

STUDIO TECNICO DR. ANTONIO BORGIO  
NATURALIST & ANIMAL TECHNICIAN

# DIURNAL BIRDS OF PREY AND FREE FLYING SPORTS IN THE GRAPPA MASSIF PRELIMINARY STUDY 2010

Nesting species in Annex I dir. 79/409/CE

**This study has been supported by ASCOM Servizi S.p.A. with a grant from the *Federazione Italiana Volo Libero*.**

Area within SCI IT3230022

Contents

1. AIMS	2
2. METHODS	4
2.1 MONITORING OF THE SPECIES	4
2.2 MONITORING AND ANALYSIS OF INTERACTIONS WITH UNPOWERED FLIGHT	4
3.1 BLACK KITE [ <i>MILVUS MIGRANS</i> ]	5
3.2 SHORT-TOED EAGLE [ <i>CIRCAETUS GALLICUS</i> ]	6
3.3 <i>Honey Buzzard</i> [ <i>Pernis apivorus</i> ]	9
3.4 GOLDEN EAGLE [ <i>AQUILA CHRYSAETOS</i> ]	11
3.5 PEREGRINE FALCON [ <i>Falco peregrinus</i> ]	17
4 CONCLUSION	20

**Cover photo: Adult Honey Buzzard (A. Borgo)**

## 1. AIMS

All human recreational activity has an impact on the environment or some of its elements. An a priori hypothesis regarding the impact of this activity can be formulated, based on knowledge that has surfaced in similar situations and in full consideration of the time limits of this analysis. The impact of human activity can indeed undergo evolution, that is a directional modification, which results from the regulatory systems of the source of the impact (human mitigation regulations deriving from experience or local features) and, above all, from the environmental elements' ability to respond.

The impact of flight activity on fauna in the ecosystem, represented by the disturbance caused by the presence or passage of hang-gliders and paragliders, has certainly been well demonstrated in alpine countries with the greatest tradition of unpowered flight and impact mitigation (France, Switzerland, Austria and Germany), with reference to target species such as large birds of prey (Golden Eagle, Griffon Vulture, Lammergeier) and Alpine Galliformes or chamois locally.

Flying activities began over the southern slopes of the Grappa Massif, and in particular over the south-western slopes, about thirty years ago. In the first few years local ornithologists Martignago and Silveri highlighted several cases of Peregrine Falcon and Black Kite nesting sites being abandoned, evidencing an effective impact of flying activities during the first period (decade) of the "rise in popularity" of the phenomenon. There are however no recent studies on the extent of the impact of flying activities in today's phase of "normalization" of the phenomenon, in which any impact should be considered "definitive", or indeed operational. The Grappa area has actually provided a daily backdrop for flying activities for thirty years, affected by an exceedingly high daily and annual presence, where paragliders and hang-gliders are nowadays to be absolutely expected to be present. The same local ornithologists Martignago, Zangobbo and Silveri, who in the second half of the 90s had already logged the presence of five pairs of Peregrine Falcons nesting in the Grappa Massif, were already signalling this, an evident sign that animals were already acclimatized to the continuing presence of foot-launched rig.

For this reason two preliminary considerations are to be made.

The first is that birds and mammals have the capacity for learning, or rather modifying their own culture in relation to their own previous experiences. Therefore a disturbance which does not cause direct damage (nuisance, voluntary disturbance) can be metabolised by the animal. This is obviously the case of Buzzards and Carrion Crows who have learnt to use roads (an initial source of disturbance) to their advantage as a source of food (the carcasses of roadkill).

The second is that for an animal a foot-launched rig is not a man, but an unknown species which it must learn to recognize and which ought not initially be trusted, given its size. At the same time, a car driving along a road is not the human species, but a different, innocuous species which should only be mistrusted when it stops, since the static car "produces" human beings.

These two considerations may help lay readers or readers who perhaps cling to evidence of the initial impact of flying activities, to have a naturalistic approach to the problem, shunning preconceived and extremist stances that on the one hand do not recognize the daily effort to adapt that man asks of nature and nature performs, and on the other hand they contrarily expect as it were some given right of predominance over creation.

The aim of this preliminary study is therefore to assess the current situation and define the degree of impact that flying activities have on the zoocenosis in the area today. In that regard it is worth remembering that the area is both SCI (Site of Community Importance under the European Habitats Directive 43/92/CE) and SPA (Special Protection Area under the European Wild Birds Directive 79/409/CE) and as such is subject to a Management Plan (currently being drawn up) which regulates activities therein, aimed at managing the maintaining or obtaining a "good state of preservation" of species and habitats.

