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PREMISES AND OBJECTIVES OF THE PROJECT “STUDY OF THE FAUNA OF BUCUREȘTI AND ITS SURROUNDINGS”

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Abstract. Under the circumstances of the rapid changes generated by the accelerate development of the capital and of the metropolitan area, the necessity of the natural capital evaluation, as a support of the durable developing, is an urgent requirement. The publishing of a faunistic monograph paper of the area was favoured by placing “Grigore Antipa” National Museum of Natural History, as research laboratory, in the centre of the studying area, by its collections with a rich material originating from there and subsequent trips.

Résumé. Dans les conditions des changements rapides provoqués par le développement accéléré de la capitale et de sa zone métropolitaine, le besoin d'évaluation de son capital naturel, en tant que support du développement durable, est une nécessité impérieuse. Les prémisses favorables, vu l'emplacement du Muséum National d'Histoire Naturelle „Grigore Antipa” en tant que laboratoire de recherches, au milieu de la zone d'étude, l'existence d'un riche matériel de cette zone dans ses collections, la possibilité de faire des déplacements rythmiques, la division écologique selon les unités de végétation, la carte de l'aire d'étude, les activités et le but final: publication d'une monographie faunistique de la zone, sont présentés ci-dessous.

Key words: study, fauna, București (Bucharest), surroundings, premises, objectives, area map, ecological division, vegetation unities, monograph paper.

The project deals with a very topical theme, with a strong impact both on scientific communities and on society, in general: anthropic erosion and climatic global change. Besides the mineral deposits and ethnocultural dowry, biodiversity is a component of the natural capital of a nation. Since his appointing director of the museum, Dr. Grigore Antipa underlined that the mission of making inventories of the “national treasures” has to be a priority of the National Museum of Natural History of Romania. Within this context, the achievement of such a theme, whose purpose is to make an inventory of the biodiversity of the area of București (Bucharest), has to be a major priority for “Grigore Antipa” National Museum of Natural History.

By its imminent multimentional expention, as the increasing of the traffic jams, trade and constructions explosive development, propension to entertainment in the surrounding areas, Bucharest is already subjected to a rapid transiency. The evaluation of the difficulties and opportunities in achieving practically this theme is briefly as it follows:

Oportunities

* Creation of an organized inventory of the fauna of the green and wet areas of București and its surroundings, within a range of about 50 km, is an important social request, because Romania has to retrieve the delays in implying itself in the protection of the communital environment.

English translation by Mihaela Barcan Achim.

* It lies in “Grigore Antipa” National Museum of Natural History of București power to achieve this theme, due to its experts and specialists in most of the zoological groups.

* The proposed theme can be achieved also with low funds by the logistic equipment of the institution.

* The small distance, of maximum 50 km, from the centre of the area to the outskirts allows collecting of quantitative samples, the detailed observation of phenology, experiment accomplishments and the application of some monitoring formula (rapid or slow), etc.

* The achievement of this theme can and has to be used also in ecological education (essential in the durable development), by the developing of the research – public interface (voluntariate, exhibitions, conferences).

Difficulties

* in spite of the efforts, we haven't succeeded in getting extra-budgetary funds for achieving such an essential theme and, therefore, the studies has to begin with internal financing.

* data from literature and from collections are so spread so that a huge labour has to be done for them to be synthesized.

* not to be exhaustive because of the lack of taxonomists in a certain group at national level, the collaboration with foreign scientists is necessary.

Project purpose

The drawing up of the first monograph paper on the fauna of București area, which is to become a starting point in monitoring the biodiversity structure of the natural capital within the perspective of a sustainable development.

Objectives

1. Inventory of the fauna of București area.
2. Mapping of taxon distribution according to an ecological division based on the typology of the potential vegetation.
3. Creation of a data base of București fauna.
4. Establishing the taxa with a bioindicator value.
5. Realisation of a preliminary red list of the invertebrate fauna.
6. Realisation of a temporary exhibition – eventually itinerant – dedicated to this theme.
7. Drawing up some popularisation materials and increasing of volunteers' interest – fliers, illustrated identification keys, and so on.
8. Drawing up the monograph paper.

