



IOD 2021

16th International Bearded Vulture Observation Days

Focal day - October 2nd 2021
IOD Period - October 2nd-9th 2021



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**The IOD 2021 were organised by the following
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Table of content

1	Abstract.....	6
2	Key facts.....	7
3	Preface.....	8
4	Methods.....	8
4.1	Organisation.....	8
4.2	Monitoring Area.....	9
4.3	Data collection and observation protocol.....	9
4.4	Data Analysis.....	10
4.5	Age classification.....	10
5	Results and Discussion.....	11
5.1	Weather conditions.....	11
5.2	Observation data.....	12
5.3	Telemetry data.....	15
5.3.1	IBM-monitoring area.....	15
5.3.2	Alpine range.....	16
5.4	Individual-based data.....	18
5.5	Estimated number of Bearded Vultures.....	21
5.6	Proportional distribution of age classes in the Alpine range.....	24
5.7	Spatial distribution of age groups.....	26
5.7.1	Alpine range.....	27
5.7.2	Massif Central & French Pre-Pyrenees.....	29
5.7.3	Spain (without Pyrenees).....	29
5.7.4	Bulgaria.....	30
6	Outlook 2022.....	31
7	Acknowledgements.....	32

The International Observation Days (IOD) are an annual monitoring event for Bearded Vultures organised by the International Bearded Vulture Monitoring network (IBM). The monitoring action takes place in the first two weeks of October with a synchronous and coordinated survey on the focal day and covers large parts of the Alpine arc (since 2006), parts of the Massif Central (since 2012), the eastern part of the French Pyrenees (since 2016), several regions in Spain (since 2017) and some selected sites in Bulgaria (since 2018). The aim of this expanding network is to establish a Europe-wide monitoring of the Bearded Vulture population where time-synchronised observations on the focal day allow to make an approximate estimate of the population size and age class distribution. A monitoring action of this scale and the fact that birds are identified on an individual level whenever possible, is unique and generates baseline information for survival analyses and demographic modelling, which give valuable insight into the reintroduction progress. Furthermore, the number of participants during the IOD increases every year and thus the IOD represents a big public event that helps to increase awareness for the conservation of the Bearded Vulture as a flagship species.

1 Abstract

On this year's Focal Day on the 2nd of October, almost 1'300 observers were able to benefit from mostly favourable weather conditions and thus contribute to the 16th annual Bearded Vulture census. Although a small proportion of observers located south of the main Alpine ridge faced unsuitable weather conditions (16%), visibility was mainly good (77%) or moderate (7%) and allowed for 927 Bearded Vulture observations at 311 of the 748 (42%) occupied sites. 18 IBM-partners and several associated organisations coordinated synchronous observations at 726 sites on the focal day and 22 more during the IOD period. Furthermore, these experts are familiar with the local situation and are key to give an estimate about the population size in their region and also to identify individual birds. This made it possible to compile, evaluate and summarise the observations and estimates over the monitoring area in order to get an overview of the age class distribution and to compare the estimates on the alpine scale with the predicted population size from demographic modelling (Schaub et al. 2009)¹.

The Alpine population was estimated to vary between 284 and 381 individuals. This is slightly lower than the model¹ estimate of 380 individuals. However, similar as in the previous years, the estimated age class distribution is well in line with the predicted values of the demographic model¹ with a slight underestimate of the number of subadult birds, which are difficult to identify correctly in the field (estimated age class distribution: 57% adults, 6% subadults, 18% immature, 14% juveniles). The population estimate and the age class distribution are based on observation data collected during the focal day combined with the estimated number of individuals that have not been observed but are supposed to be present in the specific region (territorial birds, in some exceptional cases their fledglings, GPS-tagged birds (N = 62 in 2021) etc.).

The small population of the Massif Central is estimated to vary between 7-13 individuals, and around 7 individuals have been estimated to be present in the Aude region in the French Pyrenees. In Spain, outside of the Pyrenees, Bearded Vulture populations haven been estimated to vary between 3 and 4 individuals in Maestrazgo and 21-33 in Andalusia and Rioja. Similar as in the last years, no Bearded Vultures have been observed in Bulgaria where the species has been considered extinct since 1972.

During this year's IOD, multiple Bearded Vulture individuals have been identified in the Alps (N=63), the Massif Central (N=6) and Spain (N=6), while another 19 (Alps) and 7 (Spain) individuals were identified with lower probability. Furthermore, 62 animals could be tracked by GPS, whereby only 14 of the 39 animals that were present in the Alpine region could be visually identified by observers. These valuable individual-based data provide important information on the life-history of the animals and can serve to calculate parameters for demographic modelling. Such individual-based information on an international scale is unique and allows to estimate survival rates and to follow the bird's life-history - important key elements in order to monitor the development of the Bearded Vulture project.

¹ Schaub, M., Zink, R., Beissmann, H., Sarrazin, F., & Arlettaz, R. (2009). When to end releases in reintroduction programmes: demographic rates and population viability analysis of Bearded Vultures in the Alps. *Journal of Applied Ecology*, 46(1), 92-100.

2 Key facts

Monitoring organisation

- 18 IBM-partners and several associated organisations coordinated the IOD 2021
- 1'295 observers participated in Austria, Bulgaria, France, Germany, Italy, Spain and Switzerland
- 726 sites were occupied during the focal day (2.10.2021) another 22 during the IOD period
- weather situation at the observation sites: 77% good, 7% moderate and 16% unfavourable

Observation results

- 960 Bearded Vulture observations during the IOD period, 927 of them on the focal day 2nd October 2021
- Bearded Vultures observed at 311 out of 748 sites (42%)
- observed age class distribution (number of observations per age class)
 - adult (N = 523, 54%)
 - subadult (N = 42, 4%)
 - immature (N = 157, 16%)
 - juvenile (N = 138, 14%)
 - unknown (N = 100, 10%)

Age class distribution & populations estimates

- estimated age class distribution in the alps (individuals)
 - adult (N = 182, 57%)
 - subadult (N = 20, 6%)
 - immature (N = 58, 18%)
 - juvenile (N = 44, 14%)
 - unknown (N = 17, 5%)
- estimated number of Bearded Vulture individuals:

– Alps:	284 - 381
– Massif Central:	7-13
– Pre-Pyrenees (FRA):	6-7
– Spain ² :	21-33
– Maestrazgo (ESP)	3-4
– Bulgaria:	0

Individual based data

- 63 (Alps), 6 (Massif Central) and 6 (Spain) individuals were identified
- 19 (Alps) and 7 (Spain) individuals were probably identified
- GPS-data is available for 62 individuals during the IOD period 2021
- in the Alps 14 (~36%) of the 39 GPS-tagged individuals were identified by the observers

² Only for monitored parts (e.g. no survey in Spanish Pyrenees and other mountain ranges)

3 Preface

After last year's IOD could not or only partially be carried out in certain regions due to bad weather conditions and snowfall, most regions benefited from favourable weather in 2021. The fact that this year a new record of participants was reached, shows that the fascination for Bearded Vultures continues to reach many people and brings them together at this annual event. Without the great support of the extensive network of volunteers and experts, it would not be possible to organise this unique event.

4 Methods

4.1 Organisation

The monitoring is coordinated and executed simultaneously over the four Alpine zones (eastern, central, north-western and southern Alps), in the Massif Central, in parts of the French Pyrenees, Spain and Bulgaria by local IBM-partners and associated organisations (**Figure 1**). This ultimately allows to gain information about Bearded Vulture presence thus reducing the chance of double counts and allowing us to get the big picture of Bearded Vulture distribution.

With a new releasing partner in the German Alps, a new observer network has been established in this region of the Eastern Alpine range in the last year. In the previous years, the monitoring network has evolved in the Pyrenees (department Aude in France) in order to reveal exchanges between the separated populations from the Alps and the Pyrenees. Since 2017, our Spanish colleagues (and new IBM-partner since 2019) organise the IOD within parts of Andalusia and Castilla y León and share their results with the IBM-network to contribute to get a more comprehensive picture of the Bearded Vulture population in western Europe. A new observer network is also establishing in the eastern parts of Europe in Bulgaria, where the *Green Balkans* participate at the IOD since 2018 and thus raise awareness for the regionally extinct species. As in the previous years, no IOD was organised on Corsica.

Time Period

The 2021's international survey was held between the 2nd and the 9th October with the focal day on Saturday 2nd of October. Due to the experience with the bad weather situation in 2020, an alternative date (weekend) was initially planned one week later but favourable weather conditions allowed for a European-wide survey on the first date. The buffer period of one week is chosen to allow more flexibility for areas where the weather conditions are not suitable on the focal day.

All dates are decided on mutual agreement among the IBM partners and take into account partner's availability, other ornithological appointments and the birds' reproductive behaviour (see [future dates](#)). The fact, that Bearded Vultures are active in nest building during October, makes this a suitable period to observe the birds and record possible new territories and breeding pairs.

4.2 Monitoring Area

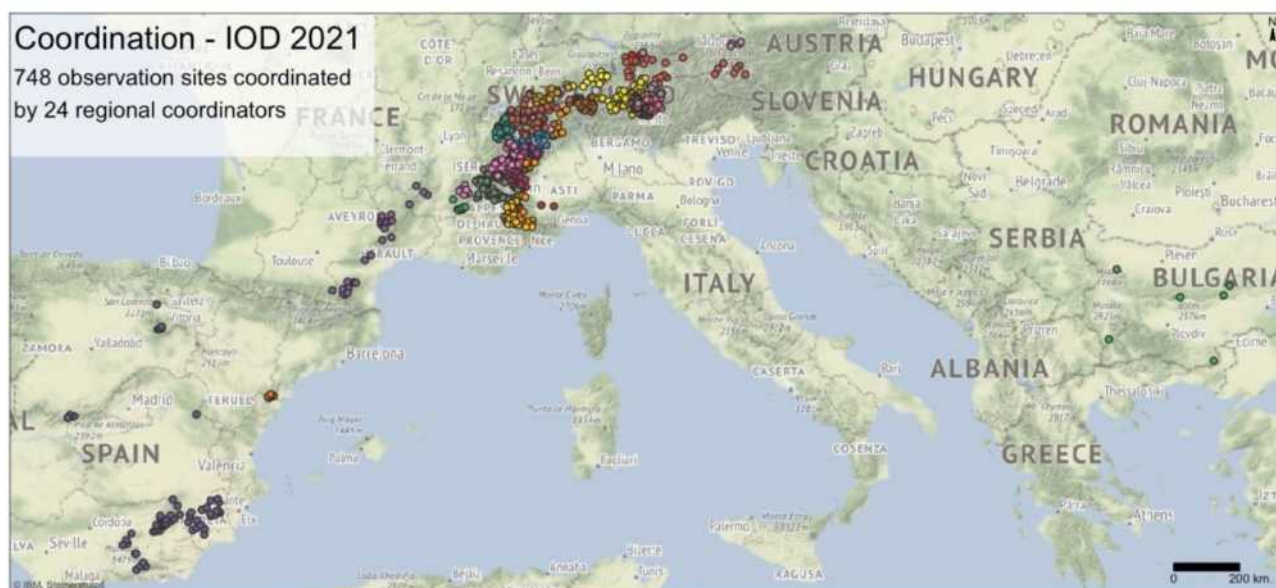


Figure 1. The IOD-monitoring area is regionally coordinated by 18 IBM-partners and associated organisations.

