INTERNATIONAL
BEARDED VULTURE
MONITORING

# Annual report 2020

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# International Bearded Vulture Monitoring- IBM

# Imprint

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# 1 The IBM & its administration

The international Bearded Vulture monitoring (IBM) is an expanding international network to coordinate the monitoring activities for European Bearded Vulture populations, to unify and manage data collections in a shared database (IBM-database) and to discuss conservation strategies and priorities for this species on an international level.

In 2020 the IBM comprised 19 IBM-partners and 3 associated organisations. The lead partner was the Vulture Conservation Foundation (VCF) and the IBM-database was managed by Mirco Lauper and Katja Rauchenstein, while additional administrative and coordinating work was carried out by Franziska Lörcher and José Tavares. These costs, as well as the costs for rings, database hosting, database upgrade etc. were covered by a budget of 43'800 Euros. The budget was financed by the fee of each IBM-partner and additional funds from MAVA, which for the fourth consecutive year allowed to reduce the partner fee substantially, from 3'000 Euros to currently 1'600 Euro for partners which are releasing birds and 800 Euros for the other partners.

In order to inform the IBM-partners about important news, the latest observations and the development of the Bearded Vulture reproduction in the wild, 10 short reports *IBM Update & Reminder* were sent out in 2020. During the steering committee meetings by phone in April and September 2020. Due to the pandemic corona-situation, a physical SC-meeting was not possible, and the meeting was therefore held virtually as well in November 2020.

# 2 Summary

Despite the aggravating circumstances due to the Corona pandemic, it was possible to release 21 Bearded Vultures in 2020: 2 birds in the central Alps (CHE), 2 birds each in the south-western Alps in Vercors (FRA) and Baronnies (FRA) respectively and 5 birds in the Massif Central (FRA). Another 10 juveniles have been released in Spain (8 near Cazorla, Andalusia and 2 in Maestrazgo, Teruel). All 21 released birds have been individually marked with country-specific rings, bleached feathers and GPS-tags in order to follow their life history and spatial behaviour. Thanks to the commitment of regional IBM partners and the financial support of the VCF it was possible to mark 7 wild-hatched birds with rings and GPS/GSM tags: 5 in France (Pierro, Vidoc, Bellevarde, Prazon-sixt-fer-a-cheval, Bellecote), 1 juvenile in Italy (Penti2020) and 1 in Andalusia, Spain (Savuti). Since 2016, 20 wild-hatched individuals have been marked with rings and GPS/GSM and in 2020 movements of 63 Bearded Vultures (14 wild-hatched and 49 released birds) were followed by GPS-tracking and stored in the WildlifeMonitor.

With 37 fledglings in the Alps in 2020 the last year's record of 39 fledglings and a productivity of 71% is still unbroken. Nevertheless, the reproduction in the wild is steadily increasing and this year's productivity of 67% is considerably higher than two years ago (60%). Out of 61 occupied territories, a clutch was reported in 53 nests. From the 43 chicks that hatched (70% breeding success) chicks fledged in Switzerland (13), France (11), Italy (10) and Austria (3). While, similar as in the previous years, productivity is highest in the north-western (74%) and central Alps (73%) followed by the eastern Alps (67%), breeding success (33%) and productivity (33%) were lower in the south-western Alps. The three territories Martina (CHE), Kandertal (CHE) and Truc (FRA) were occupied for the first time in 2020 and the successful breeding in Kandertal (CHE) is at the same time the first reproduction in the Bernes Alps of Switzerland.

On Corsica, a successful breeding was reported from the territory Bonifatu, while breeding failed in Popolasca and no breeding was observed in Asco and Restonica. After no chicks fledged last year, the successful reproduction in Corsica is an important step for the conservation of the small population on the island.

In the Massif Central, nesting behaviour from two released male birds (Layrou and Adonis) has been observed for the third consecutive year in the first occupied territory in this area.

Observation data of 1'864 Bearded Vulture sightings has been reported from 7 countries (AUT, BEL, CHE, DEU, FRA, GBR, ITA). In 35% of the cases the observed birds could be identified, resulting in the visual identification of 54 released and 11 wild-hatched individuals (30 males and 20 females). Together with individual based information from the reproduction monitoring and the International Observation Days (IOD) a total of 163 individuals were identified on individual level (Alps = 122, Massif Central & Pyrenees = 13, Corsica = 5, Spain = 23). Another 1'659 observations from ornitho.ch were imported into the IBM database. Currently this interface is implemented, that data from other European ornitho databases can be included.

Unfavourable weather conditions have made the synchronous observation event (IOD) impossible in several parts of the monitoring area on the focal day 03.10.21, which is why an estimate of the Alpine population has been dispensed. Nevertheless, 792 observers occupied 499 sites and reported 483 Bearded Vulture observations. Regional populations were estimated between 8 and 14 birds in Aude (Pyrenees FRA) and between 28 and 45 birds in Spain (without Pyrenees).

13 dropouts (9 released & 4 wild-hatched birds) have been reported in France (7), Spain (4) and Switzerland (2). Three of the birds died due to anthropogenic causes (Dolomie BG1070: shot; Hans W302: collision with powerline; Bellevarde W362: hit by train) and for one bird causes of death remains unknown (GT175; wild-hatched from Poschiavo). While Sureau (BG1061) was recaptured because of a wing fracture and could not be released again, it was possible to rerelease five birds (Pierro[1], Ophrys, Eglazine, Aven, Kika) after their recovery in captivity. The fact that one third of dropout birds could be released again, shows the importance of the close monitoring and fast reaction of local IBM partners in order to prevent dropouts especially in the first few months after the first flight of juveniles (8 of 10 dropouts in 2020).

*[1] This bird was a wild-hatched individual, that was recovered and released again.*

# 3 Key facts

**21 Bearded Vultures released at 6 sites:**

- 9 in France: 2 in Baronnies, 2 in Vercors and 5 in Grands Causses
- 2 in Switzerland in Melchsee-Frutt
- 10 in Spain: 2 birds in Maestrazgo and 8 in Parque Natural de Cazorla

**Reproduction**

- Alpine range: 61 occupied territories, 53 clutches, 37 fledglings
  - Productivity varied between 76% (NW-Alps) and 33% (SW-Alps)
- Massif Central: first territory occupied by two male nesting birds since 2018 (Layrou & Adonis)
- Corsica: 4 occupied territories, 2 clutches, 1 breeding failure, 1 fledgling (Bonifatu2020)

**Monitoring and the IBM-database**

- 1'864 observations from 7 countries by 18 IBM-partners and 3 associated organisations
  - 36% of the observed birds could be identified on individual level
  - 54 individuals (30 males and 20 females) could be identified (11 of them are wild-hatched birds)
- 1'659 ornitho.ch observations were imported to the IBM-database in 2020
- 163 individuals with known origin in the Alps (N=122), the Massif Central & French Pyrenees (N=13), Corsica (N=5) and Spain (N=23) were identified on individual level
- IOD: Despite unfavourable weather 792 observers occupied 499 sites and reported 483 Bearded Vulture observations during the International Bearded Vulture Observation Days
- Population size estimates based on IOD 2020 data: Since synchronous observation and comprehensive monitoring was not possible, no estimates of population size can be derived for the Alps. 8-14 individuals were estimated for Aude in the Pre-Pyrenees (FRA) and 28-45 for Spain (without Pyrenees) respectively.

**Markings & telemetry**

- All 21 released birds have been marked with a solar powered GPS-tag. In 2020 GPS data of 48 released and 15 wild-hatched birds was stored in the WildlifeMonitor.
- 7 wild-hatched birds were ringed/equipped with GPS-tags: Pierro (hatched 2019 and recovered 2020) (FRA), Vidoc (FRA), Bellevarde (FRA), Prazon-sixt-fer-a-cheval (FRA), Bellecote (FRA), Penti2020 (ITA), Savuti (ESP)

**13 Dropouts**

- 7 mortalities: 4 released birds (Arroyo Frío (ESP), Coco (ESP); Dolomie (FRA); Lausa (CHE)) and 3 wild-hatched birds (GT175 (CHE), Hans (ESP) and Bellevarde (FRA)
- 1 recapture: Sureau (BG1061; FRA) was recaptured and could not be released again
- 4 rereleases: Ophrys (FRA), Eglazine (FRA), Aven (FRA), Kika (ESP)

# 4 IBM-standards

The IBM-standards should serve as guidelines for the definitions used for public communications and statistics within the international network of the IBM. Below you find a short overview over the most important definitions, that are based on previous work by Richard Zink in 2009 (Table 1).

## 4.1 Age class

*Table 1: Calendar years (cy) should be used as IBM-standard for age classification. This table should serve as a general standard for the age determination of unknown and known birds recorded in the IBM-database. Grey shaded = potentially breeding birds (see "checked pairs" below).*

| Entry in the IBM (life stage) | Calendar year (cy) | Real age (years) Jan-Feb \| Mar-Dec | | Life history event |
|---|---|---|---|---|
| juvenile (1. cy) | 1 | - | 0 | hatch |
| immature (2. cy) | 2 | 0 | 1 | non-territorial |
| immature (3. cy) | 3 | 1 | 2 | non-territorial |
| subadult (4. cy) | 4 | 2 | 3 | non-territorial |
| subadult (5. / 6. cy) | 5 | 3 | 4 | potential nesting |
| adult (≥ 6. cy) | 6 | 4 | 5 | potential breeding |
| adult (≥ 6. cy) | ≥7 | 5 | ≥6 | potential breeding |

## 4.2 Dropout versus breeding failures

Dropouts include all incidents where individuals have been removed from the population (mortality, recapture). This also applies to birds that could be rereleased after the recapture. A recapture is in any case the last solution, which is why it must be assumed that these birds would not have survived without human intervention and would have died under natural conditions.

However, if a hatchling dies at less than 80 days of age, this loss is referred to as breeding failure and it is therefore not included in the dropout statistics.

| Age | < 80 days | > 80 days | Type |
|---|---|---|---|
| hatch | → mortality / recapture | | → breeding failure |
| hatch | | → mortality, recapture | → dropout |

## 4.3 Reproduction[2]

*Table 2: IBM-standards for reproduction statistics based on previous work by R. Zink (2009).*

| | |
|---|---|
| Potential territory | Area occupied by at least 2 birds showing territorial behaviour<br>→ all territories entered in the IBM-database |
| Territorial pair[3] | Pair[2] occupying a territory with at least one nest<br>→ territories with nest or egg-lay date entered in the IBM-database |
| Checked pair[2] | Pair[2] monitored during the breeding season<br>→ territories with nest or egg-lay date entered in the IBM-database<br>→ age classification: subadult (5. / 6. cy) or adult (≥ 6. cy) |
| Breeding pair[2] | Cases of verified egg-laying<br>→ date of egg-laying entered in the IBM-database |
| Breeding success | $\frac{fledglings}{breeding\ pairs}$ |
| Productivity | $\frac{fledglings}{checked\ pairs}$ |

*2 Based on: Monitoring guide (Protocol) Draft Version 0.2 (2009) by Richard Zink*

*3 Definition of a pair: At least two birds occupying a territory with at least one nest or confirmed fledge*

# 5 Releases

In 2020, a total of 21 Bearded Vultures that have been reared in six different zoos and captive breeding centres of the EEP (European Endangered Species Programme) were released at six sites in the central Alps, the western Pre-Alps, in the Massif Central as well as in two projects in Spain.

Four birds were released in the Baronnies (FRA) and Vercors (FRA) in the Pre-Alps. Another five juveniles were released in the Massif Central (FRA). The release of nine juveniles in the French Pre-Alps (two birds in Baronnies and two in Vercors) and the Massif Central (five birds) as well as the release of two juveniles in Maestrazgo (ESP) is part of a long-term goal to restore the genetic exchange between the three separated Bearded Vulture populations of the Alps, the Pyrenees and Andalusia. The connection of these populations is still non-existent, since the extinction of the Alpine (around 1900) and Andalusian (1980) Bearded Vulture population and is vital to re-establish the European meta-population. In order to enforce the local reintroduced population in Andalusia, eight juveniles have been released in this region in 2020.

All 21 released birds, except Sureau (BG1061), took off for their first flight (Table 3). Aven (BG1067) could not be released as planned due to a broken bone before transport to his release site and thus spent several weeks longer in the Green Balkans breeding centre. The bird was released at the age of 144 days (31.07.2021) and took off for the first flight a few weeks later in august. The average age at the first flight was 125 days with a minimum of 101 (Dolomie, BG1070) and a maximum of 170 days (Aven, BG1067).

## 5.1 Release sites 2020

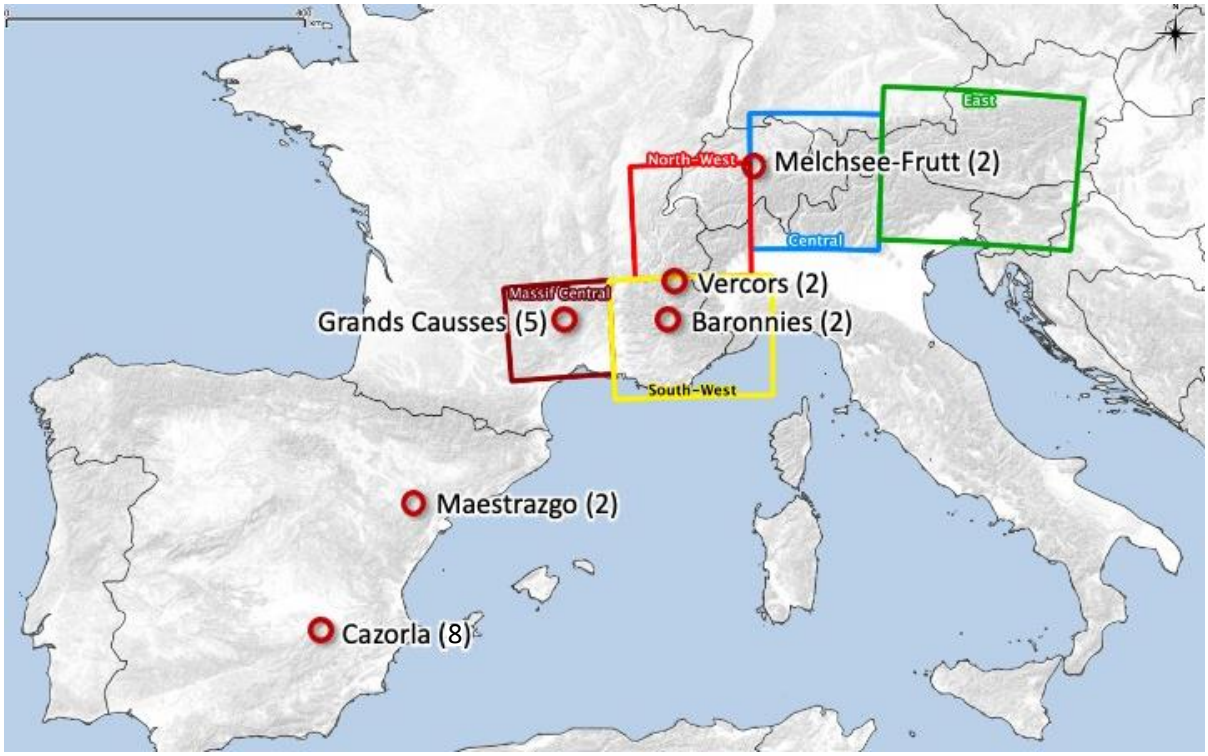



*Figure 1: 21 Bearded Vultures were released at six sites in Spain, France and the Swiss Alps. The releases of nine birds in the pre-Alps (Baronnies and Vercors) and the Massif Central are part of the long-term project GypConnect with the aim to re-establish genetic exchange between the Alpine and Pyrenean population. With a similar objective, two birds were release in Maestrazgo (ESP), an area that should serve as "stepping-stone" between the Pyrenean and Andalusian population. With the aim to enforce the growing Andalusian population 8 individuals were released in Cazorla (ESP), while genetically rare individuals, released in the Swiss Alps (Melchsee-Frutt), should enrich the genetic diversity of the Alpine population.*

*Table 3: Details about 21 Bearded Vultures that have been released within the IBM monitoring area. The release site of the Maestrazgo project is called Tinença de Benifassà. Birds that died or had to be recaptured in 2020 are written with grey letters (more information see Table 15).*

| | Place release | BirdID | Name | Sex | Hatch | Fledge | Age at first flight | Place hatch | Date release |
|---|---|---|---|---|---|---|---|---|---|
| **CHE** | Melchsee-Frutt | BG1071 | **Luzerna** | f | 12.03.20 | 14.07.20 | 124 | CC Guadalentín (ESP) | 14.06.20 |
| | | BG1068 | **Fortunat** | m | 11.03.20 | 12.07.20 | 123 | Torreferrussa (ESP) | 14.06.20 |
| **FRA** | Baronnies, Léoux Valley | BG1061 | **Sureau** | m | 27.02.20 | | | Schönbrunn Zoo (AUT) | 28.05.20 |
| | | BG1058 | **Angèle** | m | 21.02.20 | 17.06.20 | 117 | Liberec Zoo (CZE) | 28.05.20 |
| | Grands Causses, Trévezel | BG1079 | **Fario** | f | 15.03.20 | 13.07.20 | 120 | Tierpark Friedrichsfeld (GER) | 13.06.20 |
| | | BG1078 | **Ophrys** | f | 16.03.20 | 17.07.20 | 123 | Green Balkans (BGR) | 13.06.20 |
| | | BG1070 | **Dolomie** | m | 12.03.20 | 21.06.20 | 101 | Tierpark Friedrichsfeld (GER) | 13.06.20 |
| | | BG1069 | **Eglazine** | f | 12.03.20 | 15.07.20 | 125 | Parco Natura viva (ITA) | 13.06.20 |
| | | BG1067 | **Aven** | f | 09.03.20 | 26.08.20 | 170 | Green Balkans (BGR) | 31.07.20 |
| | PNR Vercors, Trechenu-Creyers | BG1063 | **Kobalann** | f | 02.03.20 | 01.07.20 | 121 | CF Vallcalent (ESP) | 30.05.20 |
| | | BG1062 | **Palo-Pala** | m | 28.02.20 | 02.07.20 | 125 | CC Guadalentín (ESP) | 30.05.20 |
| **ESP** | Los Picones, Castril | BG1053 | **Bwindi** | m | 30.01.20 | 31.05.20 | 122 | CC Guadalentín (ESP) | 05.05.20 |
| | | BG1088 | **Bernar** | f | 08.04.20 | 28.07.20 | 111 | CC Guadalentín (ESP) | 05.07.20 |
| | | BG1054 | **Leo** | f | 05.02.20 | 03.06.20 | 119 | CC Guadalentín (ESP) | 05.05.20 |
| | | BG1086 | **Llopis** | f | 02.04.20 | 19.07.20 | 108 | CC Guadalentín (ESP) | 05.07.20 |
| | PN Cazorla | BG1057 | **Curro** | f | 21.02.20 | 17.06.20 | 117 | CF Vallcalent (ESP) | 22.05.20 |
| | | BG1059 | **Alejandra** | f | 22.02.20 | 25.07.20 | 154 | CC Guadalentín (ESP) | 05.07.20 |
| | | BG1076 | **Cabrero** | m | 15.03.20 | 17.07.20 | 124 | CF Vallcalent (ESP) | 05.05.20 |
| | | BG1055 | **Samburu** | f | 11.02.20 | 19.06.20 | 129 | CF Vallcalent (ESP) | 05.05.20 |
| | Tinença de Benifassà | BG1077 | **Coco** | f | 15.03.20 | 23.07.20 | 130 | CF Vallcalent (ESP) | 12.06.20 |
| | | BG1073 | **Celest** | f | 13.03.20 | 22.07.20 | 131 | CC Guadalentín (ESP) | 12.06.20 |

# 6 Reproduction in the wild

## 6.1 Breeding season 2019/2020

During the breeding season 2019/2020 the IBM partners reported 60 territorial pairs and 6 trios that showed breeding or nesting behaviour. In 8 of these territories no clutch has been reported in the previous years. Furthermore, three of these territories were occupied for the first time in 2020: Martina (CHE), Kandertal (CHE) and Truc (FRA) (Figure 2).