Activities

1. Mapping of the fauna from the ecoregions of the studied area.
2. Habitat mapping within ecoregions.
3. Collecting of the faunistic data in the field – observations, quantitative and qualitative collecting.
4. Sorting and identification of the collected zoological material.
5. Setting up the data base for the București fauna.
6. Scanning of the specialized literature, adding it to the data base.
7. Consulting the inventory of the scientific collections of “Grigore Antipa” National Museum of Natural History for identifying the material which originates in the studied area and including the data in data base.

8. Publishing of the preliminary results and syntheses, in a special chapter, in the journal of the museum.

Potential vegetation of Ilfov area

Great unities of potential vegetation which occur in Ilfov are listed further on, according to the papers and maps published by Cristea et al. (2004), Doniță et al. (1992), Ivan et al. (1993) and Bohn et al. (2000). Potential vegetation formation can be used in setting up a preliminary ecological division of the area: „G21” covers the area of Bucharest, „F49” is North-westwards, „G34” and „L13” eastwards, and „P33” and „U19” in the floodplains of the rivers (Dâmbovița, Argeș, etc.). The following two tables present the particularities of these great vegetal units (= potential ecoregions); to those from the main table the intra-zonal of the great unities „P” (salt marshes), „R” (reed plots) and „S” (peat bogs) are added (Fig. 1).

For each great vegetal unity (= potential ecoregion) the habitats will be mapped according to the „EUNIS” classification (see the preliminary list of the habitats, presented further on) and the description card of the „NATURA 2000” sites (<http://eunis.eea.eu.int>) will be added.

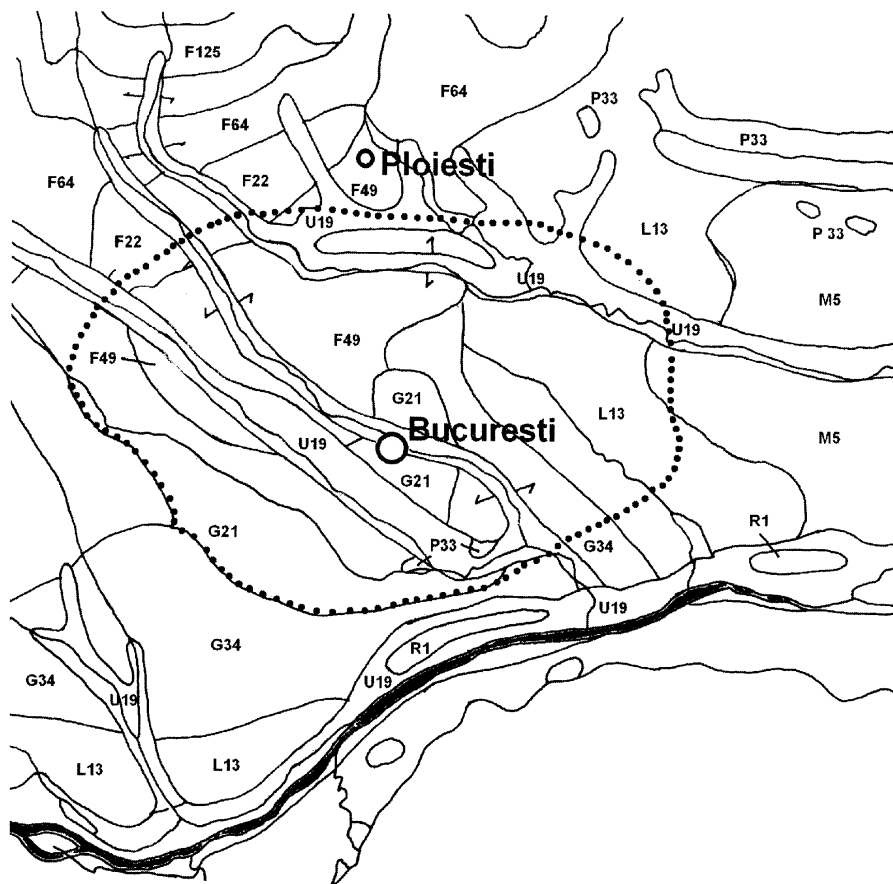


Fig. 1 – Ecological division of Ilfov area.

Great vegetal unities (= potential ecoregions) from the București surroundings.

