

T2.1. Analysis of the available information about the state of natural habitats and invasive species, selection of priority protected areas for monitoring, and adaptation of methodologies for anthropogenic pressure monitoring in protected territories included in the project

Based on the analysis of the available scientific information, a list of monitoring units to be further monitored was elaborated (Table 1). Sixty-nine units (species and habitats) were selected. On the territory of Bulgaria, within the NP Strandja, 16 units will be monitored, among them 10 plant species and 6 animal species. Twenty-seven units will be monitored in Armenia, NP Dilijan: 8 plant species, 3 habitats, 13 animal species and 3 ichthyocomplexes (including 11 taxa). Fourteen units were selected for monitoring in Romania, Danube delta: 7 plant species, 3 habitat types and 4 animal species. Twenty units will be monitored in protected areas in Georgia: 6 plant and 14 animal species.

The selection of monitoring units was based on their conservation status, both depend on national and international legislation (Bern Convention, IUCN Red List of Threatened Species, Red Book of the Republic of Bulgaria and Republic of Armenia, Red List of Bulgarian and Romanian vascular plants, etc.). In addition, invasive species, recognized as a threat to biological diversity were also listed (e.g., *Amorpha fruticosa* will be monitored in the project regions in Bulgaria, Romania and Georgia). Some native species were incorporated in the list due to their role as indicators of anthropogenic pressure on ecosystems (e.g., *Capreolus capreolus*). Six habitats will be monitored within the project protected territories: 3 Natura 2000 habitat types in Danube delta and 3 habitats in NP Dilijan, all of them of high conservation importance.

Selected monitoring plots within the protected areas are presented in Annexes III (Romania), V (Bulgaria), XVIII (Armenia); the rest of them are in a process of finalization. Methodologies which will be a basis for monitoring are also included as annexes (I-II-IV, VI-XVII). During the monitoring activities in 2021, where possible common methodologies will be elaborated.

Table 1. List of selected units to be monitored. Legend: BC - Annex 6 of Bern Convention; BDA BG- Bulgarian Biological Diversity Act; IUCN - International Union for Conservation of Nature Red List of Threatened Species; KBA - Key Biodiversity Areas; MPA BG – Bulgarian Medicinal Plants Act; RB BG- Red Book of the Republic of Bulgaria; RLBVP - Red List of Bulgarian vascular plants; RBRA - The Red Book of Republic of Armenia; RLRO - Red List of Romanian vascular plants.

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
Plant species							
1	<i>Ailantus altissima</i>	Invasive	BG, ARM	Common method for higher plants, National, in BG	Annex I, Annex XIII	Population density, Tree diameter	NP Strandja and NP Dilijan
2	<i>Aldrovanda vesiculosa</i>	RLRO – VU, IUCN - EN	RO	Common method for higher plants, National, in RO	Annex II	Population density	Annex III
3	<i>Ambrosia artemisiifolia</i>	Invasive	ARM	National method (new for Armenia)	Annex XIII	Population density, Approximate area of the population	NP Dilijan
4	<i>Amorpha fruticosa</i>	Invasive	BG, RO, GE	Common method for higher plants, National, in BG and in RO	Annex I + Annex II + Annex IV	Population density, Tree diameter; Percent Cover in square sample plots	NP Strandja, Danube delta, protected areas in GE

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
						(after Braun Blanquet)	
5	<i>Anemone ranunculoides</i>	RBRA - (EN)	ARM	National method	Annex XIII	Population density, Approximate area of the population	NP Dilijan
6	<i>Atropa bella-donna</i>	RBRA- (VU)	ARM	International method	Annex XIII	Population density, Approximate area of the population	NP Dilijan
7	<i>Bupleurum koso-poljanskyi</i>	Endemic, RBRA- VU	ARM	National method	Annex XIII	Population density, Approximate area of the population	NP Dilijan
8	<i>Calluna vulgaris</i>	BDA; RLBVP - VU	BG	Common method for higher plants, National, in BG	Annex I	Population density	Annex V
9	<i>Centaurea pontica</i>	RLRO – VU, IUCN – DD (Deficient data)	RO	Common method for higher plants, National, in RO	Annex II	Population density	Annex III
10	<i>Centaurea jankae</i>	RLRO – VU, IUCN - VU	RO	Common method for higher plants, National, in RO	Annex II	Population density	Annex III

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
11	<i>Daphne pontica</i>	BDA; RLBVP - EN; RB - EN	BG	Common method for higher plants, National, in BG	Annex I	Population density	Annex V
12	<i>Elaeagnus angustifolia</i>	Invasive	RO	Common method for higher plants National, in RO	Annex II	Population density	Danube delta
13	<i>Gleditsia triacanthos</i>	Invasive	GE	International method	Annex IV	Volume and density	Within the protected area
14	<i>Ilex colchica</i>	BDA; RLBVP - EN RB - EN	BG	Common method for higher plants, National, in BG	Annex I	Population density	Annex V
15	<i>Lysimachia vulgaris</i>	Invasive	GE	International method	Annex IV	Percent Cover	Within the protected area
16	<i>Marsilea quadrifolia</i>	RLRO – EN, IUCN - VU	RO	Common method for higher plants, National, In RO	Annex II	Population density	Annex III
17	<i>Merendera mirzoevae</i>	Endemic, RBRA- (NT)	ARM	National method		Population density, Approximate area of the population	NP Dilijan
18	<i>Mespilus germanica</i>	IUCN - LC; RLBVP - LC	BG	Common method for higher plants, National, in BG	Annex I	Population density	Annex V

