

Project title: “Enhancing biodiversity through sustainable management and protection of rare species habitat in Nestos and Ardas rivers and the Rodopi Mountain Range”

acronym “Wild Life For Ever”

Deliverable 3.7.4 Development of 3 strategies for conservation of the three most vulnerable and prioritized species/ habitats based on the result of risk assessments

**Foundation “Arbitra” (PB7)**

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The project is co-financed by the European Regional Development Fund (ERDF) and by national funds of the countries participating in the Cooperation Programme Interreg V-A “Greece-Bulgaria 2014 - 2020”.

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## REPORT №3

for the implementation of **Activity 3: „Development of strategies to protect most vulnerable and priority species/habitats“**

**According to Contract № OP-01/15.03.2019 for a public invitation with subject: „Study and planning of the protection of biodiversity in the cross-border region with the republic of Greece“,**

Within Project №B2.6d.04/10.11.2017 „Enhancing biodiversity through sustainable management and protection of rare species habitat in Nestos and Ardas rivers and the Rodopi Mountain Range“, financed under The Cooperation Programme INTERREG V-A "Greece-Bulgaria 2014-2020".

**Contracting Authority:** Fondation „Arbitra“

**Contractor:** „P-United“ LTD

**Manager of „P-United“ LTD:**



/PhD Petar Petrov/

**June, 2019**

*Project: "Enhancing biodiversity through sustainable management and protection of rare species habitat in Nestos and Ardas rivers and the Rodopi Mountain Range", acronym: „WILD LIFE FOR EVER". The project is co-financed by the European Regional Development Fund (ERDF) and by national funds of the countries participating in the Cooperation Programme Interreg V-A "Greece-Bulgaria 2014 - 2020". The content of this document is sole responsibility of the Foundation "Arbitra" and can in no way be taken to reflect the views of the European Union, the participating countries the Managing Authority and the Joint Secretariat.*

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## Introduction

The current Report 3 for the implementation of Activity 3: „Development of strategies to protect most vulnerable and priority species/habitats“ has been prepared in connection with the implementation of Contract № OP-1/15.03.2019, concluded within Project №B2.6d.04/10.11.2017 „Enhancing biodiversity through sustainable management and protection of rare species habitat in Nestos and Ardas rivers and the Rodopi Mountain Range“, financed under The Cooperation Programme INTERREG V-A "Greece-Bulgaria 2014-2020".

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## 1. Purpose and scope of Activity 3

**The purpose of Activity 3:** „*Development of strategies to protect most vulnerable and priority species/habitats*“ is the development of conservation strategies to protect three most vulnerable and priority species/habitats in the Natura 2000 protected sites on the Bulgarian territory of Arda river, covered by the risk assessment under Activity 2.

**Activity 3** is covering the implementation of the following tasks:

- **Task 1:** Agreement with the Contracting Authority on appropriate species/habitats to whom Conservation strategy will be applied.
- **Task 2:** Development of strategies to protect most vulnerable and priority species/habitats.

## 2. Actions taken for the implementation of Activity 3

### 2.1. Actions taken for the implementation of Task 1: Agreement with the Contracting Authority on appropriate species/habitats to whom Conservation strategy will be applied

On the basis of the developed risk assessment during the implementation of Activity 2, the Contractor made an agreement with the Contracting Authority on the following three most vulnerable and priority species from Natura 2000 protected sites on the Bulgarian territory of Arda river to whom conservation strategies will be applied:

1. **Three – toed woodpecker** (*Picoides tridactylus*), object of conservation in protected site BG0002113 “Trigrad – Mursalitsa” under Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds; risk assessment: High risk (3);

2. **Spur – thighed tortoise** (*Testudo graeca*), object of conservation in protected site BG0001030 “Rodopi – Zapadni” (Western Rhodopes) under Council Directive 92/43/EEC of the 21 May 1992 on the conservation of natural habitats and of wild fauna and flora; risk assessment: Very high risk (6);

3. **Asp** (*Aspius aspius*), object of conservation in protected site BG0001032 “Rodopi – Iztochni” (Eastern Rhodopes) under Council Directive 92/43/EEC of the 21 May 1992 on the conservation of natural habitats and of wild fauna and flora; risk assessment: Extreme risk (9).

#### **Main motives for choice of species/habitats were:**

- High conservation status;
- In the distribution range of the selected species are identified threats with high negative influence;
- As a result of the applied Risk assessment model, the identified risk for the selected species is evaluated as high, very high and extreme;

With evaluation of 3 (or high risk) there is need for taking measures to reduce the influence of the risk. With evaluations of 6 and 9 (very high and extreme risk) there is need for immediate and urgent regulations and actions against the influence of the risk.

*2.2. Actions taken for the implementation of Task 2: Development of strategies to protect most vulnerable and priority species/habitats.*

Conservation strategies for the protection of three most vulnerable and priority species were developed after agreement between the Contractor and the Contracting Authority.

According to the requirements of the Contracting Authority, the Conservation strategies consist of the following minimum content:

- Description of the species;
- State assessment of the species;
- Analysis of legal and planning documents, related to the species;
- Objectives of species conservation;
- Priorities for species conservation;
- Conservation measures;
- Implementation plan, including potential sources of funding and institution,

responsible for implementing the measures.



