



Lesser Spotted Eagle Friendly Habitat Management Guidelines

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Abbreviations used:
APSA – Special Protection Area
APM – Environmental Protection Agency
HNV – High Nature Value Grasslands
PNDR – National Rural Development Plan
FSC – Forestry Stewardship Council
UE – European Union
C.E. - D.G.M. – European Commission – Directorate-General for Environment

1. INTRODUCTION

a. Whom is this Guide for?

The Lesser Spotted Eagle friendly habitat management guidelines is primarily addressed to those who manage the Special Protection Areas (SPA) of the Natura 2000 network, where the lesser spotted eagle (*Aquila pomarina*) is present, especially the 12 SPAs in Romania where the most significant populations of this species can be found (see section b). The managers appointed by the Ministry of Environment will work out plans for most of the Natura 2000 sites designated as part of Romania's commitments as a Member State of the European Union. By using these instruments the main objective pursued by the Natura 2000 network will be achieved: maintaining or improving the conservation of species and habitats for which the site was designated. These management plans are an obligation undertaken by the Romanian state under the implementation of the Birds Directive.

The role of this Guide is to provide those responsible for the preparation of the management plans

with a set of conservation measures vital for maintaining the *Aquila pomarina* population. The measures proposed in this Guide are based on the four-year field study of the nesting and feeding needs of *Aquila pomarina*. The Natura 2000 site manager or custodian or the person drawing up the management plan for the site may adopt and adapt these measures to the particularities of the site and to the studies conducted in the area, to the quality of available data, etc.

In addition, the Guide serves as a general tool for the entire nature conservation sector as it provides useful information to the stakeholders responsible for the proper environmental protection in Romania, namely environmental authorities and organisations active in the field of nature conservation. However, it may be useful for other stakeholders as well, such as educational establishments, local authorities, forestry departments, private forestry offices, agriculture authorities, land owners and users, companies performing impact assessment reports, investors, local action groups (LAGs) and NGOs active in rural development and tourism. *Aquila pomarina* is an umbrella species for biodiversity, as most of the measures taken to protect it are beneficial to a number of other species and habitats in areas where it nests and feeds. A major threat to *Aquila pomarina* is human interference in its feeding and nesting habitats.

To ensure the nesting area of *Aquila pomarina*, the SPA where it is most present must provide significant and permanent surfaces of mature forests. To protect its feeding habitat in the areas where it hunts, it is important to maintain



a mosaic structure of the agricultural lands.

We hope that this Guide contributes to the long-term maintenance of the *Aquila pomarina* populations through a proper management of the forest and agricultural lands and that it will be used by various groups of stakeholders in the areas where this species lives.

b. Where does the Guide apply?

This Guide is applicable mainly in Natura 2000 Special Protection Areas designated as such also due to the presence of *Aquila pomarina*. In Romania, the 12 most important sites for the species are the following:

1. ROSPA0028 - Dealurile Târnavelor - Valea Nirajului
2. ROSPA0099 - Podișul Hârtibaciului
3. ROSPA0098 - Piemontul Făgărașului
4. ROSPA0027 - Dealurile Homoroadelor
5. ROSPA0029 - Defileul Mureșului Inferior - Dealurile Lipovei
6. ROSPA0033 - Depresiunea și Munții Giurgeului
7. ROSPA0034 - Depresiunea și Munții Ciucului
8. ROSPA0069 - Lunca Mureșului Inferior
9. ROSPA0082 - Munții Bodoc - Baraolt
10. ROSPA0091 - Pădurea Babadag ROSPA0080 - Munții Almajului - Locvei
11. ROSPA0107 - Vânători Neamț

Ghidul se poate folosi și în celelalte situri Natura 2000 SPA. The Guide can be used in other Natura 2000 SPA sites, where *Aquila pomarina* is present, in any protected area of national interest (National Parks, Natural Parks, Reserves, etc.) and so on.

c. The effort behind the Guide

In order to come up with the recommendations in this Guide, we have conducted studies and analyses in three key sites of the LIFE project

08/NAT/RO 000501 "Conservation of *Aquila pomarina* in Romania": SPA Dealurile Târnavelor – Valea Nirajului, SPA Podișul Hârtibaciului and SPA Piemontul Făgărașului, for four years. The fieldwork involved 11 members of the project team, over 15 volunteers (for mapping) and 6 employed experts (to study prey populations and analyse the satellite data).

The studies and field activities employed to determine the needs of this species included:

- direct field observation to identify the areas where the *Aquila pomarina* hunts, the types of habitat where it feeds and the height of the vegetation, and aspects related to its feeding behaviour;
- studies on the composition of *Aquila pomarina*'s feeding areas by classifying them according to their use (arable areas, meadows, pastures);
- the mounting of 8 satellite transmitters on adults and 11 transmitters on juveniles and their marking with identification rings in order to obtain accurate data on habitat use, to identify pre-migration areas and migratory routes and to find the threats encountered during migration and in wintering areas;
- the ring-marking of the monitored pairs' juveniles, the collection and analysis of the remains of food from the nest;
- the studying of the prey populations (small mammals, amphibians and reptiles) and mapping of its feeding territories to get data on food abundance and preferred feeding areas.

d. The LIFE project 08/NAT/RO 000501 “Conservation of *Aquila pomarina* in Romania”

The “Conservation of *Aquila pomarina* in Romania” project which provided the framework for the drawing up of this Guide is implemented by the Sibiu Environmental Protection Agency and its partners – the Milvus Group Association for Birds and Nature Protection and the Romanian Ornithological Society in the period January 2010 – December 2013. The project is funded by the Nature and Biodiversity component of the LIFE + Programme of the European Commission.

The project's main objective is to create optimal conditions for the favourable conservation status of a significant percentage of the *Aquila pomarina* population in the European Union. *Aquila pomarina* is a raptor bird whose nesting area is limited mainly to central, eastern and south-eastern Europe. The species is considered to be “in decline” across its entire living area, having been estimated at 20,000 pairs worldwide. Romania provides the species with one of its most important nesting areas. According to the latest studies, the *Aquila pomarina* population in Romania is estimated between 2,000 – 2,300 pairs, accounting for approximately 22% of the species population in the European Union and 10% respectively of the global population. Most *Aquila pomarina* nesting pairs can be found in Transylvania (the 7 Centre Region), in the west of Romania and on the eastern slopes of the Carpathians. There is also a small population in the eastern, southeast and south of Romania.

Project partners

The **Sibiu Environmental Protection Agency** is an environmental public authority subordinated to the National Environmental Protection Agency financed by the State budget. Sibiu EPA has gained experience in running European funded projects: it implemented the RO2004/IB/EN-02 Twinning project – “Implementation and Enforcement of the Environmental Acquis with focus on Nature Protection” – phase I and II for four years. The specialised staff of the Nature Protection Department were involved from the beginning in the designation of the special birds protection areas of the 7 Centre Region, especially those targeted by the project. The responsibilities of EPA Sibiu are to improve and support the management of protected areas and to help with the development of conservation measures for species and habitats.



The **Milvus Group Association for Birds and Nature Protection** is a non-governmental, non-profit organisation dedicated to the protection of birds and nature, active in conservation, education, research and consultancy, and aiming at creating better conditions for birds, wildlife and humans in Romania.



The Milvus Group was established in 1991 as a subsidiary of the Romanian Ornithological Society (BirdLife Romania) and became independent in 2001, running numerous national and international projects. The members of the organisation are biologists, students and doctoral students of biology and ecology.

Most of its activities are organised into working groups (raptor conservation, water birds conservation, white stork conservation, mammal conservation, monitoring and research, Natura 2000 and habitats, environmental education, etc.). The Milvus Group manages many programmes dedicated to the research and conservation of raptors both in Transylvania and in Dobrogea and Campia de Vest (the Western Plain).

Also, the organisation is actively involved in the designation of Natura 2000 sites in Romania. Its specialists have also contributed to the designation of special protection areas, working together with the Romanian Ornithological Society.

Aquila pomarina is one of the target species of the Working Group for raptor conservation set up by the Milvus Group. In 2005-2007, the Milvus

Group conducted a comprehensive census of the population of the species nationwide.

The Romanian Ornithological Society (ROS) was established in 1990 and is a non-governmental organisation and a BirdLife International partner. ROS is Romania's largest non-profit organisation in the field of wildlife conservation and the study of birds and their habitats. The organisation also aims at raising public awareness on sustainable development, protection of biodiversity and birds.

Since 2003 the ROS has been supporting the Romanian Government in the implementation of the Natura 2000 network in Romania. Activities: the ROS manages the Important Bird Areas



© Lauri Mäenpää – *Aquila pomarina* hunting

Programme (IBAs), the study and protection of rare and endangered bird species, the study of bird migration, the monitoring of certain bird species, the development of action plans for the protection of species.

Structure: the ROS is headquartered in Bucharest and provides national coverage through 19 subsidiaries and 2 vocational schools.

e) The relevant national legislation

Aquila pomarina and its habitats are protected by the legislation specific to natural protected areas, in particular by the transposition of the European legislation related to the designation of Natura 2000 sites.

Directive 79/409/EEC (Birds Directive) is the European legislative act governing the maintenance, preservation and restoration of a sufficient diversity and area of habitats for all the species of birds in Europe. The Birds Directive was introduced in the Romanian legislation by the Law 462/2001, as amended by the Emergency Government Ordinance 57/2007,

as amended, the Emergency Government Ordinance 154/2008, the Law 329/2009, and the Law 49/2011 on protected natural areas, conservation of natural habitats, wild flora and wildlife. It should be pointed out that article 1 of the Directive already notes “This Directive shall apply to birds and their eggs, nests and habitats.” Consequently, even if SPAs are designated for the species and not the habitats, the preservation of the habitats needed by the species is a legal obligation.

Through the Decision of the European Court of Justice of 14 April 2011, the European Commission decided that Romania had not designated enough territories in terms of number and surface so as to adequately protect the bird species covered by Annex I of the Birds Directive and the migratory species, thus breaching articles 4(1) and (2) of the Directive. Therefore, Romania designated new Special Protection Areas (SPAs), as a complement to already existing SPAs, by Decision no. 971 of 5 October 2011. Instances of extended *Aquila pomarina* SPAs are Defileul Inferior al Mureșului, Dealurile Homoroadelor etc.

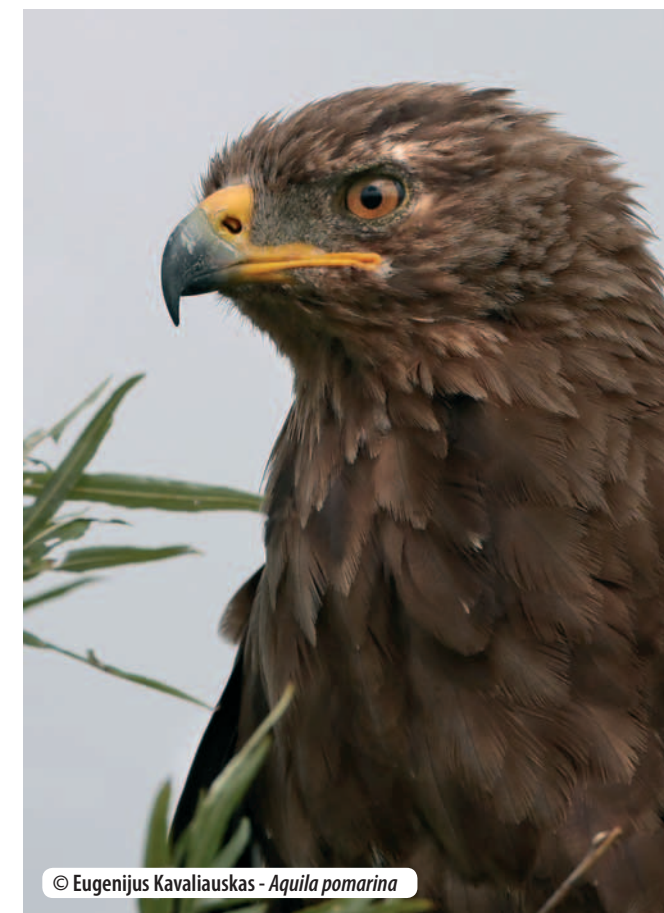


© Sos Tibor – Specific habitat of *Aquila pomarina* in Dealurile Târnavelor – Valea Nirajului site

Romania's obligations related to the implementation of the Birds Directive are mainly the following:

- to designate the Special Protection Areas (SPAs) through the national legislation;
- to develop and implement management plans for the Special Protection Areas;
- to determine and implement conservation status monitoring plans;
- to assess the impact of programmes and projects on the Natura 2000 sites according to article 28 of the Emergency Government Ordinance 57/2007.

These European legal provisions transposed in the environmental legislation in Romania must also be harmonised with the forestry laws. In April 2012 our LIFE project “Conservation of *Aquila pomarina* in Romania” submitted to the Ministry of Environment a number of proposals to amend the Order no. 1540 of 3 June 2011 approving the guidelines on time limits, methods and periods of collecting, harvesting and transport of wood in order to make sure that the method and periods of exploitation of forests meet the legal obligations to preserve the *Aquila pomarina* species and that the recommendations herein, developed based on the results of the project concerning the conservation needs of the species can be implemented. The project proposes the following: “For the forests located in protected areas and areas of scientific interest, as defined under the Emergency Government Ordinance 57/2007 approved by the Law no. 49/2011, forestry offices will necessarily establish, through permits, special measures for the proper exploitation of wood and such exploitation will take into account the specific exploitation periods, according to Annex no. 3. The said measures will be set forth in accordance with the provisions on the conservation of the species and habitats of Community interest, as described in the Management Plans of Protected



© Eugenijus Kavaliauskas - *Aquila pomarina*

Areas and National Action Plans for endangered European species.”

Like all raptor species, *Aquila pomarina* is protected at national level by the Emergency Government Ordinance 102/2010 (which amends Law 407 of 2006 on hunting and protecting the wildlife stock). Article 42, paragraph 1 of this law states that “the hunting of strictly protected game species done any other way than legally shall be considered poaching and shall be punishable by imprisonment from 3 to 7 years or with a fine from Lei 5,000 to Lei 25,000.”

Paragraph (2) specifies that “the deeds referred to in paragraph (1) are punishable by imprisonment from 3 to 10 years, if committed: a) by two or

more individuals together; b) by an individual with hunting related job duties or public responsibilities and by representatives of legal entities whose objects include the protection of game or hunting.”

Annex 2 of the same law states that in case of illegal acts the compensation for *Aquila pomarina* amounts to EUR 1,350.

f) The NATURA 2000 network in Romania

Natura 2000 is a European network of protected natural areas, comprising a representative sample of wildlife species and natural habitats of Community interest. It was created not only to protect the nature, but also mankind, to preserve these natural riches and ensure the resources necessary to long term social and economic development.

Traditional agricultural activities – some of them needed to maintain the landscapes (e.g. alpine meadows), organic products harvesting, and hunting and fishing activities will be allowed in Natura 2000 sites, provided that they fulfil their conservation objective.

But the use of agricultural lands must not lead to the degradation or destruction of natural habitats and of those flora and fauna species of Community interest for which the area was declared a Natura 2000 site.

There will be no construction and infrastructure works affecting habitats and species in the protected areas designated Natura 2000 sites.