The study concentrates on diurnal birds of prey of community interest (those listed in the Birds Directive), as they are recognised as valid bio-indicators of anthropic disturbance and quality of habitat. The aims of this first season of study was to define the presence, distribution and abundance of the various species in the areas affected by flying activities in the lower foothills of the Grappa Massif, in order to highlight any distributive gaps or other hints of impact that can probably be linked to flying activities, and the monitoring of the frequency of aggressive interaction with foot-launched rigs. Lastly, the final aim was to define the distribution of suitable Golden Eagle nesting areas throughout the entire SPA, so as to obtain a picture of the most important areas for conservation (and increase) of the species' population.

This report does not contain maps bearing distributive data of the species. This is actually sensitive information whose diffusion, even accidental, might compromise conservation of the local population. The texts however contain the current distributive data required to comprehend the situation with reference to the various sectors considered. A cartographic representation would not increase the information available to its holder. It is trusted that clients will share the same discretionary approach adopted. If this is not the case, large scale maps can be provided (no greater than 1/100.000).

## **2. METHODS**

### **2.1. MONITORING OF THE SPECIES**

The distribution of nesting pairs (territorial) was monitored between the end of March and the end of July 2010, over 18 days of field work. Observations were conducted from five observation points between Solagna and Paderno in open areas of the Massif mountainside. Using appropriate optical instruments - binoculars (7x42) and monoculars (20-60 x 80) – it was actually possible to cover large sections of the study zone (3-4 km radius) from each of these points, with a working observation front of even greater than 7km for movements of the larger species (Short-toed Eagle and Golden Eagle).

The location of nesting territories was defined either by direct observation of the nest (Peregrine Falcon) or via observation of the mating or territorial dance and transporting material for nest construction. The nesting territories were always defined as areas, even in the cases where the nest was identified. Birds of prey often change nest from one year to the next, and monitoring of one year alone may therefore bring a substantial underestimation of the vastness of the true nesting territory of a pair. In that sense, the Peregrine Falcon's nesting territory was defined as the group of rockfaces surrounding the nest, which appear suitable for hosting other alternative nesting sites. This kind of approach was considered more cautious, also for the conservation purposes that this study and its clients are establishing.

The observations were conducted on both weekdays with less intense unpowered flying activity and on Fridays and Saturdays, when there are many more foot-launched rigs in the air in a more widespread area across the massif.

### **2.2. MONITORING AND ANALYSIS OF INTERACTIONS WITH UNPOWERED FLIGHT**

During every outing into the field, attention was focussed on the effects of the presence of flying activities on the behaviour of the birds of prey in the area. In particular, monitoring took place for aggressive behaviour such as stooping the foot-launched rigs or approaches with ritual air display and behaviour denoting a state of tranquillity in the animals, such as remaining on perches and continuing activities they were already involved in. The observations were logged so as to create an organic picture, as species-specific as possible, of the extent of disturbance that flying activities cause to the target species in the observation.

The position of foot-launched rigs circling overhead was mapped on the copy of the Tabacco 1:25.000 map so as to assess species distribution in relation to the areas where flying activities were concentrated. Obviously, considering the number of foot-launched rigs, their prolonged presence when airborne and the fact that the observers were busy monitoring the birds of prey, this mapping was not uniform and standardised in time, but took place mainly during lapses in observing the birds of prey. We believe however that the 200 plus points mapped offer a representative "snapshot" of the phenomenon which is useful for the purposes of this study (refer to map p. 16), even compared with data provided by the "*Vivere il Grappa*" Semonzo Tourist Association.

### 3. RESULTS

#### 3.1. BLACK KITE [*MILVUS MIGRANS*]

##### Brief description

Medium-sized bird of prey, with 1.3-1.7m wingspan. Long, narrow wings, long tail, square when open and forked when closed. The iris is light greenish yellow. In Northern Italy its distribution is concentrated near large bodies of water (lakes and rivers) or those remaining landfills that still contain organic waste.

It is found elsewhere in arid, open areas. It also nests in large roosts where trophic resources are abundant. It feeds on small surface dwelling animals, small carcasses or large insects, dead fish or fish which are easily caught on the surface (it does not dive like the Osprey). This migratory species appears in European nesting sites from mid-March and abandons them from the end of July.