Bohn code	Ivan code		Name
F49	18	F33	Pedunculate oak Danubian forests and of Hornbeam (<i>Carpinus betulus</i> , <i>Quercus robur</i>) with <i>Tilia tomentosa</i> and <i>Carpesium ceruum</i> , <i>Arum orientale</i>
G21	29	G17a	Mixed Pannonian-Danubian forests of Turkey oak and Italian oak (<i>Quercus cerris</i> , partially <i>Qu. frainetto</i> , <i>Qu. robur</i> , <i>Qu. pubescens</i>) with <i>Pulmonaria dacica</i>
G3	430	G8a	Mixed Danubian forests of White oak, Turkey oak and Pedunculate oak (<i>Quercus pedunculiflora</i> , <i>Qu. cerris</i> , <i>Qu. pubescens</i> , <i>Qu. virgiliana</i>) with <i>Asparagus tenuifolius</i>
L13	34	L9	Danubian steppes of Gramineae and dicotyledons (<i>Stipa lessingiana</i> , <i>Festuca valesiaca</i>) with <i>Delphinium fissum</i> , <i>Campanula macrostachya</i> and <i>Chrysopogon gryllus</i> , alternating with White and Pedunculate oak (<i>Quercus pedunculiflora</i> , <i>Qu. pubescens</i>)
P33	44	P10	Danubian-Balkan halophilous lawns (<i>Puccinellia distans</i> , <i>P. convoluta</i> , <i>P. limosa</i> , <i>Juncus gerardii</i> , <i>Limonium gmelinii</i>) combined with continental haliphilous associations (<i>Salicornia prostrata</i> , <i>Suaeda maritima</i> , <i>Bassia sedoides</i> , <i>Camphorosoma monspeliaca</i>) on solonchak
U19	48	U15a	Riverside Danubian forests of hard essences (<i>Fraxinus angustifolia</i> ssp. <i>danubialis</i> , <i>F. pallisae</i> , <i>Quercus robur</i> , <i>Qu. pedunculiflora</i> , <i>Ulmus minor</i>) combined with riverside forests of poplar and white willow (<i>Populus alba</i> , <i>P. nigra</i> , <i>Salix alba</i>)

Register card for the description of the potential vegetation of the Ilfov area.

F49 (F33)	Danubian forests of Pedunculate oak and Hornbeam (<i>Carpinus betulus</i> , <i>Quercus robur</i>) with <i>Tilia tomentosa</i> and <i>Carpesium ceruum</i> , <i>Arum orientale</i>
Distribution	In a single island, not to large, in Vlăsia Plain, between Argeș and Ialomița rivers, North to București, at the altitude of about 90 m. They occur, on small surfaces, in the large meadows of the rivers Prahova, Ialomița, Argeș, Olt, Jiu.
Primary associations	<i>Tilio tomentosae - Carpinetum betuli</i> , <i>Tilietum tomentosae</i> , <i>Quercetum cerris geticum</i>
Secondary associations	<i>Agrostetum stoloniferae</i> , <i>Poetum pratensis</i> , <i>Alopecuretum pratensis</i>
Particularities	Mesophilous forests which grow within optimum life conditions, characterized by a favourable ration between the temperature (annual average of 4-9°C) and humidity (1200 - 800 (600) mm); water supplying is continuous, droughts occurring rarely), and soils have medium-high trophicity. That is why the biomass productivity is high – around 10 t/year/ha.
Problems	Intense clearing process for creating agricultural lands. Remaining forests were subsequently affected by the drying process. The oak percentage decreased or the species vanished on large surfaces, remaining only the mixed species. All forests of this potential vegetal unit have to be subjected to radical ecologic reconstructions in order to stop the degradation processes.

