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CONSERVATION PLAN OF THE TETRAO UROGALLUS IN THE NATIONAL PARK TOMORRI MOUNTAIN, ALBANIA

- **WP T1**: TRANSNATIONAL JOINT STRATEGY AND TOOLS FOR THE BETTER MANAGEMENT OF PRIORITY SPECIES IN NATURA 2000 SITES
- **ACTIVITY T1.1**: DEFINITION OF CONSERVATION GUIDELINES ON SPECIES
- **DELIVERABLE T1.1.2:** CONSERVATION PLAN ON A PRIORITY SPECIES
- **PARTNER:** NATIONAL AGENCY OF PROTECTED AREAS (NAPA) - PP2
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1 Introduction

1.1 Description of the type

Geographical Distribution of the order Galliformes species has changed significantly due to human activities (eg. excessive hunting, disease, fires) and this has often led to unnatural gaps of their distribution. Taking into account the complexity of the environmental requirements and the social interactions galliforms, it is important that each gap in their delivery, caused by man, should be fully assessed for potential offers for repopulation. Many species of Galliformes order to have specific habitat requirements, some of which are not elastic to tolerate excessive modifications of the habitats where they live. Other species can adapt to certain successive stages. In these cases, although habitat may initially seem convenient, it is necessary a detailed study of its structure and composition to ensure that the species' needs are met in long run.
Recently repopulations are being widely used as an instrument of wild fauna management, to replenish suitable habitats, animal and bird populations at risk of extinction or decline.

A large proportion of these populations belong to species of the Galliformes order. Galliforms provide suitable candidates for repopulation in order to preserve them and this for several reasons:

Firstly, due to their low mobility, there is a low risk of migration or offshore movement compared to other bird species.

Secondly, generally Galliforms carry less infectious disease than other bird species.

Thirdly, due to many factors, especially the amount of studies carried out, the Galliformes order includes an ideal set of birds to study in experimental situations.

The Galliform Repopulation Guidelines for Conservation Purposes are design to develop basic principles for the natural regeneration of healthy populations. These guidelines provide basic information on the purpose and objectives of a repopulation project and the problems to consider during the planning phase. Of course, these directives are valid for all species of this order including pheasant, wild turkey, partridge, etc.

The Conference on Environment and Development held in Rio de Janerio in 1992, led to the Convention on Biological Diversity. As stated in this Convention, about repopulation, obligations are laid down between Member States, and restocking is one of the instruments that can be considered to meet these obligations. The need for species repopulation can be consider as part of the national biodiversity strategy and action planning process that all signatory states must take. For this reason, this project also fulfills all the obligations of this Convention as well as the repopulation of the species Tetrao Urogallus.

1.2 Status of conservation

Western Capercaillie (*Tetrao Urogallus*) is a species that is included in Appendix 5 & 6 of DCM No. 31, dated 20.01.2016 on "Adoption of the Strategic Policy Document for the Protection of Biodiversity", included in the Red List of Endangered Birds and by explaining the risk category, according to IUCN, it belongs to a group called "CR" which means Critical Risk, so the species is in imminent danger of extinction in nature.

Habitat: This species lives in rocky mountain areas covered with coniferous or mixed forests.

The wild turkey (*Tetrao urogallus*) is classified as a resident bird and a rare bird. Keeping the endangered status on the Albanian Red List of Threatened Species, urgent action must be taken for the long-term recovery and conservation of this species. Designing a conservation plan for this species represents the establishment of conservation work on a professional and sustainable basis from the outset. The species conservation plan should only be design for Tomorri Mountain National Park in order to expand nationally in the future.

2 The regulatory framework

2.1 International conventions and guidelines

- **Act for the preservation of endangered species** (The Endangered Species Act (ESA - 1973). The primary objective of the ESA is to preserve native flora and fauna species that are at risk of extinction or threat.
- **International Regulatory Framework for the Protection of Birds**
  - **Birds and Habitats Directive (1979) Directive 2009/147 / EC**. The Directive presents a general outline of how it should have managed controlled and protected bird population. Contracting Parties shall designate Special Conservation Areas SPAs (Special Bird Areas) and Special Conservation Areas SCAs (Special Areas). These areas are included in the NATURA 2000 Network.
  - **The Berne Convention (1979).** It was the first product produced by international cooperation for the conservation of flora and fauna species. Highlights of the agreement are roughly equal to the Birds and Habitats Directive. This Convention applies to a large geographical area because many countries in the world have become members of this Convention.
  - **CITES Convention 1975** The Convention on International Trade in Endangered Species of wild flora and fauna.
  - **Bonn Convention (1983)** It provides a framework for the protection, in which the Contracting States may act to protect migratory birds and their habitats. The birds are

classify into two groups endangered or threatened species. Endangered birds are fully protected by strict rules.

- **The Convention on Biological Diversity (1992)**. States parties have prepared a legal instrument to support biodiversity and basic components creating diversity and sharing of genetic resources.
- **Ramsar Convention (1971).** Ramsar is an international treaty that promises to protect wetlands with the help of internal decisive sanctions and international cooperation

Albania is party to the following conventions: Ramsar Convention; Convention CITES; The Convention on Biological Diversity; Berne Convention; The Bonn Convention.

2.2 National legislations

There are several laws that guarantee the protection of nature in Albania, from which we can mention:

- Document of Strategic Policies for the Protection of Biodiversity;
- Law no. 7/2014 "On declaration of Moratorioumit Hunting in the Republic of Albania". The purpose of this law is to improve the situation of wild fauna species that are subject to hunting;
- Law no. 68/2014 On some additions and amendments to Law no. 9587, dated 07.20.2006, "On the Protection of Biodiversity", as amended;
- Law no. 81/2017 "On Protected Areas". The purpose of this law is to provide special protection of environmentally protected areas and important components of biodiversity and nature to it through -) declaration of protected environmental areas, with special attention to their natural, economic or social as part of the natural environment and cultural heritage; -) development and environmental protection of protected areas, national assets of particular importance for rare and irreplaceable values of natural balances and biodiversity as a duty in the interest of present and future generations; -)facilitating conditions for the sustainable development and promotion of valuing ecosystem services (environmental); -)information and education of the community on the state and benefits of the Protected Areas.
- Law "On protection of wild fauna", No. 10006 dated 23.10.2008;
- The law "On rules and procedures for international trade in endangered of flora and fauna species" No. 9867, dated 31.1.2008, Official Journal No. 18, date 19.02.2008 edition, page 629, as amended;
- Law No. 10253 dated 11:03. 2010 "For Hunting";
- The law "On amendments and additions to the Law No. 9587, dated 20.07.2006" On Biodiversity Protection", as amended, which transposes Council Directive 92/43/ EEC of 21 May 1992 "To preserve the natural habitats of fauna and wild flora", adopted on 2 July 2014.

2.3 The management plan of the National Park Tomorri Mountain

The Management Plan of the National Park Tomorri Mountain No. 2027, dt. 31.12.2014 is the basic document for Tomori Mountain National Park and for the Management Committee of the Protected Area. The total area of NP Mount Tomori is 26,106.2743 hectares and occupies 5.37% of the total area of protected areas in Albania.

The management plan coordinates and integrates actions that affect the Park purposes. The plan sets out a vision for the future of the Park and specifies the actions and outcomes that should be targeted.

The objectives of the Management Plan of the NP Mount Tomori are:

- Growth and protection of biodiversity and the different types of habitats.
- Protection of flora and fauna species and a much better coordination between ecosystems, providing a better quality of rivers and water flow as well as maintaining the unique natural and biological processes.

3 Context Analysis (Territory and phyto-climate framework)

Albania has a very diverse landscape where plains and mountain scenery, including the coast, are inter-twined in a very small area. Mountain ranges covered with forests that dominate Albania, combined with fertile valleys that in most cases are oriented northeast to southwest. Rich rivers in sediments discharged into a long coastline, creating from north to south, a significant number of wetlands and lakes, some of which are within the most important bird zones of the entire Adriatic, such as the National Park and Ramsar Site Divjak - Karavasta and Protected landscape Vjose - Nartë.

The climate is also different: Mediterranean in the western lowlands, continental on the eastern side of the country and transitional in the rest of the territory. This favors the development of a diverse vegetation, which on the northeast side resembles the vegetation of central Europe, while on the south-west it is typically Mediterranean.

All of these conditions create highly diverse habitats suitable for north-south migration and vice versa for wintering and breeding birds. Albania represents one of the most important sections along the Adriatic flight.

Based on time or season, birds in Albania are divided in:

(i) resident or present throughout the year;
(ii) the stewards coming into the country in the spring and leave in the fall;
(iii) in wintering - birds that come to Albania in the fall and leave in the spring;
(iv) On passers-by or birds that pass through Albania in the spring or autumn or in two seasons.

