LIFE Nature and Biodiversity

TECHNICAL APPLICATION FORMS

Part A – administrative information

LIFE 2016

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LIFE16 NAT/

LIFE Nature and Biodiversity project application

Language of the proposal:

English (en)

Project title:
Conservation and management of freshwater fauna of EU interest within the ecological corridors of Verbano-Cusio-Ossola

Project acronym:

IdroLIFE

The project will be implemented in the following Member State(s) and Region(s) or other countries:

Italy Piemonte

Expected start date: 01/10/2017 **Expected end date:** 03/09/2021

LIST OF BENEFICIARIES

Name of the **coordinating** beneficiary: Istituto per lo Studio degli Ecosistemi - CNR

Name of the associated beneficiary: G.R.A.I.A. srl - Gestione e Ricerca Ambientale Ittica Acque
Name of the associated beneficiary: Ente Parco Nazionale della Val Grande
Name of the associated beneficiary: Provincia del Verbano Cusio Ossola

LIST OF CO-FINANCERS

Name of the co-financer: ALCOTEC SRL
Name of the co-financer: ANTOLIVA SRL
Name of the co-financer: Associazione Pescatori dilettanti di Mergozzo
Name of the co-financer: G.CALDERONI E SOCI S.R.L.
Name of the co-financer: DBUILDING S.R.L.
Name of the co-financer: E.C.A. S.P.A.
Name of the co-financer: EDELWEISS FACCIOLA DI FACCIOLA GIAN MARCO & C. S.N.C.
Name of the co-financer: ENEL GREEN POWER S.P.A.
Name of the co-financer: ENERGIE S.P.A.
Name of the co-financer: A.S.D. SEZIONE PROVINCIALE PESCATORI DEL VCO CONVENZIONATA F.I.P.S.A.S.
Name of the co-financer: FRUA CAV.MARIO S.P.A.
Name of the co-financer: GIOVE S.R.L.
Name of the co-financer: GRIDONE IDROELETTRICA SRL
Name of the co-financer: HYDRABOGNA SRL
Name of the co-financer: HYDROCHEM ITALIA S.R.L.
Name of the co-financer: IDROENERGY S.R.L.
Name of the co-financer: IDROELETTRICA REVIL SRL
Name of the co-financer: IMBODEN F.LLI SRL
Name of the co-financer: IMPRESA PRODUZIONE ENERGIA ELETTRICA DI PESENTI FRANCESCO E C. - S.N.C.
Name of the co-financer: IDROELETTRICHE RIUNITE S.P.A. (SIGLABILE "I.R. S.P.A") -UNIPERSONALE
Name of the co-financer: ISPOWER S.R.L.
Name of the co-financer: KRAMEC IDROELETTRICA S.R.L.
Name of the co-financer: MANIFATTURE LAVAZZA SNC
Name of the co-financer: LEONARDO SERVIZI ENERGIA SRL
Name of the co-financer: OFFICINE LORENZINA SRL
Name of the co-financer: LUISIN SRL
Name of the co-financer: PESENTI ENERGIA BOGNANCO S.R.L.

Name of the co-financer: SAN BERNARDO SRL
Name of the co-financer: VB POWER S.R.L.
Name of the co-financer: SOCIETA' ELETTRICA VIGEZZINA SRL

PROJECT BUDGET AND REQUESTED EU FUNDING

Total project budget:	1,760,969 Euro		
Total eligible project budget:	1,760,969 Euro		
EU financial contribution requested:	1,055,669 Euro	(= 59.95%	of total eligible budget)

SECTOR

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TECHNICAL APPLICATION FORMS

Part B - technical summary and overall context of the project

SUMMARY DESCRIPTION OF THE PROJECT (Max. 3 pages; to be completed in English)

Project title:

Conservation and management of freshwater fauna of EU interest within the ecological corridors of Verbano-Cusio-Ossola

Project objectives:

IdroLIFE aims to improve the conservation status of Salmo marmoratus, Rutilus pigus, Chondrostoma soetta, Cottus gobio, Leuciscus souffia and crayfish Austropotamobius pallipes in Natura 2000 sites of Verbano Cusio Ossola Province contributing to halt the loss of aquatic biodiversity.

IdroLIFE also aims to stimulate awareness among citizens of different ages (from children to adults) about the importance of preserving and restoring aquatic biodiversity.

The achievement of IdroLIFE objectives will be strengthened by the participation as co-financers of private hydroelectric companies and the active involvement of local fishing associations.

Objectives of IdroLIFE will be:

- Re-establishing blue corridors in the Provincia del Verbano Cusio Ossola. Re-establishing the connectivity from Lake Maggiore to the first impassable obstacle upstream along the water corridor of Toce River SPA IT1140017, which is one of the last river in the Po River basin holding a residual marble trout population (both resident and lake-migratory form).

--- Improve the conservation status of Salmo marmoratus population in SPA IT1140017 Toce River

- Improve the conservation status of Rutilus pigus and Chondrostoma soetta populations in SPA IT1140013 Lago di Mergozzo and Mont'Orfano.

- Improve the conservation status of Cottus gobio and Leuciscus souffia in the SCI IT1140011 Val Grande (Val Grande National Park).

- Improve the conservation status and distribution of Austropotamobius pallipes in the SCI IT1140011 Val Grande (Val Grande National Park).

- Reduce and control the spread of alien invasive species in Natura 2000 Sites of Provincia Verbano Cusio Ossola.

- Designing, sharing among partners and stakeholders and adopting a legislation framework for the conservation of the targeted species at provincial level including Natura 2000 Sites.

- Stimulating the awareness for biodiversity conservation among citizens and different stakeholders.

Actions and means involved:

Preparatory actions include sharing responsibilities and agreements among beneficiaries (A1), a detailed environmental analysis (A2) of the sites to address the fine tuning of the concrete actions; designing (A3) the interventions for River Toce defragmentation and preparing all the administrative procedures.

Conservation actions will be addressed to:

- Improve the conservation status of the targeted species in Natura 2000 Sites (C1, C2, C3) by supportive breeding and re-population. This will be carried on by hatching eggs in a dedicated hatchery realized within the project (C1). Additionally, translocations of individuals of some species such as Leuciscus souffia from adjacent rivers will be also taken into account. A pilot activity (in C3) will be dedicated to breeding and rearing of Rutilus pigus and Chondrostoma soetta.

- Restoring aquatic connectivity (C4) in the River Toce.

- Control the spread of alien species in the targeted Natura 2000 sites by means of selective gears (C5)

and by specific regulations in the Conservation Plan (C6).

- Adoption at provincial level of a conservation plan (C6).

Dissemination (D actions) will stimulate awareness for biodiversity conservation. They will focus on communication (web site, media, logo etc) and education (children, adults...).

IdroLIFE partnership is composed by public bodies and a private company whose experience (administrative, education and dissemination, technical and scientific) ensures the achievement of project objectives. The CNR-Institute of Ecosystem Study is a Public research body belonging to the National Research Council and it is specialized in freshwater monitoring, applied research and ichthyology. Provincia of Verbano Cusio Ossola is the public Institution charged to manage, among others, the environmental issues at local level. The Ente Parco Nazionale della Val Grande is the Institution managing the SIC IT1140011 Val Grande. GRAIA is a private company with proved experience in the field of habitat restoration, fish passages and ichthyology. Furthermore, the participation as co-financers of private hydroelectric companies will give additional strength to the partnership of IdroLIFE making it coherent for the respect of the EU priorities for Biodiversity conservation. The most important local fishing associations are also involved in order to actively contribute to the project execution, both with people and infrastructures (C1,C2, C5, C6, D).

Expected results (outputs and quantified achievements):

The implementation of the project is expected to produce a significant improvement of the conservation status of species and habitats in Natura 2000 sites of Verbano Cusio Ossola linked by the blue corridor of Toce River. Improvement will be from the faunal point of view (production of juveniles of protected species, repopulation in stretches hosting target species in bad status, control of alien species), from the environmental point of view (defragmentation of Toce River), from the planning point of view (adoption of a conservation plan at provincial level), from the point of view of the control and management of alien species.

De-fragmentation of Toce River SPA IT1140017, for a length of about 60 km, from Lake Maggiore to the first impassable natural obstacle with 6 obstacles tackled.

Repopulation of Toce River SPA IT1140017 with at least 80000 individuals of Salmo marmoratus.

Realization of an hatchery of public property dedicated to conservation actions targeting fish species (production target 40000 ind/y of Salmo Marmoratus, 500 ind/y Cottus gobio, 2500 ind/y of Rutilus pigus and Chondrostoma soetta).

Repopulation with at least 1000 specimens of Cottus gobio and Leuciscus souffia in SCI IT1140011 Val Grande.

Repopulation with at least 5000 specimens of Rutilus pigus and Chondrostoma soetta populations in SPA IT1140013 Lago di Mergozzo and Mont'Orfano.

Establishment of new colonies of crayfish Austropotamobius pallipes in 4 suitable areas inside the SCI IT1140011 Val Grande (500 ind.)

Reduce of at least 60% the density of alien species (Silurus glanis, Ameiurus melas, Gymnocephalus cernuus, Lepomis gibbosus, Carassius carassius and Salmo trutta) in the project sites.

Realization and adoption of a conservation plan for the species targeted by IdroLIFE in Natura 2000 Sites of Verbano Cusio Ossola including specific measures to avoid the spread of alien species.

Participation of about 1500 children to the project actions.

Participation of about 1000 adults to the project actions.

Is your project significantly climate-related? Yes [X] No [ ]

Recent climate changes determined profound impact on aquatic biota of rivers. In general floods and drought, can determine shift in species distribution as well as decreased abundances due to habitat destruction. Fish, however, can migrate to find more favorable conditions. When this is not possible, the risk of extinction dramatically increase. This is especially true for intolerant and or sensitive species such as Salmonids for instance, which need narrow ranges of temperatures or well defined

habitat characteristics for completing their life cycles.

IdroLIFE aims to reduce the impact of climate change on fish and crayfish species of community interest in Natura 2000 Sites of Verbano Cusio Ossola by a twofold approach: 1. enabling migrations of fish species by restoring river connectivity along the River (facilitating migration towards colder areas upstream) b. directly by supporting with stocking from wild spawners the residual populations of the target species inside the SIC-SPA areas.

The proposal addresses the following project topic(s):

- Projects aimed at improving the conservation status of habitat types or species (including bird species) of Community Interest, targeting the Natura 2000 sites proposed or designated for these habitat types or species.
- Projects targeting invasive alien species, where these are likely to deteriorate the conservation status of species (including birds) or habitat types of Community Interest in support of the Natura 2000 network.

Reasons why the proposal falls under the selected project topic(s):

IdroLIFE mainly address its action to improve the conservation status of fish and crayfish species of Community Interests within Natura 2000 sites of Verbano Cusio Ossola both by direct interventions on species and actions on habitats.

IdroLIFE aims to improve the conservation status of species in unfavorable or declining status.

IdroLIFE aims to control the spread of alien species in Natura 2000 sites of Verbano Cusio Ossola.

GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Val Grande

Surface area (ha):	11,855.000
Surface description:	National Park, Hilly territory with an highly developed hydrographic network.

EU protection status:

SPA ☐ **NATURA 2000 Code**

pSCI ☒ **NATURA 2000 Code** IT1140011

Other protection status according to national or regional legislation:

The Val Grande is designated also as IBA - Important Bird Area - by BirdLife International (IT005)

Main land uses and ownership status of the project area:

The park is mostly uninhabited. is covered 42% by forests, 27% by natural vegetation, 18% open space, 6% from pascole and meadows, and 0.1% from surface water. The property consists of 42% by the state, 38% by municipalities, 11% are private and the remaining is mixed.

Scientific description of project area:

In Val Grande the interrelation between geomorphology, vegetation and human action helps to shape the environments - natural and semi - of the park in a very small space covering most of the spectrum of ecosystems in the Alps Lepontine.

The habitats of Community interest are ten: 9110 Luzulo-Fagetum for 42.9%, 8220 Siliceous rocky slopes with chasmophytic vegetation to 16.6%, 9260 woods of Castanea sativa to 6%, 4060 Alpine and Boreal heaths to 3.6%, 6230 * Nardus grasslands, rich in species, on silicious substrates in mountain areas for 2.6%, 91E0 * Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Pandion, Alnion incanae, Salicion albae) to 1.5%, 8120 scree limestone and shale-limestone mountain and alpine for the 1%, 9180 * forests of slopes, screes and Tilio-Acerion 0.9% and 6150 boreal grasslands -alpine siliceous for 0.4%.

Currently the management plan of the SCI / SPA that will lead to a revision of this list that will be submitted to the European Union is in preparation.

Among the habitats, the formations of the wood - beech, chestnut and lime-Frassineti - are those which are prevalent; it comes to vegetation Acidophilous character sub-set of oceanic crystalline substrates and developed sub-mountain and mountain altitudinalmente horizon.

The beech, in particular, is the hallmark as it covers most of the forest land, both in the inland valleys, and in the outer parts.

Formations shrubs are the alpine moorland and scrubland to connote especially ambient once dedicated to pastures, mixed with covers in which the green alder plays a major role along with rhododendron and blueberry.In addition, the morphology and the rugged terrain of the area determine the distinctive environments gorge, the ridges, crags and cliffs, scattered boulders and scree.

The connotation of man-made habitat is instead seen in the remaining areas of pastureland type, as well as in the aforementioned ceduate and chestnut forests posed numerous especially in the crown of the ancient rural villages as encouraged and exploited by man and now largely abandoned.

A set therefore rich and composite that characterizes the environment of the park in the Alpine bioregion, especially for its location next to other significant areas and ecological corridors such as Ticino, the Po Valley, the Toce and Lake Maggiore.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

Among the mammals of Community interest the dormouse is present, while among the bats an initial investigation has found the presence of 16 species. Lynx and wolf have an irregular presence in the province. Numerous and of particular interest are birds such as the golden eagle, peregrine falcon and eagle owl which are sedentary and nest inside or in the immediate vicinity of the park, the honey buzzard, black kite and toed species are migratory and can be observed only in spring and summer during their reproductive period. Still others such as the red kite, hen harrier, marsh harrier and osprey, use the territory as migration route or as a place for wintering.

Among the species protected at European level, the honey buzzard deserves special mention; available data provide a framework of regular presence of the species in the protected area, where there are certainly at least 5 breeding couples, preferring wooded areas with large clearings and hillsides facing south and west of the southern area of the Park. The rapacious more easily founded throughout the year is the golden eagle, well distributed throughout the province; in Val Grande were estimated 6 couples whose territories extend beyond the boundaries of the protected area. The sunny and well-exposed slopes that are in proximity to wooded areas, are the ideal habitat for Biancone. They could be three couples who attend the considered area, distributed in the southwest area of the Park and along the eastern ridge.

All four alpine species of Galliformes are under study and conservation strategies, as European level is recording a general scarcity mainly due to the modification and fragmentation of their habitat. Val Grande are permanently present only three of the four species listed as ptarmigan was well represented until 1950 on the ridges from Cima Laurasca Mount Togano and its growing presence there was sporadic until 1998. Today the species is believed extinct, at least as a nesting species. The Black Grouse is present mainly at altitudes between 1600 and 2000 m in wooded areas not very thick with abundant undergrowth of blueberry, green alder and rhododendron. The Woodlark was reported recently during the autumn migration, while the black woodpecker is sedentary and regularly nests in the beech woods of Val Grande. His condition is satisfactory; the current state of knowledge, it can be estimated the presence of about 12 pairs. The gradual increase in the forest area with the presence of mature trees in the future should further promote the species. Among the reptile species of Community interest present in the Park the wall lizard and the green lizard are quite common and significant it is also the spread of some species of snakes including coronella Austrian, the rat snake and the strut.

As for the fish fauna some specific surveys were made to investigate aspects of knowledge of the species present and to determine the management strategies including those related to fishing activities. Indeed, although regulated with some protected area, angling is permitted in the park. Surveys have shown a situation rather critical for the bullhead *Cottus gobio* and the river dace *Leuciscus souffia*, present with scattered populations in a few areas of rivers of the Park and with very low densities, with populations unstructured. On the contrary the brown trout (*Salmo trutta*), whose introductions have been forbidden since 25 years ago, is rather abundant and well structured, with higher densities. As an example the ichthyological investigation on some rivers have shown that in 47 transects for a total of 3940 m sampled, were caught 889 fish of which 869 were brown trout (*Salmo trutta*), 15 bullhead (*Cottus gobio*) and 5 roach (*Leuciscus souffia*). The reasons for the critical situation of bullhead and river dace are poorly understood although the most likely hypothesis is a negative impact from predation due to the abundance of brown trout in the past decades due to massive repopulation carried out by fishermen. Now, given the situation changed thanks to the presence of the Park, you can think more in terms of recovery of these two species, and assume a dual action: on one hand targeted actions of repopulation to form stable stocks of *Cottus gobio* and *Leuciscus souffia*, the other to increase strict rules for fishing.

Name of the picture: Val Grande Map

GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Lago di Mergozzo and Mont'Orfano

Surface area (ha):	483.000
Surface description:	Oligotrophic lake in a context of foothills with strong anthropogenic pressure in summer period

EU protection status:

SPA [X] **NATURA 2000 Code** IT1140013

pSCI [ ] **NATURA 2000 Code**

Other protection status according to national or regional legislation:

The Lake of Mergozzo, is under the legislation of the Provincia of Verbano Cusio Ossola (VCO), Comune di Verbania and Comune di Mergozzo. The present the management plan for the area is still lacking. The management of the fishing activities is in charge to the ProVCO.

Main land uses and ownership status of the project area:

The lake is a destination for lovers of water sports such as canoeing, kayaking, diving and windsurfing. In Lake Mergozzo motor boats are forbidden, and is allowed only navigation by using electric engines. The lake is under a substantial touristic flow in late spring-summer season where a large number of people are present favoured by the presence of two campsites located directly on the southern shore of the lake. Some peculiarities of the surrounding areas are the mining and processing of stone ("marmo rosa" of Candoglia; stone of Mont'Orfano) and horticultural activities.

Scientific description of project area:

The lake of Mergozzo is a small and deep lake. It is 2,5 km long and 1 km large with a total area of about 1.8 km^2. The maximum detph is 74 m. The catchment include many small tributaries such as the river bracchio, rio Fighera, Rio Nibbio, Rio Bettola and Rio Albo.

The lake is oligotrophic/ultraoligotrophic and has an high transparency during the whole year. Data gathered by the CNR-ISE during its long history of research have shown a decrease of the total phosphorus concentrations from 10-12 micrograms L^{-1} to the present 4 microgram L^{-1}.

The water quality is good, ammonium is low, oxygen reaches 10-11 mg L^{-1} along the whole water column and Lake Mergozzo is included among the reference lake used for the implementation of the Water Framework Directive 2000/60/EC at italian and alpine level.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

This site is of extreme importance for native biodiversity. The fish fauna was historically characterized by the presence of *Rutilus pigus*, *Chondrostoma soetta, Cottus gobio, Alosa fallax lacustris* and *Salmo marmoratus*.

The most recent fish survey carried on Lake Mergozzo was done in the course of LIFE Inhabit project (2011). It has been shown that the situation of the fish fauna became critical for some species such as the *Rutilus pigus* and *Chondrostoma soetta*. Indeed, although the sampling effort was very intense, no specimen of these two species were captured.

Although the human pressure on the lake increased significantly in the last 15 years, some fish species

of EU interests are still present such as the shad *Alosa fallax lacustris* and *Cottus gobio*. Among the main threats now presents, the presence of alien species such as the black bullhead *Ameiurus melas* and the ruffe (*Gymnocephalus cernuus*), is one of the most significant together with the human pressure along the shoreline.

Name of the picture: Lago di Mergozzo detailed map

Name of the picture: Lago di Mergozzo and Montorfano Map

GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Fiume Toce

Surface area (ha):	2,633.300
Surface description:	Large area of alpine foothills, largely inhabited

EU protection status:

SPA [X] **NATURA 2000 Code** IT1140017

pSCI [ ] **NATURA 2000 Code**

Other protection status according to national or regional legislation:

The River Toce is subject to landscape rules and every intervention that impact the river must be accompanied by a specific landscape report that is evaluated by dedicated offices at the "sovraintendenza" . As for the fish target of the project, the River Toce is protected by the law of the Piedmont Region No. 37 of 29 December 2006 "Rules for the management of aquatic, aquatic environments and fishing regulations."

Main land uses and ownership status of the project area:

The Toce River and its banks are a state property. The area of interest is mostly natural, with some flat areas of limited extension destined to the cultivation of cereals, mainly in the river closer to the confluence in Verbania. The human presence is mainly restricted to the towns distributed along the Val d'Ossola, with the town of Fondotoce at the confluence of the lake and various villages close each other until Domodossola which is the town of greater importance within the valley, and localized in the most upstream area of the project.
Along the river channel there are some industrial plants, some other active decommissioned. The industrial area of most importance is located in Pieve Vergonte, with a chemical plant particularly relevant.
Flood plains are generally well vegetated with typical peri-fluvial vegetation characterized by white willow, poplar, alder and ash.

Scientific description of project area:

The SPA "River Toce" and the area SIC "Greto Torrente Toce between Domodossola and Villadossola" included within the SPA, consists of a bed of pebbles with sand islands and riparian woodland and shrubland, presence of thermophilic environments. Along the Toce were detected some areas of Community interest, mostly hygrophilous and riparian plant communities, including the riparian forests of white willow (Salix alba) and black poplar (Populus nigra) (91E0). Testifies to the naturalness of the river ecosystem the presence of shrub vegetation in Myricaria Germanic (3230) which may be subject to significant fluctuations in population (also positive) following single floods. Colonize the river bed Germanic Myricaria and the Salix eleagnos (3240). Some channels with low water current are home for vegetation such as Callitriche stagnalis, C. hamulata and Ranunculus trichophyllus. The habitat of the aquatic vegetation of still waters (3150), greatly reduced and degraded, was subject to recovery as part of a past LIFE.

Among the approximately 340 species of flora few are reported as of high conservation value: Caltha palustris and Narcissus poeticus are included in the list of species needing absolute protection (Regional Law 32/82). The river Toce is of considerable ornithological importance, both for nesting and migration, so as to have been identified as a Special Protection Area for birds. Of the numerous nesting species, 70 out of about 150 reported in total, 7 are included in the All. I of the Bird Directive; among the latter, related largely to the shrub and herbaceous plant communities of shore, can be cited Lullula Arbora, Anthus campestris, European Nightjar, Sylvia nisoria, Circaetus gallicus, Bubo

Bubo.

The waters of river Toce host a significant fish population, including some species of the Habitat Directive: Lethenteron zanandreai, Barbus meridionalis, Telestes souffia, Salmo marmoratus, Cottus gobio, all included in App. II.

The herpetofauna has 9 species, 2 amphibians an4 d reptiles of Community interest. Remarkable is the the presence of the Natrix tessellata, Ann. IV of HD, species that prefers the rivers, known in the rest of the province in just three other sites, and generally declining for the artificial state of the river banks.

Among mammals, 20 species in total, 10 belong to the bats, all protected under the Habitats Directive.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

River Toce is rich of valuable fish species. The marble trout (*Salmo marmoratus*), the barbels *Barbus meridionalis* and *B. plebejus*), the bullhead *Cottus gobio,* and the lamprey *Letentheron zanandreai,* river dace (*Leuciscus souffia*) are among the species still today present in the area although with population often in critical situation, unstructured and threatened by hydro-morphological pressures including weirs and dams.

IUCN and Italian Red list classification as follows:

Chondrostoma soetta: Endangered; Endangered.

Rutilus pigus: Least Concern; Endangered.

Cottus gobio: Least Concern; Least Concern.

Salmo marmoratus: Least Concern; Critically endangered.

Barbus meridionalis: Near Threatened; Endangered.

Leuciscus souffia; Least Concern; Least concern.

Barbus plebejus: Least Concern; Vulnerable.

In 2009 on the territory of the whole Piedmont region fish survey enabled to classify the status of the species as follows:

Chondrostoma soetta: high risk

Rutilus pigus: near extinct

Cottus gobio: vulnerable

Salmo marmoratus: vulnerable

Barbus meridionalis: vulnerable

Leuciscus souffia: low risk

Barbus plebejus: low risk

Name of the picture: Fiume Toce Map

GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Fondo Toce

Surface area (ha):	364.000
Surface description:	The sites include the last stretch of Toce River mouth, the Lake Maggiore shoreline with Phragmites

EU protection status:

SPA [X] **NATURA 2000 Code** IT1140001

pSCI [X] **NATURA 2000 Code** IT1140001

Other protection status according to national or regional legislation:

In the SCI area facing onto Lake Maggiore, there is a regulation which obligates tourists to remain away 150 m from the shoreline.

Main land uses and ownership status of the project area:

The environments and the natural landscape occupy now a limited extensions whilst the rest of the territory is largely man-made. There are crops, greenhouses and tourist activities (golf, camping). Among the largest natural environments there is a vast area in reeds, particularly developed along the shoreline and along the canal that links Lake Maggiore Lake Mergozzo.

Scientific description of project area:

SCI Fondo Toce is an area of extreme importance for the ecological point of view. In fact it as a classic ecotone area, passage between the water and the earth, between the typical lake and mountaneous environments.

The portion close or inside water is of importance as the spawning site or migratory site for many fish species. For instance it is know that the marble trout living in the Lake Maggiore, remains for some period in water of this SCI before migrate to spwaning site.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

The Special Natural Reserve of Fondotoce includes the last stretch of the River Toce from the confluence of the Strona river to its mouth in Lake Maggiore.The environments and the natural landscape now occupy limited extensions while the rest of the territory is largely man-made: there are cultivated fields, greenhouses and tourist activities. Among the largest and most significant natural environments there is a wide reed area, bounded by a narrow strip of riparian forest vegetation. One of the areas of greatest ecological importance is the reed Phragmites australis, the largest and most representative of the Province of Verbano-Cusio-Ossola. It is home for a large number of animal species, in particular, between the insect fauna, some species are observed only in Piedmont here.

The Phragmites belt is also home to bird species and is of considerable importance as a resting place for birds during migration.

In the SCI, habitats of community interest related to wetlands were identified : the floating and submerged aquatic lake vegetation (3150), canals and ditches with slow flow (3260) and annual vegetation, amphibious, margins of standing waters (3130) and vegetation such as Rhynchospora alba (7150).

