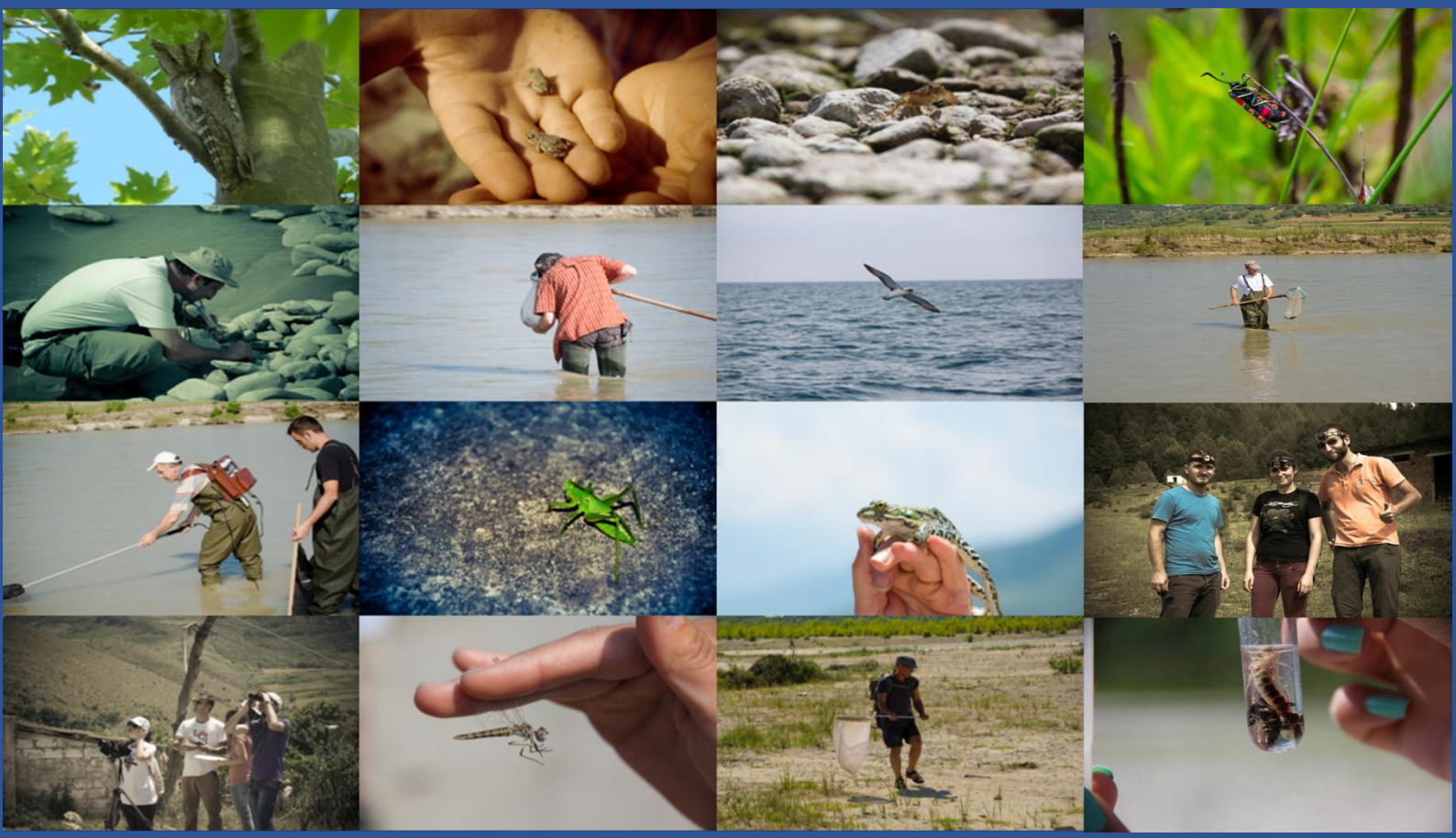


# GEO Biodiversity Days 2014, Vjosa River

# REPORT

## Aim & Scope

Between June 13th-15th, the Geo Days of Biodiversity took place at the Vjosa River in Albania. This unique event was organized by the NGOs **Riverwatch**, **Euronatur** and **PPNEA** (Protection and Preservation of Natural Environment in Albania) in cooperation with the German **GEO Magazine**.

The Vjosa River is one of the last living wild rivers in Europe. Along more than 230 kilometers in Albania it is untamed and free flowing, characterized by beautiful canyons, braided river sections and meandering stretches. Together with its tributaries, the Vjosa creates a dynamic near-natural ecosystem − a true European natural heritage. However, eight dams are foreseen along its course in Albania. These dam projects would destroy the unique river system. With respect to EU law, the projects would violate Natura 2000 Directives and the Water Framework Directive.

