

# Information Sheet on Ramsar Wetlands (RIS) – 2006 version

Available for download from [http://www.ramsar.org/ris/key\\_ris\\_index.htm](http://www.ramsar.org/ris/key_ris_index.htm).

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8<sup>th</sup> Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9<sup>th</sup> Conference of the Contracting Parties (2005).*

## Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2<sup>nd</sup> edition, as amended by COP9 Resolution IX.1 Annex B). A 3<sup>rd</sup> edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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### 1. Name and address of the compiler of this form:

Directorate General for Nature Protection –  
Ministry of Environment and Nature Protection –  
Via Capitan Bavastro 174 – I-00100 ROMA  
dpn-dg@minambiente.it

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Designation date

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Site Reference Number

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### 2. Date this sheet was completed/updated:

12 June 2006

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### 3. Country:

Italy

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### 4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

**Oasi del Sele-Serre Persano**

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### 5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or  
b) Updated information on an existing Ramsar site

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### 6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

- i) the boundary has been delineated more accurately ; or
- i) the boundary has been extended ; or
- iii) the boundary has been restricted\*\*

and/or

**If the site area has changed:**

- i) the area has been measured more accurately ; or
- ii) the area has been extended ; or
- iii) the area has been reduced\*\*

\*\* Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

**b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:**

**7. Map of site:**

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

**a) A map of the site, with clearly delineated boundaries, is included as:**

- i) a **hard copy** (required for inclusion of site in the Ramsar List): ;
- ii) an **electronic format** (e.g. a JPEG or ArcView image) ;
- iii) a **GIS file providing geo-referenced site boundary vectors and attribute tables** ;

**b) Describe briefly the type of boundary delineation applied:**

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The boundary of the Ramsar site is equal to the border site SIC IT8050021 "Medio corso del Fiume Sele" (EU-Directive 92/43/CEE), but modified with a secure border (public street).

**8. Geographical coordinates** (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

x = 15°08' 11" East (centroid)

y = 40°36' 33" North (centroid)

**9. General location:**

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

Southern Italy, Campania Region, Province of Salerno, within the municipalities of Campagna and Serre

**10. Elevation:** (in metres: average and/or maximum & minimum)

min 35 -average 50 - max 85

**11. Area:** (in hectares)

174

## 12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Serre of Persano wetland includes the councils of Serre and Campagna; it lies between the Mounts Alburni (Salerno Province) and the valleys of Calore and Sele. A reservoir was created here by damming the Sele River giving origin to the wetland. The surrounding landscape consists of inundated meadows, riparian woodland, flooded forest, fens and swamps. The neighbouring hills are covered with Mediterranean *macchia*, natural pastures, cultivated fields and broadleaved woodland. The wetland is part of the Sele-Tanagro Delta Nature Reserve.

Persano Wood represents one of the most typical habitats within the reserve. In ancient times it had been the hunting reserve of Charles III of Bourbon. The area was well-known already in Roman times; then it went under Longobard rule, under the Bourbons and further on under the Savoia. Persano became famous also because of the Royal Chalet, built on purpose by Charles III in 1753. The original designer of the Chalet is an unknown architect, however the work headmaster was Juan Domingo Piana; it was further restored by Van Wittel, later named Luigi Vanvitelli. The King requested architect Luigi Vanvitelli to restore the chalet where he would sojourn during the hunting season. The Chalet has a square basement with rhomboidal eight-angled towers. Vertical staircases in its interior are built within the walls rather than being supported by pillars; the bedrooms are decorated in rococo style.

The Bourbons had a deep knowledge about horses and Charles III decided to breed a select horse for his chariot and for his cavalry. In 1733, the King fell for an eastern Berber horse troop belonging to the Duke of Serre. In 1741, the Turkish King donated him four selected Turkish stallions. In 1760, stallions from Andalusia were sent over. Cross-breeding these horses, Charles III managed to breed a new race which grew in the valleys of Sele and of its tributary Calore. The Persano breed (or rather “la Real Razza di Persano”) bred and selected starting from 1762 by Charles III of Bourbon originated from eastern horses and Andalusian and Arab stallions. The Bourbons of Naples that reigned over Sicily and in southern Italy between 1734 and 1860, always kept pure Persano breed in the wetland area. In 1860, most of Italy came under the dominion of the Savoia and many horses went stranded across southern Italy. The Persano breed was impoverished by transferring many horses to other breeding sites. In 1874, the Persano was sold at a public auction. The Persano breed was down to 50 horses and it is close to extinction today. These horses are particularly well suited for hunting. They became famous after two of them won the Helsinki Olympics in 1952 and in Rome in 1960.

The neighbouring centre constituted by the Madonna of the Olive (XVI century), the church of St. Martin The Bishop and the Duke’s Palace built around the XV-XVI centuries consists of two wings positioned at a right angle. These, together with two containment walls surrounded a wide square area around a central stone well. The duke’s family used to live in the section of the palace which would overlook the western side, close to Saint Jacob’s Gate, accessible through a gate which still exist today, although in great disrepair.