4.3 Data collection and observation protocol

Where weather conditions permitted, posts were occupied between 10:00 and 15:00 at least. The teams were composed of one or more observers, at least one of them being experienced, equipped with binoculars and, depending on availability, telescope and camera. For each observation site and Bearded Vulture sighting the following information was recorded:

Observation site:

- Date and site occupancy (time)
- team/partner and observer names
- site name, address and coordinates
- weather conditions
- total number of observed Bearded Vultures
- presence/observation of other species

Bird observation:

- date
- time and duration of the observation
- age of the bird³
- bird name / hypothesis
- picture if possible

³ In age classes: juvenile (1.cy), immature (2.-3.cy), subadult (4.-5.cy) adult (6.cy)

4.4 Data Analysis

All data is collected at the end of the day by the local administrators who will review the reported observations. The local administrators work in close cooperation with field assistants/observers and other nearby local administrators responsible for the surrounding monitoring areas. Based on e.g. individual markings, temporal overlap of the sightings, knowledge about known territorial birds and their juveniles that still remain in the area, they are able to critically assess the number of observations and judge to how many individual Bearded Vultures the IOD observations refer to. GPS-tagged birds that were not observed, are added to the estimate and also serve as a measure for detection probability.

The population estimate should be based only on data from the focal day in order to avoid, that individuals are observed and thus counted twice in two different regions. Since individual identification is challenging, it is thus not always possible to assess whether several observations have been made of the same individual. Therefore, the final estimate includes a minimal and a maximal count number, namely accounting for a stricter versus a less conservative analysis.

After a critical assessment of possible double countings, these results are summarised over the whole monitoring area in order to get an overview of the estimated Bearded Vulture populations. Finally, the resulting population estimates of the IOD are compared with the estimates deduced from the demographic model of Schaub et al. (2009).

4.5 Age classification

Per definition the IBM always uses calendar years (cy) for age specifications (**Table 1**).

Table 1. IBM-standard age classification.

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

5 Results and Discussion

5.1 Weather conditions

The overall weather situation was favourable in 2021 with 77% good, 7% moderate and 16% bad weather conditions at the observation sites (**Figure 2**). In 2020 only 36% of the sites reported favourable weather. Unfavourable weather conditions decrease the detection probability of the individuals and should therefore be considered for the interpretation of the population estimates.

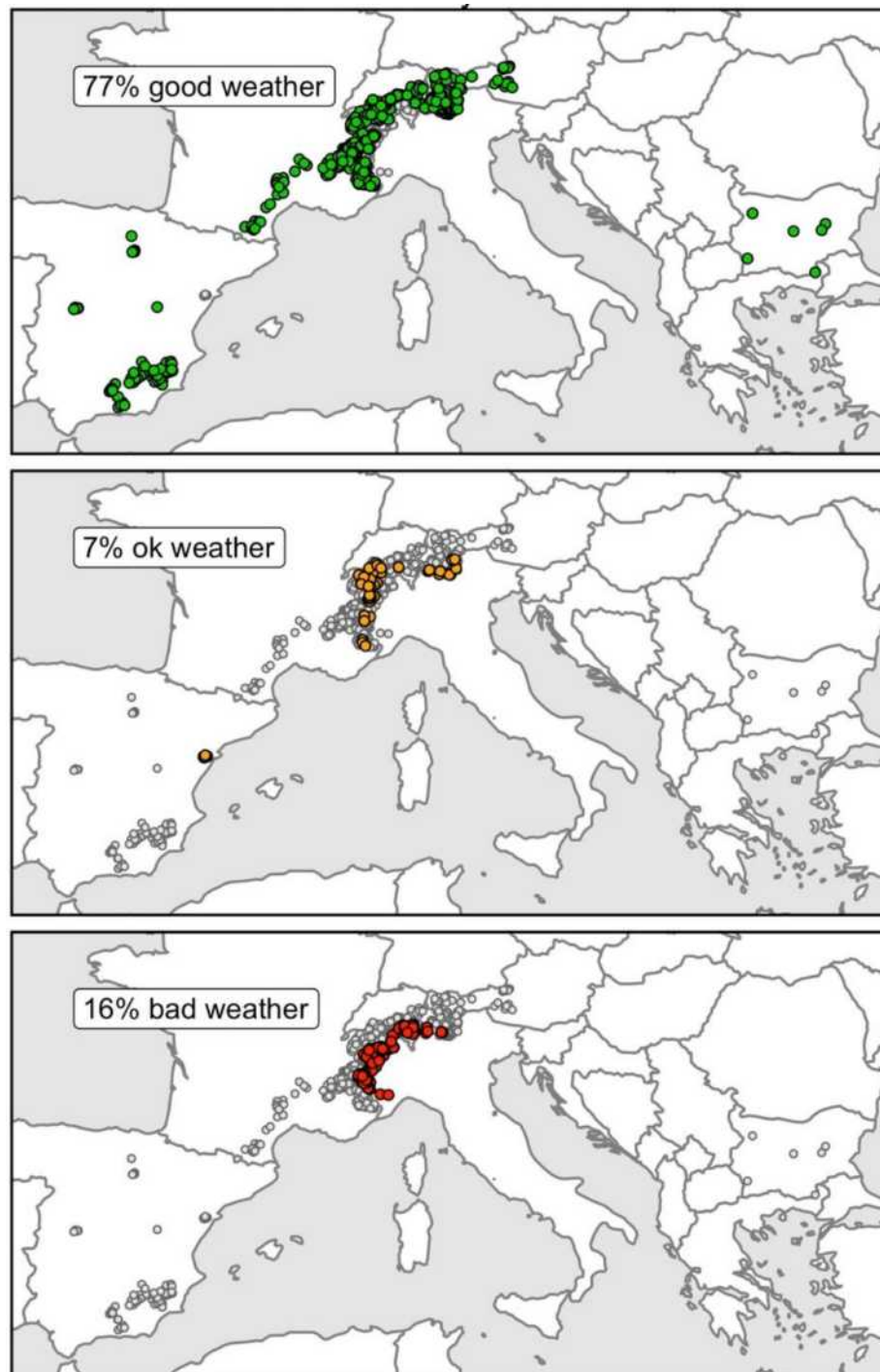


Figure 2. Weather conditions at the observations sites reported by the observers in the field during the IOD 2021. Most of the observers (77%) profited from good weather conditions and only at the southern side of the Alpine range some sites faced bad weather conditions.

5.2 Observation data

In 2021, a total of 1'295 observers have occupied 748 observation sites in the Alps, in the French Pyrenees (department “Aude”), parts of Spain as well as Bulgaria (**Figure 3 and Table 2**).

The first IOD has been organised in the German Alps, where two birds have been released for the first time in 2021. Through the new reintroduction site, hopefully more people in this region will be made aware of the Bearded Vulture reintroduction project in the future.

As in the previous years, the western regions of the Alps remain the most thoroughly surveyed areas together with the area of the Stelvio National Park in the North of Italy. With additional observation sites close to the Spanish border near the Pyrenees, the IBM monitoring network plans to cover regions that might serve as a connection between the Bearded Vulture populations from the Alps and the Pyrenees. As it is known that Bearded Vultures in Spain move between the mountainous areas in the South and the region of Castilla y León, Castilla-La Mancha and La Rioja in the North, the observer network has been expanded in these areas.

In the eastern part of Europe, several observations sites in Bulgaria were also occupied for the first time in 2018, even though so far no Bearded Vultures are known to be present in this region. However, in the future this region could serve as a stepping-stone area between the Alpine and Greek Bearded Vulture population. Therefore, the establishment of an observer network in this area makes sense in the long-term perspective.

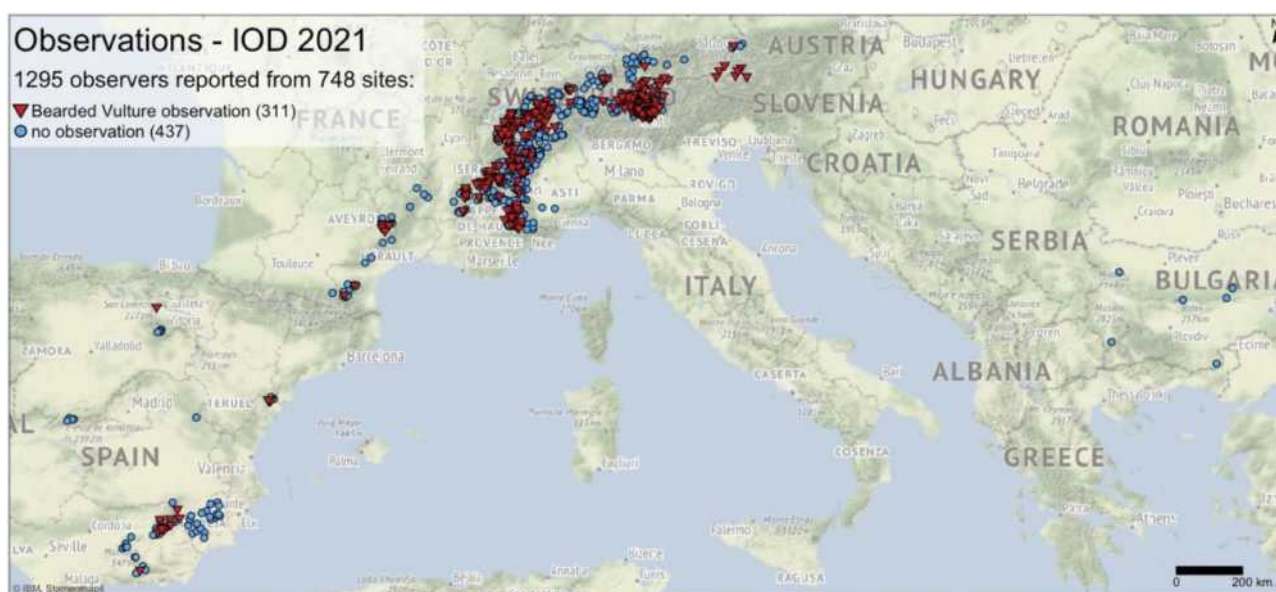


Figure 3. Distribution of all 748 observation sites during the IOD 2021 in Europe. Red triangles depict sites where Bearded Vultures have been observed at least once during the IOD period 2nd-9th of October 2021 (N=311) while no observations have been reported from sites marked with a blue dot (N=437). In Austria, only those sites are reported where a Bearded Vulture was actually observed. This means that it is not possible to see where no Bearded Vulture has been observed and the monitoring effort is underestimated due to this figure.

Table 2. Number of observation sites and observers per region during the IOD 2021 (focal day 02.10.2021). In Austria, only those sites are reported where a Bearded Vulture was actually observed. This means that it is not possible to see where no Bearded Vulture has been observed and the monitoring effort is underestimated due to this figure.