At the same time, the Vjosa is one of Europe´s least explored rivers. Ecological and hydro-morphological data is extremely limited. We might know more about rivers in the Amazon

Upstream near Këlcyra

The wide part of the Vjosa River near Qesarati village

Basin than about the Vjosa River. The GEO Days of Biodiversity were a first attempt to change this, to gather more knowledge and promote this unique river ecosystem as a European heritage.

## Summary of Activity

Approximately 70 participants were engaged in three days of field camp: biodiversity experts, student volunteers, journalists, celebrities and mayors of municipalities within the Vjosa basin (Tepelena, Qesarati, Memaliaj). The activities was captured by a professional photographic team in order to record the scientific activities and findings.

The Vjosa River Delta

Of the more than 400 species identified, ten percent are classified as threatened, rare or endemic, many of which are protected by international conventions according to IUCN and the Albanian Red List. Key findings included first records of species for both Albania and the Balkan Peninsula: the spider *Devade tenella* was first sighted on the Balkan Peninsula and eleven spider species were first recorded as part of the Albanian spider fauna. The second only sighting of a *Myotis bechsteinii* bat colony as well as rare bird species, which nest and breed in the Vjosa valley, were documented and are amongst the most impressive results.

The Vjosa delta was identified as a new site for rare dragonflies in Albania, like the *Selysiothemis nigra.* The species was previously only known to occur in the Shkodra region. The Delta also provides special habitat for two rare species of butterflies: the Cleopatra (*Gonepteryx cleopatra*) and the Southern Gatekeeper (*Pyronia cecilia*), both of which are Mediterranean endemics.

One of the most important findings in regards to macrozoobenthos is the stonefly *Eoperla ochracea*, a rare Mediterranean species occurring in larger rivers. Another stonefly found, *Xanthoperla apicalis*, was once widespread in large European rivers. Nowadays only few and isolated populations are left due to multiple stresses in central European rivers. The occurrence of these species can therefore serve as indicator for a healthy, highly dynamic braided river system, which–except along the Vjosa River – exits hardly elsewhere in Europe.

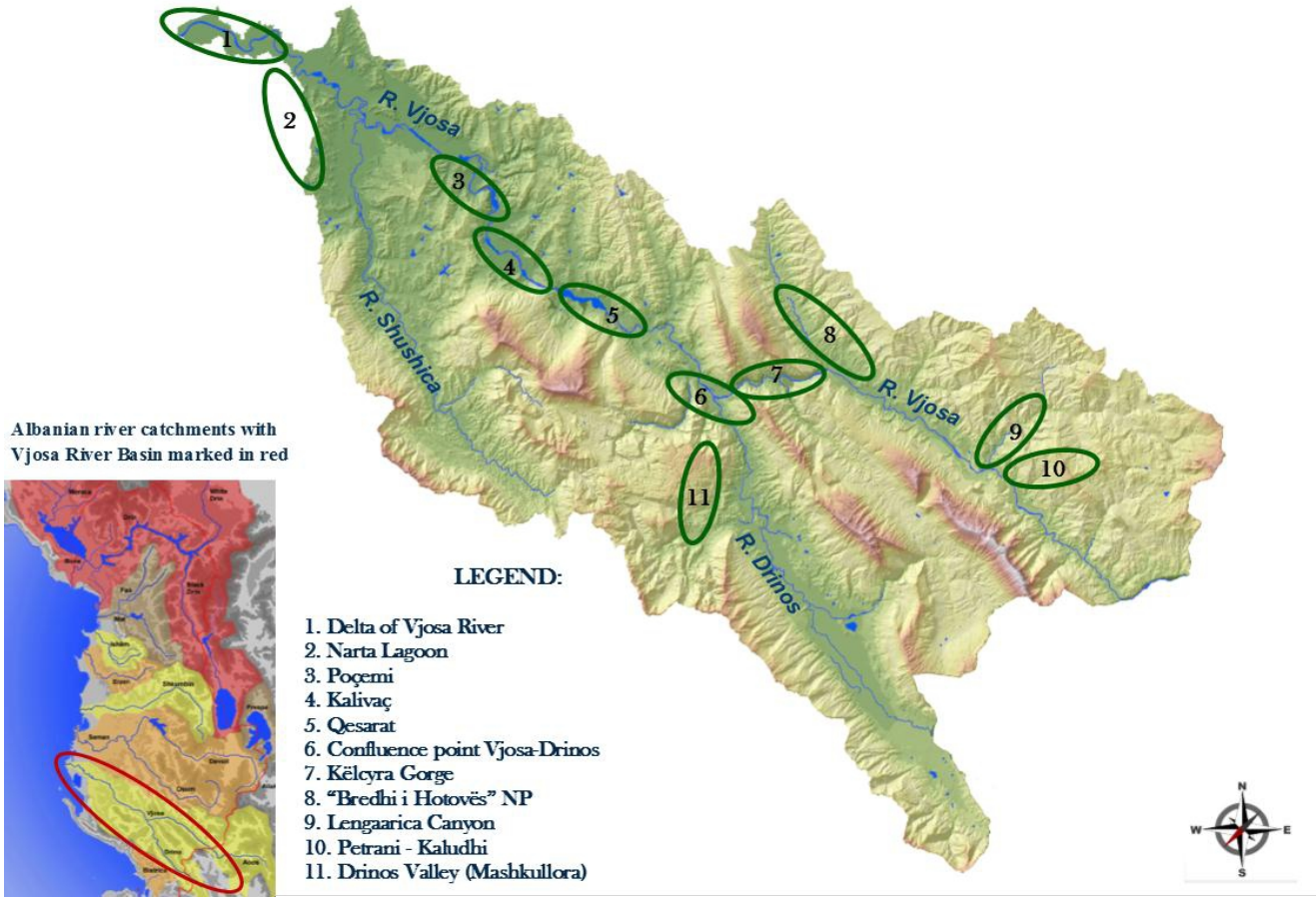
The free-flowing river ecosystem of the Vjosa provides appropriate habitats for the endangered European Eel, *Anguilla anguilla,* allowing for a viable population along the Vjosa River. Other endemic fish species, such as the Pindus loach (*Oxynoemacheilus pindus*) and the *Barbus prespensis*, were also recorded during the activities.