The Oasis of Persano, the main portion of the wetland, originated in 1981 following an agreement between the WWF and the drainage board responsible for managing the right-side of the Sele which conveys the reservoir water to irrigate the lower floodplain. The Oasis comprises a 110 ha artificial basin along the Sele. The swampy area within Persano Lake is covered with a fen which hosts a great variety of animals and plants. The 110 ha Oasis is part of a 3400 ha hunting reserve divided into a faunal protection area of 2100 ha and a 1300 ha area destined to repopulation and later re-capture, which were closed to hunting in 1977. A visitors’ centre opened in 1987 at the entrance of the Oasis; it includes a small museum.

To understand the relevance of Persano Wetland, we must go back of about one century, when the Sele floodplain was still an extensive swamp. The drainage of the swamp led to build a dam across the valley, which after 1934 gives origin each spring, and during 11 months, to an artificial lake. This wetland still hosts the otter (*Lutra lutra*).

The name “Serre” derives from 2 possible origins. The first hypothesis refers to the Latin “sera” (rod used to close a gate), which could be explained by the shape of the hills which surround the town closing access to plains and valleys. Under a second possible option, the name could derive from a type of instrument called “serre” that was used in former times for working in the forest. For this reason the town would have been called the “place of serre”.

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**13. Ramsar Criteria:**

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 8 • 9

**14. Justification for the application of each Criterion listed in 13 above:**

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Criterion 1: The area expands over a former meander of the Sele River; the dominant vegetation comprises magnopotamion and hydrocarition habitat types, typical of the Mediterranean Region.

Typical habitats correspond to the codes 92A0, 3250, 6220 and 3270, cited in the “Habitats” Directive.

- 92A0 *Salix alba* and *Populus alba* gallery forests. Mediterranean riparian forests dominated by *Populus* spp., *Ulmus* spp., *Salix* spp., *Alnus* spp., *Acer* spp. and *Tamarix* spp.
- 3250. Constantly flowing Mediterranean rivers with *Glaucium flavum*. Communities colonising gravel deposits of rivers characterised by a Mediterranean flow regime with severe summer drought, dominated by formations of the *Glaucium flavi* (40% of the area).
- 6220. \* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodieta*. Meso- and thermo-Mediterranean xerophile communities, mostly open, short annual grasslands rich in therophytes; therophyte communities of oligotrophic soils on base-rich, often calcareous substrates. In Italy this habitat, that can be ascribed to the *Thero-Brachypodieta*, *Poetea bulbosae* and *Lygeo-Stipetea*, is mainly present in the South and on the islands (15% of the area).
- 3270. Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation. Muddy river banks within the floodplain up to sub-montane levels, with annual pioneer nitrophilous vegetation of the *Chenopodium rubri* p.p. and the *Bidention* p.p. alliances. During the spring and at the beginning of the summer, sites look like muddy banks without any vegetation as it develops later in the year. Under unfavourable conditions, this vegetation develops only marginally or can be totally absent (2% of the area).

Criterion 2: the area supports populations of species mentioned in Annex II and III of Directive 79/409/CEE and habitats mentioned in Annex I of Directive 92/43/CEE.

Species listed in Annexes II of “Habitat” Directive 92/43/CEE and observed within the site include: *Lutra lutra* - rare species with up to 100 individuals occurring in the whole of southern Italy (D’Antoni *et al.*, 2003).

Threatened species include: (D’Antoni *et al.*, cit.) *Bombina variegata*, *Elaphe quatuorlineata*, *Emys orbicularis*, *Coenagrion mercuriale*, *Salmo macrostigma*, *Lampetra planeri*, and *L. fluviatilis*, *Petromyzon marinus*, *Triturus carnifex*, *Rhinolophus euryale*, *R. hipposideros*, *R. ferrumequinum*, *Myotis blythii*, *M. myotis*, *M. capaccinii*, *Miniopterus schreibersii*, *Salamandrina terdigitata*, *Rutilus rubidio*, *Alburnus albidus*, *Barbus plebejus*, *Melanargia arge*, *Cerambyx cerdo*, *Cordulegaster trinacriae*.

Scientific name	Status	IUCN categ.	Italian law n.157 92	709/409 CEE	Cites	Bonn	Berna
<i>Phalacrocorax carbo sinensis</i>	M-W	LR/nt	x				x
<i>Ardea purpurea</i>	M	LC	x	x			x
<i>Ardeola ralloides</i>	M	LC	x	x			x
<i>Botaurus stellaris</i>	M, W	LC	x	x			x
<i>Ixobrychus minutus</i>	N-M	LC	x	x			x
<i>Nycticorax nycticorax</i>	M	EX	x	x			x
<i>Ciconia ciconia</i>	M	LC	x	x			x
<i>Ciconia nigra</i>	M	LC	x	x	x	x	x