Zone	Country	Region	Occupied sites in October 2021						Total
			2.	3.	6.	7.	8.	9.	
Alpine range			620	7	2	3	3	7	642
East	AUT	Kärnten	2						2
	AUT	Salzburg	5						5
	AUT	Tirol	2				1		3
	DEU	Bayern	2						2
Central	AUT	Tirol	9	1					10
	AUT	Vorarlberg	8						8
	CHE	Central Switzerland	16						16
	CHE	Eastern Switzerland	59						59
	CHE	Ticino	23						23
	CHE	Western Switzerland	6					1	7
	DEU	Bayern	4	1					5
	ITA	Lombardia	73						73
	ITA	Piemonte	6						6
	ITA	Trentino-Alto Adige	31						31
North-West	CHE	Western Switzerland	61	3	2	3	2	5	76
	FRA	Rhône-Alpes	82					1	83
	ITA	Piemonte	39						39
	ITA	Valle d'Aosta	38	1					39
South-West	FRA	Provence-Alpes-Côte d'Azur	74	1					75
	FRA	Rhône-Alpes	42						42
	ITA	Piemonte	38						38
Massif Central			20						20
	FRA	Languedoc-Roussillon	11						11
	FRA	Midi-Pyrénées	5						5
	FRA	Rhône-Alpes	4						4
Pre-Pyrenees	FRA	Languedoc-Roussillon	11						11
Spain (without Pyrenees)			69						69
	ESP	Andalucía	28						28
	ESP	Castilla y León	3						3
	ESP	Castilla-La Mancha	5						5
	ESP	Comunidad Valenciana	7						7
	ESP	Extremadura	1						1
	ESP	La Rioja	5						5
	ESP	Región de Murcia	20						20
Bulgaria			6						6
	BGR	Blagoevgrad	1						1
	BGR	Haskovo	1						1
	BGR	Montana	1						1
	BGR	Sliven	2						2
	BGR	Stara Zagora	1						1
Sites total IOD 2021			726	7	2	3	3	7	748

Table 3. Number of Bearded Vulture sightings for each region during the whole IOD period 2021 (focal day 02.10.2021). 0 values indicate dates where sites were occupied but no Bearded Vulture have been observed.

Zone	Country	Region	Bearded Vulture observations in October 2021						Total
			2.	3.	6.	7.	8.	9.	
Alpine range			868	5	4	3	7	14	901
East	Kärnten	AUT	4						4
	Salzburg	AUT	5						5
	Tirol	AUT	2				2		4
	Bayern	DEU	2						2
Central	Tirol	AUT	9	1					10
	Vorarlberg	AUT	0						0
	Central Switzerland	CHE	12						12
	Eastern Switzerland	CHE	77						77
	Ticino	CHE	0						0
	Western Switzerland	CHE	3					1	4
	Bayern	DEU	0	0					0
	Lombardia	ITA	244						244
	Piemonte	ITA	0						0
	Trentino-Alto Adige	ITA	37						37
North-West	Western Switzerland	CHE	60	4	4	3	5	12	88
	Rhône-Alpes	FRA	264					1	265
	Piemonte	ITA	6						6
	Valle d'Aosta	ITA	15	0					15
South-West	Provence-Alpes-Côte d'Azur	FRA	56	0					56
	Rhône-Alpes	FRA	59						59
	Piemonte	ITA	13						13
Massif Central			15						15
	Languedoc-Roussillon	FRA	12						12
	Midi-Pyrénées	FRA	3						3
	Rhône-Alpes	FRA	0						0
Pre-Pyrenees	Languedoc-Roussillon	FRA	2						2
Spain (without Pyrenees)			42						42
	Andalucía	ESP	28						28
	Castilla y León	ESP	0						0
	Castilla-La Mancha	ESP	3						3
	Comunidad Valenciana	ESP	9						9
	Extremadura	ESP	0						0
	La Rioja	ESP	2						2
	Región de Murcia	ESP	0						0
Bulgaria			0						0
	Blagoevgrad	BGR	0						0
	Haskovo	BGR	0						0
	Montana	BGR	0						0
	Sliven	BGR	0						0
	Stara Zagora	BGR	0						0
Total Bearded Vulture observations IOD 2021			927	5	4	3	7	14	960

5.3 Telemetry data

5.3.1 IBM-monitoring area

During the IOD-period GPS-data of 62 Bearded Vultures with satellite tags have been retrieved in the Alpine range, the Massif Central, the Pyrenees, north-eastern Spain and Corsica⁴ (**Figure 4**). Another GPS-tagged bird (Eglazine) was flying in the North (Netherlands & Belgium) during this time and was therefore not included in the map and analysis. Although this data is not part of the IOD, this information is collected as representative of their positions and to detect areas of monitoring deficiencies. Some of these birds still show their individual marking patterns (bleached feathers) and can therefore be identified by observers. Exceptions are the wild-hatched birds which have been GPS-tagged but not marked by bleaching their feathers.

GPS-data can serve as an indicator to assess the risk of double counting of individuals. The wide range movement patterns of some birds (**Figure 4**) underline the importance of using only observational data from a narrow period (focal day) for population estimation to avoid double counting.

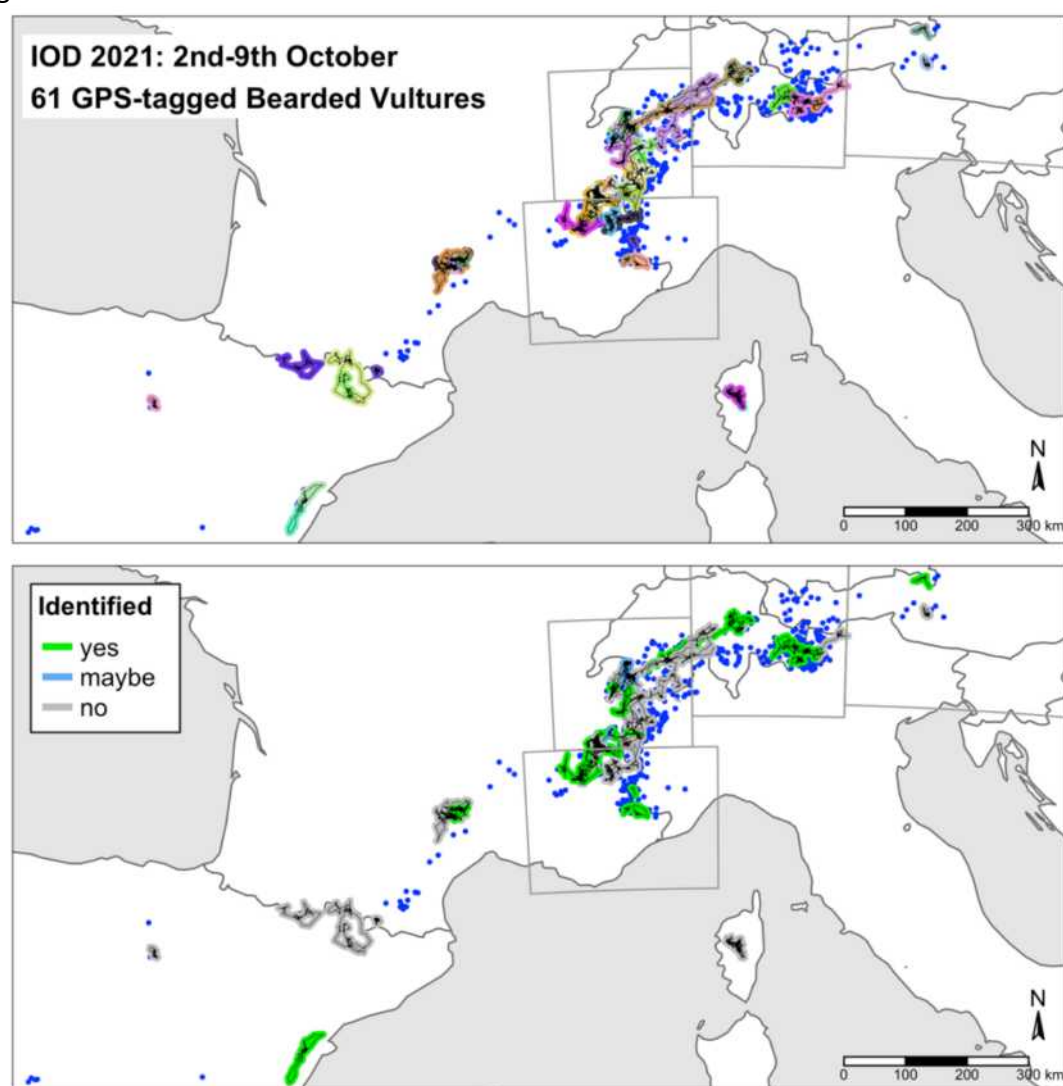


Figure 4. 61 GPS-tagged Bearded Vultures during the IOD periode. The GPS-tracks of Eglazine are not displayed on this map, as the bird was on a longer excursion in the North during the IOD-period. Blue dots = occupied observation sites.

⁴ No IOD was organized on Corsica in 2021.

5.3.2 Alpine range

During this year's IOD, GPS-data in the Alpine range was available from 39 out of 40 GPS-tagged birds during the IOD period and on the focal day (02.10.2021). No data was available from Ewolina (BG838) on the focal day. Out of the 39 GPS-tagged birds 14 individuals could be sighted and identified, while 4 birds were identified with some uncertainty by observers. In summary, 36% of the GPS-tagged birds have been sighted and identified, which is a similar value compared to 2020 (38%).

