

# Parco Nazionale dello Stelvio: from source-area to field research lab



Stelvio NP - Photo trapping

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# STELVIO, *different* MONITORING SCALE

From 1 cm<sup>2</sup> to 2400 km<sup>2</sup>



Nesting activity and breeding biology



Field monitoring and Individual photo identification



Genetical samples and nest material collection



Lead accumulation in egg shell

**WIDE STUDY AREA 2400 KM<sup>2</sup> (SO, BS, TN e BZ)**

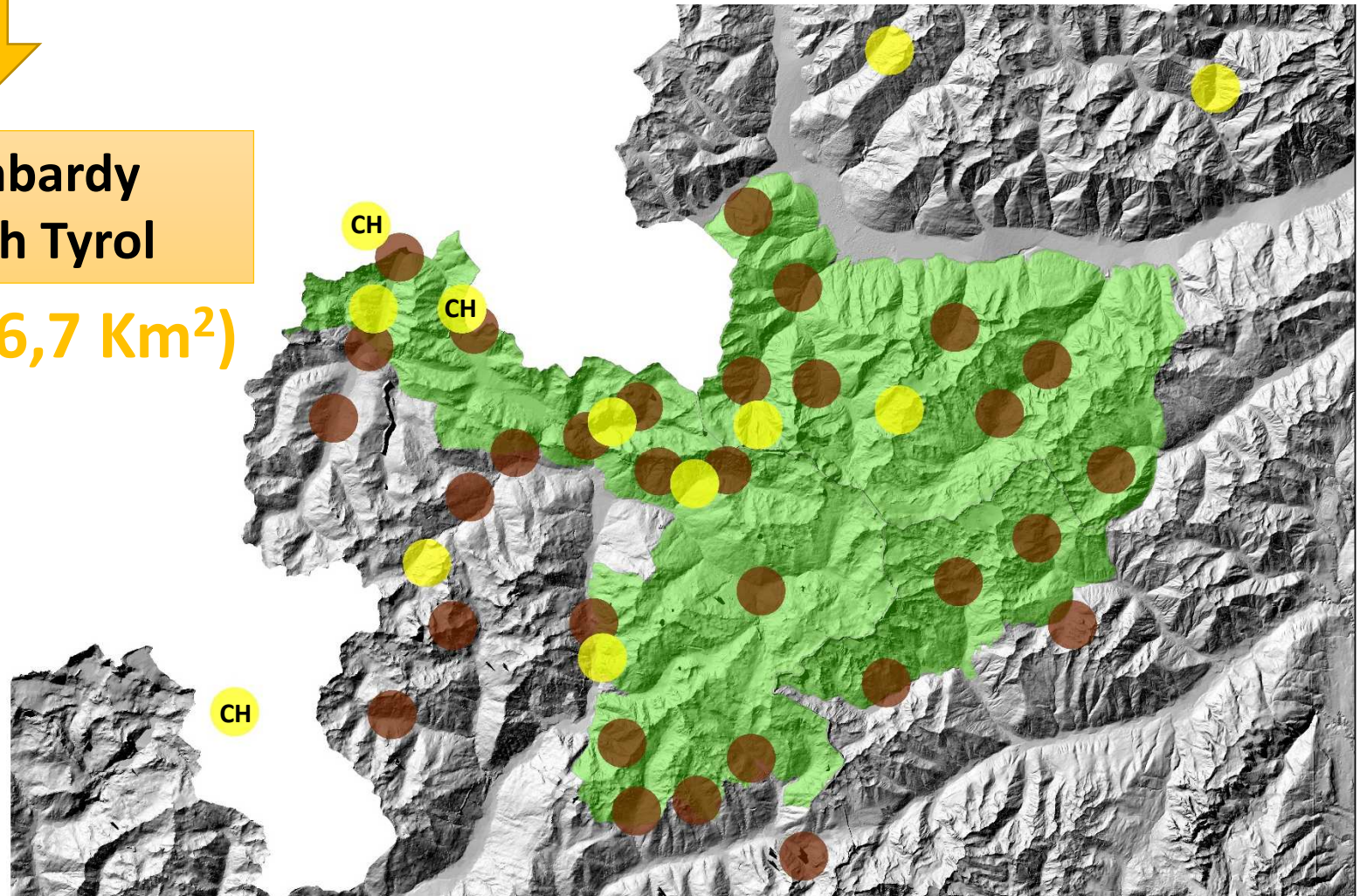
**Altitude 1000-3905 m a.s.l.**

**9 BEARDED VULTURE pairs + 34 GOLDEN EAGLE pairs**  
**(1 pair/67 Km<sup>2</sup>)**



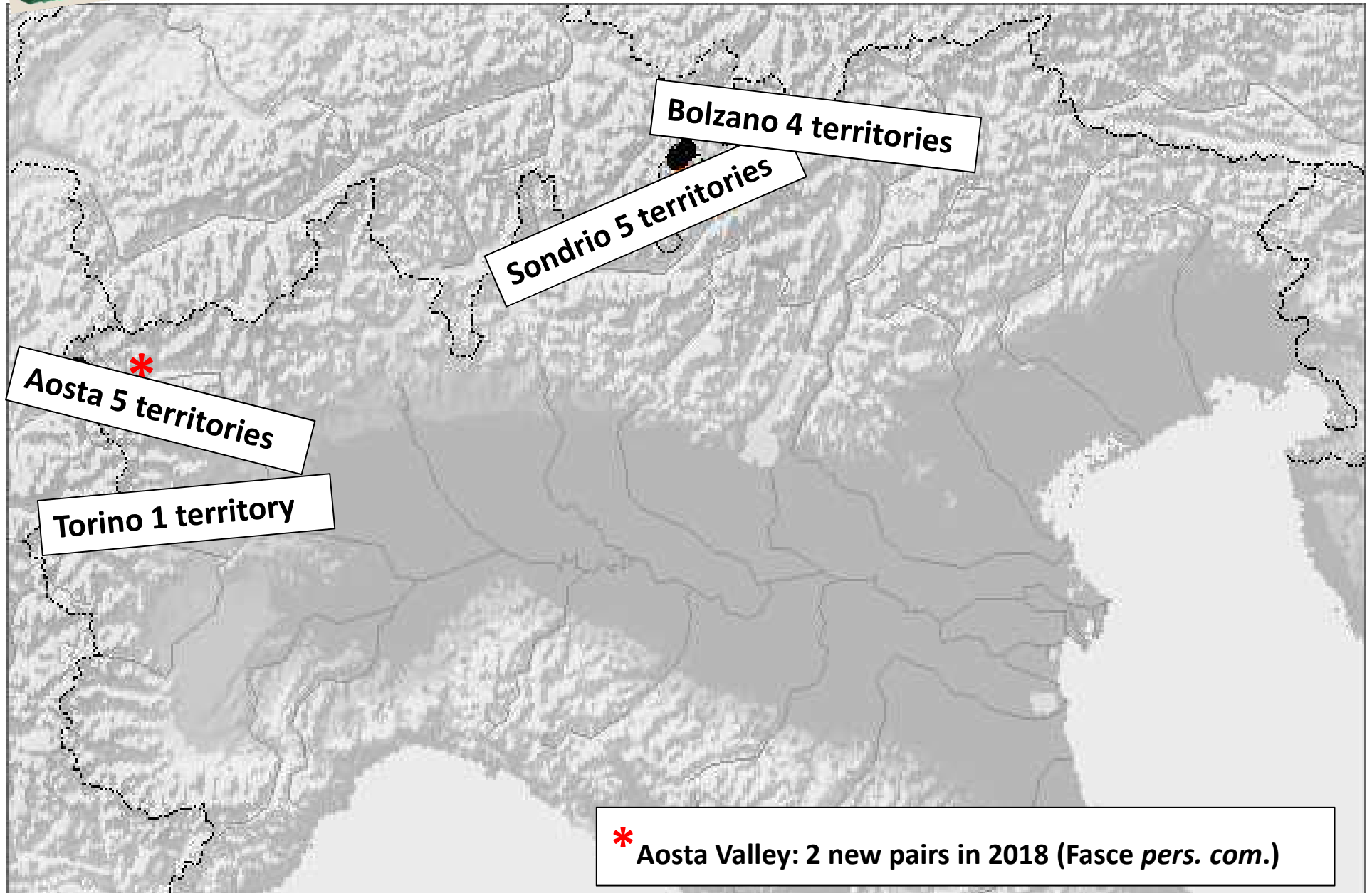
**5 in Lombardy**  
**4 in South Tyrol**

**(1 pair/266,7 Km<sup>2</sup>)**





## Italy: 15 territories (updated to 2018)



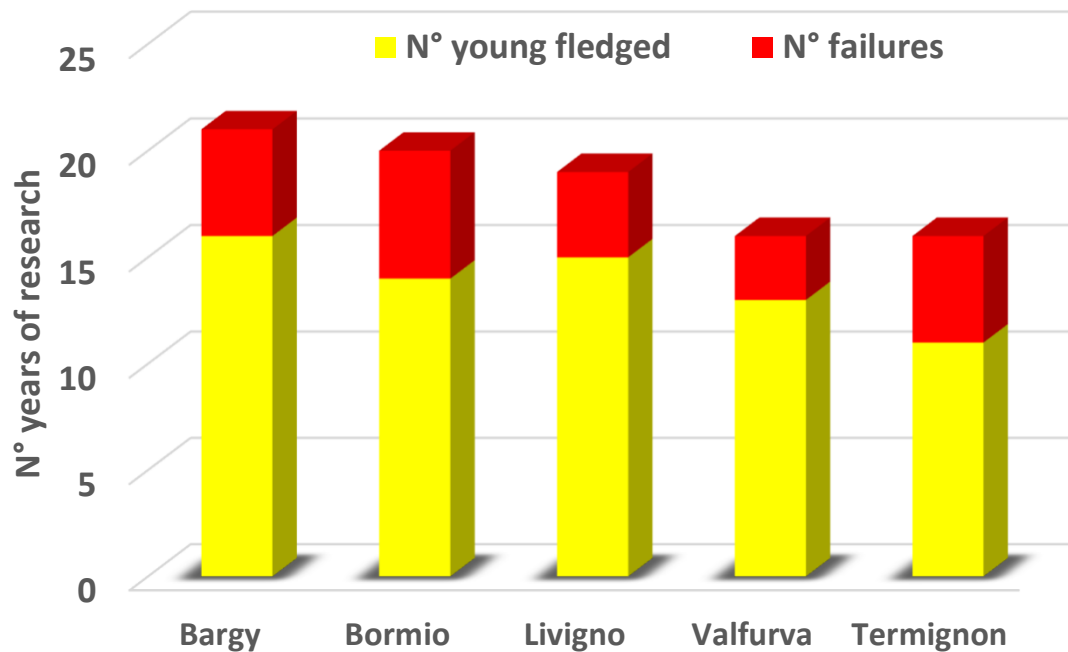
# BREEDING PARAMETERS AND PRODUCTIVITY

1998 - 2017		
Monitored pairs	CPT	<b>70</b>
Pairs with laying	CPD	<b>64</b>
Productive pairs	CPS	47
N° fledged juvv	J	47
Breeding success	J/CPD	<b>0,73</b>
