’) that was reared in La Garenne Zoo in Switzerland and released as a fledgling in 2006, in Martell, South Tyrol, Italy (fig. 2). The natal dispersal distance of BG0493 was 333 km, which is one of the furthest natal dispersal distances recorded (Jenny *et al.* 2018; IBM unpublished data). This pair had occupied the territory since 2016 and reared a chick in 2017, 2018 and 2019. In 2020 the chick died at approximately 30 days old for an unknown reason. The parents of the male parent were both captive-bred birds, the female and male being released in 1988 and 1989, respectively.

The results confirm that the Bearded Vulture that was present in the Peak District from July to September 2020 was a second-

calendar-year, wild-hatched individual with one captive-bred parent and one wild-hatched parent from the demographically self-sustaining breeding population in the Alps (Schaub *et al.* 2009; Jenny *et al.* 2018). Two other birds of known origin, both released in the Massif Central in France, are known to have travelled farther than the 1,025 km reported here, and there are records of individuals of unknown origin travelling even farther north (fig. 1; IBM unpublished data). Observations of immature Bearded Vultures in northern Europe are becoming more frequent (McInerney & Stoddart 2019), most likely due to the increasing populations in both the Alps (Jenny *et al.* 2018) and the Pyrenees (Margalida *et al.* 2020), resulting in a higher number of individuals completing long-distance movements. In addition to the increased probability of unusual, long-distance movements as population size increases (Armsworth & Roughgarden 2005), this could also be attributable to a number of other factors, which require further investigation (Doherty & Driscoll 2018; Morton *et al.* 2018).

While the increasing frequency of observations of Bearded Vultures in northern Europe reflects the successful implementation of conservation measures that have enabled the recovery of the populations in the Alps and Pyrenees (Jenny *et al.* 2018; Margalida *et al.* 2020), the long-distance excursions such as that described here may pose increased risks to the birds. For example, flying conditions in lowland areas are usually less favourable and more energetically expensive than in mountains, where thermals and orographic lift are more suitable for soaring and gliding flight (Fielding *et al.* 2020). Furthermore, levels of human activity and infrastructure density are generally higher in lowland areas at higher latitudes (Venter *et al.* 2016) and have been linked to lower survival rates in vultures owing to, for example, increased risk of

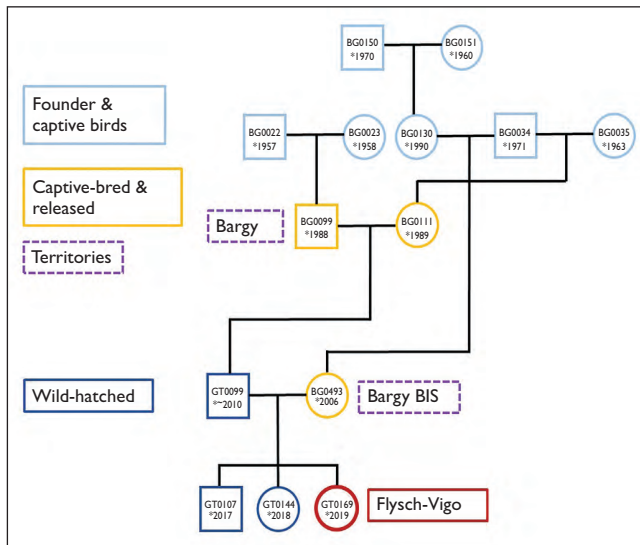


Fig. 2. The genetic pedigree of Bearded Vulture GT0169 (named Flysch, but known as ‘Vigo’ in the UK) determined by parental analysis and pedigree reconstruction based on the analysis of the feathers collected. Circles represent females, squares indicate males. Pale blue shapes indicate founder or captive individuals; yellow shapes indicate captive-bred individuals released to the wild; dark blue shapes indicate wild-hatched individuals; and the red circle indicates GT0169; and purple rectangles indicate the names of the territories. The year of hatching is shown beneath each genetic identification code, with all released individuals released in their first year as fledglings.

collisions with power lines, reduced feeding opportunities and higher risk of food contamination (Blanco *et al.* 2019; Arrondo *et al.* 2020). It is important, therefore, to assess the potential drivers of, and consequences of, these individual long-distance movements to help inform potential conservation actions. The successful identification of this individual vulture illustrates the effectiveness of cooperative, cross-border networks for research and monitoring (Perrig *et al.* 2019), and we thank all those involved in observing and reporting the movements of this now-famous vulture.

Acknowledgments

We thank all of those involved in monitoring and reporting the movements of GT0169, both within the breeding territory and beyond, particularly in the UK. We thank Asters, Conservatoire d'Espaces Naturels de Haute-Savoie, for coordinating the breeding monitoring in the Bargy BIS territory and their participation in the IBM network, especially for the collection of the original feather samples. We thank all stakeholders and organisations involved in managing the land on which GT0169 has stayed during its travels. Thanks to Hans Pohlmann and anonymous reviewers for constructive comments on earlier drafts.

Supplementary information

Microsatellite data from the individual described and identified in this paper; and related individuals, are available as a supplementary file. Please contact Franziska Loercher (see below) for further information.

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