There is, only one of the wooded habitats, a relic of riparian forest with a prevalence of white willow (Salix alba) (91E0), with a train of white alder (Alnus incana) the minimum altitude in Piedmont.

In the site about 250 species of flora have been surveyed, including Najas marina and some species of the Italian Red List or regional lists: Allium angulosum, Ludwigia palustris, Rhynchospora alba, Nymphaea alba, Osmunda regalis, Vallisneria spiralis and Hydrocharis morsus-ranae.

Overall the site is characterized by a great richness of vertebrates, including birds with about 190 species, of which 78 nesting and 40 included in the All. I of the Birds Directive (B.D.). Given its location along one of the main migration routes of Piedmont, the reed belt is a favorite destination for many migratory birds and in particular, in terms of quantity, for the swallow (Hirundo rustica).In the reed belt Acrocephalus arundinaceus, A. paludicola, A. palustris, A. schoenobaenus, A.scirpaceus, Cettia cettii, Locustella naevia, Porzana parva, Ardea purpurea, Botaurus stellaris and Ixobrychus minutus, Asio flammeus, Circus aeruginosus, Emberiza schoeniclus, Panurus biarmicus, Remiz pendulinus, Emberiza pusilla.

More related to the lake are the ducks, of which twenty species are reported in the area, including the Bucephala clangula, Clangula hyemalis, Melanitta fusca and M. nigr, Mergus merganser. In SIC 5 species of gulls have been also reported, including the Common Gull (Larus canus), saffron (lesser black-backed gull) and Little Gull (Larus minutus, DU) poorly observed in Piedmont, 5 species of the family of loons, including Gavia arctica and Gavia stellata.

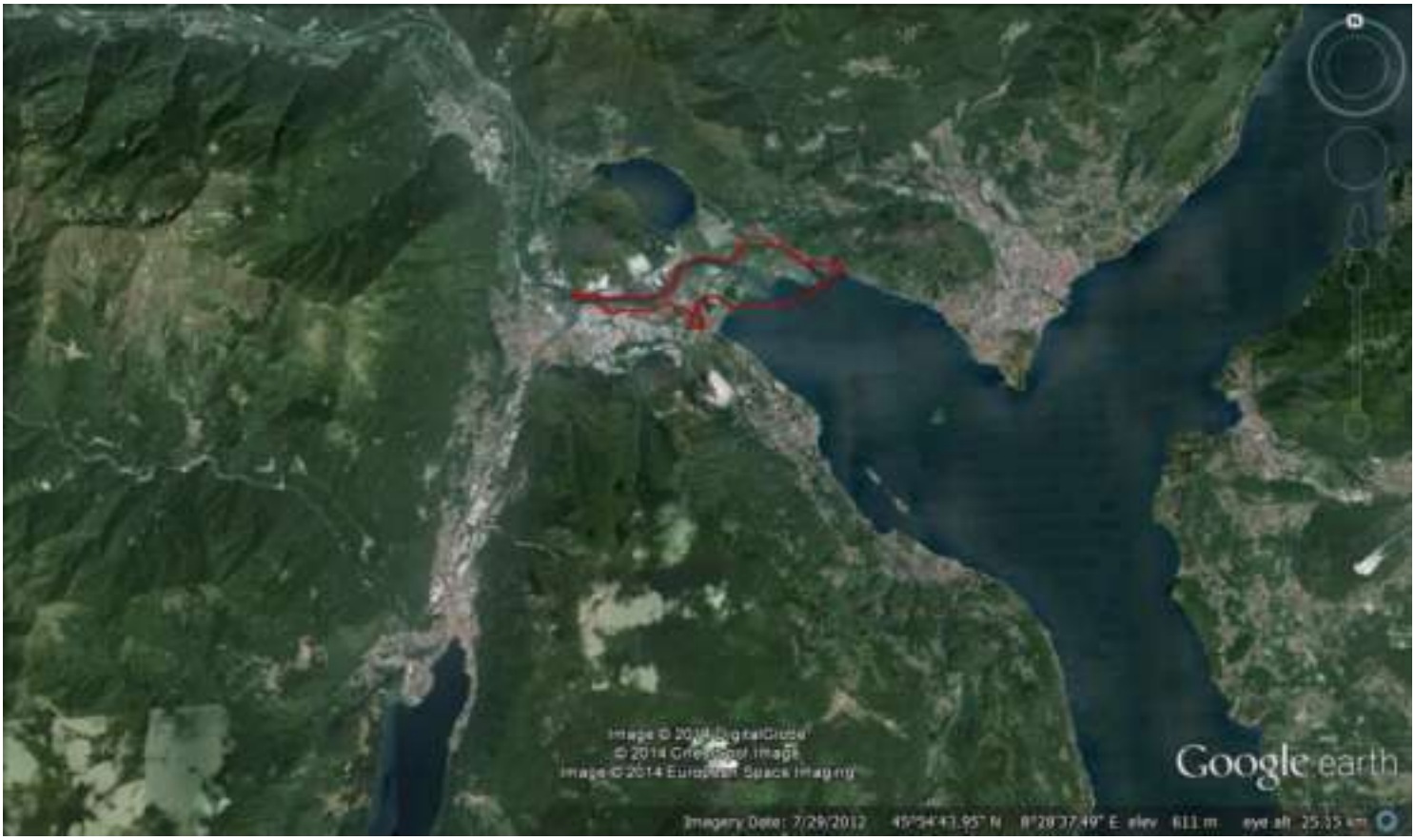
On the banks it is also observed various wading birds, including some rare for the region as the Charadrius hiaticula, Haematopus ostralegus, Numenius arquata and N. phaeopus.

The mammals have here about 30 species, of which 9 of bats. It plays great conservation significance the presence of Myotis capaccinii, an endangered species globally, that here is one of the largest breeding colonies of Italy, and the only one known in the region.

The waters of the site are home to about 30 species of the ichthyofauna, 7 are in the HD, including Rutilus pigus, Chondrostoma soetta, Salmo marmoratus, Lethenteron zanandreai, Alosa fallax lacustris,

The reeds, as already mentioned, is home to unique entomological species for Piedmont, such as the rare ditiscide Graphoderus bilineatus (App. II and IV) and the beetles Baudia abnormal, or known in a few other locations, such as ground beetles Acupalpus notatus, and Agonum lugens Chlaeniellus tristis. Also among the invertebrates are reported 15 species of butterflies and 35 between beetles and Hydradephaga.

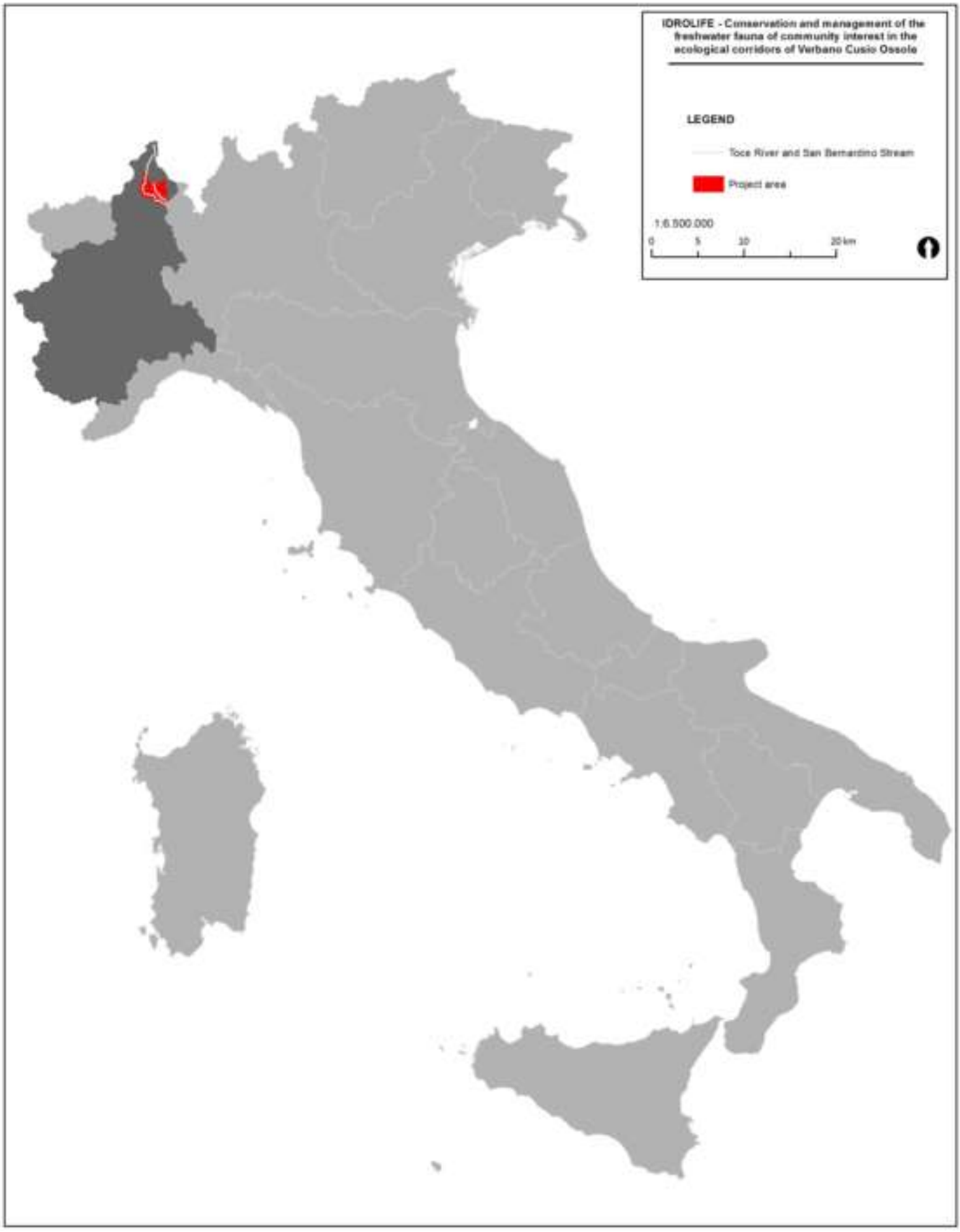
Name of the picture: Fondo Toce Map



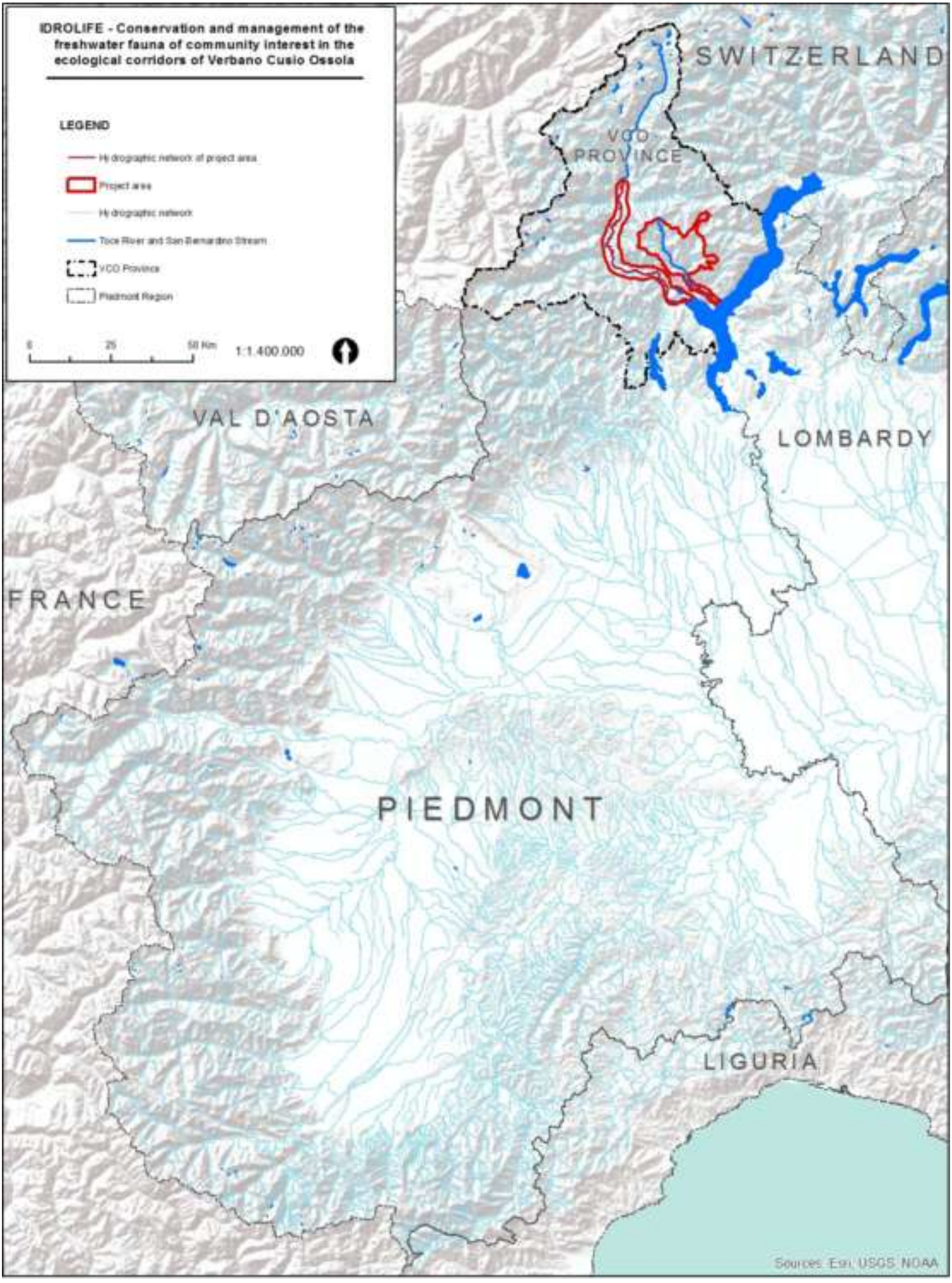
MAP OF THE COUNTRY LOCATION OF THE PROJECT AREA

SCALE 1:6500000

PROJECT AREA'S LOCATION



MAP OF THE REGION LOCATION OF THE PROJECT AREA SCALE 1:1400000



DESCRIPTION OF SPECIES / HABITATS / BIODIVERSITY ISSUES TARGETED BY THE PROJECT

The species targeted by IdroLIFE species of conservation interest included in the Annex II of the Habitats Directive (HD), populating the rivers in the project area, including SCI and SPA areas, and the white clawed crayfish, included in the above-mentioned Annex II.

Semi-quantitative data about fish population size of R. Toce are from the "Carta Ittica" of the VCO Province (updating 2009-2010), attachment ("Carta Ittica Data"). A synthesis of the Index of abundance "Ia" given within the above census to the target species in the project area and the distribution of the species in the provincial hydrographic network are supplied. These data will be useful as comparison data in the characterization and monitoring actions.

Scientific name: Salmo marmoratus

The marble trout is an endemic Salmonid of the Po river basin. It is a species attaining a very large body size (up to 110 cm). The distribution areal is constituted by rivers of the south-alpine valleys. It reveals accentuated migratory habits and requires viable fluvial corridors.

POPULATION SIZE: According to the Natura 2000 Standard Data Form (N2K Dataform), the species is very rare in the SPA IT1140001 but common in the SPA IT1140017 and SCI IT1140006. The last census of fish fauna in the hydrographic network of VCO District (2010) however highlighted the presence of the marble trout along the R. Toce and its tributaries. Distribution and population structure are however not homogeneous indicating unstable populations which are locally under significant threats (see attachment).

CONSERVATION STATUS: In Italy the species is inserted in the RED LIST (2013) as "Critically endangered". The species is in steep decline due to the destruction and fragmentation of its habitat, fishing pressure and introduction of the brown trout for angling purposes.

Scientific name: Chondrostoma soetta

Its areal comprehends almost all the Northern Italy, although in strong depletion. The habitat of this gregarious species is the middle and downstream stretches of the major rivers or oligo- or mesotrophic lakes. It presents a highly migrating behavior both in lake and fluvial environments. The knowledge regarding its biology is incomplete.

POPULATION SIZE: It's distribution has always been limited to larger lowland rivers, and with low natural frequency in Piedmont, but over the past two decades this presence was strongly reduced, even in the R. Ticino basin. During the last census of subalpine lake' fish community (Lombardy Region, 2015), the species was absent in L. Maggiore while during the last census of fish fauna in the hydrographic network of VCO District (2010) it has been capture in the R. Ticino upstream the lake. It's signaled in the L. Mergozzo (SPA IT1140013).

CONSERVATION STATUS: In Italy the species is inserted in the RED LIST as "Endangered". C. soetta is one of the inland water fish species that was mostly damaged by the dam construction and other barriers along the river routes, preventing free movement along the rivers necessary to reach the best breeding areas. Other factors that represent a high threat to the species are the artificialisation of the river habitats and the gravel extraction for constructions, that lead to a decrease of the breeding areas available.

Scientific name: Rutilus pigus

It's an endemic species of the Po and Veneto river basin, and can be found both in lakes and average/major rivers with moderate stream flow. It’s an average size fish whose biology is just partially known.

Annex of HD: II

POPULATION SIZE: According to the N2K Dataform, R. pigus is very rare in the SPA/SCI IT1140001 and present, but no data of abundance are available, in the SPA IT1140013. The species is in sharp decline from several decades and in Piedmont it's by now quite rare, except in L. Maggiore and R. Ticino, where is present but rare, as highlighted by the last census of subalpine lake' fish community (Lombardy Region, 2015).

CONSERVATION STATUS: In Italy the species is inserted in the RED LIST as "Endangered". One of the

causes for this demographic decline is the construction of river weirs, that impedes to the adult specimens to reach the sites suitable for breeding. Another cause is the sport fishing during the breeding period.

Scientific name: Cottus gobio

Small size species spread throughout Europe. The species is benthonic and sensitive to environmental quality. It requires cold waters with fast currents and high oxygenation, river bed with rocks, paddles and gravel.

Annex of HD: II

POPULATION SIZE: According to the N2K Data form, the species is present, but no data of abundance are available, in the SPA/SCI IT1140001 and in the SPA IT1140011. The last census of fish fauna in the hydrographic network of VCO District (2010) highlighted the presence of the bullhead along the R. Toce and its tributaries, with populations often well organized into age classes but not always abundant (see attachment). Last census in SCI Val Grande (CNR-ISE) however have shown a population with very low densities and unstructured.

CONSERVATION STATUS: In Italy the species is inserted in the RED LIST as "Low concern". The decrease of the species can be attributed to the altering of the river beds, the water pollution, the excessive water diversion and in the massive Salmonids repopulations (predators).

Scientific name: Leuciscus souffia

It is a widely spread species throughout central Europe. The Italian ‘muticellus’ subspecies is endemic in the Alps and Apennines (nowadays Authors consider it at species level Telestes muticellus).

Annex of HD: II

POPULATION SIZE: According to the N2K Dataform, the species is rare in the SPA/SCI IT1140001, common in the SPA IT1140017 and SCI IT1140006, and present, but no data of abundance are available, in the SPA IT1140013 and SPA IT1140011. The last census of fish fauna in the hydrographic network of VCO District (2010) highlighted the presence of the species along the R. Toce and its tributaries, with populations often well organized into age classes and fairly abundant (see attachment). The species is present even in the L. Maggiore (census by Lombardy Region, 2015). Last census in SCI Val Grande (CNR-ISE) showed a very low density.

CONSERVATION STATUS: In Italy the species is inserted in the RED LIST as "Low concern". The species is highly vulnerable to water pollution and to the modifications of the river beds that irreversibly compromise the entirety and functionality of the breeding areas. Another cause of disturbance can be represented by water diversion.

Scientific name: Barbus plebejus

It is an endemic medium-large size species of Italy. It lives in the bottom of the upstream parts of lowland rivers, even of small dimensions, as long as well oxygenated with gravelly/stony riverbed.

Annex of HD: II and V

POPULATION SIZE: According to the N2K Dataform, the species is rare in the SPA/SCI IT1140001. The last census of fish fauna in the hydrographic network of VCO District (2010) highlighted the presence of the species in the S. San Bernardino, at its mouth, even though with a not so balanced population (see attachment).

CONSERVATION STATUS: In Italy the species is inserted in the RED LIST as "Vulnerable". Even if the species is relatively common, it is endangered by the modification of the river beds and the consequent destruction of breeding areas. Another threats is the introduction of barbel alien species, that implies competition and hybridization. This factors compromise the genetic identity of the native barbel species.

Scientific name: Barbus meridionalis

The Mediterranean barbel is a small dimension Cyprinid (up to 25 cm length) that lives in hill and valley bottom rivers. The species is very sensitive to high temperature.

Annex of HD: II and V

POPULATION SIZE: According to the N2K Dataform, the species is common in the SPA IT1140017 and present, but no data of abundance are available, in the SPA/SCI IT1140001 and SCI IT1140006. The last census of fish fauna in the hydrographic network of VCO District (2010) highlighted the presence of the species along the R. Toce and its tributaries, but with populations sometimes not well organized into age classes and scarce (see attachment).

CONSERVATION STATUS: In Italy the species is inserted in the RED LIST as "Endangered". The species is in steep declines due to climatic, anthropologic and hydro-morphologic pressures that insist on the habitat where the species is still present.

Scientific name: Austropotamobius pallipes

The white-clawed crayfish is an endangered European freshwater crayfish. It populates the small mountainous and hill waterways, and the spring fed stretch of the rivers and lakes that receives fresh and oxygenated waters. The species is highly sensitive to any kind of pollution and relatively stenothermal. At the moment in Italy the populations manly belong to the subspecies A pallipes italicus and A. pallipes pallipes (defined as A. pallipes complex).

Annex of HD: II and V

POPULATION SIZE: The distribution of native crayfish in the Province of VCO was the subject of a monitoring campaign conducted from June to October 2009, within an Interreg Project. The results showed a distribution quite unsatisfactory and fragmented with native species found in few river water bodies and with the alien species found instead in lake environments. The sampling stations with presence of autochthonous crayfish was only 6 of 48 (about 12%) but they generally have stable and balanced populations, that can be used as sources of reintroduction stocks. The picture attached shows the number of subjects captured with the above mentioned census.

CONSERVATION STATUS: In Italy the species is inserted in the RED LIST (2013) as "Endangered". The white-clawed crayfish areal in the last years has greatly shrunk, even in the VCO District, as the last available data showed.

CONSERVATION / BIODIVERSITY PROBLEMS AND THREATS & PREVIOUS CONSERVATION EFFORTS

Provide this information for those species / habitat types or biodiversity issue directly targeted by the project

In the intervention area several factors that threaten the target species can be recognized. The first threat that undermines the resilience capacity of the populations is the isolation in different metapopulations given by the fragmentation of the aquatic habitats.

The Toce basin is interested by the construction of multiple fluvial barriers. This infrastructures were realized in the past decades to diverge water for hydroelectric purposes or control erosion, without planning the construction of appropriate fish passes. The River Toce results being a fundamental ecological corridor for the Val d'Ossola, therefore most of the planned action focus on this waterway. The river is interrupted by several fragmentation points that impede the migration of fish populations up and downstream (from lake Maggiore to River Toce). This migration is fundamental to complete different phases of their life cycle, such as growth, reproduction and research of winter/summer shelters (depending on the species). Another effect of the fragmentation is the isolation of different metapopulations that, in the long term, could lead to drastic decline of the population fitness and adaptive capacity. This could trigger dangerous "bottleneck" effects that diminish the intrapopulation diversity.

Among the target species the marble trout is an emblematic one, being characterized by a strong migratory behavior, this species can colonize the Lake Maggiore as well as the Toce fluvial stretch, up to Crodo, and the terminal sections of all the major tributaries. This species is known among all the fishermen in Val d'Ossola (that maintain a full historical memory of it) as the 'Grey trout of Ossola', due to its livery. Previous studies on this topic confirm that this trout during its life in the lake, actually, is almost completely silvery to better camouflage in the lake waters. When it goes up the river, instead, it assumes a grayish color, explaining the name traditionally given to it. The previous conservation actions (described in the next paragraph) confirmed that downstream of the first barrier in the River Toce (at Prata weir) a concentration of specimens is observable during the mating season. This is due to the fact the trout comes from the lake and go up the river to reproduce but, since they can't pass the barrier represented by the Prata weir, they are forced to breed downstream, impairing the breeding effectiveness. The specimens recovered in the last years in this area presented the peculiar grayish livery, and therefore confirmed its migratory habit and its movements from - and to - the Lake Maggiore.

The same reasoning applies to the remaining fish target species, although with some differences between species. The varieties of target species belong to the category of the reophilic Cyprinids, and include the Leuciscus souffia, Chondrostoma soetta, Barbus meridionalis, Barbus plebejus, Rutilus pigus. C. soetta, B. plebejus and R. pigus have similar characteristics with the Marble trout regarding the capacity of colonizing lakes and going upstream the final part of rivers to breed in the springtime. The drastic decrease of captures from fishermen during the spring time is an indirect indication of the species decline in this area. The fragmentation of the habitat can be considered, therefore, one of the main factors to address for the conservation and demographic recover of these species. The two fish species populations were historically present in the Ticino river/Lake Maggiore catchment but in the last 10-15 years underwent a dramatic decrease. For instance, as reported by anglers, in Lake Mergozzo the catches vanished at all and in a detailed fish sampling campaign carried on by CNR-ISE in 2010, no fish of both species were captured neither in the nets nor in the electrofishing indicating a very low fish density. The reason of such a decrease are probably more than one and can be ascribed to the habitat degradation (spawning sites, migration routes and fragmentation of tributaries), overfishing, and, probably more locally, interspecific competition with alien species and, in particular, predation carried on by the catfish Silurus glanis. This last points are probably true for lake Mergozzo, whose connection with the Lake Maggiore is characterized by a narrow channel inhabited by the catfish Silurus glanis, a very dense population of black bullhead Ameiurus melas, ruffe Gymnocephalus cernuus and Lepomis gibbosus which are recognized among the most dangerous alien fish species in Europe.