[foto]

Diagnostic shapes for recognition of Black Kite in flight, with forked tail and long, narrow wings. (Photo A. Borgo)

##### Population measured

No evidence of nesting was noted in the survey area. Single individuals were observed in occasional passage between Pove del Grappa and Crespano, along the foothills. From Valstagna the more regular presence of nesting individuals was noted along the Brenta outside of the area affected by unpowered flight.

The lack of signs of nesting in the study area may also be partly caused by the disturbance derived from flying activities, but mostly by the reduction in trophic resources linked to a change in urban waste management and the landfills losing value as a trophic source. Considering the social disposition of the species it is furthermore important to note that the most suitable and important habitats for conservation of this species are located along the mountainous stretches along the Brenta (Valsugana) and Piave rivers, outside the potential areas impacted by flying activities on the Grappa area.

### 3.2. SHORT-TOED EAGLE [*CIRCAETUS GALLICUS*]

#### **Brief description**

Medium to large-sized bird of prey, with 1.7-1.9m wingspan. Long and rather large wings, long tail. It often hovers over one spot in its hunting flight. It has a pale underside with contrasting dark head and throat. It hunts snakes in the open and also craggy, rocky environments, or sparsely wooded or shrubby areas. It nests in forests, selecting conifers (pines) or evergreens (holm oak) where possible. This migratory species appears in European nesting sites from mid-March and abandons them from the end of August.

*Typical colour and shape of Short-toed Eagle. (Photo on [www.Andalucianguides.com](http://www.Andalucianguides.com))*

#### **Population and situation measured (Number, density, movements, interaction)**

The species has been sighted in the survey area with two individuals since the first day of monitoring (31st March). The sightings took place throughout the entire period. The large size of this bird of prey and its characteristic shape allowed monitoring even from a great distance, thus allowing individual bird movements to be followed. This meant it was possible to ascertain that one single couple was settled in the area between the right riverside of Valle San Felicita and the right riverside of Valle San Liberale, which ranges across the entire flank of the Grappa Massif affected by unpowered flight.

This concurs with the average home range dimensions of nesting couples (25-60 km<sup>2</sup>), and guarantees that the couple can select little-disturbed nesting sites. The Short-toed Eagle is in fact a tree-nesting species and is very demanding in its hunting habitat (which must be sufficiently wide with plenty of snakes and the structural features that permit their capture) but less so regarding its nesting site, which may be located in various types of forest formations, including young high forests or aged coppices (especially with coppice with standards), without particular typological preferences and not requiring ancient or continuous formations.

As a result, arriving in March in a territory where flying activities are already established (on the Southern slopes of Monte Grappa you can fly all year round), the Short-toed Eagle can choose its nesting site in a position suitable for living with paragliders. In that regard it is noted that in similar environments (foothills of Pordenone) the Short-toed Eagle nests in the middle to low foothills, where there is little contact with the flying activities that occur at high altitude or towards the plains, during descent.

[foto]

*One of the hunting habitats of the Short-toed Eagle along the Southern foothills of the Grappa Massif (Photo A. Borgo).*

The impact of flying activities on hunting and therefore on the ability to feed during the reproductive phase may be greater. During the observations it was noted that the Short-toed Eagle uses take off areas and areas used most intensely by paragliders, in the hours before flying activities start, or whenever there are no flying activities locally. These observations seem to indicate that the Short-toed Eagle tends to avoid being near paragliders (also noted for the Peregrine Falcon).

In any case, the fact that the species has been inhabiting an area like this for years signifies that the size of the hunting territory probably gives the couple enough area for "rotated" free hunting.

Furthermore, it must be noted that the Grappa meadows and high grasslands are scarcely (between Cima Grappa and Monte Colombera) or not at all (the remaining area) affected by flying activities.

In the light of the 26 observations conducted, the areas most frequented for hunting appear to be medium to low altitude (under 600 m) Southern slopes of La Gusella, the summit grasslands and the upper half of the foothills stretching from Monte Legnarola across to Monte Colombera and Col Formiga. Patrolling flights were also observed on the mowing meadows typical of the foothills above Borso, Crespano and Paderno del Grappa. The high altitude sightings on the Monte Grappa plateau (less rewarding for observation) are still insufficient for identifying preferential areas on the Monte Grappa plateau.