Furthermore, this dynamic ecosystem includes important floodplains in which different species of amphibians and reptiles such as the Greek frog (*Rana graeca*) and the freshwater turtle (*Emys orbicularis*) were sighted.

## Participants

Participants came from various countries such as Austria, Germany, France, Macedonia and Albania (find complete list in Annex 1). They established working groups for biodiversity assessment and explored eleven sampling sites along the Vjosa River, from the upper part to its mouth in the Adriatic Sea. The following map and table exhibits the study sites and biodiversity range in more detail.

### Map of Sampling Sites




**Source:** Wikipedia

### Biodiversity Working Groups

| Species | Birds | Macrozoobenthos | Mammals | Terrestrial Insects | Dragonflies | Night butterflies | Bats | Fish | Reptiles/Amphibians | Vascular plants | Spiders |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acronyms | (BI) | (MB) | (MA) | (TI) | (IN) | (NB) | (BA) | (FI) | (RA) | (VP) | (AR) |

## Methods

Various methodologies for collection were applied, as shown in the following photographs and table 2.


**Fig. 1: M**easurement of the individual's body size **(RA)**


**Fig.2:** Electric fishing survey **(FI)**


**Fig.3:** Use of entomological nets **(IN) & (NB)**


**Fig.4:** Bird watching **(BI)**


**Fig.5:** Light-traps **(MB)**


**Fig.6:** Camera trapping **(MA)**


**Fig.7:** Hand collection & exhausters **(TI)**


**Fig.8:** Exploring caves **(BA)**

Table 2 shows the standard methods that working groups made use of for the assessment of biodiversity during the three days of study. Fifteen different methods were applied according to the type of the species groups assessed.

**Table 2**

| Method | (BI) | (MB) | (MA) | (TI) | (IN) | (NB) | (BA) | (FI) | (RA) | (VP) | (AR) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Electro fishing | | | | | | | | X | | | |
| Pitfall trapping | | | | X | | | | | | | X |
| Kick-net Sampling | | X | | | | | | | | | |
| Light-traps | | X | | | | | | | | | |
| Direct survey | X | | | | | | X | | X | | |
| Bats detectors | | | | | | | X | | | | |
| Transect walk | X | | X | | | | | | | X | |
| Bird watching point | X | | | | | | | | | | |
| Analysis of archival data | | | | | | | | X | | | |
| Floristic survey | | | | | | | | | | X | |
| Measurements of taxonomic features | | | | | | | | | X | | |
| Camera trapping | | | X | | | | | | | | |
| Entomological net | | | | | X | X | | | | | |
| Hand collection & exhausters | | | | X | | | | | | | X |
| Scoop net | | | | | X | | | | | | |

## Results

**A total of approximately 400 different species were identified**. This is quite impressive given the short timescale. A complete list of all species identified can be found in Annex II.