For Leuciscus souffia and Barbus meridionalis the situation is different. These species prefer the lotic waters, even if the first one can be found in the lakes - close to the inlet of tributaries. This species moves along the rivers, making even great distances, but they always remain in the same river course. Therefore the movements are less significant in terms of length, compared with the other species, but result fundamental to reach the breeding areas that present the best characteristics in terms of granulometry and hydraulic, and guarantee the best reproduction rates. Cottus gobio is the species that moves the less among the target ones, but it has been observed that when fish passes are present it benefits from them as well.

For the White-clave crayfish the fragmentation results being a much smaller threat, since it is able to climb even on steep slopes and leave the water during the rainy periods. Therefore it can move almost freely despites the fluvial fragmentation points.

Another important threat that this project can address partially, due to its nature that involves much wider environmental policies, is the climate change. The climate change can modify the habitat for the stenothermal species that live in cold water. Among the IdroLIFE target species the most sensible is the marble trout, that can be affected by changes of just a few Celsius degrees of the water, since the species requires a temperature not higher than 20°C.

Another important threat for the target species is the lack of knowledge itself. The studies conducted until now that involve fish surveys, in fact, always use large mesh grids, with the observation points distant, spread out and not focused specifically on Nature 2000 sites. It is evident that, is necessary to deepen the knowledge through a detailed characterization to understand in detail the current situation of the target species. This action is fundamental because helps to define exactly the stretches where repopulation activities are more likely to be success or the areas of the hydrographic network where an intervention is more appropriate.

Among the threats on the target species the fishing activities and the poaching have to be mentioned. For the fishing activities is mandatory to use nets with large mesh, to avoid the capture of non mature specimens. Anyway this defense practices are usually planned by default, without taking into account the specific realities of the different areas. Poaching, instead, is still a widespread practice, although decreasing, and present selective characteristics, since it aim to ‘noble’ species like Salmonids. Other target species of this activity are species desirable from a gastronomic point of view (e.g. Salmonids, European bullhead, white-clawed crayfish). This damaging human activities are amplified by the scarce knowledge on the species themselves. In fact, everybody knows the Brown trout, but few know the Marble trout, its behaviors and adaptations implemented in these areas. Regarding the other target species the most part of the population doesn’t even know their existence and their environmental relevance. The lack of knowledge regarding these species existence, importance for conservation purposes and biodiversity is a major thereat for their survival.

Finally, one the most recent but most important threats is characterized by alien species. In the recent decades instead many alien and potentially invasive species colonized the Po River basin. Among them, the welsh catfish Silurus glanis, whose negative effects on native fish fauna have been often documented, is probably one the most important. Furthermore other species such as catfish Ameiurus melas, Gymnocephalus cernuus, and brown trout of Atlantic origin have shown to negatively impact the native fauna and the ecosystem functioning. In the sites targeted by IdroLIFE all these species are present. In particular: Silurus glanis, Ameiurus melas, Gymnocephalus cernuus and Lepomis gibbosus are present in SPA Lago di Mergozzo and its outlet to Lake Maggiore through the SCI Fondo Toce. Brown trout is present in Toce River since is has been stocked since many decades ago for angling purposes.

About crayfish. The work cited in form B2c and Casale & Brambilla (2010) confirms the current presence of the native cray-fish species in three reaches of streams located on the boundaries of Val Grande National Park; this evidence suggests its presence in the SCI, where there're several aquatic environments similar to those inhabited by the species. A more detailed investigation on the distribution of the species in the area (including the SCI area) is necessary and it'll be included in action A2 (without any additional cost). In any case the Competent Authority will update the SDFs. We foresee to receive a signed commitment by the Ministry on this point, before the grant agreement signature. The request has already been sent to the Ministry by e-mail on 10/08/2016.

PREVIOUS CONSERVATION EFFORTS IN THE PROJECT AREA AND/OR FOR THE HABITATS / SPECIES TARGETED BY THE PROJECT

In this area the following conservation projects on the IdroLIFE target species were implemented:

- LIFE00nat/it/7268 “Preservation of Salmo marmoratus and Rutilus pigus in the River Ticino”. Is a project realized by the Park of the Ticino Valley (Lombardy area) in the period 2001-2004, and involved two target species: the Marble trout and the Pigo in the effluent of the Lake Maggiore. It has to be mentioned that, following this project, the fish passes at the ‘Porto della Torre’ and ‘Panperduto’ dams have been constructed (with different funds, but the projects started within LIFE project). Nowadays these passes are monitored h24, and passages of both Pigo and Marble trout have been filmed. This means that they can freely reach the Lake Maggiore. It is, therefore, a project connected with the proposed one.

- Interreg IIIA I-CH project “Preservation of the marble trout within the river Ticino watershed” Another activity that involved the current project area have been funded within this Interreg. The project concluded in 2007 and produced information on the marble trout’s genetic and autoecology. Moreover a census have been conducted on the fluvial fragmentations that negatively influence the river network specific for the species.

At local level, since several years repopulation activities are conducted by the Verbano Cusio Ossola Province and by fishermen associations. An example is the capture of the marble trout specimens that concentrate downstream the Prata weirs, to artificially reproduce them and release them upstream of the weir.

As mentioned previously, the distribution of native crayfish in the Province of VCO was the subject of a monitoring campaign conducted from June to October 2009, within the Interreg Project “Biodiversità: Una ricchezza da conservare”- Attività di monitoraggio, gestione e valorizzazione delle popolazioni di Gambero di fiume autoctono (genus Austropotamobius)", by Province of VCO, Insubria University and Graia srl.

In the Italian National territory can be remembered the following LIFE Natura projects for the protection of the white-clawed crayfish:

LIFE10NAT/IT /000239) - Eradication of the Louisiana crayfish and preservation of the white-clawed crayfish.

LIFE00NAT/IT/ 007159 - Preservation of the white-clawed crayfish.

LIFE03NAT/IT/000137 - Austropotamobius pallipes: preservation and management in the central Italian SCI.

LIFE03NAT/IT/000147 - Biocenosis requalification in Valvestino and Corno della Marogna.

LIFE04NAT/IT/ 00159 - Requalification interventions in the SCI "Lago di Ganna".

BEST PRACTICE CHARACTER OF THE PROJECT

Fish passes are increasingly important for the restoration of free passage for fish and other aquatic species in rivers. Therefore nowadays are universally recognized for their importance and beneficial influence on fish migrations. Such devices are often the only way to allow aquatic fauna to pass obstacles that block their up-river journey. They are thus becoming increasingly common, being key elements for the ecological improvement of running waters. The literature is full of design manuals and examples of embodiment.

Realizing fish pass at the river barrages is, therefore, a good practice to wildlife conservation and environmental recovery. In this project proposal is applied on an important river corridor, the River Toce.

On the basis of other designs of fishways implemented throughout Italy, the actions envisaged on the River Toce take on a character of "good practices", applying to this local context the best technical guidelines available today to get the best possible results.

The direct actions performed in this project to promote the target fish species are nowadays universally adopted. Specifically, these actions are the artificial reproduction and the breeding in hatchery of the juvenile fish for restocking. However, there is the awareness that, where threats or structural limitations are present, this actions have to be joined with environmental restoration interventions. Therefore this project aims to restore the fluvial viability, since fragmentation represents a threat for the project target species. In addition, it is planned to sustain for a few years the ichthyic populations involved through direct restocking actions. This will be done using the local fish families - present in the same watershed - adapted to the local conditions.

For these reasons these restocking actions can be defined as ‘good practices’, since they gain knowledge from preexisting experiences and projects implemented by other authorities on the same topics, and apply them in the local context.

Among the monitoring activities the project assumes characteristics of ‘good practices’ where it plans to continuously monitoring the artificial fish passes functionality. At the weir of the Lake Tana (River Toce), as it was previously done for similar fish passes (River Tresa, effluent of River Ticino), a monitoring cabin will be constructed and furnished with a glass window and a continuously video recording system. This system will consist in a camera placed behind the window glass or submerged in the fish pass, and a specific software dedicated to the monitoring activity. This is a well known system that have been already successfully implemented; and it is applied here for the first time, adapting the most innovative solutions developed in similar situations.

DEMONSTRATION CHARACTER OF THE PROJECT

The environmental situation in the project watercourses is representative of most of the other alpine valley rivers, and is the ideal one to carry on a demonstrative action as described in this proposal.

The high presence of fluvial barriers in the entire regional and provincial territory, that do not present artificial fishways or that include a malfunctioning or non functional one, makes the projected actions useful even at a demonstrative level. This project faces the issue of fluvial barriers with different problematic, all present on the Piedmont territory: fluvial weirs built by public authorities for the hydraulic defense; Hydroelectric wires with malfunctioning fishways; long-standing hydroelectric weirs without fishways. Therefore, this project aims to demonstrate that in all the above mentioned cases an action to reopen long ecological corridors is possible. Moreover, it wants to emphasize the fact that a punctual defragmentation is always useful, but there is the need to reason on a larger scale and restore entire long fluvial corridors.

Even the presence of concessionaire of water diversion for hydroelectric purposes as co-financier of the project has a demonstrative relevance. These business categories are actively involved in constructions of infrastructures that contribute to the fluvial fragmentation, or in the management of the existing ones. Therefore, these categories will have the evidence that this types of infrastructures can be more eco-friendly and sustainable if equipped with fishways. The same demonstrative values can be achieved with the divulgation and awareness-raising activities about the theme of the fluvial ecological corridors among private designers/architects/engineers or public authorities that deals with hydraulic defense.

Another features with a strong demonstrative effect is the construction of a continuous monitoring

cabin at the Lake Tana dam. Fish are hard to see ‘by nature’, and the risk is that the construction of a fish pass could remain unnoticed as well if it does not prove its usefulness. Therefore, verifying the effectiveness of these river connectivity restoration actions throughout this device will strengthen the demonstrative effect of this project. The videos and the structure visibility, through a window glass that allow to appreciate and enjoy its functioning, gives to this important project Action an additional demonstrative value.

PILOT ASPECTS OF THE PROJECT

A part of the IdroLIFE project (Action C3) can be considered a pilot action as well. This because IdroLIFE will develop a methodology to successfully breed some fish species (Rutilus pigus and Chondrostoma soetta) that aren’t easily raised in hatchery.

Thanks to the modularity of the fish hatchery that will be realized at the CNR-ISE (different tanks typologies, different temperatures, different volumes available) it will be possible to evaluate which are the best breeding conditions for these species. This evaluation will be performed assessing both general body conditions (e.g. different diets and their effects on the growth rate) and more specific reproductive potentials (e.g. maturity degree of the gonads).

The obtained results will be important to evaluate the possibility of replicate this actions even in a different territorial context.

EU ADDED VALUE OF THE PROJECT AND ITS ACTIONS

IdroLIFE project despite having a strong territorial connotation raises some issues strongly linked to wider European policies, not only in terms of biodiversity but also in terms of a comprehensive approach to water resources conservation and management, ecosystem integrity and ecological status of water bodies sensu WFD2000 / 60 / EC.

The activities carried out in IdroLIFE focuse on defragmentation interventions on one side (i.e. reduction of hydromorphological impacts on water bodies and biological caommunities) and on the other side on conservation of fish communities "reference" of aquatic foothills environments (as stated in the National Decrete DM260 / 2010 on the assessment of the ecological status of water bodies sensu WFD 2000/60 / EC). Overall, the actions of IdroLIFE will help to improve the ecological status of valuable aquatic ecosystems and monitoring actions will allow to assess and quantify the biological response to the measures applied for environmental improvement.

The information coming from IdroLIFE will therefore provide indirect support to the Authorities, Institutions at different geographical scale and other interested private companies on how to improve and restore water bodies in Southern Europe, information transmitted and amplified by the divulgation activities.

Also the collection and organization of biological and hydro-morphological data will form an important integration for the development and implementation of management plans at the basin level, in these areas and in adjacent areas.

In terms of local tourism development based on natural resources, IdroLIFE intends to follow the directions of the EU that, through the Commission Communication COM 352 of 2010 "Europe the world's largest No1 tourist destination - a new political framework for tourism in Europe", outlines a framework also for this issue with particular attention to consolidating the image and profile of Europe as a collection of sustainable and high-quality tourist destinations. Must be noted that PNVG is already part of the circuit of protected areas that have joined the European Charter for Sustainable Tourism in Protected Areas.

The project IdroLIFE will refer also to the several research projects supported by FP programs in recent years (Environment as preferential theme) as WISER, MARS, REFRESH, BIOFRESH, REFORM or on Horizon 2020 ongoing projects concerning water resources and climate change.

The project IdroLIFE even if not engaging directly in concrete actions other countries of the European Union (except, likely, for networking activities see E1.3) has an international value. The target species of the project are in fact characteristics of the entire basin of the River Ticino that includes a portion of Swiss territory. Many IdroLIFE target species have a marked migratory behaviour and for this reason their preservation in the large Toce basin, that pertain to the even bigger Ticino basin, may become

important for their conservation also in Switzerland. In this regard IdroLIFE had the full support from the Italian-Swiss Committee for Fisheries (A8).

SOCIO-ECONOMIC AND ECOSYSTEM SERVICES EFFECTS OF THE PROJECT

From a methodological point of view, the main elements of environmental quality (fish species and crayfish) and ecosystem functions directly or indirectly associated to them supply ecosystem services (eg. recreational facilities or services related to the value of the existence of species) that will be positively influenced by the project outcome. In many areas ,the conservation (or not) of the target species is in fact tied to the socioeconomic interest correlated to recreational fishing and to the induced tourism related to it; therefore, the correct training and involvement of stakeholders will attribute a real value to the individual populations rehabilitated.

The requalification of river segments usable in part also by the community may have, beyond the ecological value, a function of awareness for the population to improve the perception of the importance of the environment.

Under a socioeconomic point of view, the value of the work will be amplified by the dissemination actions, including the creation of the Website that will be the tool to reach a large number of potential stakeholders and to make use of the great communication potential linked to the use social networks. The web marketing activities planned is therefore aimed to boost the communication potential of the project.

As an effect on the socioeconomic aspect linked to ecosystem services, it is expected that the project IdroLIFE will increase the attractiveness of the territory from the point of view of naturalistic tourism. Environments rich in biodiversity, with animal or plant species appreciated by a "niche" tourism (such as halieutics) can be a lure for a territorial development closer to the criteria of environmental sustainability and respect for the biodiversity.

The assessment of the effects of the project on ecosystem services and economics will be realized in the dedicated actions D.

EFFORTS FOR REDUCING THE PROJECT'S "CARBON FOOTPRINT"

The procurement activities done by each partner will follow a “green” approach. In particular, the public bodies will follow as strictly as possible the guidelines on Green Public Procurement developed at European and National level such as the COM397/2008 and COM400/2008 and the D.Lgs 163/2006. For instance, the organization of the events will follow guidelines for sustainability: the food will be as much as possible from local producers, organic-fair trade food products will be used as well.

All the partners are involved already in the commitment to reduce as much as possible CO2 emissions.For instance PNVG uses recycled paper (eco-paper) for all documents, in all public tenders requires invoices on ecopaper, gadgets for instance t-shirts are usually realized by organic material adn/or fair trades materials (certified), also the energy supplier produce electricity 100% from renewable sources, uses catering based on green/organic food products.

During the project implementation the use of paper for instance will be reduced at a very low level, favouring electronic documents also for the dissemination of activities to the different stakeholders.

Although the distance among the partner’s headquarters is below 50 km, trips for meetings among partners will be reduced as much as possible and online (skype etc...) conferences will be preferred. The same will be applied to meetings with stakeholders, if possible.

The project documents will be preferably in electronic form in order to reduce the use of printers.

If air travel will be done for international events such as networking or conferences, attention will be addressed to prefer nonstop flights. For national trips, the train will be preferred.

The project will adopt a Green Procurement approach to all of purchases of goods or services. Public Procurements specifically concern CNR-ISE, ProVCO, PNVG. At the time of procurement, it will be able to require all contracting firms elements ensuring conformity of goods and services subject to contract to certain environmental criteria, referring in particular to art. 43 of the new Directive on GPP - Directive 2014/24 / EU of 26 February 2014. Under the new Directive the firms will be required to show

evidences about the environmental and sustainability criteria that they satisfy, to make sure that the works, supplies or services provided are as eco-friendly as possible: ecolabels, reports, certifications and other means of proof (for instance, the technical documentation of the manufacturer) will be accepted.

The main strategy elements will be:

1. At the beginning of the project, a specification concerning Green Procurement will be defined by the partners. This specification will be included in all the procurements foreseen in the project, by all the partners. Specifications on Project Green Procurement have been included among project deliverables.

2. A specific report concerning Green Procurement will be draft during the periodical project reporting at the deadlines specified in Form C2. The Project Green Procurement Policy reports have been included among the project deliverables.

3. The Project Manager will coordinate the partners ensuring their application of the Green Procurement specifications.

STAKEHOLDERS INVOLVED AND TARGET AUDIENCE OF THE PROJECT

Stakeholders (A8 declaration) involved in the project are of different types:

Hydroelectric companies

The project have been presented with dedicated meetings and before its re-submission to a wide number of hydroelectric companies. Most of them decided to be co-financiers due to the concrete actions foreseen in the project. This enabled to enrich the amount of the project budget of 287.000 euros from hydroelectric companies as co-financiers.

International Institutions/Organizations

Italian-Swiss Committee for the fishery (Commissione Italo-Svizzera per la Pesca-CISPP) will support the project. It is the manager of the fishing and water protection in Lake Maggiore.

National Institutions/Organizations

Commissariato Italiano per la Convenzione Italo-Svizzera sulla Pesca. It is the italian branch of the CISPP

Unione Nazionale Enalcaccia Pesca e Tiro.

Parks

Ente di gestione delle aree protette del Ticino e del Lago Maggiore

Regional Institutions

Regione Piemonte - DG Agricoltura, Caccia e Pesca

Regione Piemonte - DG. Ambiente, Governo e Tutela del Territorio - Sett. Biodiversità e Aree Naturali

Regione Piemonte – DG Ambiente, Governo e Tutela del Territorio - Settore Tutela delle Acque

Regione Lombardia - DG Agriculture

Municipalities

Municipalities fronting onto the rivers Toce such as:

Comune di Vogogna, Comune di Anzola d'Ossola, Comune di Crevoladossola, Comune di Premosello Chiovenda, Comune di Villadossola, Città di Domodossola, Comune di Mergozzo, Città di Verbania, Comune di Ornavasso, Comune di Pieve Vergonte.

Local fishing associations support and are involved with their volunteers in IdroLIFE:

Sezione Provinciale Pescatori del VCO FIPSAS ASD

Associazione Volontari Pescatori Mottarone ONLUS

Ossola Fly Team

Environmental Associations:

Legambiente

Target audience:

-Schools: they will be involved in dissemination and educational activities (Stages, contests, etc).

- Technical staff dedicated to the design of hydroeletric plants which need references and concrete examples in the field of fish passages: they will be involved dissemination activities and eventually in surveys dedicated to the assess of the socio-economic impact of the project.

- Personnel of Public Administrations/Institutions dedicated to the designing intervention of river restoration and protection from hydro-morphological pressures. They will be involved in stakeholders meeting, newsletter etc…

- Citizens who has care to the natural resources: due to the topics of the project we aim to involve in dissemination activities citizens of the neighboring territories.

In all, the target audience is very wide due to the amplitude of the projects topics (from biodiversity, to fish and fishing, engineering, environment in general), dissemination activities and communication tools (media, webcam, leaflets). We aim to involve people of different ages, social background and position, and sensitivity.

EXPECTED CONSTRAINTS AND RISKS RELATED TO THE PROJECT IMPLEMENTATION AND MITIGATION STRATEGY

IdroLIFE could encounter some risks and constraints due to its character of conservation and the number of concrete actions done in the field. The weather conditions could influence the success of many action done in the field. We will try to plan the field activities according to the best weather conditions by checking weather forecast.

The production of larvae and juveniles used for repopulation activities could meet some problem: indeed it could be difficult to find a sufficient number of spawners for the rarest species such as Rutilus pigus and Chondrostoma soetta . In this sense we already started to be in touch with the Institution managing the Parco del Ticino where activities dedicated to the artificial reproduction of cyprinids are already running. To reduce the risk of failure we will involve recreational and professional fishers as well, adjacent fishing associations and parks Institutions which can be helpful to find suitable fish individuals.

Another possible risk, common among the fish rearing plants taking water by using pumps, it is related to unexpected malfunction of the pumps adn the system in general such as due to the temporary interruption of electricity. Alarm systems will be set up to reduce as much as possible the risk of overheating of the water or other similar problems. It must be noted however that the plant will work by using external pools as a source of water (taken from the lake with pumps). Pools are quite big and can assure the provision of water to the fish tanks for at least 24 hours even if the pumps are stopped.

Regarding the intervention of defragmentation, possible risks are related to intense rain events and floods. The time table of the works will be planned as much as possible to avoid the well known seasonal raining periods. Weather forecast will be also taken into account in order to avoid loss of materials, equipment etc due to floods.

As a regard to the permissions necessary for the realization of fish-passes, all foreseen on government land, they include:

- a Hydraulic verdict by the Competent Authority (AIPO for Toce River).

- a Landscaping Authorization, which comes within the competence of the municipality concerned. All the municipalities with territorial jurisdiction on the places of realization of the blue infrastructures already support IdroLIFE (as reported in forms A8).

- if is the case of presence of a Nature 2000 site, an impact assessment within the meaning of the Habitat Directive (in Italy “VIncA” procedure), which comes within the competence of Piemonte Region - Environment Direction, as manager of the sites involved in the project area and which already supports IdroLIFE (as reported in the related A8 form).

Italian domestic law makes provision for the Service Conference (Decreto Legislativo 127/2016) as the institution that gets all the administrations competent for any aspect around a communal table, in order to simplify and speed up approval procedures. Within 5 days since the initiation of the procedure all the partecipants shall be given 45 days to issue their opinion. Cultural, landscape, environmental and social security institutions shall be given 90 days.

Specifically, the action will start with the planning of the Feasibility Project (FP) (D. Lgs. 127/2016): 3 months. Then, the FP will be submitted for the contracting authority's (VCO Province) approval : 1 month. The Definitive Project will be designed in almost 6 months; all the necessary reports for the application of the compulsory procedures (Report for the hydraulic compatibility, landscape report; environmental impact on SCI or SPA study) will be attached to the definitive project. And after that, the Service Conference will be launched, inviting all the competent institutions and sending them the whole dossier (definitive project and attached reports); at that moment all the procedures will be launched; the first ("Investigating") Service Conference shall be performed within 30 days as from that date and the second ("Decision-making") Service Conference shall be performed within 90 days; in 90 days all the procedures will be closed, followed by the phase of executive planning, that will last almost 3 months. At the end of this phase the executive project will be approved by the contracting authority that will then launch the call for tender for the realization of the fish passages (action C4); the call shall be closed and the award shall be made within 3 months.

Regarding the next State reform, we provide in the Annex "Province VCO President letter" a document signed by the Province president Dr. Costa which clarify the future of Piemonte Region provinces and their possible evolution, also related to the activities to be carried out within IdroLIFE. At the present

the Province has the authority in the field of Environment, Public Works and Infrastructures, Viability as recently determined by the National and regional laws (year 2014 and 2015 respectively). The Province also will receive competencies in the field of the Natura 2000 network (all those SPAs and SCIs sites not included in National Parks). The future “referendum” will create the so called “Ente di Area Vasta”, which will maintain the same competencies in the previous fields. Also, the Province of VCO (or the future “Ente di Area Vasta” obtained the so called “mountain specificity”, thus the competencies which are held at present will not change, in any case, in the future. In summary, in any case, the competence on Environment, including Nature 2000 network areas, Infrastructures, Public works and Viability will remain under the Province or, eventually, under the incoming "Ente di Area vasta”, under national law, and the same will occur to the project with respect to the involvement of the Province in it.

CONTINUATION / VALORISATION AND LONG TERM SUSTAINABILITY OF THE PROJECT'S RESULTS AFTER THE END OF THE PROJECT

Which actions will have to be carried out or continued after the end of the project ?

- Production of juveniles for repopulation purposes in the hatchery of CNR-ISE (C2, C3) for at least 3 years after the project end.

- Monitoring of fish repopulation (D2), Monitoring of the fish passages at the Lake Tana (D3)

- Removal of alien invasive species for 3 years after the end of the project (C5)

- Project dissemination by using brochures, roll-up and website (E1)

- Compiling and updating the LIFE performance indicator Table.

How will this be achieved? What resources will be necessary to carry out these actions?

The production of fish for repopulation purposes will be guaranteed by the fact that CNR-ISE is a public body with permanent technical staff (educated also within the IdroLIFE project) that will be used to maintain the functioning of the hatchery realized in the IdroLIFE project, in agreement with the needs of the Natura 2000 Management Institutions of the Province of VCO. CNR-ISE will cover all the ordinary costs. The hatchery could be used in the future also as a research infrastructure on species of EU Interests. For this purpose CNR-ISE will apply for EU and national funds.

The monitoring of the fish passages at the Tana Lake will continue also after IdroLIFE by continuing to analyze the movies registered. This will enable to assess on the long term the importance of the interventions. On the base of project results, the post LIFE movie analysis could be organized with a variable frequency in order to reduce costs. These costs will be covered by the Province of Verbano Cusio Ossola, which could have assistance from external Institutions/private companies in order to continue this duty.

Removal of alien species will be continued by the CNR-ISE and GRAIA.

The updating of the LIFE performance indicators table will be done by the Coordinating Beneficiary CNR-ISE.

Protection status under National / local law of sites/species/habitats targeted (if relevant)

The conservation/protection measures for the fish species included in IdroLIFE are species specific and included in the Fish fauna management plan of the Province of VCO, dating back to 2000.

The native crayfish is totally protected and the capture is forbidden.

The marble trout fishing period is closed from October to February and the minimum catchable size is 35 cm. However, in a diverse river network this protection measures could not be sufficient. The number of individual catchable per day is 3 with a maximum of 10 per year.

The barbels Barbus plebejus and Barbus caninus are protected with a fishing ban from 1 to 30 june during the spawning season.

Cottus gobio, Leuciscus souffia, Rutilus pigus and Chondrostoma soetta lack of any specific protection measure.

Within the Val Grande national Park specific fishing rules are in use. Watercourses are divided into three categories: no fishing, no-kill fishing, fishing. Cottus gobio and Leuciscus souffia have no protection.

