3 SK 012

Information Sheet on Ramsar Wetlands

Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties.

NOTE: It is important that you read the accompanying *Explanatory Note and Guidelines* document before completing this form.

1. Date this sheet was completed/updated:
December 1997

FOR OFFICE USE ONLY.
DD MM YY
17 02 98 — Designation date
3 S K 0 — Site Reference Number

2. Country: Slovak Republic

3. Name of wetland: Wetlands of Orava Basin

4. Geographical coordinates: 49° 25' N 19° 38' E

5. Altitude: (average and/or max. & min.) 603.5 - 755 m a. s. l.; average 679 m **6. Area:** (in hectares) 9,264

7. Overview: (general summary, in two or three sentences, of the wetland's principal characteristics)
The site includes fragments of the near-natural extensive peatlands and swamps of Orava Basin and it is composed of diverse mosaic of representative, well preserved, hydrologically and biologically very important and unique wetlands of types from large complex of forested peatlands to non-forested shrub and open bogs interconnected by a submontane stream with an artificial water reservoir in transboundary position. The site is characterized by rich biodiversity and occurrence of rare and endangered species of plants and animals of Slovakia and Europe.

8. Wetland Type (please circle the applicable codes for wetland types as listed in Annex I of the *Explanatory Note and Guidelines*)

marine-coastal: A . B . C . D . E . F . G . H . I . J . K

inland: L . (M) . N . O . P . Q . R . Sp . Ss . (Tp) . (Ts)
(U) . Va . Vt . (W) . (Xf) . (Xp) . Y . Zg . Zk

man-made: 1 . 2 . 3 . (4) . 5 . (6) . 7 . 8 . 9

Please now rank these wetland types by listing them from the most to the least dominant:

9. Ramsar Criteria: (please circle the applicable criteria; see point 12, next page.)

(1a) . 1b . (1c) . (1d) | (2a) . (2b) . (2c) . (2d) | 3a . 3b . 3c | (4a) . (4b)

Please specify the most significant criterion applicable to the site: _____

10. Map of site included ? Please tick *yes* ☒ **-or-** *no* ☐

(please refer to the *Explanatory Note and Guidelines* document for information regarding desirable map traits)

11. Name and address of the compiler of this form:
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Please provide additional information on each of the following categories by attaching extra pages **(please limit extra pages to no more than 10):**

12. Justification of the criteria selected under point 9, on previous page (please refer to Annex II in the *Explanatory Note and Guidelines* document)

1(a): the site is particularly good representative example of a natural and near-natural wetlands, characteristic of the Western Carpatian province;

1(c): it is particularly good representative example of a wetland which play a substantial hydrological (peatbogs, streams, Orava Reservoir), biological (specific plant communities, rich biodiversity, habitats of threatened species) and ecological role in the natural functioning of the Orava river basin in transboundary position;

1(d): it is an example of a specific type of wetland - peatland, rare in the Western Carpathians province and under-represented in the List of Wetlands of International Importance.

2(a): the site supports many rare, vulnerable and endangered species and subspecies of plants and animals threatened at national, European and/or global level with satisfactory status of populations;

2(b): it is of special value for maintaining the genetic and ecological diversity of peatlands, stagnant and running waters of Central Europe because of quality of these habitats;

2(c): it is of special value as the habitat of plants and animals, especially insects, amphibians, birds and semiaquatic mammals at critical stages of their biological cycle (breeding, wintering, feeding places);

2(d): it is of special value for several endemic species of vertebrates (*Triturus montandoni* - Carpathian endemic species, *Hucho hucho* - Danube basin endemic species), relic species and communities of plants and for invertebrates found as unique for Western Carpathians region.

4(a): the site supports a significant proportion of indigenous fish species and their life-history stages that are representative of the wetland values (*Eudontomyzon mariae, Phoxinus phoxinus, Cobitis taenia, Vimba vimba, Lota lota, Hucho hucho*) and benefits (*Salmo trutta, Thymallus thymallus*);

4(b): it is an important spawning ground and nursery for fishes in transboundary position.

13. General location: (include the nearest large town and its administrative region)

northern Slovakia, boundary area with Poland; Žilina region, Námestovo and Tvrdošín districts; near W and S border of the site are located towns Námestovo and Trstená

14. Physical features: (e. g. geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth; water permanence; fluctuations in water level; tidal variations; catchment area; downstream area; climate)

Geomorphology: the site belongs to the province of Western Carpathians, Podhôľno-Magurský district, Oravská Kotlina Basin region.

