

EXPLORING THE PROTECTED AREA

In the Torgnon municipality, precisely at an altitude of 1,920 m, in the deep valley of Chavacour, we find the Loditor Pool, a 'must' for visitors to the area. It can be easily reached either on foot or on bicycle.

This suggestive **damp area** surrounded by larch woods features a stretch of marshland with a rich **mosaic of species and habitats** typical of damp environments. Despite being common in Valle d'Aosta, these species and habitats are rarely found all together in a few hectares of land.

The limestone springs that feed the pool create an extremely precious habitat from a naturalistic standpoint, and present the prevalence of a particular combination of Bryophytes (moss), Cratoneurion. For its features, Loditor is a **Special Conservation Area (ZSC) of the Natura 2000 network**, a European ecological network created for the protection and conservation of natural habitats and animal and plant species that inhabit them.

About 30% of the Valle d'Aosta area (overall 30 sites) is part of the Natura 2000 network and, therefore, subjected to special protection, thus providing evidence of the quality and rare beauty of the natural heritage that is present.

The visit to the Loditor Pool reveals a complex and steadily developing environment that has a very **delicate** balance. The pool is silting up, a process that has reached an advanced (and unstoppable) stage, and its survival strictly depends on a carefully maintained water balance.

The typical plant species have specifically **adapted** to the aquatic environment, while the life cycle and reproductive cycle of the most common animal species are closely related to water. Every season discloses facets of the **life cycle of plants and animals** though, at this altitude, the most favourable time is summer, between late June and the end of August.

The descriptive sheets provided below enlarge on the main naturalistic aspects of the pool, underscoring periods of the year during which particular moments of the life cycle of typical plants and animals can be observed.

July and August are the best months to visit the site, which is enhanced by flowering plants that have reached maturity. There is also an excellent chance of sighting animals carrying out their activities. Autumn, instead, offers all the hues of the larch woods, followed by winter that brings quiet quiescence of nature.

LODITOR'S FLORA AND FAUNA

GENERAL DESCRIPTION

- **Surface area: 22 hectares**
- **Minimum and maximum altitude: 1,920-2,083 m a.s.l.**

GENERAL INFORMATION

Quite extensive flatland with marshland surrounded by larch woods and surmounted to the North by a rocky wall (calc-shist and green stones).

The flatland is crossed by the small torrent Petit Monde that, along with lateral springs, supplies water to the pool, which has now reached an advanced state of silting due to the build up of plant residue. In fact, the mass accumulated is rising as a result of the continuous deposit of organic substance, thus producing a stratified structure. The substrate easily soaks in water, forming sponge-like cushions.

The site's conditions are ideal for the growth of a particular combination of moss or Bryophytes (plants derived from algae that reached land in the Paleozoic Age), precisely the Cratoneurion ("petrifying springs with travertine marble formations" are their habitat), and of vast cushions of sphagnum and other moss types.

Instead, there are interesting aquatic species in areas where water flows freely.

FLORA

The most typical plant species are related to the aquatic environment.

The waters of the Loditor present intensive growth of alpine ***Groenlandia densa***. Pondweed is an aquatic plant with leaves in opposite pairs. It lives entirely submerged in water, forming more or less dense populations.

The ***Ranunculus peltatus*** is very evident, especially when it flowers in the height of summer. This aquatic buttercup with white flowers and floating leaves has roots anchored to the river bed. Along the banks we find the ***Salix pentandra***, or bay willow, a very rare tree in Valle d'Aosta. It is named after the typical sweet wood scent that is released by the leaves when they are crushed.

Utricularia minor or lesser bladderwort grows in stagnating calcareous waters. This carnivorous plant contains vesicles that have a dual function, as they act both as floats and minute traps (they present a sequence of small brushes at the tip and contain air. When they are touched, for instance by a mollusc, the trap opens and the animal is sucked inside).

At least 15 different species of sedge have been recorded in the wetland. The uncommon ***Carex limosa*** stands out among them. Its genus name (*Carex*) derives from the Greek 'keiro' (cut), which refers to the sharp-edged leaves, while the specific name (*limosa*) indicates growth on muddy soil. ***Sphagnum*** is a light permeable moss that forms thick cushions, which absorb water like sponges. The woods surrounding the wetland basin are made up of **Larch** trees, a typical conifer of the mountain environment characterised by needle-shaped leaves grouped into bunches that turn yellow and fall in autumn.