The Short-toed Eagle has a long life expectancy and every spring, it reoccupies the same nesting territory on returning from its wintering areas. It is equally true that, as is mainly evident for sedentary pairs (such as the Peregrine Falcon, see section § 3.5), nesting couples in the area and their chicks are able to draw experience from one year to the next, learning to recognize that the paragliders are not dangerous. The fact that a pair of Short-toed Eagles has been settled in the flying activities zone for years (at least since 1995: Martignago, personal comment) in itself indicates that flying activities do not have a significant impact on the species, or at least on the “expert” section of its population. In other large species of birds of prey such as the Golden Eagle and the Spanish Imperial Eagle, it has been noted that in subsequent years young birds tend to return to and settle in the areas of their birth and emancipation in the areas of their origins, if vacant spaces are available. This would allow the species to adapt to non-harmful local sources of disturbance exactly like recreational flying.

This year, it was not possible to identify the nest, whose occupation was however likely, considering that in the brooding period (April), two single individuals kept being observed (one of the two partners was recognizable because of a broken remex flying feather) and contemporary sightings of both members of the pair only began from the second half of May. No evidence of successful reproduction was noted.

Since the Grappa Massif is a SPA, some in-depth studies do deserve to be conducted, in order to assess the Short-toed Eagle's use of the space in relation to the distribution of paragliders and on different days of the week (weekdays rather than weekends) and to quantify the reproductive success of the local population.

### 3.3. HONEY BUZZARD [*PERNIS APIVORUS*]

#### **Brief description**

Medium-sized bird of prey with 1.2-1.5 m wingspan. Wings apparently longer and narrower than those of the Common Buzzard and the tail is longer. Small, round head that gives the bird a “pigeon” look. During circling it keeps its wings flat and not with the tips pointing upwards like the Common Buzzard. Close up it can be also recognized by the bars on its underside and particularly on its tail (see photo). The iris is golden yellow. Some almost totally dark specimens (phases) exist. It hunts mainly social hymenoptera (wasps) and raids their nests, but also eats other small prey such as frogs, small reptiles and miniature mammals. During the mating display and nesting territory marking flight it performs ritual aerial displays with characteristic fast wing clapping with wings raised high and straight over its back. In the Alps and pre-Alps it nests in trees in the basically thermophilic forest of the submontane plateau and lower mountainside. This migratory species appears in European nesting areas from mid-April and mainly abandons them in late August-September.

[foto]

*Adult male in flight: they are distinguished by the characteristic dark bands on the flight feathers, parallel bars on the lower part of the wings and yellow iris. (Photo A. Borgo)*

#### **Population and situation measured (Number, density, movements, interaction)**

The study area has environmental features that are highly suited to the species.

The monitoring has allowed at least four pairs to be counted distributed in Valle Santa Felicita, between Col Marmorino (to the east of Santa Felicita) and Valle delle Fagarole (to the east of valle Cornosega), between Monte Legnarola and Val Corpon, on Monte Scalare and Punta Frontale. The number of pairs was established using simultaneous observation of neighbouring pairs and following the movements of the individual subjects. The density of the species (indicative density, given the meager area of calculation at 17.3 km<sup>2</sup>) is 23.1 pairs per 100 km<sup>2</sup> : a very high value if compared against the values given by other studies.

The high density of the species reflects its tolerance to the conspicuous presence of unpowered flight. The Honey Buzzards were observed moving around to hunt even in the low altitude areas near the inhabited areas of the foothills right up to the Northern slopes of Col S. Lorenzo to the north of Mussolente. The pairs are therefore capable of also exploiting the low altitude areas such as the coppices of the medium - low slopes and the edges of the mowing meadows, as well as the areas affected by recreational flying. With the exception of the Valle Santa Felicita and Monte Legnarola-Val Corpon pairs, it seems that the lower slopes of the foothills are used for nesting, which are in effect not affected by recreational flying at either higher altitudes or very far away towards the plains during landing. The optimum density and lack of observation of intimidating behaviour towards hang-gliders or paragliders seem to maybe suggest that flying activities do not have a significant impact on the species, which is probably by now accustomed to and made expert by the experience it has acquired in previous years. The Honey Buzzard is a species with a long life expectancy which tends to return each Spring to the same nesting territory. It is thus likely that the nesting pairs in the area and their offspring are capable, as is mainly evident for pairs of sedentary species (such as the Peregrine Falcon, refer to section 3.5), to accumulate experience from one year to the next, learning to recognize that paragliders are not dangerous. For example, refer to the observation of one male circling (cover photo of this document) along Costa of the Chiesa, 100 m below ten or so paragliders who had launched from the launch point above. The bird of prey was flying around repeatedly patrolling the ground between Costa and Col Marmorino, not caring about the wheeling foot-launched rigs above.