G21 (G17a)	Mixed Danubian forests of White, Turkey and Pedunculate oak (<i>Quercus pedunculiflora</i> , <i>Qu. cerris</i> , <i>Qu. pubescens</i> , <i>Qu. virgiliana</i>) with <i>Asparagus tenuifolius</i>
Distribution	In the plain between Argeș and Neajlov rivers, at 50-100 m altitude
Primary associations	<i>Quercetum cerris geticum</i>
Secondary associations	<i>Poetum angustifoliae</i> , <i>Poetum silvicolae</i> , <i>Botriochloetum ischaemi</i>
Particularities	Formation includes the thermophilous and xerophilous oak forests. Life conditions characterize by high annual average temperatures (9-11°C), generally low precipitations (450-600 mm), soils with high trophicity, but with a critical or alternating hydric regime. Biomass productivity is lower than in the mesophilous forests (6-8 t/year/ha).
Problems	Most of the xero-thermal oak forests have to be subjected to the ecological reconstruction, as the forests from the great unity F.
G34 (G8a)	Mixed Panonian-Danubian forests of Turkey and Italian oak (<i>Quercus cerris</i> , partially <i>Qu. frainetto</i> , <i>Qu. robur</i> , <i>Qu. pubescens</i>) with <i>Pulmonaria dacica</i>
Distribution	A continuous band, of a variable wide, from West Oltenia, from Calafat, to the East of București, on the Mostiștea River; in the forest-steppe of Bărăgan there are some fragmented remain of an old brush, now cleared, the respective land being used in different purposes.
Primary associations	<i>Aceri tatarico-Querceti pubescenti-pedunculiflorae</i> , <i>Quercetum pedunculiflorae</i> , <i>Quercetum pedunculiflorae-cerris</i>
Secondary associations	Bushes (<i>Crataego-Cerasetum (Prunetum) fruticosae</i> , <i>Pruno spinosae-Crataegetum</i>) and lawns (<i>Poetum silvicolae</i> , <i>Medicagini-Festucetum valesiaca</i> , <i>Cynodono-Poetum angustifoliae</i>)
Particularities	There are Moesian forests of xerophilous oaks with upper productivity.
L13 (L9)	Danubian steppe of Gramineae and dicotyledons (<i>Stipa lessingiana</i> , <i>Festuca valesiaca</i>) with <i>Delphinium fissum</i> , <i>Campanula macrostachya</i> and <i>Chrysopogon gryllus</i> , alternating with White and Pedunculate oak forests (<i>Quercus pedunculiflora</i> , <i>Qu. pubescens</i>)
Distribution	Along the Danube, making a continuous band, wide of some tens of kilometres, which lays from West Oltenia, from the Danube North of Calafat to near Giurgiu; from the confluence of Argeș River with the Danube, this band goes towards North, reaching the Buzău Hills, continuing in Moldova.
Primary associations	Lawns (<i>Stipetum stenophyllae</i> , <i>Stipo stenophyllae-Festucetum</i> , <i>Cynodono-Poetum angustifoliae</i> and, first of all, <i>Medicagini-Festucetum valesiaca</i>) in a complex with forests (<i>Lithospermo-Quercetum</i>)
Secondary associations	<i>Artemisio autriacae-Poetum bulbosae</i> , <i>Botriochloetum ischemi</i>
Particularities	It represents the passing area between the mesophilous or xerothermal forests and the steppe. The forest-steppe structure is complex, including forests or sparse growth of trees, which alternate with xeric lawns or steppe bushes. Life conditions characterise by temperatures of 9-11°C, precipitations of 450-550 ml, very trophic soils (chernoziom), but with a deficitary regime of humidity in the second part of summer. Biomass production in forests is of 5-6 t/year/ha, in lawns of about 2 t/year/ha.

Problems	Being extremely fertile, the land covered by this formation was transformed in agricultural terrain. Only on the inadequate lands for agriculture the natural vegetation remained, but very much degraded because of the excessive grazing. Insignificant surfaces from economical point of view on which this formation still exist deserve to be protected, because it is the reference of the vegetation which grew on this land. Xeric lawns were entirely fallowed and the rare forests are strongly transformed, especially from their structure point of view – all are vegetatively regenerated, thinned out, with a low productive potential. It is necessary that all steppe forests to be preserved, the best conserved to be declared natural reservations and those degraded or cultivated with other species than the proper ones to be ecologically reconstructed.
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P33 (P10)	Danubian-Balkan halophilous lawns (<i>Puccinellia distans</i> , <i>P. convoluta</i> , <i>P. limosa</i> , <i>Juncus gerardii</i> , <i>Limonium gmelinii</i>) combined with continental halophilous associations (<i>Salicornia prostrata</i> , <i>Suaeda maritima</i> , <i>Bassia sedoides</i> , <i>Camphorosoma monspeliaca</i>) in solonchaks.
Distribution	In lawns and depressions with halomorph soils (Neajlov, Ialomita rivers).
Primary associations	
Secondary associations	
Particularities	Life conditions from the salt soil areas are entirely different: steppe climate (annual average temperatures of 11°C and low precipitations of about 300-350 ml) and soil with special features (high content of chlorides, sulphates or carbonates of sodium, dangerous for most of the plants). Biomass production is low (0.5-1 t/year/ha).
Problems	A part of the halophilous vegetation was destroyed following for the terrain to be used in agriculture, after it had been desalted. With a few exceptions, in Romania there aren't natural reservations with typical aspects of this formation and where these types of vegetations, adapted to special life conditions, can be studied.