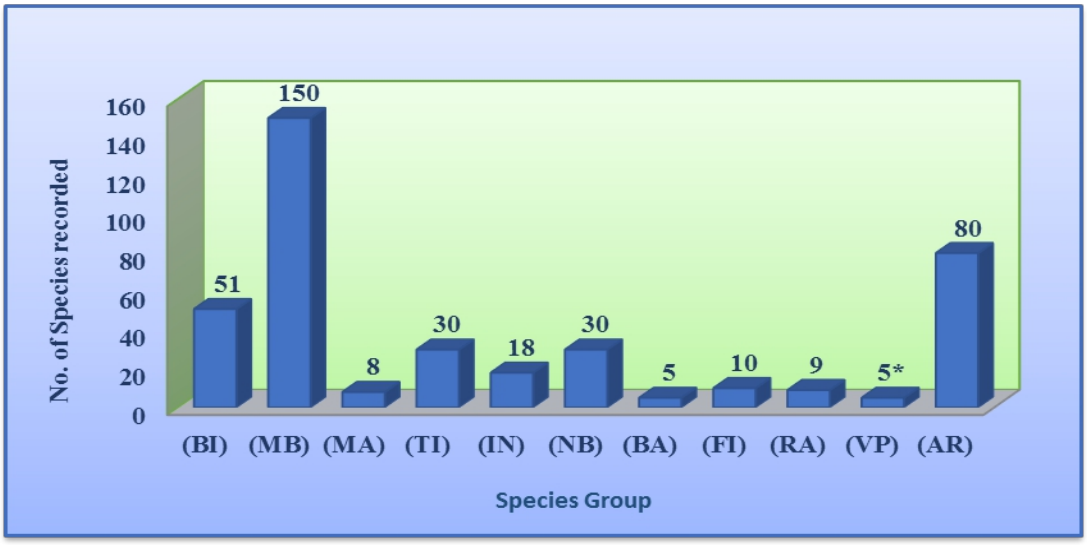



**Figure 5:** Species recorded during the activity (for **VP** there is only shows most frequent phyto-association)

**Ten percent of all recorded species are either rare or endemic** and are listed in the IUCN or Albanian Red Lists. Due to this high percentage of endemic and threatened species that occur in its aquatic and alluvial habitats, the Vjosa River deserves protection as a biodiversity "hot spot". The chart below depicts the total of species observed and the proportion of rare/endemic species.

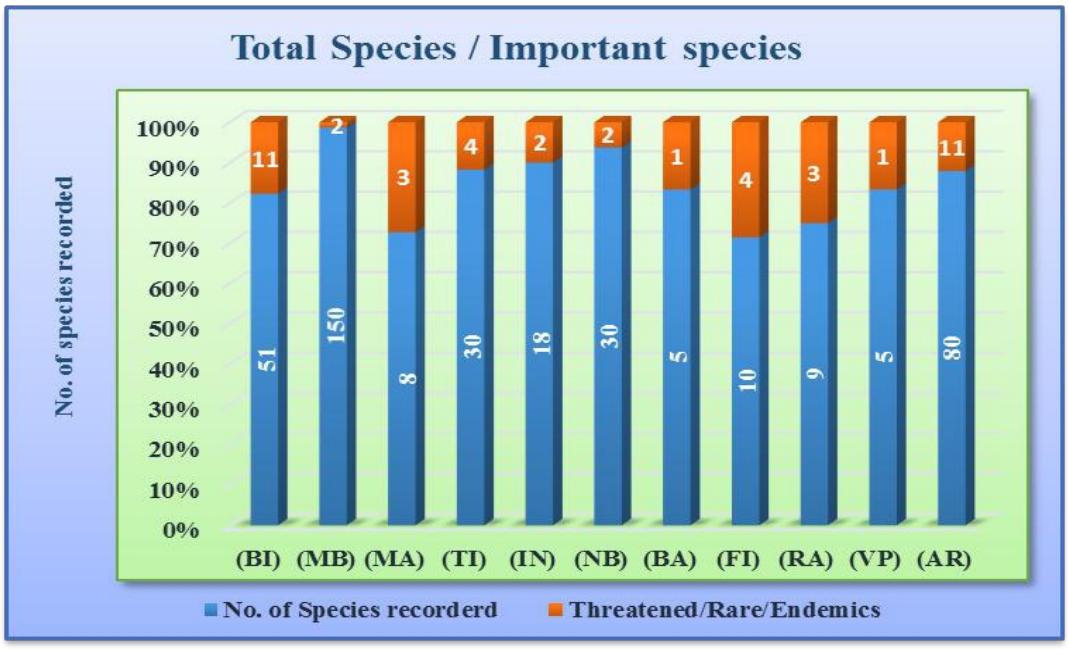



**Figure 6:** The total of species observed and the proportion of rare/endemic species.

## Rare/Endemic Species/Threatened species

1


*Myotis bechsteinii* **(BA) –** the second ever sighting in Albania.

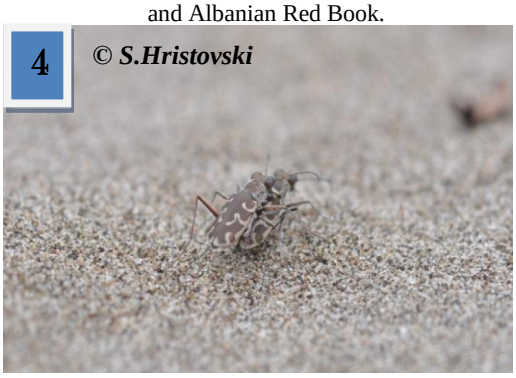
2


*Anguilla anguilla* **(FI) –** protected by IUCN and Albanian Red Book.