### **3. Results**

The result from the implementation of Activity 3 is developed Conservation strategies for protection of three most vulnerable and priority species/habitats in the Natura 2000 protected sites on the Bulgarian territory of Arda river, covered by the risk assessment under Activity 2.

#### 4. Annexes

- **Annex 1:** Conservation strategy for three-toed woodpecker (*Picoides tridactylus*) in protected site BG0002113 „Trigrad – Mursalitsa“ under Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds;
- **Annex 2:** Conservation strategy for spur – thighed tortoise (*Testudo graeca*) in protected site BG0001030 “Rodopi – Zapadni” (Western Rhodopes) under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora;
- **Annex 3:** Conservation strategy for asp (*Aspius aspius*) in protected site BG0001032 “Rodopi – Iztochni” (Eastern Rhodopes) under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.

**Conservation strategy for spur – thighed tortoise (*Testudo graeca*) in protected site BG0001030 “Rodopi – Zapadni” (Western Rhodopes) under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora**

**To Report 3 for the implementation of Activity 3: „Development of strategies to protect most vulnerable and priority species/habitats“**

According to Contract № OP-01/15.03.2019 for a public invitation with subject: „Study and planning of the protection of biodiversity in the cross-border region with the republic of Greece“

**June, 2019**

*Project: “Enhancing biodiversity through sustainable management and protection of rare species habitat in Nestos and Ardas rivers and the Rodopi Mountain Range”, acronym: „WILD LIFE FOR EVER”. The project is co-financed by the European Regional Development Fund (ERDF) and by national funds of the countries participating in the Cooperation Programme Interreg V-A “Greece-Bulgaria 2014 - 2020”. The content of this document is sole responsibility of the Foundation “Arbitra” and can in no way be taken to reflect the views of the European Union, the participating countries the Managing Authority and the Joint Secretariat.*

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**LIST OF ABBREVIATIONS**

<b>BAS</b>	Bulgarian Academy of Sciences
<b>MOEW</b>	Ministry of Environment and Water
<b>NGO</b>	Non-governmental organization
<b>RIEW</b>	Regional Inspectorate of Environment and Water

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## Introduction

After the development and implementation of Risk assessment model for total of six species in the Natura 2000 protected sites on the Bulgarian territory of Arda river, the spur – thighed tortoise (*Testudo graeca*) in protected site BG0001030 “Rodopi – Zapadni” (Western Rhodopes)” was identified among the most vulnerable and priority species for development of strategy for conservation.

During the implementation of Risk assessment model were identified threats (fires and poaching) that have negative impact on spur – thighed habitats and population. The result from the risk assessment is 6 – Very high risk, which means there is need for immediate regulations and actions against the influence of the identified threats.

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## I. Description of the species

The spur – thighed tortoise (*Testudo graeca*) is reptile species from order Cryptodyra, belonging to family Testudinidae.

*T. graeca* mainly inhabit low mountainous and hilly regions, overgrown with bushes and low-stem forests, as open grass spaces among them are preferred. The species reaches up to 39 cm in length and weighing up to 7 kg, as are mostly found tortoises with 18-25 cm in length (**Figure 1**). The spur – thighed tortoise is active during the daytime. During the autumn the tortoises bury themselves in the soil in depth of 30 to 90 cm on dry, usually southern slopes. In the beginning of April tortoises uncover themselves and come back to the surface. In comparison to Hermann’s tortoise (*Testudo hermanni*), spur-thighed tortoise is significantly more mobile species and makes longer migrations.



**Figure 1.** Spur – thighed tortoise (*Testudo graeca*)

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Sexual maturity is reached after the eighth year in males and after the tenth in females. In May-July it lays 2 or 3 times from 2 to 8 almost ball-like eggs each time, that it buries in holes in the soil. The eggs hatch in 70 – 100 days.

*T. graeca* is primarily herbivorous. The natural diet of the species consists of a wide variety of fibrous plants, especially their flowers (Divers 2003), as well as a small quantity of fallen fruits. Some free-ranging individuals may consume mollusks and insects. They have been observed to eat the feces of other animals.

According to literature data the species is found almost throughout the country without its northwestern parts; singular individuals may be found there, brought from other places. In the mountains of Southwestern Bulgaria it has been found at altitudes of up to about 1300 m. The density of the populations is heavily influenced by human activity.



## II. State assessment of the species

In the Standard Data Form of protected site “Rodopi – Zapadni” the species is represented as present (P). According to the researches during the project “Mapping and determination of the conservation status of nature habitats and species – phase I” *T. graeca* is not registered in the protected site. The area of potential habitats, based on the inductive modelling, is evaluated as 2 067.95 ha. During the filed researches according to the abovementioned project some the following results are obtained, related to the species habitats in protected site “Rodopi – Zapadni”:

- total area of suitable habitats – 557.60 ha (0.20 %);
- area of thin forests, undergrowth, pastures, meadows and abandoned agricultural lands with trees and shrubs (area of suitable habitats for laying eggs) – 78.18 %;
- area of open forest habitats – 10.24 %.

The main factors that have negative effect on the population of the species are: man's agricultural activity; destruction of the valley forests; collection for “curing”, in spite of its proved uselessness; forest fires (especially in Southeastern Bulgaria), etc.