<i>Platalea leucorodia</i>	M	LC	x	x	x	x	x
<i>Plegadis falcinellus</i>	M	LC	x	x			x
<i>Egretta alba</i>	W	LC	x	x			x
<i>Egretta garzetta</i>	M-W	LC	x	x			x
<i>Anas acuta</i>	M	LC		X		X	X
<i>Anas clypeata</i>	M	LC		X		X	X
<i>Anas crecca</i>	M	LC		X		X	X
<i>Anas penelope</i>	M	LC		X		X	X
<i>Anas querquedula</i>	M	LC		X		X	X
<i>Anas strepera</i>	M	LC		X		X	X
<i>Aythya nyroca</i>	M	NT	x	X		X	X
<i>Aythya ferina</i>	M	LC		X		X	X
<i>Aythya fuligula</i>	M	LC		X		X	x
<i>Netta rufina</i>	M	LC	x	x		x	x
<i>Circus aeruginosus</i>	M	LC	x	x	x	x	x
<i>Circus pygargus</i>	M	LC	x	x	x	x	x
<i>Circus cyaneus</i>	M	LC	x	x	x	x	x
<i>Milvus migrans</i>	N – M	LC	x	x	x	x	x
<i>Falco peregrinus</i>	N	LC	x	x	x	x	x
<i>Falco tinnunculus</i>	N-M-W	LC	x	x	x	x	x
<i>Buteo buteo</i>	M-W	LC	x		x	x	x
<i>Pandion haliaetus</i>	M	LC	x	x	x	x	X
<i>Perdix perdix italica</i>	N	NT		x			x
<i>Coturnix coturnix</i>	N-M	LC		x		x	x
<i>Grus grus</i>	M	LC	x	x	x	x	x
<i>Fulica atra</i>	N W	LC		x		x	x
<i>Gallinula chloropus</i>	N-M-W	LC		x			x
<i>Rallus aquaticus</i>	M-W	LC		x			x
<i>Gelochelidon nilotica</i>	M	CR	x	x			x
<i>Chlidonias hybridus</i>	M	LC	x	x			X
<i>Larus ridibundus</i>	M-W	LC	x	x			x
<i>Burhinus oedicephalus</i>	M	LC	x	x		x	x
<i>Himantopus himantopus</i>	M	LC	x	x		x	x
<i>Tringa glareola</i>	M	VU	x	x		x	x
<i>Tringa erythropus</i>	M	LC	x	x		x	x
<i>Tringa nebularia</i>	M	EN	x	x		x	x
<i>Numenius arquata</i>	M	NT	x	x		x	x
<i>Numenius phaeopus</i>	M	LC	x	x		x	x
<i>Limosa limosa</i>	M	VU	x	x		x	x
<i>Gallinago gallinago</i>	M-W	LC					
<i>Vanellus vanellus</i>	M-W	LC		x		x	x
<i>Philomachus pugnax</i>	M	LC		x		x	x
<i>Calidris canutus</i>	M	LC	x	x		x	x
<i>Alcedo atthis</i>	N-M-W	LC	x	x			x
<i>Coracias garrulus</i>	N-M	NT	x	x		x	x
<i>Lanius collurio</i>	N -M	LC	x	x			x
<i>Ficedula albicollis</i>	M-W	LC	x	x		x	x
<i>Melanocorypha calandra</i>	N-M	LC	x	x			x
<i>Acrocephalus melanopogon</i>	M	LC	x	x			x
<i>Turdus merula</i>	N-M-W	LC		x			x
<i>Turdus philomelos</i>	M-W	LC		x			x

Criterion 3: the area supports populations of plant and animal species important for maintaining the biological diversity of the Mediterranean Region.

Species of fishes, amphibians, reptiles, mammals and birds localized in the site and mentioned in Annex II and III of Directive 79/409/CEE or Annex II of Directive 92/43/CEE

Scientific name	Status	IUCN categ.	92/43 CEE	Berna
<i>Bombina pachypus</i>	Monotypic endemic species	LC	x	x
<i>Elaphe quatuorlineata</i>		LR: nt	x	x
<i>Emys orbicularis</i>		LR: nt	x	x
<i>Salmo macrostigma</i>	Endemic	DD	x	
<i>Lampetra planeri</i>		LR: nt	x	x
<i>Lampetra fluviatilis</i>		LR: nt	x	x
<i>Triturus carnifex</i>		LC	x	x
<i>Salamandrina terdigitata</i>	Endemic	LC	x	x
<i>Rutilus rubilio</i>	Endemic	LR : nt	x	x
<i>Alburnus albidus</i>	Endemic	VU: A1ace	x	x
<i>Barbus plebejus</i>		LC	x	x
<i>Coenagrion mercuriale</i>		NT	x	x
<i>Melanargia arge</i>			x	x
<i>Cerambix cerdo</i>		VU	x	x
<i>Cordulegaster trinacriae</i>	Endemic	VU		

Criterion 4: the area provides a winter refuge for a number of animal species during the wintering period, in particular wildfowl.

In the spring, while the winter hosts prepare to take off for the northern flyways, the herons take over, with *Ardea cinerea*, *A. purpurea*, *Egretta garzetta*, *Nycticorax nycticorax*, *Ardeola ralloides* and *Ixobrychus minutus*. Among raptors, we can spot: *Falco tinnunculus*, *Buteo buteo*, *Milvus migrans*, and *Falco peregrinus* in summer, as it glides down the mountains hunting for *Vanellus vanellus* and *Sturnus vulgaris*.