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
19	<i>Molinia caerulea</i>	Danger for the Sphagnum moss	GE	International method	Annex IV	Percent Cover	Within the protected area
20	<i>Pancratium maritimum</i>	RB – EN; BDA; RLBVP - EN	BG	Common method for higher plants, National, in BG	Annex I	Population density	Annex V
21	<i>Paspalum paspalodes</i>	Invasive species	RO	Common method for higher plants, National, In RO	Annex II	Population density	Annex III
22	<i>Polygonum thunbergii</i>	Invasive	GE	International method	Annex IV	Percent Cover	Within the protected area
23	<i>Rhododendron ponticum</i>	BDA; RLBVP - VU	BG	Common method for higher plants, National, in BG	Annex I	Population density	Annex V
24	<i>Solidago virga aurea</i>	Invasive	GE	International method	Annex IV	Percent Cover	Within the protected area
25	<i>Taxus baccata</i>	BDA BG; IUCN - LC; RBRA- (VU) MPA; RLBVP - EN RB - EN	BG, ARM	Common method for higher plants, National, in BG	Annex I	Population density, Tree Diameter	Annex V
26	<i>Vaccinium arctostaphylos</i>	RB – EN; BDA; RLBVP - EN	BG	Common method for higher plants, National,	Annex I	Population density	Annex V

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
				in BG			
Animal species							
27	<i>Acrocephalus arundinaceus</i>	Native	GE	International method	Ringing birds (catch release catch method), Annex VI	Number of individuals, length/weight, sex	Within the protected area
28	<i>Alburnus derjugini</i>	Native	GE	International method	Annex VII	Number of individuals, length/weight, sex	Within the protected area
29	<i>Alcedo atthis</i> (Common Kingfisher)	IUCN-LC Natura 2000 species	RO	National language	In Romanian, Birds Directive	number of individuals, population density	transect sampling along rivers/ drone
30	<i>Alosa immaculata</i>	Native	GE	International method	Annex VII	Number of individuals, length/weight, sex	Within the protected area
31	<i>Aythya ferina</i>	Native	GE	International method; Real count Method	Annex VI	Number of individuals, length/weight, sex	Within the protected area
32	<i>Aythya nyroca</i>	Native	GE	International method; Real count Method	Annex VI	Number of individuals, length/weight, sex	Within the protected area
33	<i>Barbus cyri</i>	Native	ARM	International method, Adapted to the National methodology	Annex XIV	number of species in fishing sample	NP Dilijan

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
34	<i>Capreolus capreolus</i>	Widespread species in forest ecosystems	ARM	International method, Adapted to the National methodology	Annex XV	Location and number of species	NP Dilijan
35	<i>Carassius gibelio</i>	Invasive	GE, ARM	International method (Adapted to the National methodology for ARM)	Annex VII, Annex XIV	number of individuals, length/weight, sex ratio	Within the protected area in GE, NP Dilijan
36	<i>Darevskia armeniaca</i> (Armenian rock lizard)	Native	ARM	International method, Adapted to the National methodology	Annex XVII	Location and number of species in typical biotopes	NP Dilijan
37	<i>Darevskia dahlia</i> (Dahli rock lizard)	RBRA- EN	ARM	International method, Adapted to the National methodology	Annex XVII	Location and number of species in typical biotopes	NP Dilijan
38	<i>Darevskia rostombekovi</i> (Rostombekov rock lizard)	RBRA- EN	ARM	International method, Adapted to the National methodology	Annex XVII	Location and number of species and presence of other rock lizards in typical biotopes	NP Dilijan
39	<i>Dryocopus martius</i>	RBRA- VU	ARM	International method, Adapted to the National methodology	Annex XVI	Location and number of species	NP Dilijan
40	<i>Emys orbicularis</i> (European pond turtle)	IUCN-NT, Natura 2000 species	BG, RO	International	Annex VIII, Methodology in Romanian –	number of individuals,	transect sampling along rivers/

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
					Habitat Directive	population density	drone – Annex III and V
41	<i>Helix lucorum</i>	Natura 2000 species, in BG Diversity Act	BG	National, in BG	Annex IX	number of individuals, population density	transect sampling along rivers – Annex V
42	Ichthyocomplex 1 <i>Alburnoides bipunctatus</i> <i>Capoeta capoeta</i> <i>Alburnus hoheneri</i>	Native	ARM	International method, Adapted to the National methodology	Annex XIV	number of species in fishing sample	NP Dilijan
43	Ichthyocomplex 2 <i>Squalius orientalis</i> <i>Luciobarbus mursa</i> <i>Alburnus filippii</i> <i>Oxyemacheilus brandtii</i> <i>Cobitis sp.</i> <i>Sabonejewi aaurata</i>	Rare	ARM	International method, Adapted to the National methodology	Annex XIV	number of species in fishing sample	NP Dilijan
44	Ichthyocomplex 3 <i>Cyprinus carpio</i> <i>Oncorhynchus mykiss</i>	Invasive	ARM	International method, Adapted to the National methodology	Annex XIV	number of species in fishing sample	NP Dilijan