In applying the Risk assessment model for *T. graeca* in protected site “Rodopi – Zapadni” during the implementation of Activity 2: “*Development and implementation of ecological risk assessment model for species and habitats in the Natura 2000 protected sites on the territory of Arda river*”, according to Contract № OP-01/15.03.2019 for a public invitation with subject: „Study and planning of the protection of biodiversity in the cross-border region with the republic of Greece“, were identified the following threats that have negative impact on the species and its habitats:

- fires;
- poaching.

Fires can lead to direct destruction and damage on individuals and habitats (important places for breeding, feeding, resting or hiding). The ploughing of the area and cutting burned trees after the fire, lead to change in the habitat and destruction of the left alive species.

Poaching is a threat that reduces the population of individuals, and in some cases can lead to direct destruction of species.

As a result of the applied Model, the risk assessment for *T. graeca* is with value of 6, defined as Very high risk. This means there is need for immediate regulations and actions against the influence of the threats and activities that occur on the species and its habitats.

### III. Analysis of legal and planning documents, related to the species

#### 1. Legal documents, related to the species

The species is object of conservation, included in documents of the national and international legislation:

- Annex II and III of the Bulgarian Biodiversity Act;
- Red Data Book of the Republic of Bulgaria: Volume 2 (Golemanski, 2011);
- Annex II and IV of Council Directive 92/43/EEC of the 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;
- Annex II of the Convention on the Conservation of European Wildlife and Fauna and Natural Habitats (Bern Convention);
- International Union for Conservation of Nature's Red list – IUCN.
- Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES

#### 2. Planning documents, related to the species

Direct relation to the species is the expired Action plan for the tortoises in Bulgaria for the period of 2005 – 2014 with the financial help of Bulgarian-Swiss Biodiversity Conservation Programme.

The following projects are identified under Operational Programme “Environment 2007 – 2013” where *T. graeca* is mentioned:

- Project “Field studies of species distribution/evaluation of species and habitat status for the territory of the whole country – phase I”;
- Project “Mapping and determination of the conservation status of nature habitats and species – phase I”.

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## IV. Objectives, priorities and conservation measures

**The main objective** for conservation of *T. graeca* in protected site “Rodopi – Zapadni” is:

➤ **Habitat conservation and achievement of sustainable population of the species**

In order to achieve the main objective with the resulting **priorities**, the implementation of the following **measures** is recommended:

**Priority 1:** Habitat conservation

*Measure 1: Priority development and adoption of management plan for protected site “Rodopi – Zapadni”*

**Priority 2:** Control over the limiting factors

*Measure 1: Financial stimulation of the controlling authorities and local people in submission of information for and catching poachers*

*Measure 2: Fire impact assessment on species’ habitats*

**Priority 3:** Achievement of sustainable population of the species

*Measure 1: Construction of breeding and rehabilitation centre for spur – thighed tortoise*

*Measure 2: Development and implementation of methodology for marking species*

**Priority 4:** Public awareness of the spur – thighed tortoise

*Measure 1: Lecturing schoolchildren and students on spur – thighed tortoise conservation status*

*Measure 2: Filming nature documentaries on the species’ biology, ecology and conservation status*

*Measure 3: Organisation of information campaigns and conducting of seminars and workshops on spur – thighed tortoise conservation status*

*Measure 4: Preparation of information materials (printed/electronic) about the spur – thighed tortoise*

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## V. Implementation plan, including potential sources of funding and institution, responsible for implementing the measures

The implementation plan, according to the Conservation strategy, is represented in **Table 1**

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**Table 1.** Implementation plan to Conservation strategy for spur – thighed tortoise (*Testudo graeca*) in protected site BG0001030 “Rodopi – Zapadni”

Main objective	Priorities	Measures (Activities)	Potential source of funding	Expected results	Institution, responsible for implementing the measures
Main objective: Habitat conservation and achievement of sustainable population of the species	<b>Priority 1:</b> Habitat conservation	<i>Priority development and adoption of management plan for protected site “Rodopi – Zapadni”</i>	European Regional Development Fund, Government budget	Developed management plan for protected site “Rodopi – Zapadni”	MOEW
	<b>Priority 2:</b> Control over the limiting factors	<i>Financial stimulation of the controlling authorities and local people in submission of information for and catching poachers</i>	European Regional Development Fund, Government budget	Increased number of catching poachers as a result of submission of information	MOEW/ RIEW– Blagoevgrad/ RIEW – Pazardzhik/ RIEW – Plovdiv/ RIEW – Smolyan
		<i>Fire impact assessment on species’ habitats</i>	European Regional Development Fund, Government budget	Collected and published information about fires impact on the population of the species	MOEW/ BAS/ Universities
	<b>Priority 3:</b> Achievement of	<i>Construction of breeding and</i>	European Regional	Built fully operational breeding and	MOEW/NGO

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Main objective	Priorities	Measures (Activities)	Potential source of funding	Expected results	Institution, responsible for implementing the measures
	sustainable population of the species	<i>rehabilitation centre for spur – thighed tortoise</i>	Development Fund, Government budget	rehabilitation centre for spur – thighed tortoise	
		<i>Development and implementation of methodology for marking species</i>	European Regional Development Fund, Government budget	Developed methodology for marking species	MOEW/ BAS/ Universities
	<b>Priority 4:</b> Public awareness of the spur – thighed tortoise	<i>Lecturing schoolchildren and students on spur – thighed conservation status</i>	European Regional Development Fund, Government budget	Conducted lectures before schoolchildren and students on spur – thighed conservation status	MOEW/ BAS/ Institutes/ Universities
		<i>Filming nature documentaries on the species' biology, ecology and conservation status</i>	European Regional Development Fund, Government budget	Broadcast nature documentary on the species' biology, ecology and conservation status	MOEW/ BAS/ Institutes/ Universities
		<i>Organisation of information campaigns and conducting of</i>	European Regional Development	Organised information campaigns and conducted seminars and workshops on spur	MOEW/ BAS/ Institutes/ Universities