[foto]

*Adult male in flight along the curves of the SP 140 road from Semonzo. (Photo A. Borgo)*

### 3.4. GOLDEN EAGLE [*AQUILA CHRYSÆTOS*]

#### Brief description

Large-sized bird of prey with 1.8 – 2.2 m wingspan, imposing yet agile shape. Long wings, well-formed tail and strong capacity for circling even in high winds. Recognizable when young by the white markings on the centre of the wings and white tail with the exception of the dark distal band. As the bird grows, the white become progressively less marked and usually disappears completely after the fifth year, with the exception of a few feathers that are slower to change.

An eclectic hunter, the Golden Eagle preys on birds and small to medium mammals up to the size of chamois and roe deer fauns and foxes. It can cause adult ungulates surprised in exposed positions to fall or may occasionally prey on adult roe deer, especially if they are hampered by snow. During the winter it feeds mainly on ungulate carcasses, serving as a refuse collector. In summer, it will resort to catching snakes where mammals and birds are less abundant.

Nesting couples occupy their territory stably over the years and all year round. Individuals without a territory move between existing territories in search of vacant positions or settle temporarily and periodically in free areas which are often not suited to nesting.

[foto]

*Adult Golden Eagle in flight, with characteristic long wings and remiges spread out well between one another and the full tail. Note the various shades of brown and ochre plumage. (Photo A. Borgo)*

### **Population measured**

A single observation of subadult Golden Eagle was made in April between Cima della Mandria, where its appearance was heralded by the flight of a small herd of chamois, and Cima Grappa to the north from where it disappeared to the west. The short number of days of monitoring limited the possibility of contact, although this datum is certainly sufficient to confirm the lack of nesting territories along the southern slopes of the Grappa Massif and the most southern section of the left riverside of the Valsugana. To the north of Solagna there is a pair which does not however appear to regularly use the entire southern section of the Massif for hunting.

It is likely that the situation may evolve in the future, with an intensification of birds frequenting the southern sector of the massif, as the progressive establishing of the Chamois population reintroduced into the Massif slowly increases the availability of food and therefore the trophic quality of the area. Habitat quality would further increase if the marmot were reintroduced on the high altitude meadows of the massif.

Experiences already encountered in other areas where nesting pairs of Golden Eagle live alongside recreational flight (one of those is the Nationalpark Berchtesgaden in Germany) have shown that it is possible and advantageous to identify a circle of respect approximately 500m around the nest during the nesting period (from mid March to mid July).

This is certainly a sustainable hypothesis in the case of the Grappa SPA, where potential suitable nesting areas are located mainly outside the flying activities areas and on the southern slopes concerned, to the east of Col Formiga (refer to map on page 15). Even in the most optimistic hypothesis of a pair settling on the southern slopes of the massif in the future, that pair would occupy the entire area alone including the area between Pove del Grappa and Pederobba. Every year only one sector would be precluded, which would for the most part not affect the areas which are most widely frequented by foot-launched rigs (refer to map on page 16).

The continuity and long-term existence of recreational flight in the Grappa region guarantees that any bird of prey “deliberately” makes its selection of nesting sites, or rather in a way which it judges compatible with this coexistence in that there can be no “surprise” effects linked to prolonged suspension of flying activities.

Sites that are less intensely frequented, in which it would be easy to discipline flying activities accordingly, would therefore certainly be selected. On the contrary, or rather in the unlikely hypothesis that a site intensely frequented by foot-launched rigs were to be chosen (as in the case of the Peregrine Falcon), it would be evident that the eagle responsible for the choice would not consider the foot-launched rigs a threat. In this case, flying activities would not necessarily have to be suspended but rather flying activities behaviour would have to be regulated (for example imposing silence with a radius of 500m) and in particular the voluntary approaching of the nest.

### **Potential distribution of Golden Eagle nesting sites**

The Golden Eagle has been pursued by man since the early 70s in the last century when legal protection was sanctioned. Since then the population has gone on increasing along the entire Alpine chain, progressively reaching an equilibrium with the food resources on offer in the territory.