How, where and by whom will the equipment acquired be used after the end of the project?

The equipment used for the renovation of the hatchery at CNR-ISE will be utilized with the same purpose in the same place by researchers, technicians and students belonging to this public body.

The equipment used for dissemination by the PNVG will remain in the “Aquamondo” infrastructure and will be utilized for educational activities with students and children in general. The equipment will be used by personnel of the PNVG.

The equipment used at the Tana Lake will remain at the site and used with the same purpose by the personnel of Province of Verbano Cusio Ossola or by an external assistance assigned from PROVCO.

Tag readers (CNR-ISE) will be used in Post LIFE actions (monitoring).

To what extent will the results and lessons of the project be actively disseminated after the end of the project to those persons and/or organisations that could best make use of them (please identify these persons/organisations)?

The hatchery and rearing plant realized at the CNR-ISE will be utilized both for teaching activities, thesis preparation, lessons to student of technical schools and university, often visiting the CNR-ISE.

Also, the plant will be utilized for local events organized with the municipalities or the Provincia of Verbano Cusio Ossola aiming at the valorization of “the best” of the territory, or events such as the “night of the researchers” (European event). So the equipment and infrastructures will be used for stakeholders and audience of different type. As a result, both IdroLIFE main messages and the wider topics on biodiversity will be disseminated.

The same will be realized by the Val Grande National Park Institution through the “Acquamondo” infrastructure.

Also, results and key messages from IdroLIFE will be conveyed in scientific congresses and other events related to biodiversity conservation, wildlife, water resources.

How will the long term sustainability of the project's concrete actions be assured?

The long-term sustainability of the fish passes construction (both rock ramps and fish passes) will be assured by the type of materials used, made to last several decades. More specifically, the rock ramps built on the weirs, using boulders, will be designed according to hydraulic good practices. The river historical floods and its ability to move the boulders will be taken into account. The boulders will be dimensioned to prevent undesirable movements and will be linked together to increase the steadiness of the ramp, and ensure at the same time adaptations to small adjustments during the floods.

With regard to the 2 pool passes of the project (at Prata and Lake Tana), they will be under responsibility of the current licensees. They will bear the costs of management and maintenance of the infrastructures until the end of the concession. At the next renewal of the license, the responsibility and costs related to the fish passes and to the monitoring cabin monitoring at Lake Tana will pass to the new dealer. this process will ensure the long-term sustainability of interventions.

The effectiveness and sustainability of the repopulation interventions will be maintained on a long term through the adoption of the Conservation Plan.

The long term sustainability of the hatchery renovation at the CNR-ISE will be guaranteed by the public body itself, that will use the infrastructure for demonstration activities on the territory and for research activities, even after the end of LIFE project.

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TECHNICAL APPLICATION FORMS

Part C – detailed technical description of the proposed actions

LIST OF ALL PROPOSED ACTIONS

A. Preparatory actions, elaboration of management plans and/or of action plans

A1 Preparation of administrative procedures for the project management and execution

A2 Collection of abiotic, hydromorphological and biological information necessary to plan concrete actions

A3 Planning of interventions of longitudinal connectivity restoration

B. Purchase/lease of land and/or compensation payments for use rights

C. Conservation actions

C1 Renovation of a public hatchery dedicated to project actions and conservation activities in Verbano Cusio Ossola Natura 2000

C2 Repopulation of Salmo marmoratus, Cottus gobio, Telestes souffia and Austropotamobius pallipes in Verbano Cusio Ossola Natura 2000 sites

C3 Artificial reproduction and breeding of Rutilus pigus and Chondrostoma soetta and repopulation in SPA IT1140013 Lago di Mergozzo and Monte Orfano

C4 Implementation of the interventions of longitudinal connectivity restoration

C5 Control of invasive alien species in project sites

C6 Development and adoption of a conservation plan at provincial scale

D. Monitoring of the impact of the project actions (obligatory)

D1 Monitoring of the effectiveness of the artificial breeding and rearing activities

D2 Monitoring of the effectiveness of repopulation activities

D3 Monitoring of the functionality and effectiveness of fish passages

D4 Assessment of the social-economic impact of the project

D5 Assessment of the project impact on ecosystem services

E. Public awareness and dissemination of results (obligatory)

E1 Dissemination planning and execution

E2 Educational and transferability activities

F. Project management (obligatory)

F1 Project management and monitoring

F2 External Audit

F3 Monitoring of the project progress

F4 Post-Life action plan

DETAILS OF PROPOSED ACTIONS

A. Preparatory actions, elaboration of management plans and/or of action plans

ACTION A.1: Preparation of administrative procedures for the project management and execution

Description and methods employed (what, how, where, when and why):

What

This action is dedicate to all the specific activities dealing with the preparation of the official start of the project and including the signature of the official agreements among the Coordinating beneficiary and the Associated beneficiaries and among the COordinatign Beneficiary and the Contracting Authority.

How

The coordinating Beneficiary will prepare all the official agreements that have to be signed by each associated beneficiary. Official agreements will be collected together with the documents related to the nomination of the Management team, Steering committee and the Communication team (Action F1).

After the project formals agreements signature, the Project manager will officially communicate the start of the project to all the stakeholders (A8) and cofinanciers (A6).

The correct execution of the action wil be monitored with the following indicators: number of official agreements signed, number of official communication to stakeholders.

Within this action the, participation of two project representatives to the Contracting Authority kick-off meeting is forseen.

When

This action will be carried on within the first month of the project.

Where

The action will be carried on in headquarter of each beneficiary.

Why

This action is necessary for the official start of the project IdroLIFE. After the official agreement signature, each beneficiary will be responsible officially of its activities as indicated in the project.

Beneficiary responsible for implementation:

CNR-ISE

All associated beneficiaries are involved for the Official Agreement and project start procedures.

Assumptions related to major costs of the action:

A1's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Official Agreement Signed	10/2017

A1's PROJECT MILESTONES

Milestone name	Deadline
Official agreement signature	10/2017

A. Preparatory actions, elaboration of management plans and/or of action plans

ACTION A.2: Collection of abiotic, hydromorphological and biological information necessary to plan concrete actions

Description and methods employed (what, how, where, when and why):

What

This is a preliminary action and is fundamental for the planning and implementation of concrete conservation actions. In particular Actions C2, C3 and C6 are beneficial of this preliminary action to address the need to conserve target species and create recolonization colonies of fish ans crayfish in the VCO Natura 2000 sites. This action aims to provide, in fact, the collection of all bio-ecological and environmental information in the project sites. The data will be added in a open access database, useful to define the best operational strategies for repopulation activities (C2, C3) as well as the best and most relevant strategies for species conservation (C6).

The Action is composed of 3 sub-actions:

A2.1 Collection and index-linking of existing information

A2.2 Study of fish and cray-fish fauna and habitat characterization in the project areas

A2.3 Analysis of the information collected

How

The sub-action A2.1 foresees the collection, organization, geo-referenziation in an open access database all the available biological, chemical and hydro-morphological data for the project sites and the relative basin. This operation will be possible thanks to other projects carried out by the Partners or by Public Bodies (eg. Regional Environmental Protection Agency, International Commission for the Protection of the Italian-Swiss Waters CIPAIS, Italian-Swiss Commission for Fisheries, Province of Varese). Special attention will be given to fish data, which will be used to identify the well balanced and abundant populations that could provide the adult and spawners for Actions C2 and C3. Moreover, information from fishing licenses of VCO fishers will be collected and analyzed to get an overview, at least qualitatively, of the fishing pressure and catches. Based on the information collected, the precise sites of intervention will be pin-pointed within the River Ticino basin (both inside and outside the Natura 2000 sites).

The sub-action A2.2 aims to study some basic aspects about fish and cray-fish communities. This will allow to properly plan the implementation of conservation actions, for example the identification of actual nursery areas where is possible to carry on restocking activities. During field surveys, flow and chemical-physical parameters will be measured (with field multiparametric probe and/or lab analyses) moreover habitat characteristics (vegetation cover, riverbank structure, type of substrate) and macro-invertebrates community will be evaluated too.

The data about fish populations (abundance and age-structure) will be collected through quantitative or semi-quantitative surveys. Where possible (eg. in small/average river stretches) quantitative monitoring of the target species will be performed throughout electro-fishing (standards ISO CEN-EN 14011), collecting the data of: sampled area, number of individuals per area, total weight per area and structure of the target species populations. Where the capture efficiency with electrofishing may be naturally reduced due to the high flow rate, a semi-quantitative fish census will be carried on. This consists in the execution of a single action of electrofishing along a stretch (whose measures will be taken as well - length and width). The minimum length of the investigated stretches will be equal to 10 times the wet riverbed width, as for the quantitative survey.

All the specimens captured will be measured (total length and total weight). In addition, scales' samples will be collected (in the dorsolateral area) to age determination. Finally, when possible, the sex will be detected by phenotypic analysis. Part of this information could be also obtained thanks to the involvement of anglers. They will be first trained, then provided with the necessary instruments to collect measures data and scales.

The surveys on cray-fish populations in the Val Grande National Park will be subcontracted to external assistance that will:

- define the hydrographic network suitability for crayfish within the park

- evaluate the river morphology and functionality

- analyse the macroinvertebrate community, using the STAR_ICMi index and the relative sampling protocol

- identify at least 4 suitable sites for reintroduction purposes

The sub-action A2.3 foresees the analysis of all the data collected by the two sub-actions above mentioned to obtain information on biomass, density, population structure, linear growth, length at maturity for males and females, optimal length of capture (Froese & Binholan 2000). The data of abundance and length will be used to analyze the population structure of the target species using different analytical and quantitative approaches. Example are the Modal Progression Analysis (Sparre & Venema 1998) and the Population Structure Density index -PSD (Anderson & Neumann 1978, Gablehouse 1984). The length and age data will be used for the construction and comparison of linear growth models to define the growth pattern, the maximum length and the rate growth; Von Bertalanffy model (1938) will be used as a descriptive model of growth.

All information will be analyzed according to the procedure defined by Ogle (2012).

Finally, all the information gathered will be used to determine mortality (natural and total) rates of each populations according to the linearized catch curve model (Sparre & Venema 1998). The results will be used to set management measures of habitat and fishing activities consistent with the species conservation policies (C6).

This action is a basis for action C5, as it provides useful informations on alien invasive species distribution and abundances which can play as a baseline and reference to estimate the results of IAS control activities (C5).

Where

For the Subaction A2.2 is expected to perform at least the following number of field surveys:

- 10 surveys along the River Toce

- 10 surveys within the Val Grande National Park

- 5 surveys within the SCI Lake Mergozzo and its tributaries

The sub-actions A2.1 and A2.3 interest all the River Ticino basin

When

Month 1 to 18

Why

This action is necessary for the execution of conservation actions C2, C3, C5 and C6, as it will allow to clearly outline all the informations (biological elements, habitat, pressures) necessary to plan and organize repopulation activities (C2,C3), control of Alien Invasive Species (C5) and the Conservation plan preparation (C6). Also the data achieved will enable to ameliorate the baseline for indicators of progress in the LIFE Progress Indicator Table (state of play at the beginning of the project).

The action is directly necessary for the execution of concrete actions during the project's lifetime: it enables to plan effective repopulation activities, targeting sites and identifying potential risks/threats.

The main threat to cray-fish and its natural recolonisation in SCI "Val Grande" was probably poaching, decreased thanks to the gradual consolidation of the Park and to the pass from one generation. Action E.2.2 has a preventive flavor for this threat.

Beneficiary responsible for implementation:

CNR-ISE

This action will be carried on mainly at the CNR-ISE by its staff but the field surveys foresee the support of GRAIA. Personnel of PNVG and PROVCO will participate to some of field activities

Assumptions related to major costs of the action:

A2's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Publication on the autoecology of Salmo marmoratus in the Toce river	06/2019
Publication on the autoecology of Cottus gobio in the VCO Province	06/2019
Open Access Database	06/2019

A2's PROJECT MILESTONES

Milestone name	Deadline

A. Preparatory actions, elaboration of management plans and/or of action plans

ACTION A.3: Planning of interventions of longitudinal connectivity restoration

Description and methods employed (what, how, where, when and why):

What

The action intends to plan the concretely restoration of the longitudinal connectivity of the River Toce in a reach of about 45 Km long, upstream of Lake Maggiore. It aims to restore 5 impassable barriers that prevent any fish movement upstream.

Together with the fish passes design, the project foresees to plan a monitoring system at the Lake Tana dam: a monitoring chamber will be designed adjacent to the fish ladder, to continuously control the fish movements.

At the end of the preparatory action A3, on which depends the concrete action C4, several aspects will take care of: the Service Conferences needed to obtain the authorizations will be carried out, the necessary permits issued and, after having implemented any requirements pointed out by the assemblies, the executive projects will be drawn up. On the basis of these executive projects, containing the tender specifications, the Province of Verbania will open call for tender and award the contract.

How

The restoration of the longitudinal connectivity of the two target rivers originates from the Interreg IIIA project "Conservation and restocking of marble trout in the River Ticino catchment area", concluded in 2007, which included the Action "Census of impassable obstacles to fish migration within the entire hydrographic network of the river basin". River Ticino catchment area, in fact, includes the River Toce as one of the most relevant tributaries of Lake Maggiore. The undertaken census grants nowadays a precise knowledge of their fragmentations, which will be the topic of this action, and indicates the scale of priorities based on which the interventions to be planned and realized with this project have been chosen.

At the 6 impassable obstructions chosen, the definitive and executive designs will be realized, including topographic surveys, environmental and landscape reports. The definitive designs will define, for each fish pass: type of fish pass to be realized, position, mean slope, total length, mean width, discharge through the pass, total costs; if it is a rock ramp: volume of boulders necessary and if it is a pool pass: number of pools, length, width and water depth of pools, type and width of cross-wall, width and height of submerged orifices, length and width of side slots.

The executive project of the fish pass at the Lake Tana dam will include the design of the monitoring station to observe migrations. It will be equipped with a viewing window, a H24 video monitoring system composed of a video camera connected to a PC and a specific software that records fish transits.

As attachment, the "Feasibility Study of the interventions of longitudinal connectivity restoration" of this action is provided.

Where

The points where the project plans interventions aimed to restore the longitudinal connectivity of the river habitat, from Verbania through the Val d'Ossola, are (see picture attached: "Fragmentation Map within project area"):

Toce01- Weir on River Toce at Migiandone Bridge

- distance from mouth: m 14375

- Fish pass: not present

- Type of fish pass to be realized: rock ramp

Toce02- Diversion weir on River Toce in Prata

- distance from mouth: m 25641

- Fish pass: present but not effective

- Type of fish pass to be realized: pool pass

Toce03- Weir on River Toce at “Sei arcate” Bridge

- distance from mouth: m 33950

- Fish pass: not present

- Type of fish pass to be realized: rock ramp

Toce04- Weir on River Toce at Mizzoccola Bridge

- distance from mouth: m 37118

- Fish pass: not present

- Type of fish pass to be realized: rock ramp

Toce05- Diversion dam of Lake Tana (ENEL)

- distance from mouth: m 42993

- Fish pass: not present

- Type of fish pass to be realized: pool pass

Regarding the River Toce, the weir located in Prata (Toce02) is already equipped with a pool fish pass but it resulted just partially functioning, according to the results of the above mentioned census. Even if many structural features are properly implemented (slope, number of basins, size of the basins), the cross-wall type and the feed rate determine excessive turbulence and energy within the pools, performing a selection process of the fish that can pass, letting migrate only big Salmonids. Even the weir that currently fragments the S. Bernardino Stream is already provided with a fish rock ramp, which is not completely functional. As things stand, the present proposal foresees to restore the connectivity at these two obstruction adjusting the already existing fish passes.

When

In the light of the experience in designing, authorizing and constructing fish passes, it is believed that 1 year and a half is necessary for the different phases of the design process and for the consecutive approval of the project by the Services Conference through the obtainment of the compulsory authorizations and the draft of the final design.

Thus this action will start in November 2017 and will be concluded within June 2019.

The permissions necessary include a Hydraulic verdict, a Landscaping Authorisation and, if is the case, an impact assessment (VIncA) (see form B5).

Why

The importance of the realization of fish passes at obstruction points for the long-term conservation of fish populations belonging to species of union interest is rather discussed in the description of Action C4.

The design of fish passes must be made according to very precise rules, respecting the criteria of modern design manuals available and assessing accurately a whole series of parameters, which if not properly evaluated lead to the construction of a fish pass not functioning, as often happens. That's why a careful planning phase carried out by expert technicians is undoubtedly necessary.

The planning phase is a preparatory action necessary to plan the next stage of concrete implementation and obtain the appropriate authorizations required by law. In particular hydraulic, environmental and landscape authorization forms are mandatory. These project documents will be evaluated by the authorities responsible for issuing permits at the final design phase, which will be collected during the Service Conferences.

The action counts towards the CCA 25% insofar as it's directly necessary for the execution of concrete actions during the project's lifetime because it is fundamental for the execution of interventions of longitudinal connectivity

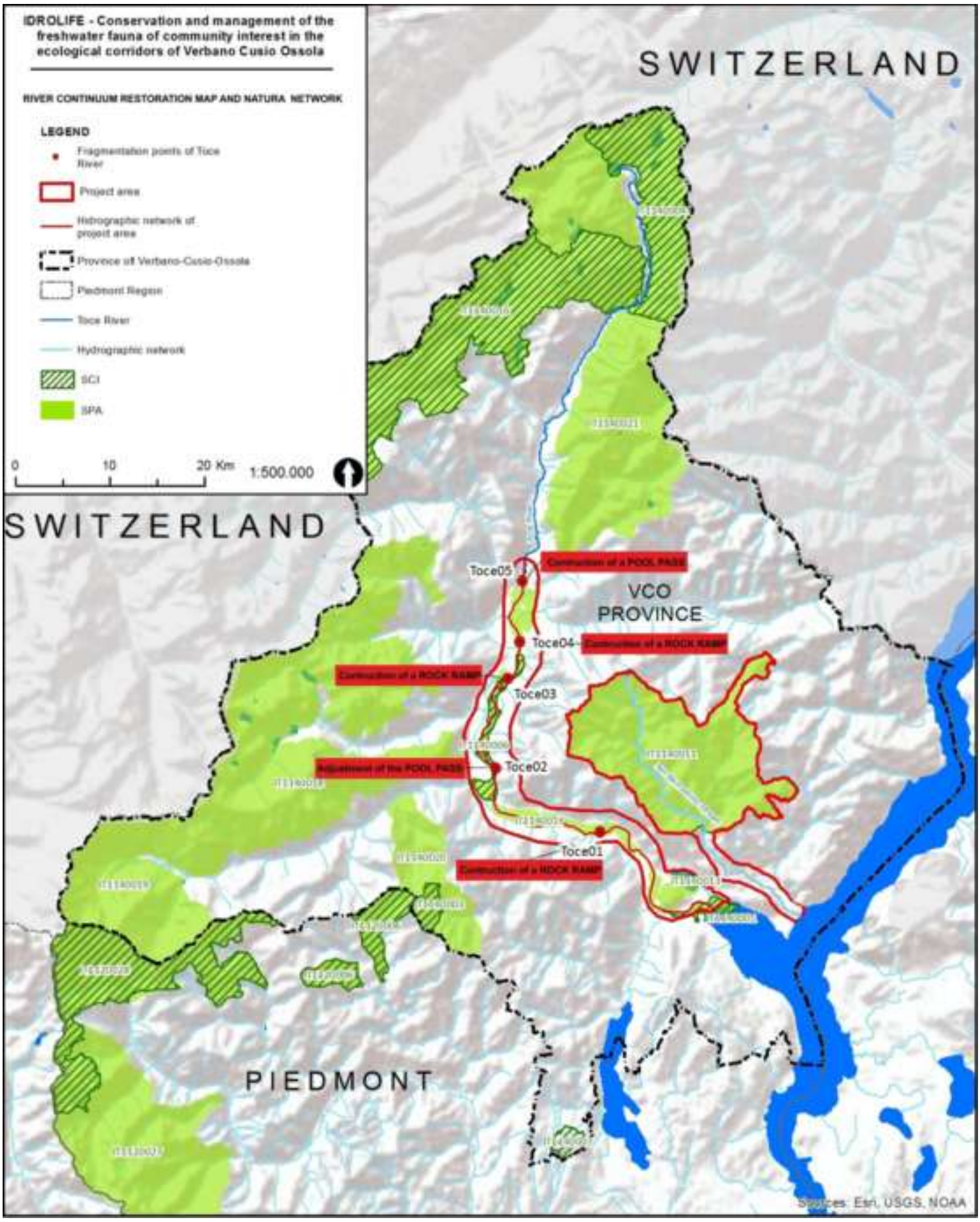
Beneficiary responsible for implementation:

GRAIA

PROVCO will participate to the action for interventions planning, technical advise and supervision

Assumptions related to major costs of the action:

Name of the picture: Restoration Map and Natura 2000 network



A3's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
No. 5 executive projects regarding the interventions to restore river longitudinal connectivity	06/2019

A3's PROJECT MILESTONES

Milestone name	Deadline
Approval of final fish pass projects	06/2019
Service conferences	06/2019

C. Conservation actions

ACTION C.1: Renovation of a public hatchery dedicated to project actions and conservation activities in Verbano Cusio Ossola Natura 2000

Description and methods employed (what, how, where, when and why):

What

The C1 action is dedicated to a series of activities addressed to the renovation of an old fish hatchery and rearing plant located on the territory of VCO Province. This is an old site used until the late '70s to produce fish juveniles for the territory around Verbania and located in the building owned by the CNR-ISE. After renovation it will become the first public hatchery of the VCO. The plant has an estimated annual production capacity of about 60,000 juveniles of S. marmoratus, 5,000 of R. pigus and C. soetta, 1000 Cottus gobio.

How

The renovated structure will be dedicated full time to the project IdroLIFE and, even after its conclusion, it will be used for the production of juveniles fish for conservation actions and repopulation of species of EU interest in the Natura 2000 sites of Verbania and possibly in other Natura 2000 sites belonging to the Ticino/ Maggiore Lake basin. In fact the Directors of Institutions (VCO Province, PNVG, CNR-ISE) will sign an official agreement on the use of the hatchery plant that will outline the responsibilities, constraints of use and priorities of fauna within the aims of the IdroLIFE Project and to the wider conservation objectives of the Habitats Directive 92/43/EEC.

The current old plant consists of infrastructures of which some are still functioning and other need to be restored completely. Remain operable the plant that takes up water from Maggiore Lake (35 m depth, temperature max H2O 15 ° C), part of the pipes which lead to two large cement pools and part of the conduction system that by gravity brings the water in a large room once used to hatching (4m height difference between tanks and hatching room). Instead, must be fully restored the hatchery tanks and hatching beds, and partially restored the underground pipes that from the hatchery room hub reach the outside (about 20 meters long).

The structure realized (some preliminary project hypothesis in the figure attached) will be functional to the fish species conservation in the SCI and SPA of the VCO territory. The plant will be suitable both for fish of cold or fresh waters such as Salmo marmoratus, Cottus gobio and Telestes souffia, and for fish of warmer waters (Chondrostoma soetta and Rutilus pigus), which are the objects of action C2 and C3. This hatchery will be dedicated full time to the project IdroLIFE.

The presence of the water withdrawal system from Maggiore Lake at a depth of 35 m and the possibility to use two large cement pools (12m*8m *1.5m) located outside will make this system particularly flexible and versatile. The water can be maintained at the desired temperature thanks to the variation of the rate of its withdrawal from the lake and the resident time in the tanks. It will be conveyed to fall in the hatchery room with the relative tank for settling and adjusting temperature, and hence to the tanks used to hatch the eggs of various species of fish. Also in this case the rate of water distribution to the individual tanks for the hatching of the eggs will be variable in relation to the desired temperature range.

The renovation of the hatchery will be implemented through the purchase of material for the main hydraulic system (pipes and replacement of a pump for drawing water from the lake) and carrying out some structural and hydraulic work (control of underground pipes, modification in plumbing position, change joints of underground pipes), both through the purchase of specific equipment for fish breeding, hatching and rearing of zooplankton used as food for the feeding of larvae; composed as follows: no. 1 rack of zug jars for hatching eggs, no. 3 horizontal hatching beds troughs for Salmonids eggs, no. 4 fiberglass tanks for rearing young

larvae and housing broodstock, no. 4 rectangular tanks for breeding bullhead, system for breeding shrimp Artemia salina and consumables such as cleaning liquids and disinfectants.

Once the assembly of the system will be done, there will be a first testing phase verifying its correct functioning. The withdrawal loads will be calibrated in order to ensure the achievement and maintenance of the desired temperature, both in the external tanks that in the inner tanks.

The hatchery room will be equipped with a small laboratory that will be used also for some environmental education activities described in the section devoted, and for this reason it will be necessary to purchase 1 counter with a sink and drawers.

After the renovation, the three public bodies (CNR-ISE; PNVG and PROVCO) will adopt an agreement on the use of this hatchery for fish repopulation activities in Natura 2000 sites of the PROVCO and PNVG rivers/lakes.

Where

CNR-ISE headquarters.

When

Month 0-14

Why

Currently the VCO Province and the local managers of Natura 2000 sites do not have a public hatchery and of suitable size to produce enough material for conservation actions for Community interest fish species. This severely limits the activities of conservation both in Natura 2000 sites and in the remaining areas associated with them. There are however some small-medium hatchery plants sporadically used by small fishermen's associations to make local repopulation activities. In this actions there will be the creation of a public facility, the utility of which will remain guaranteed by the fact of being included in a public structure, but also a support to the activity of a hatchery plant of a small association that has declared its willingness to participate actively in the project.

The construction of a hatchery plant owned and managed by a public entity, whose aims and methods of use will be agreed with the VCO Province and the local managers of Natura 2000 sites (National Park Val Grande and Province of VCO) , will give priority to the conservation objectives. The construction of a public hatchery plant is needed to help reverse the decline of populations of Salmo marmoratus, Cottus gobio, Leuciscus souffia, Rutilus pigus and Chondrostoma soetta in the project areas, both during the project and afterwards.