Geology of the site is relatively simple. The basin has developed since Neogene. The basin is surrounded by the Palaeogene mountains which rise over it. In Upper Badenian it was flooded by a sea from NW. In Sarmatian, a freshwater lake was developed and it persisted till Pontian. In this Neogene sea, a dark-grey and light-grey, green-grey and blue-green clays, locally calcareous or sandy, were deposited and they create a base of the basin. Rarely they contain lens of grey micy sands and sandstones. In a later development the basin became a dry land again. In Pleistocene the Tatra glaciers raised moraines and torrential rivers carried glacial deposits all over the basin and rivers from Beskydy Mts brought and deposited sandstone/siltstone debris. The clayey basis, the thickness of which is estimated at 300 m, was covered by sand and loess. Wet cold weather, flat ground with shallow depressions and gleysols provided good conditions for formation of the peatlands, which were in almost all the basin. A part of them was flooded by the water of Orava Reservoir in 1950s.

Hydrology: the area belongs to the Orava river catchment and it is a part of the Váh river catchment (left-side tributary of Danube River). The area of the Orava river catchment part of interest is 1,181.7 km^2. The river system is natural, except for the artificial Orava Reservoir, which was built in 1953 on confluence of Biela Orava and Čierna Orava Rivers and its area is 35 km^2 with capacity of 350 mil. m^3. All tributaries flow into the reservoir. Subject of concern is mainly Jelešňa River with catchment area 60.3 km^2 and with well-preserved meanders, which in the most part makes the border river with Poland. The whole river system is characterized by relative naturalness, ecological stabilty and good water quality documented by favourable saprobic index.

Soil types: mainly podzols, gleysols, fluvisols, cambisols and histosols. The soil pH is between 3.5-6.5.

Climate: The Western part of the area belongs to moderate warm region and either moderate warm and wet basin climatic district with cold winters (surroundings of Orava Reservoir) or moderate warm and wet colline climatic district (surroundings of Trstená); Eastern part of the area belongs to cold region, moderate cold climatic district. Average air temperature in January is between -6 °C to -4 °C and in July 14.5 °C to 16.5 °C. Annual rainfall is 750 - 930 mm.

15. Hydrological values: (groundwater recharge, flood control, sediment trapping, shoreline stabilisation, etc.)

The area has an important role in accumulation of surface water and groundwater and in maintaining the water regime of the Orava river catchment. Orava Reservoir has a priority importance in flood control as the main recipient of the watercourses in the area. Its value is also in water purification and sediment trapping of the hydrological network of Oravské Beskydy Mts, Podbeskydská vrchovina Mts and Podbeskydská Brázda, Oravská Kotlina Basin and Skorušinské Vrchy Mts. Specific hydrological and hydrogeological conditions of the area provide basis for evolution of specific habitats (peatbogs, marshes, swamp forests, seasonal and permanent pools) with rare, vulnerable and endangered phytocoenoses and zoocoenoses connected with them.

16. Ecological features: (main habitats and vegetation types)

Habitat structure of the site:

Permanent lakes/pools/ponds and running waters - 3,582 ha (39 %)
Tree-dominated wetlands, forested peatlands - 2,500 ha (27 %)
Swamps, marshes, seasonaly flooded wetlands, temporary waters - 1,200 ha (13 %)
Shrub-dominated wetlands, agricultural land (meadows, pastures, arable land) - 1,980 ha (21 %)

The site has mostly natural vegetation with relatively low human influence. It represents diverse mosaic of wetland communities.

Over the most of the area there are fragments of primary extensive mire, marsh and aquatic phytocoenoses, the large part of which is flooded by water of the Orava Reservoir. Mire phytocoenoses are represented mainly by communities of bogs of sub-continental region of Europe, classes *Oxycocco-Sphagnetea*, order *Sphagnetalia medii*, rare are communities of bogs of atlantic and sub-atlantic regions, class *Scheuzerio-Caricetea fuscae*, order *Scheuzerietalia palustris* and fen communities, class *Scheuzerio-Caricetea fuscae*, order *Caricetalia fuscae*, alliances *Caricion fuscae*, *Caricion davallianae*, *Caricion lasiocarpae*, *Sphagno warnstorfiani-Tomenthypnion*. In peatland margins are spreaded birch and pine bogs of class *Molinio-Betuletea* and willow shrub swamps, alliance *Salicion cinereae*. Substantial part of the area is covered by wet peat meadows of class *Molinio-Arrhenatheretea*, suballiance *Calthenion*. Relatively widely distributed are swamp spruce forests of suballiance *Eu-Vaccinio-Piceenion*.