Productivity	J/CPT	0,67
% laying pairs/total pairs	CPD/CPT (%)	<b>92,8</b>
% successfull pairs	CPS/CPT (%)	68,1
% successfull pairs/laying pairs	CPS/CPD (%)	<b>73,4</b>

anni	Bormio	Livigno	Valfurva	Planeil	Foscagno	Senales	Martello	Ortler	Sondalo	TOT
2017	1	1	1	failure	no	*	1	1	**	5
2016	1	1	1	failure			1	failure		4
2015	1	failure	1	no			1			3
2014	failure	1	1	no		no	*			2
2013	failure	1	1	failure		failure				2
2012	failure	1	no	*	no	*				1
2011	1	1	1		1**					4
2010	failure	1	1	*						2
2009	1	failure	1	*						2
2008	1	1	failure							2
2007	1	1	1							3
2006	1	1	1							3
2005	1	1	1							3
2004	1	1	1							3
2003	failure	1	failure							1
2002	1	1	1							3
2001	1	failure	*							1
2000	1	1								2
1999	failure	failure								0
1998	1	*								1
1997	*									0
N° young fledged	14	15	13	0	1	0	3	1	0	47
N° years of research	20	19	16	5	3	2	3	2	0	70
Productivity (J/CPT)	0,70	0,79	0,81	0,00	0,33	0,00	1,00	0,50	n.a.	0,67

**Legend**

1	one fledging
failure	hatching failed
no	no breeding
*	nest building
**	nest not found