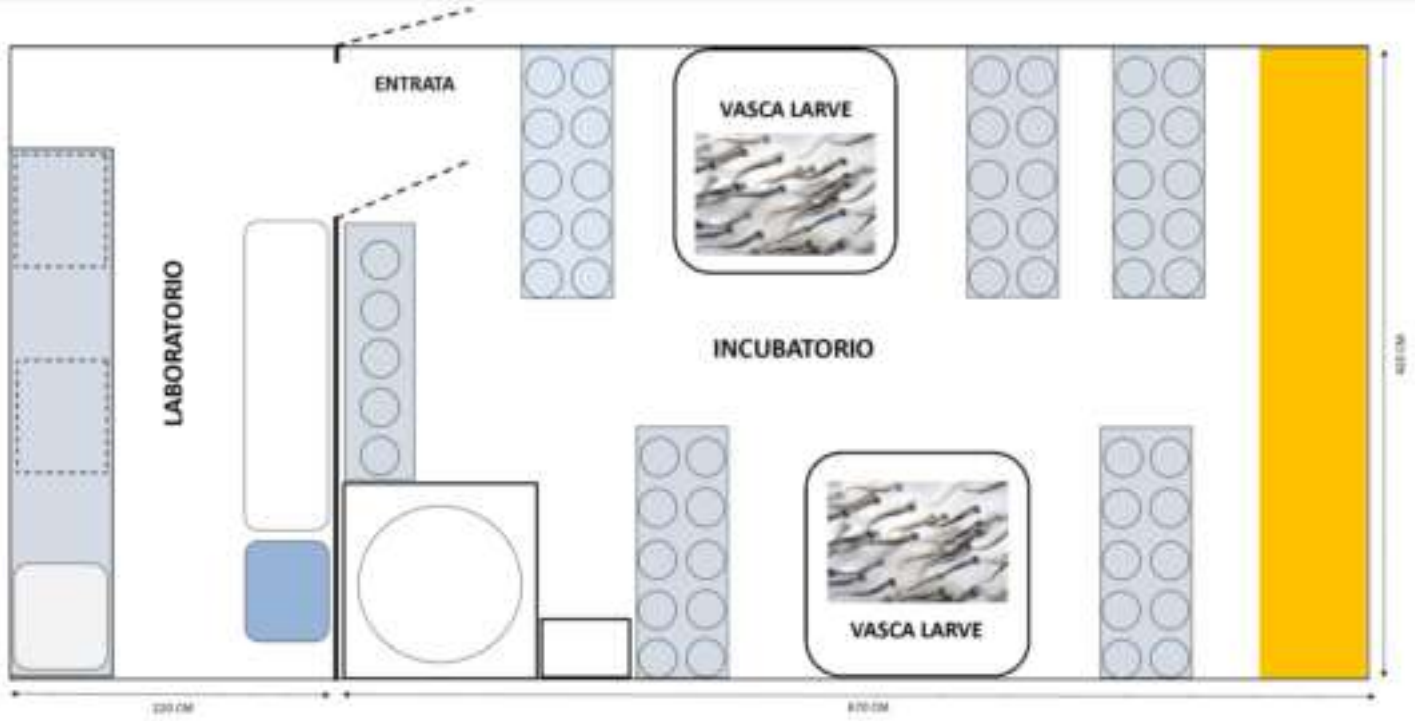
Beneficiary responsible for implementation:

CNR-ISE

PNVG and PROVCO will participate in the definition and adoption of the official Agreement on the use of the hatchery for the conservation of fish species in Natura 2000 Sites.

Assumptions related to major costs of the action:

Name of the picture: Hatchery draft project



C1's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Official agreement among CNR-ISE PROVCO, PNVG, for the use of the hatchery	11/2018
Map of the hatchery and photos	11/2018

C1's PROJECT MILESTONES

Milestone name	Deadline
Signature of the agreement among CNR-ISE, PROVCO and PNVG for the use of the hatchery	11/2018
Hatchery set up concluded	11/2018

C. Conservation actions

ACTION C.2: Repopulation of Salmo marmoratus, Cottus gobio, Telestes souffia and Austropotamobius pallipes in Verbano Cusio Ossola Natura 2000 sites

Description and methods employed (what, how, where, when and why):

What and where

Action C2 is dedicated to the repopulation of

- Salmo marmoratus in SPA IT1140017 Fiume TOCE

- Cottus gobio e Telestes souffia in SCI IT1140011 Val Grande,

- Austropotamobius pallipes in 4 suitable sites in SCI IT1140011 Val Grande.

Repopulation in Toce river will be done principally in the same areas where will be carried on the defragmentation interventions (C3).

Specifically action C2 aims to

- repopulate Toce river SPA IT1140017 with at least 80000 individuals of Salmo marmoratus,

- repopulate SCI IT1140011 Val Grande (Val Grande National Park) with at least 1000 individuals of Cottus gobio and Telestes souffia,

- create new colonies of Austropotamobius pallipes in SCI IT1140011 Val Grande (n.500 individuals in total).

How

For the Salmo marmoratus, Cottus gobio and Telestes souffia repopulation will be organized as follows.

Spawners of Salmo marmoratus will be captured since the autumn of the second year of the project in rivers belonging to the Ticino/Lake Maggiore basin and where its population is well structured and in a good status (sites chosen according to A2 results). The spawners of Salmo marmoratus will be selected according their phenotype (marbled body and opercular area, absence of red spots). Doubtful specimens will be brought to the CNR-ISE hatchery, released in tanks/pools and then in-house tested genetically before any other operations (costs not charged on this project).

Immature spawners will remain in the CNR-ISE hatchery where they will be reared in large tanks/pools enriched with refugia, shadows etc. The health (weight, length, external appearance) of the spawners brought to the hatchery will be weekly monitored and assess accurately to avoid any problem of malnutrition, diseases, etc…

Mature spawners at the moment of capture instead will be stripped directly in the field and only fecundated eggs will be brought to CNR-ISE. Before being released, spawners will be marked (RFIDs or Radio tracking Tags). Marking will enable to monitor their survival and ecological behavior (see also D2) in the following years. Sperm of males will be collected and frozen.

Cottus gobio spawners will be caught in spring in small rivers belonging to Lake Maggiore catchment. All the

specimens will be brought to the CNR-ISE hatchery (C1) until maturation. Part of the adults will remain in the hatchery as as broodstock and part released in Val Grande rivers.

In all, fecundated eggs of Salmo marmoratus and Cottus gobio will be incubated in the dedicated infrastructures realized at CNR-ISE (zug jars, horizontal spawning beds, tanks etc). Fish larvae will be maintained in the hatchery until the absorption of the yolk sac and then released in those suitable sites identified in A2.

A part of Salmo marmoratus larvae will be maintained in the tanks and reared until 15-20 cm, marked and then released in the Toce river (approximately 300 individuals per year). A part of the Cottus gobio newborns will be also maintained in the hatchery until a size of approximately 5 cm, then marked (elestomers or other marks) and released in the San Bernardino River. Marked fish will be utilized for the monitoring actions (D1).

Fish feeding will be done with both alive (Artemia salina) and artificial (specific powder, pellets) food.

Fish tanks and pools, dedicated to adults and juveniles, will be enriched with refugia to reduce the stress of captivity.

Telestes souffia will be repopulated in SCI Val Grande by translocating adults and juveniles taken by electrofishing from adjacent rivers where the population is in a good status with high densities (information and data from A2 action).

Crayfish Austropotamobius pallipes repopulation will be done by a private company specifically hired as external assistance. It will provide crayfish individuals, will mark them and will release in those suitable sites (at least 4) identified in A2. The crayfish used for the repopulation will be of different sizes and ages (subadults and adults) in order to create well structured colonization hotspots.

Austropotamobius pallipes will be add in the SDF of IT1140011 by the Ente Val Grande National Park (project partner) which is deputed to the management of the natural resources of the SCI IT1140011.

When

This action will last from month 11 to the end ot the project. Also, repopulation actions will continue at least 3 years after the project end.

Why

This action is necessary to halt the decrease of Salmo marmoratus, Cottus gobio, Telestes muticellus and Austropotamobius pallipes in Natura 2000 sites of Verbano Cusio Ossola. Part of action C2 (re-population of Salmo marmoratus in IT1140017) will be done in a SPA and not (at present) SCI. We think that these action are eligible, because these areas are ecologically connected to the other target SCIs and upstream from IT114001 thus they can be considered as ensuring the coherence of the sites designated for these species; 2. as part of the project PROVCO will act in order to change SPA IT1140017 in SCI (see C6).

The current presence of marble trout in Lake Maggiore/Ticino basin (Italy and Switzerland) and in Toce River is established (as provided in maps in form B2c). The situation is, however, critical, as a result of various factors (in order of magnitude)

Fragmentation of longitudinal connectivity of the aquatic corridor, that prevents the upward migration of fishes from the lower stretches of the water catchment area towards areas suitable for reproduction and/or for the surviving of the juveniles;

A probable not sustainable fishing pressure by anglers, due to allowable minimum catch size (35cm) established at regional scale, too low for the local population of marble trout which holds a migratory

behavior;

The interbreeding with Salmo trutta, used in the past (approximately until 2010 before the adoption (2010) of the new Regional Law 37/2006) for restocking practices also in the project area.

IdroLIFE aims to eliminate or significantly minimize these threats to marble trout by means of:

-The longitudinal connectivity restoration of Toce River up to the first natural insuperable barriers (action C.4).

-Specific studies on the marble trout biology aimed to define site-specific protective measures, like new management rules for marble trout means and higher probability of increase the fitness of its population in the medium and long term.

-Compliance with the new regional Fisheries Plan (Regional Law, n. 37/2006 approved in 2010), that obligate to use for restocking purposes in Natura 2000 sites and in the suitable river stretches only Salmo marmoratus. The project also aims to remove remnant Salmo trutta specimens from the project area (action C.5; see also this document at RP11). In addition, the restocking activity within the project and also post-life (actions C.6 and F.2, becoming F.3) will be implemented with checked biological material, originating form wild broodstock selected and produced within the hatchery directly managed by the Coordinating beneficiary CNR-ISE.

Beneficiary responsible for implementation:

CNR-ISE

PNVG and PROVCO personnel will participate to some of the re-population activities

Assumptions related to major costs of the action:

C2's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Minutes of repopulation	09/2021

C2's PROJECT MILESTONES

Milestone name	Deadline
Salmo marmoratus, Cottus gobio and Telestes souffia repopulation concluded	09/2021

C. Conservation actions

ACTION C.3: Artificial reproduction and breeding of Rutilus pigus and Chondrostoma soetta and repopulation in SPA IT1140013 Lago di Mergozzo and Monte Orfano

Description and methods employed (what, how, where, when and why):

What

This action is dedicated to the re-population of Rutilus pigus and Chondrostoma soetta in SPA IT1140013 Lago di Mergozzo. The action is characterized by a Pilot “core” that is the development and testing of specific procedures for the artificial reproduction and breeding of Rutilus pigus and Chondrostoma soetta and by a best practice part that includes the capture of fish adults in the wild, and the fish marking for the monitoring of repopulation success (D actions) and the re-stocking of the fish species in Lake Mergozzo.

As results we aim to repopulate with at least 5000 individuals of Rutilus pigus and Chondrostoma soetta the SPA IT1140013 Lago di Mergozzo and to create a captive broodstock to be used for further conservation actions (for instance in post-LIFE activities).

How

The production of fish juveniles will be realized by using spawners caught as much as possible in the Lake Maggiore and River Ticino basin and tributaries (sites chosen according the results of Action A2). The spawners will be caught as much as close to the spawning period by electrofishing and other gears, such as trap nets or seine nets.

Eggs and sperm will be collected. Eggs will be incubated in the hatchery at the CNR-ISE. A part of the juvenile fish will be released in SPA IT1140013 (sites chosen in A2) after the absorption of the yolk sac, whilst a minor part will remain in the hatchery in order to test suitable rearing practices addressed to growth the fish until a reproductive size. Specific attention will be addressed to the rearing of juveniles and adults. Different rearing conditions will be tested and rearing conditions and information will be registered accurately in a lab book used as a basis for the preparation of a technical manual used in the dissemination and networking (Actions E). The permanent stock of Rutilus pigus and Chondrostoma soetta will be used in Post-LIFE actions (F4) for ensuring the re-stocking of Lake Mergozzo for at least 3 years after the project end. This will be guaranteed by the permanent personnel at the CNR-ISE.

Fish rearing will be carried on in the new hatchery realized at the CNR-ISE (C1) but in case of further needs, such as additional space or different rearing conditions, other local hatchery will be made available from the local fishing associations will be used (see A8).

This action is very delicate. For instance, due to the low density of the R. pigus and C. soetta population in the whole distribution area, the catch of the spawners will be possibly difficult. We will reduce this risk by a preliminary evaluation of the specie distribution and abundances in the whole basin by the analyses of the available data from different sources (See A2).

Also, the rearing of the species (conditions, feeding rates etc.…), will be under high level of risk due to the novelty of the procedure. To reduce this risks 1. We will test different rearing procedures, each one accurately registered in a lab book. 2. we will take into account the information available from other similar projects such as LIFE00nat/it/7268 carried on by Ente Parco del Ticino e LIFE CON.FLU.PO carried on by the Regione Lombardia. Re-stocking could be also unsuccessful: to reduce mortality of fish larvae due to predation or low food sources, they will be stocked in suitable nursery areas identified in A2.

The progress and the success of the action will be measured according to the following indicators: N. of field campaigns for adult fish capture, N. of adults of R. pigus e C. soetta captured, N. of mature fish successfully stripped, N. of fish released.

Where

Adult fish and spawners will be captured in the Lake Maggiore basin, reared in the hatchery at the CNR-ISE headquarters and then released in Lake Mergozzo.

When

This action will start from the second year of the project and it will continue during the whole project. Repopulation with juveniles of the two species will continue also in Post LIFE period.

Why

This actions wants to contribute significantly to the conservation of the residual populations of Rutilus pigus and Chondrostoma soetta in SPA IT1140013.

Action C3 will be carried on in a SPA and not in a SCI. So, should be not eligible: however, 1. these areas are ecologically connected to the other target SCIs thus they can be considered as ensuring the coherence of the sites designated for these species; 2. Additionally, as part of the project PROVCO will act in order to change SPA IT1140013 in SCI.

Beneficiary responsible for implementation:

CNR-ISE

PROVCO participate to repopulation activities

Assumptions related to major costs of the action:

C3's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Minutes of repopulation	09/2021

C3's PROJECT MILESTONES

Milestone name	Deadline
Rutilus pigus and Chondrostoma soetta repopulation concluded	09/2021

C. Conservation actions

ACTION C.4: Implementation of the interventions of longitudinal connectivity restoration

Description and methods employed (what, how, where, when and why):

What

The action consists in the construction of 5 fish passes and a monitoring chamber, according to the projects draft within action A3, more precisely:

1. Construction of 3 rock ramps on R. Toce

2. Construction of 1 pool pass with a monitoring chamber on R. Toce

3. Adjustment of 1 pool pass on R. Toce

The rock ramp is a close-to-nature fish pass type, assembled with large boulders to imitate as closely as possible natural rivers allowing fish to overcome the obstacle, frequently used to restore longitudinal connectivity at the weirs for erosion containment. The built infrastructure must guarantee the exit (upstream) and the entrance (downstream) of all the species that compose the fish community, adopting design solutions which enable all the target species to easily overcome the obstacle, even during periods of water shortage and in any hydrological condition.

The pool pass type is a technical fish pass whose principal of functioning consists in dividing up a channel leading from the headwater to the tailwater by installing cross-walls to form a succession of stepped pools. The discharge is usually passed through openings (vertical slots) in the cross-walls and the potential energy of the water is dissipated, step-by-step, in the pools. The weir at Prata is already equipped with a pool pass, which however is not effective (see Action A3 and Feasibility Study attached). The realization of the new fish pass will therefore preserve all the effective parameters and redo the elements not adequate.

The other big obstacle (height of drop of 4.5 m) that requires a pool pass (a rock ramp is not applicable) is at the Lake Tana dam, where it must be newly built. Given the ecological and social importance of the structure, due to it's on top of the river corridor and close to the town of Domodossola, it is interesting to plan a continuously monitoring system, realizing a chamber with an observation glass window, located in the upstream stretch of the fish passage, to record all fish transits. The realization of this infrastructure will permit to carry on monitoring activities, making measurable the benefits of the implementation of this action, as described in Action D2.

The key outcomes of the action will consist in the completion of the works as outlined by the projects, and it will be formally sanctioned by the formalization of the CRE (Certificate of Right Execution), prepared by the Construction Director.

How

Interventions will be implemented according to the executive projects outlined in Action A3. For more details see the "Feasibility Study of the interventions of longitudinal connectivity restoration" attached, which identifies the weirs or dams obstructing the natural pathways of fish and in need of restoration; it also selects the types of fish pass to construct at each obstacle and made a rough estimate of costs. This feasibility study is based on field surveys and observations shared and discussed with the project partners and other existing stakeholders.

At each fragmentation point, the sites will be open according to law procedures, through the construction

supervision.

The action will be carried out under the continuous supervision of the Construction Supervisor, in collaboration with the RUP ("Responsabile Unico di Progetto") of the action, selected by the Province of Verbania.

Where

The location of the infrastructures that will be built within Action C4 are listed below and it's depicted in the maps attached to the proposal:

1. Construction of a rock ramp with boulders at the Migiandone Bridge on R. Toce

2. Adjustment of the pool pass on R. Toce in Prata

3. Construction of a rock ramp with boulders at the “Sei arcate” Bridge on R. Toce

4. Construction of a rock ramp with boulders at the Mizzoccola Bridge on R. Toce

5. Construction of a pool pass, equipped with a monitoring chamber, at the ENEL Dam of Lake Tana on R. Toce

When

The building of the 5 fish passes and the monitoring chamber will be implemented from July 2019 till April 2021.

Why

This concrete conservation action is necessary to counteract the main threat concerning the conservation of fish species of Union interest (namely Salmo marmoratus, Chondrostoma soetta, Rutilus pigus, Cottus gobio, Telestes souffia, Barbus plebejus, Barbus meridionalis): the river fragmentation that consequently leads to the aquatic habitat fragmentation. These fish species undertake more or less extended migrations from one part of the river to another or from lake to river at certain phases of their life cycles. The presence of impassable obstacles, such as weirs or dams, interrupts the longitudinal connectivity of a river so that unhindered passage for aquatic organisms is no longer ensured. This, together with other threats leads to a decrease in the population size of some fish species, sometimes to levels close to extinction.

That's why this action represents a concrete conservation action. The realization of structures that facilitate the upstream or downstream migration of aquatic organisms over obstructions to migration is necessary to restore the river longitudinal connectivity, allowing fish to move along the river corridor and reach the best reproduction sites, the feeding areas and the seasonal recovers. Moreover it allows to halt the isolation of recently formed metapopulations.

Therefore the realization of fish passes where missing or the improvement of those existing but not effective represent a necessary action in the prospective of a long-term conservation plan of target fish populations in the project area. This re-linking of aquatic ecosystems is an important contribution to efforts to facilitate the recolonisation of rivers by endangered fish species and, more generally, to species and habitat conservation.

Finally, the construction of a monitoring cabin is required to have a system of direct monitoring, constant over 24 hours, and conclusively to demonstrate the effectiveness of the ladder and its relevance for the fish target species, as described in Action D2. The presence of a monitoring system is also necessary for the dissemination character of this infrastructure since it will be open to small groups of visitors and will furnish open data. This will be useful because, due to its visual scenic effect, it can be effectively employed for

environmental education and diffusion. For this reason it will be furnished with informative panels and illustration materials regarding the infrastructure and its importance.

About the risks of turning the river stretches as corridors for genetic pollution, the unique possible hybridization processes regard Salmo marmoratus and the remnant Salmo trutta stocked until 2010 in Lake Maggiore and some of the rivers belonging to its catchment. This species however decreased naturally due to the stop of its stocking and the fishing harvest.

Beneficiary responsible for implementation:

PROVCO

The Province of Verbania will be responsible for the realization of the works, that will be entrusted through public tender.
GRAIA will be responsible for supervision of the construction phase. This will be carried out by a senior (staff) environmental engineer, boasting of a long and proven experience in both design and construction supervision of fish passes.

Assumptions related to major costs of the action:

C4's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

C4's PROJECT MILESTONES

Milestone name	Deadline

C. Conservation actions

ACTION C.5: Control of invasive alien species in project sites

Description and methods employed (what, how, where, when and why):

What

This action is dedicated to activities aiming at the control of the spread of alien species in the project sites.

Targets of this action will be the welsh catfish Silurus glanis, the ruffe Gymnocephalus cernua, the black bullhead Ameiurus melas, the pumpkinseed Lepomis gibbosus and the crucian carp Carassius carassius among the fish and the non native Procambarus clarkii and Orconectes limosus among crayfish in SPA Lago di Mergozzo and Mont'Orfano and in the adjacent SCI Fondo Toce. The brown trout Salmo trutta of Atlantic aplotype (phenotypically characterized by large and few red and black spots, absence of marbled body, will be removed from SPA Toce River.

Alien invasive species will be removed by electrofishing or other suitable techniques.

Results of removal actions will be quantified in order to guarantee the possibility to monitor the success of the action (indicator of success will be the % decrease of the catch per unit effort CPUE of the alien species during the project).

We aim to reduce at least of 80% the CPUE of alien species in the outlet of Lake Mergozzo, and reduce of 20% the CPUE of aliens in Lake Mergozzo. We aim also to reduce the CPUE of Salmo trutta of about 50% in Toce river:

- for Salmo trutta, a reduction of the species of about 50% in the Toce River before the IdroLIFE end is a reasonable and reachable objective and it will contribute significantly to improve the decreasing trend of this non native trout population in the whole area.

- The objective to reduce by 80% the other alien species in the outlet of Lake Mergozzo is the best reasonable and achievable objective within the project.

- The objective to reduce of 20% the alien species in Lake Mergozzo is a quantification of an activity whose relevance is due to its value as pilot and demonstrative action. This is the first experience of contrast of alien species in Lake Mergozzo and this in absolute the first experience of contrast of Gymnocephalus cernua in an Italian lake.

How

Alien species will be removed by electrofishing or other suitable techniques.

Results of removal actions will be quantified in order to guarantee the possibility to monitor the success of the action (indicator of success will be the % decrease of the catch per unit effort of the alien species during the project).

The capture techniques foresee the use of different gears. Mainly electric fishing (EF) will be used both in river Toce and lake Mergozzo. EF, if executed properly, enables to select the fish captured without any significant damage to it. Thus, native species can be released without injuries and fully healthy whilst non native species will be taken out. Furthermore, traps will be used mainly for the capture of the non native crayfish.

For each species a specific capture plan will be set up at the beginning of the Action in order to optimize the efficacy of the removals.

For Silurus glanis the team will use electo-fishing from a boat and from the shore, mainly during the spawning season, when fish are more concentrated along the vegetated shore. Additionally, and after a preliminary evaluation, gill nets with large mesh size (> 80mm knot to knot) will be used as well. The same approach will be used for Carassius carassius.

Gill nets with large mesh size are very selective for very large and active fish as Silurus and Carassius, especially if set very close to the shore and in vegetated areas in the late spring and summer season. On the contrary, these types of gill nets are almost safe for small body size species of conservation concern. However, the way to use and set gill nets will be monitored during the action as a whole, in order to reduce the risk of negative effects on native fish fauna.

Ameiurus melas and Lepomis gibbosus will be removed mainly with electric fishing from boat and from the shore, more likely during the spawning and post-spawning period.

Gymnocephalus cernuus will be captured mainly by traps and electric fishing.

Exotic crayfish will be captured by means of traps during the spring and summer season mainly.

Salmo trutta will be captured by means of EF from a boat or from the shore in the Toce River especially during periods of low water levels. This will maximize the efficacy of the removal actions.

Concerning the estimates of the ex-ante situation, we'll essentially compare data from Carte Ittiche (Provincia di Verbania, 1999; Provincia di Verbania, 2010) with data achieved during the project, in order to estimate the reduction rate at the end of the project.

d) The likelihood of fast recolonisation of the alien species is a risk that we tackle through the different forms of continuity we assure to the project.

Where

The action will be carried on in the Toce river, especially in areas around the defragmentation intervention and where repopulation activities have been done, and in Lago di Mergozzo and its outlet.

When

The removal of alien species will be done twice per year, starting immediately in the first year of the project in those areas where their presence is already ascertained and from the second year in those areas identified in A2 action. Specific removal activity will be done in warmer months, but if during other field activities (such as those in A2, C2, C3, D) alien species will be captured, they will be removed.

Why

This action is necessary to reduce the threats to the species targeted by IdroLIFE determined by the presence of alien species. This action will contribute to improve indirectly the conservation status of Salmo marmoratus, Cottus gobio, Telestes souffia, Rutilus pigus, Chondrostoma soetta and the native crayfish Austropotamobius pallipes in the Natura 2000 sites for Verbano Cusio Ossola.

Alien species are one of the most important threats to biodiversity and to the preservation of native fish fauna. In the last twenty years, in the lakes and low stretches of rivers of VCO Province the number of alien species and their abundance increased significantly. Some of them can be considered invasive and their impact on native fauna and ecosystem functioning and biodiversity is high. Indeed the Silurus glanis is a top

predator, competing for preys and habitats with native species such as pike Esox sp. and by exerting (due to its large maximum size reachable) a significant predation pressure on the whole fish community, the ruffe Gymnocephalus cernua, very abundant in Lake Mergozzo and its outlet, is a small sized fish known as fish eggs predators, the black bullhead Ameiurus melas and Lepomis gibbosus which reach locally very high densities exert its pressure both on ecosystems (top-down predation on invertebrates) and single fish species through predation on individuals and eggs, and the crucian carp Carassius carassius due to its high fecundity and environmental tolerance can reach population with high densities competing with bottom feeders species such as Rutilus pigus and Chondrostoma soetta.

Beneficiary responsible for implementation:

CNR-ISE

Assumptions related to major costs of the action:

C5's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

C5's PROJECT MILESTONES

Milestone name	Deadline

C. Conservation actions

ACTION C.6: Development and adoption of a conservation plan at provincial scale

Description and methods employed (what, how, where, when and why):

What

Action C6 is dedicated to the preparation, discussion and adoption by the management authorities (PROVCO and PNVG) of a plan for the conservation of the species targeted by IdroLIFE. The management authorities (PROVCO and PNVG) will include officially in their respective legislations the conservation plan. The plan will include all the results and suggestions of IdroLIFE project such as a updated fishing rules for anglers, specific areas/habitat protection (such as spawning areas), etc.