In addition to preserving the natural heritage, the Natura 2000 network offers significant



opportunities for a sustainable economic development by providing the possibility to draw funds and through an effective economic management to the benefit of people and nature. For more details please visit:

<http://natura2000.ro>

<http://ec.europa.eu/environment/nature/natura2000>

g) About the favourable conservation status

The **favourable conservation status** este definită în Directiva Habitate și în legislația românească și se referă atât la habitate, cât și la specii.

The conservation status of a natural habitat means the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions, as well as the long-term survival of its typical species. The conservation status of a natural habitat will be taken as “favourable” when the following conditions are met:

- its natural range and areas it covers within that range are stable or increasing;
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future;
- the conservation status of its typical species is favourable as defined below.

The conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory of the European Union. The conservation status will be taken as “favourable” when the following conditions are met:



© Sos Tibor – Mosaic landscape appropriate for the feeding and nesting needs of *Aquila pomarina* in Podișul Hârtibaciului site

1. population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
2. the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future.

The steps that lead to the favourable conservation status and that are observed in this Guide are the following:

Identification of the activity that causes the threat – (person responsible) → name of the issue – (person responsible for remediation) → Conservation measure → (person responsible for control) → Favourable conservation status.

The activities posing threats to *Aquila pomarina* will be presented in Chapter 3, followed by the conservation measures in Chapters 4 and 5. For each threat a solution will be suggested. We therefore hope that we can cover the whole range of threatening factors which cause the decline in the population of this species.

2. MORPHOLOGY, ETHOLOGY & ECOLOGY OF THE SPECIES

a. General information on the species

Aquila pomarina is a medium sized raptor. Adult birds have feathers mostly in shades of earthy brown, while on the head and at the tip of the wings the colour is lighter, ochre. Younger birds have darker brown feathers, with off-white and grey speckles on the wings, forming strings of dark spots on the closed wing. At the back of the head they have a yellowish-red spot. Adult birds have golden yellow irises, while younger birds have grey-blue irises. Like in other *Aquila* species, the tarsus is feathered to the end of the feet. The feet and the waxy skin at the base of the beak are yellow, while the beak and the claws are black.

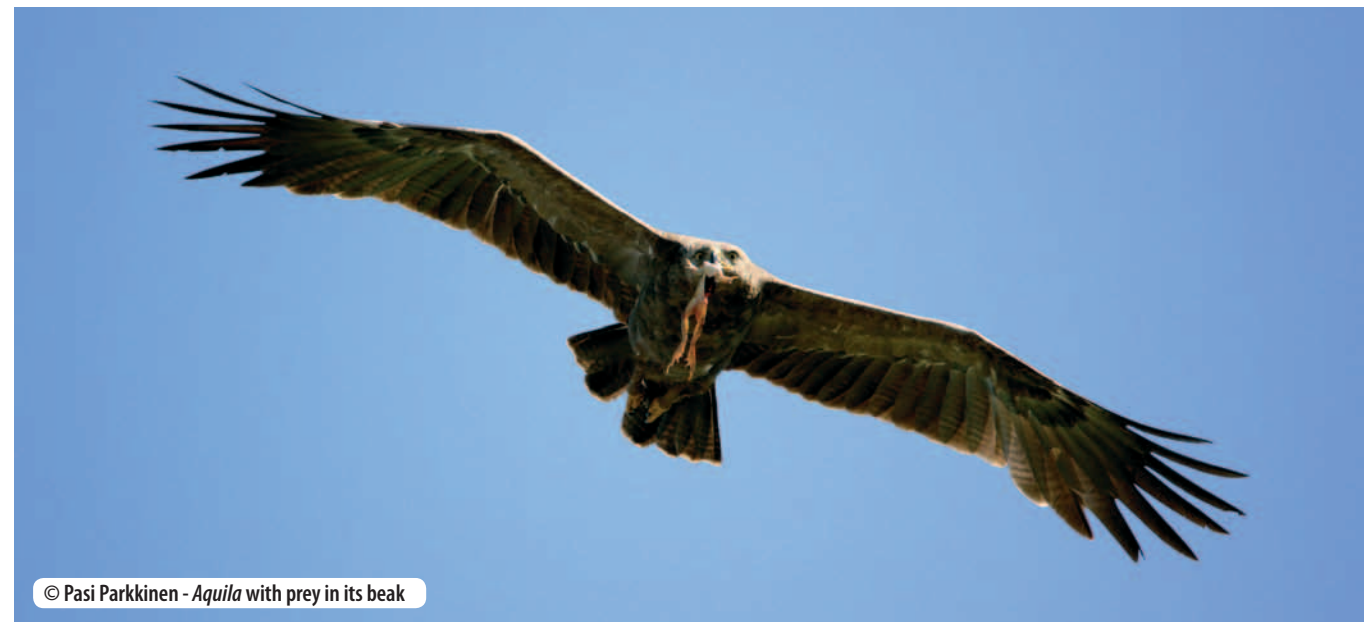
When they fly, their wings arch down and widen both at the base and at the tip, and the first

primary flight feathers are very finger-like. The wingspan reaches 140-170 cm.

Aquila pomarina lives in a very limited area. It nests only in Eastern Europe, Germany, Slovakia, Romania, Poland, the Baltic countries and some regions of Russia. It is rarely seen in the Balkan Peninsula, Hungary and Asia Minor.

It prefers mature deciduous, generally oak, forests in the hills, flat grounds and floodplains. Some pairs go as up as the alpine region where they nest in beech and spruce forests. *Aquila pomarina* nests in the forests in the vicinity of pastures, wet plains and agricultural areas, which are large enough for it to procure food.

It mostly eats rodents (prairie voles) and occasionally catches amphibians (frogs) and reptiles (lizards, snakes) and even juveniles of



© Pasi Parkkinen - *Aquila* with prey in its beak

the birds nesting on the ground (larks, pipits, buntings). Sometimes its diet includes a significant proportion of insects (crickets, grasshoppers), which it catches in the grass, by walking on the ground. It usually hunts in the air or looks out for its prey from high places (e.g. trees, tall bushes, etc.).

It builds its nest in trees, usually near the trunk at the base of the branches, using dry twigs. Sometimes nests can be easily recognised by the large amount of green leafy branches placed on the edges and inside, brought to the nest throughout the nesting period. The added green leaves have multiple purposes, probably still insufficiently known: they are used for camouflaging, for covering food remains as a protection against flies and pests, and for keeping a constant microclimate in the nest through evaporation.

Aquila pomarina lays 2 (rarely 1) eggs, 1-3 s apart, and hatching takes 40-42 (sometimes 38-45) days. Of the two hatched chicks only one can survive following the "Cain" phenomenon, according to



© Sos Tibor - *Aquila* juvenile in nest



© Jari Peltomäki - *Aquila pomarina* flying

which the bigger chick kills the smaller one. We do not know of any case in our country when both chicks have survived. In Slovakia there have been cases when the two juveniles have grown up together and have become independent until they have left the nest. Juveniles leave the nest after 50-57 days, but still enjoy the care of their parents for another 2-3 weeks.

Aquila pomarina is a long-distance migratory species. It spends the summer in our country, usually arriving in mid-April (rarely, some specimens arrive at the end of March) and migrates to its wintering grounds in September. Some specimens that are late in their migration can be seen in October, too. They migrate in large flocks counting several dozens to hundreds of specimens. The migration routes of the species best known in our country are Dobrogea, Valea Mureşului (Mureşului Valley), Valea Troţuşului (Troţuşului Valley), Valea Oltului (Oltului Valley) and Valea Siretului (Siretului Valley). *Aquila pomarina* winters in East Africa, south of Sahara,



Examples of itinerary of young birds monitored – © Milvus Group

but some even reach South Africa. Usually young birds do not return to where they hatched and remain until sexual maturity in the northeast part of the African continent or return to Turkey. In rare cases, some young birds fly to Europe, as is the case of Erika who reached eastern Russia, having been monitored by our LIFE project for two years with a satellite transmitter mounted on its back (vezi <http://www.pomarina.ro/RO/blog-migraie/199-erika-uimete-din-nou>).

Little known until recently, the species was estimated at 100-200 pairs (Weber et al., 1994), and later at 500-1,000 pairs (Munteanu, 2002). After an extensive study conducted in Romania, we have estimated a population of approximately

2,000 pairs across the country. According to some relatively recent sources, the global population is considered to amount to 13,000-16,600 pairs (Génsbøl & Thiede, 2004), but this figure seems to be slightly underestimated.

The nesting population of *Aquila pomarina* needs two distinct habitats to survive, because it nests in forests and it procures its food in the adjacent open areas. Its nesting and feeding habitat should be protected simultaneously, since the loss of either of them may lead to the extinction of the species from a certain area.

b. Direct and indirect benefits of the presence of *Aquila pomarina* in an area

Aquila pomarina is a raptor whose presence in an area indicates that the activities of the local population are in agreement with the laws of nature, without significantly affecting it. The presence of this bird is a good sign for any area whose promotion relies on its natural values.

Benefits of combating agricultural pests. *Aquila pomarina* feeds mainly on voles – considered to be harmful to crops – thus leading to a reduced use of chemicals that affect both soil and cereals, which is a good argument to certify products coming from such areas as “healthy”.

Benefits of agri-environment measures. The feeding territories of *Aquila pomarina* are mostly non-degraded, well maintained pastures and meadows, with a great diversity of species. Its

source of food consists, in addition to small rodents, of insects, amphibians and reptiles. The presence of all these species in a certain area is an obvious sign of high nature value grasslands. The meadows and pastures where *Aquila pomarina* feeds are among the last traditional grasslands of Europe whose ecology is intact. Extensive agricultural practices, along with mixed farming, the use of minimum (or zero) quantities of fertilisers and extensive grazing have allowed the survival of an amazing diversity of spontaneous flora and wild fauna, making up the so-called High Nature Value Grasslands (HNV). These conditions allow both the presence of significant populations of *Aquila pomarina* in these areas, as well as the farmers' access to the Agri-environment Measure 214 related to High Nature Value Grasslands under Axis 2 of the NRDP (National Rural Development Programme). Moreover, our LIFE project developed and proposed measures dedicated to the conservation of *Aquila pomarina* in the agri-environment package for Grasslands Supporting Important Birds. This created the premises for the protection of *Aquila pomarina* by involving farmers from the areas where these birds feed, who can benefit from payments for compliance with the measures necessary for the conservation of this species.

Benefits of the certification of forests. *Aquila pomarina* nests in old deciduous forests, mainly oak, in the hills, flat grounds and floodplains. Some pairs go as high as the alpine region, where they nest in beech and spruce forests. Since this is a species that prefers certain types of forest for nesting, it may serve as indicator in the certification of forests initiated by a forest owner or forest manager. The certification of forests results in providing markets for wood and in a better price for products sold in these markets.



© Sos Tibor – Aquila with Arvicola amphibius in its beak



© Bugariu Sebastian – Nesting habitat, mountain area.

However, those certifying the forests have the obligation to observe the 10 Principles and 36 Criteria established for the certification concerned. Among them there is Principle 6 of FSC₁ on the Environmental impact according to which forest management must conserve biological diversity and its associated values, water resources, soils, landscapes, ecosystems and unique or fragile species and, by doing so, maintain the ecological functions and the integrity of the forest. The owner or manager of a certified forest must apply safeguards to the rare, endangered species and

their habitats (e.g. nesting sites). *Aquila pomarina* is an endangered species and the sites where it nests and where forests are to be proposed for certification will be covered by special measures to protect the species.

Benefits of ecotourism. Although in our country ecotourism, including bird watching tourism, is not well represented yet, it may be a good argument for the development of certain areas. The presence of *Aquila pomarina* in a certain area could favour the development of this type

¹ Forest Stewardship Council is the body that drew up a set of 10 Principles and 56 Criteria, which are considered generally valid for a responsible forest management and which refer to environmental, social and economic issues of the forest management, whose observance is absolutely necessary for the certification of a forest

of tourism. The “healthy” designation given to products coming from the areas where it lives and the traditional landscapes that the species prefers, where grasslands and forests alternate, advocate for the development of ecotourism in these locations. Because this species no longer nests in Western European countries, where intensive agriculture and inappropriate forest management have led to its disappearance, its presence in an area may attract a segment of tourists passionate about bird watching and other natural values from these countries in the places where *Aquila pomarina* still lives. All these could bring about the growth of those areas inhabited by these birds. Bird watching tourism in locations such as the Danube Delta has become extensive and has provided significant economic benefits to the communities there.

c. The needs of the species in the nesting habitats

Aquila pomarina favours open nests, built at heights between 8 and 20 m in old trees with branches strong enough to support the nest. After a long use the nest can reach considerable size and weight.

Typically, a pair has several (2-3) nests that it often changes. As with other raptors, the nest changing behaviour is no surprise. Customarily *Aquila pomarina* uses a specific nest in which to breed a few years and then moves to the nest of its mate, which is usually less than 300 m away. But this is not a rule. Following our field studies we have become acquainted with a pair that has kept its nest for 6 consecutive years and has successfully nested four times. Another pair, monitored by the Milvus Group and settled in the vicinity of Valea Izvoarelor (Mureş County), has been using the same nest for 13 years without

breeding successfully every time. Unfortunately, the exploitation of their forest has forced the pair to find another nest.

There may be several reasons why a pair changes nests. We can say that if the birds complete their nesting season without any disturbance and have plenty of food, they return faithfully to a nest for 2 to 5 years. Afterwards, many pairs change nests for a few years (1-3 years) and go back to the previous nest. On the territory of a pair there may be 1-3 alternative nests, there may also be newly formed

© Sos Tibor – *Aquila* nest in mature oak

pairs that do not have any alternative nest. A pair often repairs several nests before laying eggs, but it will occupy only one. However, the male may use the alternative nest to rest or stay the night while the female hatches. Any disturbance to the nesting territory has highly negative effects. We are familiar with cases where, because of disturbances, the pair was forced to move every year and had no successful nesting for 3-4 years. During our four-year project we have encountered at least 7 cases in which the pair used two or three different nests or built a new one.

The nests used in the previous year may fall, tilt or flatten and may no longer be lived in. In such cases, when spring comes and the birds arrive to their breeding territories, they are in the habit of rebuilding a fallen/flattened nest, of occupying an alternative nest or of taking any unused nest of a raptor located in their territory. *Aquila pomarina* often occupies the nests built by other species nesting in its territory, such as the common buzzard (*Buteo buteo*), the Northern Goshawk

(*Accipiter gentilis*) or the black stork (*Ciconia nigra*). Once such a nest is used by the *Aquila pomarina*, it should be protected accordingly. There are no predetermined rules for the use of the nests, therefore the protection of any raptor's nest in the territories occupied by *Aquila pomarina* may be equally important.

Although nests can be changed quite often, the species is very faithful to its nesting territory. It prefers the forest edge for nesting, even in relatively small bodies of forest. This area is normally a forest section of several tens (20-40) of hectares, accommodating all the nests used over time by a pair. The nesting territory of *Aquila pomarina* is always an old forest or a mixed age forest, but where old trees predominate. The area, usually quiet and protected from frequent human activity, is at a short distance from the feeding area that is also very significant to the *Aquila*. According to the Milvus Group in ROSPA0028 Dealurile Târnavelor – Valea Nirajului and ROSPA0099 Podișul Hârtibaciului, the average distance of



© Sos Tibor – *Aquila pomarina* nest in Podișul Hârtibaciului site



© Sos Tibor – Raptor nest in a forest in the hilly area

Aquila pomarina nests to the closest edge of the forest, therefore to the feeding habitats, is 142.5 m (min. 2 m, max. 703 m). Even if specimens of a pair are different over the years because they die, the nesting area remains occupied provided the nesting and the feeding areas do not suffer major alterations.