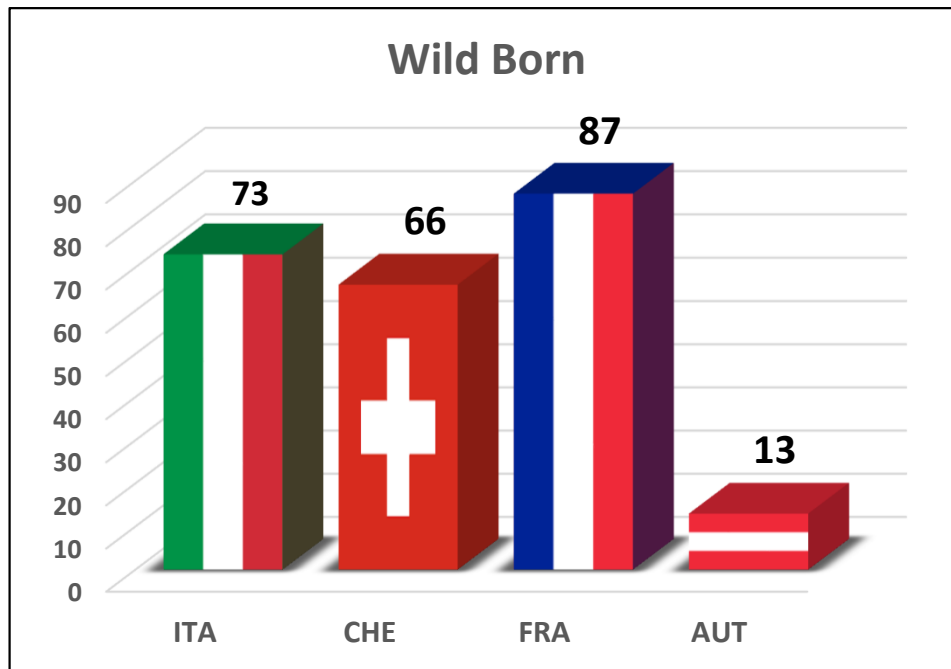


The 3 Italian historical pairs (Bormio, Livigno and Valfurva) and 2 French pairs (Bargy and Termignon), are **the most durable and productive in the Alps**

Since 2013 the male of Termignon pair is **Stelvio W02**, born in Val Braulio in 1998.

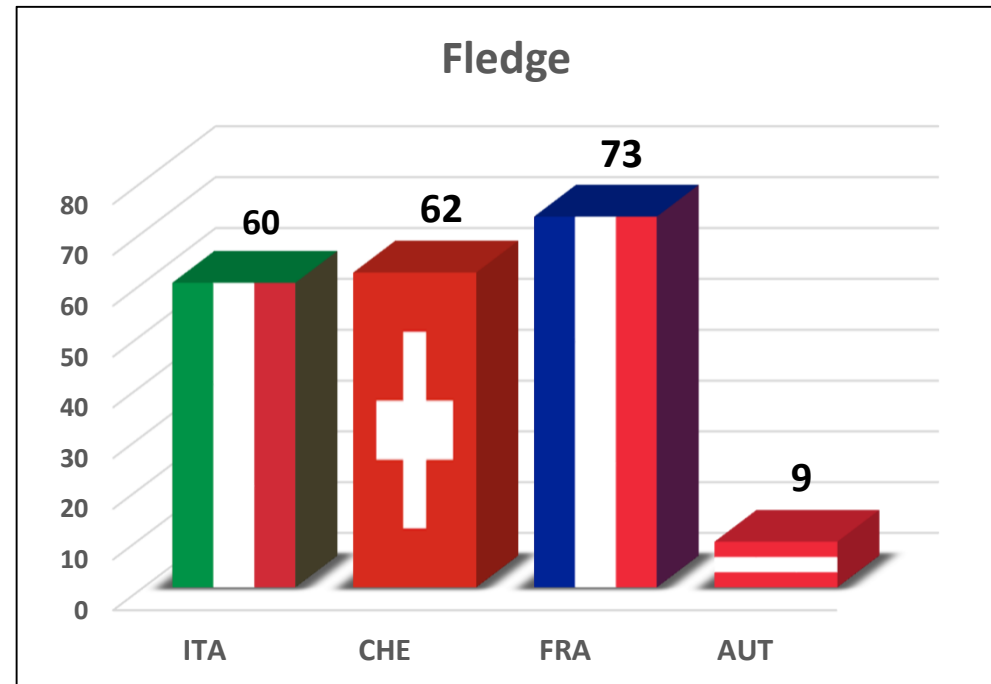
**Cic & Moische (Livigno pair)** live together since 1999. (27 and 25 years old!)

	ITALY			FRANCE	
	Bormio	Livigno	Valfurva	Bargy	Termignon
N° young fledged	14	15	13	16	11
N° years of research	20	19	16	21	16
Productivity (J/CPT)	0,70	0,79	0,81	0,76	0,69