Depending on the size of the population, the birds of Albania may simply be shared, rare or extinct. Based on the above, Western Capercaillie (Tetrao urogallus) is classified as a resident bird and a rare bird. Records from the past show that the species was present in the mountains of Tropoja district, Librazhd district, Dibra district and Berat district. Nowadays data on this species are very limited and observation reports are very rare.

Tomorri National Park encompasses an entire province that lies in three districts: Skrapar, Berat and Gramsh, which is dominate by the Tomorri Mountain at an altitude of 2416 m. The contribution of each of these districts to the park is as follows:

- Skrapar District	15 045 ha
- Berat District	8 400 ha
- Gramsh District	1 278 ha
Amount:	24 723 ha

By decision of the Council of Ministers Dt. On 03.03.2009, 1383 ha were added to the Park, so the total current surface of the park is 26.106 ha.

Tomor Park has beech forests, pine and alpine pastures that are 1000 - 2000 m high (Dardha, Lybeshe, and Kapinove). Beech forests are at altitudes of 1000 - 1200 m above sea level. Captive forests at an altitude of over 1600 m. The park also has mixed beech forests (Zeran).

In addition to, the park's flora include oak, holly, hornbeam, hazel, juniper, ash, Alecatoris gacca, Cornus mas, Arbutus unedo, Cercis, etc., as well as six endemic plant species among which "Astragalus autroni" found only in mount Tomori. The herbaceous cover consists of species: primrose, festuka, clover, mountain tea, graminace, etc.

In addition to the Western Capercaillie, the animal world also contains various species of mammals and wild birds such as bear, wolf, wild goat, wild boar, wildcat, wild rabbit, badger, fox, squirrel, nettle, the partridge of the mountain, Eagle Mountain and some bird species as swans, thrush and some other species.

World animal except wild turkey contains different types of mammals and wild birds such as bear, wolf, chamois, wild boar, wild cat, hare, fox, badger, squirrel, eagles, partridges mountain, some bird species, Eurasian jay, blackbirds and some other types of birds.

The park also contains natural monuments, cultural, religious and historical sites as well as other community facilities.

Regarding the Western Capercaillie, we can say that their number has declined massively over the last 20 years and only after hunting moratorium presence of this species resumed growth. In particular, in the Tomorri Park was identified a population of wild turkey suitable for reproduction. During territorial monitoring, their song was listened but not photographed.

4 *Tetrao urogallus* biology and the status of him in theoretical plan of recognition and preliminary data published for Tomorri National Park

4.1 Description and biology of Western Capercaillie (*Tetrao urogallus L*) and its distribution and status in the World, Europe and in Albania

(A: Capercaillie; F: Grand Tétras; Gj: Auerhuhn; I: Gallo cedrone; S: Urogallo)
CLASSIFICATION: Class: Aves; Order: Gallformes; Family: Tetraonidae.

♀ ♂

Fig. 1 Male of Western Capercaillie (*Tetrao urogallus*) **Fig. 2** Female (*Tetrao urogallus*)

BIOMETRY:

- Overall length 60 - 87 cm;
- Wing 30 - 40 cm;
- Wings opening 87 - 125 cm;
- Weight ♂ 3, 4 - 3, 6 kg; ♀1, 5 - 2, 0 kg;
- Life expectancy 15-20 years for western capercaillie males and something less for females.

DESCRIPTION:

There is pronounced sexual dimorphism. The male has a dark color (Pic. 1) that from afar resembles black. In fact, the neck, back, and arms are brown in black, gills and chest in blue with glossy black, and the shoulder white. The skin around the eyes and the nude spots on them are

red, the eyes brown, the beak yellow while the black tail with irregular white spots. The older the male, the longer the "beard" feathers and the narrower the angle between the beak and the forehead. The male song consists of two parts, the first one sounding as if two dry trees hit and the second the sound of edging a scythe (recording below).
The female, which is smaller than the male, is a rusty background on which black and white spots are placed (Pic. 2), making it resemble patchwork. The abdomen is more open to the female, while the chest is open brown. The female voice consists of two "got-got" syllables. Birds that have not reached maturity are similar to the female in colouring.
The sex of young birds can be distinguished from late summer after the black feathers appear on the back of the western capercaillie. Among the senses is the highly developed the eyesight and the hearing. It flies heavy, short from top to bottom and horizontally. Loyal to the place where he is used to living, if he is afraid he leaves but returns again. All birds or mammal raptors whether day or night, harmed him. It lives alone outside the reproductive period, and in winter joins groups of 4-5 sex-specimens.

AREAL AND BIOTOP:

Western Capercaillie is a palearctic species widespread in northern Europe (Fig. 3) and in Asia from Scotland to Siberia and China but with isolated populations it is also found in central and southern Europe where it is permanent. It is widespread in our country in the north, north-east, and central parts of the country such as Valbona, Gashi River, Martanesh, Lure, Masdeja, Qarishte, Orosh, Korab, Shishtavec, Tomor etc. Its biotopes are coniferous and smooth forests mixed with old and fertile trees near the upper boundary of forest vegetation as far as urban centers.

Fig. 3 Spread of *Tetrao urogallus*

REPRODUCTION:

Polygamy, the sexual and social maturity age of western capercaillie is 2-4 years while chickens reproduce at the age of one. The normal sex ratio is 4 - 6 female per western capercaillie (Fig. 4). It crosses from March 15 to the end of May having the most intense point from April 15 to May 15. Despite this crossover period it is a function of climatic conditions, warm and light weather which speeds it up and vice versa.

Fig. 4 Western Capercaillie male and female

At the intersection, the two sexes meet at certain points in the forest called 'arenas' where the so-called 'battles' between men and 'love parades' take place.
These points are part of 5-10 ha of forest in the form of cuttings of rare and old trees that are usually located near the upper boundary of forest vegetation, which should be dictated and protected by forest management (Fig. 5).

Fig. 5 Habitat of *Tetrao urogallus*

The Western Capercaillie gather at these points by flying or on foot, and the females arrive as a rule 2-3 weeks later. The turkeys sleep on top of the trees and in the morning about an hour before dawn they start singing. At the time of love parades, the crow drops its wings down (Fig. 6), opens its tail in a windward fashion and extends its neck forward. So does the female (Fig. 6). The crucifixion is done on the ground after the light comes out.

Fig. 6 Male and female at love parade

The female makes the nursery on the ground in a pit in the middle of the vegetation. In May it lays 5 - 9 yellowish-red eggs with brown spots and dimensions (5.8 x 4.1cm) (Fig 7).

The spawning interval is one day, while incubation begins after the last egg has been hatched and carried out by the female only.

Fig. 7 Eggs of *Tetrao urogallus*

By the end of August the females are able to breed an average of 2-3 birds per female with an average breeding rate of 0.7 birds per female. Birds are nidifugs. At the moment of opening, they are covered with a yellow fluff with black spots on the head and neck and brown spots on the back of the wings. A few hours after hatching the birds leave the nursery and 8 - 10 days after hatching they are able to fly. The birds are separated from the females after they reach the age of 4 months, when they reach adult weight. The annual survival rate is 70 - 90% for males and 60 - 80% for females.
The survival rate of young people from mid August to the following month is 35%. After reproduction the feathers change, which continues until August. It is a bird of the day that is

encountered in the summer as a rule on the ground and in winter it is stable on hardwood. Sleep on hardwood even often for several nights in the same branch.

DAILY ACTIVITY:

Tetrao urogallus is active especially at the beginning and at the end of the day. At dawn he leaves the place where he slept (which is usually a branch of a high tree) in search of food. This wood is often dictated by the presence under its crown of *Tetrao urogallus* excrement (Fig. 8).

Fig. 8 Excrement of *Tetrao urogallus*

After being saturated he spends the rest of the day hiding in the high grass or dense seedling, beneath the low branches of a tree or climbing back into the high branches of the trees, according to the season. This long period of rest is often interrupted by short periods of activity devoted to nutrition or to making its dust baths. In the breeding season, males start singing one hour before sunrise and can stay in the arena (area) for one to eight hours depending on weather conditions, the number of birds in the arena, the presence or absence of female individuals, etc.

The song's activity resumes in the evening but is shorter. Unlike adults, young people are fed almost all day approximately 16 hours in July if the temperature is sufficient. During bad weather, the birds can stay under their mother's arms for a long time instead of being fed. In this case, significant losses may occur.

Males tend to protect a breeding territory as closely as possible from the place where they were born and return to the place where they were born to carry out summer breeding, while females stay in wintering and breeding sites further away from their home country, doing so during their lives a seasonal migration between two areas that are sometimes several kilometers apart.

FOOD:

Adults consume mostly plant foods but their diet varies by season.