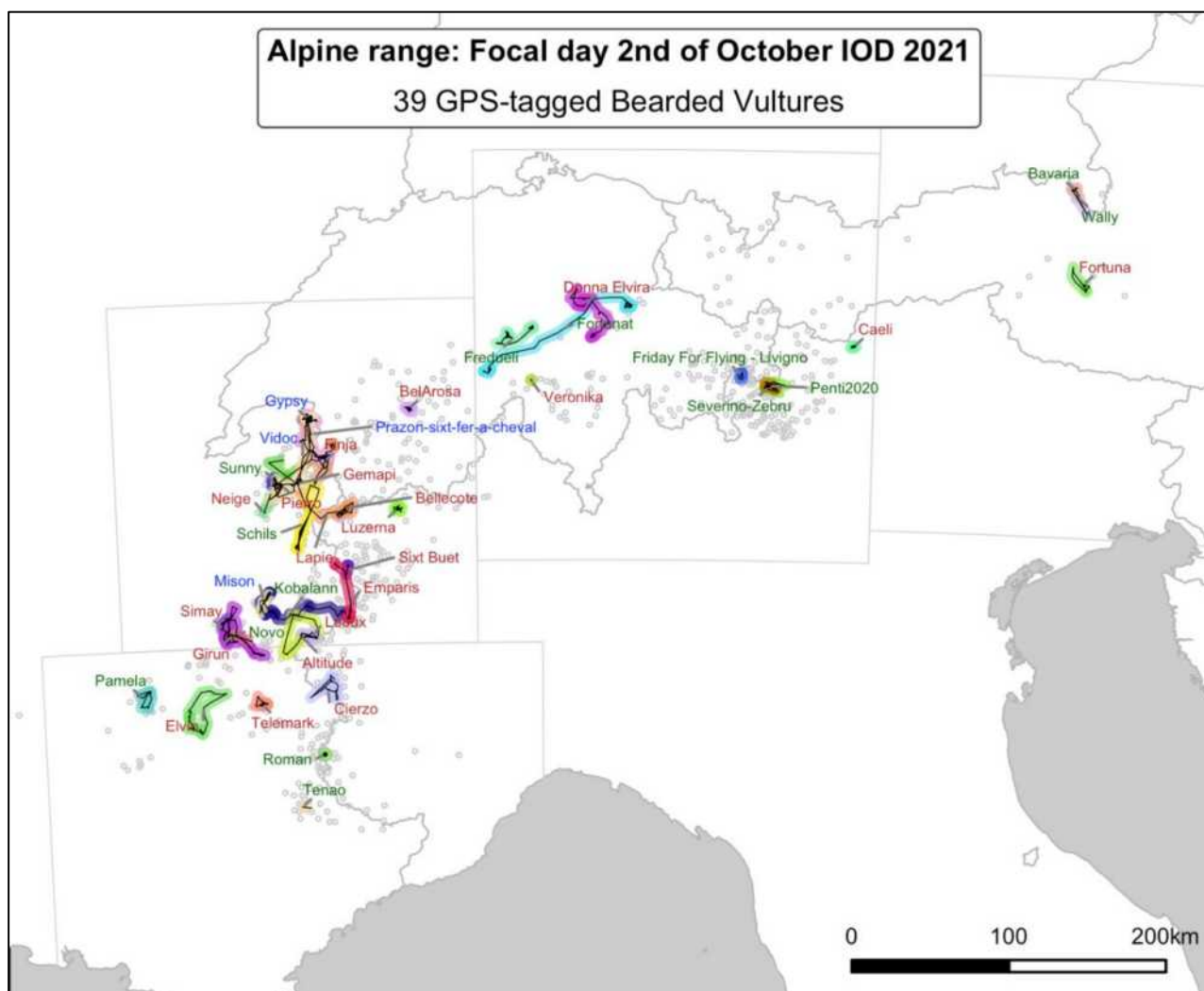


Figure 5. Positions of 39 Bearded Vultures tagged with GPS transmitters that were present in the Alpine range during the focal day (02.10.2021). Observation sites that were occupied during the IOD-period are marked with grey circles. During the IOD-period 14 birds have been identified (green labels), 4 birds have been probably identified (blue labels) and 21 birds couldn't be identified (red labels).

Table 4. 62 birds, 30 males and 29 females, with active GPS-tag during the IOD periode 2021. No IOD was organised in Corsica.

Animal	BirdID	Sex (m/f)	Age class	Days with pos.	Pos. on focal day	Observed (yes/maybe/no)
Alpine range	41	20/17				15/4/22
Roman	854	m	adult	6	1	yes
Schils	802	m		8	30	yes
Tenao	755	m		8	3	yes
Cierzo	899	m		8	48	no
Ewolina	838	f		2	0	no
Fortuna	843	m		8	16	no
Gemapi	W196	f		8	5	no
Girun	904	f		8	4	no
Neige	W198	m	subadult	7	3	no
Veronika	321	f		8	11	no
Freduei	1001	m		8	80	yes
Gypsy	W209	m		8	36	maybe
Mison	W230	f		8	10	maybe
Caeli	998	m		8	25	no
Finja	1003	f		8	84	no
Lapie	W251	m		8	25	no
Léoux	950	f	immature	8	9	no
Simay	983	m		8	24	no
Fortunat	1068	m		8	3'585	yes
Kobalann	1063	f		8	127	yes
Mistral	1022	m		8	23	yes
Pamela	1031	f		8	26	yes
Penti2020	W349	f		8	70	yes
Prazon-sixt-fer-a-cheval	W346	u		8	10'774	maybe
Vidoc	W356	u	juvenile	8	77	maybe
Altitude	W313	f		8	36	no
Bellecote	W361	u		8	48	no
Elvio	1026	m		8	42	no
Emparis	W284	f		8	14	no
Luzerna	1071	f		8	86	no
Pierro	W301	m		8	47	no
Sixt Buet	W285	f		8	25	no
Bavaria	1112	f		8	9	yes
Friday For Flying - Livigno	W396	m		8	69	yes
Novo	1098	m		8	72	yes
Severino-Zebru	W372	m		8	55	yes
Sunny	W397	u		8	846	yes
Wally	1113	f		8	10	yes
BelArosa	1119	m		8	48	no
Donna Elvira	1117	f		8	73	no
Telemark	1101	m		8	485	no
Massif Central	8	3/5				5/0/3
Layrou	761	m	adult	8	21	yes
Aven	1067	f	immature	8	255	yes
Ophrys	1078	f	immature	8	417	yes
Cévennes	1032	m	immature	8	267	no
Fario	1079	f	immature	8	227	no
Pradines	1122	f	juvenile	8	577	yes
Pyrenees	1094	f	juvenile	8	944	yes
Peyre	1116	m	juvenile	8	96	no
Pyrenees	4	3/1				0/0/4
Roc Genèse	-	m	adult	8	8	no
Alos	992	m	subadult	8	15	no
Bassi	1033	m	immature	8	43	no
Boira	1040	f	immature	8	16	no
Corsica	4	2/2				0/0/4
Muntagnolu	890	m	adult	8	5	no
Luna	959	f	subadult	8	8	no
Cintu	1042	m	immature	8	83	no
Orba	1041	f	immature	8	24	no
Maestrazgo	4	1/3				2/0/2
Amic	995	m	subadult	8	82	no
Celest	1073	f	immature	8	24	no
Dalila	1109	f	juvenile	8	21	yes
Dena	1104	f	juvenile	8	19	yes
Excursion (NDL & BEL)	1	0/1				0/0/1
Eglazine	1069	f	immature	8	47	no
Total	62	30/29				23/4/36

5.4 Individual-based data

During the IOD 2021 period 63 individuals have been identified with high probability in the Alpine range. 6 of them in the eastern Alps, 31 in the central Alps, 10 in the north-western Alps, 16 in the south-western Alps. Another 6 birds have been identified in the Massif Central and 6 in Spain. Some birds could not be identified with certainty (Alps N = 19; Spain N=3), these are marked as "maybe" observed in **Table 5**, **Table 6** and in **Table 7 for Spain (3)**. Such individual-based monitoring is only possible due to the international collaboration, information exchange and the coordination of marking patterns within the international Bearded Vulture monitoring network.

*Table 5. 39 Bearded Vultures that were identified (2 of them with some uncertainty = maybe identified) in the eastern and central Alps during the IOD 2021 grouped by the region where they have been observed. * Tag of Noel-Leya is not working since 02.01.2021 but bird could be identified by seeing the tag on the back.*

Zone	Bird	Observed (yes/maybe)	BirdID	Sex (m/f)	Age (cy)	Tag	Territory	Region
	39	37/2	18/19					
	Alexa	yes	100	f	34		Gastein/Rauris	
Eastern	Andreas Hofer	yes	260	m	26		Gastein/Rauris	
	Felix2	yes	793	m	8	GPS	Mallnitz	Hohe Tauern NP (AUT)
	Charlie	yes	910	f	6			
	Glocknerlady	yes	718	f	10			
	Pinzgarus	yes	558	m	14			
	Wally	yes	1113	f	1	GPS		Bavaria (DEU)
Alpine range	Bavaria	yes	1112	f	1	GPS		
	Freduei	yes	1001	m	4	GPS		Central Switzerland
	Fortunat	yes	1068	m	2	GPS		
	Noel-Leya	yes	797	m	8	GPS*		
	Diana-Stelvio	yes	W07	f	22		Albula	
	GT0116	yes	-	m	-		Bergün	
	GT0117	yes	-	f	-		Bergün	
	Ingenius	yes	621	m	12		Buffalora	
	Retia	yes	357	f	22		Buffalora	
	Ortler	yes	439	f	18		Ofenpass	
	Livigno	yes	W08	m	22		Ofenpass	Grisson (CHE)
	GT038	yes	-	f	-		Poschiavo	
	GT057	maybe	-	m	-		Poschiavo	
	Samuel	yes	526	m	15		Sinestra	
	Moische-Livigno	yes	W11	f	20		Sinestra	
	GT048	yes	-	f	13		Tantermozza	
	Zebru	maybe	W12	m	20		Tantermozza	
	GT0132	yes	-	m	-		Foscagno	
	GT0129	yes	-	f	-		Foscagno	
	Cic	yes	186	m	29		Livigno	
	Moische	yes	146	f	31		Livigno	
	Friday For Flying - Livigno	yes	W396	m	1	GPS	Livigno	
	Jo	yes	169	f	30		Ortler	
	Temperatio	yes	495	f	16		Val Martello	Stelvio NP, Trentino & Sondrio (ITA)
	Tell	yes	283	m	25		Valle del Braulio	
	Stift	yes	393	f	20		Valle del Braulio	
	Germano - Braulio	yes	W379	u	1		Valle del Braulio	
	Heinz-Serraglio	yes	W45	m	15		Zebru	
	Felice	yes	375	f	21		Zebru	
	Severino-Zebru	yes	W372	m	1	GPS	Zebru	
	Penti2020	yes	W349	f	2	GPS		
	Sieglinde	yes	W420	u	1		Planeil	Vinschgau (ITA)

Table 6. 43 Bearded Vultures that were identified (17 of them with some uncertainty = maybe identified) in the north- and south-western Alps during the IOD 2021 grouped by the region where they have been observed.

Zone	Bird	Observed (yes/maybe)	BirdID	Sex (m/f)	Age (cy)	Tag	Territory	Region
Alpine range	43	26/17	19/12					
	Michegabri	yes	488	m	16		Chamoussière	Gran Paradiso (ITA)
	GT094	yes	-	m	-			
	GT0167	yes	-	m	-			
	Sunny	yes	W397	u	1	GPS	Bargy	Haute Savoie (FRA)
	Belle etoile	maybe	W394	u	1		Bargy BIS	
	Zufall	yes	493	f	16			
	Schils	yes	802	m	8	GPS		Savoie (FRA)
	Nonno Bob	yes	548	m	14			
	Kobalann	yes	1063	f	2	GPS		
	Novo	yes	1098	m	1	GPS		Savoie & Haute Dauphiné (FRA)
	Condamine	maybe	586	f	13			Savoie (FRA)
	GT054	maybe	-	m	-			
	Gelas	maybe	279	f	25			
	Stelvio	maybe	W02	u	24			
	Mison	maybe	W230	f	5	GPS		
	Michel	maybe	W414	u	1		Coude du Rhône	Wallis und Berner Oberland (CHE)
	Guillaumes	maybe	411	f	19		Derborence_Vérouet	
	Pablo	maybe	359	m	22		Derborence_Vérouet	
	Kandersteg2021	yes	W422	u	1		Kandertal	
	Sionne2021	maybe	W383	u	1		Sionne	
	Smaragd	maybe	675	m	11		Zermatt	
	Gildo	maybe	299	f	24			
	Gypsy	maybe	W209	m	5	GPS		
	Prazon-sixt-fer-a-cheval	maybe	W346	u	2	GPS		
	Vidoc	maybe	W356	u	2	GPS		
	Roman	yes	854	m	7	GPS	Maira	Alpi Marittime (ITA)
	Chateaux	yes	W413	u	1		Usseglio	
	Italia 150	yes	660	m	11		Usseglio	
	Volcaire	maybe	905	m	6			La Drôme (FRA)
	Bellemotte	yes	708	f	10		Bonette	Mercantour (FRA)
	Vignemale	yes	W391	u	1		Bonette	
	Rimani	yes	W93	f	11		Chambeyron-Ubayette	
	Stephan	yes	616	m	12		Chambeyron-Ubayette	
	Adrechoun	yes	W378	u	1		Chambeyron-Ubayette	
	Girasole	yes	549	f	14		Source de la Tinée	
	Rocca	yes	516	m	15		Source de la Tinée	
	Sereno	yes	348	m	22		Source de l'Ubaye	
	GT036	yes	-	f	-		Source de l'Ubaye	
	Tenao	yes	755	m	9	GPS	Val d'Entraunes	
	Mistral	yes	1022	m	3	GPS		
	GT150	maybe						
	Kirsi	yes	764	m	9			Vercors (FRA)
Pamela	yes	1031	f	3	GPS			
Total	82	63/19	37/31					

Table 7. Bearded Vultures that were identified in the Massif Central (6) and Spain (9) (without the Pyrenees) during the IOD 2021.