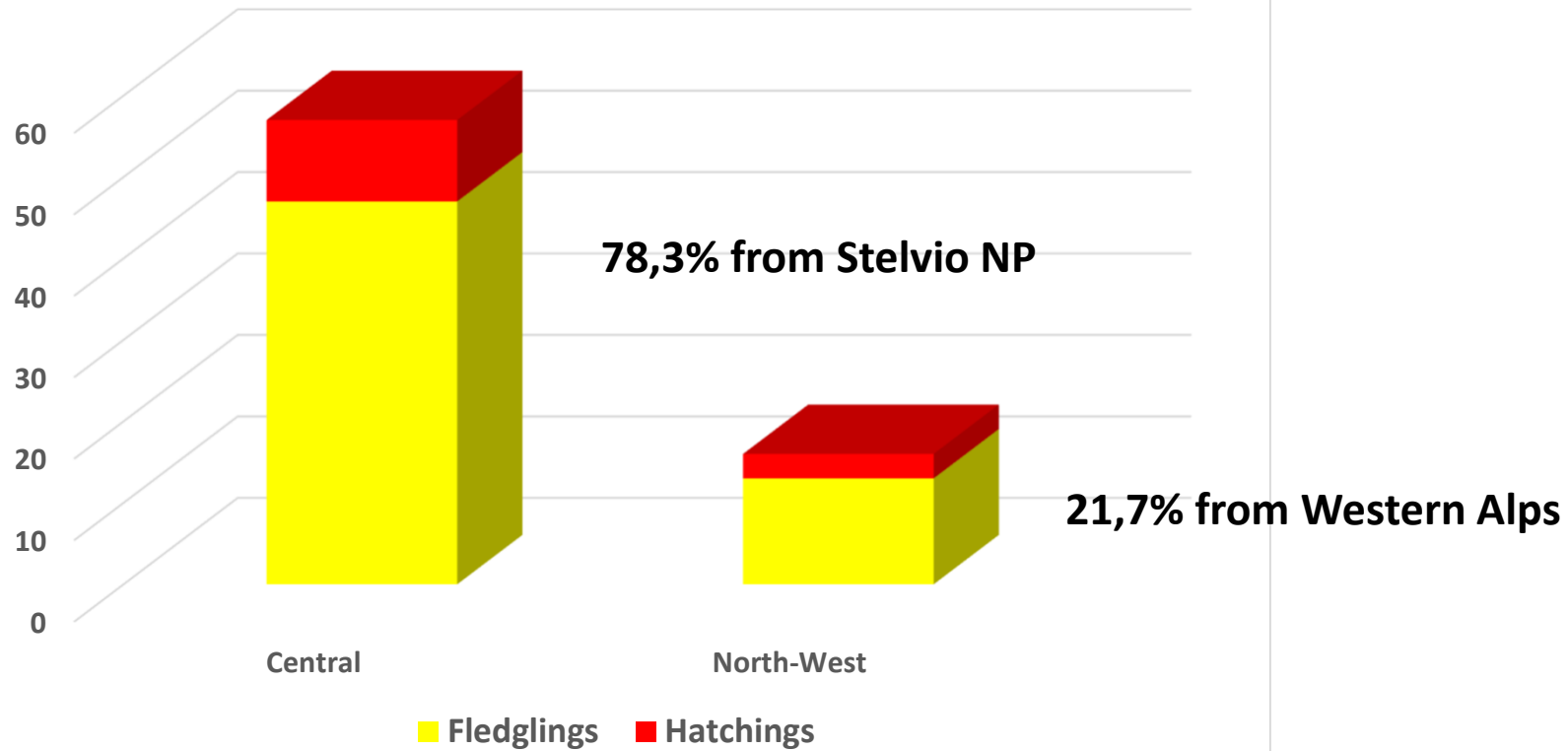


Country	Wild born	Fledglings	Fledging rate
Italy	73	60	0,82
Switzerland	66	62	0,94
France	87	73	0,84
Austria	13	9	0,69

**29,4 %** of juveniles bearded vulture that fledged in the Alps were born in Italy (updated to 2017)



## Italian Alps



Italian Alps	Hatchings	Fledglings	Fledging rate
Central	57	47	0,82
North-West	16	13	0,81



Una semplice equazione

## Starting from the principle

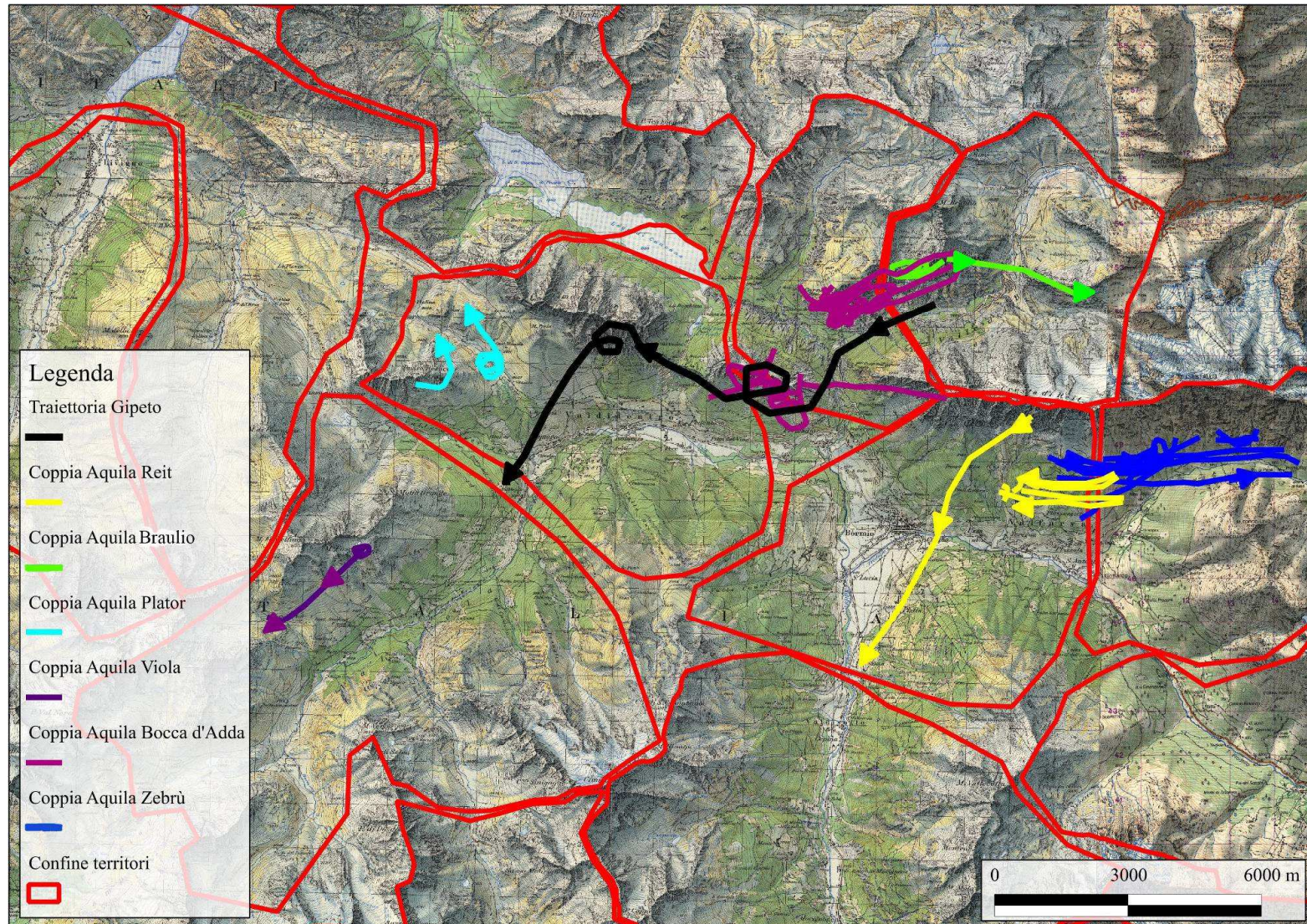
What would the world be without Nutella?



«Cosa *ne* sarebbe del Gipeto in Italia senza questi due Parchi Nazionali?»