Stagnant waters and marshes are represented above all by tall-grass sedge marshes, class *Phragmiti-Magnocaricetea*, order *Magnocaricetalia*, alliance *Caricion rostratae*, *Caricion gracilis*, *Cicution virosae*. Along the streams are distributed submontane and montane floodplain forests, suballiance *Alnenion glutinoso-incanae*. Azonal communities of floodplain forests are well-developed and well-preserved mainly in the Jelešna river alluvial floodplain. After removing of alder and willow woods, the river banks are edged by narrow strips of *Salix purpurea* and *Salix triandra*.

Interesting and valuable is also structure of the macrophyte vegetation of Orava Reservoir, which depends on water level in the reservoir (the water level vary considerably during the year). The vegetation represents 3 groups:

(a) formations of submerged and floating macrophytes of class *Potametea*
(b) formations of littoral vegetation of class *Phragmiti-Magnocaricetea*
(c) formation of bare bottom stands of class *Isoeto-Nanojuncetea*, *Bidentetea tripartiti*

A part of the area as far as its surroundings is affected to some extent by intensive or extensive agriculture and/or forestry. These activities have caused changes in vegetation structure and replacement of native vegetation by cultivated plants and spreading of invasive species (*Bidens frondosa*, *Impatiens parviflora*).

17. Noteworthy flora: (indicating, e. g., which species/communities are unique, rare, endangered or biogeographically important, etc.)

The site incudes the complex of wetland habitats with rich biodiversity of vascular plants in communities of peatlands, meadows, lakes, marshes and swamp forests.

Rare, vulnerable and endangered plants (according to categories by MAGLOCKÝ & FERÁKOVÁ 1993) include *Andromeda polifolia*, *Batrachium rhipiphyllum*, *Berula erecta*, *Calla palustris*, *Callitriche palustris*, *Carex appropinquata*, *Carex chordorrhiza*, *Carex davalliana*, *Carex diandra*, *Carex dioica*, *Carex flava*, *Carex limosa*, *Carex oederi*, *Carex paniculata*, *Carex pauciflora*, *Cicuta virosa*, *Comarum palustre*, *Crassula aquatica*, *Dactylorhiza fuchsii*, *Dactylorhiza maculata* subsp. *ericetorum*, *Dactylorhiza majalis*, *Drosera rotundifolia*, *Empetrum nigrum*, *Epipactis palustris*, *Equisetum variegatum*, *Eriophorum gracile*, *Eriophorum vaginatum*, *Gladiolus imbricatus*, *Isolepis setacea*, *Juncus bulbosus*, *Juncus filiformis*, *Juncus squarrosus*, *Ledum palustre*, *Lotus uliginosus*, *Lycopodiella inundata*, *Lycopodium clavatum*, *Lycopodium annotinum*, *Menyanthes trifoliata*, *Molinia caerulea*, *Myosotis palustris* subsp. *palustris*, *Naumburgia thyrsiflora*, *Oxycoccus microcarpus*, *Oxycoccus palustris*, *Parnassia palustris*, *Pedicularis palustris*, *Pedicularis sylvatica*, *Peucedanum palustre*, *Pinguicula vulgaris*, *Potamogeton alpinus*, *Potamogeton gramineus*, *Ranunculus auricomus* agg., *Rhynchospora alba*, *Senecio paludosus*, *Sparganium minimum*, *Utricularia australis*, *Vaccinium uliginosum*, *Valeriana simplicifolia*, *Veronica scutellata*, *Viola palustris*.