The action also foresees the official inclusion in SDF of SCI IT1140011 of Austropotamobius pallipes and the modification of SPAs IT1140017 and IT1140013 into SCIs.

How

The conservation plan will be developed by means of the discussion of the project results/insights by ad hoc meetings among the project beneficiaries and stakeholders, including Institution ad National adn International level.

The plan will foresee an introduction taking into account a general description of the environmental context, including fish and crayfish informations taken from the project results: ecologica lstatus of the rivers, health of single populations, threats, etc...

On the base of the status of species and conservation targets (mantaining, improving, sustaining, etc..) will be prepared species-specific guidelines and more general guidelines useful for the management of fish and crayfish species also in the light of the control of the spread of alien invasive species.

Additionally, the conservation plan will include a more general part related to the suggestions for reducing anthropogenic pressures that have been shown to negatively impact habitats and species in Natura 2000 Sites of the Province of Verbano Cusio Ossola.

The management authorities will act in order to change the SPA IT1140017 and SPA IT1140013 into a SCI with the support of the dedicated authority at Regionale Level (see A8 from Regione Piemonte - Dir. Ambiente, Governo e Tutela del Territorio - Sett. Biodiversità e Aree Naturali). Furthermore the SDF of the SCI IT1140011 will be modified by the Management Authority (Ente Parco Nazionale della Val Grande) including the crayfish Austropotamobius pallipes among the species present in the site.

Where

Meetings among beneficiaries will be carried on by webconferences. PROVCO will host in its headquarter the stakeholders for dedicated meetings on specific topics (fishing, water use,....) if webconferences will be not possible. At least two meetings per year are planned for the implementation of the conservation action.

When

The Conservation plan will be adopted within the end of IdroLIFE but discussions and preparation will start since the beginning of the third year of the project (taking into account first of all the informations gathered from A actions).

Why

This action is fundamental in order to add all the results and suggestions coming from IdroLIFE in a legislative framework that will assure the sustainability of conservations measures on species and habitas of Natura 2000 sites of Province of Verbano Cusio Ossola.

Beneficiary responsible for implementation:

PROVCO

All beneficiaries are involved in the Conservation Plan implementation.
PNVG will be responsible of the request of addition of Austropotamobius pallipes in SDF. PROVCO will be responsible of the change of SPAs into SCI.

Assumptions related to major costs of the action:

C6's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

C6's PROJECT MILESTONES

Milestone name	Deadline

D. Monitoring of the impact of the project actions (obligatory)

ACTION D.1: Monitoring of the effectiveness of the artificial breeding and rearing activities

Description and methods employed (what, how, where, when and why):

What

Action D1 is dedicated to the monitoring of the effectiveness of the pilot activity (included in C3) of reproducing and breeding of Rutilus pigus and Chondrostoma soetta in the renovated hatchery of CNR-ISE.

How

Monitoring protocols include: checking suitability of chemical and physical parameters to rearing conditions for the two species (both for adults and larvae), conditions of fish (all development stages) reared (bi-monthly measurement of total length and total weigth), presence of abnormalities due to unbalance of food/metabolism, parasites.

The development and hatching success will be also monitored through a day by day count of white (dead) eggs in zug jars, numbers of larvae produced daily, etc. Data will be compared with relative fecundity of both species as indicated in the literature.

Also these parameters will be compared with those available from other research and conservation projects included in the network activities.

All the information achieved will be collected in one lab book that will be the base to produce a reference publication (see C3 and E2.1).

Where

Action D1 will be carried on at the headquarter of CNR-ISE in Verbania.

When

This action will start as soon as the breeding activities will start. It will continue also after the project end to assure the effectiveness of the breeding and rearing activities continuing at CNR-ISE.

Why

The ation of monitoring is necessary to assess the effectiveness of the pilot activities dedicated to the artificial breeding and rearing of Rutilus pigus and Chondrostoma soetta. Day by day monitoring will help to solve problems in case they occur.

Beneficiary responsible for implementation:

CNR-ISE

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Assumptions related to major costs of the action:

D1's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

D1's PROJECT MILESTONES

Milestone name	Deadline

D. Monitoring of the impact of the project actions (obligatory)

ACTION D.2: Monitoring of the effectiveness of repopulation activities

Description and methods employed (what, how, where, when and why):

What

This action is dedicated to the monitoring of the success of the repopulation activities of Salmo marmoratus in SPA IT1140017 Fiume Toce, Cottus gobio, Leuciscus souffia and Austropotamobius pallipes in SCI IT1140011Valgrande and R. San Bernardino (Action C2), and Chondrostoma soetta and Rutilus pigus in SPA IT1140013 Lago di Mergozzo and Mont'Orfano (Action C3).

How

A significant portion of the fish specimens used for repopulation (at least 500 Salmo marmoratus, 200 Cottus gobio and Leuciscus souffia) will be marked with RFIDs Pit tag, elestomers or other suitable markers.

RFIDs Pit Tag will be used on the marble trout due to the fact that it can reach suitable dimensions quite fast. Furthermore the marble trout is a species with a long life cycle, hence marked species cab be monitored for many years. Already during the action A2 all the specimens of marble trout with a length higher than 25 cm captured during the samplings will be marked. The date and the tag code will be registered. Also, a part of the fish produced in the hatchery will be grown up to a suitable size, marked and released in the wild. It will be possible then to analyse the different behaviour of the wild and reared fish. Fish monitoring will be carried on in the R. San Bernardino and the R.Toce. Data from River Toce will be cross-compared with those coming from the in-site monitoring at the fish passages of Lago Tana and Prata.

The Cottus gobio and Leuciscus souffia will be marked with elastomers or suitable Pit Tags.

Whilst monitoring of fish of running water will be carried on by means of electrofishing, the monitoring of fish species introduced in Lago di Mergozzo, the Rutilus pigus and the Chrondrostoma soetta, will be carried on mainly with the contribution of local anglers, recreational divers and personel of CNR-ISE (divers). They will be involved in the monitoring by compiling a specific statistic, including the date of capture and the size of the fish. These informations will enable to follow the population dynamics of these species not only during the project implementation but also duringthe Post LIFE period.

The monitoring of the crayfish introductions will be done by an external specialized pro.

Where

The monitoring of the success of the repopulation of Salmo marmoratus will be done in SPA IT1140017 Fiume Toce, whilst Cottus gobio, Leuciscus souffia and Austropotamobius pallipes in SCI IT1140011Val Grande and R. San Bernardino (Action C2). Monitoring of Chondrostoma soetta and Rutilus pigus will be done in SPA IT1140013 Lago di Mergozzo and Mont'Orfano (Action C3).

When

Monitoring will be done since the beginning of the third year of the project.

Why

The monitoring action is mandatory.

Beneficiary responsible for implementation:

CNR-ISE

PNVG and PROVCO will participate to the action

Assumptions related to major costs of the action:

D2's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

D2's PROJECT MILESTONES

Milestone name	Deadline

D. Monitoring of the impact of the project actions (obligatory)

ACTION D.3: Monitoring of the functionality and effectiveness of fish passages

Description and methods employed (what, how, where, when and why):

What

The effectiveness of the 5fish passes planned with Action A3 and built with Action C4 along the corridor of Toce River will be monitored using 2 different techniques, as described in the following:

action D3.1: automatic video recording and subsequent counting of fish migrated through 2 fish passes on River Toce;

action D3.2: PIT (Passive Integrated Transponder) tagging of adult or sub-adult subjects, present in the wild state or bred for repopulation purposes in the River Toce and subsequent tags' detection.

How

Subaction D3.1 plans to install two recording monitoring systems, slightly different from each other, at the two planned pool passes, strategically located in the top (Lake Tana) and in the bottom (Prata) of the target stretch of River Toce.

Cause the existing fish pass at the Prata weir will be largely preserved, a submerged camera will be installed to the existing structure, if possible in the most upstream part, in order to ensure that the fish passing the monitoring station have climbed the entire fishway. The videos will be saved on PCs or data logger present in loco. The area, in fact, is supplied with electric energy and, since is a private industrial area, does not present risks of tampering, vandalism or theft.

Since the fish pass of Tana Lake dam has to be constructed ex novo, the project includes a monitoring cabin, as described with A3 and C4, with a H24 recording system composed by a video camera connected to a PC on which a specific software is installed; this software processes all the images captured by the camera, detecting and storing only the frames containing objects in movement, making then videos of different length.

The videos recorded by the two cameras will be periodically download from the hard disk and examined by qualified technicians, that will record on a database all the fish transits, reporting data, hour, species, life stage (young, sub-adult, adult), number and direction.

Additionally to the counting described above, Subaction D3.2 plans to apply PIT tags to track and recognize individuals of at least one target species over time and space. The PIT tags will be applied to approximately 1000 adult or sub-adult subjects (bigger than 20-25 cm), present in the wild state or bred for repopulation purposes in the River Toce. It is hypothesized, as privileged species to be marked, the marble trout, due to its considerable dimensions, its long life-cycle and therefore the ease to apply and maintain the PIT Tag. Therefore, the individuals to be tagged will be captured, by electro-fishing, within:

the campaigns of fish characterization of Action A2;

the monitoring campaign of Action D1;

the repopulation program of Action C2; this will allow to obtain information about the differences in migratory

behaviour between wild specimens and bred specimens released in a natural environment.

The marking data and place will be reported in the fish catalogue sheets, as well as the PIT Tag number.

In the two fish pool passes that will be provided with cameras fixed, PIT Tag detectors will be additionally installed. These detectors are a sort of antenna that logs all the passages of the tagged fish. Periodically the data logged will be download and reported in the fish catalogue sheets.

Where

Resuming, to the monitoring objectives the project proposal foresees:

the installation of a submerged camera at the existing pool pass at the Prata weir on River Toce (Toce02). This monitoring system doesn't need a preparatory action of planning as the following one;

the construction of a monitoring chamber at the new fish pass at Lake Tana Dam on River Toce (Toce05). This automatic video recording systems instead needs a preparatory action of planning (Action A3) and a construction action (Action C4);

the application of PIT tags to approximately 1000 adult or sub-adult subjects (likely of marble trout), present in the wild state (sampled with Action A2) or bred for repopulation purposes (with Action C2) in the River Toce;

the installation of PIT tag's detectors in the two fish pool passes above.

When

The video recording of fish migrations will be implemented necessarily after the fully operability of the 2 infrastructures built with action C4, for 1 year. Regular and periodic checking to download hard disk, check equipment settings, clean the observation window and check fish passage zone are foreseen. The data examination will be carry on at the same time.

The application of PIT Tags will start at the same time of Actions A2 (1st year) and D1 (3rd year).

The monitoring phase with fixed Tag detection will take place starting in the 3rd and 4th years of the project, when the fish passes will be completed.

Why

Monitoring the performance of fishways is an important operation for several reasons:

To verify the efficiency of fishways after they have been commissioned and to adjust their operation if necessary.

To verify the status of fish species of Union interest.

To study fish community composition, both qualitatively and quantitatively.

To quantify migratory fish populations and describe the pattern of their migration.

To gather technical and biological information which will be indispensable for the design and development of future fishways.

In particular, the monitoring process of the fish passes' functionality and efficiency is necessary to confirm the restoration of the River Toce (45 km) corridor.

The videos taken in the two fish pool passes represent an unequivocal and objective way of assessing the efficiency of the fishways. The test and the demonstration of the efficiency of the passages represents an excellent way for the diffusion of this techniques and the sensitization both of the numerous water diversion owners, and the designers involved in hydraulic defense that project infrastructures representing obstacles to fish migration(eg anti-erosion weirs).

The monitoring process will give a fundamental contribution to the initiatives for education and divulgation. It will be a powerful tool to convey the idea that fish population necessitates aquatic ecological corridor to survive, since no other alternative is possible.

Beneficiary responsible for implementation:

GRAIA

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Assumptions related to major costs of the action:

D3's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

D3's PROJECT MILESTONES

Milestone name	Deadline

D. Monitoring of the impact of the project actions (obligatory)

ACTION D.4: Assessment of the social-economic impact of the project

Description and methods employed (what, how, where, when and why):

What

Socio-economic impact assessment (SEIA) is a useful tool to help understand the potential range of impacts of a proposed change, and the likely responses of those impacted if the change occurs. This understanding can help design impact mitigation strategies to minimise negative and maximise positive impacts of any change.

How

This action concentrates on:

the scoping the nature and boundaries of the impact assessment. The ‘scoping’ phase establishes the goals and boundaries of the assessment and focuses the SEIA on key impacts.

Scoping should aim to determine the: time and resources available for the SEIA, nature of the proposal being assessed, groups who are potentially impacted, key impacts of interest, extent of available information, its potential usefulness in terms of appropriate scale, timeframe, content etc and how data gaps can be addressed, process and methods to be used for the SEIA. Information obtained will help determine what approach to use in the assessment.

Factors such as the nature of the proposal, the level of perceived concern and the extent of available and appropriate existing data will guide decisions about the complexity and detail of the SEIA.

The scoping stage also considers the level of community participation or involvement in the SEIA. The term ‘community’ here refers to both place-based communities, which can be defined geographically, and interest-based communities defined by a common interest or activity, often referred to as a ‘stakeholder’ group. The scoping phase identifies and examines the types of communities and/ or number of individuals potentially impacted and their level and type of participation in the SEIA.

Profiling current impacts of the activity being examined, including the historical context or current status to establish a baseline level and rate of change for relevant variables related to the activity of interest,

Before the nature of socio-economic impacts from any proposed change can be identified it is necessary to understand the current impacts or effects of the activity being examined, including the historical context and current status of operations, and to identify the groups and communities associated with the activity. Both qualitative and quantitative information are important to obtaining a thorough baseline profile. The following information may be identified in a baseline profile:

• types of activities which may be affected, who undertakes these activities, when and where

• extent/scale of activity potentially affected and the range of values associated with these activities

• historical, regulatory and other factors impacting on these activities

• methods of contacting people who may be affected so they can provide data about potential impacts

• geographic location of members of groups who may potentially be impacted by the proposed change

• proportion of the group, or of their activity, likely to be affected.

The total effect of any activity comprises both its initial or direct effects and the resultant indirect or flowon

effects generated by it.

Monitoring direct impacts of a change are felt by those individuals, groups and firms directly engaged in the activity being affected.

Direct impacts has been taken to refer to impacts in relation for instance to the fishing, tourism, school education, etc… Types of social and economic direct impacts may include changes to:

• employment – eg location, availability, and types of employment;

• personal and/or business income

• personal and/or business expenses – eg, changes to the cost of doing business;

• asset values - eg business capital items, housing;

• psychological well-being – eg stress levels, happiness, security, family interactions, leisure activities

• social well-being – eg attachment to place, access to social networks (often called ‘social capital’).

To assess direct socio-economic impacts, information and data will be gathered on:

• those identified as potentially affected by the activity, where possible over a period of time, to establish

a baseline level and rate of change in key variables

• the level and nature of potential impacts of the activity on those affected

• the range of potential impacts of the proposed changes.

This will be done by using methods such as (1) secondary data analysis, (2) primary data collection through surveys, interviews, focus groups etc.

The methodology to be used and the way it will be implemented are described as follows: Two meetings at the beginning of the project (approximately within month 3-9), two meetings in the middle of the project (months 24-30) and two meetings at the end (month 42-48) will be organized in each project area with the aim of gathering feedbacks about the project from the local community.

Representatives of municipalities supporting the project (See A8), members of angler associations (see A8), representatives of local tourism associations and environmental associations will be invited to attend the meetings. During the meetings, IdroLIFE and its step-by-step evolution will be presented in details and objectives, expected results and their outcomes for the territory will be discussed. A specific form to be filled by each meeting participant will be prepared. Feelings, ideas, and suggestions will be collected and elaborated. We hypotesize the presence of no less than 50 persons attending each meeting.

Furthermore, to each representative of associations and group of stakeholders, the same interview forms will be given to be filled by their affiliates. These forms will be collected yearly and information elaborated by the action responsible.

Interview forms will be given also to teachers and students involved in action E2, in order to collect their

perception of the project and its main topics, before and after their involvement in the educational activities.

A page dedicated to the socio-economic impact will be published on the web site of the project, from where it will be possible to download the interview forms in order to compile it and send it back to the responsible of the action.

A mailing list and address list will be prepared at the beginning of the project in order facilitate the spread of information and the easy involvement to the meetings of all the selected participants.

Where

The action will be carried on the project area (interviews, surveys, etc...) and in house (GRAIA, CNR-ISE and PNVG) for data elaboration an report writing.

When

During the whole project. Preliminary assessment will be done within month 18. between month 19 and 42 secondary data analyses, interviews and survey will be done, within month 48 the reporting will be finished.

Why

The action is obligatory. Understanding of the socio-economic impact of IdroLIFE can help design impact mitigation strategies to minimise negative and maximise positive impacts of changes determined.

Beneficiary responsible for implementation:

GRAIA

CNR-ISE will partecipate
PNVG will partecipate for its territory (analyses and info collection)

Assumptions related to major costs of the action:

D4's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

D4's PROJECT MILESTONES

Milestone name	Deadline

D. Monitoring of the impact of the project actions (obligatory)

ACTION D.5: Assessment of the project impact on ecosystem services

Description and methods employed (what, how, where, when and why):

What

To assess properly the benefits of the project, as well as to concretely assess its demonstration component, in other words to show as much as quantitatively and tangibly as possible that the approaches and methods proposed are preferable to the "business as usual", and that it is possible then to push a replication on a larger scale, it is essential that in addition to the effects of concrete actions on biodiversity the ecosystem services they provide must be also assessed.

How

This action will therefore focuse on the assessment of the effects of the project in terms of conservation and restoration of ecosystem functions in the contexts of the interventions done.

The methodology used will take into account the reports and analysis framework already produced as part of MAES (Mapping and Assessing Ecosystems and Their Services) and any guidelines that in the meantime were to be published and discussed. It should however be noted here that there is at present a universally recognized standard methodology for the assessment of ecosystem services related to the redevelopment of river ecosystems, although, even before the MAES, there were works of general framework particularly relevant (eg. The " Millennium Ecosystem Assessment "promoted by the United Nations, or the initiative" The Economics of Ecosystems and Biodiversity - TEEB "sponsored among others by the European Commission).

From the methodological point of view, strictly speaking the evaluation should include essentially:·

Identify the main elements of environmental quality (ie. The status of fish, or of the two target species) and ecosystem functions (eg. Sediment transport) that are affected by the project;.

The identification of ecosystem services provided by elements of environmental quality and ecosystem functions of the previous point (eg. Recreational services or related to the value of existence of species), which can then be influenced the measures provided for in this project.

The identification of significant variables and appropriate indicators to assess the impacts (positive and negative) on the main categories of persons affected by the change in ecosystem services determined by the project; part of these effects can possibly be expressed in the same size, usually through a monetization exercise, however, despite the benefits in terms of communication, is affected by many uncertainties and, for different components and ecosystem functions, methodologically questionable.

As part of this action it is expected to assess explicitly the main ecosystem functions on which the project has had or may have effects on a timescale at least ten years, making an attempt to quantify the effects in terms of ecosystem services in the context of geographical and temporal intervention, also with the support of a direct interaction with key stakeholders. This activity will be particularly important to the evaluation of the social acceptability of interventions, through questionnaires and interviews to the various categories (eg. Fishermen, conservationists, tourists and others). These activities will be facilitated (even if they're going supplemented by ad hoc meetings) program of workshops and meetings to share with stakeholders foreseen in action E3.

For the secondary effects of the project to a spatial and temporal scale wider (eg those related to physical processes affected by the possible new river morphology downstream of interventions) or those related to a

potential replication of the interventions, will be carried qualitative considerations, not being applicable as part of the quantitative predictive models used for this purpose.

Ecosystems services include some categories of services provided by ecosystems such as: Provisioning services, Regulating services, Habitat and supporting services, Cultural services.

The development of this action foresees a first phase of screening of the literature at that moment available on the topic, and an active discussion by means of direct approach (phone, emails, skype calls) with other groups working on the same topic. For instance GRAIA srl. Is also involved in the project LifeTicinoBiosource Nat/IT/000989, where the topic of ecosystem services provided by species conservation will be a part of the project itself.

The three specific categories targeted by the action and analyses during its progress will be: regulating services, habitat and supporting services and cultural services.

For instance for the first and second category, results of the environmental characterization in A2, those of action C5 and those of monitoring action D4 will enable the gathering of all the necessary information to assess the impact of the project on the ecological status of the water bodies included in the project, as requested by the Water Framework Directive 2000/60/EC. Indeed, fishes are among the biological quality element to be used for the assessment of ecological status as requested also by the National Decrete 260/2010. The information gathered will be used to assess the ecosystem service realized (improvement of ecological status of the water body or increase of the fitness of the species population and resilience of the local fish communities).

For the third category of ecosystem services, results of the interviews in D4 will be elaborated to get a measure of the “cultural services”, in terms of intangible benefits such as: intellectual enrichment, increased sensitivity in respect to the issue of freshwater biodiversity or, on a wider perspective, in regard to the issue of requalification of water bodies and species conservation; increase of leisure value in terms of attractiveness or use of the territory.

Where

CNR-ISE headquarter

When

Month 12-48

Why

It is mandatory

Beneficiary responsible for implementation:

CNR-ISE

PNVG participation in the information collection and analyses for its territory.
GRAIA will contribute to this action

Assumptions related to major costs of the action:

D5's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

D5's PROJECT MILESTONES

Milestone name	Deadline

E. Public awareness and dissemination of results (obligatory)

ACTION E.1: Dissemination planning and execution

Description and methods employed (what, how, where, when and why):

GRAIA designates the Communication Manager (CM), represented by a biologist with decennial experience in Environmental Education and Divulgation, responsible of the activities of communication and dissemination.

E1 is divided into subactions:

Subaction E1.1 Communication Plan

What

Planning of the communication strategy on a multiyear scale, aiming to raise awareness of the stakeholders on the objectives, development and results of the project and to create social consensus.

The contents and the key elements of the communication plan answer to the rule SMART (Specific, Measurable, Agreed upon; Reasonable; Trackable).

How

All beneficiaries are involved in defining and approving the CP

CP is equipped with a system of prior control, concurrent and subsequent to evaluate the effectiveness and efficiency of all initiatives and monitoring their impacts

CP consider the publications "LIFE Communication strategy", "Guide to effective communication of project results", "Visibility guidelines" and "LIFE-Nature: Communicating with stakeholders and the general public - Best practices examples for Natura 2000"

Where

Each partner designate a reference person for communication activities. Dialogue among partners is based on emails/Skype but also on formal meetings dedicated to the approval of communicative products.

When

Month 0-6

Why

Necessary to set up, plan and start effective communication and dissemination activities.

Subaction E1.2 Dissemination Pack

What

The visual identity that includes a project logo in different electronic versions (horizontal, vertical, b/w, coloured, high/low resolution, PPT templates, etc.)

Website (Italian & English) includes the LIFE and Natura 2000 logo, species, habitats and threats descriptions,

project aims and results, deliverables, press communications, educational materials, the link to observe fish passages at Lago Tana (webcam). It remains online at least for 5 years after the project end.

1 social network page created and regularly updated

8 newsletters describing the project status and results

Layman’s report (CNR-ISE) with the information requested by the Contracting Authority: no less than 1.000 copies, indicative A4 format in quadricromy, 16 pages.

Items for promotion and dissemination:

N. 5 Notice boards to be placed at strategic sites of intervention (hatchery, fish passes...), illustrating briefly the project: poster totem, indicative size 70cm*200cm for external exposition, in quadricromy

N. 8 roll up panels, to be used during meetings, press conferences, environmental education activities and placed at the partners' offices during the 4 years of the project: indicative size 85*200cm

N. 1000 copies of a brochure illustrating the project distributed during the meetings and available at the partners' offices: indicative 4 pages in quadricromy. Targets: stakeholders representatives, municipalities, public libraries, Rete natura 2000 Managers, other LIFE NAT projects beneficiaries, Regional and National administrations, partecipants to the final meeting, researchers (JRC, Universities).

N 500 copies of a publication on the aquatic fauna of the area, in particular the targeted species: indicative 100 to 200 pages, A4, 3000 copies in quadricromy.

N. 50 T-shirts with logo, used by people involved in the project during field activities

N. 500 USB pen drive with logo distributed to major stakeholders, containing project documents, press releases, Layman's Report, educational movie (about 10 to 15 minutes, fully edited), dissemination products

The Communication Pack foresees a series of meetings and Press office activities:

1 public Kick off meeting and 1 final meeting. The first will foresee a description of the aims with emphasis on LIFE targets and Natura 2000 network importance, the second will explain the project results and the interventions that the management public bodies (PROVCO and PNVG) will continue according to the Conservation Plan realized (C6)

Meetings with stakeholders categories (at least 1/year) will be realized in order to communicate, share, discuss IdroLIFE progress and results and plan further ameliorations: 1 meeting per year (about 50 partecipants/meeting). Target of kick off and final meeting: stakeholders, local administrations, other Italian LIFE Nat project beneficiaries, Rete natura 2.000 and other protected areas managers, representatives of local schools.

Thanks to the support of FIPSAS, almost the total number of anglers in the project areas will be addressed.

N.20 press communications, realized in correspondence with some milestones of the project

How

The project visual identity is realized by the CM.

The website and social network pages are created and updated by CNR-ISE. The management of the contents is in charge to the CM. Newsletters are prepared by the CM, distributed by CNR-ISE, after having approved the

text by all the beneficiaries

Notice boards and roll-up are realized in external assistance.

Layman’s Report is realized in a limited number of paper-copies and uploaded into the USB pen drive

Meetings and press office activities are carried on by PROVCO according to the Steering Committee and Management team

When

Visual identity: month 1-3

Web site and social networks: month 1-7

Newsletter: month 2-48

Layman’s report: month 48

Items for dissemination: month 6-12

Publication: month 36-48

Kick off meeting: month 0-2

Final meeting: month 47

Press office: month 2-48

Meetings with stakeholders: 1-48

Where

Realized at the CNR/ISE or Province VCO.