Zone	Bird	Observed (yes/maybe)	BirdID	Sex (m/f)	Age (cy)	Tag	Territory	Region
Massif Central	6	6/0	2/4					
	Layrou	yes	761	m	9	GPS	Jonte amont	Massif Central (FRA)
	Adonis	yes	794	m	8		Jonte amont	
	Pradines	yes	1122	f	1	GPS		
	Aven	yes	1067	f	2	GPS		
	Ophrys	yes	1078	f	2	GPS		
	Pyrenees	yes	1094	f	1	GPS		
Spain (without Pyrenees)	9	6/3	4/5					
	Dalila	yes	1109	f	1	GPS		Maestrazgo (ESP)
	Dena	yes	1104	f	1	GPS		
	Tono	yes	486	m	16			Andalusia (ESP)
	Bigup	yes	856	m	7			
	Sansón	yes	767	m	9			
	Viola	yes	707	f	10			
	Kika	maybe	1018	f	3			
	Nerpio	maybe	762	m	9			
	Tormenta	maybe	963	f	5			

5.5 Estimated number of Bearded Vultures

E_{foc} - Based on observations (focal day):

Although the total amount of observations gathered during the IOD can be used as an indicative of the presence of Bearded Vultures, it is not possible to use data from the whole week (IOD-Period) due to the high mobility of the species (**Figure 4**). In order to omit the possibility of double counting birds and to create a more accurate picture of the Bearded Vulture distribution, only observations from the focal day were used to determine the approximate number of birds (*E_{foc} = estimate based on observations (focal day)* **Table 8**). Furthermore, regional administrators were requested to communicate with nearby partners to avoid double counting of bird individuals.

E_{hyp} - Hypothetically present birds:

During the focal day it is not possible to observe and identify every single bird that is known to be present in a specific region. A second estimate (*E_{hyp} = hypothetically present birds*) composed of the estimate based on observations (focal day) *E_{foc}* and the number of individuals that were missed during the survey but that should be present in the region (e.g. territorial breeding pairs) should therefore give a picture of the expected number of Bearded Vulture individuals on the regional level (**Table 8**).

However, as the number of counted birds during the IOD depends on multiple external factors (weather conditions, observer etc.), these estimates are best used as a proxy for population trends and to be compared between years rather than directly and solely as a population size estimation.

E_{GPS} GPS-tagged non-territorial floater birds:

Most of the GPS-tagged birds are non-adult floater birds, which do not necessarily stay in a certain area for a longer time period. Therefore, GPS-tagged individuals, which have not been observed during the IOD should be added to the subtotal of hypothetically present birds in order estimate the overall Alpine Bearded Vulture population.

Final estimate:

We estimate the number of Bearded Vultures observed on the focal day in the Alpine range to vary between 236 and 284 individuals (*E_{foc}*). Together with the birds that are known to be present in the region (mainly territorial birds from the breeding pairs), the estimate sums up to 263 – 356 individuals (*E_{hyp}*). Based on GPS-data we know, that 41 tagged birds were present in the Alpine range during this year's IOD. However, 23-27 of these individuals (*E_{GPS}*) were not identified by observers and should therefore be added to the estimate (*E_{hyp}*). Through the combination of estimates based on observation data, expert knowledge about territorial birds and GPS-data results it can be assumed that the number of Bearded Vultures in the Alpine population varies between 284 and 381 individuals.

The estimates of hypothetically present birds *E_{hyp}* represent 75% (conservative) or 100% (optimistic) of the total population that is predicted by the demographic model from Schaub et al. 2009 (predicted population size = 380, **Figure 7 and Table 10**) with a lower variance than the estimates from the year 2019 (conservative = 256 (80%), optimistic = 344 (108%) with better weather conditions). However, looking at the estimates based on observations only, it was possible to observe 62% or 75% respectively of the birds predicted by the model – less than in 2019 (no estimate in 2020). In good weather conditions (thermals) the activity and flight distance of the birds increase, which can lead to double counting. In addition, it is expected that with good visibility, more observations will be possible.

Table 8. Estimates of minimal (conservative) and the maximal (optimistic) number of Bearded Vulture individuals observed during the focal day (E_{foc}) and hypothetically present (E_{hyp} = observed and known not-observed birds) in each region during the IOD.

Population	Country	Region	E _{foc} - Estimate based on observations (focal day)		E _{hyp} - Estimated number of hypothetically present birds	
			min	max	min	max
Alpine range	East subtotal		16	20	24	32
	AUT	Hohe Tauern NP	16	20	24	32
	GER	Allgaeu	-	-	-	-
	Cenral subtotal		97	110	102	143
	GER	Bavarian Alps	2	2	2	2
	AUT	Tyrol	4	5	4	5
	CHE	Central Switzerland	5	6	5	6
	CHE	Grisson	50	57	53	85
	CHE	Ticino	-	-	2	4
	ITA	Stelvio NP, Sondrio, Brescia & Trentino Alto Adige	36	40	36	41
	North-west subtotal		76	99	89	124
	CHE	Berner Oberland	5	7	5	7
	CHE	Wallis	26	36	28	44
	FRA	Haute Savoie	14	22	17	26
	FRA	Savoie	31	34	32	35
	ITA	Valle d'Aosta & Gran Paradiso NP	-	-	7	12
	South-west subtotal		47	55	48	57
	FRA	Baronnies	-	-	1	1
	FRA	Haute Dauphiné	17	21	17	22
	FRA	Mercantour	14	17	14	17
	FRA	Vercors NP	5	5	5	5
	ITA	Alpi Cozie	3	3	3	3
	ITA	Alpi Marittime - WAON	8	9	8	9
Subtotal Alpine range		236	284	263	356	
+ not observed GPS-tagged birds				21	25	
Total Alpine range				284	381	
Massif Central	FRA	Grands Causses & Cevennes NP	4	7	4	10
+ not observed GPS-tagged birds				3	3	
Total Massif Central				7	13	
French Pyrenees	FRA	Aude	2	2	6	6
+ not observed GPS-tagged birds				1	1	
Total French Pyrenees				7	7	
Spain (wihtout Pyrenees)	ESP	Andalusia, La Rioja, Castile y León, Castile la Mancha	21	29	21	33
Maestrazgo	ESP	Maestrazgo	2	2	2	2
+ not observed GPS-tagged birds				1	2	
Total Spain				3	4	
Bulgaria	BRG		0	0	0	0

Table 9. Comparison of the estimated number of Bearded Vultures in the Alpine range based on the survey during the IOD 2021 in comparison to the estimates from previous years (no estimate from 2020).

	E _{foc} - Estimate based on observations (focal day only)		E _{hyp} - Estimated number of hypothetically present birds	
	min	max	min	max
IOD 2021	236	284	284	381
IOD 2019	215	257	256	344
IOD 2018	153	177	208	284
IOD 2017	152	182	208	251
IOD 2016	149	178	172	218
IOD 2015	120	153	166	199
IOD 2014	87	95	112	130
IOD 2013	87	98	117	128

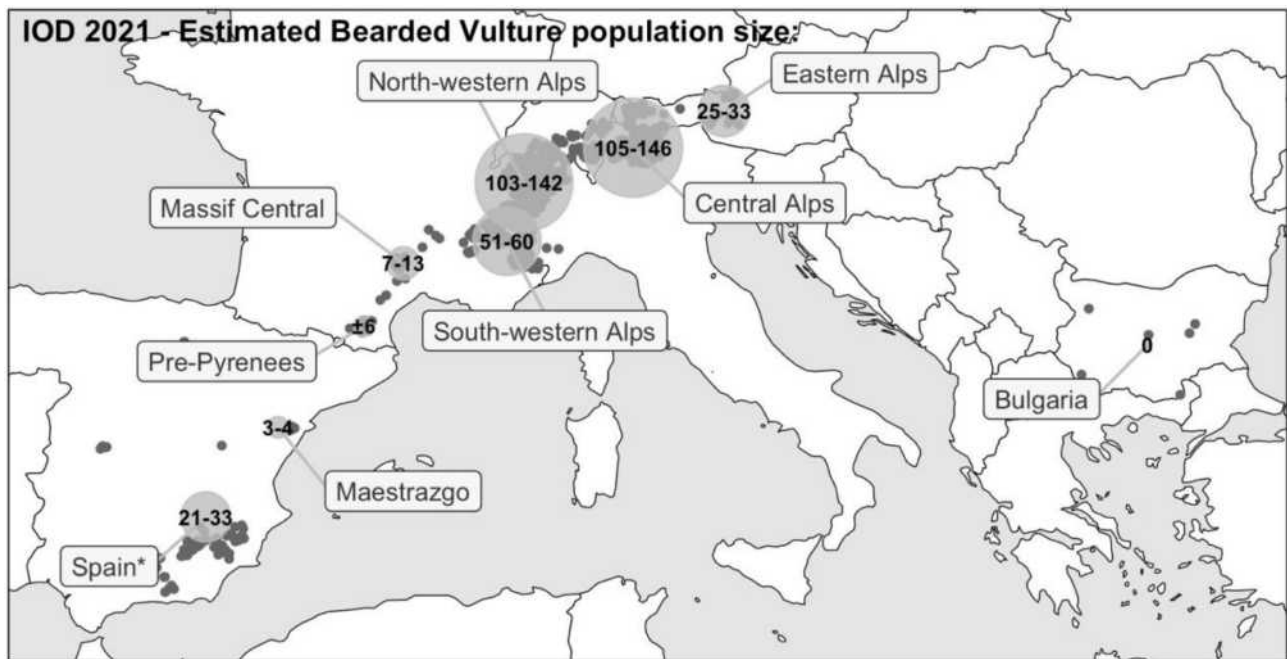


Figure 6. Overview of the estimated Bearded Vulture population size E_{hyp} on the regional level within the monitoring area of the IOD 2021. Estimates of the populations size are based on estimates derived from observations during the focal day of the IOD E_{foc} and an estimated number of birds that were not observed but should be present in the region (mostly territorial birds). *The estimate for Spain is based on observation data from the occupied observation sites (grey dots) without taking the Bearded Vulture population of the Spanish Pyrenees into account. In Spain Bearded Vultures roam between mountainous areas in the south and in central and northern Spain. No IOD was organised in Corsica (FRA) where a small population of 4 breeding pairs survived. Since 2016 a restocking program is ongoing on Corsica to support this small island population. Since their extinction in 1972, no Bearded Vultures are present in Bulgaria.

5.6 Proportional distribution of age classes in the Alpine range

By looking at the total number of observations during the IOD it is possible to get an overview of age class distribution, which should be representative of the general Alpine Bearded Vulture population. Per definition the IBM always uses calendar years (cy) for age specifications (**Table 1**).