From November to April it consists of only about 250 grams of coniferous needles such as Pinus silvestris, Pinus uncinata, Abies alba, Juniperus comunis, etc. which the bird can assimilate thanks to its digestive tract and large intestine, which are branches of the digestive tract containing a bacterial flora capable of transforming cellulose.

In the period April - May, the increase in energy needs caused by reproductive activity makes wild turkeys look for protein-rich foods. Thus it consumes at this time the germination of Fagus silvatica beech, Sorbus aucuparia, Vaccinium myrtillus, willow bushes Salix sp, Betula verucosa birch, as well as new flowers and germination of herbaceous plants.

Its diet is diversified from June to September by consuming about 150 species of herbaceous as well as fruits of Vaccinium myrtillus, Rubus idaeus and Sorbus aucupria. This rich food gives him the energy needed to replace feathers during straightening. Nutrition in the fall consists of

switching to the winter nutritional regime. For digestion wild turkey like all galiforms swallows and gastroliths.
Young birds feed on arthropods during the first 4 weeks of life then progressively transition into the adult diet.

HUNTING:
In our country it is completely forbidden. It is allowed by rules in Austria, Belarus, Bosnia, Bulgaria, Finland, France, Kazakhstan, Norway, Romania, Russia, Slovakia.

Voice: Stime von Auerhun.html

4.2 The current situation of the population (populations) of *Tetrao urogallus* in the National Park Tomorri Mountain

4.2.1 The surface of the real spread of the *Tetrao urogallus* in the National Park Tomorri Mountain

1. Assessment of the real area of wild turkey spread in Tomorri Park in order to then find out the reasons for its low density and to propose measures for its rescue in the future by proposing concrete forms of population protection and breeding (or populations if more than one will exist).
2. Tomorri National Park in its total area of 26106 ha consists of parts (surfaces) with different destinations and uses such as: forests, pastures, surfaces for tourist, religious, water, or agricultural uses, etc.
3. Bearing in mind the biological characteristics of the species and especially its peculiarities in relation to ecological requirements (massive forests of old timber, ferns, forests and variable herbaceous vegetation), the unimaginable necessity of the existence of an indispensable tranquillity away from habitat of agricultural, tourist, religious, etc. activities, there was a need for the work to determine the area of turkey spread in the park to follow the following time rhythm:

- Preliminary research;
- Field data collection;
- Cartographic presentation of data and development of working models to improve the situation;

4.2.2 Preliminary inquiries

Prior to fieldwork related to the study of population parameters (referring to the literature "Biology and Breeding of Hunting Fauna" A. Postoli 2017) of wild turkeys in Tomorri National Park and determination of the extent of its spread will some desk research is done using existing documentation that will be collected as:

- Current technical documentation of the park;
- Documentation of former DFSs, Hunters' Associations of the three districts;
- Organize a survey of local residents (foresters, farmers, hunters, teachers, schoolchildren, etc.) about the findings that they may have made in time for the existence of wild turkeys in the park (based on a survey model that could be created).

Certainly the data collected in this way will be carefully evaluated by separating those that are secure from information that requires further verification. The work done with the aforementioned documentation will give the opportunity to determine the surfaces that deserve further study which are potentially surfaces of real type distribution in the object. This will create a first image of the geographical habitat of the wild turkey by excluding inappropriate or less species-populated areas from the study.

The following may be excluded:

- Surfaces located at an altitude below 1200 m;
- Forest vegetation areas of the phytoclimatic zone lauretum and castanetum;
- Anthroposed surfaces;
- Areas above 1900 m altitude that do not normally contain forest formations;

This will enable a first categorization of the territory that will be presented in Table 1:

Type of cover	**Ha**
Coniferous forests (Robull, Pine)	27.9
Notebook Forest (Ah, Bunge, Mountain Maple)	90
Mixed forests (.....)	47.8
Massive pasture	2.3
Meadowy	4.75
Agricultural land	0
Productive surface (rock etc)	47
Urbanized areas	0
Bush	52.55
Empty surface	2.3
T O T A L	274.6

***Table 1**: Categorization of territory*

This eliminates urbanized, agricultural, meadows, productive rocky areas and massive pastures. This defines the areas where potentially wild turkeys may exist and where further research will be conduct. Overall, for the Tomorri Park this area turns out to be 184.55 Ha.

4.2.3 Study of forest types encountered in wild turkey habitat in Tomorri Park, basis for determining the size of its population

Based on the existing documentation data, the types of forests that exist in the wild turkey spreading area will be defined on the ground and on the map. For each type of forest shall be determined:

1. Naming the type of forest which will be in accordance with classical silvicultural designations eg.:
    a. Pinetum eldreihii with ... (herbaceous indicative species ...);
    b. Fagetum. . . . . (asperuletosum) etc.
2. The extent of any type of forest shall include large parts of the forest which may consist of more than one sub-parcel according to the old parcel division of breeding;
3. The structure of forest clusters within each type of forest;
4. Under the forest describing: extent of cover, composition, height, nutritional value, etc.;
5. Herbaceous vegetation describing: composition, extent of cover, nutritional value, etc.

Data collection work will continue on any such part of the surface (ie above any forest type) as shown below.

5 Field data collection on the dimensions of the wild turkey population in Tomorri Park

Here it should be determined:

1. The exact presence of the species (in the presumed territory of its existence);
2. Density so the ability to know the number of individuals per unit area and for the whole territory;

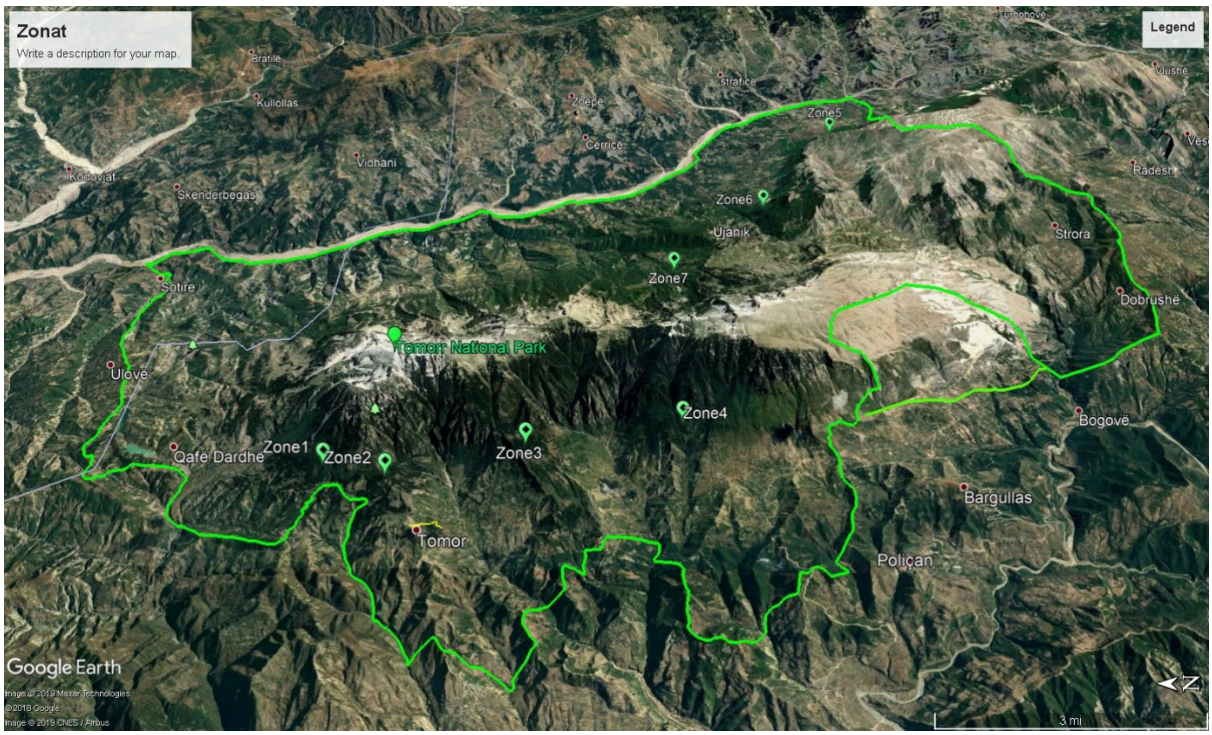

Fig. 9 Map of the extension of the territory where the Western Capercaillie was heard

Different methods may be used to monitor wildlife (ie to determine the presence and density).

The following will briefly describe the content of these methods

5.1 Monitoring methods for wild turkey populations

The literature identifies three types of monitoring:

a) Monitoring during the reproduction period;

b) Summer monitoring;

c) Winter monitoring;

Monitoring populations requires a good understanding of the terrain and a motivation to guarantee the work ethic. In order for the results to be properly evaluated and utilized, they must be formalized and standardized. Therefore all actions to be taken should be foreseen in a pre-designed material as is being done in the concrete case, which should not be altered until the end of the work.

