

A comment about the meeting's results

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We summarize in Tab. 1 the results from the presentations of this meeting, and compare them with the results from the First Meeting on the diurnal and nocturnal Italian Raptors, held in Treviso (Fasce & Fasce 2003), when a first estimate about the species consistency in the national territory was attempted. One fact impresses immediately the reader: the Italian population of the Golden Eagle has, since then, greatly increased.

Even outside the Italian borders this population increase is currently ongoing: for instance, in France (Goar 2004), Scotland (Watson 1997, Eaton *et al.* 2007, Hayhow *et al.* in press), Sweden (Tjernberg 1990) and Switzerland (Haller 1988, Jenny 1992). In particular, in Scotland the population has grown by 15% (Hayhow *et al.* in press) in the last 12 years.

All the Authors in this volume agree that this increase is not only apparent, i.e. due to better surveying techniques, but it is an actual increase in territorial pairs.

In almost every region the number of recorded pairs is higher today than the numbers estimated in 2003.

Unfortunately, for several small regions, the comparison of data presented in 2003 is approximative, due to lack of monitoring.

In fact, for example, in the Central Alps, data from the province of Biella and the Sesia Valley are not available today, whilst, in 2003, 33-34 pairs were observed in these areas as well as in the province of Verbano-Cusio-Ossola. While Bionda (this volume) has confirmed the presence of 23 pairs in the Verbano-Cusio-Ossola areas, we may assume that at least a further 10 pairs must occupy the province of Biella and the Sesia Valley. We therefore added these 10 pairs to the number of known and estimated pairs.

In the Eastern Alps, data for Trentino and Alto Adige resulted, in 2003, 115 recorded pairs; today, consistency amounts to 105 (65 in Trentino and 40 in Alto Adige). The complete picture of the distribution and consistency in Alto Adige is not available yet, as Clementi (this volume) re-

marks in his communication, due to the lack of a coherent programme of analysis of the whole territory: the apparent contradiction in data comes likely from that. It seems anyway that in this part of the alpine arc the Golden Eagle does not follow the same rate of increase observed elsewhere in Italy.

In the peninsular Italy, the population seems to encounter a phase of marked increase: the number of pairs has almost doubled, much more than expected.

Also in Sardinia the population has increased considerably, whilst in Sicily the increment is undoubtedly lower. The only Italian region where the Golden Eagle is absent is Apulia, most likely due to the absence of suitable habitat.

The reasons for the present higher density of this species in our country lie, according to all of the Authors, in general, higher food availability, in the increase of the populations of prey species, in the creation of protected areas and in the reduction of illegal persecution (that in several regions is almost null).

Everywhere threats are similar and mostly depend on human activities, especially hobbies that are more and more widespread: climbing, paragliding, photography and so on.

Another threat, detected only recently, is lead poisoning, deriving from ingestion of carcasses of animals killed or wounded by lead shot. In some regions, the relevant authorities have proceeded to fix this situation and discourage the use of this kind of ammunitions, encouraging instead the use of non toxic metals (mostly copper).

The negative effect of afforestation, caused by the abandonment of grazing and farming, is controversial: some Authors minimize its impact on the Golden Eagle, others think it is a limiting factor. The Golden Eagle is increasing all over our country, in spite of the fact that open areas are decreasing: this appears to be in contrast with the negative effect ascribed to this factor.

The total numerical consistency of the Italian population is questionable, because data on floating individuals are missing from almost everywhere.

In Lombardy a commendable effort has been made to evaluate the number of floaters (Bassi *et al.* this volume):

however, the lack of data on mortality and hatching rate make their conclusions quite unproductive. If the fraction of floaters amounts to about 30% (Fasce 1984), it is likely that the Italian population today consists of at least 1500-1600 individuals.

Table 1. Known and possible pairs in 2003 and 2016 of Golden Eagle breeding population in western, central and eastern Alps, northern, central and southern Apennines and islands.

Zone	2003		2016	
	known pairs	possible pairs	known pairs	possible pairs
Ligurian Alps	6	7	7	9
Province of Cuneo	33	34	44	44
Province of Turin	46	48	58	60
Aosta Valley	44	45	59	60
Western Alps	129	134	168	173
Lombardy	25 ¹	30 ¹	68	84
Verbano-Cusio-Ossola	21	22	23	24
Sesia Valley and province of Biella	12	12	12 ²	12 ²
Central Alps	58	64	103	120
Veneto	45	48	45	53
Trentino	56	60	65	70
Alto Adige	59	64	40 ³	67
Friuli-Venezia Giulia	25	35	35	38
Eastern Alps	185	207	185	228
ALPS	372	405	456	521
Liguria, Tuscany, Emilia-Romagna	20	23	32	40
Northern Apennines	20	23	32	40
Umbria and Marche	13		18	25
Latium	7	8	11	13
Abruzzi			23	24
Central Apennines	20	36	52	62
Campania	2	3	3	3
Basilicata			1	3
Calabria	5	6	4	4
Southern Apennines	7	10	8	10
PENINSULAR ITALY	47	69	92	112
Sicily	15	17	17	21
Sardinia	41	53	57	70
ISLANDS	56	70	74	91
ITALY	475	544	622	724

¹ Data after Tosi & Pinoli in Bricchetti & Fasola (1990).