Noteworthy plant communities include above all peatland communities of raised bogs (class *Oxycocco-Sphagnetea*, order *Sphagnetalia medii* and *Sphagno-Ericetalia*), bogs (class *Scheuchzerio-Caricetea fuscae*, order *Scheuzerietalia palustris*) and fens (class *Scheuchzerio-Caricetea fuscae*, order *Caricetalia fuscae*, alliances *Caricion fuscae, Caricion davallianae, Caricion lasiocarpae* and *Sphagno warnstorfiani-Tomenthypnion*). Important and rare are also phytocoenoses of marshes of class *Phragmiti-Magnocaricetea*, order *Magnocaricetalia*, alliance *Cicution virosae*.

18. Noteworthy fauna: (indicating, e. g., which species are unique, rare, endangered, abundant or biogeographically important; include count data, etc.)

Animal communities of the Orava basin belong to Euro-Siberian province of the Palearctic zone and they are classified to outer periphery of the Western Carpathians. The wetlands of the site provide conditions for existence of specific hydrophilous, limnic, tyrfofile and tyrfobiont zoocoenoses. Naturalness of the site and hydrological and vegetation conditions of marshes, swamp forests and peatlands maintain survival and development of indigenous, specific and representative groups of wetland animals.

From nature conservation, zoogeographical and faunistical point of view are remarkable rare and threatened communities of invertebrates of peatlands. Noteworthy fauna include:

Spiders *(Araneae) - Gnaphosa microps* - endangered species, a typical representative of rare peatland species, which occur there on the edge of its European range; *Agroeca proxina* and *Scotina paillardi*.

Dragonflies *(Odonata) - Leucorhinia rubicunda* - the first finding in Slovakia; *Aeschna juncea, Sympetrum danae* and *Leucorhinia dubia* - rare species.

Diptera - Prionocera turcica, Nephrotoma tenuipes, Dicranomyia distendes, Dicranomyia autumnalis - important species.

Beetles *(Coleoptera) - Pterostichus gracilis, Olophrum rotundicolle, Quedius fulvicollis* - rare species.

Particular attention has been paid on butterflies *(Lepidoptera)* - 34 species have been found. Rare and threatened species include *Colias palaeno* subsp. *europome, Celeophora ledi, Celaena haworthii, Micropteryx aureatella, Glyphipterix haworthana, Acleris maccana, Eulithis testata, Anarta cordigera*. The unique species not found in any other sites of Slovakia include *Anarta cordigera, Crambus alienellus, Anarta myrtilli*. From faunistical point of view remarkable is finding of *Syngrapha microgamma* in Suchá Hora (a unique relic occurrence at the southern edge of its range). It indicates noteworthy bog within Western Carpathians.

During last years, a number of other first invertebrate findings for Slovakia or Europe have been made there.

Noteworthy and important are also fish communities of the area - 37 fish species have been recorded. Rare and endangered species include: *Cyclostomata - Eudontomyzon mariae, Osteichthyes - Phoxinus phoxinus, Cobitis taenia, Vimba vimba, Lota lota, Hucho hucho*.

From the class of amphibians *(Amphibia)*, interesting is a common occurrence of all 4 newt species known in Slovakia *(Triturus alpestris, T. vulgaris, T. montandoni* and *T. cristatus)*, as far as hybrids of *Triturus montandoni* and *Triturus vulgaris*. Noteworthy frogs include a "pure" population of *Rana lessonae*. Widesprad reptile *(Reptilia)* species of peatlands is *Lacerta vivipara*.

Birds (*Aves*): Orava Basin lies on important migration route of water birds. The Orava water reservoir, muddy shores, temporary pools and marshes attract water birds and provide suitable conditions and resources as resting and feeding places during migration. Among the most numerous are *Anseriformes, Charadriiformes* and *Lariformes*. Rare migratory species are *Haliaeetus albicilla, Pandion haliaetus, Limosa limosa, Gavia arctica, Clangula hyemalis, Egretta alba, Grus grus*. Breeding species of water habitat include *Ciconia nigra, Alcedo atthis, Sterna hirundo, Larus ridibundus, Tringa totanus, Motacilla flava* and probably *Tringa ochropus*.

Mammals *(Mammalia)*: Satisfactory is status of otter *(Lutra lutra)* and watershrews *(Neomys fodiens* and *Neomys anomalus)*. In Jelešňa River live beavers *(Castor fiber)* reintroduced in 1995. Zoogeographically interesting is occurrence and breeding of elks *(Alces alces)*. Bats include *Myotis daubentoni* inhabiting wetland habitats.