Regarding the tree species where the nest is built, *Aquila pomarina* does not have set preferences, as the branches supporting the nest are of greater concern than the species itself. Although it generally prefers deciduous forests, in Romania it may settle in mixed and coniferous forests as well (Zeitz & Daróczy, 2003). The types of forest where known nests are in ROSPA0028 Dealurile



© Sos Tibor – *Aquila pomarina* nest

Târnavelor – Valea Nirajului and ROSPA0099 Podișul Hârtibaciului are the following: 91Y0 Dacian oak and hornbeam forest – 79%, 9170 Galio-Carpinetum oak-hornbeam forests – 2%, 9130 Asperulo-Fagetum beech forests – 12%, 9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli – 2%, outside the forest – 4.6%. Most nests (91%) are in sessile oaks (*Quercus petraea*) and oak (*Quercus robur*), while a small number of nests are built in beech trees (*Fagus sylvatica*), black locust trees (*Robinia pseudacacia*) and plum trees (*Prunus sp.*).

d. The needs of the species in the feeding habitats

Aquila pomarina needs open areas to procure food. Pairs have been described that feed in the forest, close to their nests, but the amount of food provided here is insignificant. According to studies on the abundance of prey species, the fauna in the forests of the central part of the country is not that rich. Although there is great variability among different pairs in terms of composition of the feeding habitat, we can distinguish a certain preference of the species.

As pointed out by data collected under the LIFE project, summarised in the table below, we can

see that some *Aquila* individuals choose to hunt in meadows (e.g. *Aquila* in Ihod (SPA Dealurile Târnavelor – Valea Nirajului) in 2010 and 2011), agricultural lands (e.g. *Aquila* specimens in Valea (SPA Dealurile Târnavelor – Valea Nirajului) in 2011 and Lisa (SPA Piemontul Făgăraș) in 2011) or abandoned agricultural lands (e.g. *Aquila pomarina* individuals in Bârghiș (SPA Podișul Hârtibaciului) in 2011), even if the percentage of the habitat is low compared to the 12 km2 of studied surface. In other *Aquila* specimens the attack percentage is similar to the percentage of the types of habitat, thus failing to demonstrate any clear preference (e.g. *Aquila* individuals in Alțâna (SPA Podișul Hârtibaciului) in 2011). In some cases *Aquila pomarina* avoid lower quality habitats such as overgrazed pastures (e.g. Ihod in 2010 and 2011).

Table 1. Number of attacks observed in the territory of target *Aquila pomarina* individuals during direct observation activities and percentage of different types of habitats in the territory of *Aquila* specimens studied. Their preference for certain types of habitats despite their low percentage can be noticed.

<i>Aquila</i> territory (county)/ observation year	Meadows		Pastures		Abandoned agricultural land		Agricultural land	
	Attack percentage (number of attacks)	Habitat percentage in studied area (12x12 km)	Attack percentage (number of attacks)	Habitat percentage in studied area (12x12 km)	Attack percentage (number of attacks)	Habitat percentage in studied area (12x12 km)	Attack percentage (number of attacks)	Habitat percentage in studied area (12x12 km)
Ihod (Mureș)/ 2010	77,41 (24)	33,69	19,35 (6)	34,06	0,00	5,83	0	10,91
Ihod (Mureș)/ 2011	91,66 (22)	33,69	0	34,06	8,33 (2)	5,83	0	10,91
Mitrești (Mureș)/ 2011	50 (20)	41,80	7,5 (3)	9,97	17,5 (7)	4,45	32,5 (13)	13,49
Valea (Mureș)/ 2011	21,43 (12)	14,29	12,5 (7)	17,15	5,36 (3)	11,62	58,93 (33)	30,56
Bârghiș (Sibiu)/ 2011	26,79 (15)	18,53	14,29 (8)	35,6	32,14 (18)	8,12	19,64 (11)	6,49
Alțîna (Sibiu)/ 2011	13,33 (12)	10,77	61,11 (55)	40,59	6,67 (6)	9,83	16,67 (15)	19,93
Lisa (Brașov)/ 2011	15,27 (11)	19,46	5,54 (4)	26,44	22,22 (16)	5,60	56,93 (41)	8,25
Dejani (Brașov)/ 2011	12,50 (5)	7,92	40 (16)	53,35	27,50 (11)	9,13	17,50 (7)	8,39

In terms of biomass, the diet of *Aquila pomarina* consists of small mammals (min. 80%) in most pairs, supplemented with amphibians, reptiles and large insects (*Orthoptera*). Judging by the food remains gathered from nests and their vicinities in the three key Natura 2000 sites of the LIFE project 19 taxa of mammals, birds, reptiles, amphibians and insects have been identified (see table 2).

Table 2. Taxa identified in the diet of *Aquila pomarina* in the three SPAs:

No.	Taxon
MAMMALIA	
1.	<i>Erinaceus roumanicus</i>
2.	<i>Crocidura leucodon</i>
3.	<i>Microtus arvalis</i>
4.	<i>Arvicola amphibius/scherman</i>
5.	<i>Cricetus cricetus</i>
6.	<i>Apodemus spp.</i>
7.	<i>Mustela erminea</i>
8.	<i>Mustela nivalis</i>
AVES	
9.	<i>Passeriformes</i>
10.	<i>Merops apiaster</i>
REPTILIA	
11.	<i>Lacerta agilis</i>
12.	<i>Lacerta viridis</i>
13.	<i>Lacerta spp.</i>
14.	<i>Serpentes</i>
AMPHIBIA	
15.	<i>Anura</i>
INSECTA	
16.	<i>Orthoptera</i>
17.	<i>Hymenoptera</i>
18.	<i>Coleoptera</i>



In order to have access to these food sources during the nesting period (April-August), *Aquila pomarina* needs a mosaic of habitats with varying percentages of meadows, pastures and agricultural lands. The primary habitats of *Aquila pomarina* are pastures and meadows, but the quality of these types of habitats may favour a more frequent use of another type of habitat. For example, overgrazed pastures lack the food the *Aquila* prefers and are consequently avoided and replaced with agricultural lands.

In terms of micro-mammal abundance, *agricultural areas* are often the most productive. The higher the mosaic percentage of lands, the better the conditions provided to the species the *Aquila* preys on, since they have more places to take refuge because the vegetation on plots with various uses has different harvest periods. Another feature of mosaic agricultural lands is the so-called "plot edge effect". These narrow strips, which often include logs, trees, and patches of untilled and grassed land or slightly muddy wetlands, are places that offer refuge to reptiles, amphibians

and rodents. This feature of agricultural areas is essential for the species, as *Aquila* specimens monitored under our project avoid monoculture areas altogether. According to our data, there are crops that are preferred by *Aquila pomarina* for the abundance of prey, such as ear cereals (wheat, barley, oats), and alfalfa.

The crops that *Aquila pomarina* stays away from are corn, **sunflower**, **soybean**, **rapeseed**, **sorghum**. One possible reason is that the structure of the vegetation prevents the birds from capturing their prey

Pastures have always covered a considerable percentage of the feeding habitat of *Aquila pomarina*, but their quality is highly variable. Open pastures, where the vegetation is very dry and short as a result of overgrazing, are not favourable to *Aquila pomarina*, because the animals it preys on disappear, having no possibility to escape nor enough food. Typically, these pastures are used as feeding locations only occasionally, whereas



© Sos Tibor – *Aquila* specimen hunting on the ground on a plot of cut clover



© Sos Tibor – *Aquila pomarina* looking out for its prey in a meadow

quality pastures where cattle, buffaloes or horses graze are used by the *Aquila* more often. Pairs provided with such quality pastures within their area procure most of their food from these habitats.

Meadows are the types of habitats that are favoured by *Aquila pomarina*. Each pair studied under the project has proven absolute preference to this type of habitat. But usually the meadow percentage is very low in areas where the *Aquila* nests. By increasing the surfaces covered by meadows in areas where the species nests the quality of the feeding habitat will improve significantly. The ideal for this species is to be provided with short grass meadows (cut in the last two weeks) throughout the nesting period from mid-May to late August. The area of *Aquila pomarina* may overlap other areas where another endangered species nests – e.g. corncrake (*Crex crex*). This species needs tall grass until mid-July and nests mainly in wet meadows in the valleys. To avoid a conflict between the

conservation management of the two species we suggest cutting the grass in areas where both species nest from May to July in the drier meadows in the hills (where the corncrake rarely nests) and from mid-July in the wet meadows in the valleys.

3. THREATS

a) In the nesting habitat

The threats in the nesting habitats are of two kinds and both are related to forestry practices.

1. The loss of the nesting habitat

The pressure on the nesting habitat comes from the way of planning and using wood resources, through the irrational exploitation of old age stands and the non-compliance with the three general principles of forest works. The impact of non-compliance with the forest work plan provisions, the forcing of achievability of main products, the approach to forests only from an economic perspective, all lead to alterations to the structure in certain areas by age class of forests.

In the hilly areas, *Aquila pomarina* nests mainly in deciduous and mixed (deciduous and coniferous) forests and in the alpine areas it can be seen in coniferous forests. *Aquila pomarina* is always partial to old stands in classes V and VI₂, where there are mature and old trees (around 80 years old, 35 cm trunk diameter), with crowns strong enough to support the nest. Forest bodies that lack significant areas of such stands are not suitable for nesting.

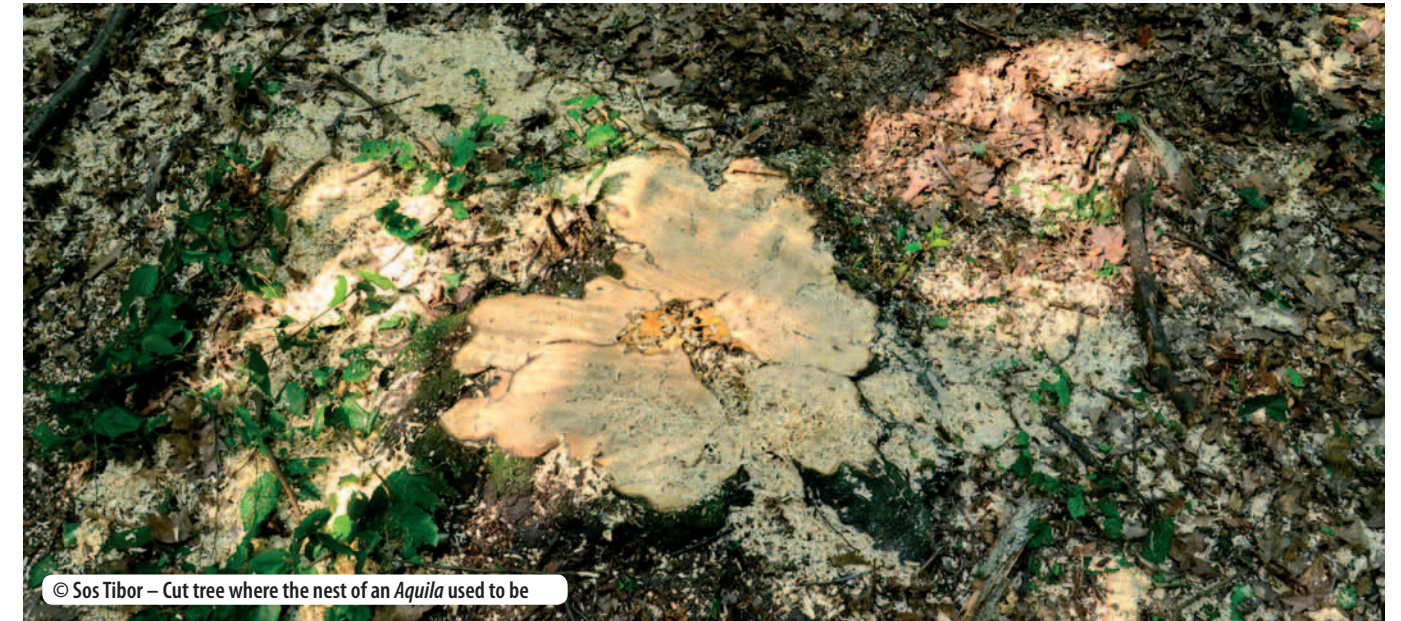
In deciduous forests reaching the age of technical exploitability or of protection, their current exploitation practice through treatments involving long regeneration periods or conservation cutting, to the extent to which the work plans

2 Age classes are: I 0-20 years, II 21-40 years, III 41-60 years, IV 61-80 years, V 80-100 years, VI 100-120 years, VII more than 120 years

are complied with, makes up the minimum management required for the conservation of forest habitats allowing *Aquila pomarina* to nest. Through the work plans, properly prepared for 10 years, forestry works are planned by promoting a balanced forest age class structure to ensure continuity of forest and of crops at the same time. At the end of the 10 years of implementing such work plans, the forest should be characterised by a balanced age class distribution of stands, whereas



© Sos Tibor – Forestry works close to the nest of an *Aquila*



© Sos Tibor – Cut tree where the nest of an *Aquila* used to be

the surface taken up by older stands should be at least the same as at the beginning of the work plan implementation period.

The issues identified are as follows:

- **The decrease in the surface of stands in age classes V and VI in the forest bodies located in the nesting habitat of *Aquila pomarina*.** In most cases this is due to the excessive prior use of the forest body. *Aquila pomarina* stays away from these forests that have probably accommodated nests in the past.
- **The breaches of the legal provisions of the Order no. 1540 of 3 June 2011** approving the Guidelines on the time limits, methods and periods of collecting, harvesting and transporting of wood. Pursuant to the annex no. 3 that lists the periods for forest wood exploitation and main cutting the exploitation period is between September and April. But economic operators and/or managing forestry offices often fail to comply with this time interval, blaming the inability to perform their works on account of adverse weather

conditions. As a result exploitation works are often extended beyond April, when the *Aquila* begins its nesting. Under such circumstances, due to the disturbance caused by the logging activities, the birds frequently give up nesting.

- **The lack of legal provisions obliging forest managers to take special measures for the proper exploitation of wood in areas where *Aquila pomarina* specimens (and other priority protected species) nest.** In the Order no. 1540 of 3 June 2011, article 31 stipulates: "In certified forests, in forests located in protected areas, in forests of scientific interest and in gene pool and ecosystem protection forests and in stands used for resonant and keyboard wood, depending on their importance and their specific management, forest offices may establish, through permits, special measures for the proper exploitation of wood." Unfortunately, it is not mandatory to put into practice certain exploitation measures in favour of the species if not set forth in the management plan of the protected natural

area. Forestry offices may establish, through permits, special measures for the conservation of forest biodiversity, but most times they do not consider it a priority and refer to the need to comply with the inventory and logging rules, which are however observed selectively.