The increase in ungulates, marmots and mesocarnivores (foxes in particular) taking place within the Alpine chain and particularly in its central-east sector, are marking an increase in food resources available to the eagle and therefore sustaining a further increase in the population of this majestic bird of prey.

Such a scenario of population and density may see increased settling of new pairs in the sectors where food resources allow. In this sense, in the management of the territory and activities practised therein, we cannot limit ourselves to simply considering the current distributive situation, we also need to think about the prospective of possible population increase, or rather potential population. This brings us to the need to elaborate models and predictive maps of the areas suited to nesting of the species. This possibility of increase may be the case of the Grappa Massif, where the reintroduced chamois population is beginning to establish itself with a significant population. The Golden Eagle is a territorial species and its territories range from 40 to 130 km<sup>2</sup>.

Considering the size and morphology of the Grappa Massif, it is plausible that three pairs of Golden Eagle may nest in the massif, above all with the continuing growth of the chamois population and possible future release of the marmot into the Grappa area (where it would find ideal habitats and would have a negligible impact on grazing, given the abundance of areas with rocky outcrops selected by the marmot and avoided by cattle).

The predictive map supplied here was obtained using a stratified habitat selection model (MSSH; Borgo, 2010<sup>1</sup>) especially elaborated by the author based on habitat selection patterns measured in an ample study area of the Friulian Dolomites and Carnian Prealps (n=73 nests; Borgo, 2009<sup>2</sup>). The model was applied to the entire regional territory, but that location promises only the picture relating to the Grappa Massif SPA.

The potentially suitable sectors for Golden Eagle nesting in the Grappa Massif SPA are numerous and well-distributed (refer to map on page 15). As a result, each pair has a likely possibility of choosing the least disturbed and most advantageous sections among them in terms of distribution of prey species. In the Massif foothills area (or rather, the area affected by unpowered flight) few, localized sectors are present in the upper Valle Santa Felicita and in the upper Val Cornosega, while suitability increases from Giaron di Calcara and from Monte Colombera to the upper Valle San Liberale. In light of the sensitivity that the Golden Eagle shows towards avenues of penetration on foot, the presence of roads and paths in those sectors certainly reduces the effective possibility of settlements within them. In the Valle San Liberale river basin it would be opportune to refrain from identifying take off points and banning take off for individual foot-launched rigs in order to guarantee an adequately peaceful area for the Golden Eagle, protected from occasional and thus alarming appearance of foot-launched rigs that are out of their domain. In other areas (from Colombera to Santa Felicita) it is not deemed necessary to adopt any regulatory measure since the lesser diffusion of suitable nesting areas and greater concentration of other sources of disturbance (paths, habitations, roads) would however make it improbable for eagles that are not already acclimatized to such sources of disturbance to build and use nests in that sector. Furthermore the proximity of Valle San Liberale does however offer a guarantee that the southern sector of the Massif has sectors suitable for nesting which are not significantly affected by unpowered flight (refer to map on page 16).

A good distribution of areas suitable for Golden Eagle nesting is also noted (moving clockwise) in the entire western sector overlooking Valsugana, mainly between Solagna and Valstagna, where the exposure of the geographical profile appears more suitable.

<sup>1</sup> Borgo A., 2010. VI Convegno Faunisti Veneti. (atti in prep.).

<sup>2</sup> Borgo A., 2009. Aquila reale. "I libri of the Parco" collection, 5. Edizioni Parco Naturale Dolomiti Friulane.

In the northern section of the SPA an optimal concentration of suitable habitats are found in Val dello Stizzon. Finally, various suitable sites are located and scattered throughout the eastern sector of the SPA: Val di Pont, Val Perisella, Val dell'Inferno, Val di Sassumà, Val di Prada, Val Censoi, the southeastern slopes of the Cesaretto and Tomatico mountains, Val Calcino, the upper Ornic river valley (slopes of Punta Zoc, Monte Spinoncia and Porte di Salton).