Comparing the results from the absolute numbers of observations with the estimated number of individuals per age class indicates that, even though there is some variation, observation data can be used as an estimate for the age class distribution. The estimate of the age class distribution based on the data collected during the IOD 2021 is similar as in the last year's estimate. Most of the birds observed on the focal day were adults (54%), followed by immatures (16%), juveniles (14%) and subadults (4%). In fact, similarly to last year's results, the proportion of sighted birds aged in their 5th calendar year or older (subadults & adults - potentially in age to establish a territory) almost reaches 2/3 of the total number of observations (**Table 10**).

Finally, the results were compared to the expected number of living individuals per age class derived by the demographic model designed by Schaub et al. (2009) (**Table 10, Figure 7**). The results from **Figure 7** indicate that the percentage of juveniles, immatures and adults coincide quite well with the model predictions, while similar as in the previous years the proportion of subadults is underestimated by the observations from the IOD. This is also the case for the absolute numbers (E_{hyp}), where the estimated and predicted numbers overlap quite well, except for the subadults.

There are multiple and additive explanations for the observed discrepancies in the age class distribution (A) and total estimate of the population size (B):

- A. More adult birds might be easier to recognise, detect and monitor as they settle into a region and are territorial. In addition, many observation sites were situated in the core area of known breeding units.
- A. Juveniles are also easier to detect as they are easier to discern from the other age classes and often the parents have already been detected and the territory is therefore regularly visited. Additionally, released birds up to 2 to 3 years can be identified individually thanks to the bleached feathers.
- A. In general it is considered difficult for non-professional ornitologists to determine the age of young vultures (especially subadult) and could therefore represent the number of observations under the category "unknown".
- B. The model of Schaub et al. (2009) is based on survival rates over the whole Alpine area and does not take differences in regions into account.
- B. The model of Schaub et al. (2009) is based on only two survival rates. One for juveniles (1.cy) and one for all older birds.

Table 10. Proportion of Bearded Vultures per age class based on observations reported during the focal day during the IOD 2021. Based on these observations the regional coordinators estimated a minimal and maximal number of Bearded Vultures per age class (estimated from observations E_{foc}). The estimate of the birds that are hypothetically present also includes territorial birds, the birds that are known to be present in the region as well as the GPS-tagged birds that have not been identified during the IOD-period (estimated hypothetically present E_{hyp}).

Age class	Observed	Estimated				Predicted	
	focal day only	E _{foc}		E _{hyp}		Model Schaub et al. 2009	
	absolut	mean(min,max)	%	mean(min,max)	%	absolut	%
adult	484	152	57%	190	57%	198	52%
subadult	34	14	5%	25	6%	58	15%
immature	147	52	19%	65	18%	74	19%
juvenile	112	34	13%	47	14%	50	13%
unknown	90	17	6%	17	5%	-	-
Total	867	269	100%	344	100%	380	100%

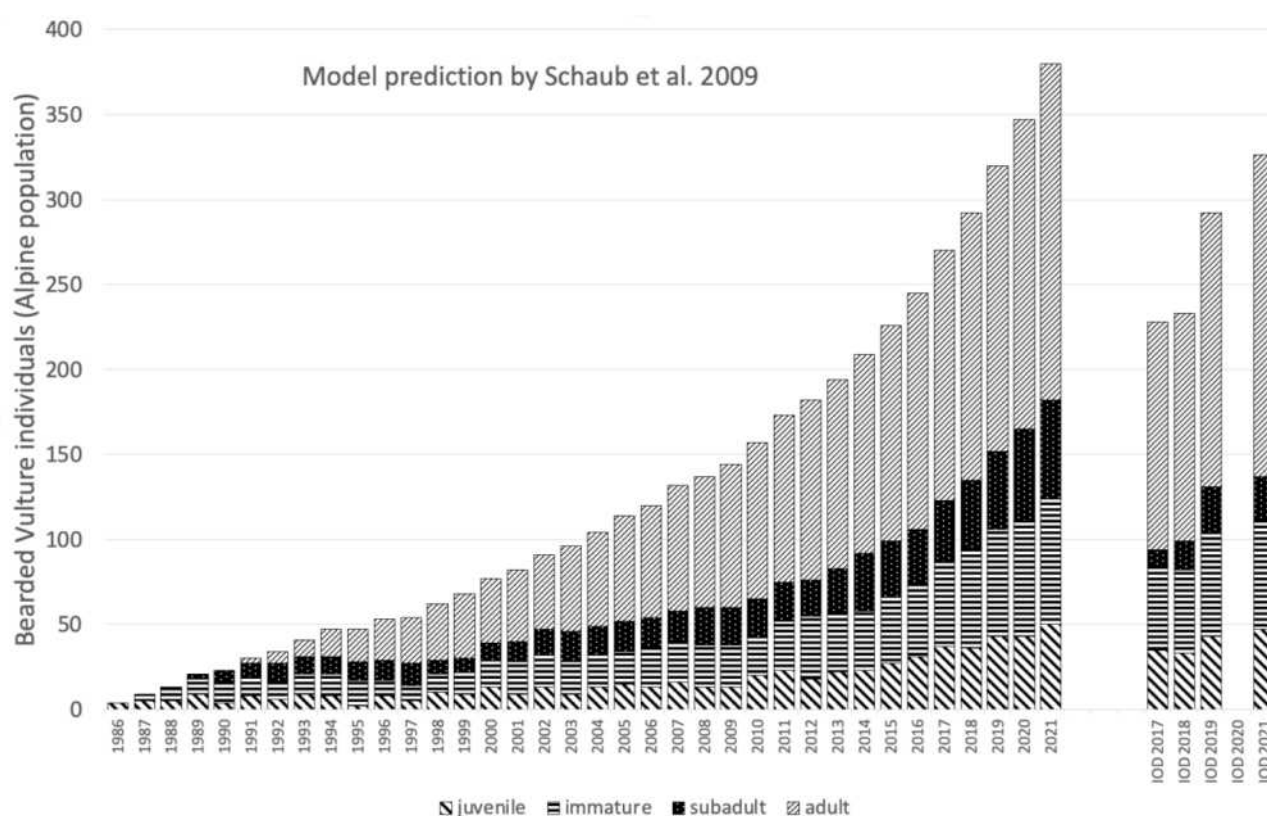


Figure 7. Predicted number of Bearded Vultures per age class according to the demographic model by Schaub et al. 2009¹ in comparison to the estimated number of birds that should hypothetically be present based on observation data (IOD) and expert knowledge from regional coordinators. (*mean of minimal = 284 and maximal = 381 estimated number of hypothetically present Bearded Vultures and the GPS-tagged birds that have not been identified during the IOD; birds with unknown age are not included).

5.7 Spatial distribution of age groups

From 748 sites 960 Bearded Vulture sightings have been recorded during the whole period, 927 during the focal day (**Table 3**).

In terms of reintroduction and resettlement of a species like the Bearded Vulture, it is of interest to gain a picture of the spatial distribution of different age classes. In particular, the presence of sexually mature adult birds can be an indicator for the formation of new reproductive units in the periphery of the species' distribution.

The following figures (**Figure 8 - Figure 14**) show the presence of Bearded Vultures subdivided in the two age groups adult and non-adult (juvenile, immature, subadult) at the regional level and give a more detailed overview on the Bearded Vulture distribution during the whole observation period. Each symbol on the map represents the position of an observation site, while the white dots represent sites where no Bearded Vulture was observed.

5.7.1 Alpine range

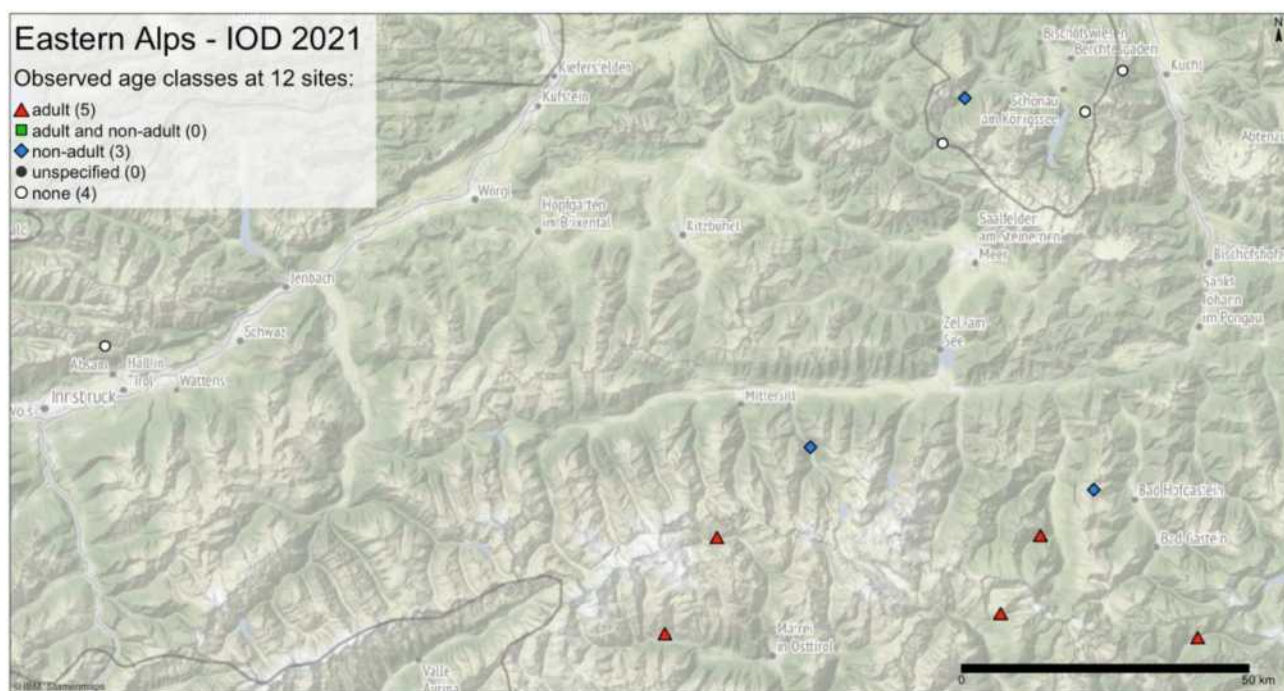


Figure 8. Age class distribution observed at 12 sites in the Eastern Alps during the IOD 2021.