In fact, many authors have devised various methods of surveillance as well as relevant technical files (forms) to be used for data recording. In any case, the local research coordinator (implementer) is responsible for the proper functioning of the enacted provision.

5.1.1 Monitoring during the reproduction period

In this period, a maximum of data can be obtained with a minimum of concern provided that the methods provided are rigorously observed. Specifically, three methods have been devised:

a) Counting by observing from a fixed point:

Method applied to fixed (stable) sites that are nothing but song surfaces (arenas) when they have long been dictated by male song. These points are marked on the map via the GPS device that the monitors should be equipped with.

- Objective of the method: In addition to bird counts, a maximum of data on their behavior is also collected.

- Working method: The observer shall be placed at the observation place before 5 pm the day before the scheduled day for counting. It will leave the observation area the following day, starting at 10am or exactly one hour after the last presence of the bird (even of a single specimen) has been ascertained. Very strict care must be taken both in preparing the point of observation and its disguise, as well as throughout the observation and exit.

b) Counting by combined approach and observation

Method applied in the case of unstable song locations or known roughly but not correctly.

- Objective of the method: To locate and enumerate the birds.
- Working method:

Teamwork: The local coordinator designates a number of observation points at which he sets observers either the day before or, at the latest, two hours before sunrise. The observation points may not be left before 10 am and at the earliest one hour after the last bird presence has been established. Care must be exercised when preparing the survey points as well as during the survey and departure from the relevant point.

Individual work: The observer applies the song search method (see method below) in order to locate the area where the birds are. During his other visits to the already designated arenas, the observer applies the fixed point observation method.

c) Search by song

Method applied to areas where there are no well-defined song areas (surfaces) and to areas where there is assumed to be bird presence (according to new or old data).

- Objective of the method*:* Locate the location or make voice or visual contact with the birds.

- Working method: The observer predicts a route of movement to the area where the bird is assumed to be, as in the case of the "transect" mobile surveying method (for details see the book Biology and Hunting Fauna A Postol 2017). He travels this route at most once a month from March to June, either very early in the morning to look for a voice contact or on the day to look for other indicators. In all cases, the movements are concretized into a daily and seasonal plan drafted by the field research leader and made with great care and concentration in order to increase the chances of having "indications" and limiting concerns. In the case of a voice or visual contact you should not attempt to approach the birds. All observations made by observers are transmitted at the end of each working day to the field research leader who in turn does the same to the park level manager.

5.1.2 Winter monitoring

a) Winter search (first option):

Method applied during winter outings especially in areas where a bird presence is assumed (new or old data).

- Objective of the method: Survey winter indicators.

- Working method: Define and present a plan of terrain traversal on the winter search card, which can contribute to the collection of winter indices. Between November and February, when conditions are favorable, carry out two transections of the terrain and record all observations on the file mentioned above. No other winter trips are made, so as not to disturb the individuals who winter in the sector concerned.

b) Winter search (second option):

Method applied during winter outings in circulation corridors especially in areas where the presence of birds has been established in order to know the wintering conditions of the species.

- Objective of the method: Detect potential winter indicators and monitor their frequency.

- Working method: The observer travels through the area where the bird is widespread and seeks various traces of bird access, making use of as much snow cover as possible to assist. All traces of excrements, feathers, etc. found are forwarded to the coordinator during the balance of winter outings (transects).

5.1.3 Summer monitoring

In some pilot areas, taking advantage of the special status of the management process, a summer monitoring of reproduction completes other forms of monitoring in order to complement the impact assessment of the measures implemented.

- Objective of the method: In a given sector the maximum of the indicators are collected which allow to evaluate the success of the species reproduction.
- Working method: Indicators are required in a transect in search of reproductive tracks (eggshells, hatching eggs, feathers) and summer presence indicators (lineage feathers, etc.). The carry-over method (see cited book A.P. 2017) can also be used to determine the number of birds.

5.2 Monitoring practice

In the case of our study the monitoring will be done:

a) During the May - June period (when the birds are in the arena phase) using "monitoring methods during the reproduction period" or "song period" as it is termed including both night and day song) to find eventual traces of bird presence.

b) During the July - September summer period coinciding with the growth phase of the toddlers using the "summer search method".

The number of observations (fixed) or crossings (transects) as well as the relevant areas affected by the study will be determined on the basis of:

- Preliminary orientation data on the spread of crows;
- Extension and configuration of the bird breeding area;
- The number of populations assumed to exist;

In parallel with the observations made on the presence and density of the species, environmental data will also be collected in the places (areas) where the bird is found. At these sites sampling surfaces are designated to study forest and vegetation characteristics. These surfaces are made circular with a radius of 20 meters which defines:

- The composition of the forest;
- Crown density and trunk density of the forest;
- Sub-forest, its composition, extent of cover, height etc.;

A similar work is done for herbaceous vegetation to collect data on selected sample areas. The processing of forest and vegetation data, including the general overview of the whole territory, will allow to determine important correlations on habitat preferences for crows.

5.3 Survey results

5.3.1 Spring surveys

The data collected from the spring surveys will be collected and presented in a table as follows (table 2):

Location (sub-parcel group) where transient surveying was conducted	Direct observation	Trace	Year of Relevance	Characterization of the place of the song (arena)
1) Slope of…	X	X	2019	sure
2) Forest of	-	X	2019	possible
•	•	•	•	•
•	•	•	•	•

***Table 2**: Spring surveys*

In view of the data collected and processed, conclusions will then be drawn as to the presence of wild turkey in the country concerned, its density and the reliability of the relevant assertions.

5.3.2 Summer surveys

It is shown how many transections (transect methods) of the territory (group of parcels) were made for the method by recording the findings of both the presence of birds and their traces (feathers, glas, etc.). Even for this case the data are reflected in a table like Table 2.

Surveys are also carried out with the method of moving to areas where females are presumed to breed young.

For these areas:

- Description of the area (vegetation, landscape, etc.);

- Uplift Ground area (typically 50 ha);

- Counter direction;

- Necessary number of uplifts;

- Maximum length of uplifts (as a rule 1300 - 1600 m);

Output data are summarized in a table as follows Table 3.

Surface designation traversed by the uplift and the size in Ha	**Date of the count**	**Tracking observers**	**Results**
1) The well of ...50 ha	25/3/2019	9	We have 11 turkey alerts out of which: 1 nursery (leftovers) 1 dead female 5 glaze marks 4 feather marks
• • •	• • •	• • •	• • •

***Table 3**: Data about uplifts*

This also completes the table for other surfaces where eventually uplifts have been done. These data (i.e. the number of traces or alerts) serve to estimate the number of birds while allowing the identification or confirmation of areas most favorable for the growth of young birds.

The data processing is done according to the instructions indicated for the method of counting (inventory) with fixed test surfaces and for the method of counting by means of permeation (or of observer, mobile - transect observation).

5.4 Real situation of the Western Capercaillie population in Tomorri National Park

5.4.1 Estimated effectiveness for the whole park (if we are dealing with a single population) or for certain parts of it (if we are dealing with more than one population)

In terms of the effective in this case we are dealing with several populations in different areas of the National Park. This distribution of effectiveness in different areas gives an overview of several different populations, but with relatively low number of effective ones, therefore these effects are difficult to detect.

5.4.2 Map fixation and description of defined song locations (arenas) basic for repeating counts in subsequent years

Using a 1: 25000 map and a GPS device they map out the locations of the track that has been reached and their description is made by giving the surface, describing the arena vegetation as the underlying forest cover and the herbaceous vegetation with all elements of it. their composition, crowndensity, age, phytosanitary status, etc.

The places of the song are also ranked by presence and especially by the number of specimens they attend, the time interval when this happens (daily and monthly), etc.

For the song sites one can also see the possibility of building "watchtowers" (Fig. 10) as sustainable counting equipment but also to promote wildlife to photograph and develop elite tourism.

Fig. 10 Type of Watchtowers

6 Threats to the *Tetrao Urogallus* population in the Tomorri Mountain National Park

As shown by the existing data published by the Regional Administration of Protected Areas, Berat wild turkey population has fallen sharply but today after the implementation of the hunting moratorium, a population capable of reproduction is found but not manage to photograph.

Therefore, assessments regarding threats to wildlife will be make through:

1. Existing documentation:
2. Data from former DFSs Berat, Skrapar and Gramsh;
3. Hunters' Association data from these districts (if any).