3


Excrement of *Lutra lutra* **(MA) –** protected by IUCN

4




*Cylindera trisignata* **(TI) –** not yet assessed by IUCN

5


*Emys orbicularis* **(RA) -** NT according to IUCN

6


*Eoperla ochracea* **(MB) –** rare species, indicator of natural and free-flowing rivers

7


N*eophron percnopterus* **(BI) –** breeds and nests in Vjosa's canyons

8


*Pyronia Cecilia* **(IN) & (NB) –** species endemic to Southern Europe, North Africa and Western Turkey

## Rare/Endemic Species (Continued)


*Arbutus andrachne* **(VP) –** unique to this area of Albania


*Latrodectus tredecimguttatus* **(AR) –** one of eleven spider species recorded for the first time in Albania


*Rana graeca* **(RA)** – typical to clean waters rich in oxygen


*Otus scops* **(BI) –** typical to riverbanks


*Calonesctris diomedea* **(BI) -** typical species of natural river deltas


*Selysiothemis nigra* **(IN) –** identified as a new species in Albania in 2013.


*Upupa epops* **(BI)**


*Caliaeschna microstigma* **(IN) –** IUCN protected

**Butterflies:** According to Misja, 2003, Albania hosts 17 Prime Butterfly Areas (PBA) with four species of conservation importance (*Lycaena ottoman, Parnassius apollo, Phengaris arion* and *Euphydrias aurinia*). So far, the Vjosa River is not one of the PBAs in Albania. However, **30 species of butterflies** from 5 different families were identified during the Vjosa field study. Most species were found at the edge of the pine forest (17), but also in rural (9) grassland (5), coastal (5) and riparian (4) habitats. Two rare species were identified at the Vjosa's mouth into the Adriatic Sea: the Cleopatra (*Gonepteryx cleopatra*) and the Southern Gatekeeper (*Pyronia cecilia*), both Mediterranean endemics occurring only in Southern Europe, North Africa and Western Turkey.

**Terrestrial Insects:** The ground beetle fauna (*Carabidae*) of Albania consists of approximately 550 species (Guéorguiev 2007). During the Vjosa field study, **30 species of ground beetles** were identified, mostly in the sand and gravel banks of the river and its tributaries. The most diverse genus was the *Bembidion* with several species: *B. bualei albanicum, B. combustum, B. siculum smyrnense,* and *B. punctulatum*. Three species of tiger beetles were identified in the sand and gravel habitats (*Cylinderagermanica, Cylindera trisignata* and *Cicindela monticola albanica*). Other wetland species identified include the *Poecilus rebeli, P. striatopunctatus, Anchomenus dorsalis, Chlaenius cruralis, Ch. flavipes, Clivina fossor, Omophron limbatum,* etc. Recorded Balkan endemics are: *Bembidion bualei albanicum, Tapinopterus extensoides, Poecilus rebeli.* A colony of wood termites was also identified (*Reticulitermes lucifugus).* European rhinoceros (*Oryctes nasicornis*) beetles and the lesser stag beetle (*Dorcus parallelipipedus*) were abundant in the oriental plane woodlands. The following species have conservation status under the Albanian Red List (Urdhër, nr. 146, 8.5.2007): *Cincindela germanica - VU, Carabus coriaceus - VU, Dorcus parallelipipedus - VU* and *Oryctes nasiconis - LR/nt*.

**Macrozoobenthos:** Approximately **150 species of macrozoobenthos** were identified during the Vjosa field study. Literature on aquatic organisms in Albania is rare, so it will take time to determine if these are new findings for Albania. Biodiversity is high due to the habitat-heterogeneity within the river bed. Springs, backwaters and slow to fast flowing river sections exist at one single site enabling a huge variety of species to find their specific niches.

**Spiders:** The spider fauna of Albania remains insufficiently explored but is believed to include about 350 species (Helsdingen, 2013). Participants identified **80 species of spiders**. The most important discovery was the species *Devade tenella* - the first record of

this species in the Balkan Peninsula. 11 species were recorded for the first time in Albania: *Clubiona pallidula, Devade tenella, Diplocephalus graecus, Episinus truncatus, Euryopis sexalbomaculata, Latrodectus tredecimguttatus, Micaria dives, Tetragnatha obtuse, Thanatus atratus, Trochosa spinipalpis* and *Zelotes babunaensis*. *Harpactea nausicaae* and *Zelotes babunaensis* represent Balkan endemics.

**Amphibians/Reptiles:** Participants to the Vjosa field trip identified **9 species of amphibians and reptiles** that occur in five different habitats around Poçemi village in the middle section of the Vjosa River. The herpetofauna of the Vjosa valley was very impressive with many typical representatives of the aquatic and terrestrial taxa of amphibian and reptiles, most importantly the occurrence of the European Pond Turtle (*Emys orbicularis*).

**Birds: 51 bird species,** including the extremely rare Egyptian Vulture (*Neophron percnopterus*), were identified during the Vjosa field study. The Vjosa valley is one of the few territories in Albania, where this species breeds and nests. Other species identified were the Common Hoopoe (*Upupa epops*), the Little Ringed Plover (*Charandrius dubius*), the Lesser Kestrel (*Falco naumani*), and the Scops owl (*Otus scops*).