R1 (R1)	European marshes of reed, lesser reed, Dutch rush (<i>Phragmites australis</i> , <i>Typha angustifolia</i> , <i>Scirpus lacustris</i>)
Distribution	The unit has been largely distributed in the floodplains of the great rivers before they were regulated, and it can be still find on all marsh and lake shores of the region (excepting the very salt ones).
Primary associations	<i>Phragmitetalia</i>
Secondary associations	
Particularities	Depending on the azonal life conditions – marshes permanently with water excess – reed plots occur in different bioms, from forests to steppes. Biomass production of the reed plots is maximum for the temperate area, around 15 t/year/ha.
Problems	Reed marshes are very important, functioning as a biological filter for waters and representing a protection element of the shores against the wave power. Along the last decades of the last century the surfaces of the reed plots of Romania decreased more by the discharges of the wet areas and regulation of several rivers. The impact was negative on the ecological equilibrium of the floodplains, as well as by the diminishing of the biodiversity.

S24 (S21) Distribution	Central-European and Baltic marshes Peat marshes are less distributed in South Romania but there are small surfaced marshes in the floodplains of the rivers Jiu, Neajlov and Dâmbovița.
Primary associations	<i>Oxyccoco-Sphagnetea, Magnocaricetalia</i>
Secondary associations	
Particularities	Peat marshes are intrazonal units. In the area marshes occurred (mineral-trophic peat bogs).
Problems	Marshes were strongly damaged as a result of the draining works. All those which remained must be preserved in natural reservations because many of them has glacial relicts, and the peat preserves fossil pollen which allows the vegetation history to be established.
U19 (U15a)	Hard essence Danubian forests of floodplains (<i>Fraxinus angustifolia</i> ssp. <i>danubialis</i> , <i>F. pallisae</i> , <i>Quercus robur</i> , <i>Qu. pedunculiflora</i> , <i>Ulmus minor</i>) combined with floodplain poplar and willow forests (<i>Populus alba</i> , <i>P. nigra</i> , <i>Salix alba</i>)
Distribution	In the field floodplains – along Ialomița, Buzău, Siret rivers.
Primary associations	Brushes belonging to the association <i>Fraxino pallisae-angustifoliae-Quercetum</i> in complex with riverside coppices <i>Salicetum albae-fragilis</i> , <i>Saponario-Salicetum purpureae</i> , <i>Salicetum triandrae</i>
Secondary associations	
Particularities	Floodplain forests are very complex because of the substratum diversity – from evolved floodplain soil to young alluvia. Adequately, initially the vegetation was made of brushes of hard essences from riverside coppices surrounded by soft essence trees, from the hygrophilous lawns and halophilous vegetation. Life conditions from the floodplains, even in the steppic xeric climate, are favourable to the biomass production due to the high trophicity of the alluvia, in general, and to the continuous water supply from the ground-water table. That is why the biomass production is very high - 12 t/year/ha for forests.
Problems	Floodplain vegetation was subjected to some strong anthropic transformations along history, but the strongest impact was within the period '60-'90 of the 20th century, when huge floodplain surfaces were cleared for creating new agricultural terrains or dam lakes, this thing influencing negatively the ecological equilibrium of the floodplains and of the surroundings.

Preliminary list of the EUNIS potential habitats for Ilfov area.