Survey that should to be conduct by AdZM Berat with local population, foresters, schoolchildren and hunters should be based on:

a) Huntings: that may have been committed during the last 5 years by illegal hunting, which are difficult to detect;

b) Diseases: Although the indicator of infectious and parasitic diseases in wild turkeys is small, in the case of birds ie their real spread area, it is close to areas where there is a certain human activity (villages, restaurants where soft and wild poultry is consumed, tourist movement tracks, etc.) from studies conducted in other developed countries it is find that infestation by coccidia, certoids, and nematodes can pose a significant risk to wild turkeys.

c) Predation: From marten and fox, which occurs on eggs in nurseries that are built on the ground and to young birds as young as 10 days old, is the major factor limiting the success of wild turkey reproduction. Even wild boar when is extremely dense in numbers is a significant damaging factor of nurseries and young birds. Predatory of raptors is also an important factor that increases the mortality of young turkeys as well as adults. For these reasons, during field surveys of all kinds of surveys, we will try to observe the density of these raptors in order to then anticipate measures to limit or even combat them.

d) Infrastructure and tourist attendance of the park

- Access roads and access to the park, buildings, ski slopes, religious pilgrimage sites, picnic areas, etc., cause a significant reduction in the population of turkeys that may lead to its disappearance.
- Mortality caused by electric cables also adversely affects the dynamics of the wild turkey population.
- The existence of forest and herd roads is often due to the intensification of silvicultural and zootechnical works that sometimes affect the quality of habitats, as they bring about an almost systematic increase in tourism and hunting activities. Although it can be argued here that summer tourism activities (such as guided excursions etc.) are less harmful to wild turkeys than winter ones unless they are extremely massive and poorly organized.

e) Degradation and modification of habitats

In many parts of the world habitat degradation and modification has been the most important factor in the progressive decline of this wild bird. Among these negative factors the most important are:

- Completely reduce or stop grazing in forests;
- Intensifying silvicultural production (high-density forest plantations, conversion of forests to regular trunks, massive reforestation) and all practices that generally lead to more or less total pile closure and sub-forest drowning, and of herbaceous vegetation.
- Degradation and destruction of the lower floors of forest vegetation necessary for young birds.
- Protection of new forests or other crops within the habitat of the turkey with wire mesh enclosures.

All of these are causes of high mortality of wild turkeys.

f) Meteorological conditions and their change

- Meteorological conditions during the breeding period (from the period before the eggs were hatched to the first weeks of life of the small birds) strongly influence the success of breeding. Thus an increase in precipitation and a decrease in temperature (from normal) during the reproductive period have a direct effect on reproductive productivity.

- In addition to the most recent analyzes carried out in developed countries show that there is a tendency for wild crows to reproduce earlier (seasonally) which makes the apex of the hatchery correlate with a period of adverse weather conditions for young birds.

7 Identification of decision makers and other stakeholders directly involved in habitat/species management and SWOT analysis

7.1 Central authorities

- **The Ministry of Tourism and Environment (MTE**) has the key role of nature conservation policy-making and monitoring in Albania. The main tasks of the MTE in relation to biodiversity are:
  - Development and publication of strategies / plans for environmental components;
  - Development and approval of the legal framework for environmental protection;
  - Adoption and monitoring of environmental standards;
  - Information and awareness rise on communities about environmental protection and sustainable use.

The ministry has several subordinate institutions used as technical bodies in fulfilling its tasks.

They are:

- **National Environmental Agency (NEA)**. It is a public institution operating throughout the territory, through the Regional Environmental Directorates. The main tasks of the Agency relate to monitoring of environmental elements and reporting through the "State of the Environment Report". Another task is the environmental permit through the EIA process.
- **The State Inspectorate of Environment, Forestry, Water, and Tourism** established based on Council of Ministers Decision No. 103, dated 04.00.2015. Its mission is to ensure compliance with legal requirements in the field of environmental protection, forests and waters (the issue of marine waters is not clear). It is responsible for all inspection-related functions in accordance with the responsibilities of the relevant ministries responsible for the environment.
- **The National Agency for Protected Areas (NAPA)**, established in February 2015, with its regional structures (Regional Protected Areas Administrations) is responsible for the management and management of biodiversity and protected areas and the implementation of management plans. The protected area administration staff has a coordinating and informative function to ensure better implementation of legal practices regarding nature conservation, biodiversity, protected areas and landscaping.
- **The Regional Administration of Protected Areas (RAPA), Berat** is responsible for the management and management of biodiversity and protected areas and the implementation of the management plan for Tomorri Mountain National Park.
- **Ministry of Infrastructure and Energy**: This Ministry of Infrastructure and Energy (MEI) has four main pillars: (i) Energy, (ii) Infrastructure Development, (iii) Industrial Development and Urban Development.

The main institution within the Ministry of Infrastructure and Energy for spatial planning is **the National Territorial Planning Agency (NTA)**, responsible for coordinating the processes of drafting territorial planning and development documents, which are undertaken by the planning authorities at the level central and local.

- **The Ministry of Agriculture and Rural Development (MAFRD)** is the leading government institution dealing with agriculture and rural development.
- **Ministry of Education, Sport and Youth**, with the Regional Education Directorate, Berat District, which promote by including information on habitat / species conservation in the Tomorri Mountain National Park in educational curricula.
- **Research Institutions and Universities.**

7.2 Local authorities

- **Local government units** (municipalities, administrative units), the main tasks are the approval of planning instruments, the issuance of development and construction permits, the approval of planning and construction regulations at the local level, the provision and maintenance of services, including water supply, and sanitation, integrated waste management, etc.
- **Berat and Gramsh Prefectures** have the task of checking the legal compliance of decisions made by local planning units.
- **Non-profit organizations and associations** that support local community initiatives, including sustainable development of agriculture and other local economic activities, conservation of biodiversity and awareness raising. The most important associations and those that play a role in habitat / species protection are PPNEA, INCA.
- **Hunting associations**, banning illegal hunting and improving habitats for particular species of fauna.
- **Religious subjects**: promote religious and cultural values of the area, organize religious activities and maximize public participation.
- **Local Residents**: Local landowners benefit from tourism and infrastructure development, maximizing their economic benefits from various activities.
- **International institutions and donors** present in Albania through projects and activities related to habitat / species protection are UNDP, Italian Cooperation and Development Agency, WWF etc.

7.3 SWOT analysis

This analysis is valuable in highlighting potentials in the area, identifying problems to improve or avoid in future management, identifying ecological and socio-economic threats and future development opportunities.

Strengths	Weaknesses
• Various habitats spread in the NP Tomorri Mountain, old and natural forests, pastures, heaths and low vegetation associations. • Rich fauna in the NP Tomorri Mountain – major taxonomic groups present, presence of rare endemic species. • Galliforms provide suitable candidates for repopulation in order to preserve them. There is a lower risk of migrating or moving out of the territory compared to other bird species • The Galliforms order includes an ideal bird population for research in experimental situations. • Strengthening the PA management system. Establishment of the Management Committee of NP Tomori Mountain • Establishment of NAPA and RAPA Berat, which monitor and manage the territory of NP Tomorri Mountain. • The Management Plan of NP Tomorri Mountain with the appropriate territory zoning • Strong partnerships to ensure the involvement of all stakeholders	• Intensive logging of the forest • Lack of monitoring and fire management system • Limited information on nature and protected areas features • Illegal and forbitten practice of hunting • Little information available on this aspect, especially regarding Galliforms and their impact on the community. • Little support from the local community in the process of bird repopulation in order to be successful. • Lack of support at the local level can make various aspects of overcrowding very difficult or impossible to achieve. • Lack of local or regional experts • Lack of coordination between key stakeholders and members of the Management Committee • Lack of cooperation with local institutions
Opportunities	**Threats**
• Positive socio-economic impacts for the community • Potential ecosystems for scientific research studies for research institutions and students. • Awareness of the protection of this species	• Illegal logging • Habitat loss and fragmentation • Erosion • Geo-morphological modifications • Lack of local or regional experts

by the local community and environmental education for school students • Changing the perception of the community about *Tetra urogallus* • Conservation of individual species • Reduce biodiversity losses within the Galliform order • Information / training on *Tetra urogallus* conservation • Trend of potential growth in ecotourism • Increased interest from international and local tourists	• Lack of support locally • Lack of access to community structure

***Table 4**: Analysis SWOT*

Strengths - Opportunities

- Collaboration with research experts about *Tetrao Urogallus*
- Apply up-to-date biotech data to optimize *Tetrao Urogallus* conservation

Strengths - Threats

- Increase the number of staff to monitor the *Tetrao Urogallus* species
- Determination of rules for suitable habitat conditions necessary for *Tetrao Urogallus*
- Continuous monitoring of the area (habitat) that is vulnerable to different pressures

Weaknesses - Opportunities

- Dissemination of information / training on *Tetrao Urogallus* conservation
- Capacity building of the Regional Administration Protected Areas, Berat staff and of other RAPAs.