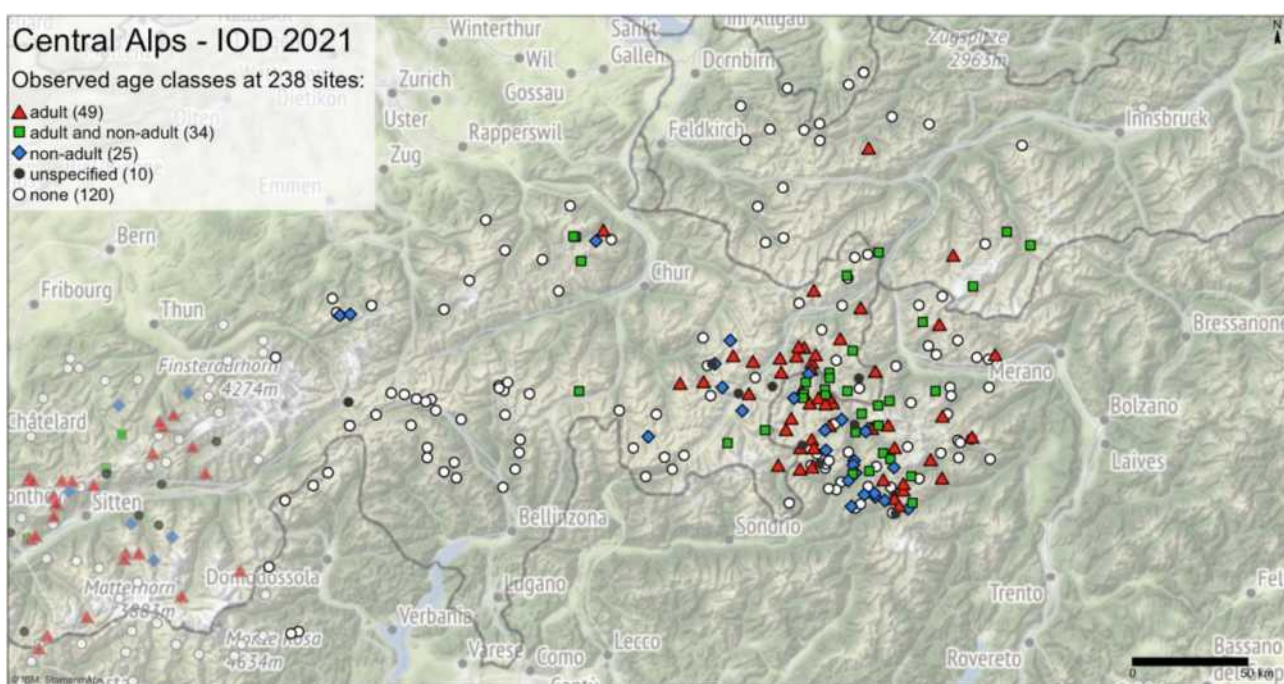


Figure 9. Age class distribution observed at 238 sites in the Central Alps during the IOD 2021.

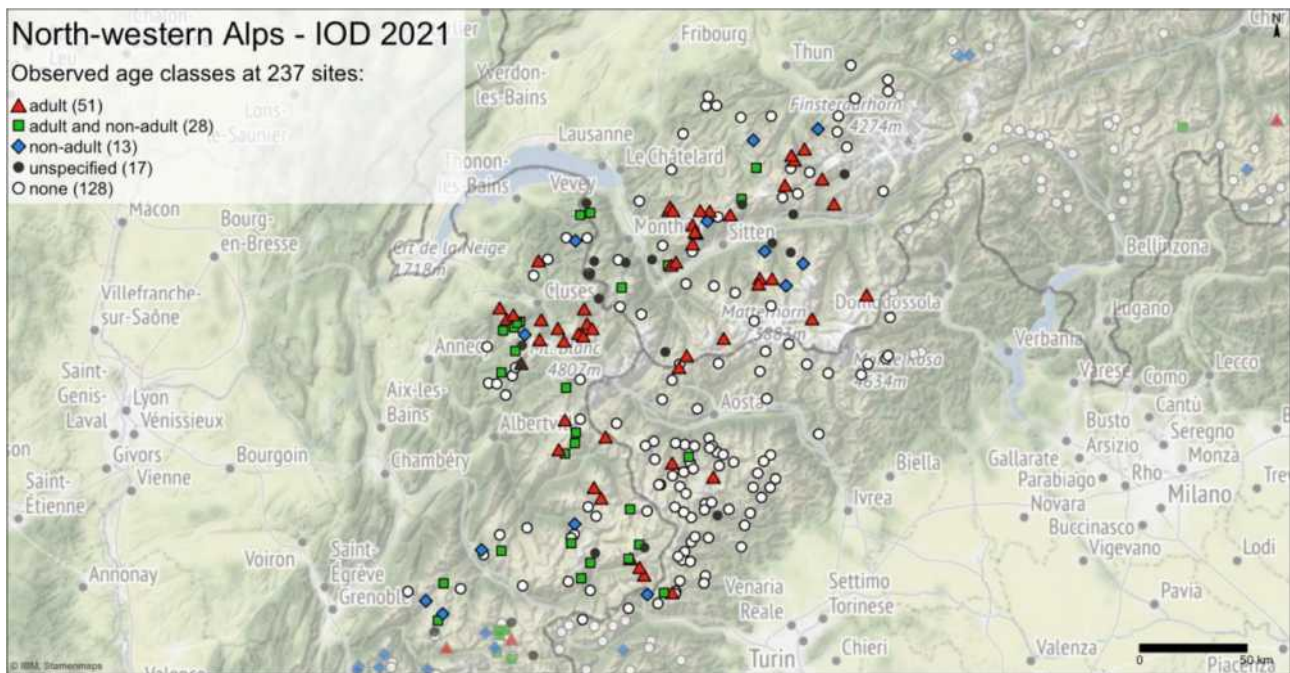


Figure 10. Age class distribution observed at 237 sites in the north-western Alps during the IOD 2021.

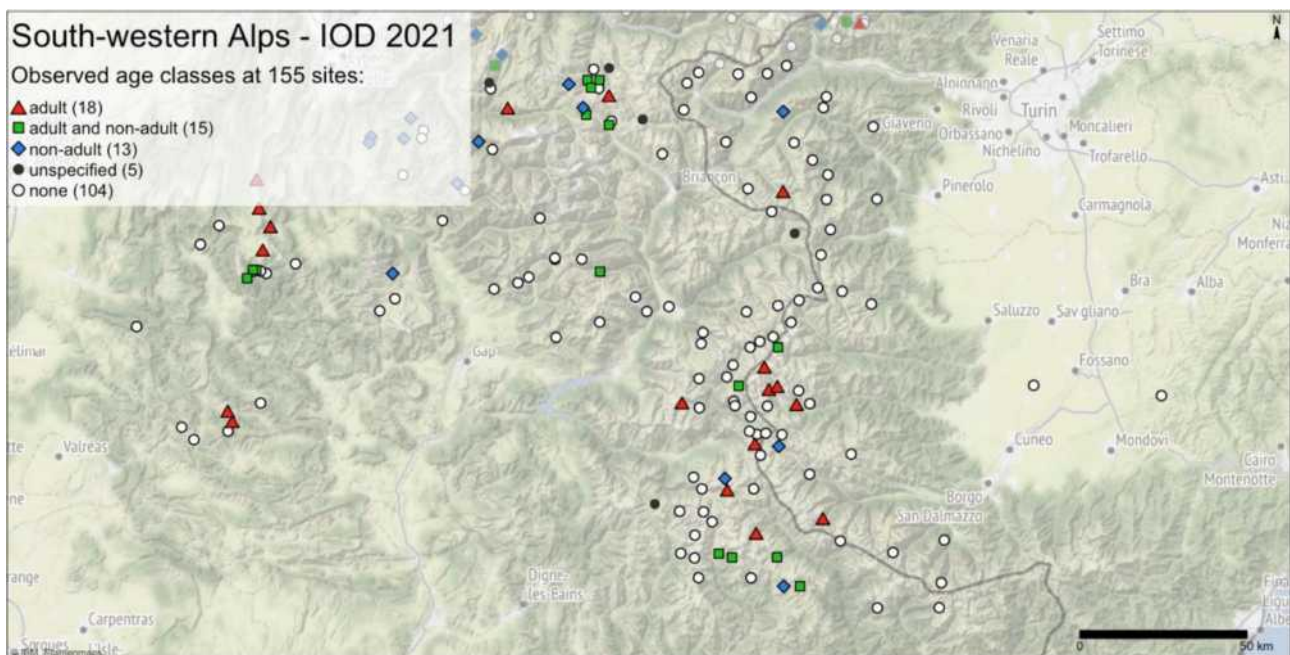


Figure 11. Age class distribution observed at 155 sites in the south-western Alps during the IOD 2021.

5.7.2 Massif Central & French Pre-Pyrenees

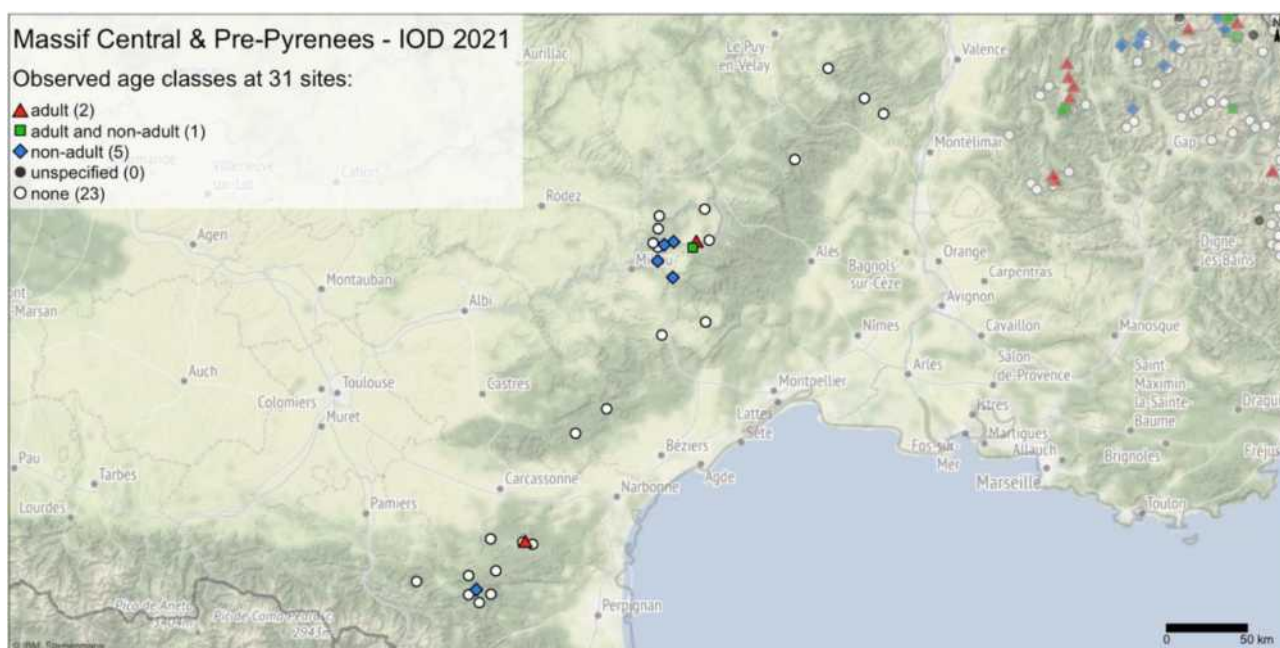


Figure 12. Age class distribution observed at 31 sites in the region of the Massif Central and the french Pyrenees during the IOD 2021.

5.7.3 Spain (without Pyrenees)



Figure 13. Age class distribution observed at 69 sites in Spain during the IOD 2021.