In the Alpine range 53 of 61 breeding units produced a clutch with a total of 43 birds hatching in these nests (81% hatch rate). Finally, 37 young Bearded Vultures fledged by the end of the summer: 13 in Switzerland, 11 in France, 10 in Italy and 3 in Austrian (Figure 3). Compared to last year's record of 39 fledglings the reproduction was slightly lower. However, it was the first breeding attempt for three of the breeding territories (Martina, Tinizong and Kandertal) and at the same time the first successful reproduction in the territory Kandertal and thus the first reproduction in the region of the Bernes Alps in Switzerland.

On Corsica, breeding was reported in two out of four territories and was successful in the territory Bonifatu. This successful reproduction is great news after last year without reproduction in the wild.

In the Massif Central, the two released male birds (Adonis 2014 & Layrou 2013) are still showing territorial behaviour (nesting and copulation) since 2018. Even though, this couple will not be able to reproduce in this constellation it is a first sign for settling territorial birds in the region.

Similar as in previous years, the reproduction success (and productivity) varies considerably among regions with only two fledglings in the south-western (33%), 2 in the eastern (67%), 16 in the central (76%) and 17 in the north-western Alps (74%). The overall breeding success of 70%, was lower than in the last year but considerably higher than in 2018 (64% breeding success). While breeding success describes the ratio between fledglings and clutches, productivity, defined as the ratio of fledglings over checked breeding pairs or trios, also takes into account territories occupied by mature birds that are not breeding. Therefore, productivity might be very low in a struggling population, despite high breeding success, and is thus a more accurate measure for reproductive success.

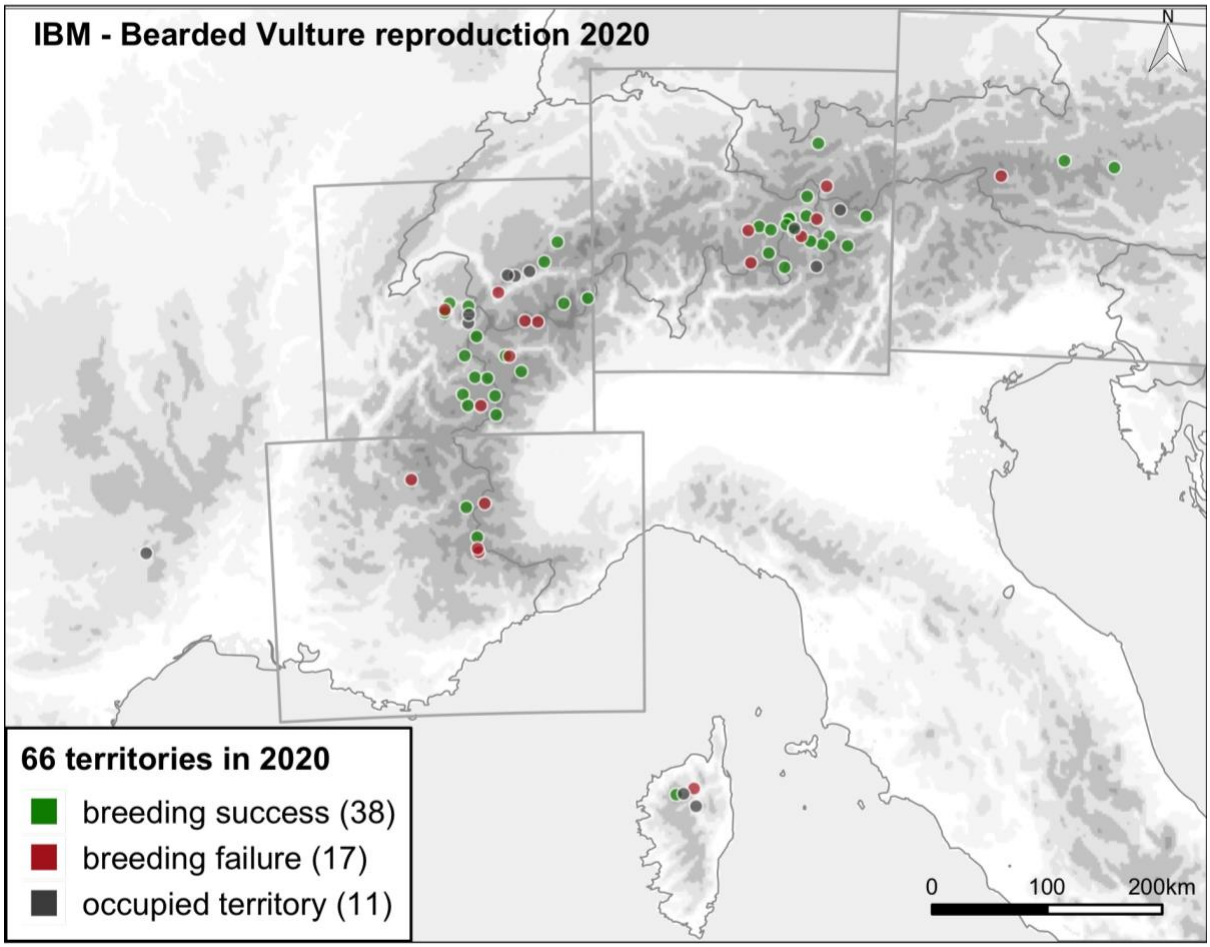



*Figure 2: Reproduction status in 66 occupied territories in the Alpine range, Corsica and the Massif Central. Despite slightly lower reproductive success compared the previous year the breeding season 2020 was successful with 37 fledglings in the Alps and 1 fledgling on Corsica. For the first time a successful breeding was reported from territory "Kandertal" (CHE). In the Massif Central, the two released male birds, Layrou and Adonis, are still occupying a territory (Jonte amont) for the third year. The rectangles represent the 4 monitoring zones: south-western Alps, north-western Alps, central Alps and eastern Alps, from left to right.*

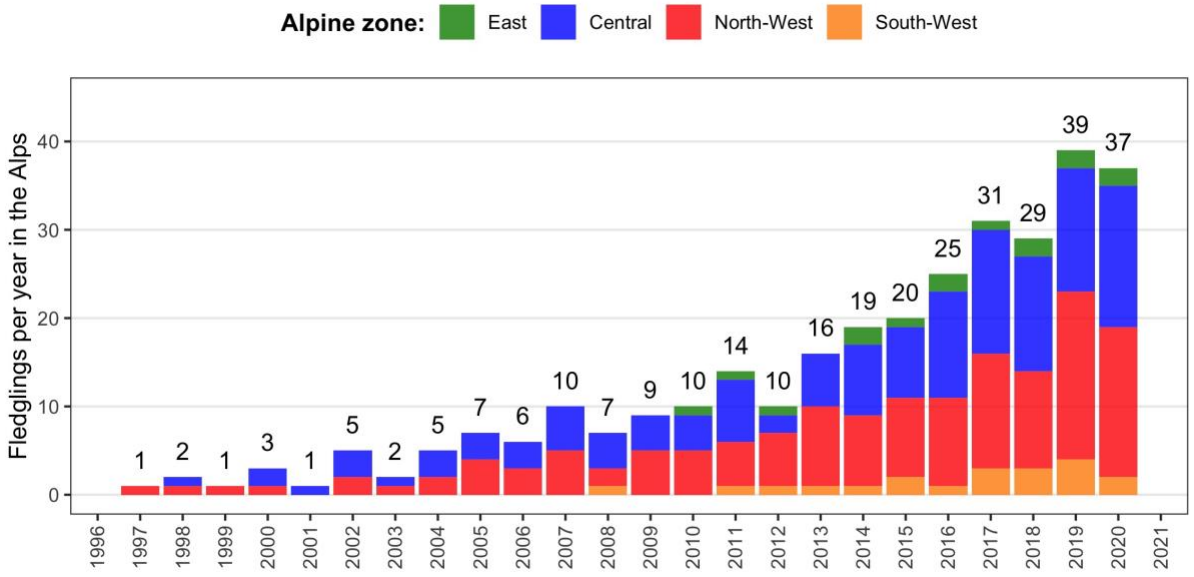



*Figure 3. Fledglings per year and Alpine region, since the first reproduction in 1997.*

*Table 4: Breeding statistics for the season 2019/2020. See Table 2 for further details about the IBM-standards for breeding statistics.*

| | Zone | Potential territories | Territorial pairs | Checked pairs | Breeding pairs | Hatches | Fledglings | Failures | Breeding success | Productivity |
|---|---|---|---|---|---|---|---|---|---|---|
| Alpine range | **2020** | **62** | **57** | **55** | **53** | **43** | **37** | **16** | **70%** | **67%** |
| | East | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 67% | 67% |
| | Central | 24 | 22 | 22 | 21 | 17 | 16 | 5 | 76% | 73% |
| | North-West | 28 | 25 | 23 | 23 | 19 | 17 | 6 | 74% | 74% |
| | South-West | 6 | 6 | 6 | 6 | 5 | 2 | 4 | 33% | 33% |
| | **2019** | **59** | **55** | **55** | **52** | **44** | **39** | **12** | **75%** | **71%** |
| | East | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 67% | 67% |
| | Central | 23 | 20 | 20 | 19 | 15 | 14 | 5 | 74% | 70% |
| | North-West | 26 | 25 | 25 | 23 | 21 | 19 | 3 | 83% | 76% |
| | South-West | 6 | 6 | 6 | 6 | 5 | 4 | 2 | 67% | 67% |
| | **2018** | **54** | **49** | **48** | **45** | **34** | **29** | **16** | **64%** | **60%** |
| | East | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 67% | 67% |
| | Central | 22 | 19 | 19 | 19 | 13 | 13 | 6 | 68% | 68% |
| | North-West | 23 | 21 | 20 | 17 | 14 | 11 | 6 | 65% | 55% |
| | South-West | 5 | 5 | 5 | 5 | 3 | 3 | 2 | 60% | 60% |
| **Corsica** | | | | | | | | | | |
| | **2020** | **4** | **4** | **4** | **2** | **1** | **1** | **1** | **50%** | **25%** |
| | **2019** | **5** | **4** | **4** | **4** | **1** | **0** | **4** | **0%** | **0%** |
| | **2018** | **5** | **5** | **5** | **2** | **2** | **1** | **1** | **50%** | **20%** |
| **Massif Central** | | | | | | | | | | |
| | **2020** | **1** | **1** | **1** | **0** | **0** | **0** | **0** | - | - |
| | **2019** | **1** | **1** | **1** | **0** | **0** | **0** | **0** | - | - |
| | **2018** | **1** | **1** | **1** | **0** | **0** | **0** | **0** | - | - |

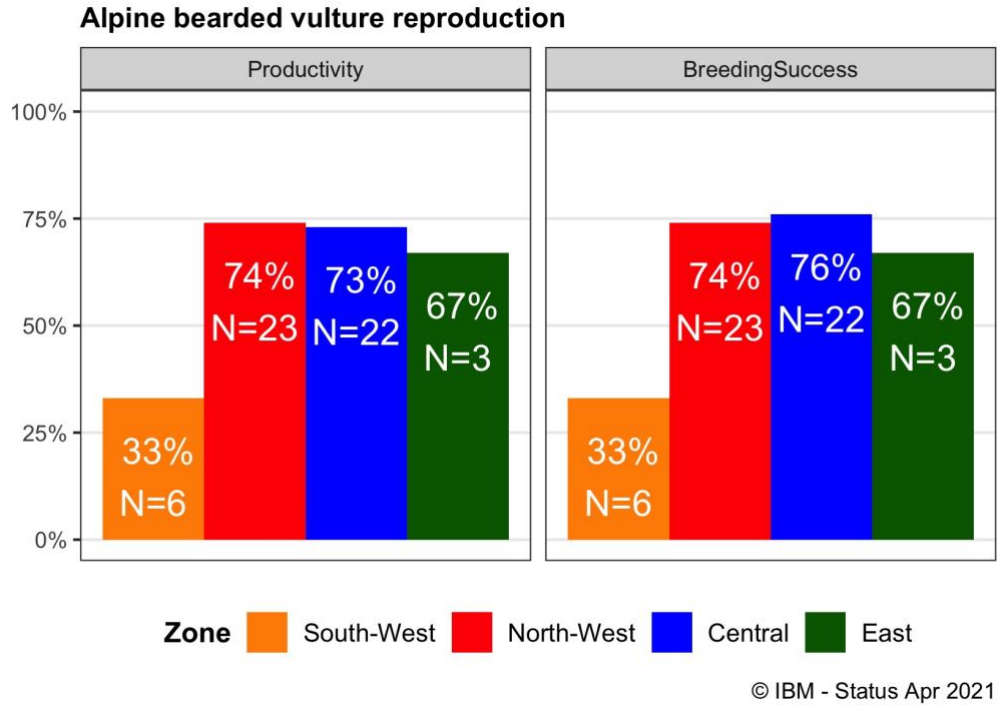



*Figure 4: Productivity and breeding success vary within the different alpine zones with the highest productivity and breeding success in the north-western Alpine. Note that sample size (breeding territories) N varies considerably among regions. See Table 2 for further details about the IBM-standards for breeding statistics.*

*Table 5: Reproduction in the eastern and central Alpine range. Territories with no clutch in previous years are marked with an asterisk (*).*