**Bats:** Participants identified **6 species of bats,** including a colony of *Myotis bechsteinii*. According to existing literature, this is only the second time that this species has been sighted in Albania. It is a very specialized species that lives only in clean water, by an old - growth forest near a river. Other species identified are: *Rhinolophus ferrumequinum, Rhinolophus hipposideros, Pipistrellus kuhli, Hypsugo savii* and *Myotis sp*.

**Fish: 10 species of fish** were identified during the Vjosa field study, including diadromus ones. The most distributed species are: *Barbus prespensis, Gobio gobio, Squalius cephalus, Oxynoemacheilus pindus* and *Alburnus sp*. The species *Anguilla anguilla, Barbus prespensis, Alburnoides bipunctatus* and *Oxynoemachileus pindus, Pachychilon pictum, Alburnus alborella, Squalius cephalus and Gobio gobio, Cobitis ohridana* have different conservation statuses according to IUCN, the Albanian Red Book 2007 and the Bern Convention at European level.

**Mammals:** In regards to mammals, the aim was to collect data on large carnivores (Brown Bear, Wolf and Lynx), small mammals (Fox, Wild cat, European Otter and Marten

etc.) and their prey. Data was collected by non-direct methods such as camera-trapping. As a result additional time is required to obtain and analyze the footage.

**Vascular Plants:** The key feature of the Vjosa valley habitats (both riparian and slope forests) is their Mediterranean character and uniqueness which is specific to the southern Balkan Peninsula. The most frequent phyto-associations along the riverbank occurred in the forest belts of the Oriental plane *Platanion orientalis*, with a dominance of *Platanus orientalis* and *Liquidambar orientalis*. Its importance and threat status is recognized at the European level and is listed in the EU Habitats Directive. Associations of *Tamarix hampeana* and *Salix alba* were frequent in the floodplain close to the riverbank along the wide part of the river. *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation is present in fragments in the floodplains and marshes. The vegetation on the immediate slopes of the the valley is composed of thermophilous and xerophilous forest communities (a significant portion of this vegetation was turned into arable land and agro-ecosystems during the last millennium). There are various oak forest communities like the *Quercus coccifera* and the *Quercus alnifolia* low woods. Most of these forests are highly degraded and need restoration. The lowest belt along the valley at its lower flow is comprised of *Pseudomaquis* and various Kermes oak habitats. Arborescent matorral is represented by *Juniperus oxycedrus. Pseudomaquis* is represented by Thermo-Mediterranean shrubs like *Phillyrea latifolia*. The most prominent feature of the slope vegetation is a rare plant community created by the Strawberry Tree *Arbutus andrachne garrigues*. Other characteristic habitats include: sand and gravel banks, soft sediments along the river, sand dunes (which are typical and have a very good conservation status) at the mouth of the Vjosa into the Adriatic Sea, but most of the active floodplain suffers from overgrazing by goats and sheep.

**Dragonflies:** Participants to the Vjosa field camp identified **18 species of dragonflies**. Their key habitats were small tributaries of the Vjosa River, especially those with well-preserved riparian vegetation. The spring flowing into the Vjosa near Poçemi was richest in odonata diversity (8 species). Near Tepelena the river widens and hosts larger populations. Sections of the Vjosa with standing water provide suitable habitats for *Zygoptera* and the *Libellulidae* family. Two species recorded (*Coenagrion ornatum* and *Caliaeschna microstigma)* are near threatened according to the IUCN Red List (Europe and EU27). The former species is also listed in the Albanian Red List as well as in Annex II of the European Habitats Directive. It is threatened by habitat destruction. The population of *Caliaeschna microstigma* is decreasing due to degradation or loss of habitat. *Selysiothemis*

*nigra* was detected by Murányi & Kovács as a new species for Albania, near Shkodër Lake (Malësi e Madhe district) in 2013. The Vjosa delta is a new spot for *Selysiothemis nigra* in Albania.

Based on these preliminary results, we plan to initiate substantial scientific research on the Vjosa River. We believe that the GEO Days of Biodiversity were an important starting point. The Vjosa and its tributaries provide a unique European natural heritage, a near-natural ecosystem of outstanding ecological value.

## Socio-cultural Activities


**S.Shumka, B.Guri, O.nika** - organizers of the event


**Ulrich Eichmann** - presentation session

Educational and entertainment events were organized to put the scientific activity in the context of socio-cultural values. This included a concert of Albanian traditional songs and delicious dishes prepared with local products, showing the multidimensional values of the Vjosa.


**Participants –** during the concert


**Guri Rrokaj** - Traditional Singer

In the evening, the organizers held presentations to highlight these special values and to inform about the "Save the Blue Heart of Europe" campaign, which aims to preserve these values. Another special event was the photographic exhibition of Albanian biodiversity,

which was of great interest to participants, particularly to first-time visitors to the Vjosa region.