- **The superficial approach to other forest functions, including those concerning the forests of scientific interest and the gene pool and ecosystem protection forests (functional group I, subgroup 1.5)** in the forest work planning process. The Forest Code (regardless of version) ensures, at least in principle, the conservation of the biodiversity as well, because it recognises the multifunctional role of forest ecosystems. Also, forest rules allow the classification of certain stands truly valuable in terms of biodiversity into functional subgroups aiming at protecting the natural values. The practical approach to forest work plans is to omit these stands from the groups with protective functions (which are classified as functional type TI and TII),

even if they have great value, because this approach reduces the production area of the forest subject to work plans. This practice, however, is in conflict with the principles of a sustainable forest management that leads to the certification of the voluntary forest management, is contrary to the conservation objectives of certain species encompassed in the specific legislation or in the management plans of protected areas and it is also contrary to the Forest Code itself and to the principles of sustainable management of forest ecosystems stipulated in the international conventions to which Romania is a party.

- **The non-compliance with the work plan.** In many cases the work plan is just a useless document in planning and many stands are deconstructed or completely destroyed as a result of unjustified accidental product cutting and exaggerated sanitation harvest volumes, so that the age structure of the forest subject to the work plans is changed by the end of the period.



© Sos Tibor – Cut tree where the nest of an *Aquila* used to be



© Sos Tibor – Forestry works outside the legal period

bodies benefit from works, whereas the third body is not provided with any work plan. Thus, without coordination between them, trees may be cut in all three forest bodies to different extents, leading to the disappearance of older stands and thus affecting the habitat for the two pairs of *Aquila pomarina*.

- **The work plans for small surfaces.** Although not an illegal practice, applying works to a small surface can have serious repercussions on many species of birds, including *Aquila pomarina*. Based on best practices, in the past a work plan used to be drawn up for large areas (of thousands of hectares of forest). Thus the upper limit of production was reached in relation to a very large surface and after completing the works the age compositions were favourable to the species. After returning forests to private natural persons, the Forest Code allowed the preparation of work plans for very small surfaces (from a few hectares to a few dozen hectares). Due to the material pressure from owners, the production capacity of the forest was overestimated and in conjunction with the small size of the forest random unplanned tree cutting took place, using the forest work plans as excuse. This phenomenon has serious repercussions on all species, including *Aquila pomarina*, a species dependent on old age trees.
- **The forestry works outside the work plans.** This is an increasingly common practice because the Forest Code has left out certain provisions. When forests are returned to their (natural person) owners the latter are required under the Forest Code to sign a management contract with private or State forestry offices. Often, the owner signs a management contract with a private/State forestry office that, according to the contract, draws up the
- **The exploitation without a work plan.** Not all forests are covered by a work plan (e.g most forests in Valea Nirajului where *Aquila pomarina* specimens nest are not included in any work plan), consequently trees are cut under permits issued annually and the age structure of forests can change given that it is not closely monitored. In the majority of cases, old forest plots, favourable for exploitation, are overused during these types of interventions.
- **The unsynchronised work plans.** Work plans do not necessarily include the whole body of forest or bodies of forest located. It may happen that, for instance, in an area with 3 forest bodies located close to each other (with two pairs of *Aquila pomarina*), two of the

work plan for the forest body concerned, either separately or by joining it to its own work plan. Subsequently, the private owner decides to terminate the contract (the reason being most often that the money coming from the legal exploitation of the forest is not satisfactory) and signs a new contract with another forestry office. The new manager of the forest no longer complies with the original work plan and therefore, pressured by the owner, is forced to extract more wood, bringing about serious consequences for the forest structure and hence for *Aquila pomarina*.

• **The old stands are not fit for nesting.** Locating the stands in age classes V and VI inside the forest bodies is very important. Even if we assume that at the beginning of the 10 year period we have more than 30% of forest older than 85 years (favourable to *Aquila pomarina*) and the same percentage is maintained through the end of the implementation of the work plan, this does not necessarily mean that the area will be able to support the same number of *Aquila pomarina* pairs. The species prefers to nest near the edge of the forest (with nearby feeding habitats as accessible as possible), therefore, if all old stands covered by the work plan remain far from the forest edge, *Aquila pomarina* most likely will not nest here or the density of the species will decrease significantly.

• **The illegal cutting of old trees.** It is a phenomenon that can occur in plots that accommodate *Aquila pomarina* nests when disturbing the species is the very purpose. There is also the permanent threat of illegal logging, through which old trees, sometimes even whole stands, may be selectively exploited without permits or with fake permits.

2. The disturbance in the nest area

Disturbance is mainly the result of forestry works, which are the primary activities that are conducted in the forest habitats. But this chapter aims at other types of disturbance such as that caused by temporary or permanent constructions at the edge of the forest (sheepfolds, vacation homes, trout farms, bed and breakfasts, and so on). The emergence of these facilities near the nesting areas in most cases puts an end to nesting and leads to the abandonment of the nesting territory. Other disturbing factors are tourism, motorised off-road activities, hunting, poaching and illegal grazing in the forest.

A preventive measure is the protection area around the nest (conservation measure implemented by the LIFE project "Conservation



© Sos Tibor – Securing the perimeter of an *Aquila pomarina* nest to prevent disturbance



© Sos Tibor – Raptor nest on old oak tree.

of *Aquila pomarina* in Romania", also used in other countries), designed to keep away such sources of disturbance. The buffer zone is a circle around the nest with a radius of 150 m, indicated as such by different markings (the fitting of plates with warning inscriptions or forestry markings such as a yellow stripe) on the trunk, warning that there is a protected raptor nest nearby.

Most *Aquila pomarina* specimens come back from the wintering grounds in Africa in April. Immediately after they choose their mate, they renovate their old nest (or build a new one) and then lay their eggs and start hatching.

In the first period, from the arrival in the nesting territory until they lay eggs, *Aquila pomarina* individuals are very sensitive to disturbance and

leave the nesting territory (to choose another location if they have enough time and if there is another favourable area) if they are disturbed several times.

The hatching period (about 40 days) is another critical stage. If their nest is disturbed during this time for more than 2-3 hours (when the weather is cold or rainy even for a shorter period), this can be fatal to the eggs laid that year. If the *Aquila* leaves the nest due to disturbance and cannot return soon enough, the eggs get cold and reproduction will be compromised that year. After hatching and when the chicks are at least 2 weeks old, they become more resistant to disturbance and nesting will no longer be compromised even if the disturbance persists for several hours around the nest. However, for an optimum nesting any kind of further disturbance should be avoided. But nesting is endangered during this period by the exploitation of the forest. Even if the nest tree is not cut, according to our findings, adult birds may leave the nest in consequence of the disturbance.

The sources of disturbance identified around the nest during the reproduction of *Aquila pomarina* are as follows:

- logging activities in the vicinity of the nest;
- transporting (harvesting and forwarding) of the wood;
- harvesting pre-existing or old trees through sanitation harvest;
- locating tourist or biking trails near the nest;
- performing off-road motorised activities;
- locating sheepfolds at the edge of the forest;
- grazing in the forest;
- hunting and poaching;
- camping and picnics;
- allow sheep or cows to stay around the nest;
- grass cutting with heavy machinery.

b) In the feeding habitat

The most serious threats to the feeding habitats are as follows:

1. The changes to the current use system of the agricultural lands

Currently the most important *Aquila pomarina* populations in Romania are in areas that, in addition to forests favourable for nesting, provide appropriate feeding habitats such as pastures, meadows and mosaic agricultural lands, made up of small plots, traditionally extensively managed. The intensification of agriculture through monocultures on large areas or on the contrary, the abandonment of lands, leads to the disappearance of these habitats preferred by *Aquila pomarina*.

The most important factors that reduce the quality of the feeding habitat of *Aquila pomarina*



© Sos Tibor – Grassland in Barghis before being cleaned under the project

on arable lands are as follows:

- the changes to the mosaic structure of the arable lands in favour of monocultures, more precisely the application of land consolidation (including under the influence of legislative changes related to the liberalisation of the land market);
- the cultivation of crops (e.g. corn, rapeseed) that are not favourable to *Aquila pomarina* on large areas of its feeding habitat;
- the abandonment of crops that are favourable to *Aquila pomarina* (oats, barley, wheat) and the appearance of fallow lands with invasive plants.

2. The disappearance or degradation of grasslands

Meadows (from the plains to the mountain) are the most valuable types of feeding habitat for *Aquila pomarina*. Unfortunately, their percentage at national level is very small and consequently account for very little of *Aquila pomarina* territories. Keeping the meadows in their natural state and creating new parcels of meadows are very important in the protection of this species.

Compared to meadows, pastures hold almost always a much higher percentage of the feeding habitat of *Aquila pomarina*. Their quality largely determines whether they are selected or not by an *Aquila pomarina* pair in order to be used. Good quality pastures attract *Aquila pomarina* specimens through the abundance of food, whereas degraded ones are avoided by them. High quality pastures are those where an appropriate number of animals graze (sheep or goats), especially those where cows or horses graze. In the case of *Aquila pomarina* pairs that



© Deák Attila – Rapeseed field unsuitable for capturing food

are provided with such pastures in their area much of the food is procured from these habitats. Avoiding overgrazing would be a solution that could increase the use of pastures by *Aquila pomarina* in the future. Degraded pastures are the open ones (with few or no bushes or trees), where the vegetation is almost absent and very dry and short as a result of overgrazing. From the results of the LIFE STIPA (Saving Transylvania's Important Pastoral Ecosystem) project, implemented by the ADEPT Foundation, the dry habitats 6210 and 6240 are particularly threatened because the biomass is much lower and the load under the requirements of the Agri-environment measures is too high (1 LSU/ha/approximately 6.6 sheep/ha). Unfortunately this is an increasingly common phenomenon and the animals *Aquila pomarina* preys on are disappearing because they no longer have places to seek refuge.

The most important factors leading to the disappearance/reduction of grasslands favourable to *Aquila pomarina* are as follows:

- the disappearance of meadows (through

abandonment or their conversion into pastures, arable land or building land);

- the disappearance of meadows due to the agricultural practices under the Agri-environment measure, where there is no clear distinction between pasture and meadow. Farmers are more inclined to allow grazing activities for the same amounts from compensatory allowances under Measure 214 – NRDP and stop cutting the grass, thus having a significant impact on the cultural landscape and on the traditions in these habitats;
- the degradation of meadows and wet pastures through drainage (as a result the habitats of amphibians, an important food source for *Aquila pomarina*, disappear);
- the abandonment of grazing and hay production activities;
- ecological restoration (prohibition of grazing for the purpose of forest regeneration) outside the forest, in areas favourable to *Aquila pomarina*;
- the disappearance of pastures because of

temporary or permanent constructions (houses, bed and breakfasts, roads, solar farms, wind farms, etc.);

- the changes to the land use (integration into the built-up area, conversion of agricultural lands to other uses);
- the increasing use of meadows (overseeding with non-native species, excess fertilisers, disking grasslands);
- the overgrazing (especially by sheep) and the improper treatment with sheep manure that lead to the destruction of the vegetation and enable the growth of invasive plants;
- the erosion due to the disappearance of the grass cover;
- the destruction of the grassland structure by people engaging in motorised off-road activities;
- the degradation of grasslands due to invasive plants;
- the plantation of exotic species, such as the locust, for soil fixing.

c) Other threat

The birds are usually killed because of the aversion to raptors and because all raptors are wrongly considered a threat to poultry in households, or in order to protect the game (pheasants, hares, etc.), to serve as a stuffed trophy and sometimes even to have fun.

Poaching is an important threatening factor. In Romania there have been cases where *Aquila pomarina* specimens have been shot, even if their hunting is illegal. The effect of illegal hunting on this species is not exactly known, but one thing is certain: poaching still exists. Often poachers shoot *Aquila pomarina* individuals to stuff them. Stuffed specimens are found quite often among other diurnal raptors, especially in bed and



© Deák Attila – Stuffed Aquila

breakfasts, hunting lodges or private collections. Other raptors too are victims of poaching by shooting, despite being protected by law. This phenomenon is still popular among some hunters and gamekeepers. By committing these acts, they become poachers and the hunting of raptors is an offence punishable by law.

Fortunately the poisoning of raptors is not a widespread phenomenon in Romania, whereas it is quite frequent in other countries (Spain, Hungary). But it is possible that this is due primarily to insufficient monitoring and the bird poisoning phenomenon could turn out to be broader than expected. We are aware of isolated cases when raptors (and mammals, such as foxes) have been deliberately poisoned, but not in sites where *Aquila pomarina* lives. This type of poaching is probably much more significant in areas where the species migrates and winters. It is worth noting that the placing of poison entail serious consequences to the environment, having effects on human health as well (e.g. consumption of wild boar meat from



© Deák Attila – Electrocuted raptor

the affected areas).

The collection of eggs can be an endangering factor, regardless of whether *Aquila pomarina* eggs end up in small collections or are purchased by large collectors, which is considered an offence. The locals can also contribute to decreasing the number of raptors (and the number of *Aquila pomarina* individuals also) through occasional campaigns conducted to eradicate these birds by taking their eggs from nests, a phenomenon that has been quite frequent until recently in Transylvania. The collection of infertile eggs by specialists and/or authorised persons for museums or for toxicological studies does not fall into this category.

Wind turbines can have multiple effects on these birds. The effect that is best known – but probably not the most important – is the direct impact, the collision of the birds with the blades of the wind turbines. Building wind turbines is a fairly new activity in Romania, but there have already been two known cases of *Aquila pomarina* specimens



© Deák Attila – Aquila flying through the blades of a wind turbine

that have died during migration (in Dobrogea). A significant effect is the disturbance: *Aquila pomarina* and many other species of birds avoid nesting in areas with wind turbines because of the constant disturbance caused by the noise from the rotors.

Another serious effect is the destruction or change of the habitat during the building and operation of wind turbines – wind turbines need significant concreted areas, new access roads, medium voltage, etc. In Romania, the nesting area of *Aquila pomarina* overlaps areas that are favourable for wind turbines especially in Dobrogea and Moldova (but also in some parts of western and southern Romania). *Aquila pomarina* specimens that migrate here in large numbers can be significantly affected.

Electrocution is a real endangering factor for raptors. Many species of raptors sit on electric poles to watch out for prey in their feeding territory or to rest. By touching the non-insulated cables or the beams of poles, they are electrocuted and in



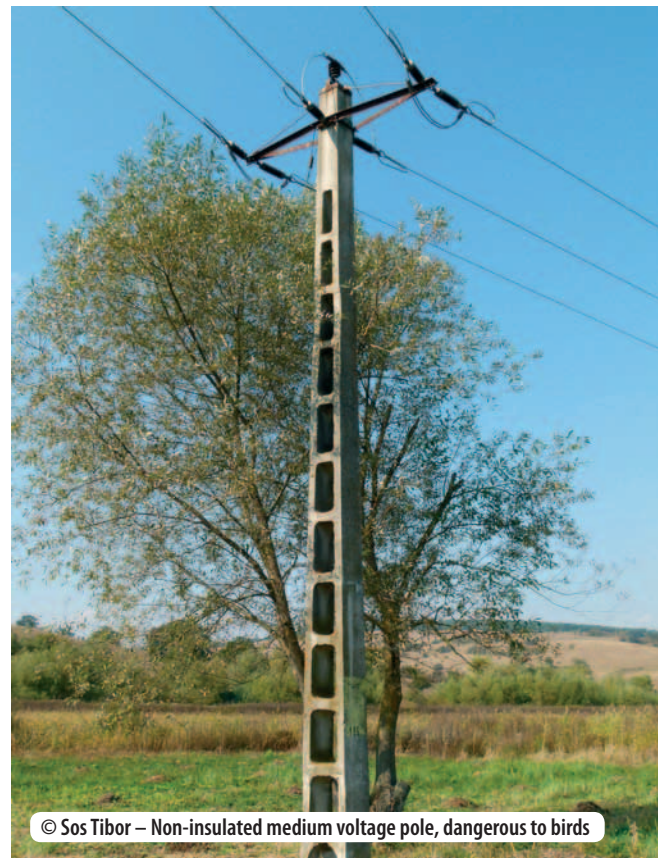
© Sos Tibor – Bird electrocuted on medium voltage pole

most cases they die instantly or are seriously hurt without the possibility to heal.