| | Territory | Nest | Parent 1 | Parent 2 | Parent 3 | Clutch | Hatch | Fledge | Failure | Chick | First clutch | First fledge | Total clutches | Total fledglings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Alps total** | **61** | **56** | **61** | **61** | **6** | **53** | **43** | **37** | **16** | **42** | **1996** | **1997** | **453** | **310** |
| **Eastern Alps** | **3** | **3** | **3** | **3** | **0** | **3** | **2** | **2** | **1** | **2** | **2001** | **2010** | **35** | **15** |
| **AUT** | Gastein/Rauris | x | Andreas Hofer | Alexa | - | 15/01 (±5) | 10/03 (±2) | 23/07 | - | Kruml7 (W332) | 2003 | 2010 | 18 | 7 |
| | Katschberg | x | Hubertus 2 | Romaris | - | 15/01 (±7) | 17/03 (±1) | 22/07 (±5) | - | Katschberg2020 (W341) | 2010 | 2012 | 11 | 8 |
| | Prägraten | x | adult | Joker | - | 15/02 (±2) | - | - | 10/04 (±5) | - | 2018 | - | 3 | 0 |
| **Central Alps** | **24** | **22** | **24** | **24** | **0** | **21** | **17** | **16** | **5** | **17** | **1998** | **1998** | **182** | **134** |
| **AUT** | **1** | **1** | **1** | **1** | **0** | **1** | **1** | **1** | **0** | **1** | **2019** | **2019** | **2** | **2** |
| | Lechtal * | known | adult | adult | - | 18/01 (±20) | 19/03 (±20) | 17/07 (±1) | - | Lechtal2020 (W369) | 2019 | 2019 | 2 | 2 |
| **CHE** | **15** | **15** | **15** | **15** | **0** | **14** | **10** | **9** | **5** | **10** | **2007** | **2007** | **96** | **69** |
| | Albula | x | adult | Diana-Stelvio | - | 17/01 | 12/03 (±1) | 01/07 (±1) | - | Renad (W336) | 2008 | 2008 | 13 | 10 |
| | Bergün | x | wild-hatched (≥6.cy) | wild-hatched (≥6.cy) | - | 22/01 (±1) | 17/03 | 09/07 | - | Chantal (W340) | 2016 | 2016 | 5 | 4 |
| | Buffalora | x | Ingenius | Retia | - | 12/01 (±1) | - | - | 22/04 (±6) | - | 2017 | 2017 | 4 | 2 |
| | Foraz | x | adult | GT031 | - | 13/01 (±4) | 17/03 (±4) | 22/07 (±5) | - | Lia (W339) | 2012 | 2014 | 9 | 7 |
| | Maloja | x | Rurese | Folio | - | 09/01 | - | - | 21/04 (±5) | - | 2016 | 2016 | 4 | 1 |
| | Martina * | x | adult | adult | - | 27/01 (±2) | 23/03 (±2) | - | 01/04 (±5) | Martina2020 (W343) | - | - | - | - |
| | Ofenpass | x | Livigno | Ortler | - | 15/01 (±10) | - | - | 15/04 (±15) | - | 2007 | 2007 | 11 | 9 |
| | Ova Spin | x | wild-hatched (≥6.cy) | wild-hatched (≥6.cy) | - | 01/01 (±2) | 23/02 | 15/06 (±3) | - | Vitus (W344) | 2015 | 2018 | 5 | 3 |
| | Pontresina | x | wild-hatched (≥6.cy) | wild-hatched (≥6.cy) | - | 28/01 (±2) | 25/03 (±2) | 15/08 (±1) | - | Pontresina2020 (W345) | 2019 | 2019 | 2 | 2 |
| | Poschiavo | x | GT057 | GT038 | - | 09/01 (±1) | 07/03 (±2) | 01/07 (±5) | - | Poschiavo2020 (W331) | 2013 | 2013 | 8 | 8 |
| | Sinestra | x | Samuel | Moische-Livigno | - | 20/01 (±7) | 14/03 (±6) | 08/07 (±3) | - | Sinestra2020 (W338) | 2012 | 2013 | 9 | 7 |
| | Spöl | x | wild-hatched (≥6.cy) | GT090 | - | - | - | - | - | - | 2014 | 2014 | 6 | 4 |
| | Tantermozza | x | Zebru | wild-hatched (≥6.cy) | - | 01/01 (±13) | 25/02 (±10) | 07/07 (±6) | - | Tantermozza2020 (W333) | 2007 | 2007 | 14 | 10 |
| | Tinizong * | x | Cravallo | Inge | - | 13/01 (±6) | - | - | 23/04 (±3) | - | - | - | - | - |
| | Trupchun | x | wild-hatched (≥6.cy) | wild-hatched (≥6.cy) | - | 10/01 (±12) | 18/03 (±4) | 16/07 (±1) | - | Abbracciavento (W342) | 2017 | 2019 | 4 | 2 |
| **ITA** | **8** | **6** | **8** | **8** | **0** | **6** | **6** | **6** | **0** | **6** | **1998** | **1998** | **84** | **63** |
| | Livigno | x | Cic | Moische | - | 04/01 (±2) | 27/02 (±2) | 11/07 (±1) | - | Penti2020 (W349) | 1999 | 2000 | 22 | 18 |
| | Ortler | x | adult | Jo | - | 11/01 | 05/03 | 04/07 | - | Ortler2020 (W351) | 2016 | 2017 | 5 | 3 |
| | Planeil | - | Blick | adult | - | - | - | - | - | - | 2013 | - | 5 | 0 |
| | Schnals | x | subadult (5./6.cy) | adult | - | 06/01 (±3) | 29/02 (±3) | 30/06 | - | Schnals2020 (W350) | 2013 | 2018 | 4 | 3 |
| | Sondalo * | - | adult | adult | - | - | - | - | - | - | - | - | - | - |
| | Val Martello | x | adult | Temperatio | - | 11/01 | 05/03 | 04/07 | - | Val_Martello2020 (W352) | 2015 | 2015 | 6 | 6 |
| | Valle del Braulio | x | Tell | Stift | - | 06/12 (±2) | 29/01 (±2) | 10/06 (±1) | - | Braulio2020 (W327) | 1998 | 1998 | 23 | 16 |
| | Zebru | x | Heinz-Serraglio | Felice | - | 26/12 (±1) | 18/02 (±1) | 22/06 (±2) | - | Zebru2020 (W348) | 2002 | 2002 | 18 | 16 |

*Table 6: Reproduction in the north- and south-western Alpine range. Territories with no clutch in previous years are marked with an asterisk (*).*

| NW Alps | 28 | 25 | 28 | 28 | 5 | 23 | 19 | 17 | 6 | 18 | 1996 | 1997 | 202 | 140 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **9** | **7** | **9** | **9** | **3** | **6** | **5** | **4** | **2** | **5** | **2007** | **2007** | **38** | **27** |
| CHE | Bagnes | x | adult | adult | - | 10/01 (±5) | - | - | 01/03 (±10) | - | 2016 | 2016 | 4 | 2 |
| | Coude du Rhône | x | adult | adult | - | 13/01 (±4) | 13/03 (±15) | - | 25/04 | Coude du Rhône2020 (W368) | 2019 | 2019 | 2 | 1 |
| | Derborence_down | x | Swaro | Gilbert | ubadult (4.cy | - | - | - | - | - | 2012 | 2012 | 8 | 7 |
| | Derborence_Vérouet | - | Pablo | Guillaumes | Gildo | - | - | - | - | - | 2007 | 2007 | 9 | 6 |
| | Kandertal * | x | adult | adult | - | 21/01 (±5) | 15/03 (±5) | 11/07 | - | Gregoria (W367) | - | - | - | - |
| | Leukerbad | x | adult | wild-hatched (≥6.cy) | - | 10/01 (±10) | 10/03 (±15) | 15/06 (±5) | - | Leukerbad2020 (W354) | 2012 | 2015 | 5 | 3 |
| | Saas | x | adult | adult | - | 18/01 (±4) | 15/03 (±10) | 15/07 (±20) | - | Queen (W355) | 2019 | 2019 | 2 | 2 |
| | Sionne | - | adult | subad / adult (?) | badult (5./6.c | - | - | - | - | - | 2019 | 2019 | 1 | 1 |
| | Zermatt | x | Smaragd | adult | - | 15/01 (±15) | 20/03 (±5) | 05/07 (±3) | - | Pollux (W353) | 2016 | 2016 | 5 | 4 |
| | **13** | **12** | **13** | **13** | **1** | **11** | **10** | **9** | **2** | **10** | **1996** | **1997** | **131** | **89** |
| FRA | Andagne | x | adult | adult | - | 03/02 | 26/03 | 10/07 | - | Gwaihir (W363) | 2011 | 2014 | 7 | 3 |
| | Aravis | x | wild-hatched (≥6.cy) | wild-hatched (≥6.cy) | - | 03/01 (±1) | 29/02 (±1) | 25/06 (±1) | - | Tempete (W329) | 2006 | 2009 | 15 | 9 |
| | Bargy | x | wild-hatched (≥6.cy) | wild-hatched (≥6.cy) | adult | 21/01 (±1) | 20/03 (±3) | 06/08 | - | Vidoc (W356) | 1996 | 1997 | 24 | 19 |
| | Bargy BIS | x | wild-hatched (≥6.cy) | wild-hatched (≥6.cy) | - | 23/01 (±2) | 15/03 (±5) | - | 16/04 (±6) | Bargy_BIS2020 (W347) | 2016 | 2017 | 5 | 3 |
| | Bourg-Saint-Maurice | x | adult | adult | - | 01/01 (±2) | 02/03 (±10) | 22/06 (±2) | - | Enzo (W359) | 2016 | 2017 | 5 | 4 |
| | Passy * | - | adult | adult | - | - | - | - | - | - | - | - | - | - |
| | Peisey-Nancroix | x | adult | adult | - | 11/01 (±1) | 07/03 (±3) | 14/07 | - | Bellecote (W361) | 2005 | 2005 | 16 | 13 |
| | Pra de pis | x | adult | adult | - | 30/12 | - | - | 01/01 (±2) | - | 2019 | - | 2 | 0 |
| | Pralognan | x | adult | adult | - | 27/01 | 01/04 | 17/07 | - | Nina (W364) | 2018 | 2018 | 3 | 3 |
| | Sixt Fiz | x | adult | adult | - | 19/01 (±2) | 14/03 (±1) | 08/07 (±1) | - | Prazon-sixt-fer-a-cheval (W346) | 2007 | 2009 | 14 | 9 |
| | Termignon | x | adult | adult | - | 27/12 | 22/02 | 20/06 | - | Mila (W358) | 2002 | 2002 | 19 | 14 |
| | Truc * | x | Neige (4.cy) | adult | - | - | - | - | - | - | - | - | - | - |
| | Val dIsère | x | adult | adult | - | 19/01 (±3) | 08/03 | 15/07 | - | Bellevarde (W362) | 1999 | 2002 | 21 | 12 |
| | **6** | **6** | **6** | **6** | **1** | **6** | **4** | **4** | **2** | **3** | **2010** | **2012** | **33** | **24** |
| ITA | Bionaz | x | adult | adult | - | 02/02 (±2) | - | - | 23/02 (±3) | - | 2020 | - | 2 | 0 |
| | Chamoussière | x | Michegabri | adult | - | 18/01 (±8) | - | - | 22/03 (±3) | - | 2011 | 2012 | 10 | 7 |
| | Usseglio | x | Italia 150 | subadult (5./6.cy) | - | 14/02 (±1) | 06/04 (±2) | 11/08 | - | Maurich (W365) | 2019 | 2019 | 2 | 2 |
| | Val di Rhemes | x | adult | adult | adult | 30/01 (±5) | 01/04 (±6) | 14/07 (±2) | - | Val di Rhemes2020 (W366) | 2010 | 2012 | 10 | 8 |
| | Valdigne | x | adult | adult | - | 28/01 (±10) | 01/04 (±10) | 23/06 (±5) | - | Valdigne2020 (W357) | 2010 | 2019 | 3 | 2 |
| | Valnontey | x | adult | adult | - | 03/01 (±1) | 02/03 (±1) | 19/06 (±5) | - | - | 2015 | 2015 | 6 | 5 |
| SW Alps | 6 | 6 | 6 | 6 | 1 | 6 | 5 | 2 | 4 | 5 | 2008 | 2008 | 33 | 20 |
| FRA | Bonette | x | adult | Bellemotte | - | 13/01 (±1) | 07/03 (±1) | 11/07 (±1) | - | Amprene (W334) | 2017 | 2017 | 4 | 4 |
| | Chambeyron-Ubayette | x | Stephan | Cuneobirding | - | 21/01 (±1) | 12/03 (±2) | 14/07 | - | Tensing (W337) | 2016 | 2020 | 5 | 1 |
| | Malaval | x | Basalte | adult | adult | 02/01 | 26/02 (±1) | - | 26/03 | Malaval2020 (W328) | 2018 | 2018 | 3 | 2 |
| | Source de la Tinée | x | Rocca | Girasole | - | 29/01 (±1) | 23/03 (±49) | - | 26/05 (±1) | Pelite (W371) | 2013 | 2015 | 7 | 5 |
| | Source de lUbaye | x | Sereno | GT036 | - | 17/01 (±9) | - | - | 10/04 (±30) | - | 2008 | 2008 | 11 | 8 |
| | Val dEntraunes | x | Tenao | adult | - | 18/01 | 12/03 | - | 25/04 | Entraunes2020 (W335) | 2019 | - | 2 | 0 |

*Table 7: Reproduction in Corsica and the Massif Central. The IBM does not include reproduction data for Corsica before 2018. As in the previous year, no reproduction has been reported from the Massif Central, where two male birds have established a territory since 2018. Territories with no clutch in previous years are marked with an asterisk (*).*

| | Territory | Nest | Parent 1 | Parent 2 | Parent 3 | Clutch | Hatch | Fledge | Failure | Chick | First clutch | First fledge | Total clutches | Total fledglings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Corsica** | **4** | **4** | **4** | **4** | **0** | **2** | **1** | **1** | **1** | **1** | **2018** | **2018** | **8** | **2** |
| **FRA** | Asco | x | Asco 1 | Asco 2 | - | - | - | - | - | - | 2018 | - | 2 | 0 |
| | Bonifatu | x | Bonifatu 1 | Bonifatu 2 | - | 23/01 (±7) | 06/03 (±3) | 15/07 (±30) | - | Bonifatu2020 (W360) | 2018 | 2018 | 3 | 2 |
| | Popolasca | x | Popolasca 1 | Popolasca 2 | - | 16/01 (±10) | - | - | 12/03 (±7) | - | 2019 | - | 2 | 0 |
| | Restonica | x | Restonica 1 | Restonica 2 | - | - | - | - | - | - | 2019 | - | 1 | 0 |
| **Massif Central** | **1** | **1** | **1** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **-** | **-** | **0** | **0** |
| **FRA** | Jonte amont * | X | Layrou (≥6.cy) ♂ | Adonis (≥6.cy) ♂ | - | - | - | - | - | - | - | - | - | - |

*Info: Two male birds built a nest.*

# 7 Observations

## 7.1 IBM-network & -monitoring area

Bearded Vulture observations are collected within the area of the International Bearded Vulture Monitoring (IBM) network. Regional coordinators from national parks, regional nature parks or NGO's (Table 8) are responsible for a certain area (20 areas in 2020, see Figure 5), where the professionals collect and validate reported Bearded Vulture observations that are later stored in the IBM-database.

In 2020, two new organisations became partner of the IBM-network: The Zentrum Naturerlebnis Alpin (ZNAlp, Nr. 40) is the second partner organisation in Germany who works in close collaboration with the LBV in the eastern Alpine region. This is a further step in order to intensify the monitoring effort in the eastern regions of the Alps where a new release site has been established in Berchtesgaden National Park (GER) for 2021. With the Gran Paradiso National Park (Nr. 33), a new partner joins the IBM-network and coordinates the monitoring in the area of the Aosta valley. As both new partners collaborate closely with existing partners in their region, no new collecting centres respectively monitoring areas have been established.

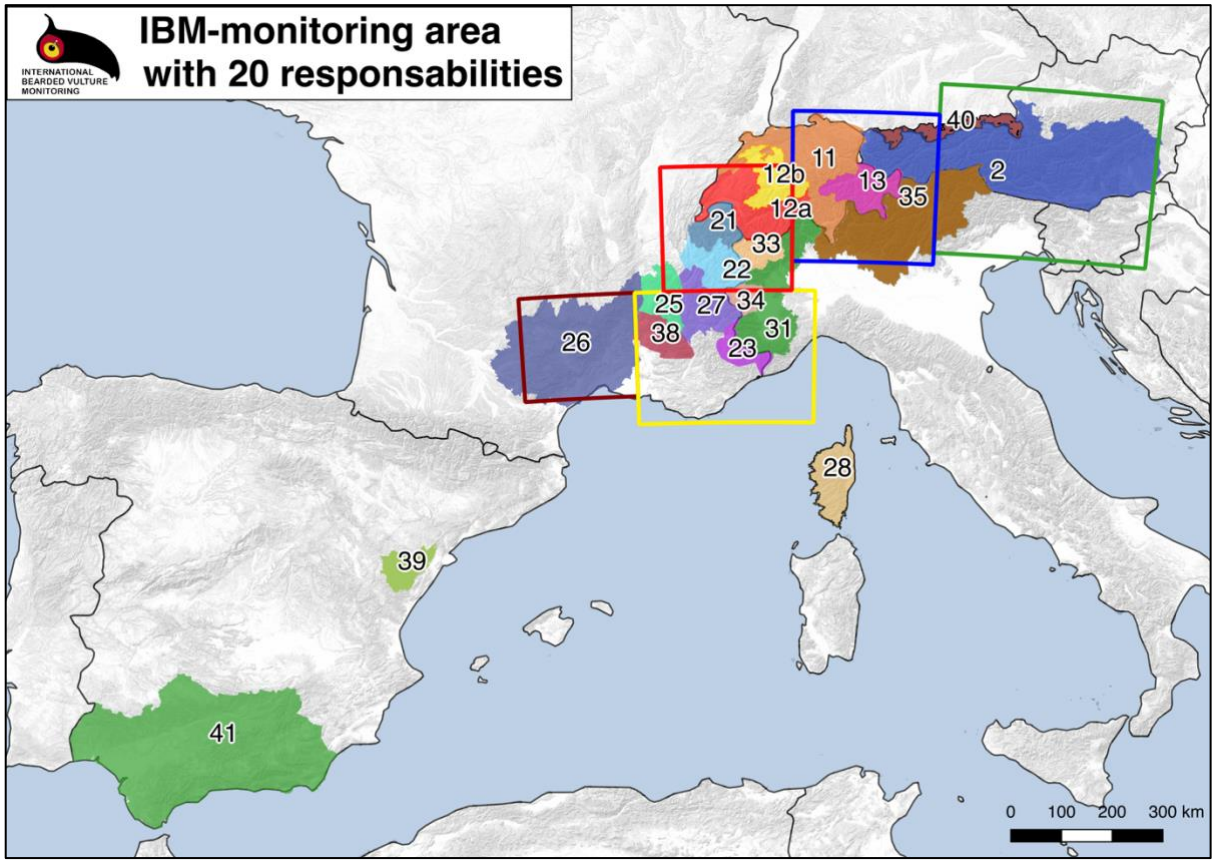



*Figure 5: 20 Areas of responsibility that form the International Bearded Vulture Monitoring Network. The Zentrum Naturerlebnis Alpin – ZNAlp (40) and the Grand Paradiso National Park (33) both became IBM-partners in 2020.*

*Table 8: IBM-partners and associated organisations (*) that collect data within their area of responsibility.*

| Collecting centre ID | Responsible organisation | Country |
|---|---|---|
| 2 | *Hohe Tauern National Park* | AUT |
| 11 | *Stiftung Pro Bartgeier Central* | CHE |
| 12a | *Stiftung Pro Bartgeier north-west* | CHE |
| 12b | *Stiftung Pro Bartgeier south-west* | CHE |
| 13 | *Stiftung Pro Bartgeier east* | CHE |
| 21 | *ASTERS* | FRA |
| 22 | *Parc National de la Vanoise* | FRA |
| 23 | *Parc National du Mercantour* | FRA |
| 25 | *Parc Naturel Régional des Vercors* | FRA |
| 26 | *LPO Grands Causses* | FRA |
| 26 | *National Park of Cevennes ** | FRA |
| 28 | PNR de Corse | FRA |
| 38 | *Association Vautours en Baronnies* | FRA |
| 39 | *Envergures Alpines* | FRA |
| 39 | *Parc National des Écrins** | FRA |
| 31 | *Parco Naturale Alpi Marittime* | ITA |
| 33 | *Parco Nationale Gran Paradiso* | ITA |
| 33 | *Regione autonoma valle d'Aosta** | ITA |
| 34 | *Parco Naturale Alpi Cozie* | ITA |
| 35 | *Parco Nazionale dello Stelvio* | ITA |
| 39 | *Maestrazgo - Els Ports* | ESP |
| 41 | *Junta de Andalucia* | ESP |
| 40 | *Landesbund für Vogelschutz - LBV* | GER |
| 40 | *Zentrum Naturerlebnis Alpin - ZNAlp* | GER |

## 7.2 Visual observations

In 2020, 1’864 Bearded Vulture observations from 7 different countries in Europe have been registered in the IBM-database. For 646 (35%) observations it was possible to identify the observed individual, for 140 (8%) cases there are hypotheses about the bird’s identity, while it was not possible to identify the individuals in 1’078 (58%) observations (Figure 6).