Why

The coordinated visual identity guarantees the recognizability of the project and LIFE program, and ensure the effectiveness and efficiency of the communication. The website improves the communication power with external stakeholders. Social networks enable to disseminate activities in “real time”.

Meetings with stakeholders enable to build consensus.

Layman’s report and notice boards are mandatory.

Sub action E 1.3 Networking with other projects

Networking foresees: a preliminary investigation and request of networking of those project developed under EU funds and related to the species and topics targeted by IdroLIFE. Some project targeted could be:

CON.FLU.PO LIFE11NAT/IT/000188

LIFE BARBIE LIFE13NAT/IT/001129

LIFE POTAMOFAUNA LIFE12NAT/ES/001091

LIFE FREE-FISH LIFE12 NAT/BG/001011

LIFE+ Lavant LIFE10NAT/AT/000017

LIFE TRIGLAV LIFE00NAT/SLO/007231

LIFE RARITY LIFE10NAT/IT/000239

The project results, including those of the C3 pilot action, are disseminated through:

3 national and 2 international scientific conferences

Exchange of students for thesis preparation (n. 2) with Universities.

When

Networking: month 6-48

Conferences: month 24-48

Where

Skype and 1 trip in Italy and 1 outside to visit other LIFE project sites .

How

Organized and managed by CNR-ISE. All beneficiaries participate if contents are of their interests

The most pertinent conferences to the project topics will be chosen for disseminating project results and contents

Beneficiary responsible for implementation:

GRAIA

All the beneficiaries will participate to the action

Assumptions related to major costs of the action:

E1's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

E1's PROJECT MILESTONES

Milestone name	Deadline

E. Public awareness and dissemination of results (obligatory)

ACTION E.2: Educational and transferability activities

Description and methods employed (what, how, where, when and why):

Subaction E2.1: Publication for the transferability and replicability of pilot activity of artificial reproduction and breeding of Rutilus pigus and Chondrostoma soetta

What

Publication/Technical report on practices of artificial reproduction and breeding of Rutilus pigus and Chondrostoma soetta

Where

CNR-ISE headquarter

How

The publication will be realized in electronic form and made available on the project Web Site. Also it will be used during the networking activities carried on after its realization.

When

Month 42

Why

The production of a technical report is fundamental for the transferability of Pilot contents of action C3.

Subaction E2.2 - Environmental education

What

The subaction foresees:

Students' stages: organization of summer stages at the facilities involved in the project (CNR, Val Grande National Park involving high schools (5) of the project area for at least 20 students attending the 4th year for each stage. Candidates will be selected based on their school curriculum, attitudes and personal motivations; those chosen will win even informatics devices or other benefits related to their studies. The students would be directly affected and employed in the project.

Environmental education program: realization of lectures on project topics (both inside and outdoor) in 50 classes of primary and middle schools of the project area (about 3000 students) and training courses of 150 teachers. The program also includes the involvement of adult audiences (about 1000 adults among senior universities and associations) through the creation of educational "packages" specific for this target (lessons, visits and participation to project activities).

Where

The stages will involved 5 high schools throughout the Province of VCO.

The Environmental education program will involve 50 classes of primary and middle schools throughout the Province of VCO.

How

For the implementation of the Environmental education program it will be developed a kit, to be distributed to teachers and students, consisting of educational material and technical sheets. The program will be managed by "Acquamondo", Environmental Education Centre of the Val Grande National Park (Cossogno-VB).

When

The students' stages will be organized from the first year of the project.

The environmental education program will be planned in the 1st year of the project, will start from the 2nd year and will last 3 years.

The dissemination movie will be assigned to an external assistant from the 2rd year of the project.

Why

The aim of both the stages and environmental education program is to sensitize young and adult people towards environmental issues (eg: fragility of the aquatic environments, threats and possible solutions, the importance of the streams and rivers as biological corridors, sustainable fishing) and encourage attitudes consistent with environmental protection, organizing direct experiences within natural resources. Moreover, the stages of high school students represent a great training opportunity and guidance for a future career choice or university for these teenagers.

Beneficiary responsible for implementation:

CNR-ISE

All the beneficiaries will participate to the action

Assumptions related to major costs of the action:

E2's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

E2's PROJECT MILESTONES

Milestone name	Deadline

F. Project management (obligatory)

ACTION F.1: Project management and monitoring

Description and methods employed (what, how, where, when and why):

What

F1 is related to the set up and functioning of the project management structures and its monitoring.

During the first month of the project a Management Team, a Steering Committee and an internal management structure for each partner, will be nominated.

The Management Team (MT), whose components are a Project Manager (PM), an Administrative and Financial Manager (AM) and a Communication Manager (CM) (see picture attached) will manage, coordinate and monitor the project execution. PM and AM will belong to CNR-ISE and CM to PROVCO.

MT will manage and coordinate day by day the project activities. The efficacy of the management is guaranteed by the expertise of CNR-ISE and PROVCO achieved during the many EU projects (LIFE; LIFE+, FP, INTERREG) carried on in the last years.

MT will monitor the project development according to the technical and communication plan (E1), but also will assess the project activities impact according to the general objectives of the LIFE program and of the LIFE Multiannual Work Programme. The monitoring of the project development and results will be done according to the Indicator of progress table (see attachment). Specific indicators for the monitoring of each action execution (usually quantitative indicators).

The roles and functions of the members of project management are:

- PM ensures the overall project management, in terms of: partnership coordination, compliance with the project contents and timetable, official relations with the Contracting Authority. PM is directly involved in all the communication and dialogue opportunities with stakeholders. PM, with his specialist skill and local knowledge, takes also part in the scientific and technical activities. Finally, PM coordinates the partners ensuring their application of the Green Procurement specifications.

- AM, is responsible for coordinating all administrative and financial aspects either within the partnership or within the Coordinating beneficiary, to ensure that LIFE Program Regulation is properly applied. AM is also the contact point in case of financial or administrative questions from associated beneficiaries.

- CM is responsible and coordinator for all communication activities of the project, including contacts with stakeholders, management of dissemination activities, meetings organization. The designation of one CM increases the efficacy of the communication and dissemination activities.

The three management persons will strictly collaborate each other, mainly through weekly updates (direct, phone or mail) about the project progress.

As part of the project management and coordinating structures a Steering Committee (ST) is also created. It is composed by one member for each beneficiary plus the PM and AM. SC is dedicated to make strategic decisions in order to the project development, communication also in line with the LIFE general objectives.

PM will be a supervisor of all actions according to the ST suggestions, in particular those related to technical and administrative aspects. It will be responsible of intermediate and final reporting and it will maintain the relationships with the Contracting Authority and stakeholders.

Finally, each beneficiary will have an internal coordinating structure including a technical, administrative and communication dedicated person.

Progress reporting also with financial payments will a part of this action and carried on by the MT.

How

MT will prepare within the first four month a detailed plan of the technical interventions to be used beside the Communication Plan (E1). The plan includes detailed information on sites, mailing lists, timetables, proforma invoices and cash flow estimation, personnel (internal, external, pro etc..), financial resources needs and specific indicators used to monitor each action execution (usually quantitative). The plan will have as reference the timetable, the products and the results to be achieved, and it will detail methods, procedures and tools to be used during the development of the different project activities. This procedure will help to define clearly and strictly the responsibilities and roles of each beneficiary. The plan will help the MT to modified if necessary the activities development and execution.

Members of the ST will met during the periodical meeting and will keep in touch mainly via conference call (skype), phone and mail. The decisions will be taken according to the maximum consensus but in case of different opinions each partner will vote and in case of equal score the Associated Beneficiary will decide. 1 meeting per semester (total n.8) will be organized. During the meetings, depending on the specific topic of discussion (communication, administration etc.…), some personel of each partners could also be present or participate via conference call.

Additionally these periodical meeting will be used, as much as possible, as occasion to meet stakeholders. This will enable to have direct contact between the ST and the project supporters.

Where

F1 activities will be carried on at each beneficiary headquarter and, in occasion of the specific meetings at CNR-ISE and PROVCO sites.

When

MT nomination month 1

ST nomination month 1

ST Meetings every 6 months

Monitoring by MT during the whole project execution.

The following report are foreseen

- 1 Mid-Term report with payment request within 30/09/2018

- 1 Final report within 30/11/2020

- 1 Progress report within 28/02/2017

- 1 Progress report within 30/06/2019

- 1 Progress report within 31/05/2020

Why

The PM is mandatory. The MT internal of the Coordinating Beneficiary and the ST ensure a management and coordination structure effective and incisive.

Beneficiary responsible for implementation:

CNR-ISE

All beneficiaries are involved in the Steering Committee activities and internal management of the project

Assumptions related to major costs of the action:

F1's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

F1's PROJECT MILESTONES

Milestone name	Deadline

F. Project management (obligatory)

ACTION F.2: External Audit

Description and methods employed (what, how, where, when and why):

What

Audit will verify the respect of national legislation and accounting rules but will also certify that all costs incurred within the project respect the General Conditions of the Model LIFE Grant Agreement.

How

The project audit will be assigned to an external pro or company.

Audit will be realized in strict collaboration among the internal personnel of CNR-ISE (Project manager and Financial manager).

When

Audit will begin in the second year of the project. Audit meetings will be realized at least once per year.

Why

Requested by the Article II.23.2 (d) of the Model Grant Agreement

Beneficiary responsible for implementation:

CNR-ISE

Assumptions related to major costs of the action:

F2's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

F2's PROJECT MILESTONES

Milestone name	Deadline

F. Project management (obligatory)

ACTION F.3: Monitoring of the project progress

Description and methods employed (what, how, where, when and why):

What - The action is aimed to periodically measure the effect of the project on the target species.

How - This action provides the periodic (every six months) review of the results obtained from the project, according to the system of indicators provided for each share, as reported in Form C, and according to the model tables of indicators provided by LIFE and, starting from the one attached to the proposal, which will be implemented and as precise as possible fullfilled.

The Project Manager shall carry the action, periodically collecting the data about the results of the project actions, in order to compile the table of indicators. Every 6 months the workgroup of the action shall meet to discuss and confirm the data on the basis of the results collected at the moment by each partner; the table of indicators will be therefore officially updated every 6 months.

The completed table of indicators will be included in the first Progress Report to the EC and in the Final Report.

Where - Project area.

When - The action will start in the first 6 months of the project and will last till the end of the project.

Beneficiary responsible for implementation:

CNR-ISE

All beneficiaries are involved

Assumptions related to major costs of the action:

F3's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

F3's PROJECT MILESTONES

Milestone name	Deadline

F. Project management (obligatory)

ACTION F.4: Post-Life action plan

Description and methods employed (what, how, where, when and why):

What

The action foresees the preparation of a AFTER LIFE plan in order to guarantee and mantain results and sustainability of the actions of the projects after its end.

How

The Plan will be added to the Final Project Report as a separate chapter, in paper and electronic form, both in English and Italian. The plan will be focused on the most important actions, chosen according a scale of priority, and on those available funds to be gathered to do in order to follow the strategies of conservation followed in the project, especially those related to the Natura 2000 network conservation, management and implementation and to those species of major interest for the Biodiversity Strategy of EU.

Specific attention will be addressed to the follow up of the best practices action and pilot action . For best practice projects, the After-LIFE Plan shall set out how the actions initiated in the LIFE project will be continued and developed in the years that follow the end of the project, and how the longer term management of the species will be assured. For pilot actions, the After-LIFE Plan will set out how the dissemination and communication of the results will continue after the end of the project. It should give details regarding what actions will be carried out, when, by whom, and using what sources of finance.

When

The plan will be realized in the last month of the project.

Why

AFTER LIFE plan is mandatory.

Beneficiary responsible for implementation:

CNR-ISE

PROVCO, PNVG, GRAIA will participate to the preparation of the AFTR LIFE plan

Assumptions related to major costs of the action:

No costs charged on the project are foreseen for this action.

F4's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline

F4's PROJECT MILESTONES

Milestone name	Deadline

DELIVERABLE PRODUCTS OF THE PROJECT

Name of the Deliverable	Number of the associated action	Deadline
Official Agreement Signed	A 1	31/10/2017
Map of the hatchery and photos	C 1	30/11/2018
Official agreement among CNR-ISE PROVCO, PNVG, for the use of the hatchery	C 1	30/11/2018
No. 5 executive projects regarding the interventions to restore river longitudinal connectivity	A 3	30/06/2019
Open Access Database	A 2	30/06/2019
Publication on the autoecology of Cottus gobio in the VCO Province	A 2	30/06/2019
Publication on the autoecology of Salmo marmoratus in the Toce river	A 2	30/06/2019
Minutes of repopulation	C 2	30/09/2021
Minutes of repopulation	C 3	30/09/2021

MILESTONES OF THE PROJECT

Name of the Milestone	Number of the associated action	Deadline
Official agreement signature	A 1	31/10/2017
Hatchery set up concluded	C 1	30/11/2018
Signature of the agreement among CNR-ISE, PROVCO and PNVG for the use of the hatchery	C 1	30/11/2018
Approval of final fish pass projects	A 3	30/06/2019
Service conferences	A 3	30/06/2019
Rutilus pigus and Chondrostoma soetta repopulation concluded	C 3	30/09/2021
Salmo marmoratus, Cottus gobio and Telestes souffia repopulation concluded	C 2	30/09/2021

ACTIVITY REPORTS FORESEEN

Please indicate the deadlines for the following reports:

• Progress Reports n°1, n°2 etc. (if any; to ensure that the delay between consecutive reports does not exceed 18 months)

• Mid term report payment request (for project longer than 24 months or with Eu contibution of more than EUR300,000)

• Final Report with payment request (to be delivered within 3 months after the end of the project)

Type of report	Deadline

TIMETABLE

Action		2017				2018				2019				2020				2021				2022			
Action numbe	Name of the action	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
A. Preparatory actions, elaboration of management plans and/or of action plans																									
A.1	Preparation of administrative procedures for the project management and execution				■																				
A.2	Collection of abiotic, hydromorphological and biological information necessary to plan concrete actions				■	■	■	■	■	■	■														
A.3	Planning of interventions of longitudinal connectivity restoration				■	■	■	■	■	■	■														
B. Purchase/lease of land and/or compensation payments for use rights																									
C. Conservation actions																									
C.1	Renovation of a public hatchery dedicated to project actions and conservation activities in Verbano Cusio Ossola Natura 2000				■	■	■	■	■																
C.2	Repopulation of Salmo marmoratus, Cottus gobio, Telestes souffia and Austropotamobius pallipes in Verbano Cusio Ossola Natura 2000 sites							■	■	■	■	■	■	■	■	■	■	■	■	■					
C.3	Artificial reproduction and breeding of Rutilus pigus and Chondrostoma soetta and repopulation in SPA IT1140013 Lago di Mergozzo and Monte Orfano						■	■	■	■	■	■	■	■	■	■	■	■	■	■					
C.4	Implementation of the interventions of longitudinal connectivity restoration										■	■	■	■	■	■									
C.5	Control of invasive alien species in project sites				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					
C.6	Development and adoption of a conservation plan at provincial scale												■	■	■	■	■	■	■	■					
D. Monitoring of the impact of the project actions (obligatory)																									
D.1	Monitoring of the effectiveness of the artificial breeding and rearing activities					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					
D.2	Monitoring of the effectiveness of repopulation activities												■	■	■	■	■	■	■	■					
D.3	Monitoring of the functionality and effectiveness of fish passages											■	■	■	■	■	■	■	■	■					
D.4	Assessment of the social-economic impact of the project					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					
D.5	Assessment of the project impact on ecosystem services							■	■	■	■	■	■	■	■	■	■	■	■	■					
E. Public awareness and dissemination of results (obligatory)																									
E.1	Dissemination planning and execution				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					
E.2	Educational and transferability activities				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					

F. Project management (obligatory)																								
F.1	Project management and monitoring				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
F.2	External Audit							■	■	■	■	■	■	■	■	■	■	■	■	■				
F.3	Monitoring of the project progress				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
F.4	Post-Life action plan																							

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FINANCIAL APPLICATION FORMS

Part F – financial information

Budget breakdown cost categories	Total cost in €	Eligible Cost in €	% of total eligible costs
1. Personnel	836,278	836,278	47.49%
2. Travel and subsistence	32,842	32,842	1.86%
3. External assistance	172,600	172,600	9.80%
4. Durable goods			
Infrastructure	511,000	511,000	29.02%
Equipment	41,000	41,000	2.33%
Prototype	0	0	0.00%
5. Land	0	0	0.00%
6. Consumables	25,000	25,000	1.42%
7. Other costs	29,500	29,500	1.68%
8. Overheads	112,749	112,749	6.40%
Total	1,760,969	1,760,969	100.00%

Contribution breakdown	In €	% of total	% of total eligible costs
EU contribution requested	1,055,669	59.95%	59.95%
Coordinating Beneficiary's contribution	189,000	10.73%	
Associated Beneficiaries' contribution	202,300	11.49%	
Co-financers contribution	314,000	17.83%	
Total	1,760,969	100.00%	

Cost category in Euro										
Project action	Personnel (Days)	Travel	External assistance	Infrastructure	Equipment	Prototype	Land	Consumables	Other	Total
A1 Preparation of administrative procedures for the project management and execution	1,934 (7)	1,200	0	0	0	0	0	0	0	3,134
A2 Collection of abiotic, hydromorphological and biological information necessary to plan concrete actions	70,016 (380)	7,476	8,000	0	0	0	0	2,000	0	87,492
A3 Planning of interventions of longitudinal connectivity restoration	43,285 (144)	420	16,000	0	0	0	0	0	0	59,705
C1 Renovation of a public hatchery dedicated to project actions and conservation activities in Verbano Cusio Ossola Natura 2000	7,097 (31)	0	10,000	0	26,000	0	0	0	0	43,097
C2 Repopulation of Salmo marmoratus, Cottus gobio, Telestes souffia and Austropotamobius pallipes in Verbano Cusio Ossola Natura 2000 sites	77,486 (395)	1,728	17,000	0	15,000	0	0	10,000	0	121,214
C3 Artificial reproduction and breeding of Rutilus pigus and Chondrostoma soetta and repopulation in SPA IT1140013 Lago di Mergozzo and Monte Orfano	78,810 (407)	960	0	0	0	0	0	13,000	0	92,770
C4 Implementation of the interventions of longitudinal connectivity restoration	59,961 (174)	4,004	20,000	511,000	0	0	0	0	0	594,965
C5 Control of invasive alien species in project sites	29,300 (135)	2,216	0	0	0	0	0	0	0	31,516
C6 Development and adoption of a conservation plan at provincial scale	12,175 (54)	0	0	0	0	0	0	0	0	12,175
D1 Monitoring of the effectiveness of the artificial breeding and rearing activities	13,200 (60)	0	0	0	0	0	0	0	0	13,200
D2 Monitoring of the effectiveness of repopulation activities	14,300 (80)	1,888	0	0	0	0	0	0	0	16,188

D3 Monitoring of the functionality and effectiveness of fish passages	47,605 (201)	1,848	37,700	0	0	0	0	0	0	87,153
D4 Assessment of the social-economic impact of the project	1,540 (10)	0	6,900	0	0	0	0	0	0	8,440
D5 Assessment of the project impact on ecosystem services	19,945 (95)	0	0	0	0	0	0	0	0	19,945
E1 Dissemination planning and execution	70,319 (357)	11,102	2,000	0	0	0	0	0	24,500	107,921
E2 Educational and transferability activities	37,950 (268)	0	55,000	0	0	0	0	0	0	92,950
F1 Project management and monitoring	231,760 (964)	0	0	0	0	0	0	0	0	231,760
F2 External Audit	4,550 (20)	0	0	0	0	0	0	0	5,000	9,550
F3 Monitoring of the project progress	15,045 (65)	0	0	0	0	0	0	0	0	15,045
Overheads										112,749
Total	836,278 (3,847)	32,842	172,600	511,000	41,000	0	0	25,000	29,500	1,760,969

Costs per Beneficiary

Short name	Personnel (Days)	Travel	External assistance	Infrastructure	Equipment	Prototype	Land	Consumables	Other	Overheads	EU contrib.	Total eligible costs	% of total eligible costs
CNR-ISE	533,930 (2,651)	16,092	35,000	0	41,000	0	0	25,000	9,500	45,691	506,213	706,213	40.10%
GRAIA	180,640 (621)	13,786	80,600	0	0	0	0	0	20,000	20,300	245,326	315,326	17.91%
PNVG	60,286 (376)	1,954	55,000	0	0	0	0	0	0	7,900	53,840	125,140	7.11%
PROVCO	61,422 (199)	1,010	2,000	511,000	0	0	0	0	0	38,858	250,290	614,290	34.88%
Total	836,278 (3,847)	32,842	172,600	511,000	41,000	0	0	25,000	29,500	112,749	1,055,669	1,760,969	100.00%
Share of total eligible costs	47.49%	1.86%	9.80%	29.02%	2.33%	0.00%	0.00%	1.42%	1.68%	6.40%	59.95%	100.00%	

Coordinating Beneficiary's contribution				
Country code	**Beneficiary short name**	**Total costs of the actions in € (including overheads)**	**Beneficiary's own contribution in €**	**Amount of EU contribution requested in €**
IT	CNR-ISE	706,213	189,000	506,213

Associated Beneficiaries' contribution				
Country code	**Beneficiary short name**	**Total costs of the actions in € (including overheads)**	**Associated beneficiary's own contribution in €**	**Amount of EU contribution requested in €**
IT	GRAIA	315,326	70,000	245,326
IT	PNVG	125,140	71,300	53,840
IT	PROVCO	614,290	61,000	250,290
TOTAL Associated Beneficiaries		**1,054,756**	**202,300**	**549,456**

TOTAL All Beneficiaries	**1,760,969**	**391,300**	**1,055,669**

Co-financers contribution	
Co-financer's name	**Amount of co-financing in €**
ALCOTEC	5,000
ANTOLIVA	0
ASPMERG	1,000
CALDERONI	0
DBUILDING	3,000
ECA	2,000
EDELWEISS	0
ENEL	140,000
ENERGIE	6,000
FIPSAS VCO	3,000
FRUA	10,000
GIOVE	0
GRIDONE	4,000
HYDRABOGNA	0
HYDROCHEM	10,000
IDROENERGY	80,000
IDROREVIL	8,000
IMBODEN	4,000
IMPRENEL	0
IRSPA	20,000
ISPOWER	4,000
KRAMEC	0
LAVAZZA	2,000

LEONARDO	0
LORENZINA	0
LUISIN	0
PESENTIEN	0
SANBER	8,000
VBPOWER	0
VIGEZZINA	4,000
TOTAL	**314,000**

Direct Personnel costs

			Calculation =>	A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest	Number of person-days	Direct personnel costs (€)
CNR-ISE	A 1	Permanent staff or civil servant	Administrative staff / Preparation adn collection of documents/agreements	225	2	450
CNR-ISE	A 1	Additional staff	Researcher level III / Project Manager, Preparation and collection of documents/agreements, communication to stakeholders	230	2	460
CNR-ISE	A 2	Permanent staff or civil servant	Technician level V / Field work and data collection	205	60	12,300
CNR-ISE	A 2	Permanent staff or civil servant	Researcher / Supervisor of data analyses	410	20	8,200
CNR-ISE	A 2	Permanent staff or civil servant	Technician level V / Field work, data collection and analyses	205	60	12,300
CNR-ISE	A 2	Additional staff	Researcher level III / Project Manager/ partecipation to field work activities, data analyses and reporting	230	25	5,750
CNR-ISE	A 2	Additional staff	Research fellow / Field work, data analyses and database management	125	160	20,000
CNR-ISE	C 1	Permanent staff or civil servant	Technician level V / Fish hatchery set up and control	205	20	4,100
CNR-ISE	C 1	Permanent staff or civil servant	Researcher / Supervisor of hatchery set up and functioning	410	3	1,230
CNR-ISE	C 1	Permanent staff or civil servant	Administrative staff / management of the administrative procedures for the acquisition of hatchery materials	205	2	410
CNR-ISE	C 2	Permanent staff or civil servant	Researcher / Supervisor scientific aspects of the action (quality of procedures and data acquisition, breeding and rearing activities etc)	410	25	10,250
CNR-ISE	C 2	Permanent staff or civil servant	Technician level V / Field work, spawners capture, hatchery operations	205	130	26,650
CNR-ISE	C 2	Permanent staff or civil servant	Technician level V / Field work, spawners capture, hatchery operations	205	130	26,650
CNR-ISE	C 2	Additional staff	Research fellow / Data analyses, breeding activities, report elaboration	125	92	11,500
CNR-ISE	C 3	Permanent staff or civil servant	Researcher / Supervisor scientific aspects of the action (quality of procedures and data acquisition, breeding and rearing activities etc)	410	25	10,250
CNR-ISE	C 3	Permanent staff or civil servant	Technician level V / Field work, spanwers capture, hatchery operations	205	130	26,650
CNR-ISE	C 3	Permanent staff or civil servant	Technician level V / Field work, spanwers capture, hatchery operations	205	130	26,650
CNR-ISE	C 3	Additional staff	Research fellow / Field work, data analyses, rearing and breeding activities, report elaboration	125	120	15,000