[foto]

*Immature Golden Eagle in flight, with characteristic white markings on the wing and base of the tail. (Photo A. Borgo)*

Legenda= Key

Idoneità dell'habitat= **Habitat suitability**

**Nulla= zero**

**Bassa= low**

**Media= medium**

**alta= high**

**Confine ZPS= SPA border**

**Habitat idoneo alla nidificazione di Aquila Reale nel settore meridionale del massiccio del Grappa interessato dal volo a vela =**

Suitable Golden Eagle nesting habitat within the southern sector of the Grappa Massif affected by recreational flight

**Carta predittiva elaborata mediante MSSH (Borgo, 2010)**

Predictive map obtained using a MSSH (Borgo, 2010)

**Legenda= Key**

**Confine ZPS= SPA confine??**

**Idoneità dell'habitat= habitat suitability**

**Nulla= ??**

**Bassa= low**

**Media= medium**

**Alta= high**

**Concentrazione di vele= concentration of hang-gliders and paragliders**

**Kernel 35**

**Kernel 36-55**

**Kernel 56-75**

**Kernel 76-95**

### 3.5. PEREGRINE FALCON [*FALCO PEREGRINUS*]

#### Brief description

Large sized falcon with 85-120 cm wingspan. Distinctive in typical pointed wing shape, relatively short tail and the impression of compactness and strength emanating from its flight, especially when it performs its famous hunting stoops with closed wings or on a downbeat, when it can reach speeds of over 380 km/h.

[foto]

*Unmistakeable shape of adult Peregrine Falcon during circling: pointed wings, short tail, compact structure and strongly adapted to high speed hunting stoops (Photo [www.birding.in](http://www.birding.in))*

In the adult the white parts of the throat and breast contrast starkly with the black hood, even from a great distance. In the young bird, the upper parts are brown and the lower parts are cream with brown stripes and the contrast is on the whole less marked. It almost exclusively hunts birds, captured on the wing. It nests in ravines or on ledges of rocky walls, without building a nest, laying its eggs on sediment covering the bare rock. Pairs found in Italy are geographically settled, or rather they occupy their territory all year round for their whole life (even more than 20 years).

The species is strongly capable of adapting to living alongside man (pacific...) and has learned to colonize towns and large cities and agricultural flatlands, nesting on tall structures or buildings. In the mid 90s it was the subject of a release project in Bassano (promoted by the AIR Italian Association of Birds of prey), with the very task of increasing their presence in the old town, as a deterrent to the settlement of doves. The species may often pass unnoticed outside the reproductive period because of its hunting characteristics and the breadth of its living territory.

## Population and situation measured

The Peregrine Falcon is the species which reserved the greatest number of surprises during monitoring, both in terms of nesting population density found, and for its adaptation to recreational flying. In this sense, the Grappa range is probably destined to become a case for learning.

Four pairs are present between Valle Santa Felicita, Valle Cornosega, Monte Colombera and Valle di San Liberale and another is added on the left slope of Valsugana (Campolongo), to the north of the area affected by flying activities. It is interesting to note that the number of pairs in the Grappa area have remained the same since at least the late 90s when 4 pairs were found to be nesting in 1996 and 1997 (one nesting failed after the male was injured with a shotgun) and 5 in 1998 (Zangobbo, Silveri, Martignago). A momentary reduction in the population was registered in the first years of unpowered flight, because of the temporary disappearance of the nesting pair in Val Cornosega (Martignago and Silveri).

The population density is 15.6 pairs per 100 km<sup>2</sup> and appears very high if compared with the data available in literature. The average distance between pairs is just 2.7 km. The proximity of the nesting territory is permitted by the extent of the pairs' hunting territories, which go out to hunt on the plains below. The Valle di Santa Felicita pair were observed hunting as far up as Bassano, while the Val Cornosega and Monte Colombera pairs reached the Mussolente and Asolo hills. Their use of the area is found to be similar to that demonstrated by coastal pairs (and even more than the Eleonora falcon *Falco eleonoraë*) which nest in groups on the cliffs and go out to hunt over the sea below them, with a distribution of home ranges that spread outwards (hunting territories) like the petals of a flower. It's a situation which reduces the visibility of single individuals in the areas near the nesting territory and can lead an occasional observer to underestimate the presence of the species in the area.

Peregrine Falcons demonstrated themselves to be heedless of the foot-launched rigs. The Cornosega and Monte Colombera pairs in particular nest in two sectors that are heavily frequented by recreational flight enthusiasts. The Val Cornosega pair identified and nests in a ravine which is totally hidden from view, with no front opening, which can be reached via a lower opening (Martignago, personal comment). The Monte Colombera pair nests on a pinnacle which is circled above and in front by the foot-launched rigs taking off from the Cima Meda launch zone up above it. The site has to be considered particularly advantageous, since a pair of Common Ravens (*Corvus corax*) also nest on the same rocky outcrop just 10 m from the Peregrine Falcon nest .