8 Defining general and specific objectives for the conservation of habitats/species in the short, medium and long term.

The main objective is to tackle biodiversity loss by defining common strategies to conserve natural heritage and landscape in the low Adriatic area, with priority for species protected by Directives 92/43 / EEC and Directive 79/409 / EEC, typical of these eco-regions and/or threatened by environmental variations caused by climate change and bad management.

Specific objectives are:

- Improving the environmental protection policies;
- Improving the quality of the environment through integrated approaches and collaborative activities by generating concrete tools and results that favor sustainable long-term growth not only in the areas involved but also in other areas not directly involved;
- Improving the level of designated species / habitat protection and strengthening public-private cooperation to promote long-term environmental conservation (concrete implementation of the Common Cross-border Strategy through direct and indirect conservation interventions for habitat and species);
- Establishing a good balance between socio-economic development and environmental protection, through concrete interventions and awareness raising through awareness raising actions. The project will deliver concrete results and tools that allow defining possible paths of development while benefiting from knowledge sharing.

More specifically, this Galliform Conservation and Repopulation Plan aims to create a free and healthy population. This would contribute to the conservation of individual species and reduce biodiversity losses within the order.

The goal of this repopulation conservation plan is to establish a population that will be healthy in the long run, this can be achieved through two objectives:

The first objective is to successfully breed through the re-introduction of individuals and their offspring, so that resettled populations can relate to existing populations around and thereby avoid the possibility of incest. Increasing the safety of reintroduced birds, in our case this is very difficult due to the difficulty of species repopulation.

The second objective would be to let them be managed by the community, a management which, if appropriate, could be converted into financial gain (eg through tourism). This is foreseen in this project, thus involving the entire local community which will play an important role in this repopulation.

While long-term goals usually include species conservation and the creation of an independent population, the short-term objectives (survival, reproduction) provide immediate clarity on the success of resettlement and serve as guides for future decision-making.

9 Action Plan for the conservation and retraining of habitat and the *Tetrao urogallus* population (s) in Tomorri Park

Tomorri Mountain National Park is managed through Management Plan no. 2027, dt. 31.12.2014.

The vision for Tomorri National Park is:

Conservation and management of Tomorri National Park resources, their aesthetic value and cultural heritage as a unique and universal value of human coexistence and nature with future generations ensuring that Tomorri is a place of living, nurturing and resting, and efficient delivery of first class tourist products and services.

Two of the long-term management objectives of NP Tomorri Mountain are:

1. Increase the protection and conservation of habitats and biodiversity
2. Strengthening of the protected area management system

Concerning the zoning of the Tomorri Mountain National Park, which is an important aspect of the Management Plan and provides a clearer overview of the management of species resources and habitats, it is divided into:

1. Core Zone (Area) - 7,484.4 Ha
2. Sustainable Use Area - 1,365,5 Ha
3. Traditional Use Area - 15,640,9 Ha
4. Recreational Area - 232.3 Ha

The Action Plan for the Protection of *Tetrao Urogallus* Specie and Appropriate Habitats is detailed as follows:

9.1 Improvement of *Tetrao urogallus* conservation policies and management plans

The Management Plan of Tomorri Mountain NP should be improve with measures to ensure the conservation of critical *Tetrao urogallus* habitats in Tomorri Mountain and other areas of Albania. Responsible and interested parties must ensure its full implementation. Training of RAPA staff and other stakeholders in the field is essential.

The field research team will attempt to collect all possible data on the threats that actually exist in the park and then plan the appropriate measures to be proposed and the associated costs.

Activities:

- Establishment of ranges to enable a strict control regime over the location of the nesting area in the Tomorri Mountain NP for the period January - June of each year. Tourists, visitors within the area should not be allowed during this period;
- Increased access control for humans and locals to create an undisturbed wildlife environment;
- Prohibition of logging / burning in key areas (territories) where the Wild Rooster stands.

Priority: Essential

Responsibility: National Agency of Protected Areas (NAPA); Regional Administration of Protected Area RAPA Berat; Directorate of Biodiversity and Protected Areas (MTE)

Other Stakeholders: Ministry of Tourism and Environment, Municipalities of Berat, Skrapar, Gramsh, local institutions, local organizations, scientific institutions etc.

Timing: Immediate and ongoing

9.2 Promote sustainable development in *Tetrao urogallus* habitats

An integrated approach to habitat conservation from which other species will benefit also should be promoted. Such an approach would protect areas from unsustainable development associated with pollution, degradation, and habitat loss. At the same time, it will increase revenues for local communities. Their involvement in the conservation and management of species and critical habitats is of particular importance.

Activities:

- Promoting the concept of zoning, already adopted through the Management Plan of Tomorri Mountain National Park, where areas where the *Tetrao urogallus* has its habitats are designated as special conservation areas.
- Promoting conservation and mutual benefit with the local community in the villages of Dardhe, Kapinove and Tomorr for the recovery of *Tetro urogallus* where habitat suitability allows it.
- Lobbying against tourism development plans associated with the alienation of critical habitats or central areas of the Tomorri Mountain National Park.

- Construction of Tetrao urogallus observation tower in Tomorri Mountain National Park. Their construction serves to promote sustainable tourism based on bird watching.

Priority: Essential

Responsibility: NAPA, RAPA Berat; Directorate of Biodiversity and Protected Areas (MTE)

Other Stakeholders: Ministry of Tourism and Environment, Municipality of Berat, Skrapar and Gramsh, local institutions, local organizations and civil society etc.

Timing: Immediate and ongoing

9.3 Strengthening international cooperation

Activities:

- Improving cooperation with biodiversity conservation authorities in neighboring countries such as Italy and Montenegro through periodic annual meetings between responsible authorities, scientific institutions and specialized NGOs.
- Increased cooperation between scientific institutions of neighboring countries in conservation of biodiversity, especially *Tetrao urogallus* species.
- Promote collaborative teamwork, design and implement common data collection protocols and information sharing.
- Working closely with partners to promote natural tourism and awareness of *Tetrao urogallus* protection for the positive effects of this symbol on the economic growth of its areas.
- Improving cooperation between NGOs from Italy and Montenegro by sharing best practices.

Priority: Medium

Responsibility: MTE, NAPA; RAPA Berat;

Other Stakeholders: Ministry of Environment Tourism, Municipality of Berat, Skrapar and Gramsh, local institutions, local organizations, scientific institutions etc.

Timing: Medium and ongoing

9.4 Management and monitoring of the Tetrao Urogallos species and habitat conservation

9.4.1 Biotope improvement interventions

As has been done throughout the world in the *Tetrao urogallus* territories for the protection and recovery of its normal population, in the park of Tomor Mountain a series of measures (activities) should be gradually planned and implemented for a long time, among which the basic place occupy those concerned with habitat improvement which are briefly as follows:

- Forest treatment systematically taking into account the requirements of the *Tetrao urogallus* throughout its spreading surface and particularly vital environments such as:
    - Song venues (arenas);
    - Nesting sites;
    - Bird breeding sites etc.
- Structure of forest clusters as shown in Fig. 11, which represents the ideal case of a forest structure favorable for the natural development of populations of this bird. The realization of this structure will be the long-term strategic goal of forest treatment, which will be achieved gradually and for a long time through cultural measures that will be planned and implemented.
- Prevention of excessive closure of forest clusters for a long time by favouring their opening in all possible ways through the use of appropriate silvicultural methods or by allowing a reasonable pasture in the forest.
- Creation, where possible, of an irregular structure of forest clusters favouring species mixing.
- Maintain such a density of birch trees (where they exist) that no complete destruction of the forest and herbaceous vegetation will occur.
- Preserve at least 30% of woody vegetation over the upper boundary of forest vegetation, unaffected and not burned by pasture improvement works, in areas where wild crows are found, saving pines during cropping.

9.4.2 Concern management measures

- The *Tetrao urogallus* wintering areas should be placed within and on the outskirts of the areas used for skiing, which allows the birds to be kept in close proximity to the area managed for this purpose.

- In all cases of the creation of new zones for sports and tourism purposes and when road or alleyway signage is established, movement lines (roads) must respect (avoid) *Tetrao urogallus* winter areas.
- Use of forest roads and those of grazing pastures to be trusted only by professionals.
- Cable car transport can be an efficient alternative to creating transportation opportunities because it avoids road construction in *Tetrao urogallus* habitats.

9.4.3 Measures related to hunting and its related problems

At the moment hunting is an activity that cannot be absolutely allowed in the Tomor park.