Species listed in Annex I of the “Wild Birds” Directive 79/409/CEE observed within the site include: *Botaurus stellaris*, *Ixobrychus minutus* (1-5 individuals), *Nycticorax nycticora*, *Ardeola ralloides*, *Egretta garzetta*, *Egretta alba*, *Ardea purpurea*, *Plegadis falcinellus*, *Platalea leucorodia*, *Aythya nyroca* (1-5 individuals), *Milvus migrans* (2 couples), *Circus aeruginosus*, (1-5 individuals), *Circus cyaneus* (1-5 individuals), *Circus pygargus*, *Pandion haliaetus*, *Grus grus*, *Himantopus himantopus*, *Burbinus oediconemus*, *Philomachus pugnax*, *Gelocbelidon nilotica*, *Chlidonias hybridus*, *Alcedo atthis* (11-50 individuals), *Coracias garrulus* (1-5 individuals), *Ficedula albicollis*, *Lanius collurio* (11-50 individuals), *Tringa glareola*, *Acrocephalus melanopogon* (1-5 individuals), *Melanocorypha calandra* (6-10 individuals), *Falco peregrinus* (1couple), *Milvus milvus* (1 couples 1-5individuals), *Ciconia nigra*, *Anas penelope*, *Anas strepera* (11-50 individuals), *Anas crecca* (101-250 individuals), *Anas platyrhynchos* (11-50 individuals, 101-250 individuals), *Anas acuta* (11-50 individuals), *Anas querquedula*, *Anas chipeata* (11-50 individuals), *Netta rufina* (11-50 individuals), *Aythya ferina* (501-1000 individuals), *Aythya fuligula* (11-50 individuals), *Perdix perdix* (6-10 individuals), *Rallus aquaticus* (11-50 individuals), *Gallinula chloropus* (51-100 couples), *Fulica atra* (51-100 individuals, 501-1000 individuals), *Vanellus vanellus* (51-100 individuals), *Gallinago gallinago*, *Limosa limosa*, *Numenius arquata*, *Tringa erythropus*, *Tringa nebularia*, *Larus ridibundus*, *Columba palumbus*, *Streptopelia turtur*, *Turdus merula* (251-500 individuals), *Turdus philomelos*.

**15. Biogeography** (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) **biogeographic region:** Mediterranean Region

b) **biogeographic regionalisation scheme** (include reference citation):  
European Councils Habitat Directive 92/43/EEC

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#### 16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

The basin soil types comprise a wide number of geologic formations, originated in different epochs. The main morphs can be described as follows:

- Campano-Lucanian calcareous rocks, Triassic dolomites, thick layers of dolomitic calcareous rocks from the Jurassic as well as from the Cretaceous;
- Lagonegro formation: clayey loams with schists and flysch;
- Sicilid units, clay scales of different colours, clayey loams, sandy loams as well as red, green and grey clays;
- Irpinian units: sandy loams alternated with clays and loams;
- Illuvial and detritic deposits, fluvio-lacustrine and piroclastic sediments giving origin to brecciae and more or less cemented detritus.

The geologic units cited above have undergone mainly vertical tectonic movements during the Mesozoic and part of the Cenozoic, accompanied by the formation of marine sediments. During the Miocene, these deposits were further compressed and disposed into superposed layers; such events continued during the Pliocene. Between the Upper Pliocene and Quaternary, epirogenetic tectonic phases which were linked to the rise of the Apennine chain, with geological formations layered along extensive faults.

The linear shape of the Sele catchment is itself conditioned by the local tectonic evolution: the mountain end flows between Mt. Marzano and Mt. Polveracchio, along a North-South fault. After Contursi township it encounters the tributary Tanagro, originated from another fault line which divides Mt. Marzano from the Alburni monocline. The Sele River flows towards the NE-SW plain, where it receives the tributary Calore, coming down from the Alburni. Stemming from the extensive Sele plain, the river flows towards the sea, across recent geological formations, represented by Quaternary alluvial deposits, where extensive remediation works have been carried out, such as at Aversana Lake in 1714.

From a morphological standpoint, the Sele Floodplain represents the filling of a peri-Thyrrhenian trench in which the Meso-Cenozoic formations of the Campanian Apennines are depressed by a few thousand metres. This throughfall occurred due to a faulting oriented along the Apennines and across, which formed during intense tectonic relaxation events during the Plio-Pleistocene. The depressions which originated during this period were later filled by powerful Quaternary sedimentary deposits, themselves produced by this tectonic relaxation. From the point of view of rock formation, the area is characterised by a monotonous alternation of cobble and clayey layers disposed according to sedimentary transitional facies, known as Persano Complex. Dunal deposits are laid upon these, in the zones of greater depression, forming Holocene beaches. The alternation of cobbles and clayey layers is due to successive sedimentary events which characterised the floodplain; some where characterised by high energy, others by lentic conditions, typical of a region proximal to the coast. The soils, highly heterogeneous for what concerns particle size distribution, width of the soil layer and structure, show a disposition according to sub-horizontal planes, lenticular structure and a crossed disposition; factors which converge into determining an extreme lithological variability, both in the vertical and in the horizontal direction.

Hydrographically, the Floodplain is constituted by the slow flowing section of the Sele river, which describes extensive lentic meanders and by an artificial dam forming a reservoir.