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
45	<i>Lutra lutra</i> (Eurasian otter)	IUCN-NT (decreasing), Natura 2000, Indicator species	BG, GE	National	Annex X, Annex XI	number of individuals, population density	transect sampling (and camera-trap monitoring in GE) along selected rivers (Annex V for BG)
46	<i>Mauremys rivulata</i>	Priority species	BG		Annex VIII	number of individuals, population density	transect sampling along rivers/ drone – Annex V
47	<i>Merops apiaster</i> (European bee-eater)	IUCN-LC Natura 2000 species	RO	National language	Methodology in Romanian - Bonn Convention		transect sampling along rivers/ drone
48	<i>Muscicapa striata</i>	Native	GE	International method	Ringling birds (catch release catch method) - Annex VI	Number of individuals, length/weight, sex	Within the protected area
49	<i>Myocastor coypus</i>	Invasive	GE	International method	Annex XI	Number of individuals, population density	Transect sampling and camera-trap monitoring along selected rivers
50	<i>Neogobius fluviatilis</i>	Native	GE	International method	Annex VII	Number of individuals,	Within the protected area

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
						length/weight, sex	
51	<i>Neogobius melanostomus</i>	Native	GE	International method	Annex VII	Number of individuals, length/weight, sex	Within the protected area
52	<i>Phylloscopus collybita</i>	Native	GE	International method	Ringling birds (catch release catch method) - Annex VI	Number of individuals, length/weight, sex	Within the protected area
53	<i>Potamopyrgus</i> (aquatic New Zealand mud snail)	Invasive	BG	National, in BG	Annex XII	number of individuals, population density	transect sampling along rivers – Annex V
54	<i>Pseudorasbora parva</i>	Invasive	ARM	International method/ Adapted National methodology	Annex XIV	number of species in fishing sample	NP Dilijan
55	<i>Rallus aquaticus</i>	Native	GE	International method, Real count Method and ringing Method	Annex VI	Number of individuals, length/weight, sex	Within the protected area
56	<i>Salmo trutta</i> (Red trout)	Rare	ARM	International method/ Adapted National methodology	Annex XIV	number of species in fishing sample	NP Dilijan
57	<i>Sus scrofa</i>	Widespread species in different ecosystems	ARM	International method/ Adapted National methodology	Annex XV	Location and number of species	NP Dilijan

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
58	<i>Sylvia atricapilla</i>	Native	GE	International method	Ringling birds (catch release catch method) - Annex VI	Number of individuals, length/weight, sex	Within the protected area
59	<i>Testudo graeca</i> (Mediterranean spur-thighed tortoise)	IUCN-V, Natura 2000 species	RO	National language	Methodology in Romanian – Habitat Directive	number of individuals, population density	transect sampling along rivers/ drone
60	<i>Tetrao mlokosiewiczii</i>	RBRA- VU	ARM	International method/ Adapted National methodology	Annex XVI	Location and number of species	NP Dilijan
61	<i>Tetraogallus caspius</i>	RBRA- VU	ARM	International method/ Adapted National methodology	Annex XVI	Location and number of species	NP Dilijan
62	<i>Trachemys scripta</i> subsp. <i>elegans</i> + <i>scripta</i>	Invasive	BG	National method, in BG	Annex VIII	number of individuals, population density	transect sampling along rivers/ drone – Annex V
63	<i>Ursus arctos</i>	RBRA- VU	ARM	International method	Annex XV	Location and number of species	NP Dilijan
Habitat type							
64	92A0 <i>Salix alba</i> and <i>Populus alba</i> galleries	Natura 2000	RO	Common method for habitats assessments, National, in RO	Annex II	Species composition and conservation status	Annex III
65	2110 Embryonic shifting dunes	Natura 2000	RO	Common method for habitats assessments,	Annex II	Species composition and	Annex III

N	Taxa/Habitat type	Criteria for selection	Country	Available method National/international Language	Adapted methodology under BSB-884	Monitoring parameters	Monitoring sampling plots
				National, in RO		conservation status	
66	3160 Natural dystrophic lakes and ponds	Natura 2000	RO	Common method for habitats assessments, National, in RO	Annex II	Species composition and conservation status	Annex III
67	Beech forests/eastern beech (<i>Fagus orientalis</i>)	BC	ARM	Common method for habitat assessment	Annex XIII	Population density, Tree diameter	NP Dilijan
68	Oak and oak-hornbeam forests (<i>Quercus iberica</i> , <i>Quercus macranthera</i>)	BC	ARM	Common method for habitat assessment	Annex XIII	Population density, Tree diameter	NP Dilijan
69	Pine forest (<i>Pinus kochiana</i>)	Important biodiversity area	ARM	Common method for habitat assessment	Annex XIII	Population density, Tree diameter	NP Dilijan