The study conducted under the LIFE project on 4835 electric poles in 3 SPAs showed that more than 8% of the medium voltage poles cause bird electrocution. Under the 403 killer poles identified 554 dead birds were found. More than 20% of the electrocuted birds were large birds, raptors and storks, most of which were also protected species. The risk of electrocution varies depending on the characteristics of the poles and on the habitat where they are located. The switch or voltage poles are more dangerous than the support poles. Also, the bracket material and the location of insulators influence the dangerousness, thus poles with metal brackets and those with insulators pointing up are more dangerous. In a habitat where there are few trees that can serve as a place to watch for prey or to rest, the risk of electrocution increases significantly.

Electrocution can be prevented by selecting and installing from the very beginning poles that are

not dangerous to birds, by insulating dangerous poles and by fitting insulated cables. In 2011, at a conference in Budapest on “Power Lines and Bird Mortality in Europe” in which the project team participated as well, the “Budapest Declaration on Bird Protection and Power Lines” was drawn up, calling for a European directive for this purpose.



© Sos Tibor – Non-insulated medium voltage pole, dangerous to birds

4. THE MANAGEMENT OF FOREST HABITATS IN FAVOUR OF *AQUILA POMARINA*

a. The importance of forest habitats to the species

As shown in detail in Chapter 2 of this Guide, *Aquila pomarina* nests exclusively in trees in open nests, built at heights between 8 and 20 meters. In the hilly areas *Aquila pomarina* nests mainly in deciduous and mixed (deciduous and coniferous) forests and in the alpine areas it also nests in coniferous forests. It is always partial to old stands in classes V and VI₃ where there are mature old trees (around 80 years old, 35 cm trunk diameter), with crowns strong enough to support the nest. Forest bodies that lack significant areas of such stands are not suitable for nesting. This was confirmed by the nest search activity conducted under our project: in the three key sites over 500 *Aquila pomarina* nests were identified in the period 2010-2012. Regarding the tree species in which the nest is built, *Aquila pomarina* has no predetermined preferences, as the branches supporting the nest are more important than the species. The types of forest where known nests are in ROSPA0028 Dealurile Târnavelor – Valea Nirajului and ROSPA0099 Podișul Hârtibaciului are the following: 91Y0 Dacian oak and hornbeam forest – 79%, 9170 Galio-Carpinetum oak-hornbeam forests – 2%, 9130 Asperulo-Fagetum beech forests – 12%, Sub-Atlantic and medio-

European oak or oak-hornbeam forests of the Carpinion betuli – 2%, outside the forest – 4.6%. Most nests (91%) are in sessile oaks (*Quercus petraea*) and oak (*Quercus robur*), while a small number of nests are built in beech trees (*Fagus sylvatica*), black locust trees (*Robinia pseudacacia*) and plum trees (*Prunus sp.*).

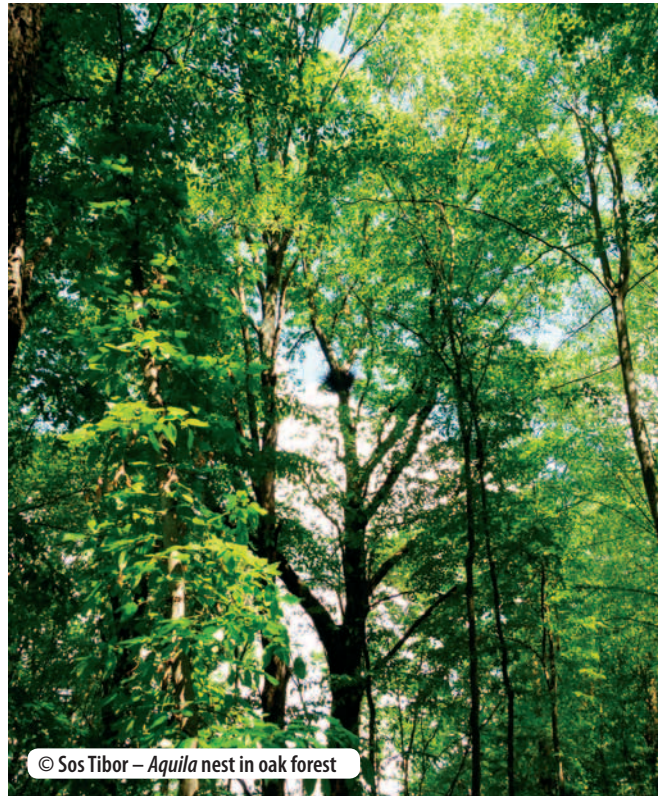
© Sos Tibor – Oak forest, *Aquila* nesting habitat

3 Age classes are: I 0-20 years, II 21-40 years, III 41-60 years, IV 61-80 years, V 80-100 years, VI 100-120 years, VII more than 120 years

Case study

The nest of Benjamin and its mate near the village of Alțâna (SPA Podișul Hârtibaciului) was known from the very beginning of the LIFE project. In 2010 a satellite transmitter was mounted on the male (when it was given the name Benjamin), which allowed monitoring this pair over many years. In the spring of 2012, a protection zone with a diameter of 100 m was designated around the nest, marked by warning plates fitted on trees. For better protection the exact position of the nest was communicated to the employees of the Dealul Sibiului private forestry office to which the forest plot belonged. Despite these actions, at the end of the summer of 2012 the Milvus team members noticed that forestry operations were about to commence in the area. The project team reminded the forestry office of the existence of the protection zone around the nest and the exploitation of the area was temporarily stopped, allowing a successful nesting in 2012, without affecting the eggs. However, later that autumn, the project team discovered that the tree where Benjamin had nested had been cut down. The forestry office had included such works in its work plan.

To help the pair nest, in the spring of 2013 the team built an artificial nest in the thinned forest plot initially chosen for nesting by the pair. On 10 June 2013, on checking the status of the nests and the presence and the activity of the birds, a new nest was discovered, chosen by Benjamin and its mate. It was an older nest, probably randomly used by the birds. Unfortunately, less than 100 m away another forest plot was under exploitation works. According to the forestry office employee who was present during the cutting of the trees,

© Sos Tibor – *Aquila* nest in oak forest

that was an authorised cutting – although the law did not allow cutting mature trees that time of the year. At the team's request, the exploitation works were again temporarily interrupted, so that on 11 July 2013 another juvenile of this pair was marked with a ring. According to the information supplied by the Milvus team, the exploitation of this forest was not stopped, but moved elsewhere, where habitat disturbance and alteration was going to continue regardless of the presence of *Aquila pomarina* during the current works. Considering that the mentioned surface was included in a work plan in its last year of implementation, the project team is discussing with the forestry office to exclude the plot from the exploitation operations during the next work plan (for a period of 10 years)..



© Sos Tibor – Destruction of nesting habitats



© Sos Tibor – Destruction of warning plates around the nests



© Sos Tibor – Destruction of protection zones around the nests

b. The main measures proposed

Under the “Conservation of *Aquila pomarina* in Romania” project, based on the field data collected in 2010, 2011 and 2012 by the project team in the SPA Dealurile Târnavelor – Valea Nirajului, the SPA Podișul Hârtibaciului and the SPA Piemontul Făgăraș, we have completed the protection measures shown in Table 4.1. The implementation of these measures in SPAs and other areas important to the *Aquila pomarina* are required to maintain the favourable conservation status of the species in Romania.

1. protection perimeters around the nest
2. maintenance of mature forest percentage in the forest stock by keeping the mature stand at the level of the Natura 2000 site (40%) in each body of forest (30%), in forest edge strips (30%) – the “30-40% rule”

Table 3. Protection measures in forest habitats

Protection measures to avoid the loss of the nesting habitat	In SPAs (with <i>Aquila pomarina</i>)	Outside SPAs
1. Creating protection zones around the nests	Mandatory – compensatory payments under Natura 2000	Mandatory if the nest is known (compensatory payments under Natura 2000 should be provided outside Natura 2000 sites too).
2. Keeping on approximately 40% of the SPA surface the stands in age classes V and VI in the old forests of the total forests of a SPA	Mandatory – to be included in the Management Plan of the protected area	- not applicable, but should be implemented at the level of the Forest Work Plan
3. Keeping at least 30% of forests in the age classes V and VI in a forest body in the hilly area	Mandatory – if applicable, compensatory payments under Natura 2000 are provided	- not applicable, but should be implemented at the level of the Forest Work Plan
4. Keeping forest bodies with stands in the age classes V and VI in the forest edge (along a strip having a width equal to two heights of a mature tree)	Mandatory – implemented through the Work Plans	- recommended to be implemented through the Forest Work Plans
5. Prohibiting forestry works through exploitation permits in the nesting period (15 March – 15 August) in old stands where <i>Aquila pomarina</i> nests have been identified. or alternately Including in the functional group 1.5.c (Rule 5 of 2000) the units undergoing works where nests have been identified according to the forestry rules	Mandatory	- recommended at least for the period 15 March – 15 June in mature stands where the majority of bird species nests.

Advantages	Disadvantages	Explanation, reasons
1. Creating plots where human intervention is minimal, allowing natural processes. 2. Securing a safe location and a nesting place for an undetermined period of time.	1. Difficult to implement without payments under Natura 2000. 2. <i>Aquila pomarina</i> specimens may relocate for other reasons, nevertheless these areas should be preserved. 3. Protecting only a small surface of the forest	The best protection method of the nesting area.
1. Supporting a healthy forest dynamics, favourable to many species that depend on the mature forest habitat. 2. Not requiring compensatory payments.	1. Failing to provide constancy to <i>Aquila pomarina</i> pairs, as some pairs may be left without a nesting habitat. 2. Difficult to control.	In the SPA with the most <i>Aquila pomarina</i> pairs in Romania, Podișul Hârtibaciului, the percentage of old forests is approximately 40%.
1. Making sure that <i>Aquila pomarina</i> individuals (and many other species depending on old forests) do not disappear from that forest body.	1. May be difficult to implement without compensatory payments if the forest body does not have several old plots.	
Providing the ideal nesting habitat to <i>Aquila pomarina</i> .	Difficult to implement, may be achieved only by means of the Work Plans.	<i>Aquila pomarina</i> (and the majority of raptors) mainly nest close to the forest edge. The most affected parts of the forests are the very edges.
Securing the quietness necessary in the nesting period. It is essential to the majority of bird species nesting in the forest.	Difficult to implement in whole, in some cases compensatory payments under Natura 2000 may be needed.	Elementary measure to ensure nesting.

Explanations to the table:**1. Protection zones around the nests**

According to the specialised literature in other countries that applied the raptor nest protection method by delimiting safety perimeters, a circle with a radius of 150 m is enough to provide good nesting conditions to *Aquila pomarina*.

For example, Haraszthy et al. 1996 for Lesser Spotted Eagle id recommend a perimeter of 100 m. Daróczy J. Sz, Zeitz R., 2001, conclude that the size of the protection perimeter may vary depending on the needs of the species. The two authors conclude that in Europe there are methods that are well drawn up and documented for the protection of raptors during the nesting. The radius of the protection perimeter is influenced by the species and may vary between 100 and 300 m. In the case of nests located in open field the radius of a perimeter may exceed 400 m, while for the species that nest in forests, such as *Ciconia nigra* or *Circaetus gallicus* and *Aquila pomarina* a circle with a radius of 150 may be enough.

The protection zone around the nest should be applied to all nests used by *Aquila pomarina* (including alternative nests as potential nests), regardless of whether or not they are built by this species. The protection zone status must be maintained throughout the period, namely as long as it is taken up/used by the *Aquila pomarina* individuals and for at least another five years after its abandonment. Nests that have not been used for more than five years no longer benefit from protection. **Our recommendation is that inside SPAs these areas should have**

minimal intervention (or no intervention at all) without limitation in time, even if *Aquila pomarina* will no longer nest, in order to have areas in the forests where natural processes predominate. These plots can become over time “salvation” nuclei for many species.

2. Keeping mature stands at the level of the Natura 2000 site (40%) in each body of forest (30%), in forest edge strips (30%) – the “30-40% rule”

This category includes all forests in the SPAs declared for the conservation of *Aquila pomarina* (according to the standard form attached to the Government Decision no. 971 of 2011 amending and completing the Government Decision no. 1284/2007 regarding the establishment of special protection areas as integral part of the European ecological network Natura 2000 in Romania) and the forests outside SPAs that are conducive to the nesting of *Aquila pomarina*.

Aquila pomarina chooses for nesting the forests where mature stands prevail (age > 80 years old or trunk diameter > 35 cm for species of *Quercus*, *Fagus* and *coniferous*), while the nest is built in old trees. For this reason, it is essential that this species be **permanently** provided with mature stands plots or subplots in the forests it lives in. In the forests that have plots of different generations, the surface must not be less than 7 hectares. In the forests where plots have stands of similar age, quasihomogeneous, **their percentage should be maintained.**

In order to ensure the nesting of the pairs in such forests it is recommended that the percentage of the surface taken up by plots

that can secure nesting (age > 80 years or trunk diameter > 35 cm for species of *Quercus*, *Fagus* and *coniferous*) does not decrease below 30% of the surface of the forest body. The best thing is that on planning the management of stands this percentage is limited to a few neighbouring plots not evenly distributed across the entire forest.

In the hilly area *Aquila pomarina* prefers to nest near the edge of the forest; usually the nests are at a maximum of 300 m from the forest edge, therefore it is very important that in this 300 m strip at least 30% of old plots be maintained in order for the *Aquila pomarina* to be able to nest.



© Sos Tibor – *Aquila* close to the nest

c) The responsibilities of stakeholders

There are different stakeholders, institutions, etc. determining the proper management of forests in protected areas in Romania. They may be considered as entities whose actions endanger the species, since they are responsible for the occurrence thereof, but they are also the ones who are able, even obliged, to solve the issues caused by such endangering activities. The stakeholders are as follows: the manager or custodian of the protected area, the private and/or State forestry offices, the hunting associations, the local government (town halls, police, judges, etc.), forest owners and the mass of people who conduct different activities in the protected areas. The most important stakeholders, their roles and obligations in the protection of the species are listed below.

1. Natura 2000 site managers and/or custodians

Those managing a **Natura 2000** site of the **12 most important sites** to the species:

1. ROSPA0028 – Dealurile Târnavelor – Valea Nirajului
2. ROSPA0099 – Podișul Hârtibaciului
3. ROSPA0098 – Piemontul Făgărașului
4. ROSPA0027 – Dealurile Homoroadelor
5. ROSPA0029 – Defileul Mureșului Inferior – Dealurile Lipovei
6. ROSPA0033 – Depresiunea și Munții Giurgeului
7. ROSPA0034 – Depresiunea și Munții Ciucului
8. ROSPA0069 – Lunca Mureșului Inferior
9. ROSPA0082 – Munții Bodoc – Baraolt
10. ROSPA0091 – Pădurea Babadag
11. ROSPA0080 – Munții Almajului – Locvei
12. ROSPA0107 – Vânători Neamț

are recommended to apply all the points in Table 3. Protection measures in forest habitats.