19. Social and cultural values: (e. g. fisheries production, forestry, religious importance, archaeological site, etc.)

The area is important mainly for scientific research (fauna and flora), environmental education, recreation (SW part of Orava Resevoir), fishing (Orava Reservoir, Jelešňa River) and hunting; less importance has for tourism (but there are no marked touristical footpaths). Most important cultural values are sacral buildings, for example the church in Nature Monument Slanický Ostrov Island, wayside columns in Bobrov, etc. Use of the area, if some limits and ways of use are respected, does not contradict the sustainability of natural processes and the ecological character of the site. Adverse effect can be expected if hunting, recreational activities and tourism became more intensive.

20. Land tenure/ownership of: (a) site (b) surrounding area

(a) Mostly private and communities/companies ownership (swamps, shrub-dominated wetlands, swamp forests, seasonally flooded forests, forested and non-forested peatlands, meadows, pastures, fields). State ownership (water area and riparian vegetation of Orava Reservoir, rivers and other streams). Users of the area are cooperative farms, communal co-owners, state organizations.

(b) Ownership of surrounding area is similar to that of (a).

21. Current land use: (a) site (b) surroundings/catchment

(a) Direct exploitation of the site does not affect sustainability of natural values. Some parts are intensively or extensively agriculturally used (cultivation of grain and root crops, meadows, pastures, cattle farming). Surrounding of Orava Reservoir, mainly its S and SW part, is used for recreation (swimming, sailing, sunbathing). Fishing and regulated hunting are carried out in the area. In surrounding of Suchá Hora are situated peat-mines. Timber harvesting and management are made according to 10-years Forest Management Plans. The most of forests have protected status. On the border of the site are situated two towns and six villages: Námestovo (7,952 inhabitants), Trstená (6,800), Klin (1,855), Zubrohlava (1,759), Bobrov (1,438), Liesek (3,000), Hladovka (1,600), Suchá Hora (1,600). Number of inhabitants is seasonally increasing during summer touristic season. Water supply for domestic use is mostly ensured from the Orava water suply system, but many villages have no water treatment plant.

(b) Northern border of the site is a state border with Poland and this area is mostly extensively agriculturally used (private fields, pastures, meadows). Permanently water-logged grasslands, peatlands and heath are not used. Peat extraction is made near Czarny Dunajec. A part of the state border is forested. Larger surroundings of the site has character of agricultural and urban land with priority in extensive and intensive agricultural exploitation (agricultural products, meadows, pastures, cattle farming). Industry is developed mainly in town areas (clothing, electrical and machine industry, timber trade), where business and services are also situated.

22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects: (a) at the site (b) around the site

(a) Negative human influence in the site include unregualted recreation in the Orava Reservoir area, waterfowl hunting, picking up the forest fruits in peatlands, illegal commercial collection of insects, peat mining in Suchá Hora, overfishing in Polish side of Jelešňa River. Very negative disturbance factor is planned building of roads and a border crossing near Bobrov.

23. Conservation measures taken: (national category and legal status of protected areas - including any boundary changes which have been made: management practices; wheather an officially approved management plan exists and wheather it has been implemented)

Most part (90 %) of the site is situated in the Horná Orava Protected Landscape Area, which is in the second level of nature conservation according to the Nature Conservation Act No. 284/94. Several protected sites were designated there (level of protection, year of designation, area, brief characteristics are indicated): Protected Site Vtáčí ostrov (4; 1973; 1.56 ha; important breeding site for waterbirds), Nature Monument Slanický ostrov (5; 1973; 3.54 ha; cultural monument), Nature Reserve Rudné (5; 1978; 1.95 ha; remnant of a large complex of peat-bogs); National Nature Reserve Klinské rašelinisko (5; 1967; 15.07 ha; raised bogs); National Nature Reserve Sosnina (5; 1994; 160.75 ha; complex of swamp forests and forested peat-bogs); National Nature Reserve Jelešňa (5; 1978; 20.33 ha; natural river with riparian vegetation as otter and beaver habitat).