Participants during the reflections session

**"Mallkastra"** Iso-polyphony group

## Acknowledgments


- Special thanks to the GEO Magazine for participating in and reporting about the event.
- The organizers would like to thank their partners BOKU University in Vienna, Tirana University and Vlora University in Albania, Macedonian Ecological Society and all the student volunteers for their support. Special thanks goes to the local collaborators in the regions of Qesarati, Poçemi, Vlora and Përmeti.
- Thanks to the prominent participants: the mayors of Municipalities of Qesarati, Memaliaj, Tepelena, writers such as Mrs. Diana Çuli and other special guests.
- Thanks to the media group (AM production, Mr. Ilir Kaso and Christoph Walder).
- Many thanks to the "Hotel Poçemi" staff for their strong support in accommodation and serving as base camp.
- Finally, many thanks to the financial supporters: Goethe Institute, MAVA Foundation, and Manfred-Hermsen-Stiftung.

***This activity was financially supported by:***

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# Annex I

**Table 3**

| Name | Institution | Acronyms | Name | Institution | Acronyms |
|---|---|---|---|---|---|
| **Working Group 1 (Macrozoobenthos)** | | | **Working Group 6 (Butterflies)** | | |
| ***Wolfram Graf*** * | University of Wien | **(MB)** | ***Dime Melovski*** * | MES | **(NB)** |
| Monika Hess | BOKU University | | Besiana Shima | Tirana University | |
| Ulrich Heckes | BOKU University | | Enis Mehmeti | Tirana University | |
| Bekim Trezhnjeva | PPNEA | | **Working Group 7 (Bats)** | | |
| Artenisa Peçuli | Tirana University | | ***Philippe Theou*** * | Tirana University | **(BA)** |
| Liljana Qorri | Tirana University | | Ndue Marku | Tirana University | |
| **Working Group 2 (Mammals)** | | | Klaudia Cera | Tirana University | |
| ***Bledi Hoxha*** * | PPNEA | **(MA)** | **Working Group 8 (Fishes)** | | |
| Ervis Loçe | Tirana University | | ***Spase Shumka*** * | Agriculture University of Tirana | **(FI)** |
| Theodhora Dimertika | Tirana University | | Robert Shahini | Tirana University | |
| Enea Dusha | Tirana University | | Ledia Nanaj | Tirana University | |
| **Working Group 3 (Birds)** | | | **Working Group 9 (Amphibians)** | | |
| ***Mirjan Topi**** | PPNEA | **(BI)** | ***Enerit Saçdanaku*** * | Vlora University | **(RA)** |
| Oresta Saliaj | Tirana University | | Elvira Xhemalaj | Vlora University | |
| Edmond Hidri | Tirana University | | Endora Celohoxhaj | Vlora University | |
| **Working Group 4 (Terrestrial Insects)** | | | **Working Group 10 (Spiders)** | | |
| ***Slavcho Hristovski*** * | MES | **(TI)** | ***Marijan Komnenov*** * | MES | **(AR)** |
| Juliana Ciko | Tirana University | | Earta Nuna | Tirana University | |
| Majlinda Doci | Tirana University | | Genci Kadilli | Tirana University | |
| **Working Group 5 (Dragonflies)** | | | **Working Group 11 (Vascular Plants)** | | |
| ***Despina Kitanova*** * | MES | **(IN)** | ***Ljupcho Melovski*** * | MES | **(VP)** |
| Amarilda Rapaj | Vlora University | | Erald Xeka | Tirana University | |
| Edison Nuredini | Vlora University | | Eriselda Ndoj | Tirana University | |

| **Species** | Birds | Macrozoobenthos | Mammals | Terrestrial Insects | Dragonflies | Night butterflies | Bats | Fish | Reptiles/Amphibians | Vascular plants | Spiders |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acronyms** | (BI) | (MB) | (MA) | (TI) | (IN) | (NB) | (BA) | (FI) | (RA) | (VP) | (AR) |

**Annex I** shows the consistence of the working groups (Table 3) as well as the images of each of them in action during the biodiversity assessment in the Vjosa valley (photos below).







**Biodiversity Working Groups in Action!**

**1:** Macrozoobenthos group **(MB), 2:** Mammals group **(MA)**, **3:** Birds group **(BI)**, **4:** Terrestrial Insects group **(TI)**, **5:** Dragonflies group **(IN)**, **6:** Butterflies group **(NB)**






**Biodiversity Working Groups in Action!**

**7:** Spiders group **(AR)**, **8:** Vascular Plants group **(VP)**, **9:** Reptiles/Amphibians group **(RA)**, **10:** Bats group **(BA)**, **11:** Fish group **(FI).**

# Annex II

Complete list of species already determined:

**Apmphibians/Reptiles**

*Anguis fragilis*
*Bufo bufo*
*Bufo viridis*
*Emys orbicularis*
*Natrix natrix*
*Rana balcanica*
*Rana graeca*
*Testudo hermanni*