5.7.4 Bulgaria

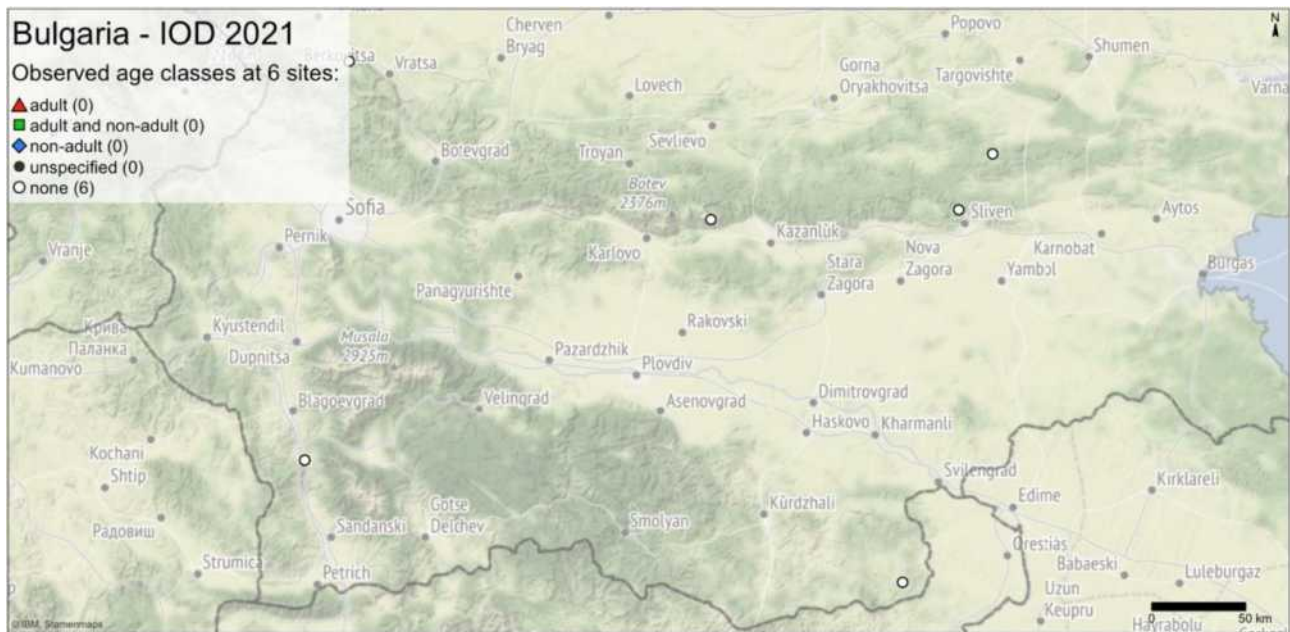


Figure 14. Age class distribution observed at 6 sites in Bulgaria during the IOD 2021.

6 Outlook 2022

For 2022 the focal day is planned for the 8.10.2022 which sets the start for the IOD-period during the following week. Based on last years' experience and feedback from IBM partners, it has become apparent that it is very impractical organisationally to plan for two dates. So that participants can plan the date better, it was therefore decided in plenary to decide on one date for the focus day and to decide according to the weather conditions whether it makes sense to carry out or cancel the IOD. This will have consequences on the possibility of population estimates locally and at population scale.

Focal day **Sat 8th of October 2022**
Period **8th - 15th of October 2022**

Even though a period of one week was chosen for public communication, we would like to stress the importance of focused observation intensity. Observations can be cumulated only within the core period. Therefore, **the count by specialists and volunteers on observation posts shall be carried out only during the focal day.**

The focal time for the count starts at 10 am to at least 3 pm.

7 Acknowledgements

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- ◆ *Associazione Naturalistica Le Gru*
- ◆ *Associazione OIKOS (N. CARQUILLAT, E. CARQUILLAT, F. LANTELME)*
- ◆ *Asters*
- ◆ *Azienda Faunistica - venatoria Albergian (E. AUDIBUSSO, M. FERRIER, A. VIGNETTA)*
- ◆ *Bernard Drillat*
- ◆ *Birds of Prey Protection Society (GEORGI STOYANOV)*
- ◆ *Carabinieri Forestali - Provincia di Cuneo*
- ◆ *Carabinieri Forestali Bardonecchia (M. PEIROLO, R. CORTI)*
- ◆ *Carabinieri Forestali Pragelato (L. DAMIANO, L. QUAGLIA)*
- ◆ *Carabinieri Forestali Torre Pellice (M. SALSOTTO, S. CUCCURU)*
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- ◆ *Conseil départemental de la Drôme*
- ◆ *Conservatoire d'espaces naturels Haute-Savoie with the observer network of Asters*
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- ◆ *Ente di Gestione delle Aree protette dell'Ossola*
- ◆ *Ente di Gestione delle Aree protette della Valsesia*
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- ◆ *Groupe des Jeunes de Nos Oiseaux*
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- ◆ *LPO Drôme*

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Morgane Tetu	Patrick Pichard	Raphaël Arlettaz
Myriam Crozyer	Patrick Scimè	Raphaël Neouze
Nadia Severgnini	Pau Salvador Agut	Raphaëlle Napoleoni
Narcisse Certain	Paul Cuchot	Raquel Franco Antolí
Nella Gulino	Paul Dervaux	Raul Chavero Garcia
Nicholas Auchli	Paul Gassebner	Raymond Meyer
Nicola Ferrari	Paula Eggenschwiler	Raymond Ulliel
Nicola Giudice	Pauline Reyes	Regina Winkler
Nicolas Bertrand	Pedro Niñerola Valfagón	Régine Praile
Nicolas Boutroux	Pedro Vizcaino	Régis Bertolotti
Nicolas Goin	Perrinne Arvin-Berod	Régis Jordana
Nicolas Moriset	Peter Pfiffner	Régis Picavet
Nicole Carquillat	Peter Wimmer	Reinhard Gorfer
Nicole Erard	Philipp Bertagnolli	Remo Basso
Nicole Köppel	Philipp Merckle, Dr.	Renato Roganti
Nicole Petitpierre	Philippe Archimbaud	Renato Scarafoni
Nicoletta Pott	Philippe Ayral	Renzo Borettaz
Niki Sommerhalder	Philippe Badin	Reto Strimer
Nils Zimmermann	Philippe Fortini	Ricardo Castillo
Nino Basso	Philippe Lavaux	Ricardo Moreno
Noa Rigoudy	Philippe Lucas	Riccardo Del Togno
Norbert Jordan	Philippe Maret	Riccardo Ferrari
Olivier Laurent	Philippe Munier	Riccardo Nardelli
Olivier Peter	Philippe Vallet	Richard Bonnet

Richard Chervet	Sarah Guiheux	Suzanne Houot
Richard Mazagg	Sébastien Honore	Svenja Crottogini
Richard Prime	Sébastien Lauper	Svenja Summermatter
Richart Chaillou	Sébastien Marie	Swann Camviel
Risti Curek-Pinelli	Serena Barberis	Sylvain Antoniazza
Robert Golling	Serge Denis	Sylvain Grimaud
Robert Joly	Serge Lenogue	Sylvain X
Robert Straughan	Sergio Fasano	Sylvie Besnard
Robert Zegg	Sergio Perron	Sylvie Claudon
Roberta Latini	Severin Hohenegger	Sylvie Deligondès
Roberto Bressanelli	Séverine Lenogue	Sylvie Geneve
Roberto Corti	Séverine Magnolon	Sylvie Mosdale
Roberto Fontana	Severino Moranduzzo	Tarin Tonon
Roberto Lardelli	Sharon Merki	Teresa Spanò
Roberto Permunion	Silke Moll	Theo Köhli
Robi Janavel	Silvana Nembrini	Théo Mazet
Robin Viton	Silvia Alberti	Thibault Longeroche
Rocco Leo	Silvia Birocchi	Thibault Veyret
Rodolphe Papet	Silvia Compagnoni	Thierry Faivre
Rodolphe Rauber	Silvia Gatta	Thierry Kerisit
Roland De Coster	Silvia Gennusa	Thierry Sauzay
Roland Molliet	Silvia Kaserer	Thierry Schwab
Roland Paris	Silvia Maroni	Thierry Vincent
Romain Barou	Sílvia Navarro Barrachina	Thomas Bachofner
Roméo Roux	Silvia Salomoni	Thomas Bouyard
Romy Decarli	Silvia Vercesi	Thomas Gaupp
Rosalba Di Tanna	Simeon Marin	Thomas Gorr
Rosanna Pedrini	Simon Jäger	Thomas Parisse
Rosanna Pedrini	Simon Zeiner	Thomas Roux
Rossana Dassetto Daidone	Simona Adorni	Thomas Ruetz
Rosy Chevrier	Simona Danielli	Thomas Wehrli
Rozen Hars	Simona Molino	Timothée Chaboud
Rudy Vallet	Simone Bocca	Tito Princisvalle
Ruedi Bösch	Simone Liechti	Tiziana Favre
Ruedi Christen	Simone Luzzato	Tiziana Odelli
Ruth Bstieler	Simone Meytre	Tiziano Beretti
Ruth Klucker	Simone Minessi	Tiziano Quey
Ruth Pfiffner	Simone Roveyaz	Tiziano Ruatti
Ryan Coulon	Simonetta Cutini	Tom De La Cretaz
Sabine Iwangoff	Sònia Rabasco Chaparro	Tom Lamy
Sam Cruickshank	Sonja Wipf	Tommaso Del Prete
Samson Acoca-Pidolle	Sophie Leclerc	Tommaso Delprete
Samuel Bachmann	Sophie Macon	Tommy Bulle
Samuel Gessler	Sophie Marti	Toni Kronig
Samuel Talhoet	Soraya Fàbrega Lorente	Toni Reinstadler
Samuele Cassani	Steeve Peyron	Toni Wegscheider
Samuele Cuccuru	Stefan Lerch	Ueli Rehsteiner
Samy Jendoubi	Stefan Seifert	Ugo Delpero
Samy Michel	Stefania Capelli	Ugo Parolini
Sandra Cuna	Stefania Vuillermoz	Ulisse Guchardaz
Sandra Moor	Stefano Allavena	Ulrich Ruepp
Sandra Pérez Aceituno	Stefano Costa	Umberto Poet
Sandra Sáenz	Stefano Marcolli	Urs Kyburz
Sandrine Mendès	Stefano Nicolodi	Ursula Ramseier
Sandro Cerquetti	Stefano Zuccaro	Ursula Sterrer
Sandro Pollinger	Steivan Luzi	Valentin Debons
Santiago Solé Luz	Stéphane Garnier	Valentin Lauret
Sara Boucheron	Stéphane Savary	Valentina Babolin
Sara Ferreras Viruete	Stéphane Thiebaud	Valentina Cecchini
Sara Segura Aduna	Susanna Rossi	Valère Marsaudon

Valeria Moris	Virgil Bassani	Yann Blanchard
Valeria Paganoni	Virginie Romanetto	Yann Breull
Valeria Wyler	Vittorio Saccoletto	Yann Gerond
Valter Vallet	Vitus Grond	Yohan Sassi
Vanesa Abad Gil	Vivian Buscaglia	Yvan Frutig
Verena Eichenberger	Walter Casarone	Yvan Schmidt
Véronique Rémyot	Walter Guenzani	Yvan Sibourg
Vianney Bajart	Walter Palfrader	Yves Jacquemoud
Victor Seve	Walter Pucher	Yves Jobert
Vincent Aubert	Werner Fischer	Yves Lazennec
Vincent Mugnier-Merlin	Werner Rokitzky	Yves Leuzinger
Vincent Nobili	Werner Ruinelli	Yves Roullaud
Vincenzo Ragaglia	Werner Schuh	Yves Sornay
Violaine Chervet	Willy Bourgeois	Yves-Marie Gorin
Violaine Coulanges	Wolfgang Fritz	Yvonne Markl
Violetta Fontana	Xavier Fribourg	