In 1988 a management plan for NNR Klinské rašelinisko was approved concerning mostly to removing of self-seeded trees and shrubs and it has been implemented. Protection and management of the site is designed by the Territorial System of Ecological Stability of Dolný Kubín District (1994), the Strategy, Principles and Priorities of the State Governmental Environmental Policy of Dolný Kubín District (1994), the Environmental Action Plan of Districts Námestovo (1977) and Tvrdošín (1977). These conceptional materials are implemented and taken into account when problems of protection of the site are solved. Biodiversity protection of the site is in more details solved in project "Biodiversity Protection of Oravská Kotlina Basin" developed by Slovak Environment Agency (SAŽP) - Administration of PLA Horná Orava; it has been partially implemented (Biodivesity Protection of the Orava Water Reservoir - a project supported by GEF, reintroduction of Beaver - Oravanatur Foundation, protection of natural values of Orava Reservoir - a campaign launched by Slovak Union of Nature and Landscape Conservationists (SZOPK) in Námestovo, plan for building up the protected sites network in Oravská Kotlina Basin, Ornithological camps - organized by SAŽP, SZOPK Námestovo, Ornithological club at Orava Museum, proposal for International Bird Area (IBA) in Europe (BirdLife), cooperation with organizations of nature conservation in Poland).

24. Conservation measures proposed but not yet implemented: (e. g. management plan in preparation; officially proposed as a protected area, etc.)

Plans and projects for designation of new protected sites have been prepared: Orava Reservoir (1,584 ha) - protection of habitats for water birds; Kriváň (17 ha) - imporant peat-bog and fens with rare plant species; Bratkovčík (40 ha) - shrub-dominated marshes, reeds - faunistically important site; Páleniská (150 ha) - marshes, shrub swamps, peat-bogs, site with faunistical and botanical importance.

Plans for enlargement (boreder improvement) of the Horná Orava PLA have been made so as the whole area of the site will be a part of the PLA. The site is included in several conceptions of biodiversity and nature protection of the State Nature Conservancy and in proposals for ecological networks (National Ecological Network - NECONET, IBA) as important core area (fauna, flora, biodiversity, important migration route of water birds).

Activities affecting the ecological character of the sites where the State Nature Conservancy has not been successful are mainly exploitation of peat-bogs and problems with proposed designation of protected site Páleniská because of users disagreement.

25. Current scientific research and facilities: (e. g. details of current projects; existence of field station, etc.)

Many of the localities were surveyed and studied within the national wetlands inventory. Research of protected sites has been carried out and their monitoring has been done by stages. A research of the birds fauna of Orava Reservoir has been made regularly since 1991 within the framework of Ornithological meetings ("camps"). Research of birds, amphibians, reptiles, mammals (especially the otter and the beaver) and invertebrates (butterflies and dragonflies above all) has been carried out in the whole area. Within botanical research an attention has been paid particularly to flora and vegetation of peatlands and of Orava Reservoir.

26. Current conservation education: (e. g. visitors centre, hides, information booklet, facilities for school visits, etc.)

The area as a whole along with the interconnected mosaic of various habitats is subject of environmental education of the public, especially pupils and students. People are educated by means of discussions, excursions, conservationists' camps, etc., using mainly Orava Reservoir and peatlands as models, in cooperation with governmental and non-governmental organizations in the area. Some advertising materials with information on the Horná Orava PLA and its special sites have been produced. Yearly ornithological meetings ("camps") have been organized in the area of Orava Reservoir with the aim not only to gain information on migratory birds, but also to educate young people. In The Protected Site Vtáčí Ostrov Island, an information panel is placed and an educational trail near Orava Reservoir has been planned.

27. Current recreation and tourism: (state if wetland is used for recreation/tourism; indicate type and frequency/intensity)

South-western parts of Orava Reservoir is mainly used for recreation activities (water sports, tourism and so on). Recreational using of the rest of the site is only sporadic, mainly for weekend trips and fishing/angling).

28. Jurisdiction: (territorial e. g. state/region and functional e. g. Dept. of Agriculture/Dept. of Environment, etc.)

State: Ministry of Environment, Ministry of Interior, Ministry of Agriculture, Forestry and Water Management
Regional: Regional Office at Žilina, District Office at Námestovo and Tvrdošín
Local: Town Office at Námestovo and Trstená, Municipal Office at Bobrov, Klin, Štefanov, Liesek, Hladovka, Suchá Hora.