- If after a number of years it is verified that wild turkey populations have recovered (they will have reached the status of a breeding population), as anywhere in the civilized world and in Tomorri Park, than would be possible their use for hunting purposes. In this case the application of a "hunting plan" would allow to control the percentage of harvests (hunting).
- Individual identification of legally harvested specimens also allows for ease of avoidance of poultry and bird traffic.
- Harvest quotas are set annually as a function of the *tetrao urogallus* present at the opening of the hunt and the success of breeding.
- The effectiveness of adult males can be estimated based on the number of songs performed in May and their percentage of survival from spring to autumn, which is 90% from studies conducted elsewhere.

Plans should be made according to the following recommendations:

- The number of turkeys of the year is estimated as a function of the reproduction index (which is the number of young birds for adult individuals) observed in the respective area through counts made by the "main male reproductive individuals" in August, having considered a balanced sex ratio.
- The effect of controlled hunting (harvesting) will be without risk to the stability of the effective if the breeding exceeds the ratio (a new bird: for adult female individuals). Specifically, the harvest should not exceed:
    - (5 - 10) % of effective when breeding is average (1 - 1.8 young birds per female individual);

- (15 - 20) % of effective in the case of good reproduction (more than 1.8 young birds per female individual);

Harvest quotas set this way should be deducted 30% for not finding the birds killed in the very dense young piles.

- Except for years when reproduction fails, harvests should be discontinued when the effective tendency shows a pronounced regression, or when the bird density is judged to be too low.

9.4.4 Measures for habitat improvement

Improvement of habitat is accomplished as follows:

- Creating by planting several hundred acres (in the form of several hectares) of myrtilus scattered in different forests allows for the rehabilitation of vital environments in which the dense forest cluster does not allow plants producing the crow's food base. Pastures in the woods are sometimes used as a means of keeping them open for a long time.
- Applying early thinning to avoid obstructing subsurface vegetation development and creating a messy (multi-diversity) structure on large areas.
- Planting of forest essences favourable for *Tetrao urogallos.*
- Mosaic cleansing of the rhododendron surfaces in order to restore their attractive potential for female individuals.
- Designation of Tetrao urogallus forests of the so-called "species of habitation" and "individual growth areas" in the area of several thousand hectares, which will allow certain parts of the forest to be maintained in the state of the old trunk corresponding to the optimum requirements for this species (Figure. 11).

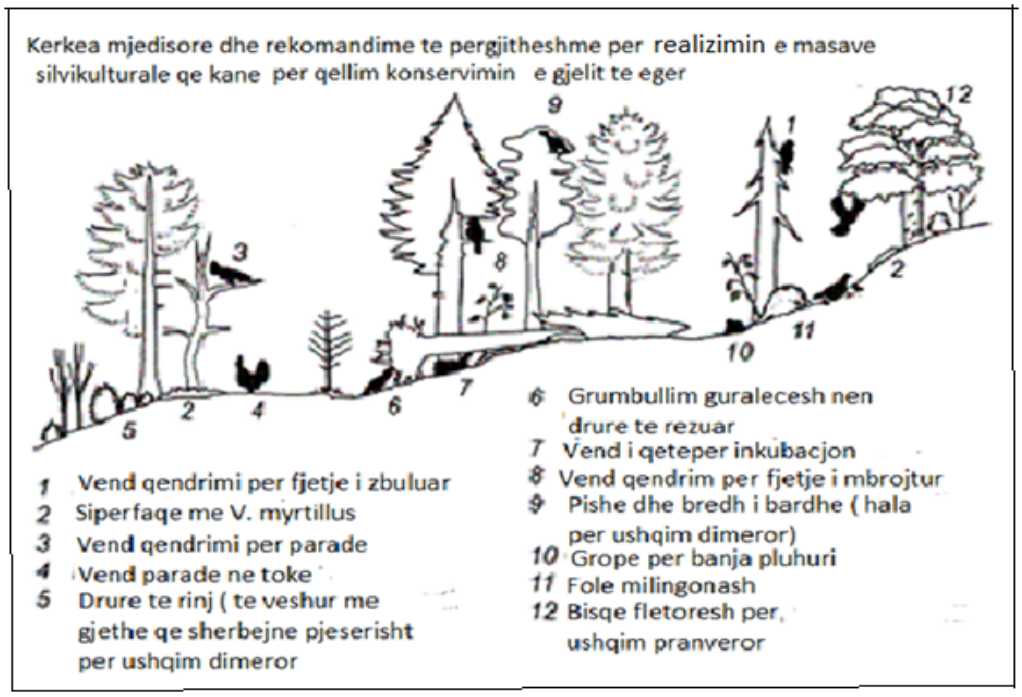

Fig. 11 Designation of Tetrao urogallus forests, Environmental requirements and general recommendations for the implementation of silvicultural measures aimed at the conservation of *Tetrao Urogallus.* **Notes (eng):** 1-Detected sleeping place; 2-Surface with V.myrtillus; 3-Residence for parades; 4-parade place on earth; 5-young leafy trees serving as winter food; 6-collection of pebbles under fallen wood; 7-quiet place for incubation; 8-protected sleeping place; 9-Pine and white Fir(for winter food); 10-dust bath pits; 11-ant nest; 12-Spring food.

9.4.5 Measures intended to limit concerns

- Prohibition for certain periods and areas of "photographic hunting" as well as road traffic and tourist use of the territory when species protection requires it.
- For important areas of vital importance to the Tetrao urogallus, the prohibition of any human intervention is imposed and passed on finding and experimenting with possible solutions.

9.4.6 Measures to limit accidental and artificial mortality

- Develop a program for identifying, mapping, and using mitigation techniques (colored plastic coils, hard colored spheres) to highlight electrical cables or other types of cables that pass through the woods after them are deadly to *Tetrao urogallus*.

- The same program is designed for enclosures of different surfaces with wire nets for different protection purposes.
- Administration of Protected Areas with staff assigned to remove branacs, each spring, conducts surveillance on or near the surfaces of the song (arenas) to detect illegal hunting.

9.4.7 Further details of work to deepen *Tetrao urogallus* recognition in the Tomorri Mountain National Park

To formulate and detail the conservation measures of Tetrao urogallus populations, it is necessary to deepen our knowledge of the distribution capacities of young birds after their separation from the family nucleus.

Mapping the most important cores of populations for species conservation requires further research on the organization of these cores in "metapopulations". This mapping is in relation to the knowledge gained about the capacity of young birds to propagate from the family nuclei.

Research is still needed to clarify the impact of predation and disturbances of anthropogenic origin.

Additional research also requires the link between climate change and *tetrao urogallus* reproduction success.

- The value of *Tetrao urogallus* as an indicator of forest biodiversity in mountain areas should be tested in greater depth at different size scales such as forest, massive forest, natural unit (eg park of different levels), or bio-geographical region.
- In the more distant future when *Tetrao urogallus* populations and habitats are retrained, tourism promotion can be achieved through “photo hunting” from observatories that can be set up near “arenas” (areas), Figure. 10 and planning of a controlled annual harvest which may be the subject of a "tourist hunt".
- In addition, given the increasing importance of this wild bird as an indicator of forest biodiversity, and the increasing development of the concepts of "sustainable development" or "multifunctional development", its consideration in management of mountain forest areas can be considered as one of the means by which these objectives can be achieved.

For all the problems that may be encountered during the implementation of the plan, the field researchers verify the problem that exists and the urgency of its solution by anticipating then the measures to be taken, planning their implementation and the associated costs.

Priority: Essential

Responsibility: NAPA, RAPA Berat, Environmental association.

Stakeholders: Ministry of Tourism and Environment, National Territorial Planning Agency, State Inspectorate of Environment, Forests, Water and Tourism, local institutions, local associations, hunters associations, scientific institutions, etc.

Timing: Immediate and ongoing

9.4.8 Timely extension of conservation activities

Species conservation activities extend throughout the duration of the plan implementation, which is 2 years. However, activities deemed essential and of immediate effect are foreseen to be implemented from the first year of the plan. Meanwhile, other activities will be implemented in the second year (Tab.4: Timing of conservation activities).