54 individuals (11 of them wild-hatched) were identified by at least one visual observation, while some birds have been observed several times in 2020. Two birds have even been observed over 40 times in 2020. The most frequently observed birds are Mistral (BG1022, Vercors 2019) with 45 and Carmen (BG1027, Baronnies 2019) with 41 observations (Table 9).

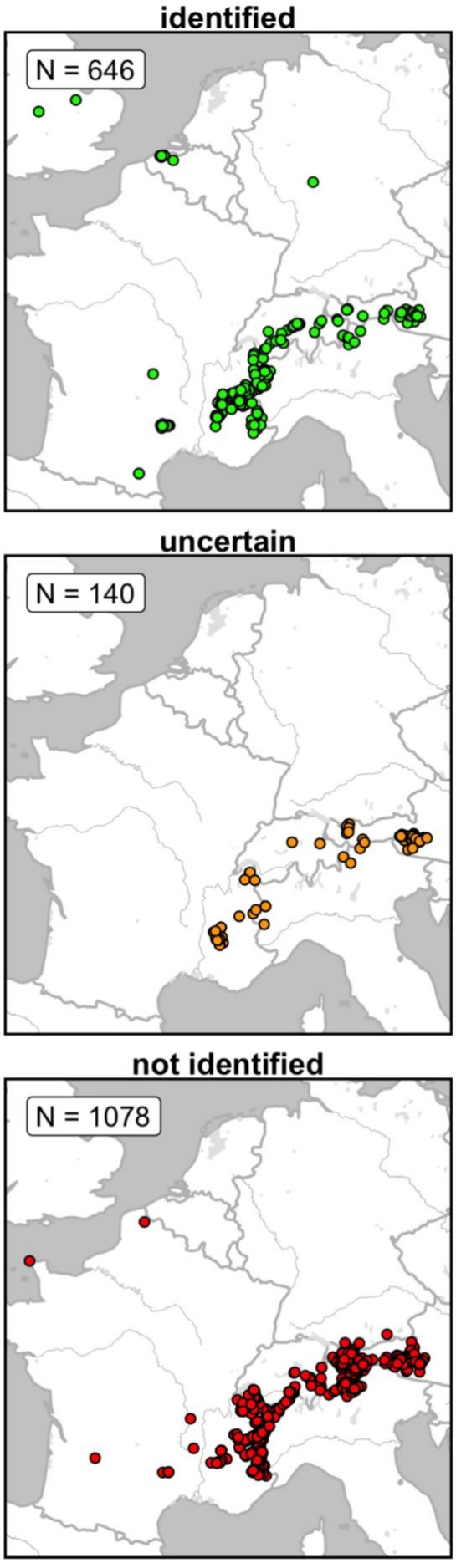



*Figure 6: Overview the 1'864 Bearded Vulture observations that have been reported in 2020. In 35% of all observations the observed bird could be identified on the individual level (646 identifications).*

*Table 9: Overview of all 1'864 observations from 7 different countries reported in the IBM-database for the year 2020. The older a bird is and the more often it has been observed, the darker it is highlighted in green. The longer a bird has not been observed before 2020, the darker it is highlighted in red.*

| Bird | Sex | Age (cy) | Observed before period | Observed in period | Observed total | AUT | BEL | CHE | DEU | FRA | GBR | ITA | Observed in 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adonis (794) | m | 7 | 18.12.19 | 23 | 288 | - | - | - | - | 23 | - | - | **23** |
| Alexa (100) | f | 33 | 10.11.19 | 1 | 95 | 1 | - | - | - | - | - | - | **1** |
| Angèle (1058) | m | 1 | - | 37 | 37 | - | - | - | - | 37 | - | - | **37** |
| Arcana (954) | f | 4 | 21.12.19 | 9 | 84 | - | - | - | - | 9 | - | - | **9** |
| Caeli (998) | m | 3 | 06.12.19 | 3 | 13 | - | - | - | - | - | - | 3 | **3** |
| Calandreto (948) | m | 4 | 24.11.19 | 13 | 34 | - | - | - | - | 13 | - | - | **13** |
| Carmen (1027) | f | 2 | 30.12.19 | 41 | 76 | - | - | - | - | 41 | - | - | **41** |
| Cévennes (1032) | m | 2 | 27.11.19 | 29 | 40 | - | - | - | - | 29 | - | - | **29** |
| Charlie (910) | f | 5 | 31.12.19 | 23 | 112 | 23 | - | - | - | - | - | - | **23** |
| Cierzo (899) | m | 5 | 14.04.19 | 1 | 21 | - | - | 1 | - | - | - | - | **1** |
| Clapas (975) | m | 3 | 30.12.19 | 26 | 119 | - | - | - | - | 26 | - | - | **26** |
| Eglazine (1069) | f | 1 | - | 2 | 2 | - | - | - | - | 2 | - | - | **2** |
| Elvio (1026) | m | 2 | 43829 | 36 | 46 | - | - | - | - | 33 | - | 3 | **36** |
| Emparis (W284) | f | 2 | - | 2 | 2 | - | - | - | - | 2 | - | - | **2** |
| Fario (1079) | f | 1 | - | 1 | 1 | - | - | - | - | 1 | - | - | **1** |
| Felice (375) | f | 20 | 29.12.19 | 2 | 69 | - | - | - | - | - | - | 2 | **2** |
| Felix2 (793) | m | 7 | 31.12.19 | 40 | 119 | 40 | - | - | - | - | - | - | **40** |
| Finja (1003) | f | 3 | 16.07.19 | 4 | 17 | - | - | 4 | - | - | - | - | **4** |
| Flysch (W297) | f | 2 | - | 8 | 8 | - | 5 | - | - | - | 3 | - | **8** |
| Fortuna (843) | m | 6 | 11.11.19 | 12 | 45 | 12 | - | - | - | - | - | - | **12** |
| Fortunat (1068) | m | 1 | - | 5 | 5 | - | - | 5 | - | - | - | - | **5** |
| Fredueli (1001) | m | 3 | 27.12.19 | 4 | 14 | - | - | 4 | - | - | - | - | **4** |
| Gemapi (W196) | f | 5 | 23.01.18 | 1 | 13 | - | - | 1 | - | - | - | - | **1** |
| Gerlinde (759) | f | 8 | 18.02.19 | 1 | 184 | - | - | - | - | 1 | - | - | **1** |
| Glocknerlady (718) | f | 9 | 24.12.17 | 2 | 42 | 2 | - | - | - | - | - | - | **2** |
| Gypsy (W209) | m | 4 | 30.11.19 | 1 | 11 | - | - | 1 | - | - | - | - | **1** |
| Italia 150 (660) | m | 10 | 15.08.15 | 1 | 41 | - | - | - | - | - | - | 1 | **1** |
| Johannes (964) | m | 4 | 29.06.19 | 2 | 19 | - | - | 2 | - | - | - | - | **2** |
| Kasimir (991) | m | 3 | 20.12.19 | 7 | 22 | 7 | - | - | - | - | - | - | **7** |
| Kirsi (764) | m | 8 | 30.12.19 | 8 | 85 | - | - | - | - | 8 | - | - | **8** |
| Kobalann (1063) | f | 1 | - | 36 | 36 | - | - | - | - | 36 | - | - | **36** |
| Kruml5 (W245) | u | 3 | 26.08.19 | 2 | 15 | 2 | - | - | - | - | - | - | **2** |
| Kruml7 (W332) | u | 1 | - | 2 | 2 | 2 | - | - | - | - | - | - | **2** |
| Lausa (1015) | f | 2 | 21.12.19 | 27 | 49 | - | - | - | 1 | 26 | - | - | **27** |
| Layrou (761) | m | 8 | 17.12.19 | 30 | 297 | - | - | - | - | 30 | - | - | **30** |
| Lea (840) | m | 6 | 10.11.19 | 11 | 75 | 10 | - | - | - | - | - | 1 | **11** |
| Lechtal2020 (W369) | u | 1 | - | 4 | 4 | 4 | - | - | - | - | - | - | **4** |
| Lucky (909) | m | 5 | 17.09.19 | 1 | 63 | 1 | - | - | - | - | - | - | **1** |
| Luzerna (1071) | f | 1 | - | 4 | 4 | - | - | 4 | - | - | - | - | **4** |
| Maurich (W365) | u | 1 | - | 10 | 10 | - | - | - | - | - | - | 10 | **10** |
| Michegabri (488) | m | 15 | 24.04.14 | 1 | 59 | - | - | - | - | - | - | 1 | **1** |
| Mistral (1022) | m | 2 | 30.12.19 | 45 | 58 | - | - | - | - | 45 | - | - | **45** |
| Noel-Leya (797) | m | 7 | 07.10.17 | 1 | 12 | - | - | 1 | - | - | - | - | **1** |
| Ophrys (1078) | f | 1 | - | 3 | 3 | - | - | - | - | 3 | - | - | **3** |
| Palo-Pala (1062) | m | 1 | - | 29 | 29 | - | - | - | - | 20 | - | 9 | **29** |
| Pamela (1031) | f | 2 | 43829 | 32 | 55 | - | - | 1 | - | 31 | - | - | **32** |
| Penti2020 (W349) | f | 1 | - | 2 | 2 | - | - | - | - | - | - | 2 | **2** |
| Pierro (W301) | m | 2 | - | 2 | 2 | - | - | - | - | 2 | - | - | **2** |
| Roman (854) | m | 6 | 30.12.19 | 34 | 87 | - | - | - | - | - | - | 34 | **34** |
| Simay (983) | m | 3 | 43698 | 7 | 58 | - | - | - | - | 2 | - | 5 | **7** |
| Sixt Buet (W285) | f | 2 | - | 2 | 2 | - | - | 1 | - | 1 | - | - | **2** |
| Tell (283) | m | 24 | 08.12.19 | 3 | 77 | - | - | - | - | - | - | 3 | **3** |
| Tenao (755) | m | 8 | 27.12.19 | 9 | 104 | - | - | - | - | 9 | - | - | **9** |
| Volcaire (905) | m | 5 | 43736 | 4 | 130 | - | - | - | - | 4 | - | - | **4** |
| unknown | | | | | | 363 | - | 15 | 12 | 282 | - | 546 | **1'218** |
| **Total observations in 2020** | | | | | | **467** | **5** | **40** | **13** | **716** | **3** | **620** | **1'864** |

### 7.2.1 Ornitho.ch data

Another 1'659 Bearded Vulture observations have been reported on the swiss ornithologist reporting platform *ornitho.ch.* Even though these observations were not validated by professional observers such as the regional IBM-coordinators, these observations deliver information about Bearded Vulture hotspots and future focal areas (
Figure 7).

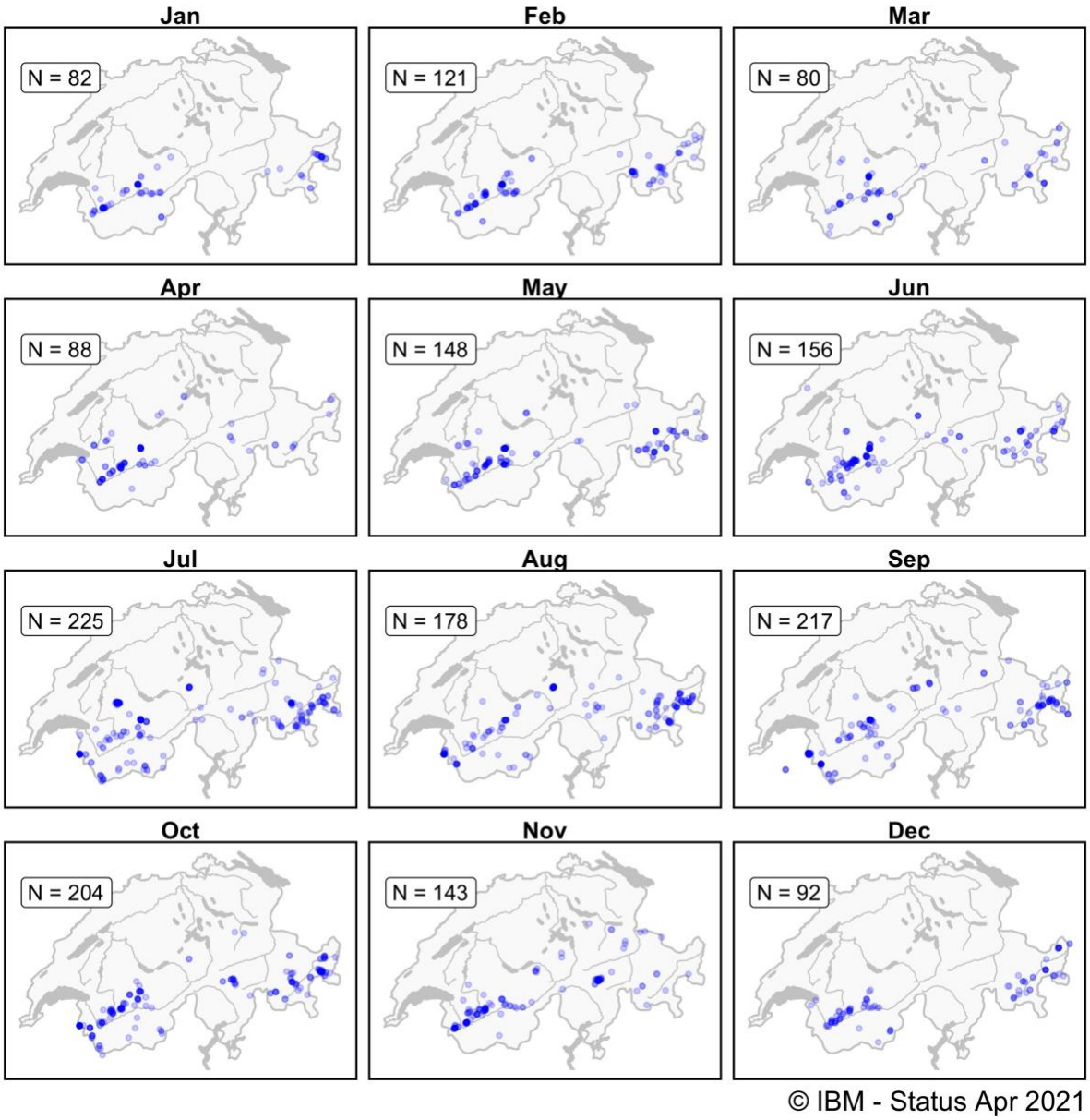



*Figure 7. All observations classified as Bearded Vulture observations on Ornitho.ch in 2020. The points are shown with 20% coverage, so five overlapping observations appear in dark blue.*

## 7.3 Unusual observations

### 7.3.1 Identified observations

#### 7.3.1.1 Lausa's odyssey

On her tour through France, Belgium, Germany and Switzerland (see 8.3.2) the immature bird that was released in 2019 in Grands Causses was observed several times before Lausa (BG1015) was found dead in Switzerland (see 9.1.4).

#### 7.3.1.2 Flysch in the far north

A young Bearded Vulture was photographed in Kenilworth, England on the 25.06.21 after the same bird was observed several times in the north of Europe and was nicknamed "Vigo". It is the second-ever record of a Bearded Vulture observed in England. Genetic analyses revealed the identity of the bird: It was the wild hatchling Flysch (W297) which hatched in the territory Bargy BIS in 2019. These interesting findings were published in BritishBirds by Louis Phipps, Franziska Loercher, David Ball and Etienne Marlé / January 2021 – vol. 114, issue 1, pp 33–37.

#### 7.3.1.3 Pierro in the North of France

Two observations of young Bearded Vultures (second calendar year), who left their mountain habitat and headed north to explore new areas, were reported in May (12. & 17.05.21). One Bearded Vulture was observed in «Nieppe» (Hauts-de-France) and another Bearded Vulture observation was reported from «la Hague» (Basse-Normandie) by the coast near Nez de Jobourg only few days later. While the latter was sighted several times in this region, the young Bearded Vulture (maybe the one observed in Nieppe) was rescued, rehabilitated at Hegalaldia (FRA) and released again. With the help of genetic analysis, the Stiftung Pro Bartgeier (SPB) and the VCF detected the origin of this young individual called Pierro (W301) from the breeding territory Bargy (2019).


## 7.4 Individual identification

Thanks to the sophisticated marking system of the IBM, it was possible to identify 163 Bearded Vultures in 2020 (Table 10, Table 11 and Table 12). Data from observations, the reproduction monitoring, telemetry as well as the IOD were used to gain valuable information about Bearded Vultures on the individual level.

This information allows to draw conclusions about the life history of individuals, which forms the basis for survival analyses in order to better understand and manage the reintroduction process of this endangered species. Furthermore, such life history data is essential for population modelling and predictions about the development of the Bearded Vulture population.