The area is mostly covered by inland water bodies both lentic and lotic (70%), orchards, groves and vineyards (10%), other arable land (5%), mixed woodland (10%) and other (5%).

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#### 17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

The Sele Floodplain is characterised by the presence of a relatively superficial sedimentary layer as well as by a deeper one, both of which consist of several superposed layers. Among them there is significant hydrologic exchange. In the upper end of the basin, close to the carbonatic massifs, this exchange is due to percolation from the top to the bottom layer, while at the lower end of the basin movement is directed mainly by the drainage of the deeper layer which, in this region, becomes partly confined and isolated from the upper layer. As a consequence of this, the upper layer can be considered significantly vulnerable for its entire length; the deeper layer is highly vulnerable in its middle-upper section, and relatively safe in the semi-confined area. It has to be considered that this relatively low vulnerability applies to natural equilibrium conditions, that is to say: hydrodynamic conditions which, although disturbed, do not inverse the relationships between the two faulting systems.

Human activities within the Sele basin are varied and dominated by intensive agriculture and industry; diffuse pollution is expected to represent a tangible problem all over the catchment, while point source pollution is likely to be concentrated at the lower end, stemming from residential and small scale industrial activities. Areas which are vulnerable to pollution impacts include sites where aquifers are directly recharged from surface water as well as coastal areas which may easily undergo seawater intrusion fuelled by groundwater overexploitation and local effects due to the intensive borehole operation.

### 18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

The Sele River Basin covers approximately the counties of Salerno and Avellino in Campania Region as well as the county of Potenza in Basilicata Region. Ninety-three townships are comprised within the basin (64 in Salerno county, 8 in Avellino county and 21 in Potenza county). The active population engaged in agricultural activities, the main economic use, decreased significantly during the past 15 years.

The Sele River stems from the southern end of a saddle positioned across Nusco mount (Avellino), however traditionally, its official source is identified with a spring which stems out of Mount Paflagone near Caposele. The River reaches the sea in the gulf of Salerno near Paestum after 64 km. Its extensive basin includes parts of Basilicata with the left-wing tributaries Platano (44 km) and Melandro (30 km) which converge into the Bianco (12 km) and the Calore, which is actually the upper course of the Tanagro.

The basin size is 3258 km<sup>2</sup>, of which the sub-basin of the main course covers 712 km<sup>2</sup>, the Tanagro 1830, the Calore 716. The basin landscape is a typical representation of a southern Italian scenery, including a number of typical environmental problems common to less favoured areas of southern Europe, as described in the EU classification.

### 19. Wetland Types

#### a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

**Marine/coastal:** A • B • C • D • E • F • G • H • I • J • K • Zk(a)

**Inland:** L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •  
Vt • W • Xf • Xp • Y • Zg • Zk(b)

**Human-made:** 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

#### b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

<b>O</b> - permanent freshwater lake	15%
<b>P</b> - seasonal/intermittent freshwater with floodplain lake	5%
<b>Tp</b> - permanent freshwater marshes/pools	5%
<b>W</b> – shrub-dominated swamps	15%

Xf - freshwater, tree-dominated wetlands	5%
Xp - forested peatlands; peat swamp forests	10%
Y - Freshwater springs	5%
6 - Water storage areas	40%

## 20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The area is characterised by a range of different habitats: the permanent river channel, the reservoir, a whole range of inland water bodies, both lentic and lotic (70%), agroforestry cultures including orchards, groves, vineyards (10%), other arable land (5%), mixed woodland (10%), remaining land surface (5%).

The area represents an interesting bird resting and nesting site and is characterised by a rich herpetofauna. Typical habitats correspond to the codes 92A0, 3250, 6220 and 3270, cited in the “Habitats” Directive.

- 92A0 *Salix alba* and *Populus alba* gallery forests. Mediterranean riparian forests dominated by *Populus* spp., *Ulmus* spp., *Salix* spp., *Alnus* spp., *Acer* spp. and *Tamarix* spp.
- 3250. Constantly flowing Mediterranean rivers with *Glaucium flavum*. Communities colonising gravel deposits of rivers characterised by a Mediterranean flow regime with severe summer drought, dominated by formations of the *Glaucium flavi* (40% of the area).
- 6220. \* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*. Meso- and thermo-Mediterranean xerophile communities, mostly open, short annual grasslands rich in therophytes; therophyte communities of oligotrophic soils on base-rich, often calcareous substrates. In Italy this habitat, that can be ascribed to the *Thero-Brachypodietea*, *Poetea bulbosae* and *Lygeo-Stipetea*, is mainly present in the South and on the islands (15% of the area).
- 3270. Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation. Muddy river banks within the floodplain up to sub-montane levels, with annual pioneer nitrophilous vegetation of the *Chenopodium rubri* p.p. and the *Bidention* p.p. alliances. During the spring and at the beginning of the summer, sites look like muddy banks without any vegetation as it develops later in the year. Under unfavourable conditions, this vegetation develops only marginally or can be totally absent (2% of the area).