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Main objective	Priorities	Measures (Activities)	Potential source of funding	Expected results	Institution, responsible for implementing the measures
		<i>seminars and workshops on spur – thighed tortoise conservation status</i>	Fund, Government budget	– thighed tortoise conservation status	
		<i>Preparation of information materials (printed/electronic) about the spur – thighed tortoise</i>	European Regional Development Fund, European funds, Government budget, Municipal budgets, NGO budgets	Prepared information materials (printed/electronic) about the spur – thighed tortoise	MOEW/ BAS/ Institutes/ Universities

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**Conservation strategy for asp (*Aspius aspius*) in protected site  
BG0001032 “Rodopi – Iztochni” (Eastern Rhodopes) under Council  
Directive 92/43/EEC on the conservation of natural habitats and of  
wild fauna and flora**

**To Report 3 for the implementation of Activity 3: „Development of strategies to  
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**LIST OF ABBREVIATIONS**

<b>BFSA</b>	Bulgarian Food Safety Agency
<b>HEPP</b>	Hydro-Electrical Power Plant
<b>EAFA</b>	Executive Agency of Fisheries and Aquaculture
<b>MOAFF</b>	Ministry of Agriculture, Food and Forestry
<b>MOEW</b>	Ministry of Environment and Water
<b>RIEW</b>	Regional Inspectorate of Environment and Water

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## Introduction

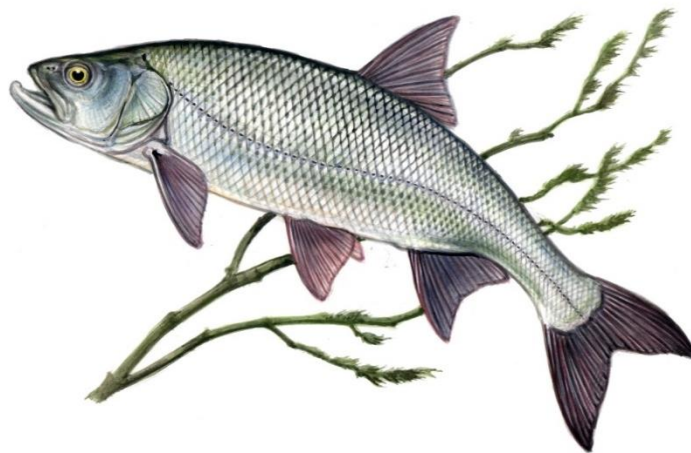
After the development and implementation of Risk assessment model for total of six species in the Natura 2000 protected sites on the Bulgarian territory of Arda river, the asp (*Aspius aspius*) in protected site BG0001032 “Rodopi – Iztochni” (Eastern Rhodopes) was identified among the most vulnerable and priority species for development of strategy for conservation.

During the implementation of Risk assessment model were identified threats that have negative impact on asp habitats and population: pollution from landfill, located on the Arda river terrace; quarry for aggregates; dam walls of reservoirs “Studen kladenets” and “Ivaylovgrad”; HEPP; artificial river threshold without a fish ladder. The result from the risk assessment is 9 – Extreme risk, which means there is need for urgent regulations and actions against the influence of the identified threats.

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## I. Description of the species

The asp (*Aspius aspius*) is a European freshwater fish from the carp family (Cyprinidae). The fish inhabit lakes and lower reaches of rivers and estuaries. Normally, asps are between 60 – 80 cm in length and weighing up to 6 – 7 kg, with a maximum body length of 100 cm and weight of 9 kg. His back is bluish or dark gray with a slight lateral overflow. The scales are relatively small and the fins are large and greyish in color (**Figure 1**). The eyes are yellow with a green line at the top. The caudal fin is wide and the mouth is large. The lower jaw tip projects and fits into a notch in the upper jaw.



**Figure 1.** Asp (*Aspius aspius*)

The fish reach sexual maturity between 2 – 4 years with maximum life span of 11 years. Asp migrate upstream for spawning, which occurs from April to June. Spawning takes place in fast-flowing water on sandy or pebble substrate with water temperature between 9 – 10°C.

The asp is the only piscivorous species in the family Cyprinidae. In its early juvenile phase feeds on crustaceans, bottom fauna, terrestrial insects that have fallen into the water, and fish

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larvae. The most important food item for adults is bleak (*Alburnus alburnus*), followed by roach (*Rutilus rutilus*), and goldfish (*Carassius auratus*).

According to literature data the species is found in Danube river and in some of the downstreams of the tributaries – Iskar, Vit, Osam. The fish was found also in the rivers from the Aegean Sea – Struma, Maritsa, Tundzha, Vacha, Kamchiya.

*A. aspius* in the past decade is known to be found in Danube river and its tributaries Ogosta, Iskar and Vit, as in Aegean catchment area – the rivers Struma and Maritsa and “Studen kladenets” reservoir.