A manager/custodian of a **Natura 2000 site** which has been **designated as such for the presence of *Aquila pomarina* (as well)**, but which is not among the 12 sites mentioned, is recommended to apply at least the points 2, 3, 4 of the Table 3. Protection measures in forest habitats.

2. Private and State forestry offices

For the private and State forestry offices having responsibilities pursuant to the Forest Code that manage forests overlapping, in whole or in part, Natura 2000 sites (SPAs) that were designated for the conservation of *Aquila pomarina*, it is recommended to consider the measures in the Table 3. Protection measures in forest habitats on drawing up the Work Plan. Also, it is recommended that these measures be discussed with the manager/custodian of the Natura 2000 site or with the project team since the stage of the Conference I to avoid inconsistencies between the species conservation principles and the exploitation principles, or to review the Work Plan in the last stage.

Under the environmental legislation during the assessment procedure for the Work Plans the protected area approval should also be sought. As a result in the procedure according to the Emergency Government Ordinance 1076/2004 a notice shall be sent by the environmental authority to participate in the stages of the SEA procedure, with the obligation to issue an approval to the manager or custodian. In the working groups organised for the drawing up of the environmental report the managers/custodians are required to analyse the contents and provisions of the work plan and the accompanying environmental report. The opinion is recorded in a report and the

beneficiary and the consultant must take it into account and modify/complete, as appropriate, the assessment study in order for the non-conformity to be removed.

d) Other rules on the forestry works (exploitation, access, storage, etc.)

General measures for maintaining the forest habitat favourable to *Aquila pomarina* (Natura 2000 and forests, European Commission – Directorate-General for Environment):

In order to maintain the health and vitality of forest ecosystems the following measures should be applied:

- the forest management practices should make better use of the natural structures and processes and should implement preventive biological measures whenever possible. The existence of an appropriate genetic, specific and structural diversity strengthens the stability, vitality and resilience of forests to adverse environmental factors and leads to the reinforcement of the natural regulatory mechanisms;
- the appropriate forest management practices will be used, such as reforestation and afforestation with tree species and provenances adapted to the site, as well as treatments, harvesting and transport techniques that minimise the degradation of trees and/or soil;
- the strict prohibition of oil leakage during forest operations or irregular waste disposal.

In order to maintain and encourage the (wood and non-wood) productive functions of forests the following measures must be applied:

- the regeneration, care and harvesting operations should be carried out on time and in a way that does not lead to a decrease in the productive capacity of the site, for example by avoiding the

degradation of the stand/undergrowth and the remaining trees, as well as the degradation of the soil by using the appropriate systems;

- the harvesting of wood and non-wood products (berries, mushrooms etc.) must not exceed a sustainable level in the long term and harvested products must be used in an optimal way, following the rate of nutrient recycling;
- an appropriate infrastructure (roads, trails for harvesting-forwarding or bridges) will be designed, built and maintained to ensure efficient movement of goods and services and at the same time to minimise the negative environmental impact.

For the purpose of maintaining, preserving and expanding the biological diversity in forest ecosystems the following measures apply:

- the forest management planning should aim at maintaining, preserving and enhancing the ecosystem, specific and genetic biodiversity, as well as at maintaining landscape diversity;
- the forest work plans, the land inventory and the forest resource mapping should include forest

biotopes that are important in terms of ecology and should take into account the protected, rare, sensitive or representative forest ecosystems such as riparian areas and wetlands, areas containing endemic species and habitats of endangered species and in situ endangered or protected genetic resources;

- the natural regeneration will be preferred provided that there are appropriate conditions to ensure the quantity and quality of forest resources and that the existing indigenous varieties have the quality necessary to the site;
- for afforestation and reforestation the indigenous species and local provenances well adapted to the site will be preferred;
- the forest management practices must promote, where appropriate, the diversity of structures, both horizontal and vertical, such as stands of mixed ages, and the diversity of species, such as mixed stands, where possible; these practices will aim at maintaining and restoring the landscape diversity;
- the infrastructure must be designed and built



© Sos Tibor - Specific habitat of *Aquila pomarina* in the hilly area

so that the damage to the ecosystem is minimal, especially for rare, sensitive or representative ecosystems and genetic reserves, paying attention to threatened or other key species, particularly to their migration patterns;

- dry trees, fallen or standing, hollow trees, clumps of old trees and extremely rare species of trees should be kept in the amount and distribution necessary to protect the biodiversity, taking into account the possible effect on the health and stability of the forests and surrounding ecosystems;

- key forest biotopes such as water sources, wetlands, rock outcrops and ravines must be protected and, where appropriate, restored if they have been degraded by forest practices.

Other measures that can be applied to maintain the quality of forest habitats used by *Aquila pomarina*

- managing the stands with an excessive percentage of coniferous and/or pioneer species to a composition similar to that of the natural type of forest (either by gradually removing the inappropriate species in the case of stands where they account for more than 20%, or by substituting the inappropriate species – when reaching the age of exploitability – and by afforesting with the appropriate species in the case of stands consisting of at least 80% of coniferous and/or pioneer species);

- performing the care and management works on time;

- making full use of the possibilities of natural regeneration of beech from seeds;

- managing the stands only in high forests system;

- performing the care and management works on time and for the stands that have not undergone intervention works in a long time conducting interventions at low but frequent intensity;

- using in artificial regenerations only seedlings produced with seminologic material of local origin;

- eliminating tree cutting in breach of the legal provisions;

- avoiding grazing in the forest and minimising the passage of animal herds through the stands;

- complying with the measures taken to identify and forecast the evolution of the populations of main insect pests and phytopathogenic agents, promptly combating them (as much as possible by biological or integrated methods) if necessary, performing all necessary phytosanitary measures to prevent mass multiplication of insect pests and the spread of phytopathogenic agents;

- avoiding concentrated tree collection for a long period by skidding along the greatest slope, on lands with high slopes, avoiding keeping sloping lands without forest vegetation for a long period of time, conducting operative intervention in case of signs of torrential downpours.



© Tom Heller – *Fagus sylvatica*

5. THE MANAGEMENT OF GRASSLANDS & AGRICULTURAL LANDS

a. The importance of grasslands and agricultural lands to *Aquila pomarina*

According to the European Union Species Action Plan for *Aquila pomarina* (Meyburg et al., 2001), this species prefers to nest in forest habitats with open spaces dominated by grassy vegetation. In our country, following the observations achieved under the LIFE project “Conservation of *Aquila pomarina* in Romania”, *Aquila pomarina* nests in deciduous or coniferous trees, but in order to procure food it uses pastures, meadows and agricultural lands near the nesting site.

Each *Aquila pomarina* nesting pair controls such a mosaic territory, usually in the hilly-alpine area at

altitudes between 500 and 1,600 m. It can nestle at lower altitudes (300 m) if it is provided with forests in floodplains, when it hunts in floodplain grasslands and meadows. There have been reports on the nesting of the species in the steppe area (Dobrogea), where it finds food in xeric grasslands. Although some researchers who have studied the habitat selection of this species (Matusiak, 2001) argue that *Aquila pomarina* has changed its feeding strategy lately, adapting to the intensification of agriculture across Europe (preferring agricultural lands for hunting, thus experiencing a decrease in the role of grasslands), many studies (Mirsk, 2009 – Poland, Treynis, 2004 – Lithuania) have shown that *Aquila pomarina* still prefers to use herbaceous plant formations (95% of the attacks have occurred in grasslands) and avoids agricultural lands if it has the possibility



© Sos Tibor – Grassland – feeding habitat for *Aquila pomarina*

to choose between them. According to data collected under the LIFE project (see the chapter on “Needs of the species in the feeding habitats”), *Aquila pomarina* may have different preferences for hunting habitats, preferences that can be caused by the percentage, state, prey abundance, distance from the nest, competition caused by the density of pairs, etc.

The major conclusion of these studies is the need to concentrate the habitat management measures undertaken to preserve the *Aquila pomarina* on the complex mosaic landscapes, which have old forests, extensive water courses and large areas of open lands, as *Aquila pomarina* shows a clear preference for this combination of landscape elements. A widely-branched river system in the area explains the higher proportion of meadows and pastures, given that agriculture needs lands located above the flood area. This factor explains the proximity of nesting places to water courses in many European countries (Mirski, 2009 – Poland; Lõmus & Välli, 2005 – Estonia). The analysis of the composition of these habitats has repeatedly shown that *Aquila pomarina* prefers grasslands because they are often more abundant in small rodent species (*Microtus sp.*, *Arvicola sp.*) or small reptiles and amphibians (Butet & Leroux, 2001, Rodriguez & Bustamante, 2008) that they frequently hunt. Similar preferences have been observed in *Aquila pomarina* specimens in Latvia (Meyburg et al., 2004b) and *Aquila pomarina* individuals in Germany have had an identical behaviour, even if the agricultural lands have had a higher percentage than pastures in their nesting landscape (Meyburg et al., 2004b).

Another very important aspect in the selection of the hunting territories for many raptor species dependent on open areas is the grassland

vegetation structure, factor that has directly determined the access to prey (Aschwanden et al., 2005, Bechard, 1982 Preston, 1990, Romanowski & Zmihorski, 2008).

b. The management of grasslands and meadows

The main types of herbaceous plant formations that may serve as feeding habitats for *Aquila pomarina* in Romania are hill and alpine mesophile grasslands (meadows and pastures), floodplain grasslands and xeric grasslands.

1. Hill and alpine mesophile grasslands, meadows and pastures

This type of vegetation includes the following:

- **south-eastern Carpathian grasslands of *Agrostis capillaris* and *Festuca rubra***, scattered on the Sub-Carpathian hills in Podișul Mehedinți (Mehedinți Plateau), Podișul Transilvaniei (Transylvania Plateau), Depresiunea Dornelor (Dorna Depression) and Obcinele Moldovei (Moldavian Ridges). The vegetation covers 90-95% and makes up the largest grasslands in the hilly and alpine areas. The representative species are: *Festuca rubra*, *Agrostis capillaris*, *Cynosurus cristatus*. Other important species are: *Dactylis glomerata*, *Daucus carota*, *Pimpinella saxifraga*, *Anthoxanthum odoratum*, *Cerastium holosteoides*, *Holcus lanatus*, *Lotus corniculatus*, *Trifolium pratense*, *Briza media*, *Carex pallescens*, *C. ovalis*, *Achillea millefolium*, *Trifolium repens* and *Medicago lupulina*. The grass is cut in these grasslands that have appeared after the deforestation of mixed forests, or most of the times they are converted into pastures in our country, often showing signs of degradation



as a result of overgrazing. In these cases an increase in the abundance of *Nardus stricta* and *Festuca ovina* species is noticed.

- **Daco-Getic grasslands of *Agrostis capillaris* and *Anthoxanthum odoratum***, spread in the Subcarpații Getici (Getic Sub-Carpathians), Subcarpații Moldovei (Moldavian Sub-Carpathians) and Podișul Transilvaniei (Transylvanian Plateau). They are used for cattle grazing, but the grass here may be cut.
- **Daco-Getic grasslands of *Arrhenatherum elatius***, meadows in the lowlands, in the hill and lower alpine regions across the country. The typical species are: *Arrhenatherum elatius*, *Cerastium holosteoides*, *Trisetum flavescens*. Other important species are: *Trifolium pratense*, *Onobrychis viciifolia*, *Leontodon autumnalis*, *Lolium perenne* and *Phleum pratense*.
- **south-eastern Carpathian grasslands of *Trisetum flavescens* and *Alchemilla vulgaris*** in the lower and middle alpine regions of the Carpathians in Romania (south-eastern

part). The *Trisetum flavescens* meadows are composed of many tall species (60-80 cm), covering 80-95%. Along with the dominant species the following are also frequent: *Agrostis capillaris*, *Phleum montanum*, *Cynosurus cristatus*, *Festuca pratensis*, *Arrhenatherum elatius*, *Onobrychis viciifolia*, *Leucanthemum vulgare*, *Knautia arvensis* and *Campanula glomerata*.

- **south-eastern Carpathian grasslands of matgrass (*Nardus stricta*) and *Viola declinata*** can be used for hunting by *Aquila pomarina* in the area of Făgăraș Mountains. The representative species are: *Viola declinata* and *Nardus stricta*. The typical species of these grasslands are: *Viola declinata*, *Nardus stricta*, *Scorzonera rosea*, *Poa media*. Other important species are: *Hieracium aurantiacum*, *Hypochoeris uniflora*, *Calluna vulgaris*, *Campanula serrata*, *Geum montanum*, *Ligusticum mutellina*, *Potentilla ternata*, *Campanula abietina*, *Leucorchis albida*, *Genista*

sagittalis, *Festuca nigrescens*, *Antennaria dioica*, *Luzula campestris* and *Carex ovalis*.

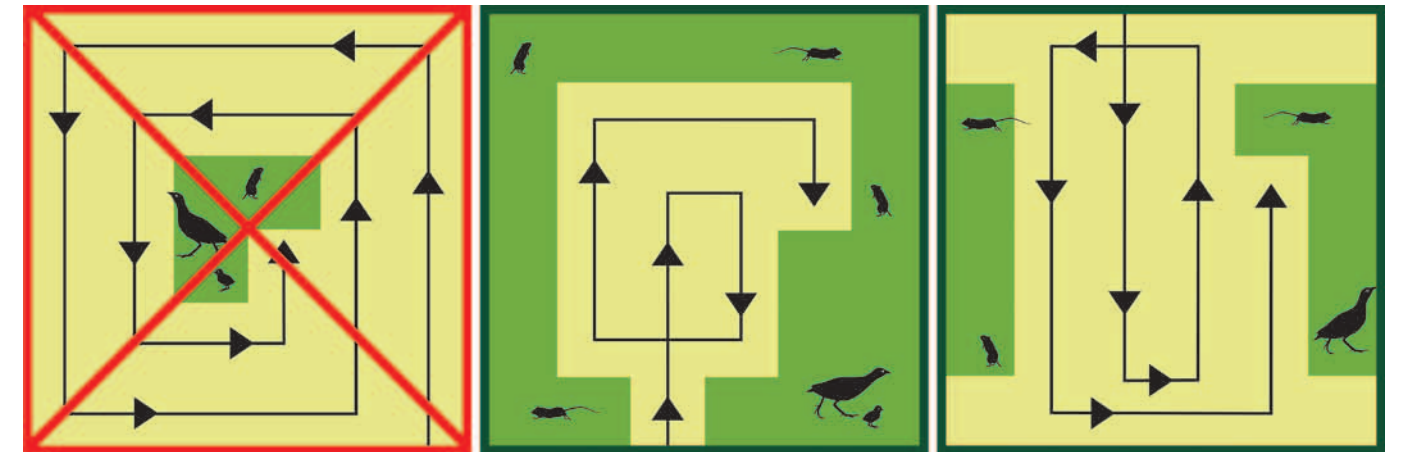
2. Floodplain grasslands

These wet grasslands are found in the river floodplains of Transylvania, Banat, Oltenia, Muntenia, Dobrogea and Moldova. The most common habitats of this type are the following:

- **Dacian grasslands of *Molinia caerulea***, meadows spread in Banat (Caransebeș), in Transylvania (Hațeg, Poiana Ruscă, Făgăraș, Brașov), in the intermountain depressions of the upper Olt basin, Giurgeu basin and in Moldova. They cover areas of 2-4 ha, sometimes reaching 10-15 ha (in Pădurea Narciselor (Daffodil Wood), Brasov County). The collection of *phytocoenoses* includes, in large numbers, tall plants exceeding 1 m in height. In this category the following are mentioned: *Molinia caerulea*, *Serratula tinctoria*, *Juncus conglomeratus*, *Angelica sylvestris*, *Cirsium rivulare*. Other important species are:

Succisia pratensis, *Stachys officinalis*, *Gentiana pneumonanthe*, *Galium boreale*, *Carex ovalis*, *Parnassia palustris*, *Lathyrus pratensis*, *Gladiolus imbricatus*, *Stellaria graminea*.