**Fishes**

*Alburnus sp.*
*Anguilla anguilla*
*Barbus prespensis*
*Chondrostoma prespensis*
*Cobitis ohridana*
*Gobio gobio*
*Misgurnus fosilis*
*Mugil cephalus*
*Oxynoemacheilus pindus*
*Squalius cephalus*

**Birds**

*Actitis hypoleucos*
*Alcedo atthis*
*Aquila chrysaetos*
*Ardea cinerea*
*Buteo buteo*
*Carduelis cannabina*
*Carduelis carduelis*
*Carduelis chloris*
*Cecropis daurica*
*Charadrius dubius*
*Circaetus gallicus*
*Corvus corax*
*Corvus corone cornix*
*Corvus monedula*
*Delichon urbicum*
*Dendrocopos major*
*Emberiza calendra*
*Emberiza cirlus*
*Emberiza melanocephala*
*Erithacus rubecula*
*Falco naumani*
*Falco peregrinus*
*Falco tinnunculus*
*Fringilla coelebs*
*Galerida cristata*
*Hirundo rustica*
*Larus ridibundus*
*Melanocorypha calandra*
*Merops apiaster*
*Motacilla alba*
*Motacilla cinerea*
*Motacilla flava*
*Neophron percnopterus*
*Oenanthe hispanica*
*Oenanthe oenanthe*
*Oriolus oriolus*
*Otus scops*
*Parus caeruleus*
*Parus major*
*Passer domesticus*
*Passer hispaniolensis*
*Pernis apivorus*
*Phoenicurus ochruros*
*Riparia riparia*
*Streptopelia turtur*
*Sturnus vulgaris*
*Sylvia atricapilla*
*Sylvia communis*
*Sylvia crassirostris*
*Turdus merula*
*Upupa epops*

**Butterflies**

*Apatura ilia*
*Argynnis paphia*
*Celastrina argiolus*
*Colias croceus*
*Gonepteryx cleopatra*
*Gonepteryx rhamni*
*Hipparchia syriaca*
*Iphiclides podalirius*
*Leptidea sinapis*
*Libythea celtis*
*Maniola jurtina*
*Melanargia galathea*
*Melanargia larissa*
*Melitaea didyma*
*Melitaea trivia*
*Papilio machaon*
*Pararge aegeria*
*Pieris brassicae*
*Pieris mannii*
*Pieris napi*
*Pieris rapae*
*Polygonia egea*
*Polyommatus icarus*
*Pontia edusa*
*Pyrgus malvae*
*Pyronia cecilia*
*Spialia orbifer*
*Thymelicus sylvestris*
*Vanessa atalanta*
*Vanessa cardui*

**Dragonflies**

*Anax imperator*
*Caliaeschna microstigma*
*Calopteryx splendens*
*Calopteryx virgo*
*Coenagrion ornatum*
*Coenagrion puella*
*Cordulegaster bidentata*
*Erythromma lindenii*
*Ischnura elegans*
*Lestes barbarus*
*Libelula depressa*
*Onychogomphus forcipatus*
*Orthetrum brunneum*
*Orthetrum cancellatum*
*Orthetrum coerulescens*
*Platycnemis pennipes*
*Selysiothemis nigra*
*Sympetrum vulgatum*

**Bats**

*Myotis bechsteinii*
*Rhinolophus ferrumequinum*
*Rhinolophus hipposideros*

*Pipistrellus kuhli*
*Hypsugo savii*
*Myotis sp.*

## Spiders

*Clubiona pallidula*
*Devade tenella*
*Diplocephalus graecus*
*Episinus truncatus*
*Euryopis sexalbomaculata*
*Harpactea nausicaae*
*Latrodectus tredecimguttatus*
*Micaria dives*
*Tetragnatha obtusa*
*Trochosa spinipalpis*
*Thanatus atratus*
*Zelotes babunaensis*

## Terrestrial Insects

*Anchomenus dorsalis*
*Bembidion combustum*
*Bembidion punctulatum*
*Bembidion siculum smyrnense*
*Carabus coriaceus*
*Chlaenius cruralis*
*Chlaenius flavipes*
*Clivina fossor*
*Cylindera germanica*
*Cylindera monticola albanica*
*Cylindera trisignata*
*Dorcus parallelipipedus*
*Omophron limbatum*
*Oryctes nasiconis*
*Oryctes nasicornis*
*Poecilus rebeli*
*Poecilus striatopunctatus*
*Reticulitermes lucifugus*

## Vascular Plants Phyto-associations

*Callitricho-Batrachion*
*Phillyrea-Arbutusandrachne*
*Platanion orientalis*
*Quercetum cocciferae*
*Ranunculion fluitantis*
*Tamarix-Salixetum*

## Mammals

*Lutra lutra*
*Vulpes vulpes*
*Canis lupus*
*Meles meles*
*Lepus europaeus*