## II. State assessment of the species

In the Standard Data Form of protected site “Rodopi – Iztochni” the species is represented as very rare (V). According to the researches during the project “Mapping and determination of the conservation status of nature habitats and species – phase I” *A. aspius* is not registered in the protected site. The area of potential habitats is evaluated as 3 635.1 ha and the length of river divisions, where the species is found, is 82.7 ha. There is evidence of *A. aspius* presence in “Studen kladenets” reservoir (Stefanov & Trichkova, 2004).

During the filed researches according to project “Mapping and determination of the conservation status of nature habitats and species – phase I” the following results are obtained, related to the species habitats in protected site “Rodopi – Iztochni”:

- water flow – 0.3 m/s;
- water quantity – 2.362 m<sup>3</sup>/s;
- saprobity (related to Bulgarian Biotic Index for flowing waters) – 3.5 (average data within the protected site);
- oxygen saturation – 89.03%.

*A. aspius* is sensitive to the environmental degradation. The main factors that have negative impact on the population of the species are: hydrotechnical activities, leading to transverse partition of the rivers and deposition of sediments; pollution of the rivers and poaching.

In applying the Risk assessment model for *A. aspius* in protected site “Rodopi – Iztochni” during the implementation of Activity 2: “*Development and implementation of ecological risk assessment model for species and habitats in the Natura 2000 protected sites on the territory of Arda river*”, according to Contract № OP-01/15.03.2019 for a public invitation with subject: „Study and planning of the protection of biodiversity in the cross-border region with the republic of Greece“, were identified the following threats that have negative impact on the species and its habitats:

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- pollution from landfill, located on the Arda river terrace;
- quarry for aggregates;
- dam walls of reservoirs „Studen kladenets“ and „Ivaylovgrad“;
- HEPP;
- artificial river threshold without a fish ladder.

Pollution in river stretches leads to damage on habitats and individuals and has an adverse affect on the food base. There is possibility of damaging the breeding sites of the species.

Quarries represent a threat where causing a change in river hydromorphology can lead to repelling species due to disturbance. As a result, this may lead to population decline.

Reservoirs represent migration barrier for the species. Reservoir walls run transversal of the valley and block the water as well as the floodplains and the valley itself. This way interrupts the migration corridors in and along the water body.

The presence of high reservoir walls, the lower drainage of reservoir waters with low temperature during the breeding season, etc., have a negative impact on the habitats of the *Aspius aspius*, which is sensitive to the environmental degradation.

Hydro-electrical power plants are migration barrier which leads to direct destruction of habitats and species by land construction, swamping or drainage. Indirectly, the threat leads to breaking the links between ecosystems. In the construction of hydropower, the watercourse is blocked by reservoir walls or barrages, which disrupt the most important functions of the rivers and they stop to act like biological corridors.

Continuous fluctuations of water level, due to the maintenance of hydro-electrical power plants cause deterioration of the *Aspius aspius* habitats. During the breeding season the species migrates upstream along the river. The migration of the *Aspius aspius* can be prevented by a presence of hydropower which can lead to disastrous consequences for its populations.

Artificial thresholds are threat with permanently negative influence, representing migration barrier for species. There is a difference in water levels on both sides of the threshold, only well

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swimming and jumping fish can overcome the barrier. All other species and benthic organisms cannot move upstream.

As a result of the applied Model, the risk assessment for *A. aspius* is the highest possible – 9, defined as Extreme risk. This means there is need for immediate and urgent regulations and actions against the influence of threats and activities that occur on the species and its habitats.

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### III. Analysis of legal and planning documents, related to the species

#### 1. Legal documents, related to the species

The species is object of conservation, included in documents of the national and international legislation:

- Annex II of the Bulgarian Biodiversity Act;
- Red Data Book of the Republic of Bulgaria: Volume 2 (Golemanski, 2011);
- Annex II of Council Directive 92/43/EEC of the 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;
- Annex III of the Convention on the Conservation of European Wildlife and Fauna and Natural Habitats (Bern Convention);
- International Union for Conservation of Nature's Red list – IUCN.

#### 2. Planning documents, related to the species

At the moment there are no developed and adopted planning documents, related directly to the species. The following projects are identified under Operational Programme “Environment 2007 – 2013” where *A. aspius* is mentioned:

- Project “Field studies of species distribution/evaluation of species and habitat status for the territory of the whole country – phase I”;
- Project “Mapping and determination of the conservation status of nature habitats and species – phase I”.

*Project: “Enhancing biodiversity through sustainable management and protection of rare species habitat in Nestos and Ardas rivers and the Rodopi Mountain Range”, acronym: „WILD LIFE FOR EVER”. The project is co-financed by the European Regional Development Fund (ERDF) and by national funds of the countries participating in the Cooperation Programme Interreg V-A “Greece-Bulgaria 2014 - 2020”. The content of this document is sole responsibility of the Foundation “Arbitra” and can in no way be taken to reflect the views of the European Union, the participating countries the Managing Authority and the Joint Secretariat.*

## IV. Objectives, priorities and conservation measures

**The main objective** for conservation of *A. aspius* in protected site “Rodopi – Iztochni” is:

➤ **Habitat conservation and achievement of sustainable population of the species**

In order to achieve the main objective with the resulting **priorities**, the implementation of the following **measures** is recommended:

**Priority 1:** Habitat conservation

*Measure 1: Priority development and adoption of management plan for protected site “Rodopi – Iztochni”*