- **grasslands with excess moisture in the spring, in the category of Dacian communities of *Deschampsia caespitosa* and *Agrostis stolonifera***, used most often for cattle grazing. They are spread in Transylvania and Oltenia, Muntenia and Moldova, only in the hilly area. The typical species are: *Deschampsia caespitosa*, *Agrostis stolonifera*, *Juncus conglomeratus*. Other important species are: *Phleum pratense*, *Festuca pratensis*, *Poa trivialis*, *Ranunculus acris*, *Alopecurus pratensis*, *Trifolium pratense*, *Briza media*, *Lathyrus pratensis*, *Cynosurus cristatus*, *Holcus lanatus* and *Cirsium canum*.
- **Danubian-Pontic grasslands of *Poa pratensis*, *Festuca pratensis* and *Alopecurus pratensis***, used as meadows and as cattle grazing site. The sheep grazing results in the degradation of these habitats. The



© Deák Attila - The grass cutting can be performed only after 31 July and it will be carried out from the inside of the parcel to the outside thereof.

representative species are: *Poa pratensis*, *Festuca pratensis*. The typical species are: *Festuca pratensis*, *Alopecurus pratensis*, *Poa pratensis*. Other important species are: *Poa palustris*, *Galium palustre*, *Juncus effusus*, *Holcus lanatus*, *Agrostis capillaris* and *Briza media*.

- in the hilly area across the country, in places with excess moisture and periodical floods, **the dominant vegetation is the bulrush (*Juncus sp.*)**, a place favourable to animals that are part of *Aquila pomarina*'s diet. The representative species are: *Juncus inflexus*, *J. effusus*, *Mentha longifolia*, *Agrostis canina*. The typical species are: *Juncus inflexus*, *J. effusus*, *Agrostis canina*, *Alopecurus pratensis*, *Rumex crispus*, *Festuca arundinacea*, *Carex hirta* and *Lolium perenne*. Other important species are: *Medicago lupulina*, *Ranunculus acris*, *R. sardous*, *Alopecurus geniculatus*, *Juncus articulatus*, *Poa trivialis*, *P. palustris* and *Lysimachia nummularia*.

Below there are some measures for the management of grasslands and meadows, favourable to *Aquila pomarina*. Once these measures are applied by farmers in the grasslands and pastures legally owned by them, a commitment

is signed for a period of five years and written records are kept on the agricultural activities carried out at the farm level, in conjunction with the implementation of the specific agri-environmental requirements. Farmers with farms located in the territories used by *Aquila pomarina* for feeding can benefit from payments for the compliance with the management requirements favourable to this species according to the agri-environment payments under Measure 214.

Management measures favourable to *Aquila pomarina* to be applied to meadows:

General measures:

- it is prohibited to use pesticides and chemical fertilisers;
- it is prohibited to plough or disk the grasslands under commitment;
- the vegetal mass cut must be collected from the surface of the grassland not later than two weeks after cutting;
- it is prohibited to burn the grasslands;
- it is prohibited to cut the solitary trees or groups of trees;
- it is prohibited to perform drainage.

Measures specific to *Aquila pomarina*:

- the grass cutting can be performed only after 31 July and it will be carried out from the inside of the parcel to the outside thereof, leaving a 3-metre wide uncut or ungrazed strip along the edges of each parcel (measures applicable to *Crex crex* species – corncrake);
- the mechanical grass cutting will be carried out using mechanical machinery driven by animals;
- in the parcel there must be an area with uncut grass (min. 10% - max. 20%), but grass should be cut twice a year to maintain the meadow-specific structure (agri-environmental requirement);
- a grass cutting scheme should be developed, by agreement between the farmers in each area so that the parcels with uncut grass alternate throughout the nesting period (May-August)



with those where grass has already been cut (requirement applicable for NATURA 2000 compensatory measures for *Aquila pomarina*). The last three measures will result in an increase in the abundance of small mammals in refuges with uncut grass and in their exposure when going from one parcel to another, on lands with cut grass, thus becoming accessible targets to *Aquila pomarina*. The benefits of alternating exploited areas with intact areas have been demonstrated by studies on other species of diurnal or nocturnal raptors in other European countries (e.g. Aschwanden et al., 2005 – Switzerland).

Management measures favourable to *Aquila pomarina* to be applied to pastures

General measures:

- it is prohibited to use pesticides and chemical fertilisers;
- it is prohibited to plough or disk the pastures under commitment;
- the flooded pastures will not be grazed earlier than two weeks from the withdrawal of waters;
- it is prohibited to drain wet pastures;
- it is prohibited to burn the pastures;
- it is prohibited to cut the solitary trees or groups of trees.

Measures specific to *Aquila pomarina*:

- the adjustment of the number of animals on the pasture and a rigorous control where there is a massive degradation due to overgrazing (making up one of the objectives of the agri-environment measure);
- the grazing will be at a maximum of 0.7 LSU per hectare⁴;

⁴ In the sites where there are studies identifying all the types of grasslands within the site and whose location is known and the APIA recognises them as such a limit should apply based on the studies conducted in the area

- 10% of the pasture will remain ungrazed. On this surface the grass will be cut annually. The grass cutting will be done manually, after the end of September;
- an area of at least 10% per hectare will be preserved as bush area, without any cleaning works (cutting the bushes that invade the pasture), and thus, by natural regeneration, a bush habitat will be created, to be used by *Aquila pomarina* as a place for hunting and watching for prey, making up a heaven for rodents to increase their abundance. In this area only bush maintenance works will be performed to prevent the excessive expansion of bushes. This area will not overlap the area where grazing is not allowed and where grass will be cut annually;
- the implementation of sanitation or grass growth stimulation measures through controlled or uncontrolled fire is completely prohibited;
- the eradication of invasive plant species is necessary;
- the application of methods other than fire to eradicate invasive non-native species (*Solidago sp.*) or native but problematic species (*Pteridium aquilinum*).

c. The management of agricultural lands

The relevant literature states that *Aquila pomarina* prefers grasslands for hunting (Treinys, 2004), but when they provide poor trophic resources the species extends its hunting territory to the agricultural lands (Mirsk, 2009). The importance of cultivated lands to the species has been shown by a number of studies (Matusiak, 2001), but it should be pointed out that based on the studies conducted under the LIFE project it has been noticed that a mosaic cultivation of agricultural lands is not enough for *Aquila pomarina*, as it

needs grasslands and pastures in its hunting territory.

In the feeding territories in the southern and central part of Transylvania 78% of the pairs studied (n=9) have shown a preference for feeding in grassy habitats (meadows, grasslands, pastures, used extensively, abandoned agricultural lands) and 22% have shown a preference for mosaic agricultural lands.

Agriculture is extensively practiced in the region under study and the mosaic structure of the agricultural land as a whole and its proximity to vast grasslands secure the trophic resources necessary to *Aquila pomarina*.

Management measures favourable to *Aquila pomarina* to be applied to agricultural lands:

- The agricultural lands in the hunting territories of the species should not extend to the detriment of meadows and pastures used extensively;
- The agricultural land should to be cultivated on a mosaic basis, in small parcels. In order to maintain the mosaic of agricultural lands, we suggest that cereal crop parcels (rapeseed, corn, sorghum, soybean, sunflower) and alfalfa do not exceed four hectares. Where the same crop is grown on several adjacent parcels, the combined monoculture area should not exceed four hectares;
- In agricultural lands *Aquila pomarina* shows a preference for ear grain crops (wheat, 2-row-barley, barley, etc.), alfalfa and uncultivated agricultural parcels (fallow). It should be noted however that, according to the direct observations carried out under the LIFE project, most attacks in cereal crops have been in stubble fields after harvest, or in the second part of the nesting period. An insignificant number of attacks have been recorded in dry parcels, planted with potatoes;

- Among the crops that are not suitable for the species we would like to mention rapeseed, corn, sorghum, soybean, sunflower and various kinds of vegetables. Also vine crops are avoided entirely by *Aquila pomarina*.
- The fact that *Aquila pomarina* does not prefer a series of crops from the ones listed above does not mean that the crops concerned cannot be grown in the hunting territories of the species. Their cultivation must be performed with a view to maintaining the crop mosaic of the entire agricultural set-up and should be conducted to a lesser extent than cereal and alfalfa crops;
- In this regard, it is recommended that parcels planted with corn, sorghum, soybean, sunflower or vegetable do not exceed one hectare and the combined area of adjacent parcels to be cultivated with the same crop do not exceed two hectares. The total area of parcels cultivated with crops unfavourable to the species should not exceed 15-20% of the total agricultural lands pertaining to a town or a larger agricultural farm. An exception is the rapeseed crop, where the recommendation would be not to be cultivated in the hunting territories of *Aquila pomarina*.
- Of the total area of cultivated agricultural land in the feeding territory of *Aquila pomarina* about 10% should be left uncultivated each year, but a parcel should not be left uncultivated more than 1-2 years. The uncultivated parcels do not need to be grouped together, they can be dispersed throughout the entire cultivated agricultural area in the hunting territory of *Aquila pomarina*. The annual grass cutting/grazing in the uncultivated parcels is recommended.
- An important role is played by the grassy edges of the parcels. They should not be ploughed or cultivated, but the grass must be

- cut once a year. Also an important role belongs to the rows of bushes and trees at the edges of the parcels, roads and agricultural lands. They cannot be destroyed or cut under any circumstances.
- În teritoriile agricole mozaicate folosite de acvilaă, folosirea fertilizanților și a pesticidelor este strict interzisă iar utilizarea tradițională a gunoiului de grajd este permisă în echivalentul a maxim 30 kg. N s.a./ha.
 - Also, it is not recommended to set up wind farms or photovoltaic panels in the hunting territories of *Aquila pomarina*, regardless of whether they are located on grasslands or in agricultural crops.

The measures presented can be used as guidelines for the development of management plans in protected areas where *Aquila pomarina* lives, as a basis for the NATURA 2000 measures and for the drawing up of agri-environment measures for this species. The measures are summarised in Table 5.1.



Tabelul 4: Necessary measures in the management of lands in the hunting territory of *Aquila pomarina*

Threats to <i>Aquila pomarina</i> in the feeding territory (meadows, pastures and grasslands, agricultural lands)	Management measures favourable to <i>Aquila pomarina</i>
The disappearance of meadows (through abandonment or conversion into pasture, arable land or building land)	<p>10% of the pasture will remain ungrazed. On this surface the grass will be cut annually.</p> <p>An area of at least 10% per hectare will be preserved as bush area, without any cleaning works (cutting the bushes that invade the pasture), and thus, by natural regeneration, a bush habitat will be created, to be used by <i>Aquila pomarina</i> as a place for hunting and watching for prey, making up a heaven for rodents to increase their abundance. On this area only bush maintenance works will be performed to prevent the excessive expansion of bushes. This area will not overlap the area where grazing is not allowed and where grass will be cut annually.</p> <p>It is prohibited to plough or disk the pastures under commitment.</p>
The degradation of meadows and wet pastures through drainage (as a result the habitats of amphibians, an important food source for <i>Aquila pomarina</i> , disappear)	<p>It is prohibited to drain wet pastures by any method.</p> <p>Flooded pastures will not be grazed earlier than two weeks from the withdrawal of waters.</p>
The abandonment of grazing	<p>It is prohibited to plough or disk the pastures under commitment.</p> <p>It is prohibited to extend the cultivated agricultural lands to the detriment of grasslands and pastures.</p>
The ecological restoration (prohibition of grazing for the purpose of forest regeneration) outside the forest, in areas favourable to <i>Aquila pomarina</i>	<p>The grazing practices in these areas favourable to <i>Aquila pomarina</i> will be continued.</p>
The disappearance of pastures because of temporary or permanent constructions (houses, bed and breakfasts, roads, solar farms, wind farms, etc.)	<p>It is not recommended to set up wind farms or photovoltaic panels in the hunting territories of <i>Aquila pomarina</i>, regardless of whether they are located on grasslands or in agricultural crops</p> <p>It is prohibited to erect temporary or permanent constructions on grasslands or agricultural crops.</p>

Threats to <i>Aquila pomarina</i> in the feeding territory (meadows, pastures and grasslands, agricultural lands)	Management measures favourable to <i>Aquila pomarina</i>
The changes to the land use and reclassification of lands (integration into the built-up area, conversion of agricultural lands to other uses)	It is forbidden to include agricultural lands in the built-up area or to change their use.
The increasing use of meadows (overseeding with non-native species, excess fertilisers, disking grasslands) and inappropriate grass cutting practices	<p>It is prohibited to use pesticides and chemical fertilisers.</p> <p>It is prohibited to plough or disk the pastures under commitment.</p> <p>The vegetal mass cut must be collected from the surface of the grassland not later than two weeks after cutting.</p> <p>The grass cutting can be performed only after 31 July and it will be carried out from the inside of the parcel to the outside thereof, leaving a 3-metre wide uncut or ungrazed strip along the edges of each parcel (measures applicable to <i>Crex crex</i> species – corncrake).</p> <p>The mechanical grass cutting will be carried out using mechanical machinery driven by animals.</p> <p>In the parcel there must be an area with uncut grass (min. 10% - max. 20%), but grass should be cut twice a year to maintain the meadow-specific structure (agri-environmental requirement).</p> <p>A grass cutting scheme should be developed, by agreement between the farmers in each area so that the parcels with uncut grass alternate throughout the nesting period (May-August) with those where grass has already been cut (requirement applicable for NATURA 2000 compensatory measures for <i>Aquila pomarina</i>).</p>
The overgrazing (especially by sheep)	<p>The adjustment of the number of animals on the pasture and a rigorous control where there is a massive degradation due to overgrazing (making up one of the objectives of the agri-environment measure).</p> <p>The grazing will be at a maximum of 0.7 LSU per hectare. In the sites where there are studies identifying all the types of grasslands within the site and whose location is known and the APIA recognises them as such a limit should apply based on the studies conducted in the area.</p>

Threats to <i>Aquila pomarina</i> in the feeding territory (meadows, pastures and grasslands, agricultural lands)	Management measures favourable to <i>Aquila pomarina</i>
The destruction of grassland structure by people engaging in motorised off-road activities	It is forbidden to engage in motorised off-road activities.
The degradation of grasslands due to invasive plants	<p>The eradication of invasive plant species is necessary.</p> <p>The application of methods other than fire to eradicate invasive non-native species (<i>Solidago</i> sp.) or native but problematic species (<i>Pteridium aquilinum</i>).</p>
The illegal sanitation methods of pastures with fire	<p>The implementation of sanitation or grass growth stimulation measures through controlled or uncontrolled fire is completely prohibited.</p> <p>The application of methods other than fire to eradicate invasive non-native species (<i>Solidago</i> sp.) or native but problematic species (<i>Pteridium aquilinum</i>).</p>
The intensification of agriculture and inappropriate practices on cultivated lands (monoculture, disappearance of mosaic structure)	<p>The maximum area of a parcel of cereals or alfalfa should not exceed 2-4 hectares.</p> <p>The combined area of several adjacent parcels cultivated with cereals or alfalfa should not exceed four hectares.</p> <p>The maximum area of a parcel cultivated with crops unfavourable to the species should not exceed one hectare.</p> <p>The combined area of several adjacent parcels cultivated with crops unfavourable to the species (rapeseed, corn, sorghum, soybean, sunflower and various kinds of vegetables, vine crops) should not exceed two hectares.</p> <p>It is prohibited to cultivate rapeseed on lands under commitment.</p> <p>10% of the total area of cultivated agricultural lands in the territory of an <i>Aquila pomarina</i> specimen should not be cultivated.</p> <p>It is recommended to cut the grass on the grassy edges on an annual basis.</p> <p>It is prohibited to destroy the rows of bushes at the edges of the parcels.</p>
The abandonment of agricultural lands	<p>A parcel should not be left uncultivated more than 1-2 years.</p> <p>The uncultivated parcels do not need to be grouped together, they can be dispersed throughout the entire cultivated agricultural area in the hunting territory of <i>Aquila pomarina</i>.</p> <p>The annual grass cutting in the uncultivated parcels is recommended.</p>

6. THE MONITORING OF *AQUILA POMARINA*

In order to follow the evolution of the measures taken for the conservation of *Aquila pomarina* it is necessary to conduct a monitoring activity. In the case of protected areas (national parks, nature parks, reserves, Important Bird Areas, etc.) it is enough to perform a monitoring inside the territory and possibly in the protected areas. The regional or national monitoring of *Aquila pomarina* is conducted according to the applicable methodology, which may be found in the “National Action Plan for *Aquila pomarina*”. But said document can be useful both to the managers of protected areas and to all those interested in protecting the birds.