29. Management authority: (name and address of local body directly responsible for managing the wetland)

Slovak Environment Agency, The Horná Orava Protected Landscape Area Administration, Bernolákova 408, SK-029 01 Námestovo, phone/fax: (+421 846) 522466

30. Bibliographical references: (scientific/technical only)

BERNÁTOVÁ, D., MAJZLANOVÁ, E., 1982: *Lycopodiella inundata* (L.) HOLUB na Suchej Hore. Biológia, Bratislava, 5: 529.

DOHNÁNY, J., 1946: Oravské Bory. Prírodoved. Sborn., Martin, 1: 59-90.

FERIANCOVÁ-MASÁROVÁ, Z., 1962: Význam Oravskej priehrady pre ťah a hniezdenie vodného vtáctva. Biológia, Bratislava, 17/5: 340-353.

HOLČÍK, J. *et al.*, 1965: Ichtyologický prieskum Karpatského oblúka. 3. Ichtyofauna povodia Oravskej priehrady a jej prítokov. Zbor. Slov. nár. múz. Prír. vedy 11/1: 93-139.

HROMÁDKA, J., 1934: Zemepis Oravy. Knižnica našej školy. Štátne nakladateľstvo, Bratislava, 249 pp.

JANOVSKÝ, M., REIPRICH, A., 1989: Lepidoptera rašeliniště Rudné u Suché Hory. Zbor. Slov. nár. múz. Prír. vedy 35: 29-50.

JURKO, A., PECIAR, V., 1959: Zpráva o výskume rašeliniska pri Suchej Hore na Orave. Acta Fac. Rerum Nat. Univ. Comenianae, Bot., Bratislava, 13: 469-508.

KARASKA, D., DEMKO, M., TRNKA, R., 1992: Oravská priehrada - významné vtáčie územie Európy. Významná ptačí území v České a Slovenské republice. Sborník referátů ze semináře Československé sekce ICBP Třeboň, pp. 127-131.

KARASKA, D., TRNKA, R., DEMKO. M., 1993: Predbežná správa o vtáctve Chránenej krajinnej oblasti Horná Orava. Zborník Oravského múzea, 1993: 114-124.

KONČEK, M., 1980: Klimatické oblasti. In: MAZÚR, E. (ed.): Atlas Slovenskej socialistickej republiky, Veda, vydavateľstvo SAV, Bratislava, pp. 70-71

LÁC, J., 1961: Obojživelníky Oravy. Biologické práce VII/3.

MAGLOCKÝ, Š., FERÁKOVÁ, V., 1993: Red List of ferns and flowering plants (*Pteridophyta* and *Spernatophyta*) of the flora of Slovakia (the second draft). Biológia, Bratislava, 48: 361-385.

MUCINA, L., MAGLOCKÝ, Š. (ed.), 1985: A list of vegetation units of Slovakia. Doc. Phytosociol., N. S., Camerino, 9: 175-220.

PETROVIČ, Š. *et al.*, 1972: Klimatické a fenologické pomery Stredoslovenského kraja. NMÚ, Bratislava, 432 pp.

PUCHMAJEROVÁ, M., 1942: Oravské rašeliny. Stud. bot. čech., Praha, 5: 80-120.

RYBNÍČEK, K., BALÁTOVÁ-TULÁČKOVÁ, E., NEUHÄUSL, R., 1984: Přehled rostlinných společenstev rašelinišť a mokřadních luk Československa.

STOCKMANN, V. *et al.*, 1981: Územný priemet ochrany prírody. Chránená krajinná oblasť Horná Orava. Slovenský ústav pamiatkovej starostlivosti a ochrany prírody, Bratislava.

STRAKA, V., 1989: Vážky (*Odonata*) Oravy. Stredné Slovensko - Prírodné vedy, 8: 229-236.

TRNKA, R., 1992: Rozšírenie a početnosť vydry riečnej (*Lutra lutra*) v chránenej krajinnej oblasti Horná Orava. Lynx (Praha), n. s., 26/1992: 5-16

TRNKA, R., 1995: Súčasný stav poznania procesu reaklimatizácie a problematika ochrany losa mokraďového (*Alces alces* L.) na Slovensku. Výskum a ochrana cicavcov na Slovensku, Banská Bystrica: 129-138.

TRNKA, R., 1996: Avifauna rašelinísk na Orave - Nelesné rašeliniská. (1. časť). Tichodroma 9: 40-50.