No.	**Activities**	**Period**
9.1	**Improve Tetrao urogallus conservation policies and management plans**	
a)	Establishment of guards to enable a strict control regime over the location of the nesting area in the Tomorri Mountain NP for the period January - June of each year. Tourists, visitors within the area should not be allowed during this period.	All the implementation
b)	Increased access control for humans and locals in order to create an undisturbed Tetrao urogallus environment.	All the implementation
c)	Prohibition of logging / burning in key areas (territories) where the Tetrao urogallus resides.	All the implementation
9.2	**Promoting sustainable development in *Tetrao urogallus* habitats**	
a)	Promotion of the concept of zoning, already adopted through the Management Plan of Tomorri Mountain National Park, where areas where *Tetrao urogallus* has its habitats are designated as special conservation areas.	All the implementation
b)	Promote conservation and mutual benefit with the local community of Dardhe, Kapinove, Tomor and Ujanik villages	All the implementation

	for *Tetrao urogallus* recovery where habitat suitability allows it.	
c)	Lobbying against tourism development plans associated with the alienation of critical habitats or central areas of Tomorri Mountain National Park.	All the implementation
d)	Construction of a *Tetrao urogallus* observation tower in Tomorri Mountain National Park. Their construction serves to promote sustainable tourism based on bird watching.	Second year
9.3	**Strengthening international cooperation**	
a)	Improving cooperation with biodiversity conservation authorities in neighboring countries such as Italy and Montenegro through periodic annual meetings between responsible authorities, scientific institutions and specialized NGOs.	All the implementation
b)	Increased cooperation between scientific institutions of neighboring countries in conservation of biodiversity, especially *Tetrao urogallus* species.	All the implementation
c)	Promote collaborative teamwork, design and implement common data collection protocols and information sharing.	All the implementation
d)	Working closely with partners to promote natural tourism and *Tetrao urogallus* conservation awareness of the positive effects of this symbol on the economic growth of areas where it is located	All the implementation
e)	Improving cooperation between NGOs from Italy and Montenegro by exchanging best practices.	First year
9.4	**Management and monitoring of the Tetrao Urogallos species and habitat conservation**	
9.4.1	Biotope improvement interventions	First year
9.4.2	Concerns management measures	All the implementation
9.4.3	Measures related to hunting and its related problems	All the implementation
9.4.4	Habitat improvement measures	All the implementation

9.4.5	Measures intended to limit concerns	All the implementation
9.4.6	Measures to limit accidental and artificial mortality	All the implementation
9.4.7	Further details of the work to deepen the recognition of Tetrao urogallus in the Tomorri Mountain NP	All the implementation

***Table 5**: Timely extension of conservation activities*

10 Information and awareness-raising measures for stakeholders and the local population towards deepening knowledge and recognition of *Tetrao urogallus* in Tomorri National Park

The environmental education and awareness undertaken in the last 20 years seems to be bearing fruit but there is still a need for the conservation of biodiversity and endangered species such as *Tetrao urogallus* to be rooted not only in the local but also in the national community. This requires further training of the responsible RAPA staff, local administration and other stakeholders.

Activities:

- Organize public awareness campaigns with hunters, local communities, tour operators, government institutions that are part of wildlife conservation.
- Organize exchange visits to partner countries to recognize and share best practices for the conservation and management of the *Tetrao urogallus* and its habitat.
- Prepare publications such as leaflets, brochures, posters, etc. on the importance of habitat/species in national and international contexts.
- Training of RAPA staff on environmental education, bird conservation and management, wildlife in general.
- Training of RAPA staff responsible for the implementation of the law on rules and regulations related to wildlife protection.
- Training of NGOs and other interest groups on nature conservation focusing especially on wildlife conservation.
- Training of Eco-tour guides to accompany tourists visiting Tomorri Mountain National Park.

- Increase the technical capacity of protected area employees on:
    - Bird monitoring.
    - Management equipment that is important for the conservation of the *Tetrao urogallus*.
    - Minimizing human interference and other special concerns.

11 Assessment of the Impact of the Action Plan on the Conservation and Correct Management of Habitat/Species

11.1 Expected problems during implementation

Implementation of the plan may be difficult due to various external factors that may affect its success. These factors need to be identified and listed in advance so they can be controlled effectively.

Natural Ecological Disasters:

- Severe weather conditions (fires, damage to vegetation, etc.)
- Epidemics

11.2 The human impact

It is already know that the human factor expressed as human concern has a high impact on the bird populations in Albania. This is an alert to be very careful with hunting control in the Tomorri Mountain NP so as not to harm the *Tetrao urogallus* population.

Changing the habitat or damaging it by various activities of local people (cutting down trees, mowing the trees etc.) have a direct impact because they damage habitats vital to the species. They bring various concerns that have long-term effects on the population and affect the sustainability and success of its positive development.

Uncontrolled tourist activities, especially in areas of special importance to the species, may bring continued concern to its population and decrease the success of the species' reproduction.

The only way in the short term to prevent negative impact is to control these activities by local rangers. Its long-term conservation this can be achieved through public awareness of the importance of the *Tetrao urogallus* as a valuable natural asset of the NP Tomorri Mountain area, which affects the eco-tourist and economic development of the local population.

In order to ensure that conservation and enhancement are properly plan; the following issues will be considering:

- Conservation of natural territory, which carries habitats suitable for *Tetrao urogallus*.
- Eliminate the factors that led to the partial disappearance of the population and identify other potential risks.
- Creating conditions for a natural Re-colonization.
- Providing conditions for long-term population development and sustainability in order to achieve a genetically healthy population.
- Awareness of the local population about the importance of this type in the development of eco-tourism in the area.

12 Identify the human and financial resources that will be incorporated into the project through collaboration with public and private authorities

The partnership will provide the necessary theoretical and technical expertise for optimal project development. The main partners will be the local authorities, the RAPA Berat staff who will monitor its progress on a continuous basis. Regional NGOs, Research Institutes, and Universities will also be important partners who will contribute to raising awareness of the local population about the importance of *Tetrao urogallus* and sharing scientific information. Once the work plans will be approved, they will represent a means by which each stakeholder will carry out concrete activities aimed at preserving *Tetrao urogallus*. Each partner will contribute by providing data, identifying problems and suggesting possible solutions according to their respective field. Local community people will also be important contributors, as they are in constant contact with the area and play a key role in maintaining the balance of environmental use in the area of interest and consequently the impact on the *Tetrao Urogallus* species.

Funding for the implementation of the plan it is plan to have from two sources as follows:

Internal sources:

- The state budget of the Republic of Albania from the section designated for the National Agency of Protected Areas, Ministry of Tourism and Environment;
- Resources of scientific and academic institutions;
- Resources of the Albanian Hunting Association;

- Other resources (e.g. business sector).

Foreign sources:

- European Community - through IPA CBC Programe Italy - Albania - Montenegro for several years and for certain projects;
- Foreign contributions;
- Other resources.

13 Monitoring the Action Plan to control the effectiveness of actions

Monitoring the Action Plan

Every conservation plan needs in-depth monitoring in order for the success of the Action Plan to be measurable. Monitoring should focus on meeting the goals of the Action Plan.

In our case, monitoring should:

- Control the success of wild turkey population reproduction
- Control the size of the wild turkey population
- To check the level of public awareness through interviews with representatives of the area or not
- To check the number of research publications that mention Wild Turkey

Annex 1. List of indicators

No.	**Activities**
1	Support to implementing administration and local NGOs
	Computers, software and GPS
	Other ground equipment (binoculars, microphone)
9.1	**Improve Tetraourogallus conservation policies and management plans**
b)	Increased access control for humans and locals in order to create an undisturbed Tetraourogallus environment.
c)	Prohibition of logging / burning in key areas (territories) where the Tetraourogallus resides.
9.2	**Promoting sustainable development in *Tetraourogallus* habitats**
a)	Promotion of the concept of zoning, already adopted through the Management Plan of Tomorri Mountain National Park, where areas where *Tetraourogallus*has its habitats are designated as special conservation areas.
b)	Promote conservation and mutual benefit with the local community of Dardhe, Kapinove, Tomor

	and Ujanik villages for *Tetraourogallus* recovery where habitat suitability allows it.
c)	Lobbying against tourism development plans associated with the alienation of critical habitats or central areas of Tomorri Mountain National Park.
d)	Construction of a *Tetraourogallus* observation tower in Tomorri Mountain National Park. Their construction serves to promote sustainable tourism based on bird watching.
9.3	**Strengthening international cooperation**
a)	Improving cooperation with biodiversity conservation authorities in neighboring countries such as Italy and Montenegro through periodic annual meetings between responsible authorities, scientific institutions and specialized NGOs.
b)	Increased cooperation between scientific institutions of neighboring countries in conservation of biodiversity, especially *Tetraourogallus* species.
c)	Promote collaborative teamwork, design and implement common data collection protocols and information sharing.
d)	Working closely with partners to promote natural tourism and *Tetraourogallus*conservation awareness of the positive effects of this symbol on the economic growth of areas where it is located
e)	Improving cooperation between NGOs from Italy and Montenegro by exchanging best practices.
9.4	**Management and monitoring of the TetraoUrogallos species and habitat conservation**
9.4.1	Biotope improvement interventions
9.4.2	Concerns management measures
9.4.3	Measures related to hunting and its related problems
9.4.4	Habitat improvement measures
9.4.5	Measures intended to limit concerns
9.4.6	Measures to limit accidental and artificial mortality
9.4.7	Further details of the work to deepen the recognition of Tetraourogallus in the Tomorri Mountain NP

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