**Stelvio NP:**  
*from source area to field research lab*

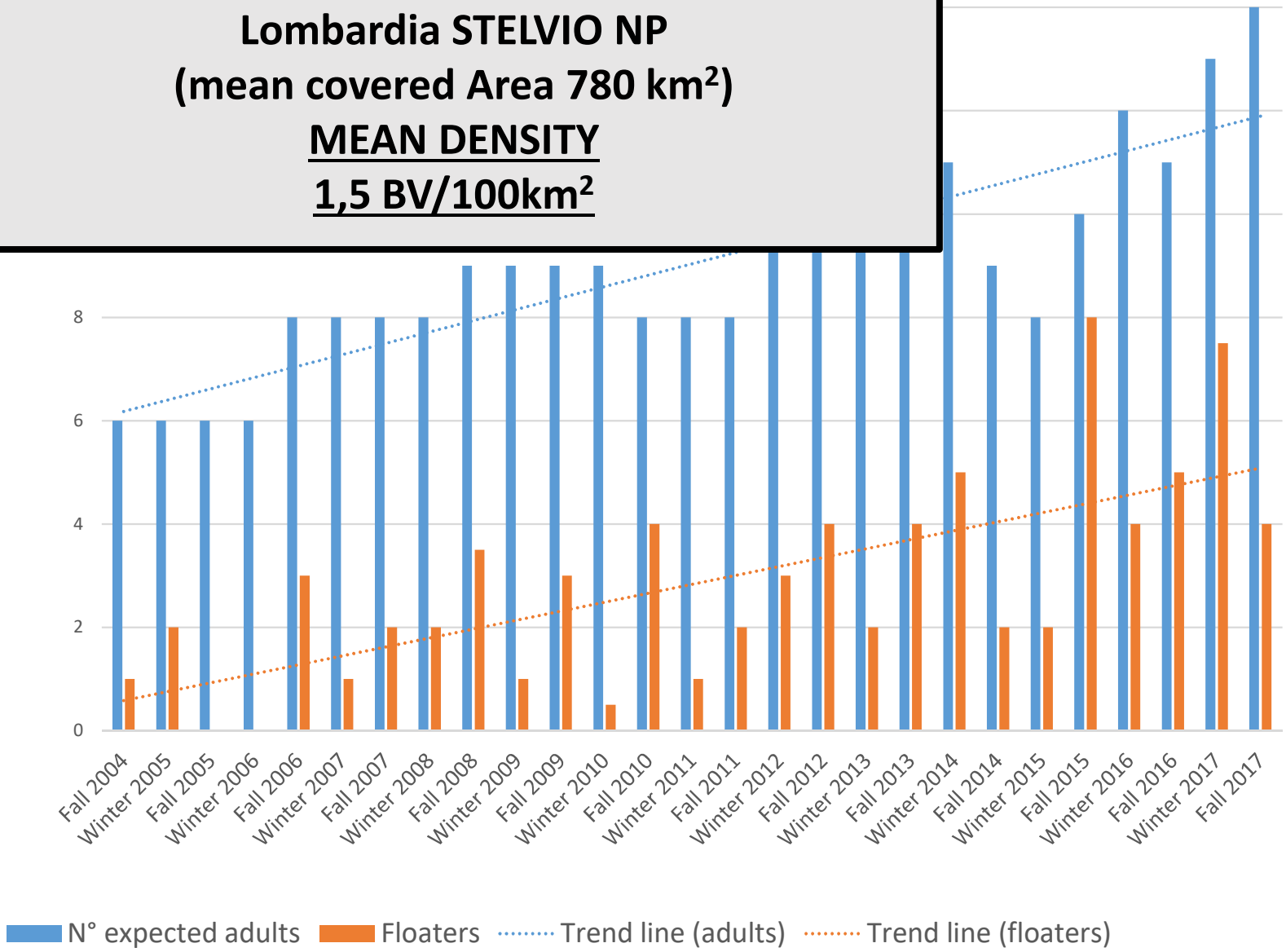
# Contemporary census in Stelvio NP: Golden Eagle and Bearded Vulture trajectories