² Non updated data

³ Census not completed

The knowledge of the age classes of the territorial birds has much improved, as in many studies the age of partners of territorial pairs has been evaluated: it emerges that, for instance, in the Western Alps the percentage of mixed pairs, i.e. pairs formed by an adult bird and a sub-adult or an immature, is about 6% (Fasce *et al.* this volume); in the recently-monitored Scottish population, this percentage corresponds exactly to the one registered in the Western Alps (Hayhow *et al.* in press).

In the Northern Apennines, this percentage is equal to 16% (Nardelli this volume).

It is often debated whether a higher percentage of sub-adult/immature partners correspond to a healthy population or the opposite: in fact, this value should be considered together with the mortality rate (that is unknown for this population). Indeed, in the presence of a low mortality rate, a high number of mixed pairs could originate from an increase in productivity and could also mean an expanding population; on the contrary, if the mortality rate is high, the presence of a large amount of mixed pairs could mean that the population is crossing a remarkable stress phase, because not enough young birds are reaching the reproductive age to adequately replace the losses of adult birds.

The relatively high number of mixed pairs in the Northern Apennines, where productivity is quite high (0.76: Nardelli this volume), could, in our opinion, be actually ascribed to the second possibility, i.e. to a population that is remarkably expanding, whilst in the Western Alps 6% of mixed pairs could be ascribed to the normal biology of the species, as this fraction was almost constant during the 45-year surveys.

Productivity (number of fledged young/monitored pairs per year) has been evaluated in many regions, even if with different methodologies, in particular the duration of surveys.

Although it is not possible to directly compare the productivities reported in this volume with those published in 2003 (Fasce & Fasce 2003), because the study areas do not have the same boundaries of the previous surveys and also the duration of monitoring are different, it seems that this parameter has a general negative trend, as registered also in Scotland (Hayhow *et al.* in press). Anyway, it has an oscillating trend in every region.

Explaining this alternation of good and bad productivity years with dependence on meteorological factors does

not appear to be completely convincing and has not been demonstrated yet.

Also the presence of floaters, disturbing the pairs during the breeding period, and causing brood failures (Haller 1982), is questionable (Fasce & Fasce 2003), because in areas, where the population density is high (for instance the Gran Paradiso National Park), productivity is higher than in regions with lower density.

In our opinion, the most convincing hypothesis, but not necessarily the only, is the one we sketched in our study (Fasce *et al.* this volume): this alternation originates from a density-dependent factor, originated not from the presence of floaters, but by the occurrence during the pre-laying period of the young of the previous year, which would affect egg-laying. Indeed we observed a parallel trend in the number of pairs laying eggs and productivity, thus supporting the conviction that the negative factor occurs before the egg-laying period.

REFERENCES

- Brichetti P. & Fasola M., 1990. Atlante degli uccelli nidificanti in Lombardia 1983.1987. Ed. Ramperto, Brescia.
- Eaton M.A., Dillon I.K., Stirling-Aird P.K. & Whitfield D.P., 2007. Status of Golden Eagle *Aquila chrysaetos* in Britain in 2003. *Bird Study* 54: 212-220.
- Fasce P. & Fasce L., 1984. L'Aquila reale in Italia - Ecologia e conservazione. LIPU Serie scientifica, Parma, 66 pp.
- Fasce P. & Fasce L., 2003. L'Aquila reale *Aquila chrysaetos* in Italia: un aggiornamento sullo status della popolazione. Pp. 10-13. In: Mezzavilla F., Scarton F. & Bon M., Atti 1° Conv. Ital. Rapaci diurni e notturni. Avocetta 27.
- Goar J.L., 2004. Aigle royal *Aquila chrysaetos*. Pp. 96-99. In: Thiollay J.M. & Bretagnolle V. (eds), Rapaces Nicheurs de France, Distribution, Effectifs et Conservation. Delachaux et Niestlé, Paris.
- Haller H., 1982. Raumorganisation und Dynamik einer Population des Steinadlers *Aquila chrysaetos* in den Zentralalpen. *Orn. Beob.* 79: 163-211.
- Haller H., 1988. Long-term trends in the Swiss breeding population of the Golden Eagle *Aquila chrysaetos*. *Orn. Beob.* 85: 225-244.
- Hayhow D., Stuart B., Stevenson A., Stirling-Aird P.K. & Eaton M.A., in press. Status of Golden Eagle *Aquila chrysaetos* in Britain in 2015. *Bird Study*.
- Jenny D., 1992. Reproduction and regulation of density in an alpine population of Golden Eagles *Aquila chrysaetos*. *Orn. Beob.* 89: 1-43.
- Tjernberg M., 1990. The Golden Eagle *Aquila chrysaetos* in Sweden: distribution, population and threats. *Vår Fågelvärld* 49: 337-348.
- Watson J., 1997. The Golden Eagle. T. & A.D. Poyser, London.