**Priority 2:** Reducing pollution on key areas and habitats of the species

*Measure 1: Control of illegal landfills appearance, located on the Arda river terrace*

*Measure 2: Control of pesticide use in agriculture, located near the water bodies*

**Priority 3:** Minimizing the limiting effect of anthropogenic factors

*Measure 1: Restriction of the construction of hydrotechnical facilities along the river*

*Measure 2: Fish ladder construction to help species move up and down the stream*

**Priority 4:** Achievement of sustainable population of the species

*Measure 1: Establishing favourable conditions for return of *A. aspius**

*Measure 2: River restocking*

**Priority 5:** Public awareness of the asp

*Measure 1: Organisation of information campaigns and conducting of seminars and workshops on *A. aspius* conservation status*

*Measure 2: Preparation of information materials (printed/electronic) about the asp*

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## V. Implementation plan, including potential sources of funding and institution, responsible for implementing the measures

The implementation plan, according to the Conservation strategy, is represented in **Table 1**.

*Project: "Enhancing biodiversity through sustainable management and protection of rare species habitat in Nestos and Ardas rivers and the Rodopi Mountain Range", acronym: „WILD LIFE FOR EVER". The project is co-financed by the European Regional Development Fund (ERDF) and by national funds of the countries participating in the Cooperation Programme Interreg V-A "Greece-Bulgaria 2014 - 2020". The content of this document is sole responsibility of the Foundation "Arbitra" and can in no way be taken to reflect the views of the European Union, the participating countries the Managing Authority and the Joint Secretariat.*

*Table 1. Implementation plan to Conservation strategy for asp (*Aspius aspius*) in protected site BG0001032 „Rodopi – Iztochni“*

Main objective	Priorities	Measures (Activities)	Potential source of funding	Expected results	Institution, responsible for implementing the measures
<b>Main objective:</b> Habitat conservation and achievement of sustainable population of the species	<b>Priority 1:</b> Habitat conservation	<i>Priority development and adoption of management plan for protected site “Rodopi – Iztochni”</i>	European Regional Development Fund, Government budget	Developed management plan for protected site “Rodopi – Iztochni”	MOEW
	<b>Priority 2:</b> Reducing pollution on key areas and habitats of the species	<i>Control of illegal landfill appearance, located on the Arda river terrace</i>	Government budget	Abundance of illegal landfills, located on the Arda river terrace	RIEW – Haskovo/ Kardzhali Municipality
		<i>Control of pesticide use in agriculture, located near the water bodies</i>	Government budget	Limited pesticide use in agriculture, located near the water bodies	BFSA/MOAFF/ MOEW
	<b>Priority 3:</b> Minimizing the limiting effect of	<i>Restriction of the construction of hydrotechnical facilities along the river</i>	Government budget	Control of the construction of hydrotechnical facilities	RIEW – Haskovo

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Main objective	Priorities	Measures (Activities)	Potential source of funding	Expected results	Institution, responsible for implementing the measures
	anthropogenic factors				
		<i>Fish ladder construction to help species move up and down the stream</i>	European Regional Development Fund	Constructed fish ladders	MOEW
	<b>Priority 4:</b> Achievement of sustainable population of the species	<i>Establishing favourable conditions for return of A. aspius River restocking</i>	European Regional Development Fund	Sustainable A. aspius population	MOEW
		<i>River restocking</i>	European Regional Development Fund, Government budget	Increased population growth	EAFA
	<b>Priority 5:</b> Public awareness of the asp	<i>Organisation of information campaigns and conducting of seminars and workshops on A. aspius conservation status</i>	European Regional Development Fund, Government budget	Organised information campaigns and conducted seminars and workshops on A. aspius conservation status	MOEW/ BAS/ Institutes/ Universities

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# Interreg

## Greece-Bulgaria

### WILD LIFE FOR EVER

European Regional Development Fund



EUROPEAN UNION

Main objective	Priorities	Measures (Activities)	Potential source of funding	Expected results	Institution, responsible for implementing the measures
		<i>Preparation of information materials (printed/electronic) about the asp</i>	European Regional Development Fund, European funds, Government budget, Municipal budgets, NGO budgets	Prepared information materials (printed/electronic) about the asp	MOEW/ BAS/ Institutes/ Universities

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**Conservation strategy for three-toed woodpecker (*Picoides tridactylus*) in protected site BG0002113 „Trigrad – Mursalitsa“ under Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds**

**To Report 3 for the implementation of Activity 3: „Development of strategies to protect most vulnerable and priority species/habitats“**

According to Contract № OP-01/15.03.2019 for a public invitation with subject: „Study and planning of the protection of biodiversity in the cross-border region with the republic of Greece“

**June, 2019**

*Project: „Enhancing biodiversity through sustainable management and protection of rare species habitat in Nestos and Ardas rivers and the Rodopi Mountain Range“, acronym: „WILD LIFE FOR EVER“. The project is co-financed by the European Regional Development Fund (ERDF) and by national funds of the countries participating in the Cooperation Programme Interreg V-A “Greece-Bulgaria 2014 - 2020”. The content of this document is sole responsibility of the Foundation “Arbitra” and can in no way be taken to reflect the views of the European Union, the participating countries the Managing Authority and the Joint Secretariat.*



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**LIST OF ABBREVIATIONS**

<b>BAS</b>	Bulgarian Academy of Sciences
<b>SF</b>	State Forest
<b>EFA</b>	Executive Forest Agency
<b>MOEW</b>	Ministry of Environment and Water
<b>NGO</b>	Non-governmental organization
<b>RIEW</b>	Regional Inspectorate of Environment and Water

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## Introduction

After the development and implementation of Risk assessment model for total of six species in the Natura 2000 protected sites on the Bulgarian territory of Arda river, the three-toed woodpecker in protected site BG0002113 “Trigrad – Mursalitsa” was identified among the most vulnerable and priority species for development of strategy for conservation.