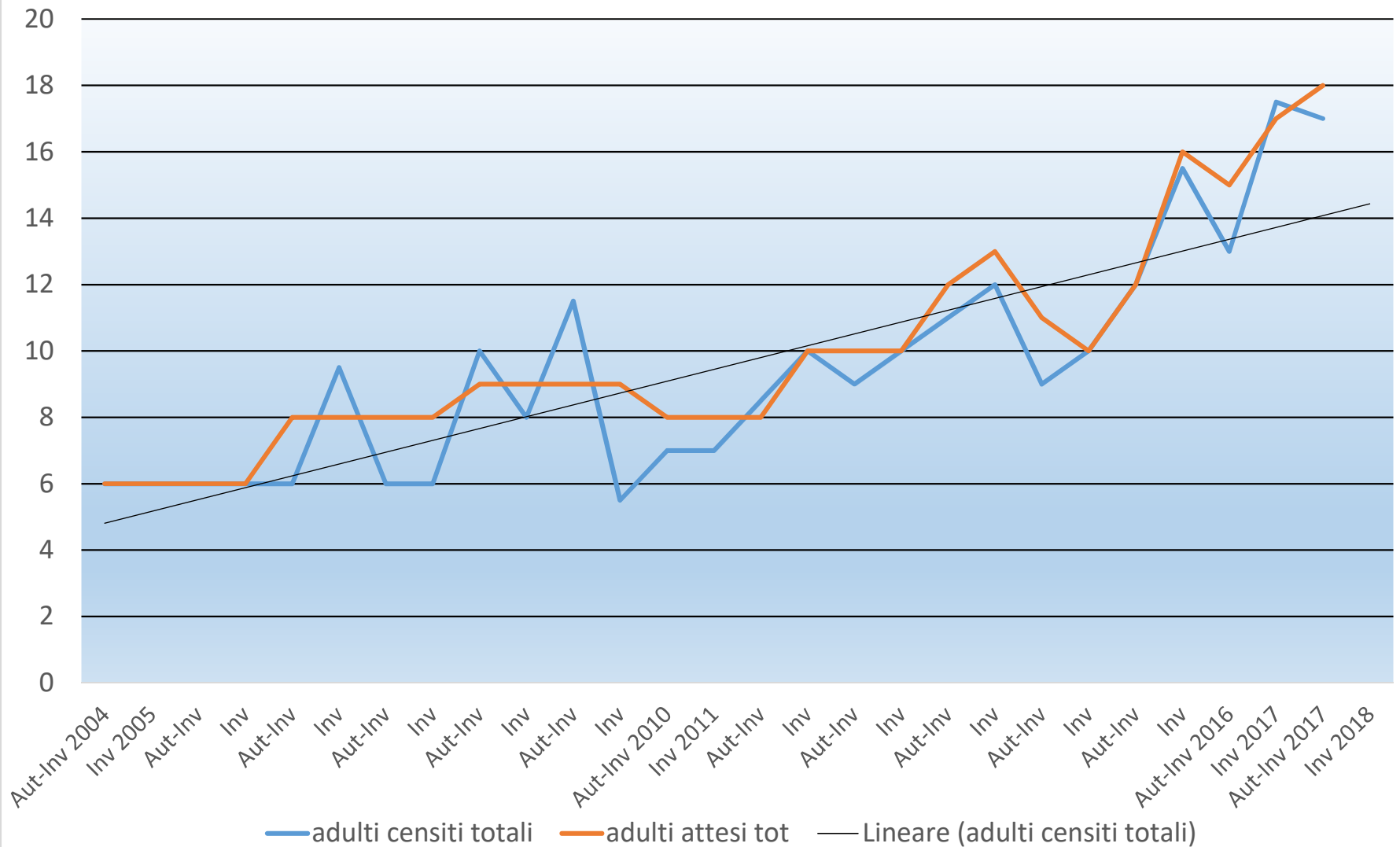
## 27 Contemporary Censuses 2004 - 2017

**Lombardia STELVIO NP**  
**(mean covered Area 780 km<sup>2</sup>)**  
**MEAN DENSITY**  
**1,5 BV/100km<sup>2</sup>**



# EFFICACY of SIMOULTANEOUS CENSUSES on 1,076 km<sup>2</sup> (S.D. = 226.6)

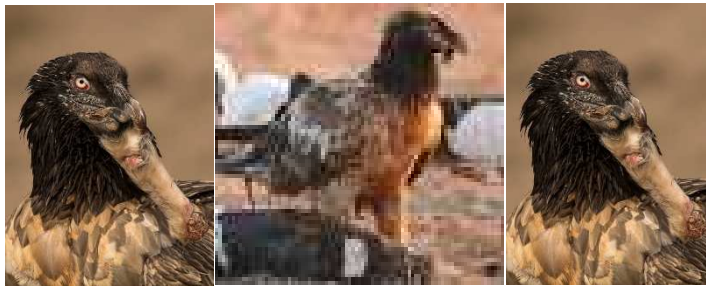
## Trend of censused and expected BV adults in Lombardy/South Tyrol Stelvio NP