Direct Personnel costs

			Calculation =>	A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest	Number of person-days	Direct personnel costs (€)
CNR-ISE	C 5	Additional staff	Researcher level III / Project Manager / partecipation to field activities for alien specie control	230	10	2,300
CNR-ISE	C 5	Permanent staff or civil servant	Technician level V / Field work and lab work	205	25	5,125
CNR-ISE	C 5	Additional staff	Research fellow / Field work and data collection and analyses	125	30	3,750
CNR-ISE	C 5	Permanent staff or civil servant	Technician level V / Field work, data collection and lab work	205	25	5,125
CNR-ISE	C 6	Permanent staff or civil servant	Researcher / Supervisor and scientific contribution of the development of Conservation Plan	410	5	2,050
CNR-ISE	C 6	Additional staff	Researcher level III / Project Manager, controbution to the development of the Conservation Plan	230	10	2,300
CNR-ISE	D 1	Permanent staff or civil servant	Researcher / Supervisor of activities, report elaboration	410	20	8,200
CNR-ISE	D 1	Additional staff	Research fellow / Data analyses, rearing and breeding activities, report elaboration	125	40	5,000
CNR-ISE	D 2	Additional staff	Research fellow / Field work and data collection and analyses for monitoring activities, report elaboration	125	60	7,500
CNR-ISE	D 2	Permanent staff or civil servant	Researcher / Supervisor of activities, data analyses and reporting	410	15	6,150
CNR-ISE	D 5	Permanent staff or civil servant	Researcher / Supervisor of action implementation, data analyses and reporting	410	20	8,200
CNR-ISE	D 5	Additional staff	Research fellow / action implementation, information analyses and report writing	125	40	5,000
CNR-ISE	E 1	Additional staff	Resercher level III / Project manager / Website contents preparation	230	10	2,300
CNR-ISE	E 1	Additional staff	Researcher / Project manager / Partecipation to meetings with stakeholders	230	12	2,760
CNR-ISE	E 1	Additional staff	Researcher level III / Project Manager / partecipation to the development ot the visual identity kit, mascot	230	4	920
CNR-ISE	E 1	Additional staff	Researcher / Project manager / Layman's report preparation	230	15	3,450
CNR-ISE	E 1	Permanent staff or civil servant	Technical staff Level VII / Website creation, update and maintenance	165	90	14,850
CNR-ISE	E 1	Additional staff	Researcher level III / Project Manager, partecipation to the defintion of the comunication plan	230	4	920
CNR-ISE	E 1	Additional staff	Researcher level III / Project Manager / COntrobution to communication plan elaboration	230	5	1,150

Direct Personnel costs

			Calculation =>	A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest	Number of person-days	Direct personnel costs (€)
CNR-ISE	E 1	Additional staff	Research fellow / partecipation to meetings with stakeholders	125	12	1,500
CNR-ISE	E 1	Permanent staff or civil servant	Researcher / Scientific supervisor of Layman's report	410	3	1,230
CNR-ISE	E 1	Additional staff	Researcher level III / Project Manager / Organization and partecipation to network activities	230	20	4,600
CNR-ISE	E 1	Additional staff	Research fellow / organization and partecipation to network activities	125	15	1,875
CNR-ISE	E 2	Additional staff	Researcher / Project manager / Educational materials contents elaboration	230	5	1,150
CNR-ISE	E 2	Additional staff	Research fellow / report on R. pigus and C. soetta breeding and rearing elaboration and preparation	125	20	2,500
CNR-ISE	E 2	Additional staff	Research fellow / Educational materials contents elaboration	125	5	625
CNR-ISE	E 2	Additional staff	Research fellow / tutoring for stages and educational meetings with schools/stakholders	125	140	17,500
CNR-ISE	E 2	Permanent staff or civil servant	Researcher / Supervisor of report on R. pigus and C. soetta contents	410	5	2,050
CNR-ISE	F 1	Permanent staff or civil servant	Researcher / contribution to development of technical plan and Steering Committee member	410	20	8,200
CNR-ISE	F 1	Additional staff	Researcher level III / Project Manager/ project management and monitoring	230	600	138,000
CNR-ISE	F 1	Permanent staff or civil servant	Administrative staff level V/ Financial manager of the project	205	160	32,800
CNR-ISE	F 2	Additional staff	Researcher level III / Project Manager / interactions with the Audit team	230	10	2,300
CNR-ISE	F 2	Permanent staff or civil servant	Administrative staff / Interaction with the Audit team	225	10	2,250
CNR-ISE	F 3	Additional staff	Researcher level III / Project Manager/ project management and monitoring	230	50	11,500
GRAIA	A 1	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia	425	1	425
GRAIA	A 2	Permanent staff or civil servant	Managing director, part time / Technical Manager for Graia - expert in ichthyology and hydrobiology	425	10	4,250
GRAIA	A 2	Permanent staff or civil servant	CCNL Commerce Employee III level / Senior expert biologist on nature conservation and ecological networks	180	11	1,980
GRAIA	A 2	Permanent staff or civil servant	CCNL Commerce Employee III level / Junior naturalist expert of nature conservation and environmental assessment	170	18	3,060

Direct Personnel costs

			Calculation =>	A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest	Number of person-days	Direct personnel costs (€)
GRAIA	A 3	Permanent staff or civil servant	CCNL Commerce Employee III level / Senior expert biologist on nature conservation and ecological networks	180	30	5,400
GRAIA	A 3	Permanent staff or civil servant	Managing director, part time / Technical Manager for Graia - expert in ichthyology and hydrobiology	425	12	5,100
GRAIA	A 3	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia	425	15	6,375
GRAIA	A 3	Permanent staff or civil servant	CCNL Commerce Employee III level / GIS systems designer	120	32	3,840
GRAIA	A 3	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia - expert in fish pass design	425	50	21,250
GRAIA	C 4	Permanent staff or civil servant	Managing director, part time / Technical Manager for Graia - expert in ichthyology and hydrobiology	425	10	4,250
GRAIA	C 4	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia	425	10	4,250
GRAIA	C 4	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia - expert in fish pass design	180	33	5,940
GRAIA	C 4	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia - expert in fish pass design	425	48	20,400
GRAIA	C 5	Permanent staff or civil servant	Managing director, part time / Technical Manager for Graia - expert in ichthyology	425	20	8,500
GRAIA	C 5	Permanent staff or civil servant	CCNL Commerce Employee III level / Senior expert biologist on nature conservation and ecological networks	180	25	4,500
GRAIA	C 6	Permanent staff or civil servant	Managing director, part time / Technical Manager for Graia - expert in ichthyology and hydrobiology	425	5	2,125
GRAIA	D 3	Permanent staff or civil servant	CCNL Commerce Employee II level / Senior expert biologist on environmental conservation	200	50	10,000
GRAIA	D 3	Permanent staff or civil servant	CCNL Commerce Employee III level / Senior expert biologist on nature conservation and ecological networks	180	46	8,280
GRAIA	D 3	Permanent staff or civil servant	CCNL Commerce Employee III level / Junior naturalist expert of nature conservation and environmental assessment	170	60	10,200
GRAIA	D 3	Permanent staff or civil servant	Managing director, part time / Technical Manager for Graia - expert in ichthyology and hydrobiology	425	30	12,750
GRAIA	D 3	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia	425	15	6,375
GRAIA	D 5	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia	425	5	2,125

Direct Personnel costs

			Calculation =>	A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest	Number of person-days	Direct personnel costs (€)
GRAIA	E 1	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia: layman's report	425	5	2,125
GRAIA	E 1	Permanent staff or civil servant	CCNL Commerce Employee III level / Senior biologist expert on environmental education	180	28	5,040
GRAIA	E 1	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia: meetings with stakeholders	425	5	2,125
GRAIA	E 1	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia: meetings and press office activities	425	3	1,275
GRAIA	E 1	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia: networking	425	5	2,125
GRAIA	F 1	Permanent staff or civil servant	Managing director, part time / Technical Manager for Graia - expert in ichthyology and hydrobiology	425	14	5,950
GRAIA	F 1	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia	425	15	6,375
GRAIA	F 1	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia - expert in fish pass design	425	5	2,125
GRAIA	F 3	Permanent staff or civil servant	Managing director, part time / Technical and Financial Manager for Graia	425	5	2,125
PNVG	A 1	Permanent staff or civil servant	Administrative staff (cat. C)/Internal administrative support/agreement preparation	168	1	168
PNVG	A 2	Permanent staff or civil servant	Technical staff (cat.B)/Field work partecipation	130	2	260
PNVG	A 2	Permanent staff or civil servant	Technical staff (cat.C)/Field work partecipation and planning	154	4	616
PNVG	C 1	Permanent staff or civil servant	Director/Agreement preparation for the common use of CNR-ISE hatchery	360	1	360
PNVG	C 1	Permanent staff or civil servant	Administrative staff (cat. C)/preparation of the official document of agreement among public bodies for the use of the hatchery	168	2	336
PNVG	C 2	Permanent staff or civil servant	Technical staff (cat. C)/partecipation to repopulaiton activities	154	4	616
PNVG	C 2	Permanent staff or civil servant	Technical staff (cat. B)/partecipation to repopulaiton activities	130	4	520
PNVG	C 4	Permanent staff or civil servant	Administrative staff (cat. C) /partecipation to conservation plan preparation	168	5	840
PNVG	C 4	Permanent staff or civil servant	Technical staff (cat. B)/partecipation to conservation plan preparation	130	5	650

Direct Personnel costs

			Calculation =>	A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest	Number of person-days	Direct personnel costs (€)
PNVG	C 4	Permanent staff or civil servant	Director/partecipation to conservation plan preparation	360	2	720
PNVG	C 6	Permanent staff or civil servant	Director/ partecipation to conservation plan preparation and adoption	360	4	1,440
PNVG	C 6	Permanent staff or civil servant	Technical staff (cat.C)/ Conservation plan preparation	154	15	2,310
PNVG	D 2	Permanent staff or civil servant	Technical staff (cat. B)/partecipation to monitoring activities	130	2	260
PNVG	D 4	Permanent staff or civil servant	Technical staff (cat. B)/partecipation to socio economic impact monitoring activities	154	10	1,540
PNVG	D 5	Permanent staff or civil servant	Technical staff (cat. C)/ controbution to action implementation and report writing	154	30	4,620
PNVG	E 1	Permanent staff or civil servant	Technical staff (cat.C)/partecipation to website contents development and update	154	20	3,080
PNVG	E 1	Permanent staff or civil servant	Technical statt (B2)/partecipation to meetings	130	16	2,080
PNVG	E 1	Permanent staff or civil servant	Technical staff (cat.C)/partecipation to press office activities	154	10	1,540
PNVG	E 1	Permanent staff or civil servant	Technical statt (C2)/organization and partecipation to meetings	154	20	3,080
PNVG	E 1	Permanent staff or civil servant	Technical staff (cat. B)/partecipation to website contents development	130	3	390
PNVG	E 1	Permanent staff or civil servant	Technical staff (cat. C)/sharing visual identity devleopment	154	2	308
PNVG	E 1	Permanent staff or civil servant	Technical staff (cat. B)/sharing visual identity devleopment	130	2	260
PNVG	E 1	Permanent staff or civil servant	Technical staff (cat. B)/sharing visual identity devleopment	130	15	1,950
PNVG	E 1	Permanent staff or civil servant	Technical staff (cat. C)/partecipation to networking activities	154	15	2,310
PNVG	E 1	Permanent staff or civil servant	Director/ partecipation to press office activities contents development	360	2	720
PNVG	E 1	Permanent staff or civil servant	Director/partecipation to meetings	360	10	3,600
PNVG	E 2	Permanent staff or civil servant	Technical staff (cat. B)/ stage tutoring	130	40	5,200

Direct Personnel costs

			Calculation =>	A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest	Number of person-days	Direct personnel costs (€)
PNVG	E 2	Permanent staff or civil servant	Technical staff (cat. B)/ planning of educational activities contents	130	4	520
PNVG	E 2	Permanent staff or civil servant	Adminsitrative staff (cat. C)/public tender procedures and assignement for educational activities	168	2	336
PNVG	E 2	Permanent staff or civil servant	Technical staff (cat. C)/ planning of educational activities contents	154	4	616
PNVG	E 2	Permanent staff or civil servant	Technical staff (cat. C)/ stage tutoring	154	40	6,160
PNVG	F 1	Permanent staff or civil servant	Administrative staff (cat. C)/ Administrative management for the beneficiay	168	40	6,720
PNVG	F 1	Permanent staff or civil servant	Tehcnical staff (cat. C)/ contents and scientific management for the beneficiay	154	35	5,390
PNVG	F 3	Permanent staff or civil servant	Tehcnical staff (cat. C)/ contents and scientific management for the beneficiay	154	5	770
PROVCO	A 1	Permanent staff or civil servant	Administrative director/Control of legal procedures and responsibility for administrative acts/Agreement with coordinating beneficiary	431	1	431
PROVCO	A 2	Permanent staff or civil servant	Expert on fauna (cat. D)/Technical advise/partecipation to field work for preliminary environmental assesment of project sites	130	10	1,300
PROVCO	A 3	Permanent staff or civil servant	Expert on fauna (cat. D)/Technical advise/partecipation to defragmentation interventions planning	130	3	390
PROVCO	A 3	Permanent staff or civil servant	Technical director (Engineer)/Control and responsibility for technical actions/partecipation to defragmentation interventions planning	465	2	930
PROVCO	C 1	Permanent staff or civil servant	Administrative staff/preparation of the contents of the agreements for the common use of CNR-ISE hatchery	115	2	230
PROVCO	C 1	Permanent staff or civil servant	Technical director (Engineer)/Agreement preparation for the common use of CNR-ISE hatchery	431	1	431
PROVCO	C 2	Permanent staff or civil servant	Expert on fauna (cat. D)/Technical advise/partecipation to repopulation activities	130	10	1,300
PROVCO	C 3	Permanent staff or civil servant	Expert on fauna (cat. D)/Technical advise/partecipation to repopulation activities	130	2	260
PROVCO	C 4	Permanent staff or civil servant	Technical director (Engineer)/Control and responsibility for technical actions/public tender for infrastructures execution	465	40	18,600
PROVCO	C 4	Permanent staff or civil servant	Administrative director/Control of legal procedures and responsibility for administrative acts/public tender for infrastructures execution	431	6	2,586

Direct Personnel costs

			Calculation =>	A	B	A x B
Beneficiary short name	**Action number**	**Type of contract**	**Category/Role in the project**	**Daily rate (rounded to the nearest**	**Number of person-days**	**Direct personnel costs (€)**
PROVCO	C 4	Permanent staff or civil servant	Administrative staff (cat. C)/Internal administrative support/public tender for infrastructures execution	115	15	1,725
PROVCO	C 6	Permanent staff or civil servant	Expert on fauna (cat. D)/Technical advise/conservation plan development and preparation	130	15	1,950
PROVCO	D 2	Permanent staff or civil servant	Expert on fauna (cat. D)/Technical advise/partecipation to field work for fish repopulation monitoring	130	3	390
PROVCO	E 1	Permanent staff or civil servant	Administrative director/Control of legal procedures and responsibility for administrative acts/discussion of communication plan	431	1	431
PROVCO	E 1	Permanent staff or civil servant	Technical director (Engineer)/Control and responsibility for technical actions/networking activities partecipation	465	5	2,325
PROVCO	E 2	Permanent staff or civil servant	Administrative director/Control of legal procedures and responsibility for administrative acts/public tender	431	3	1,293
PROVCO	F 1	Permanent staff or civil servant	Expert on fauna (cat. D)/Technical advise/detailed plan of technical interventions	130	5	650
PROVCO	F 1	Permanent staff or civil servant	Technical director (Engineer)/Control and responsibility for technical actions/detailed plan of technical interventions	465	20	9,300
PROVCO	F 1	Permanent staff or civil servant	Administrative staff (cat. C)/Internal administrative support/project cycle management	115	20	2,300
PROVCO	F 1	Permanent staff or civil servant	Technical director (Engineer)/Control and responsibility for technical actions/steering commitee and progress reports and technical plan supervision	465	30	13,950
PROVCO	F 3	Permanent staff or civil servant	Expert on fauna (cat. D)/Technical advise/detailed plan of technical interventions	130	5	650
				TOTAL =>	3,847	836,278

Travel and subsistence costs

Calculation =>				A	B	A X B
Beneficiary short name	Action number	Destination	Explanations of assumptions	Travel and subsistence rate	Number of travels	Total travel and subsistence costs
CNR-ISE	A 1	Inside EU	From Verbania to Brussels, two persons to the kick-off meeting	600	2	1,200
CNR-ISE	A 2	National	From Verbania to Domodossola (85km, 31euro person food). Field work and data collection, 4 persons, 10 trips	36	40	1,440
CNR-ISE	A 2	National	From Verbania to Val Grande (Finero) (90km, 31euro person food). Field work and data collection, 4 persons, 10 trips.	37	40	1,480
CNR-ISE	A 2	National	From Verbania to Mergozzo (40km, 31euro person food). Field work and data collection, 4 persons, 5 travels Field work and data collection, 4 persons, 10 trips.	37	20	740
CNR-ISE	C 2	National	From Verbania to Domodossola. Capture of fish spawners/Adults (Toce/Ticini basin) and repopulation 4 persons, 10 trips	36	40	1,440
CNR-ISE	C 3	National	From Verbania to Ticino basin. Capture of Rutilus pigus and Chondrostoma soetta spawners and repopulation. 4 persons, 6 trips	40	24	960
CNR-ISE	C 5	National	From Verbania to Domodossola. Alien specie control. 2 persons, 8 trips	42	16	672
CNR-ISE	C 5	National	From Verbania to Mergozzo. Alien specie control. 2 persons, 8 trips	36	16	576
CNR-ISE	D 2	National	Fish monitoring in Toce River	36	32	1,152
CNR-ISE	D 2	National	From Verbania to Val Grande, monitoring of fish and crayfish repopulation, 4 persons, 4 trips.	37	16	592
CNR-ISE	E 1	National	Visiting site of a project included in networking/2 persons/train/hotel night/4 meals	300	2	600
CNR-ISE	E 1	National	Partecipation to 3 scientific conferences / 2 persons / 2 days / train ticket	240	6	1,440
CNR-ISE	E 1	Inside EU	Visiting site of a project included in networking activities/2 persons/flights/2 days/4 meals/2 hotel nights	500	2	1,000
CNR-ISE	E 1	Inside EU	Partecipation to scientific conferences (2persons/4 days/flight/4 conferences)	700	4	2,800
GRAIA	A 2	National	From Varano Borghi To Domodossola (170 km a/r, 25€/person for food). Field work, data collection. 3 persons, 10 trips	68	30	2,040

Travel and subsistence costs

Calculation =>				A	B	A X B
Beneficiary short name	Action number	Destination	Explanations of assumptions	Travel and subsistence rate	Number of travels	Total travel and subsistence costs
GRAIA	A 2	National	From Varano Borghi To Val Grande - Finero (212 km a/r, 25€/person for food). Field work, data collection. 2 persons, 10 trips	78	20	1,560
GRAIA	A 3	National	From Varano Borghi to the river fragmentation sites (180 km a/r, 25€/person for food). Inspection and data collection. 3 persons, 2 trips	70	6	420
GRAIA	C 4	National	From Varano Borghi To the fish passes' sites (170 km a/r, 25€/person for food). Construction Supervisor Toce01-02-03-04 SBernardino01.1 person, 28 trips	68	28	1,904
GRAIA	C 4	National	From Varano Borghi To Crevoladossola (180 km a/r, 25€/person for food). Construction Supervisor Toce05 (with monitoring chamber). 1 person, 30 trips	70	30	2,100
GRAIA	C 5	National	From Varano Borghi to Mergozzo (112 km a/r, 25€/person for food). Alien specie control. 1 person, 8 trips	53	8	424
GRAIA	C 5	National	From Varano Borghi to Domodossola (170 km a/r, 25€/person for food). Alien specie control. 1 person, 8 trips	68	8	544
GRAIA	D 3	National	From Varano Borghi To Vogogna and Crevoladossola (170 km a/r, 25€/person for food). Data collection and check of monitoring chamber at Toce02 and Toce05. 1 person, 24 trips	68	24	1,632
GRAIA	D 3	National	From Varano Borghi To Verbania (114 km a/r, 25€/person for food). Fish sampling up/downstream on Sanbernardino01. 4 persons, 1 trip	54	4	216
GRAIA	E 1	National	From Varano Borghi To Verbania (114 km a/r, 25€/person for food). Meetings with stakeholders, 1 person, 15 trips	54	15	810
GRAIA	E 1	National	Partecipation to scientific conferences (1 person/4 days/flight/2 conferences)	700	1	700
GRAIA	E 1	National	Partecipation to 3 scientific conferences for networking/1 person / 2 days / train ticket	240	3	720
GRAIA	E 1	National	From Varano Borghi To Verbania (114 km a/r, 25€/person for food). Public Kick-off meeting, 2 persons, 1 trip	54	2	108
GRAIA	E 1	National	From Varano Borghi To Verbania (114 km a/r, 25€/person for food). Public final meeting, 2 persons, 1 trip	54	2	108

Travel and subsistence costs

			Calculation =>	A	B	A X B
Beneficiary short name	Action number	Destination	Explanations of assumptions	Travel and subsistence rate	Number of travels	Total travel and subsistence costs
GRAIA	E 1	National	Visiting site of a project included in networking activities/1 person/flights/2 days/4 meals/2 hotel nights	500	1	500
PNVG	A 2	National	From Vogogna To Val Grande - Finero (78 km a/r, 25€/person for food) Field work partecipation and data collection. 2 persons, 3 trips	36	6	216
PNVG	C 2	National	From Vogogna To Val Grande - Finero (78 km a/r, 25€/person for food) Field work partecipation and data collection. 2 persons, 4 trips	36	8	288
PNVG	D 2	National	From Vogogna to Val Grande, monitoring of fish and crayfish repopulation/2 persons/25€ person for food/2 trips.	36	4	144
PNVG	E 1	National	From Vogogna to Verbania (44 km a/r) , meetings with stakeholders, Kickoff and final meeting. 3 persons, 16 trips	12	48	576
PNVG	E 1	Inside EU	From Vogogna to Italia networking activities, 1 person, by train/plane (200€), 25€/person for food, one night in Hotel (60€), 1 trip	450	1	450
PNVG	E 1	National	From Vogogna to Italia networking activities, 1 person, by train (80€), 25€/person for food, one night in Hotel (60€), 1 trip	280	1	280
PROVCO	E 1	National	From Verbania to italian site for network activities /train ticket/2 persons/2 days/8 meals/2 hotel night	280	2	560
PROVCO	E 1	Inside EU	Airplane/train tickets to site of network projects/1 persons/2 days/4 meals/hotel night	450	1	450
					Total	32,842

External assistance costs

Beneficiary short name	Action number	Procedure	Description	Costs (€)
CNR-ISE	A 2	Public tender/electronic market of the public administration	external assistance for the environmental monitoring of the PNVG rivers finalized to the re-introduction of Autropotamobius pallipes	8,000
CNR-ISE	C 1	Public tender / direct assignement according to the Public administration rules	Painter and bricklayer for the set up of the hatchey building	10,000
CNR-ISE	C 2	Public tender / direct assignement according to the Public administration rules	External assistance for the monitoring of the repopulation of Autropotamobius pallipes set up of the hatchey building	7,000
CNR-ISE	C 2	Public tender / direct assignement according to the Public administration rules	External assistance for the reintroduction of Autropotamobius pallipes	10,000
GRAIA	A 3	direct assignment of selection for curriculum (at least 3 screened)	environmental engineer - expert in fish pass design	16,000
GRAIA	C 4	direct assignment of selection for curriculum (at least 3 screened)	environmental engineer - expert in fish pass	20,000
GRAIA	D 3	direct assignment of selection for curriculum (at least 3 screened)	biologist engineer - expert in fish pass monitoring and ichthyology	37,700
GRAIA	D 4	Expert on socio-economic aspects	Assistant for the analysis of the socio-economic impact of the project	6,900
PNVG	E 2	Public tender / direct assignement according to the Public administration rules	Environmental education	55,000
PROVCO	E 1	Public tender/direct assignement according to the Public administration rules	Catering	2,000
			TOTAL =>	172,600

Durable goods: Infrastructure costs

Beneficiary short name	Action numbe	Procedure	Description	Actual cost (€)	Depreciation (eligible cost)
PROVCO	C 4	Public tender	Execution of defragmentation interventions	511,000	511,000
			TOTAL =>	511,000	511,000

Durable goods: equipment costs

Beneficiary short name	Action number	Procedure	Description	Actual cost (€)	Depreciation (eligible cost)
CNR-ISE	C 1	Public tender / direct assignement according to the Public administration rules, Electroni Market of the Public administation MEPA	VTR pools/tanks for the hatchery and rearing plant	15,000	15,000
CNR-ISE	C 1	Public tender / direct assignement according to the Public administration rules, Electroni Market of the Public administation MEPA	Zug jars	5,000	5,000
CNR-ISE	C 1	Public tender / direct assignement according to the Public administration rules, Electroni Market of the Public administation MEPA	Hatching beds	6,000	6,000
CNR-ISE	C 2	Public tender / direct assignement according to the Public administration rules, Electroni Market of the Public administation MEPA	3RFIDs Pit tag and 2Radio Tags readers	15,000	15,000
			TOTAL =>	41,000	41,000

Consumables

Beneficiary short name	Action numbe	Procedure	Description	Costs (€)
CNR-ISE	A 2	Public tender / direct assignement according to the Public administration rules, ELectroni Market of the Public administation MEPA	Consumables for fish and macroinvertebrates analyses (slides, ethanol, gloves,...)	2,000
CNR-ISE	C 2	Public tender / direct assignement according to the Public administration rules, ELectroni Market of the Public administation MEPA	waders, polarized sunglasses, gloves, material for electrofishing	4,000
CNR-ISE	C 2	Public tender / direct assignement according to the Public administration rules, ELectroni Market of the Public administation MEPA	FIsh food (from powder to pellets) for the fish rearing activities	6,000
CNR-ISE	C 3	Public tender / direct assignement according to the Public administration rules, ELectroni Market of the Public administation MEPA	markers such as RFIDs, Radio Pit tags, elastomers	8,000
CNR-ISE	C 3	Public tender / direct assignement according to the Public administration rules, ELectroni Market of the Public administation MEPA	Healthcare products for the hatchery structures (disinfectants, antibiotics...)	5,000
			TOTAL =>	25,000

Other costs

Beneficiary short name	Action numbe	Procedure	Description	Costs (€)
CNR-ISE	E 1	Public tender / direct assignement according to the Public administration rules	Layman's printing	1,500
CNR-ISE	E 1	Direct assignment	Reimbursement for meetings lecturers	3,000
CNR-ISE	F 2	Direct assignement according to the Public administration rules	Project Audit	5,000
GRAIA	E 1	Public tender / direct assignement according to the Public administration rules	Items for promotion and disseminations	20,000
			TOTAL =>	29,500

Overheads

Beneficiary short name	Total direct costs of the project in €	Overhead amount (€)
PNVG	117,240	7,900
GRAIA	295,026	20,300
PROVCO	575,432	38,858
CNR-ISE	660,522	45,691
	1,648,220	112,749