## 21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.

The vegetation is rich and diverse. The humid forest constitutes the most interesting habitat, including willows, black poplar, white poplar and black alder, all water-loving species. In spring, bloom the beautiful flowers of Pervinca. The underwood is colonised by numerous ferns and large horse-tail *Equisetum* sp. pl. while the water surface is covered by beautiful water lilies (*Iris pseudacorus*). The swamp is mostly covered by canes dominated by *Phragmites australis* and *Typha* sp. pl., with *Sparganium* sp. and rushes (*Juncus* sp. pl.). Noteworthy are: the rare yellow iris, *Arum italicum* and 13 species of wild orchids: *Anacamptis pyramidalis*, *Ophrys apifera*, *Oph. sphagodes*, *Oph. tenthredinifera*, *Orchis italica*, *Orch. lactea*, *Orch. laxiflora*, *Orch. purpurea*, *Orch. tridentata*, *Serapias vomeracea* and *Spiranthes spiralis*. The fields are spotted with highly perfumed narciss and wild iris. The Mediterranean macchia is interspersed with remains of evergreen forest; it includes *Phyllirea* sp.pl., Mediterranean oak (*Quercus ilex*), mirtle (*Mirtus comunis*), lentisk (*Pistacia lentiscus*) and Mediterranean cherry (*Arbutus unedo*). Noteworthy are the blooms of the Juda tree (*Cercis siliquastrum*) and of the *Spartium* sp. pl.; the remaining mixed forest is dominated by pubescent oak (*Quercus pubescens*).

The main riparian trees include: *Salix alba*, *Alnus glutinosa* and *Populus nigra/alba*. Among rare and characteristic wetland species, the site includes the presence of *Ceratophyllum demersum*, *Epilobium hirsutum*, *Glaucium flavum*, *Juncus* sp.pl., *Lythrum salicaria*, *Mentha aquatica*, *Myriophyllum spicatum*, *Polygonum amphibium* and, *Potamogeton* sp.pl.

## 22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare,

endangered or biogeographically important, etc., including count data. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.

The most noteworthy protected species residing within the wetland is undoubtedly the otter (*Lutra lutra*). This marvellous mustelid is nowadays the most highly threatened mammal in the country; in the Sele basin it survives its most numerous and vital population. It is a remarkable indicator of aquatic ecosystem health and it plays a key role in trophic chain exchanges. Despite this, birds are the true key players in the area: every season throughout the year offers the sighting of both aquatic, riparian, macchia and woodland species. The central portion of the wetland hosts diving ducks, such as *Aythya farina*, *A. fulvigula* and the rare *A. nyroca*. Surface ducks rest in proximity of the riparian area, such as: *Anas platyrhynchos* and *Anas crecca*. Less abundant there are also: *Anas Penelope*, *Anas acuta*, and *Anas chapeata*. Among rallids, there is: *Gallinula chloropus*, *Rallus aquaticus* and *Fulica atra*. In the spring, while the winter hosts prepare to take off for the northern flyways, the herons take over, with *Ardea cinerea*, *A. purpurea*, *Egretta garzetta*, *Nycticorax nycticorax*, *Ardeola ralloides* and *Ixobrychus minutus*. Among raptors, we can spot: *Falco tinnunculus*, *Buteo buteo*, *Milvus migrans*, and *Falco peregrinus* in summer, as it glides down the mountains hunting for *Vanellus vanellus* and *Sturnus vulgaris*.

The rich wetland diversità comprises also fishes, among which: *Leuciscus cephalus*, *Alburnus albidus*, *Anguilla anguilla*, *Tinca tinca*, *Barbus meridionalis*, *Cyprinus carpio*, *Leuciscus souffia* and the increasingly rare *Lampetra planeri*. Amphibians and reptiles are common throughout the wetland and represent key components of its complex trophic chain.

### 23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

The territory administered by the Upper and the Medium Sele comprises over 35,500 ha, including 8 city councils, all situated within Salerno Province: Campagna, Castelnuovo di Conza, Colliano, Contursi Terme, Laviano, Oliveto Citra, Santomenna e Valva. The basin is oriented from North to South. This scenic landscape has been preserved by its inhabitants over centuries. A varied range of habitats extends over a gradual cline between 100. and 1800 m a.s.l (Mt. Polveracchio). Nature reserves include Parco regionale dei Monti Picentini, Oasi di Persano, Riserva Naturale dei Monti Eremita e Marzano, among others. The hydrothermal springs of Contursi are among the most popular attraction in the basin due to their reknown healing properties.

Vast plains, freshwater and woodland next to the coastline explain why the Sele basin was colonised in ancient times by the Greeks and later by the Romans. Around the V century B.C., the area around Persano (part of Serre), Padula and the area around Calore came under the influence of the nearby Posidonia. Settlements consisted of fluvial villages. The main resources consisted of in whet production and commerce. The harbour Alburnus and numerous fluvial ports, among which Portello situated near Altavilla of Silento county. The defeat of the Roman Empire pushed inhabitant to abandon these settlements. Once abandoned, these areas became swampy and unhealthy. People started moving to the uplands, constructing fortification and defenses. In 1350, these settlements were ravaged and destroyed by the troops of the King of Hungary Ludwig. The first records citing the urban centre of Serre appear around the XV century when first feudal lord Arrigo of San Severino established here.