*Table 10. List of all birds that have been identified in 2020 with "origin" in the eastern and central Alpine range. Wild-hatched birds are marked with a prefixed "W" or "GT" in the BirdID. "Identification" describes the data basis that was used for their record: r = reproduction, i = IOD, t = telemetry, o = observation. Sorted by their region of origin (territory or release site). * = territory of hatch from juvenile birds from 2020.*

| Name | BirdID | Sex | Hatch | Death | Age (cy) | Origin (release site / territory / country) | | Zone | Territory (2020) | Identification |
|---|---|---|---|---|---|---|---|---|---|---|
| **Eastern an central Alpine range** | | | | | | | | | | **66** |
| Kruml5 | W245 | u | 2018 | | 3 | Gastein/Rauris | | | | o |
| Kruml7 | W332 | u | 2020 | | 1 | Gastein/Rauris | | | Gastein/Rauris (AUT)* | r,o,i |
| Cravallo | W156 | m | 2015 | | 6 | Katschberg | | | Tinizong (CHE) | r |
| Katschberg2020 | W341 | u | 2020 | | 1 | Katschberg | | | Katschberg (AUT)* | r |
| Felix2 | 793 | m | 2014 | | 7 | NP Hohe Tauern, Debantal | | | | o,t |
| Fortuna | 843 | m | 2015 | | 6 | NP Hohe Tauern, Dorfertal | | | | o,i,t |
| Lea | 840 | m | 2015 | | 6 | NP Hohe Tauern, Dorfertal | | | | o,t |
| Glocknerlady | 718 | f | 2012 | | 9 | NP Hohe Tauern, Fleißtal | | | | o |
| Inge | 720 | f | 2012 | | 9 | NP Hohe Tauern, Fleißtal | | | Tinizong (CHE) | r |
| Smaragd | 675 | m | 2011 | | 10 | NP Hohe Tauern, Habachtal | | | Zermatt (CHE) | r |
| Hubertus 2 | 446 | m | 2004 | | 17 | NP Hohe Tauern, Kals | AUT | | Katschberg (AUT) | r |
| Romaris | 528 | f | 2007 | | 14 | NP Hohe Tauern, Kals | | East | Katschberg (AUT) | r |
| Joker | 420 | f | 2003 | | 18 | NP Hohe Tauern, Mallnitz | | | Prägraten (AUT) | r |
| Caeli | 998 | m | 2018 | | 3 | NP Hohe Tauern, Mallnitz | | | | o,t |
| Kasimir | 991 | m | 2018 | | 3 | NP Hohe Tauern, Mallnitz | | | | o,t |
| Alexa | 100 | f | 1988 | | 33 | NP Hohe Tauern, Rauris | | | Gastein/Rauris (AUT) | r,o |
| Andreas Hofer | 260 | m | 1996 | | 25 | NP Hohe Tauern, Rauris | | | Gastein/Rauris (AUT) | r |
| Rurese | 559 | m | 2008 | | 13 | NP Hohe Tauern, Rauris | | | Maloja (CHE) | r |
| Charlie | 910 | f | 2016 | | 5 | NP Hohe Tauern, Untersulzbachtal | | | | o |
| Lucky | 909 | m | 2016 | | 5 | NP Hohe Tauern, Untersulzbachtal | | | | o,t |
| Retia | 357 | f | 2000 | | 21 | NP Stilfserjoch, Martell | | | Buffalora (CHE) | r |
| Stift | 393 | f | 2002 | | 19 | NP Stilfserjoch, Martell | ITA | | Valle del Braulio (ITA) | r,i |
| Ortler | 439 | f | 2004 | | 17 | NP Stilfserjoch, Martell | | | Ofenpass (CHE) | r,i |
| Temperatio | 495 | f | 2006 | | 15 | NP Stilfserjoch, Martell | | | Val Martello (ITA) | r |
| Lechtal2020 | W369 | u | 2020 | | 1 | Lechtal | AUT | | Lechtal (AUT)* | r,o |
| Renad | W336 | u | 2020 | | 1 | Albula | | | Albula (CHE)* | r |
| Chantal | W340 | u | 2020 | | 1 | Bergün | | | Bergün (CHE)* | r |
| Lia | W339 | u | 2020 | | 1 | Foraz | | | Foraz (CHE)* | r |
| Heinz-Serraglio | W45 | m | 2007 | | 14 | Ofenpass | | | Zebru (ITA) | r,i |
| Vitus | W344 | u | 2020 | | 1 | Ova Spin | | | Ova Spin (CHE)* | r,i |
| Pontresina2020 | W345 | u | 2020 | | 1 | Pontresina | | | Pontresina (CHE)* | r,i |
| Poschiavo2020 | W331 | u | 2020 | | 1 | Poschiavo | | | Poschiavo (CHE)* | r |
| Sinestra2020 | W338 | u | 2020 | | 1 | Sinestra | | | Sinestra (CHE)* | r |
| Tantermozza2020 | W333 | u | 2020 | | 1 | Tantermozza | | | Tantermozza (CHE)* | r |
| Abbracciavento | W342 | u | 2020 | | 1 | Trupchun | | | Trupchun (CHE)* | r |
| Ingenius | 621 | m | 2010 | | 11 | Calfeisen, Vaettis | | | Buffalora (CHE) | r |
| Noel-Leya | 797 | m | 2014 | | 7 | Calfeisen, Vaettis | | | | o,i,t |
| Schils | 802 | m | 2014 | | 7 | Calfeisen, Vaettis | | | | t |
| Ewolina | 838 | f | 2015 | | 6 | Melchsee-Frutt | | | | t |
| Sempach 2 | 841 | f | 2015 | | 6 | Melchsee-Frutt | | | | t |
| Cierzo | 899 | m | 2016 | | 5 | Melchsee-Frutt | CHE | | | o,t |
| Johannes | 964 | m | 2017 | | 4 | Melchsee-Frutt | | | | o,t |
| Finja | 1003 | f | 2018 | | 3 | Melchsee-Frutt | | | | o,t |
| Fredueli | 1001 | m | 2018 | | 3 | Melchsee-Frutt | | | | o,i,t |
| Fortunat | 1068 | m | 2020 | | 1 | Melchsee-Frutt | | Central | | o,t |
| Luzerna | 1071 | f | 2020 | | 1 | Melchsee-Frutt | | | | o,i,t |
| Moische | 146 | f | 1991 | | 30 | NP Engadin, Zernez | | | Livigno (ITA) | r |
| Jo | 169 | f | 1992 | | 29 | NP Engadin, Zernez | | | Ortler (ITA) | r |
| Cic | 186 | m | 1993 | | 28 | NP Engadin, Zernez | | | Livigno (ITA) | r |
| Tell | 283 | m | 1997 | | 24 | NP Engadin, Zernez | | | Valle del Braulio (ITA) | r,o |
| Gildo | 299 | f | 1998 | | 23 | NP Engadin, Zernez | | | Derborence_Vérouet (CHE) | r |
| Veronika | 321 | f | 1999 | | 22 | NP Engadin, Zernez | | | | t |
| Felice | 375 | f | 2001 | | 20 | NP Engadin, Zernez | | | Zebru (ITA) | r,o,i |
| Folio | 463 | f | 2005 | | 16 | NP Engadin, Zernez | | | Maloja (CHE) | r |
| Blick | 524 | m | 2007 | | 14 | NP Engadin, Zernez | | | Planeil (ITA) | r |
| Samuel | 526 | m | 2007 | | 14 | NP Engadin, Zernez | | | Sinestra (CHE) | r |
| Livigno | W08 | m | 2000 | | 21 | Livigno | | | Ofenpass (CHE) | r |
| Moische-Livigno | W11 | f | 2002 | | 19 | Livigno | | | Sinestra (CHE) | r |
| Penti2020 | W349 | f | 2020 | | 1 | Livigno | | | Livigno (ITA)* | r,o,i,t |
| Ortler2020 | W351 | u | 2020 | | 1 | Ortler | | | Ortler (ITA)* | r |
| Schnals2020 | W350 | u | 2020 | | 1 | Schnals | ITA | | Schnals (ITA)* | r |
| Val_Martello2020 | W352 | u | 2020 | | 1 | Val Martello | | | Val Martello (ITA)* | r |
| Diana-Stelvio | W07 | f | 2000 | | 21 | Valle del Braulio | | | Albula (CHE) | r,i |
| Braulio2020 | W327 | u | 2020 | | 1 | Valle del Braulio | | | Valle del Braulio (ITA)* | r |
| Zebru | W12 | m | 2002 | | 19 | Zebru | | | Tantermozza (CHE) | r |
| Zebru2020 | W348 | u | 2020 | | 1 | Zebru | | | Zebru (ITA)* | r |

*Table 11. List of all birds that have been identified in 2020 with "origin" in the north- and south-western Alpine range. Wild-hatched birds are marked with a prefixed "W" or "GT" in the BirdID. "Identification" describes the data basis that was used for their record: r = reproduction, i = IOD, t = telemetry, o = observation. Sorted by their region of origin (territory or release site). * = territory of hatch from juvenile birds from 2020.*

| Name | BirdID | Sex | Hatch | Death | Age (cy) | Origin (release site / territory / country) | | Zone | Territory (2020) | Identification |
|---|---|---|---|---|---|---|---|---|---|---|
| **North-western & south-western Alpine range** | | | | | | | | | | **56** |
| Mison | W230 | f | 2017 | | 4 | Bagnes | | | | t |
| Gregoria | W367 | u | 2020 | | 1 | Kandertal | | | Kandertal (CHE)* | r |
| Leukerbad2020 | W354 | u | 2020 | | 1 | Leukerbad | **CHE** | | Leukerbad (CHE)* | r |
| Queen | W355 | u | 2020 | | 1 | Saas | | | Saas (CHE)* | r |
| Pollux | W353 | u | 2020 | | 1 | Zermatt | | | Zermatt (CHE)* | r |
| Gwaihir | W363 | u | 2020 | | 1 | Andagne | | | Andagne (FRA)* | r |
| Neige | W198 | m | 2016 | | 5 | Aravis | | | Truc (FRA) | r,t |
| Gypsy | W209 | m | 2017 | | 4 | Aravis | | | | o,t |
| Tempete | W329 | u | 2020 | | 1 | Aravis | | | Aravis (FRA)* | r |
| Gemapi | W196 | f | 2016 | | 5 | Bargy | | | | o,t |
| Lapie | W251 | m | 2018 | | 3 | Bargy | | | | t |
| Pierro | W301 | m | 2019 | | 2 | Bargy | | | | o,t |
| Vidoc | W356 | u | 2020 | | 1 | Bargy | | North-West | Bargy (FRA)* | r,t |
| Flysch | W297 | f | 2019 | | 2 | Bargy BIS | | | | o |
| Enzo | W359 | u | 2020 | | 1 | Bourg-Saint-Maurice | **FRA** | | Bourg-Saint-Maurice (FRA)* | r |
| Altitude | W313 | f | 2019 | | 2 | Peisey-Nancroix | | | | t |
| Bellecote | W361 | u | 2020 | | 1 | Peisey-Nancroix | | | Peisey-Nancroix (FRA)* | r,t |
| Nina | W364 | u | 2020 | | 1 | Pralognan | | | Pralognan (FRA)* | r |
| Sixt Buet | W285 | f | 2019 | | 2 | Sixt Fiz | | | | o,t |
| Prazon-sixt-fer-a-cheval | W346 | u | 2020 | | 1 | Sixt Fiz | | | Sixt Fiz (FRA)* | r,t |
| Mila | W358 | u | 2020 | | 1 | Termignon | | | Termignon (FRA)* | r |
| Bellevarde | W362 | u | 2020 | 30.12.20 | 1 | Val dIsère | | | Val dIsère (FRA)* | r,i,t |
| Pablo | 359 | m | 2000 | | 21 | Haute-Savoie, Bargy | | | Derborence_Vérouet (CHE) | r |
| Gilbert | 440 | f | 2004 | | 17 | Haute-Savoie, Doran | | | Derborence_down (CHE) | r |
| Swaro | 459 | m | 2005 | | 16 | Haute-Savoie, Doran | | | Derborence_down (CHE) | r |
| Maurich | W365 | u | 2020 | | 1 | Usseglio | | | Usseglio (ITA)* | r,o,i |
| Val di Rhemes2020 | W366 | u | 2020 | | 1 | Val di Rhemes | **ITA** | | Val di Rhemes (ITA)* | r |
| Valdigne2020 | W357 | u | 2020 | | 1 | Valdigne | | | Valdigne (ITA)* | r |
| Amprene | W334 | u | 2020 | | 1 | Bonette | | | Bonette (FRA)* | r |
| Tensing | W337 | u | 2020 | | 1 | Chambeyron-Ubayette | | | Chambeyron-Ubayette (FRA)* | r,i |
| Emparis | W284 | f | 2019 | | 2 | Malaval | | | | o,t |
| Girun | 904 | f | 2016 | | 5 | Baronnies, Léoux Valley | | | | t |
| Volcaire | 905 | m | 2016 | | 5 | Baronnies, Léoux Valley | | | | o |
| Léoux | 950 | f | 2017 | | 4 | Baronnies, Léoux Valley | | | | t |
| Clapas | 975 | m | 2018 | | 3 | Baronnies, Léoux Valley | | | | o,t |
| Simay | 983 | m | 2018 | | 3 | Baronnies, Léoux Valley | | | | o,t |
| Carmen | 1027 | f | 2019 | | 2 | Baronnies, Léoux Valley | | | | o,t |
| Pamela | 1031 | f | 2019 | | 2 | Baronnies, Léoux Valley | | | | o,t |
| Angèle | 1058 | m | 2020 | | 1 | Baronnies, Léoux Valley | | | | o,t |
| Guillaumes | 411 | f | 2003 | | 18 | PN du Mercantour, Vignols | **FRA** | | Derborence_Vérouet (CHE) | r |
| Rocca | 516 | m | 2007 | | 14 | PN du Mercantour, Vignols | | | Source de la Tinée (FRA) | r |
| Tenao | 755 | m | 2013 | | 8 | PN du Mercantour, Vignols | | South-West | Val dEntraunes (FRA) | r,o,i,t |
| Stephan | 616 | m | 2010 | | 11 | PNR Vercors, Trechenu-Creyers | | | Chambeyron-Ubayette (FRA) | r,i |
| Bellemotte | 708 | f | 2012 | | 9 | PNR Vercors, Trechenu-Creyers | | | Bonette (FRA) | r |
| Gerlinde | 759 | f | 2013 | | 8 | PNR Vercors, Trechenu-Creyers | | | | o |
| Kirsi | 764 | m | 2013 | | 8 | PNR Vercors, Trechenu-Creyers | | | | o |
| Elvio | 1026 | m | 2019 | | 2 | PNR Vercors, Trechenu-Creyers | | | | o,i,t |
| Mistral | 1022 | m | 2019 | | 2 | PNR Vercors, Trechenu-Creyers | | | | o,i,t |
| Kobalann | 1063 | f | 2020 | | 1 | PNR Vercors, Trechenu-Creyers | | | | o,t |
| Palo-Pala | 1062 | m | 2020 | | 1 | PNR Vercors, Trechenu-Creyers | | | | o,t |
| Sereno | 348 | m | 2000 | | 21 | PN Alpi Marittime, Argentera | | | Source de lUbaye (FRA) | r,i |
| Cuneobirding | 491 | f | 2006 | | 15 | PN Alpi Marittime, Argentera | | | Chambeyron-Ubayette (FRA) | r,i |
| Michegabri | 488 | m | 2006 | | 15 | PN Alpi Marittime, Argentera | | | Chamoussière (ITA) | r,o |
| Girasole | 549 | f | 2008 | | 13 | PN Alpi Marittime, Argentera | **ITA** | | Source de la Tinée (FRA) | r |
| Italia 150 | 660 | m | 2011 | | 10 | PN Alpi Marittime, Argentera | | | Usseglio (ITA) | r,o |
| Roman | 854 | m | 2015 | | 6 | PN Alpi Marittime, Argentera | | | | o,i,t |

*Table 12: List of all birds that have been identified in 2020 with "origin" in the Massif Central, the French Pyrenees, Corsica and Spain. Wild-hatched birds are marked with a prefixed "W" or "GT" in the BirdID. "Identification" describes the data basis that was used for their record: r = reproduction, i = IOD, t = telemetry, o = observation. Sorted by their region of origin (territory or release site). * = territory of hatch from juvenile birds from 2020.*