2 Censuses/year to photograph  
the temporary density of floaters  
(seasons)



Lombardy Stelvio NP



FLOATERS

FALL = 34.5%

Mean 29.4% floaters

EXPECTED ADULTS



MARCH = 24%

# Temporary density of floaters (periods)

2004 - 2011

14 censuses



FLOATERS

21,5%

EXPECTED ADULTS



The ratio Floaters/Adults  
observed in censuses  
is steadily increasing

2011 - 2017

13 censuses



+



FLOATERS

38%

EXPECTED ADULTS

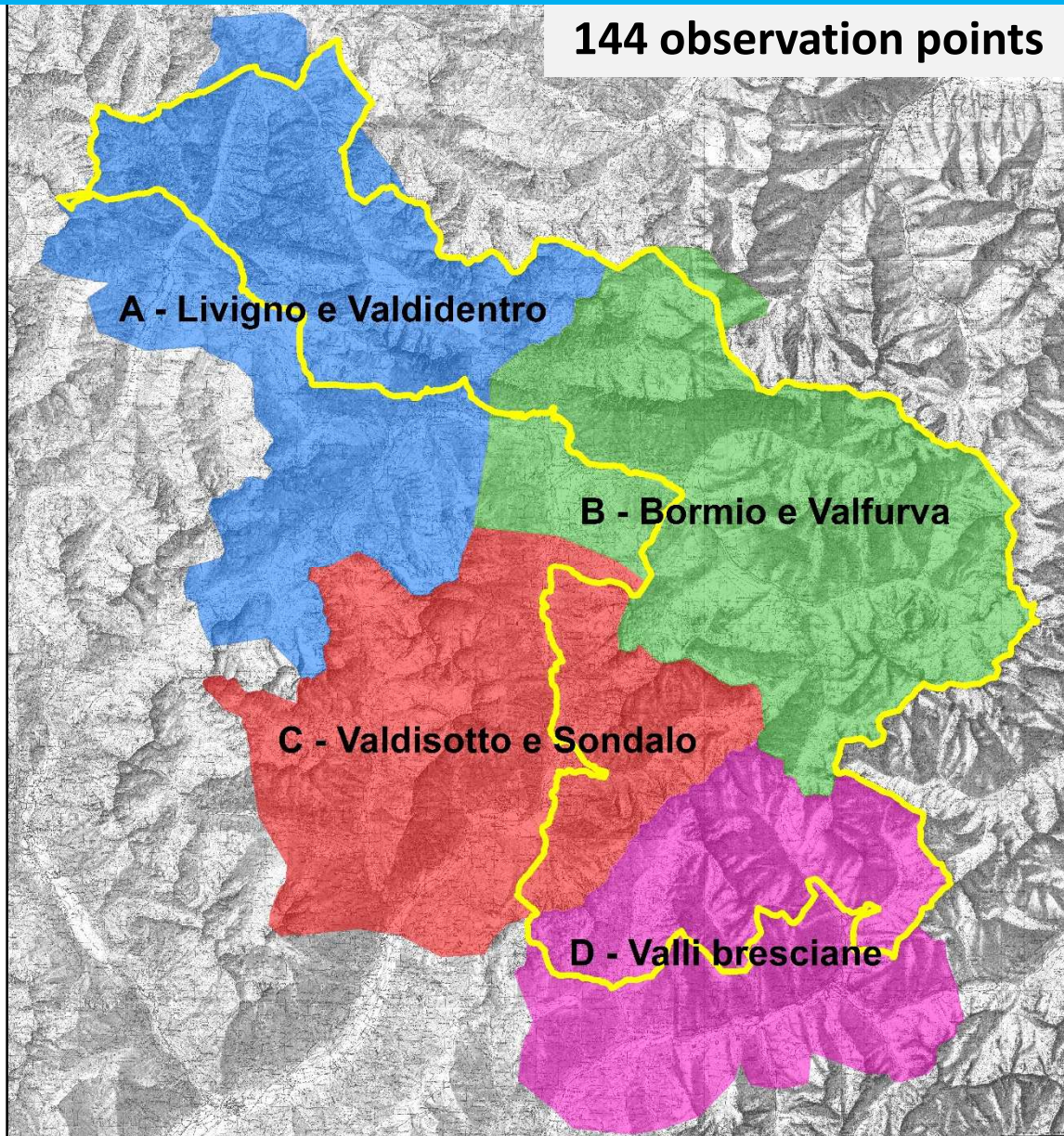


Lombardy Stelvio NP

Around 200 observers/census came from Italy  
to census Stelvio-raptors



# The increasing trend of BV floaters within Stelvio NP has been observed in 1800 h of field monitoring



> 3000 obs of BV and GE

Macro area	BV Frequency (obs / h)	GE Frequency (obs / h)
A	0,64	1,19
B	0,68	1,07
C	0,61	1,22
D	0,08	1,09

2004 - 2014: 0,02 obs/h  
(1 floater each 43 hours)

2015 - 2018: 0,06 obs/h  
(1 floater each 17 hours)

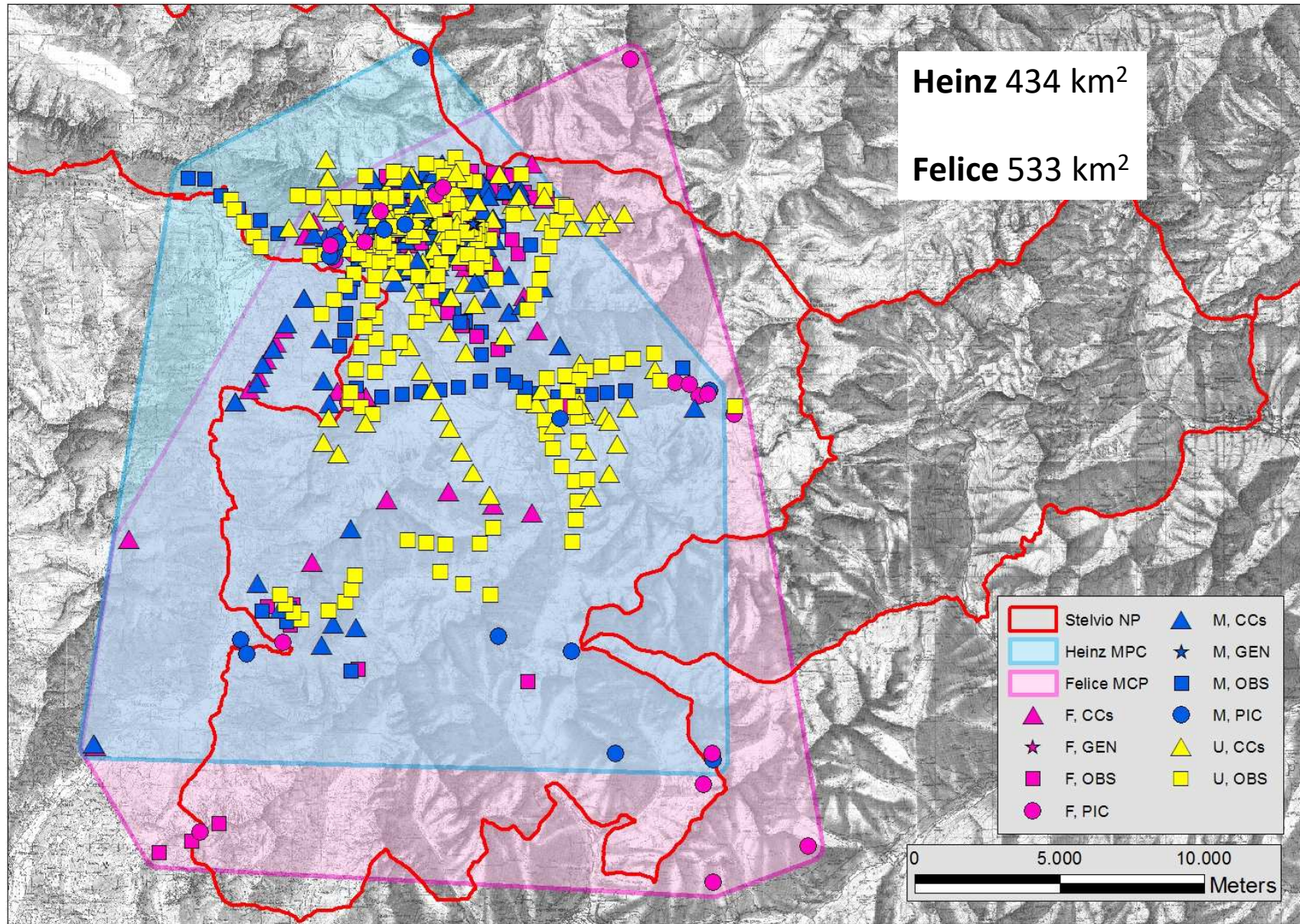
Since 2014 **PHOTO IDENTIFICATION** of the large majority of the territorial birds basing on **PHENOTYPICAL CRITERIA**