The name Serre derives according to some from the local wood felling activities. Others claim that the name refers instead to the shape of the surrounding hills which tend to isolate the territory and isolate it from the outer landscape.

The council of Campagna is situated in the heart of the Picentini Mounts, with Polveracchio Mount (1780 m a.s.l.) which gives origin to three main springs: the Atri, the Tenza and the Trigenito, which flow across the catchment towards the South and then flow into the Sele. Several ancient tribes have inhabited the riverbanks of the rivercourses. Up to the advent of Roman times, in the whole region known as “Campania vetus” settlements were constituted mainly by small communities.

As Christian influence penetrated the society, many churches and spiritual congregation sites were built. These new settlements includes Sant'Angelo di Palmentara, San Catello, Sant'Antonino, San Marco, San Giorgio, Sant'Avunna. After 400 A.D., barbars started to ravage the landscape. The centres of Tuori, Saginara and Serradarce originated as settlers directed themselves towards the inner valleys, hidden among the mountains. The incursion of the Sarrazin Arabs caused the final abandonment of the settlements in the floodplain. For nearly 1000 years these sites were not be recolonised. Only after year 1000, there are some news about a settlement named "Campagna", this name appears in some ancient writings of 1056, where a "castellum Campaniae" is mentioned, as well as in 1063 ("finibus Campaniae").

Local documents dating to the XII and XIII century mention "Civitatis Campanile" to indicate the current residential settlement of Campagna. A document of 1121 specifically mentions the church of Saint Mary of Giudeca. The historical events which took place during these centuries were related to the history of the kingdom of Salerno, a possession of the Orsini, than obtained by the Sanseverino. After it became public that the Sanseverino actively participated in the plot against Frederick II of Sweden, St. Angel's Casale in Palmentare was completely derstroyed in retaliation. After numerous killings and manslaughter, the last residences posed at the foot of the mountains were finally abandoned for good. The new residential centre which was developped during the XIV, XV and XVI centuries became decorated with a conspicuous number of infrastructures of political, religious snd economical nature.

In 1542, following the defection of Ferdinand Orsini, duke of Gravina, the possession of the Campagna farmland went under the Grimaldi of Monaco, a family of rich merchants from Genoa.

Throughout the area, banditism was enhanced by many factors, such as the undisciplined clergy and harsh tax administrators. Monseigneur Caramuel decided to establish his residence in Sant'Angelo, because Campagna wasn't safe enough due to the presence of numerous bandits.

Austrian domination did not bring significant changes, the feudal privileges consolidated and the Austrian authorities enlarged the feudal line of succession. In 1799, Naples French revolution's echo extended also to Campagna. With the French period, the eversive feudal laws of 1806 encouraged the closure of many cloisters and nunneries, bringing remarkable changes to town life. The availability of abandoned monasteries provided the opportunity to base in Campagna a number of administrative and military centres. In 1939, the former convents which had been erected by Domenican monks and by the Frati Osservanti became designated to host a detention camp.

During the last two centuries, the clergy underwent profound changes: in 1818 and 1819 there were profound transformations and the *Archidiocesi of Conza* was annexed; in 1922 it was declared independent again with the addition of Alta Valle del Sele's towns. Following 1973, the *Diocesi of Campagna* was united to the *Archidiocesi of Salerno*.

Historians can find in Valle del Sele's territories a historical resource which remained unaffected for centuries. After a long process of re-valuation, the complex formed by these historical monuments represents a respectful historical route: the *Villa d'Ayala* in Valva, the archeological museum in the impressive Norman castle of Oliveto Citra, the Cathedral of Santa Maria of Peace of Campagna, with its remarkable marble pulpit.

Still today, there are numerous examples of cultural and folkloristic events which propose traditional products and elements of the past history that involve the entire territory. The context is broad, original and enriching for the tourist that will find satisfaction of a wide range of interest. The Upper Sele Valley is a centre of evocative folk happenings: traditional feasts and celebrations that recall times long foregone. It is a travel back through time, to rediscover the traditional uses of this part of the landscape. Every summer the "Chiena" water feast takes place in Campagna, while the Fucanoli feast occurs the 17<sup>th</sup> of January, on the day of Saint Anthony. From the ethnographical point of view, the area developed peculiar demo-ethno-anthropological features among which a typical peasant dress worn by craftsmen, peasants and shepherds. It consists of long white socks, woollen in winter but of cotton in summer; black cotton trousers up to the knees or just a few cm below, fixed with small red ribbons; the shirt was made of cotton and generally white, it used to be worn very tight; a sleeveless jacket made of the same material and colour of the trousers was simple and with no pockets; a large red silken ribbon used to be worn tied

around the waist; a foulard made of the same material used to be worn around the neck and was used frequently to wipe sweat while working; the shoes were either of textile or leather.