During the implementation of Risk assessment model were identified threats (fires and loggings) that have negative impact on three-toed woodpecker habitats and population. The result from the risk assessment is 3 – High risk, which means that measures need to be taken to reduce the influence of the identified threats.

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## I. Description of the species

The three-toed woodpecker (*Picoides tridactylus*) is bird from order Piciformes, belonging to family Picidae.

The species is resident for Bulgaria and inhabit old coniferous, mainly spruce forests with more dying trees, most frequently at altitudes between 1400-2100 m.

The adult *P. tridactylus* is 21 to 24 cm in length with a wingspan of 40 cm. The species has age and sexual dimorphism. The male bird is black and white on the back and wings, the bottom is white with small brownish spots, the throat is white and the head is black with a yellow cap (**Figure 1**). The female bird has a white cap, instead of yellow and the juveniles look more like the males.



**Figure 1.** Three-toed woodpecker (*Picoides tridactylus*); male

As a result of observation of the species is established that 95% of the food consists of insects – xylophages and their larvae, found in dying trees with slightly falling-off bark and soft wood and rarely feeds on rowanberry and spruce seeds.

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During the winter males feed only on spruce trees, while females feed also on other tree species.

The three-toed woodpecker excavate deep nesting chambers and foraging holes in trees. The bottom of the nesting chamber is covered with dry wood pulp. Woodpecker nest holes are subsequently used for breeding by other birds, including endangered species as the Eurasian pygmy owl (*Glaucidium passerinum*).

The species is monogamous, laying usually 3-5 eggs during the period April-June and has one generation per year. Incubation is lasting for 14 days. The nestlings are very noisy when are hungry and the nest can be easily found.

At the beginning of the 20th century the species was considered common at some places in the Rila mountain, but until the end of the century it remained understudied and with few registered breeding places in the mountains Rila, Pirin and the Western Rhodopes. In 1995-2005, it was found in more places in the three mountains as well as in Vitosha mountain. Recently it was registered also in the reserves Mantaritsa and Soskovcheto and above Prespa Hut, in the Western Rhodopes (T. Zlatanov, P. Shurulinkov, unpublished information).

## II. State assessment of the species

Three-toed woodpecker has larger distribution and probably highest population size on Bulgarian territory in the Western Rhodopes.

Protected site “Trigrad – Mursalitsa” (55 335 ha) is located in the central part of the Western Rhodopes. Its territory is of mid and high-mountain nature. The main habitats are forests rock complexes, open grasslands and rivers. The forests cover about 70% of the territory, the largest part of which are coniferous forests of *Picea abies*, but also at some places *Pinus sylvestris* and mixed coniferous ones.

According to the Standard Data Form the protected site is inhabited by 1 to 3 breeding pairs, but resent researches show that the population size is between 9-12 breeding pairs.

In applying the Risk assessment model for *P. tridactylus* in protected site “Trigrad – Mursalitsa” during the implementation of Activity 2: “*Development and implementation of ecological risk assessment model for species and habitats in the Natura 2000 protected sites on the territory of Arda river*”, according to Contract № OP-01/15.03.2019 for a public invitation with subject: „Study and planning of the protection of biodiversity in the cross-border region with the republic of Greece“, were identified the following threats that have negative impact on the species and its habitats:

- forest fires;
- clearcut and sanitary loggings.

The habitats of the species are often destructed by extreme climatic phenomena – high wind, leading to windblown and heavy snow. Another problem is the drought and the related to it forest fires. Almost each year big forest fires occur on the three-toed woodpecker habitats that are difficult to access in the mountains Rila, Rhodopi and Pirin.

Fires as a threat can lead to: direct destruction and damage on habitats and individuals, disturbances of the protected site integrity and reduction of three – toed woodpecker habitats area.

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There is a possibility of direct destruction of important places for breeding, feeding, resting or hiding, as well as causing mortality in individuals.

There is possibility of driving the species away which can lead to reduction of the population size, due to the caused disturbance.

Fragmentation of habitats due to forestry activities is the most serious threat to the species not only in Bulgaria but also in other parts of the world. The logging of old-growth forests and sanitary logging are one of the main threats to woodpeckers. During logging activities is possible to occur habitat destruction and damage on species, leading to destroyed nests, broods and eggs (if logging activities are during nesting/breeding season).

The loggings and the reduction of the three – toed woodpecker preferred habitats lead to fragmentation of the populations. It has been found that for 1 three-toed woodpecker breeding pair is needed a minimum of 80-130 ha optimum habitat.

As a result of the applied Model, the risk assessment for *P. tridactylus* is with value of 3, defined as High risk. This means that measures need to be taken to reduce the influence of the threats and activities that occur on the species and its habitats.