| Name | BirdID | Sex | Hatch | Death | Age (cy) | Origin (release site / territory / country) | | Zone | Territory (2020) | Identification | repdata | obsdata | iodrepdata | gpsdata |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Massif Central & french Pyrenees** | | | | | | | | | | **13** | | | | |
| Layrou | 761 | m | 2013 | | 8 | Grands Causses, Trévezel | | | Jonte amont (FRA) | r,o,t | r | o | | t |
| Arcana | 954 | f | 2017 | | 4 | Grands Causses, Trévezel | | | | o,t | | o | | t |
| Calandreto | 948 | m | 2017 | | 4 | Grands Causses, Trévezel | | | | o | | o | | |
| Dolomie | 1070 | m | 2020 | 11.10.20 | 1 | Grands Causses, Trévezel | | | | t | | | | t |
| Eglazine | 1069 | f | 2020 | | 1 | Grands Causses, Trévezel | | | | o,t | | o | | t |
| Fario | 1079 | f | 2020 | | 1 | Grands Causses, Trévezel | **FRA** | **Massif Central** | | t | | | | t |
| Ophrys | 1078 | f | 2020 | | 1 | Grands Causses, Trévezel | | | | t | | | | t |
| Basalte | 716 | m | 2012 | | 9 | Grands Causses,Frépestel | | | Malaval (FRA) | r,i | r | | i | |
| Adonis | 794 | m | 2014 | | 7 | Grands Causses,Frépestel | | | Jonte amont (FRA) | r,o | r | o | | |
| Cévennes | 1032 | m | 2019 | | 2 | Grands Causses,Frépestel | | | | o,t | | o | | t |
| Lausa | 1015 | f | 2019 | 28.06.20 | 1 | Grands Causses,Frépestel | | | | o,t | | o | | t |
| Aven | 1067 | f | 2020 | | 1 | Grands Causses,Frépestel | | | | t | | | | t |
| Roc Genèse | | m | 2016 | | 5 | Pyrenees | **FRA** | **Pyrenees** | | t | | | | t |
| **Maestrazgo & Andalusia** | | | | | | | | | | **23** | | | | |
| Alos | 992 | m | 2018 | | 3 | Tinença de Benifassà | | | | t | | | | t |
| Amic | 995 | m | 2018 | | 3 | Tinença de Benifassà | | | | t | | | | t |
| Bassi | 1033 | m | 2019 | | 2 | Tinença de Benifassà | **ESP** | **Maestrazgo** | | t | | | | t |
| Boira | 1040 | f | 2019 | | 2 | Tinença de Benifassà | | | | i,t | | | i | t |
| Celest | 1073 | f | 2020 | | 1 | Tinença de Benifassà | | | | i,t | | | i | t |
| Coco | 1077 | f | 2020 | 09.08.20 | 1 | Tinença de Benifassà | | | | t | | | | t |
| Alejandra | 1059 | f | 2020 | | 1 | Los Picones, Castril | | | | i | | | i | |
| Curro | 1057 | f | 2020 | | 1 | Los Picones, Castril | | | | i | | | i | |
| Huesitos | 1036 | f | 2019 | | 2 | PN Carzola, Guadalentín | | | | i | | | i | |
| Bigup | 856 | m | 2015 | | 6 | PN Castril, Granada | | | | i | | | i | |
| Vainilla | 1029 | f | 2019 | | 2 | PN Castril, Granada | | | | i | | | i | |
| Samburu | 1055 | f | 2020 | | 1 | PN Cazorla | | | | i | | | i | |
| Blimunda | 633 | f | 2010 | | 11 | PN Cazorla, Canalejas | | | | i | | | i | |
| Estela | 746 | f | 2013 | | 8 | PN Cazorla, Canalejas | | | | i | | | i | |
| Guadalquivir | 751 | m | 2013 | | 8 | PN Cazorla, Canalejas | **ESP** | **Andalusia** | | i | | | i | |
| Tono | 486 | m | 2006 | | 15 | PN Cazorla, Centenares | | | | i | | | i | |
| Encina | 713 | f | 2012 | | 9 | PN Cazorla, Centenares | | | | i | | | i | |
| Tramaya | 1023 | f | 2019 | | 2 | PN Cazorla, Guadalentín | | | | i | | | i | |
| Trashumancia | 1025 | f | 2019 | | 2 | PN Cazorla, Guadalentín | | | | i | | | i | |
| Nerpio | 762 | m | 2013 | | 8 | PN Cazorla, Tornillos de Gualay | | | | i | | | i | |
| Miguel | 800 | m | 2014 | | 7 | PN Cazorla, Tornillos de Gualay | | | | i | | | i | |
| Rayo | 799 | m | 2014 | | 7 | PN Cazorla, Tornillos de Gualay | | | | i | | | i | |
| Heli | 955 | m | 2017 | | 4 | PN Cazorla, Tornillos de Gualay | | | | i | | | i | |
| **Corsia** | | | | | | | | | | **5** | | | | |
| Bonifatu2020 | W360 | u | 2020 | | 1 | Bonifatu | | | Bonifatu (FRA)* | r | r | | | |
| Muntagnolu | 890 | m | 2016 | | 5 | Corsica, Niolo Valley | | | | t | | | | t |
| Luna | 959 | f | 2017 | | 4 | Corsica, Niolo Valley | **FRA** | **Corsica** | | t | | | | t |
| Cintu | 1042 | m | 2019 | | 2 | Corsica, Niolo Valley | | | | t | | | | t |
| Orba | 1041 | f | 2019 | | 2 | Corsica, Niolo Valley | | | | t | | | | t |

## 7.5 Population estimate based on IOD 2020

In order to obtain a reliable Alpine population estimate, synchronous monitoring over a large part of the area is necessary to avoid double counting. However, due to limited access or poor visibility in many regions during the IOD 2020, the monitoring network could not be covered as in previous years. In addition, it must be assumed that fewer Bearded Vultures were observed flying at sites with bad weather, as a consequence of the unfavourable thermal conditions. Because of these limitations, no reliable estimate of the Alpine Bearded Vulture population or its age class distribution could be made in 2020.

Nevertheless, in the Alps it was possible to identify 27 Bearded Vulture individuals with certainty, while a further 22 birds could be identified with slightly lower probability. These data provide important information on the life-history of these animals and can serve to calculate parameters for demographic modelling. Out of 38 GPS-tagged animals that sent data during the IOD period 2020, only 10 individuals could be identified. Thanks to GPS-tagging, we therefore understand how difficult it can be to identify animals and thus how valuable identification data is.

The Spanish IBM-partners profited from favourable weather conditions and estimated the Bearded Vulture population in Andalusia, Castilla y León, Castilla la Mancha, Murcia and Valencia with a minimal and maximal number of 28 and 45 Bearded Vultures, respectively. Furthermore, they were able to identify 20 Bearded Vulture individuals. In the French Pre-Pyrenees, the moderate weather situation allowed to estimate the local population at 8-14 individuals, while the IOD was cancelled in the Massif Central due to bad weather forecast. Same as in the last two years, no Bearded Vultures have been observed in Bulgaria where the species has been considered extinct since 1972.

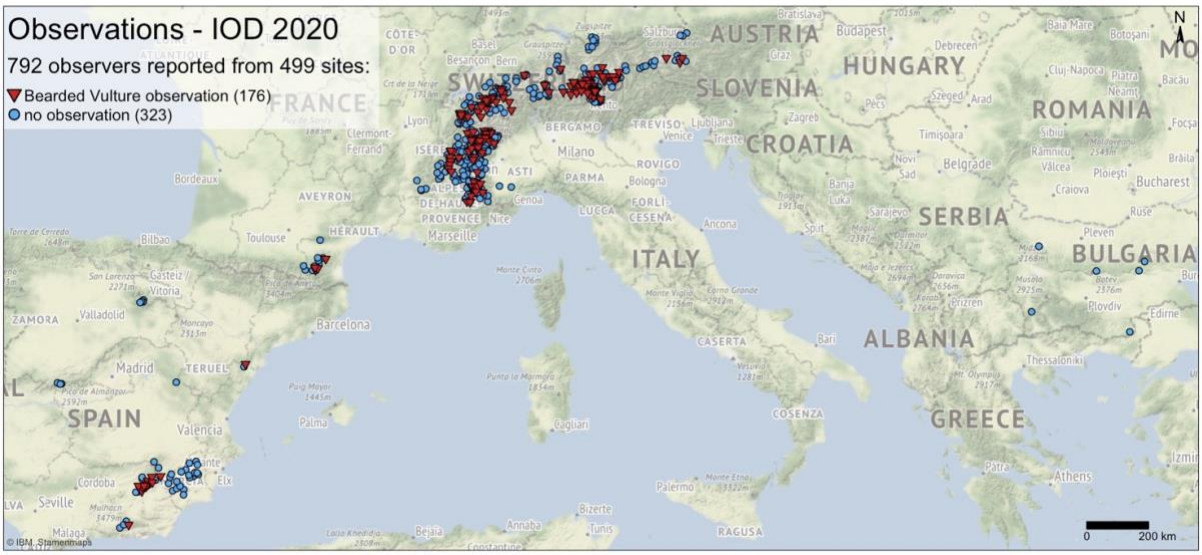



*Figure 8. Distribution of all 499 observation sites during the IOD 2020 in Europe. Red triangles depict those sites where Bearded Vultures have been observed at least once during the IOD period 3rd-10th of October 2020 (N=176) while no observations have been reported from sites marked with a blue dot (N=323).*

*** The complete IOD 2020 report can be found online on [www.gyp-monitoring.com](www.gyp-monitoring.com)***

# 8 Markings

Individual based monitoring makes the International Bearded Vulture Monitoring unique among monitoring projects of this scale. By the end of 2020, more than 59'000 Bearded Vulture observations were stored in the IBM-database, ~30% of them from identified individuals. The marking of released and wild-hatched birds is of major importance to follow the life history and reveal the behavioural patterns of the individuals in order to understand the demography and track the development of the reintroduction process. Therefore, young Bearded Vultures are marked with rings (chapter 8.1), some feathers are bleached (chapter 8.2) as well as GPS-tags (chapter 8.3) before they are released into the wild (Figure 10).

## 8.1 Rings

Since 2015, one silver aluminium ring and a black plastic ring with white letters ("Darvic ring"), both with two-digit codes (bi-directional), were used to mark Bearded Vultures (Figure 9). Their large letters should ensure that the codes are easily readable with binoculars and also on pictures. Since uniqueness of the codes is important for clear identification, unique two-digit codes (unidirectional) were used from 2016 onwards. Two rings with inverted identical codes but different orientation improves legibility, as it is more likely to be able to read both characters of the code. After it has been observed that the Darvic rings of some birds fell off or slipped from their position, it was decided to use two aluminium from 2017 onwards (see annual report 2017 for more details). The right aluminium ring is marked with a country-specific code of the national ringing centre (Table 13), while the left IBM-ring is marked with the two-digit code and IBM-contact details.

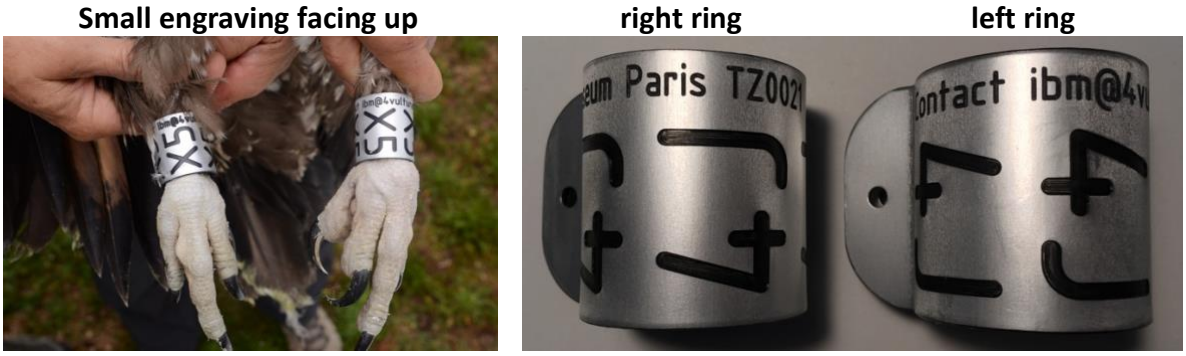



*Figure 9: IBM-ringing system since 2017: 2 Aluminium rings with large two-digit code and a smaller engraving for the national code (right) and aluminium standard IBM-engraving (left) facing up.*

*Table 13: Engravings for the country-specific national code (####) and the IBM-standard ring.*

| Country | Right aluminium ring | Left aluminium ring |
|---|---|---|
| AUT | AB#### KLIVV.AT AB#### KLIVV.AT | Contact ibm@4vultures.org |
| CHE | Vogelwarte Helvetia Sempach GYP#### | Contact ibm@4vultures.org |
| ESP | Contact ibm@4vultures.org | Contact ibm@4vultures.org |
| FRA | Museum Paris TZ#### 4vultures.org | Contact ibm@4vultures.org |
| ITA | INFS OZZANO (BO) ITALY MC#### ring.ac | Contact ibm@4vultures.org |

## 8.2 Markings 2020

### 8.2.1 Released birds[4]

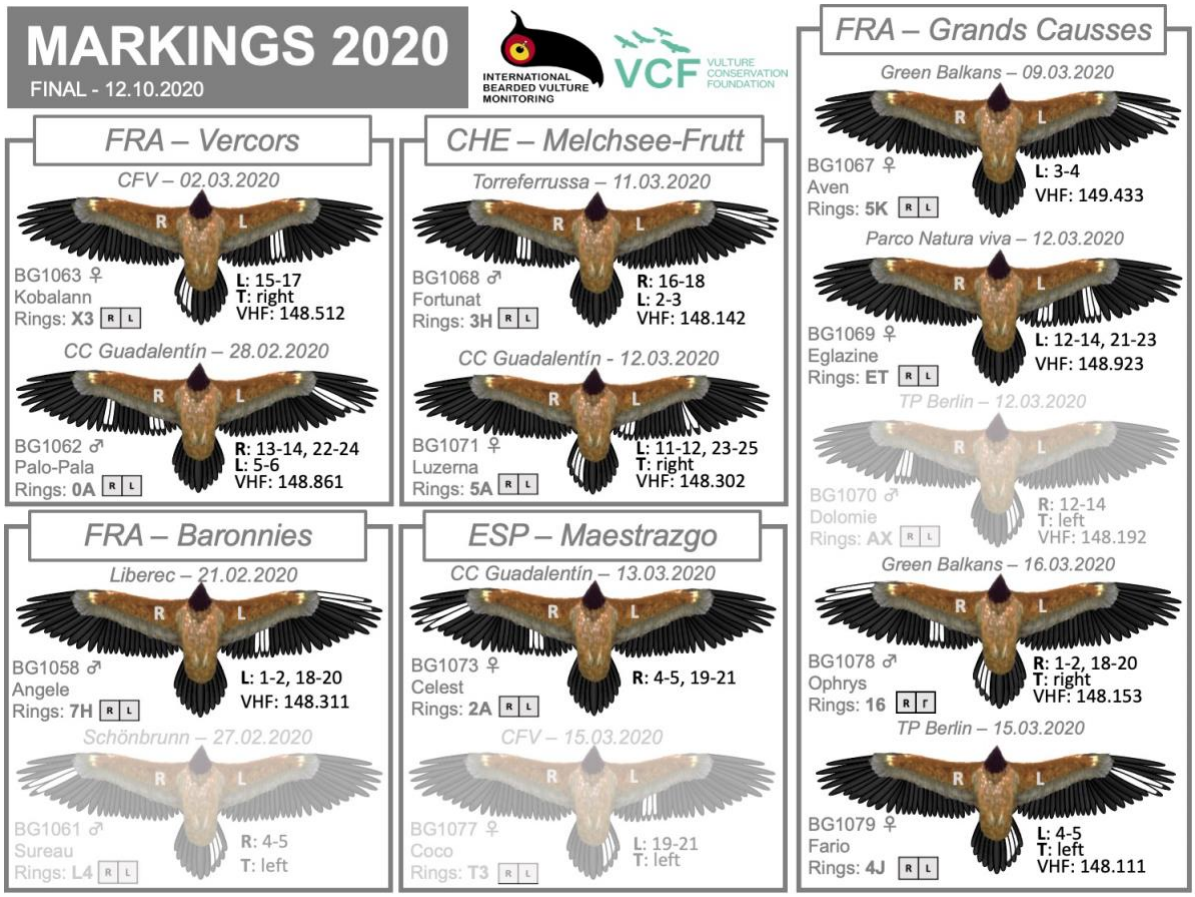



*Figure 10: Marking patterns of 13 Bearded Vultures released in 2020.*

[4] *Download this file on: www.gyp-monitoring.com --> Downloads --> Marking pattern*

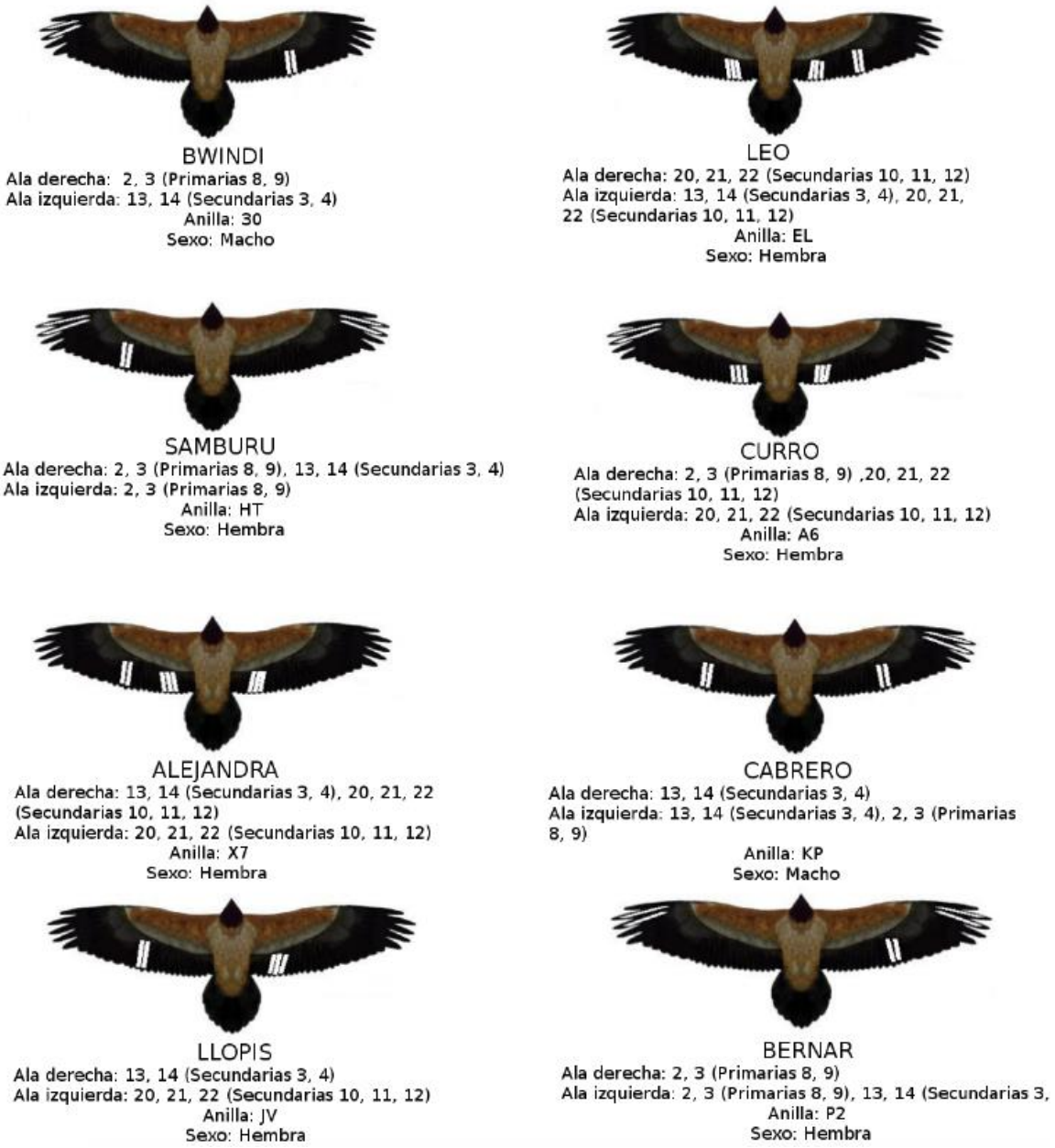



*Figure 11. Markings of birds released in Andalusia in 2020.*

### 8.2.2 Wild-hatched birds

The IBM-network plans to intensify its efforts to mark wild hatched animals in the future, as marking of wild hatchlings delivers insight into their behaviour and survival and which are keystone factors to follow and understand the developments of the Bearded Vulture reintroduction project. In 2020 six wild-hatched birds have been marked in France (5) and Italy (1), Spain (1) (**Error! Reference source not found.**).