Codes are according to EUNIS European classifications (<http://eunis.eea.eu.int>), and Romanian nomenclature is original:

C – Aquatic:

C1 stagnant waters: C11, C12 C13, C14, C15, C16

C2 running waters: C21, C22, C23, C25

C3 littoral area: C31, C33, C34, C35, C36, C37

D – Marshy:

D4 marches: D41

D5 reed plots, sedges, soft rush: D51, D52, D53

D6 salt marshes: D61, D62 (probably)

- E – Planted with grass:
 E1 xerophilous lawns: E11, E13, E14, E16
 E2 mesophilous lawns: E21, E22, E25, E26
 E3 hygrophilous lawns: E34, E35
 E5 weeds: E52, E54, E56
 E6 halophilous lawns: E62
 E7 lawns with scattered trees: E72
- F – Bushes:
 F3 temperate bushes: F31
 F9 riparian bushes: F91, F92, F93
 FA hedges: FA1, FA2, FA3, FA4
 FB plantations: FB1, FB2, FB3, FB4
- G – Afforested:
 G1 deciduous forests: G11, G12, G13, G18, G1A, G1D
 G5 rows of trees, small tree plantations, forest clearing, young plantations: G51, G52, G54, G55, G56, G57, G58
- H – Sterile:
 H1 underground: H17
 H5 habitats with rare or absent vegetation: H53, H54, H56
- I – Cultivated:
 I1 arable and intensive cultures: I11, I12, I13, I15
 I2 gardens and parks: I21, I22, I23
- J – Built:
 J1 towns: J11, J12, J13, J14, J15, J16, J17
 J2 villages: J21, J22, J23, J24, J25, J26, J27
 J4 transport net, relaxing places, churchyards: J41, J42, J43, J44, J46, J47
 J5 aquatic artificial: J53, J54, J55
 J6 waste deposits: J61, J62, J63, J64, J65, J66

Some specifications on the subdivisions of the studied area and map explanation (Fig. 1).

- The sketch is a fragment of the potential vegetation map of Europe, after Bohn et al. (2000), and represents the study area, which is not simply circular, within a radius of about 50 km around București (Călinescu, 1962), but slightly elliptical, imposed by the inclusion of the vegetation units and of the EUNIS habitats (Fig. 1). Explanation of the sigles is detailed in the text.

- The limits of the study area are also slightly variable: the northern and southern limitation was made easier by the borders of the Sub-Carpathians and the Danube Floodplain, while the eastern and western ones are difficult to be established. They extend North-westwards to Dâmbovița County, in order to include the wet areas from Corbii Mari and South-eastwards, in the counties Teleorman, Giurgiu, Călărași and Ialomița, for including the representative areas of the steppe ecoregion, present only in Romania within the enlarged European Union. Depending on the interest of each taxonomical group, the area can be diminished or enlarged within some rational limits.

- We present two preliminary variants of the study area, one enlarged (Titu to North, Urziceni and Lehliu to East, Daia to South and Roata de Jos to West) and one diminished (Cocoraști to North-West, Răcari, Vânătorii Mici, Videle to West, Izvoarele, Schitu, Mihai Bravu, Hotarele, Radovanu to South, Gurbănești, Nicolae

Bălcescu, Ileana to East). Final variant will be inferred from the compilation of all sites, as a conclusion to the studies, and it will be published in the monograph paper.

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PREMIZELE ȘI OBIECTIVELE PROIECTULUI “CERCETAREA FAUNEI BUCUREȘTILOR ȘI A ÎMPREJURIMILOR”

REZUMAT

Având ca obiectiv începerea unei cercetări faunistice organizate, a zonelor verzi ale Bucureștilor și ale împrejurimilor, ca suport al dezvoltării durabile, cercetătorii de la Muzeul Național de Istorie Naturală “Grigore Antipa” și-au propus studiarea monografică a tuturor datelor existente în literatură și în colecțiile științifice, dublată de o activitate de teren susținută, desfășurată pe câțiva ani, într-o arie delimitată natural, de existența unităților de vegetație și de habitatele EUNIS, potențiale pentru zona ilfoveană. Proiectul prezintă argumentele, oportunitățile, dificultățile, scopul final (intocmirea unei monografii faunistice a zonei), activitățile, ecoregiunile potențiale, cu denumirea și răspândirea lor, lista preliminară a habitatelor EUNIS, harta și fișele pentru descrierea vegetației potențiale. Aceste date servesc drept cadru pentru desfășurarea activității de teren și publicarea rezultatelor parțiale, atât pentru echipele mai numeroase cât și pentru cercetătorii independenți sau voluntari.

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