The information resulting from the monitoring shows the evolution of the population and the changes that occur in the *Aquila pomarina* populations in the target area, and based on such dynamics we are able to come up with conclusions on the effectiveness of the measures implemented to preserve the species. From the data resulting from the specific monitoring sections we can even find the endangering factor that determines the decline of the population. For example, if we have a situation where the *Aquila pomarina* population drops, to the extent to which the measurements in the forest are appropriately applied, the percentage and the quality of pastures has not diminished, but the structure of the arable land has changed considerably to crops unsuitable to the species, then the endangering factor could be the agricultural crop composition, possibly the disappearance of the mosaic structure. Of course, the more the monitoring levels, the much more complex the situation is and as a result our data

will lead us closer to reality. But a very complex monitoring is also very expensive and many times the limited funds and the number of specialists are the factors that determine its magnitude. In this chapter we will attempt a description of the minimum measures in order to perform a monitoring, which may have interpretable results.

We can see that in addition to the general conservation measures (e.g. Measure 30%) there are specific measures (protection zone around the nest) that are more effective, but can only be used if we know the exact location of nests. In general, the better we know the location of nests, the more efficient we can be both in terms of protection and in terms of management of conflicts with the stakeholders (landowners, forestry offices, etc.) and last, but not least, in terms of monitoring works, which will be much easier.

Regardless of whether the monitoring is performed across the entire target area or by samples, it is not enough to find possible changes in the population, we also need data on the quality of the habits used by *Aquila pomarina*. Thus, the most important aspects that could determine the distribution and survival of *Aquila pomarina* specimens should be recorded and followed up on regularly (every 2 years).

The aspects referred to are as follows:

- the percentage of appropriate forests that can provide nesting and their percentage in relation to the inaccessible or inappropriate forests;
- the number of activities that may affect the nesting in the forest;



- the percentage of the disturbed area out of the total old tree parcels;
- the composition of open areas (except for settlements, water surfaces and industrial areas);
- the quality of grasslands (in percentage), possibly the number of animals grazing on pastures;
- the composition and distribution of the arable areas;
- the number of nesting pairs of *Aquila pomarina* (for four-year periods).
- In the case of known nests:
- the total number of nests;
- the number of pairs that hold/occupy a territory;
- the number of pairs whose nest is known;
- the number of nests where eggs have been laid;
- the number of pairs that have successfully raised juveniles;
- the sources of disturbance around the nest

that could influence the success of nesting;

- other information on nest protection (if a protection zone has been applied around the nest).

If we know the feeding area of certain pairs, a study on the composition of parcels with different uses and its comparison with the general composition of the target area could help a lot in future conservation measures.

Of course, there are other forms of monitoring, such as the analysis of the composition of predators in the hunting territory of *Aquila pomarina*, the toxicological studies on hatched egg shell or excrements, the genetic diversity of the population, etc.

7. FINANCING THE CONSERVATION OF BIODIVERSITY

a. The analysis of the current situation

Even before the accession of Romania to the European Union the LIFE programme of the European Commission was the most effective instrument for the biodiversity conservation. After Romania joined the European Union post-accession funds became available, of which the funds mainly used for the biodiversity conservation activities were from the European Regional Development Fund through the Sectoral Operational Programme on Environment and from the European Agricultural Fund for Rural Development through the National Rural Development Programme. Other operational programmes that can be used for infrastructure projects for biodiversity conservation are the Regional Operational Programme (e.g. for the construction of tourism infrastructure in protected areas) and the Operational Programme on Transport (e.g. the construction of bridges over motorways for the transit of fauna). The funds of the Operational Programme for Human Resources Development are also available and may be used to develop training programmes for the staff of the management and custodians of protected areas.

In the six years since Romania's accession to the European Union, the rate of accessing these funds for biodiversity conservation projects has been relatively low. In the case of the Sectoral Operational Programme on Environment out of the total allocated for the period 2007-2013 amounting to approximately EUR 250 million

about half of the amount has been used so far, namely EUR 134 million.

In the case of the National Rural Development Programme, the funds for the Natura 2000 compensatory payments amounting to EUR 100 million for the period 2007-2013 have not been used yet because of some conditions imposed by the Ministry of Agriculture, more precisely the existence of management plans for the Natura 2000 sites, approved by the Ministry of Environment. However, this argument is not based on any specific requirement of the European Directives in the field of nature protection that stipulates the existence of management plans as a precondition. Article 6.1 of the Habitats Directive stipulates that Member States must provide the necessary conservation measures, leaving the freedom to develop a management plan only if it is deemed absolutely necessary. As other EU Member States have shown, the favourable conservation status can be achieved in the absence of management plans as well, e.g. through contracts with land users where the need to take special conservation measures is established (model practiced in Austria).

There are currently no management plans for the Natura 2000 sites approved by the Ministry of Environment, which prevents the access to the funds allocated by the Ministry of Agriculture. The lack of Natura 2000 management plans is due to the fact that the process of taking Natura 2000 sites for management/custody purposes was completed only in early 2011. This led to a delay in the commencement of the drawing up of the management plans specific to these sites.

Under the National Rural Development Programme the agri-environment payments are functional; they were intended to provide benefits in the biodiversity conservation through the proper management of pastures important to birds, the traditional practice of agriculture and the maintaining of High Nature Value Grasslands. The total amount allocated for the period 2007-2013 is EUR 863.2 million (source: Ministry of Agriculture and Rural Development) and a large portion of this amount has already been allocated. The Ministry of Agriculture is open to proposals of new agri-environment measures that support the conservation of the biodiversity, put forward by any organisation that brings important arguments in support of that measure. In this respect, the LIFE project "Conservation of Aquila pomarina in Romania" together with the Ministry of Agriculture and Rural Development (MARD), the National Network for Rural Development (NNRD) and the ADEPT Foundation, has prepared within the NNRD working groups an agri-environment measure dedicated to this species, registered by the MARD in 2011 through the NNRD. The measure is currently under negotiations with the Ministry of Agriculture for its approval and implementation, although the present budget is insufficient for the conclusion of contracts implemented to date. The period 2014-2020 may be an opportunity to implement the measure concerning Aquila pomarina registered and approved by the MARD. In order for the degree of access to these funds to increase and be effective, the Ministry of Agriculture and the Ministry of Environment need to work out information and training programmes both for the direct beneficiaries and for the institutions that can assist in accessing these funds (institutions subordinated to the Ministry of Agriculture, institutions subordinated to the Ministry of Environment, NGOs, consulting companies, etc.).

Romania needs to find ways to supplement the funding provided from post-accession external funds. One solution is the more efficient use of funds made available for biodiversity conservation projects from the National Environmental Fund. Currently, the financing from the Environmental Fund for projects on biodiversity conservation and management of protected areas is low. Of the total expenses of RON 824,935,000 (EUR 191,845,000) approved for 2012 for biodiversity conservation and management of protected areas the amount of RON 378,000 (EUR 87,906) was allocated (source: Decision no. 136 of 13 March 2012 approving the revenue and expenditure budget for 2012 of the Environmental Fund), which is an insufficient amount for the financing needs of the biodiversity conservation field.

b. The sources of financing of biodiversity conservation in Romania

1. The LIFE programme

The most important financial resources allocated to biodiversity conservation have been assigned through the **LIFE programme** since **1992**. The LIFE programme of the European Community is an environmental financial instrument, contributing to the development and application of the Community policy and legislation aimed at protecting the environment, conserving the natural heritage and promoting a sustainable development.

Under the Natura programme, part of the LIFE Programme of the European Community, financial support is provided to actions for the conservation of the natural heritage through the implementation of the provisions of Directive

92/43/EEC on the conservation of natural habitats, wild flora and fauna and of Directive 79/409/EEC on the conservation of wild birds.

So far, Romania has implemented under the LIFE programme 26 projects amounting to **EUR 11,792,686**, of which the co-financing by the LIFE programme was **EUR 7.350.299**.

The beneficiaries of LIFE projects are the Environmental Protection Agencies, institutions subordinated to the Ministry of Environment (Local Environmental Protection Agencies), research institutes (Forestry Research and Management Institute, Danube Delta National Institute for Research and Development, Institute of Biology), NGOs (ROS, Milvus, WWF, etc.), universities (University of Bucharest, Transylvania University of Braşov), protected area management services, county councils, town halls, etc.

Life+ is a new financial instrument designed to support nature protection which came into force at the date of publication of the corresponding Regulation in the Official Journal L 149 of 9 June 2007. With a budget of **EUR 2.143 billion (for the period 2007-2013)**, LIFE+ is an important financial instrument offering specific support for the development and implementation of the Community policy and legislation, in particular for the objectives of the 6th Environmental Action Plan and thematic strategies resulting therefrom. The instrument consists of 3 components:

- LIFE+ Nature and Biodiversity;
- LIFE+ Environment Policy and Governance
- LIFE + Information and Communication

For more information please visit:

<http://ec.europa.eu/environment/life/funding/>

2. The Sectoral Operational Programme for Environment (SOP ENV)

The Sectoral Operational Programme for Environment is a document on the use of EU financing and national co-financing to support the development of public utilities and environmental infrastructure for the economic development of the country.

Under the Priority Axis 4 "Implementation of adequate management systems for nature protection", the investments aim at ensuring an appropriate management of protected areas, at maintaining and improving the favourable conservation status of habitats and species, at stopping the degradation of the biodiversity and the natural resources and at raising awareness of the relevant factors.

The beneficiaries can be managers and custodians of protected sites, Regional Environmental Protection Agencies and Environmental Protection Agencies, public authorities, NGOs, research institutes, universities, museums, etc.

The financial allocation for the period 2007-2013 is **EUR 215 million**, of which the EU grant amounts to EUR 172 million.

There have been four project submission sessions so far, following which **155 projects** have been selected amounting to a total of **RON 601,813,260** (approximately **EUR 134 million**).

For more information please visit:

www.mmediu.ro

3. The National Rural Development Plan (NRDP)

Măsurile din cadrul Axei 2 a PNDR vizează The measures under Axis 2 of the NRDP aim at maintaining and improving the quality of the environment in rural areas by promoting a

sustainable management of both agricultural lands and the forests.

Under Axis 2 of the Rural Development Programme around EUR 20.3 billion will be allocated from the EAFRD budget for the agri-environment measures for 2007-2013, which provide substantial support for Natura 2000 and the biodiversity. Moreover, the amount of approximately EUR 577 million from the EAFRD resources has been specifically allocated for the Natura 2000 agricultural and forested areas under the new specific measures related to this policy. There are significant differences between Member States in terms of overall use of these funds.

Strategic objectives

1. Continued use of agricultural lands in disadvantaged areas and promotion of sustainable agriculture – **EUR 1,100.9 million**
2. Conservation and improvement of the natural resources and habitats – **EUR 963.2 million**
3. Promotion of the sustainable management of forest lands – **EUR 229.4 million**

Specific objectives

Supporting farmers by compensating specific disadvantages resulting from the implementation of the Natura 2000 network, based on the obligations deriving from the directives on the protection of birds and the conservation of natural habitats and wild species.

- **Measure 213** – payments on agricultural land under Natura 2000

The financial allocation for 2007-2013 is **EUR 100 million**

In the programming period 2007 - 2013 no Natura 2000 compensatory payments have been allocated on agricultural land by the Ministry of Agriculture.

- Contribution to sustainable rural development by encouraging users of agricultural lands to initiate or continue agricultural production methods compatible with the improvement of the environment, including biodiversity, water, soil and rural landscape.

Measure 214 – Agri-environment payments

The financial allocation for 2007-2013 is **EUR 863.2 million** for the following packages of measures:

Package 1: Maintaining High Nature Value Grasslands

Package 2: Maintaining biodiversity through traditional agricultural practices

Package 3: Appropriate management of grasslands important for birds

Package 4: Water and soil protection

Measure 221 – First afforestation of agricultural land

The financial allocation for 2007-2013 is **EUR 137.6 million**

Measure 223 – First afforestation of non-agricultural land

The financial allocation for 2007-2013 is **EUR 75.7 million**

- Supporting farmers by compensating specific disadvantages resulting from the implementation of the Natura 2000 network, based on the obligations deriving from the directives on the protection of birds and the conservation of natural habitats and wild species.

Measure 224 – payments under Natura 2000 on forest land

The financial allocation for 2007-2013 is **EUR 16.1 million**.

In the programming period 2007 - 2013 no Natura 2000 compensatory payments have been allocated on agricultural land by the Ministry of Agriculture.

4. Other financing programmes for nature conservation

The three financing programmes previously mentioned remain the most important sources of financial support for nature conservation. But alongside these there are other financing programmes operating in Romania, which include nature conservation among their eligible fields. Of these the most important are the Global Environmental Facility – Small Grants Programme (GEF-SGP), the Cross-Border Cooperation Programmes, the European Economic Area (EEA) Financial Mechanism, the Swiss-Romanian Cooperation Programme, etc. They are, however, funding opportunities occasionally allocated in the short term to partially help nature conservation. In order to develop a sustainable biodiversity protection large financing programmes are needed with constant allocations of long-term funds, as is the case of the LIFE programme, the SOP-ENV Programme or the National Rural Development Plan.

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