### III. Analysis of legal and planning documents, related to the species

#### 1. Legal documents, related to the species

The species is object of conservation, included in documents of the national and international legislation:

- Annex II and III of the Bulgarian Biodiversity Act;
- Red Data Book of the Republic of Bulgaria: Volume 2 (Golemanski, 2011);
- Annex I of Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds
- Annex II of the Convention on the Conservation of European Wildlife and Fauna and Natural Habitats (Bern Convention);
- International Union for Conservation of Nature's Red list – IUCN

#### 2. Planning documents, related to the species

Direct relation to the species is the developed and under process of adoption Action plan for three-toed woodpecker (*Picoides tridactylus*) in Bulgaria for the period of 2016 – 2025 under Operational Programme “Environment 2007 – 2013”.

Another identified planning document under Operational Programme “Environment 2007 – 2013”, indirectly related to the species, is: project “Field studies of species distribution/evaluation of species and habitat status for the territory of the whole country – phase I”.

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#### IV. Objectives, priorities and conservation measures

The main objective for conservation of *P. tridactylus* in protected site “Trigrad - Mursalitsa” is:

➤ **Habitat conservation and achievement of sustainable population of the species**

In order to achieve the main objective with the resulting priorities, the implementation of the following measures is recommended:

**Priority 1:** Stopping the degradation and destruction of species’ habitats

*Measure 1:* Cessation of tree loggings with natural and woodpecker holes

*Measure 2:* Priority development and adoption of management plan for protected site “Trigrad - Mursalitsa”

**Priority 2:** Habitat conservation

*Measure 1:* Maintaining a minimum level of dry fallen and standing dead trees

*Measure 2:* Priority development and adoption of management plan for protected site “Trigrad - Mursalitsa”

**Priority 3:** Research on the species and its habitats

*Measure 1:* Research on three-toed woodpecker preferred habitats, population structure and the limiting factors for the species

*Measure 2:* Studies on breeding success and species mortality

**Priority 4:** Public awareness of the three-toed woodpecker

*Measure 1:* Organisation of information campaigns and conducting of seminars and workshops on three-toed woodpecker conservation status

*Measure 2:* Preparation of information materials (printed/electronic) about the three-toed woodpecker

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## V. Implementation plan, including potential sources of funding and institution, responsible for implementing the measures

The implementation plan, according to the Conservation strategy, is represented in **Table 1**.

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**Table 1.** Implementation plan to Conservation strategy for three-toed woodpecker (*Picoides tridactylus*) in protected site BG0002113 “Trigrad – Mursalitsa”

Main objective	Priorities	Measures (Activities)	Potential source of funding	Expected results	Institution, responsible for implementing the measures
<b>The main objective:</b> Habitat conservation and achievement of sustainable population of the species	<b>Priority 1:</b> Stopping degradation and destruction of species’ habitats	<i>Cessation of tree loggings with natural and woodpecker holes</i>	Government budget	Conservation of nests and bird nesting habitats	EFA/SF
		<i>Priority development and adoption of management plan for protected site - “Trigrad - Mursalitsa”</i>	European Regional Development Fund, Government budget	Developed management plan for protected site “Trigrad – Mursalitsa”	MOEW
	<b>Priority 2:</b> Habitat conservation	<i>Maintaining a minimum level of dry fallen and standing dead trees</i>	Government budget	Maintained suitable feeding and breeding habitats	MOEW/EFA/SF “Smolyan”/ RIEW – Smolyan

*Project: “Enhancing biodiversity through sustainable management and protection of rare species habitat in Nestos and Ardas rivers and the Rodopi Mountain Range”, acronym: „WILD LIFE FOR EVER”. The project is co-financed by the European Regional Development Fund (ERDF) and by national funds of the countries participating in the Cooperation Programme Interreg V-A “Greece-Bulgaria 2014 - 2020”. The content of this document is sole responsibility of the Foundation “Arbitra” and can in no way be taken to reflect the views of the European Union, the participating countries the Managing Authority and the Joint Secretariat.*

Main objective	Priorities	Measures (Activities)	Potential source of funding	Expected results	Institution, responsible for implementing the measures
		<i>Priority development and adoption of management plan for protected site “Trigrad Mursalitsa”</i>	European Regional Development Fund, Government budget	Developed management plan for protected site “Trigrad Mursalitsa”	MOEW
	<b>Priority 3:</b> Research on the species and its habitats	<i>Research on three-toed woodpecker preferred habitats, population structure and the limiting factors for the species</i>	European Regional Development Fund, Government budget	Improved knowledge on the biology and ecology of the species	MOEW/Institutes/Universities/NGO
		<i>Studies on breeding success and species mortality</i>	European Regional Development Fund, Government budget	Study of the species and results obtained to support its conservation	BAS/Universities/NGO

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Main objective	Priorities	Measures (Activities)	Potential source of funding	Expected results	Institution, responsible for implementing the measures
	<b>Priority 4:</b> Public awareness of the three-toed woodpecker	<i>Organisation of information campaigns and conducting of seminars and workshops on three-toed woodpecker conservation status</i>	European Regional Development Fund, Government budget	Organised information campaigns and conducted seminars and workshops on three-toed woodpecker conservation status	MOEW/ BAS/ Institutes/ Universities
		<i>Preparation of information materials (printed/electronic) about the three-toed woodpecker</i>	European Regional Development Fund, European funds, Government budget, Municipal budgets, NGO budgets	Prepared information materials (printed/electronic) about the three-toed woodpecker	MOEW/ BAS/ Institutes/ Universities

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