The presence of foot-launched rigs does not seem to pose a problem for hawks and equally ravens which have managed to successfully raise a brood twice in the same nest in the spring-summer 2010 season. Observations conducted in April and May allowed a pair of Peregrine Falcons to be observed, engaged in lengthy aerial skirmishes with the pair of Common Ravens, which were attacked on every return to their nest, while numerous foot-launched rigs wheeled and circled above them, then moving westwards, (between 10 and 20 depending on the day). On April 9<sup>th</sup> it was even possible to see the female Peregrine Falcon perched near the nest, standing on one leg in the classic resting pose as two paragliders, one after the other, circled 20 metres in front of her and her nest. This was proof of amazing tranquility, given that the pose with one leg lifted is abandoned at the first inkling of a threat which worries or alarms the bird of prey. The female Peregrine Falcon eventually took to the air to launch the nth hunting stoop against a Common Raven.

For the three pairs of Peregrine Falcons settled in the area most heavily affected by flying activities (Santa Felicita, Cornosega, Colombera) and therefore most exposed to potential disturbance, successful reproduction was measured at a rate of 2.3 chicks/pair. In detail: in Valle Santa Felicita 2 apparently same sex chicks, in Val Cornosega 1 male and 1 female, on Monte Colombera 3 chicks (maybe 2 males and 1 female).

[foto]

*The Val Cornosega male in dominant pose above nesting area checks his territory shortly after the youngsters become airborne. (Photo A. Borgo)*

#### **4. CONCLUSION**

The monitoring conducted in this season has helped highlight very high density of Peregrine Falcon and Honey Buzzard and the stable presence of a Short-toed Eagle pair in the breeding phase. The situation logged is not coincidental or transitory, since the number of pairs of Peregrine Falcons has been stable since at least the second half of the 90s and the presence of Short-toed Eagles has been ascertained for several years now.

Previously, during the first decade of unpowered flight, a drop in the Peregrine Falcon population was recorded (abandonment of the Val Cornosega site), which bore witness to an impact caused by this "new" activity. The subsequent stable re-occupation of all sites, together with the show of indifference to foot-launched rigs logged during this monitoring bears witness to the population's acclimatization and the disappearance of significant effects of disturbance. In this acclimatization process it is likely that the Peregrine Falcon has benefitted from being sedentary, which keeps individual birds continuously in contact with paragliders and hang-gliders. The picture that seems to emerge is therefore that of an initial impact in the first years of rising popularity of recreational flight on the Grappa range and the species subsequently learning that the foot-launched rigs are inoffensive, with consequent acclimatization to their presence and adaptation.

Young born every year to the five pairs learn from birth to live side by side with foot-launched rigs, guaranteeing the progressive diffusion of Peregrine Falcons which are "experts" in facing paragliders and hang-gliders. Having already learned not to fear the foot-launched rigs, these individuals will be able as adults to even settle in other alpine areas affected by recreational flying, guaranteeing the possibility of conserving the species even if faced by an increase in recreational use of the mountain.

What has been shown above teaches that the actual flying activities can be considered to be compatible with conservation of the species studied and does not highlight areas to be avoided within the SPA sector currently affected by flying activities. As regards instead the sections of the Grappa Massif which are not regularly flown over by foot-launched rigs, because of the lack of suitable conditions for flying activities, it is highlighted that the pairs settled in those sections will not present the same degree of acceptance and tolerance. Rigs (especially if motorized) must be prevented from reaching different parts of the massif than the zones that are frequently used by the craft today.

In the same way, sport enthusiasts, even solo individuals must not be allowed to perform launches, following perhaps excursions on foot, from peaks or ridges different from the official launch sites used by local flying associations. If that were the case, they could actually approach the breeding grounds of species or pairs that are not acclimatized, having an impact on their persistence or negatively impacting on their reproductive success. A ban of this sort is particularly important for suitable Golden Eagle nesting areas currently not affected by flying activities, among which Valle San Liberale also should be counted. An obvious need to involve the local recreational flight associations in conservation of its environmental heritage and the delicate ecosystem in which they fly has emerged.

The situation today on the Grappa Massif represents a symbolic case for learning and ability to adapt to the disturbance initially brought by flying activities. The future evolution of the eagle population and a possible pilot programme for the founding of a Griffon Vulture colony in the flight areas may emphasize the possibility of cohabitation between unpowered flight and the ecosystem.