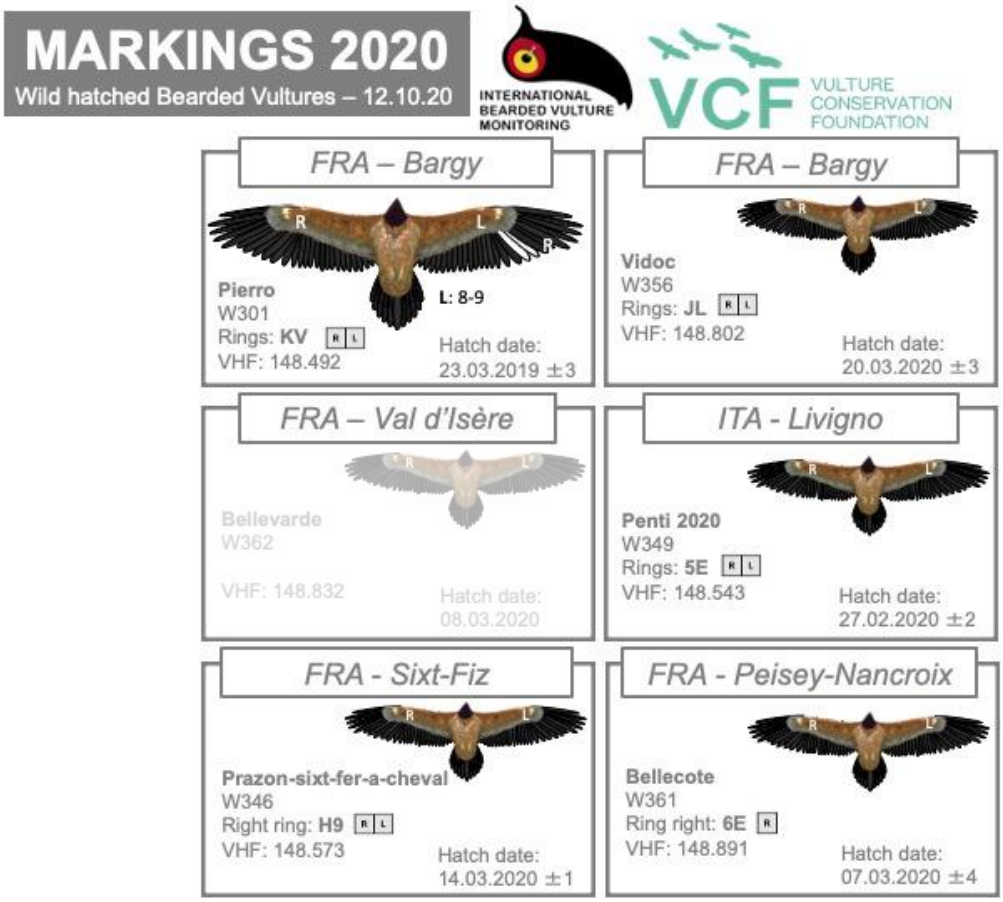



*Figure 12. Five wild-hatched birds have been marked with GPS/GSM tags by the specialised team of Asters in France in 2020 and another wild-hatched bird (Penti2020) was marked in Livigno, Italy. Most of these birds (except Bellevarde, W362) were also marked with rings. The already moulted feathers 8 and 9 in the left wing were bleached on Pierro (W301) a bird that hatched in 2019.*

*Figure 13. A seventh wild hatchling was marked by the Junta de Andalusia. The female juvenile Savuti was ringed with two silver aluminium rings (code = 4H) and bleach marked on the right wing (feather 20,21,22).*

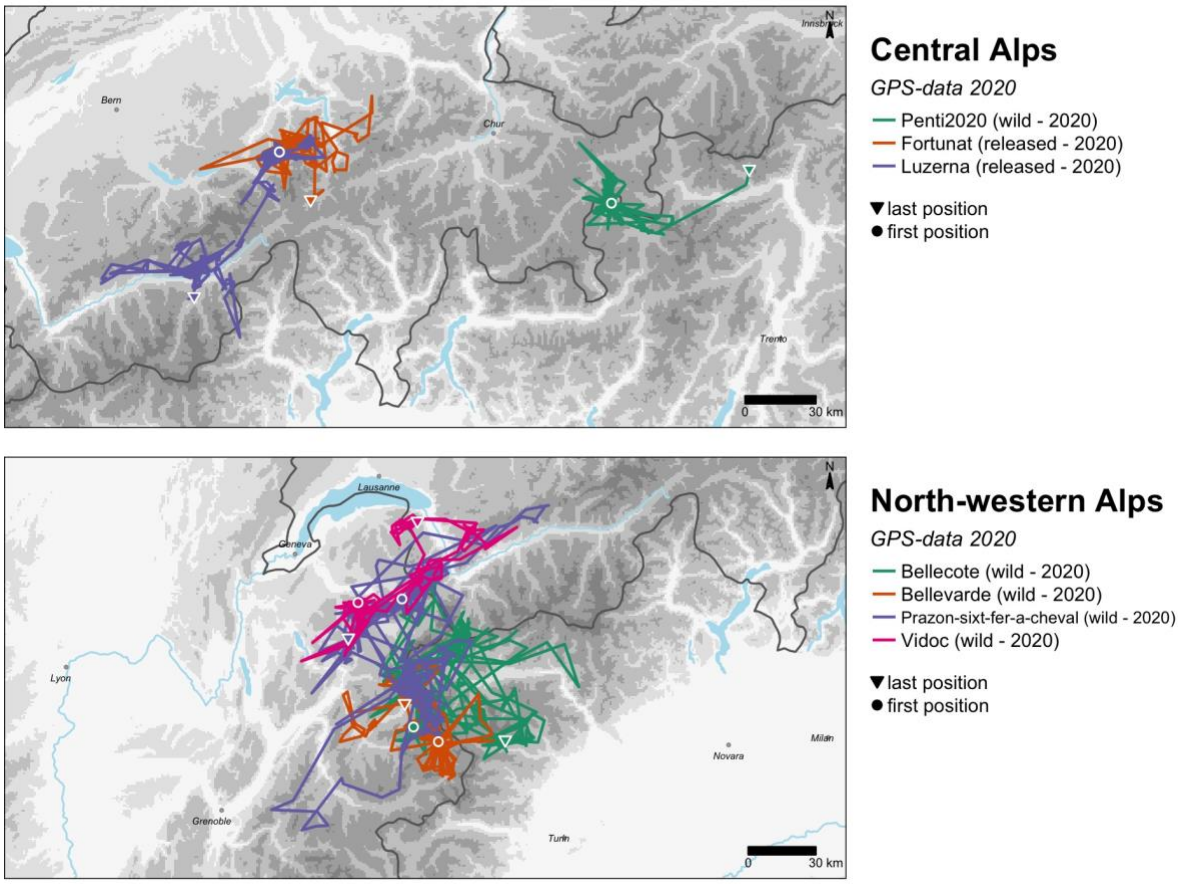
## 8.3 GPS-tagged birds in 2020

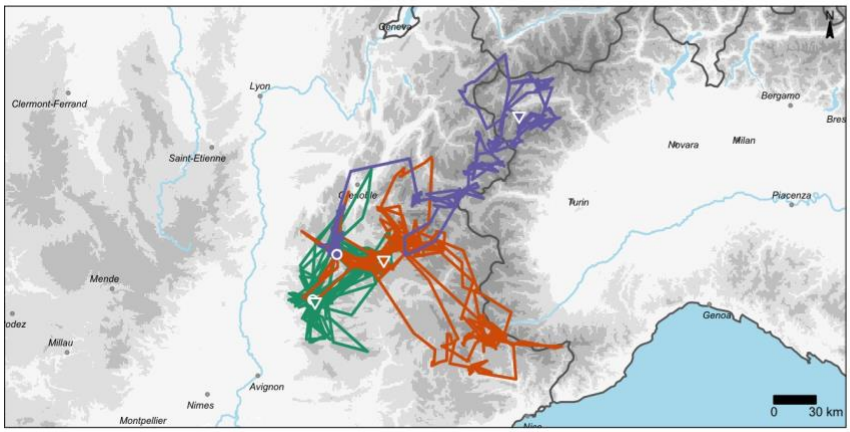
In order to gain insight into their life history, the first wild fledglings were ringed in Haute Savoie, France in 2013. Modern monitoring methods, such as GPS-tags, have been continuously developed and well-proven with the reintroduced Bearded Vultures. Such data provide valuable information on mortality (dropout) cases and the spatial behaviour of the released birds. With successful natural reproduction, the proportion of wild-hatched Bearded Vultures in the population is steadily increasing.

In order to gain knowledge about the spatial behaviour of wild-hatched birds, it was therefore decided to mark two wild fledglings (Neige and Gemapi) with GPS-tags for the first time in 2016 Since then, another 11 wild-hatched juveniles (2 in 2017, 5 in 2018 & 4 in 2019) were marked with a GPS-tag and in 2020 it was even possible to mark 7 wild-hatched individuals (Pierro, Vidoc, Bellevarde, Penti2020, Prazon-sixt-fer-a-cheval,Bellecote, and Savuti); see Figure 12).

In total, movements of 63 Bearded Vultures (14 wild-hatched and 49 released birds) were followed by GPS-tracking and stored in the WildlifeMonitor in 2020 (Table 14). Besides eleven adult birds, most of the tagged birds are non-adult individuals. With 33 males, 27 females and 3 unknowns the sex-ratio is fairly balance.

### 8.3.1 GPS-trajectories 2020 by region



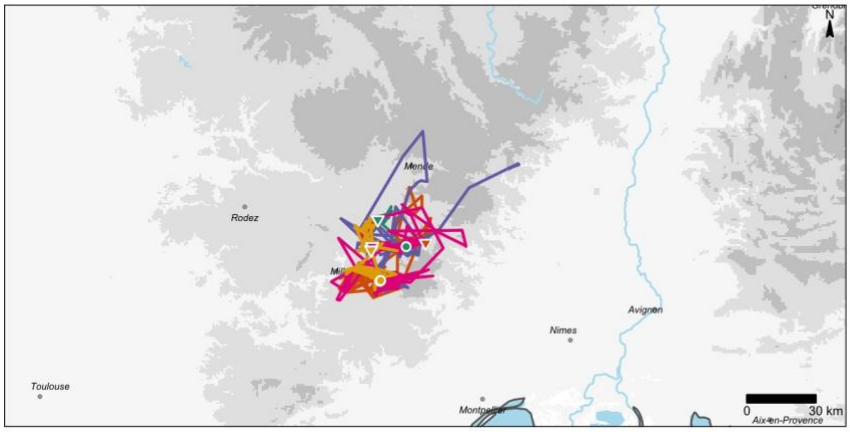



## South-western Alps

*GPS-data 2020*

- Angèle (released - 2020)
- Kobalann (released - 2020)
- Palo-Pala (released - 2020)

▼last position
● first position

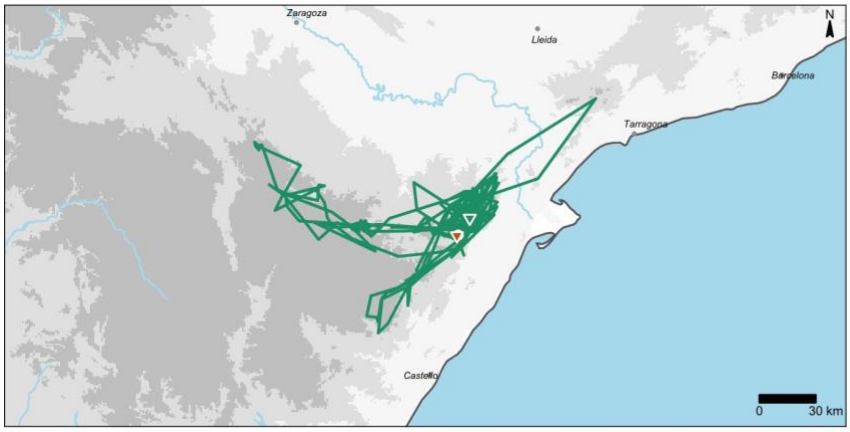



## Massif Central

*GPS-data 2020*

- Aven (released - 2020)
- Dolomie (released - 2020)
- Eglazine (released - 2020)
- Fario (released - 2020)
- Ophrys (released - 2020)

▼last position
● first position



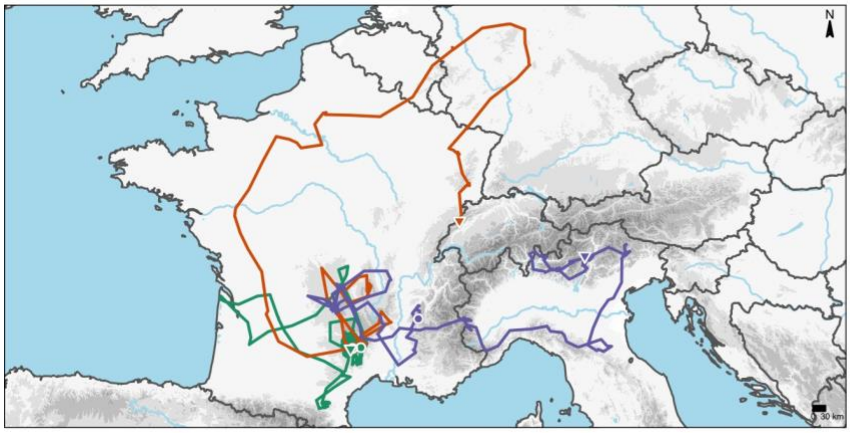

## Maestrazgo (ESP)

*GPS-data 2020*

- Celest (released - 2020)
- Coco (released - 2020)

▼last position
● first position

### 8.3.2 Extraordinary excursions



## Excursions

*GPS-data: 01.-31.12.2020*

- Cévennes (released - 2019)
- Lausa (released - 2019)
- Pierro (wild - 2019)

▼last position
● first position

*Table 14: 63 birds from different age classes could be followed by GPS during 2020 thanks to the support by partner organisations. minDT and maxDT represent the day of the first and last location in 2020 respectively. The number of obtained localisations varies considerably among individuals (114 - 436'432 positions) and mainly depends on tag type used, age of the tag and battery charge level. Low battery in the table means that the tag could not obtain and send data regularly, but the birds are still fine.*