Women used to wear a tight cotton or silk jacket tied down around the waist with colourful ribbons depending whether the dress was to be worn on a working day or during a feast. The shirt was white and very large around the elbow. A lace decoration called “*Arriccia*” used to adorn the shirt at breast height; it would convey greater distinction and grace. The skirt was made of cotton; it would run down to the ankles with many rigid plies. A coloured ribbon would tie the skirt around the ankles giving it the shape of trousers. Small coloured ribbons would hang down on the feet. Under the skirt, a long cotton underwear would run from the shirt down the legs. Wealthy families used to wear it decorated, while laywomen used to wear it plain. The hair fashion of the men used to be very simple, combed in a “Greek” style. The women used to wear their hair well combed and straightened, divided into two parts by the “*Scrima*”, with plaids knotted around the back of the head. A linen, cotton or white canapa cloth would cover the head; it used to be called “*Tuaglia*” (table wrapper). Older women as well as the very young ones would always use a bleached wrapper. The wrapper would fall down onto the shoulders, covering the body down to the kidneys. On the forehead it would be held in place by a wooden stick to fold backwards. This white head cover would enhance the contrast with the pink faces of the girls, giving them a certain grace and distinction. The shoes were made either of cloth or leather.

The site is managed by the ENEL (the major Italian Electricity company), by local authorities and by the WWF.

**b)** Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box  and describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

**24. Land tenure/ownership:**

a) within the Ramsar site:

Ownership category	On-Site	Off-Site
Non governmental organisation	+	
National, regional and local authority, municipalities	+	+
Private	+	+

b) in the surrounding area:

**25. Current land (including water) use:**

a) within the Ramsar site:

- Non irrigated arable land
- Fruit trees and berry plantations
- Broad-leaved forest
- Water courses

(cfr Land use map)

The area is mostly covered by inland water bodies both lentic and lotic (70%), orchards, groves and vineyards(10%), other arable land (5%), mixed woodland (10%) and other (5%)

b) in the surroundings/catchment:

- Non irrigated arable land
- Fruit trees and berry plantations
- Broad-leaved forest
- Water courses

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**26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:**

a) within the Ramsar site:

b) in the surrounding area:

Human activities within the Sele basin are varied and dominated by intensive agriculture and industry; diffuse pollution is expected to represent a tangible problem all over the catchment, while point source pollution is likely to be concentrated at the lower end, stemming from residential and small scale industrial activities. Areas which are vulnerable to pollution impacts include sites where aquifers are directly recharged from surface water as well as coastal areas which may easily undergo seawater intrusion fuelled by groundwater overexploitation and local effects due to the intensive borehole operation.

The basin landscape is a typical representation of southern Italian scenery, including a number of typical environmental problems common to less favoured areas of southern Europe, as described in the EU classification.

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**27. Conservation measures taken:**

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

Management plan is in progress by WWF Italy.

d) Describe any other current management practices:

1. Regional Nature Reserve "Foce Sele-Tanagro" – Deliberation Giunta Regionale della Campania n. 64/12.02.1999;
2. Important Bird Area (IBA)
3. SIC IT8050021 "Medio corso del Fiume Sele" – (EU-Directive 92/43/CEE)

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**28. Conservation measures proposed but not yet implemented:**

e.g. management plan in preparation; official proposal as a legally protected area, etc.

The Management Plan is in progress by the WWF Italy (NGO with management liability).

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**29. Current scientific research and facilities:**

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

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### 30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Conservation education is a major program of the WWF in the "Oasi di Serre Persano" Nature Reserve. Nature Reserve facilities have been developed over the past 10 year to aid in educating the public, school groups and educators that use "Oasi di Serre Persano" as an outdoor learning site. In the area there is a visitor's centre with nature trails and particular facilities for the school visits.

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### 31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

The main activity practiced by the local residents is small scale agriculture. Unlike other boroughs located around the Alburni mountains, in the plain of Serre agricultural practices are modern, rationalised and relatively specialised. Oil, wheat, cereals, fruit, vegetables and grapes represent the main produce. By including the area within the WWF Italy-Oasis and Reserves system, a number of initiatives have emerged concerning restoration projects, the design of site-seeing tracks, wildlife look-out points and stations for the observation and study of aquatic life forms. There is a visitors' centre and this site soon became the logistical fieldwork operations centre.

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### 32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Campania Region, Province of Salerno, Municipalities of Campagna and Serre.

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### 33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

From the hydrological point of view, the Interregional Basin Authority of Sele River is the main managing authority. It was created following the issue of Article 13 of Law n. 183 of the 18<sup>th</sup> May 1989 (following an Interregional agreement document signed in 1993 between Campania and Basilicata Regional Authorities).

From the point of view of broader environmental issues, management is ensured by the Regional Nature Reserve "Sele-Tanagro Delta" and , limited to the artificial reservoir area, by WWF-Italy.

- Ministry of Environment, Nature and Sea Protection: Directorate General for Nature Protection - Via Capitan Bavastro 174 00100 Rome – E-mail: [dpn-dg@minambiente.it](mailto:dpn-dg@minambiente.it)
- Campania Region: Environmental planning, Landscape, and protected areas Service-Directional Center- Isola A/6 – 80100 Naples - E-mail: [l.criscuologaito@maildip.regione.campania.it](mailto:l.criscuologaito@maildip.regione.campania.it)
- WWF Italy: Via Po 25/c – 00100 Rome – E-mail: [giampieroindelli@virgilio.it](mailto:giampieroindelli@virgilio.it)

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### 34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

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