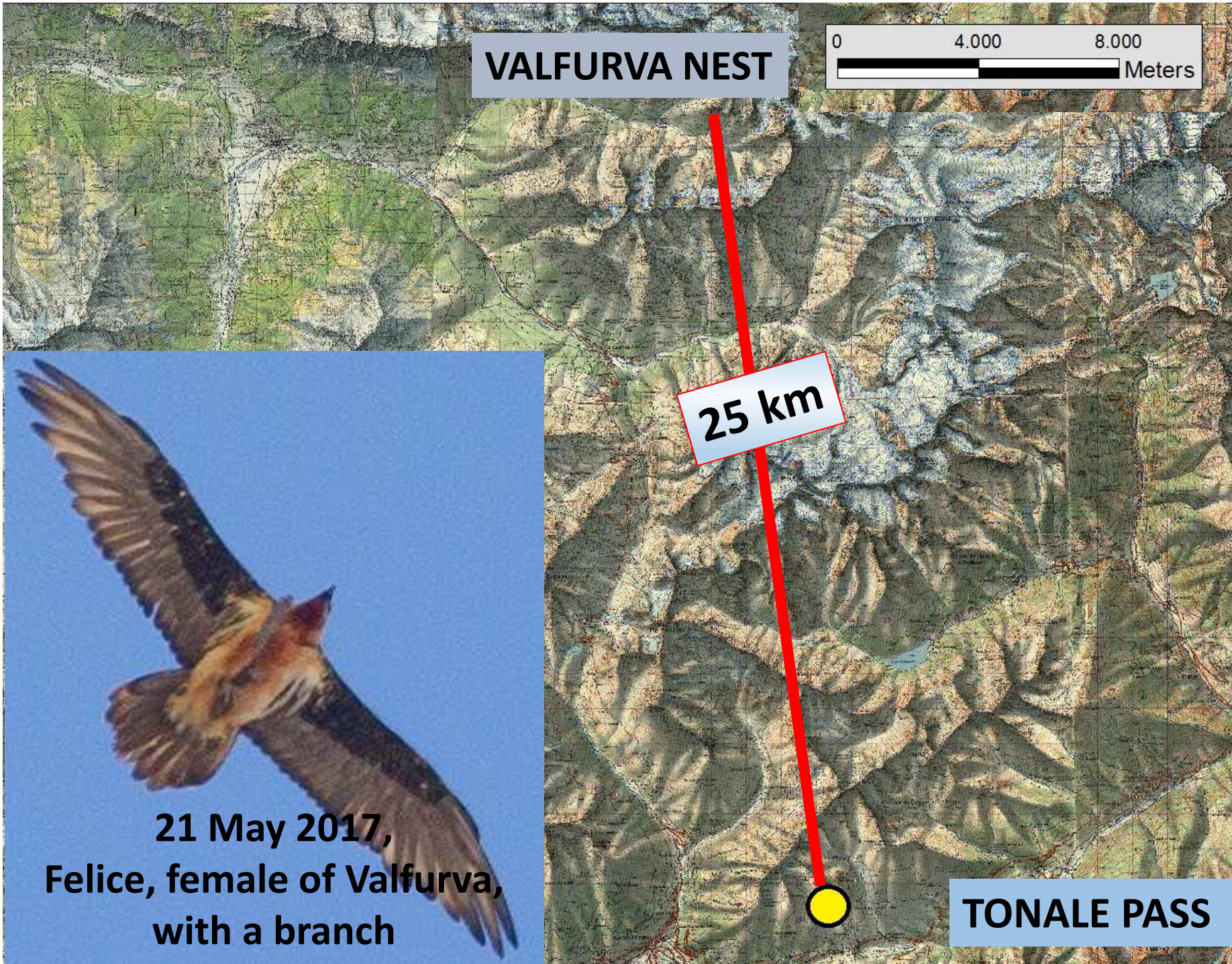
Braulio		Livigno		Zebrù	
 Tell Mar 13- sep17	 Stift Aug 13-aug 17	 Cic Apr 11-oct 17	 Moische Apr 09-oct 17	 Heinz Nov 13-oct 17	 Felice Aug 13-nov 17
Ofenpass		Martello		Ortler	
 Livigno Jun 09-aug17	 Ortler Oct14-feb 17	 Male Mar 14-may 17	 Temperatio Mar 14-jun 17	 Male Feb 16-oct 17	 Jo Feb 16-oct 17
Planol		Sondalo		Foscagno	
 Male Jun 14-apr 16	 Female Jun 14-may 15	 Male Dec 16-jun 17	 Female Feb 16-may 17	?	 Female Sep 17

Senales	
 Male Oct 13	?

# MPC Valfurva 2013-2017: 600 km<sup>2</sup>

24% of these (145 km<sup>2</sup>) outside the protected area







**Valfurva home: Ms Felice and Mr Heinz**

**2016.09.24 10:02:06**

## Fallen Branches below 13 nests



Territory	Mean Length Branches (cm)	N° tot Branches
Foscagno 17	51	8
Livigno 17	19,9	147
Livigno 16	23,7	85
Livigno 15	23,1	122
Livigno 14	44,4	205
Livigno 13	38,1	110
Zebrù 17	22	791
Zebrù 16	27,5	761
Zebrù 15	28,3	80
Zebrù 14	36,4	93
Zebrù 13	42,7	65
Braulio 16	27,9	812
Tantermozza 13	39,75	208
<b>Mean</b>	<b>32,7</b>	<b>3487 (268,2 branches/nest)</b>

BV territory (years)	N° Breeding seasons	Mean Length Branches (cm)	N° total Branches
Livigno (2013-2017)	5	29,8	669
Zebrù (2013-2017)	5	31,4	1790
Braulio (2016)	1	27,9	812
Tantermozza (2013)	1	39,8	208
<b>Sum</b>	<b>12</b>	<b>33,0</b>	<b>2810</b>





***... Why several active nests are huge and striking (eye-catching)?***

- **Direct consequence of biparental input of branches;**
- **The contribution of branches is part of the courtship ritual;**
- **Courtship is also useful for evaluation among the partners of the respective fitness;**
  - **Indicative of occupancy;**
- **Dissuasive value towards floaters and newly formed pairs.**

***Hypothesis NEST as «FLAG MONUMENT»***

This '*message*' may certify the presence of the holder even in his absence and prevents any intruders who, during their experience, have already associated the presence of the nests in good condition at the probability of receiving an attack.

Se Paganini  
non ripete...

«Paganoni»  
purtroppo SI!  
(90 anni dopo)

2002-2004 BERGAMO PROVINCE  
Poaching act against wolf  
with poisoned sheep





***Lea, released in Hohe Tauern NP (A) after the recovery in Italy***



Provincia  
di Sondrio



PARCO  
NAZIONALE  
DELLO  
STELVIO

NATIONAL  
PARK  
STILFSER  
JOCH

***Thanks Hans and colleagues!***

**LA VITA è BELLA,  
ANCHE QUANDO STA PER FINIRE!**



**LIFE IS BEAUTIFUL,  
EVEN WHEN IT IS TO END!**

Mazagg



PARCO  
NAZIONALE  
DELLO  
STELVIO

NATIONAL  
PARK  
STILFSEER  
JOCH

AUTONOME  
PROVINZ  
BOZEN  
SÜDTIROL



PROVINCIA  
AUTONOMA  
DI BOLZANO  
ALTO ADIGE



Provincia di  
Sondrio

**Hundreds of Park rangers, Gamekeepers and volunteers  
involved in the monitoring and in the Contemporary  
Censuses for Stelvio NP.**

**Thanks to  
D. Jenny, K. Bliem, M. Ferloni, I. Armanasco & L. Pedrotti  
for these years.**