| Animal | BirdID | Sex | Hatch | Date death | Place release | minDT | maxDT | Remark | Days with locations | Locations total |
|---|---|---|---|---|---|---|---|---|---|---|
| Angèle | 1058 | m | 2020 | | Baronnies, Léoux Valley (FRA) | 28.05.20 | 31.12.20 | | 218 | 11'384 |
| Aven | 1067 | f | 2020 | | Grands Causses,Frépestel (FRA) | 26.08.20 | 31.12.20 | | 126 | 1'418 |
| Bellecote | W361 | u | 2020 | | wild-hatched | 14.07.20 | 31.12.20 | | 171 | 81'345 |
| Bellevarde | W362 | u | 2020 | 30.12.20 | wild-hatched | 15.07.20 | 30.12.20 | | 169 | 57'383 |
| Celest | 1073 | f | 2020 | | Tinença de Benifassà (ESP) | 22.07.20 | 31.12.20 | | 163 | 8'440 |
| Coco | 1077 | f | 2020 | 09.08.20 | Tinença de Benifassà (ESP) | 23.07.20 | 09.08.20 | | 18 | 114 |
| Dolomie | 1070 | m | 2020 | 11.10.20 | Grands Causses, Trévezel (FRA) | 21.06.20 | 11.10.20 | | 113 | 5'950 |
| Eglazine | 1069 | f | 2020 | | Grands Causses, Trévezel (FRA) | 15.07.20 | 31.12.20 | | 165 | 28'260 |
| Fario | 1079 | f | 2020 | | Grands Causses, Trévezel (FRA) | 13.07.20 | 31.12.20 | | 168 | 16'365 |
| Fortunat | 1068 | m | 2020 | | Melchsee-Frutt (CHE) | 12.07.20 | 31.12.20 | | 173 | 35'001 |
| Kobalann | 1063 | f | 2020 | | PNR Vercors, Trechenu-Creyers (FRA) | 01.07.20 | 31.12.20 | | 184 | 23'527 |
| Luzerna | 1071 | f | 2020 | | Melchsee-Frutt (CHE) | 14.07.20 | 31.12.20 | | 171 | 14'753 |
| Ophrys | 1078 | f | 2020 | | Grands Causses, Trévezel (FRA) | 17.07.20 | 31.12.20 | | 128 | 11'207 |
| Palo-Pala | 1062 | m | 2020 | | PNR Vercors, Trechenu-Creyers (FRA) | 02.07.20 | 31.12.20 | | 183 | 11'847 |
| Penti2020 | W349 | f | 2020 | | wild-hatched | 28.07.20 | 31.12.20 | | 157 | 49'836 |
| Prazon-sixt-fer-a-cheval | W346 | u | 2020 | | wild-hatched | 09.07.20 | 31.12.20 | | 176 | 326'392 |
| Vidoc | W356 | u | 2020 | | wild-hatched | 06.08.20 | 31.12.20 | | 148 | 1'827 |
| Altitude | W313 | f | 2019 | | wild-hatched | 01.01.20 | 31.12.20 | | 366 | 158'060 |
| Bassi | 1033 | m | 2019 | | Tinença de Benifassà (ESP) | 01.01.20 | 31.12.20 | | 328 | 21'937 |
| Boira | 1040 | f | 2019 | | Tinença de Benifassà (ESP) | 01.01.20 | 31.12.20 | | 366 | 18'196 |
| Carmen | 1027 | f | 2019 | | Baronnies, Léoux Valley (FRA) | 01.01.20 | 31.12.20 | | 366 | 47'602 |
| Cévennes | 1032 | m | 2019 | | Grands Causses,Frépestel (FRA) | 01.01.20 | 31.12.20 | | 366 | 76'638 |
| Cintu | 1042 | m | 2019 | | Corsica, Niolo Valley (FRA) | 01.01.20 | 31.12.20 | | 359 | 96'244 |
| Elvio | 1026 | m | 2019 | | PNR Vercors, Trechenu-Creyers (FRA) | 01.01.20 | 31.12.20 | | 365 | 32'094 |
| Emparis | W284 | f | 2019 | | wild-hatched | 01.01.20 | 31.12.20 | | 366 | 92'866 |
| Lausa | 1015 | f | 2019 | 28.06.20 | Grands Causses,Frépestel (FRA) | 01.01.20 | 26.06.20 | | 177 | 32'932 |
| Mistral | 1022 | m | 2019 | | PNR Vercors, Trechenu-Creyers (FRA) | 01.01.20 | 31.12.20 | | 365 | 119'793 |
| Orba | 1041 | f | 2019 | | Corsica, Niolo Valley (FRA) | 01.01.20 | 31.12.20 | | 360 | 75'316 |
| Pamela | 1031 | f | 2019 | | Baronnies, Léoux Valley (FRA) | 01.01.20 | 31.12.20 | | 366 | 119'928 |
| Pierro | W301 | m | 2019 | | wild-hatched | 08.07.20 | 31.12.20 | | 177 | 209'194 |
| Sixt Buet | W285 | f | 2019 | | wild-hatched | 01.01.20 | 31.12.20 | | 366 | 436'432 |
| Alos | 992 | m | 2018 | | Tinença de Benifassà (ESP) | 01.01.20 | 31.12.20 | | 361 | 8'522 |
| Amic | 995 | m | 2018 | | Tinença de Benifassà (ESP) | 01.01.20 | 31.12.20 | | 366 | 18'658 |
| Caeli | 998 | m | 2018 | | NP Hohe Tauern, Mallnitz (AUT) | 01.01.20 | 31.12.20 | | 366 | 45'391 |
| Clapas | 975 | m | 2018 | | Baronnies, Léoux Valley (FRA) | 01.01.20 | 25.03.20 | tag loss | 85 | 705 |
| Finja | 1003 | f | 2018 | | Melchsee-Frutt (CHE) | 01.01.20 | 31.12.20 | | 366 | 256'812 |
| Fredueli | 1001 | m | 2018 | | Melchsee-Frutt (CHE) | 01.01.20 | 31.12.20 | | 362 | 192'943 |
| Kasimir | 991 | m | 2018 | | NP Hohe Tauern, Mallnitz (AUT) | 01.01.20 | 06.10.20 | tag loss | 280 | 5'834 |
| Lapie | W251 | m | 2018 | | wild-hatched | 01.01.20 | 31.12.20 | | 365 | 5'994 |
| Simay | 983 | m | 2018 | | Baronnies, Léoux Valley (FRA) | 01.01.20 | 31.12.20 | | 366 | 33'025 |
| Gypsy | W209 | m | 2017 | | wild-hatched | 01.01.20 | 31.12.20 | | 366 | 72'858 |
| Johannes | 964 | m | 2017 | | Melchsee-Frutt (CHE) | 01.01.20 | 15.04.20 | tag loss | 106 | 86'299 |
| Léoux | 950 | f | 2017 | | Baronnies, Léoux Valley (FRA) | 01.01.20 | 31.12.20 | | 366 | 3'598 |
| Luna | 959 | f | 2017 | | Corsica, Niolo Valley (FRA) | 01.01.20 | 31.12.20 | | 365 | 2'387 |
| Mison | W230 | f | 2017 | | wild-hatched | 08.01.20 | 13.10.20 | low battery | 227 | 1'526 |
| Cierzo | 899 | m | 2016 | | Melchsee-Frutt (CHE) | 01.01.20 | 31.12.20 | | 365 | 39'386 |
| Gemapi | W196 | f | 2016 | | wild-hatched | 01.01.20 | 31.12.20 | | 366 | 31'456 |
| Girun | 904 | f | 2016 | | Baronnies, Léoux Valley (FRA) | 01.01.20 | 17.12.20 | | 305 | 1'617 |
| Lucky | 909 | m | 2016 | | NP Hohe Tauern, Untersulzbachtal (AUT) | 01.01.20 | 06.08.20 | tag malfunction | 207 | 822 |
| Muntagnolu | 890 | m | 2016 | | Corsica, Niolo Valley (FRA) | 01.01.20 | 31.12.20 | | 363 | 1'747 |
| Neige | W198 | m | 2016 | | wild-hatched | 21.02.20 | 16.09.20 | | 199 | 1'002 |
| Roc Genèse | | m | 2016 | | wild-hatched | 01.01.20 | 31.12.20 | | 365 | 3'784 |
| Ewolina | 838 | f | 2015 | | Melchsee-Frutt (CHE) | 02.01.20 | 30.12.20 | | 234 | 1'204 |
| Fortuna | 843 | m | 2015 | | NP Hohe Tauern, Dorfertal (AUT) | 01.01.20 | 31.12.20 | | 355 | 8'210 |
| Lea | 840 | m | 2015 | | NP Hohe Tauern, Dorfertal (AUT) | 01.01.20 | 31.12.20 | | 361 | 10'524 |
| Roman | 854 | m | 2015 | | PN Alpi Marittime, Argentera (ITA) | 01.01.20 | 31.12.20 | | 291 | 1'148 |
| Sempach 2 | 841 | f | 2015 | | Melchsee-Frutt (CHE) | 01.01.20 | 23.04.20 | tag loss | 114 | 10'163 |
| Felix2 | 793 | m | 2014 | | NP Hohe Tauern, Debantal (AUT) | 06.04.20 | 31.12.20 | | 144 | 380 |
| Noel-Leya | 797 | m | 2014 | | Calfeisen, Vaettis (CHE) | 01.01.20 | 31.12.20 | | 290 | 3'365 |
| Schils | 802 | m | 2014 | | Calfeisen, Vaettis (CHE) | 01.01.20 | 31.12.20 | | 352 | 21'342 |
| Layrou | 761 | m | 2013 | | Grands Causses, Trévezel (FRA) | 01.01.20 | 31.12.20 | | 350 | 17'057 |
| Tenao | 755 | m | 2013 | | PN du Mercantour, Vignols (FRA) | 01.01.20 | 31.12.20 | | 362 | 991 |
| Veronika | 321 | f | 1999 | | NP Engadin, Zernez (CHE) | 01.01.20 | 31.12.20 | | 353 | 1'311 |

# 9 Dropouts

Dropouts include all incidents where individuals have been removed from the population (mortality, recapture). This also applies to birds that have been recaptured and could be released again. A recapture is in any case the last solution, which is why it must be assumed that these birds would not have survived without human intervention and would have died under natural conditions. However, if a hatchling dies at less than 80 days of age, this loss is referred to as breeding failure and it is therefore not included in the dropout statistics (see IBM-standard, chapter 4.2).

Mortalities of 7 Bearded Vultures have been reported in 2020: in France (2), Switzerland (2) and Spain (3) (Figure 14). Three birds died directly as a result of anthropogenic influences: Dolomie was shot (FRA), Hans collided with a powerline (ESP) and Bellevarde was hit by a train (FRA).

Although much effort is invested in the search for, and investigation of dead animals, the reason of dropout remains unclear in several cases. With 9 released and 4 wild-hatched dropout cases in their first two years of life it becomes clear that young Bearded Vultures in particular are exposed to various threats in the wild.

However, thanks to the close monitoring and quick intervention of the IBM partners and the regional coordinators, it was possible to recapture the birds in 6 out of 13 cases and return 5of them to the wild population (Pierro, Ophrys, Eglazine, Aven, Kika). Sureau was recaptured due to a wing fracture shortly after the release and could not be released again. He will be included in the EEP-breeding network.

*Table 15: List of all 13 reported dropouts from 2020.*

| Name | BirdID | Bird type | Hatch | Dropout | Date | Country | Reason | Classification |
|---|---|---|---|---|---|---|---|---|
| Arroyo Frío | BG1047 | released | 2019 | mortality | 02.01.20 | ESP | head injury (trauma) | unknown |
| GT175 | | wild hatched | ? | mortality | 22.04.20 (±90) | CHE | unknown | unknown |
| Hans | W302 | wild hatched | 2019 | mortality | 20.06.20 (±5) | ESP | collision with powerline | anthropogenic |
| Lausa | BG1015 | released | 2019 | mortality | 28.06.20 (±2) | CHE | malnutrition / poison (?) | unknown |
| Coco | BG1077 | released | 2020 | mortality | 09.08.20 | ESP | golden eagle attack | natural |
| Dolomie | BG1070 | released | 2020 | mortality | 11.10.20 (±2) | FRA | shot | anthropogenic |
| Bellevarde | W362 | wild hatched | 2020 | mortality | 30.12.20 | FRA | hit by train | anthropogenic |
| Sureau | BG1061 | released | 2020 | recapture | 02.06.20 | FRA | wing fracture | natural |
| Pierro | W301 | wild hatched | 2019 | recovery | 15.05.20 | FRA | weakness | natural |
| Kika | BG1018 | released | 2019 | rerelease | 03.07.20 | ESP | dehydration | natural |
| Ophrys | BG1078 | released | 2020 | rerelease | 19.08.20 | FRA | leg fracture | natural |
| Eglazine | BG1069 | released | 2020 | rerelease | 22.10.20 | FRA | weakness | natural |
| Aven | BG1067 | released | 2020 | rerelease | 24.11.20 | FRA | weakness | natural |

## 9.1 Mortalities

### 9.1.1 Arroyo Frío (BG1047)

On the 02.01.2020 the immature Bearded Vulture was found dead in river bed in Santiago-Pontones (ESP). Investigations revealed that the bird died due to cranial clots (post-traumatic). No traces of a disease or intoxication (pesticides, rodenticides, lead residues, antimicrobials or anti-inflammatory agents) were found. Arroyo Frío was released in Cazorla NP in 2019.

© Junta de Andalusia

### 9.1.2 GT175

On the 22.04.20 a dead immature or subadult Bearded Vulture was discovered 70m away from a small and 110m away from a big powerline in Ftan, GR (CHE). The carcass was already in very poor condition, but no traces of burning could be detected. The lead levels were not noticeable. Although the cause of death cannot be determined with certainty, there is a hypothesis that the bird collided with the power line and was moved by scavengers after death.

© David Jenny

### 9.1.3 Hans (W302)

The wild-hatched immature was found dead on the 20.06.2020 in the surrounding of Cazorla, ESP. The dead bird showed clear marks from a collision with a powerline.

### 9.1.4 Lausa (BG1015)

The immature Bearded Vulture Lausa (released 2019 in Grands Causses - FRA) was found dead on 28.06.20 in the canton of Neuchatel (CHE). The necropsy showed that Lausa had starved to death after the long journey north. The lead value in the bone was measured with 1.9mg/kg and further analyses also revealed traces of carbofuran. Even though typical clinical symptoms of poisoning were not detected the cause of death has not yet been fully resolved and is still under discussion (to be updated).

### 9.1.5 Coco (BG1077)

The juvenile bird was found dead on the 09.08.2020 in Sierra de la creu (ESP). Investigations showed that the bird died due to interspecific competition and was killed by a golden eagle. The bird was released in 2020 in Maestrazgo (ESP).

### 9.1.6 Dolomie (BG1070)

On the 11.10.20 the juvenile bird was found dead in Lozère (FRA) near the hacking site of Grands Causses where Dolomie was released in 2020. After necropsy and toxicological analysis, it became clear that Dolomie was shot and died as a result of the internal bleeding. The 15 shot pellets did not affect internal organs but caused Dolomie to fall to the ground.

© LPO

### 9.1.7 Bellevarde (W362)

The wild hatched juvenile was hit by a train on the 30.12.20 in Rognaix, FRA. Thanks to the marking (GPS and rings) of the juvenile that hatched in the territory Val d'Isère in 2020, the regional team was alarmed in an early stage after the accident and could find and identify the bird.

## 9.2 Recaptures

### 9.2.1 Sureau (BG1061)

Sureau, one of the birds released in Baronnies (FRAU), had an accident shortly after the birds arrived in the release cave (28.05.20). Sureau fell from the release cave and broke a wing and had to be recaptured on the 02.06.20. The bird could not be released again and remains in captivity and will be included in the breeding network.

## 9.3 Rereleases

### 9.3.1 Ophrys (BG1087)

Ophrys released in 2020 in Grand Causses was captured on the 19.08.20 after an alarming stationary state for almost 48 hours. The bird was transferred to the Goupil Connexion center where a fracture of the right femur, low bone density and a deficit in calcium was diagnosed. After one month of recovery the bird was released again on the 29.09.20.

### 9.3.2 Eglazine (BG1069)

On the 22.10.20 Eglazine was recaptured due to weakness in the community Ardèche in France. The bird that was released in Grands Causses in 2020 passed a few days in the aviary to recover, before it was released again the 27.10.20.

### 9.3.3 Aven (BG1067)

On the 24.11.20 Aven was recaptured as the bird was not able to take off by itself in the deep gorge of a valley in Veyreau in France. The bird was released again two days later on the 26.11.20 after a short recovery in captivity. The juvenile was released in Grands Causses in 2020.

### 9.3.4 Kika (BG1018)

On the 03.07.20 Kika was found weak and dehydrated in Peralejos de las Truchas, Guadalajara (ESP) and was rescued by the staff from Castilla-La Mancha region. The bird was rereleased two months later (03.09.20) after recovery and minor surgery (pox-virus) on the head. Lead analysis revealed non-toxic levels of 2.490 µg/dL. The bird was released in Cazorla National Park (ESP) in 2019.

## 9.4 Recovery

### 9.4.1 Pierro (W301)

A young wandering immature Bearded Vulture left his mountainous home and was exploring unusual corners of France. Due to weakness the bird was rescued on the 15.05.20, rehabilitated at Hegalaldia (FRA) and released again on the 08.07.20. With the help of genetic analysis, the Stiftung Pro Bartgeier and the Vulture Conservation Foundation (VCF) detected the origin of this young individual called Pierro from the breeding territory Bargy (2019).

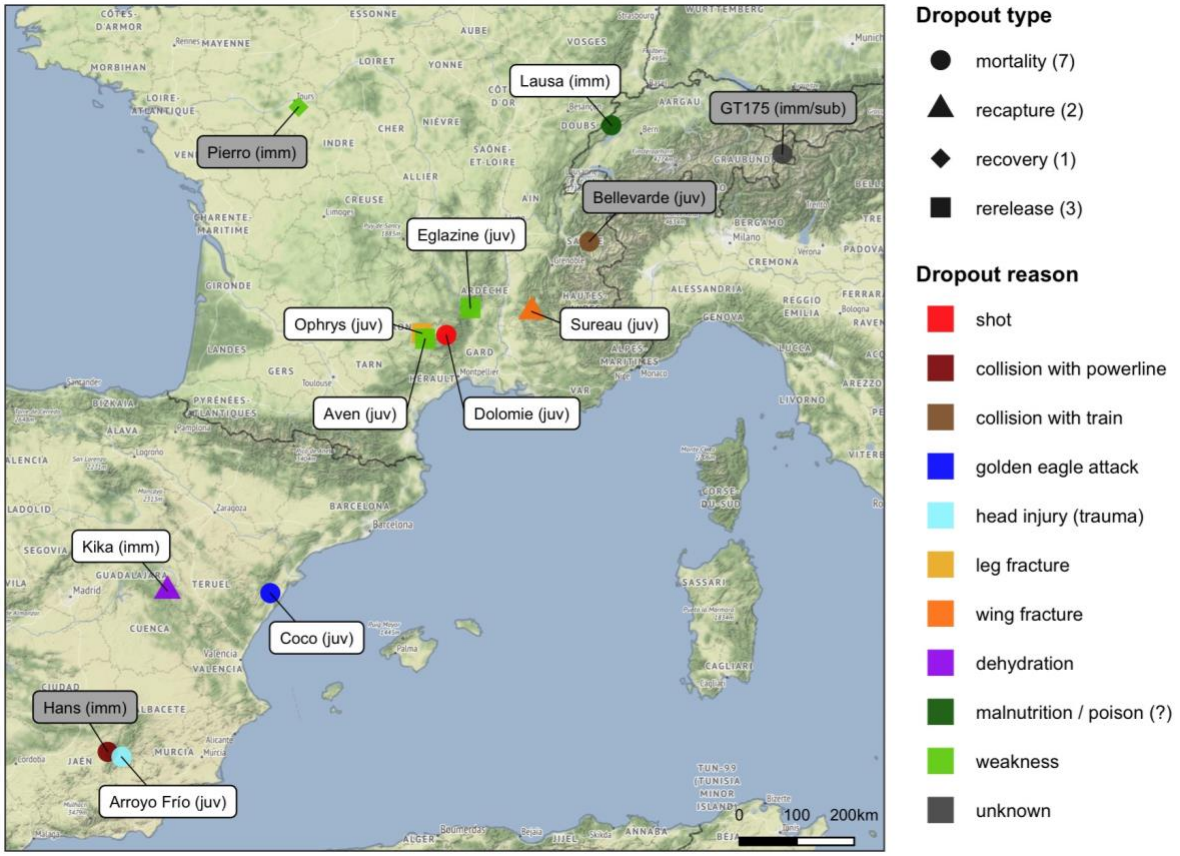



*Figure 14. 7 mortalities, 1 recovery, 1 recapture and 3 rereleases of Bearded Vultures in 2020. Grey labels mark wild-hatched individuals (N=4).*

# 10 Acknowledgements

Thanks to all the field workers, assistants, gamekeepers, hunters, ornithologists and non-professional observers who report Bearded Vulture sightings and valuable information during the reproduction monitoring. Furthermore, thanks to the regional coordinators of the IBM-network and associated organisations who enter the data in the IBM, coordinate the monitoring network within their area of responsibility and contribute to this report with their inputs. Also, thanks to the valuable inputs by Franziska Lörcher (VCF) and Katja Rauchenstein (IBM) during the review of this report.

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