VISITING LODITOR

DETAILED INFORMATION

FAUNA

In terms of fauna, animals that are most easily observed in warm weather are the Common Frog, the Mallard Duck and dragonflies (particularly the *Aeshna juncea* species).

The Common Frog, generally called the Red Frog by its colour, was widely found at rather high altitudes. The adults are not closely bound to water but during the reproductive phase they go to water that is either still or is low with a weak current to deposit up to 4,000 eggs in jelly masses (egg masses).

The larva (tadpole) fully develops in the aquatic environment. The metamorphosis takes place through various stages of development until the adult's appearance differs entirely from that of the larva.

The adult goes into hibernation in winter. Depending on the latitude and altitude, hibernation can commence from August to November and last until February-June. During hibernation the frog seems dead with neither heartbeat nor breath. To survive it produces large amounts of glucose that reduces the freeze temperature of body fluids. At the first signs of thawing, it awakens and instantly commences its reproductive cycle.

The Mallard Duck, an unfailing presence in ponds and lakes, is the most common wild duck. It spends most of the day on the water, and visits land only to nest or rest and clean its feathers, which are water-resistant as a result of the oily substance it spreads with the beak. This substance is produced by a gland situated at the base of the tail.

It presents an evident sexual dimorphism, with noticeable differences between male and female, especially in the colours of the plumage.

The male features a beautiful electric dark green head and neck with a thin white collar underscoring the contrast with the black chest. The colour of the head becomes brighter during the mating season to attract the female. Conversely, the female is mainly brown with a variety of nuances ranging from beige to brown. This shade ensures excellent mimicry amidst wetland vegetation. This is essential to brood the eggs and care for the offspring.

Dragonflies

These insects belong to the order of the **Odonati**, whose life cycle is closely bound to water. The adults are recognised by the long abdomen formed by clearly visible segments, two pairs of wings thickly lined with veins, large eyes and very short antennae.

They are active during the day, especially around midday, and their flight is agile and fast. All dragonflies are predators, both during the larval phase and the adult phase. The formidable power of their flight and their extraordinary sight make them unrivalled winged hunters. Preys are ambushed and captured (the dragonfly sights the prey while resting motionless; then it flies straight at it, captures it with the feet and returns to its perch to eat it), or caught in flight (it attacks and devours the prey while flying, without needing to land on a perch).

The mating process is fascinating, and can be observed if one is fortunate. The male performs ritual movements to attract the female. He catches her, holds her and arches the abdomen, stimulating her to do the same. If she is responsive, it will acquire the typical heart-shaped position.

TYPICAL SPECIES

BEST OBSERVATION PERIOD

FLORA

- *Groenlandia densa* (pond weed)
- *Ranunculus peltatus*
- *Salix pentandra* (bay willow)
- *Urticularia minor* (lesser bladderwort)
- *Carex limosa*
- *Sphagnum*
- *Larix decidua* (larch)

June-August: the vegetation is at the height of its growth (flowers).
Late September-October: larch trees start yellowing.

FAUNA

- *Rana temporaria* (common frog)

Winter: hibernation period
March-June (depending on thawing process): reproduction near the water with eggs deposited in the water.
June-July: development cycle of the tadpole.

- *Anas Platyrhynchos* (mallard duck)

From April-May: the eggs hatch. Visitors might see the little ones with the mother.
July-August: there is a good chance of observing both young ones and adults of both sexes

- Dragonfly (particularly *Aeshna juncea*)

July-August: the adults might be seen flying or perched on vegetation along the banks of the pond. Mating season.

DETAILED INFORMATION - HOW ENVIRONMENTAL FACTORS AFFECT THE COMMON FROG'S REPRODUCTION PROCESS

Several studies have been carried out in Valle d'Aosta as part of the transnational cooperation project "Phenoalp - Phénologie alpine" to better understand the reproductive phenology of the Red Frog, namely how the reproductive phases of this amphibian that is bound to aquatic mountain environments are directly affected by temperature, altitude and other environmental parameters.

In Valle d'Aosta the species was monitored in 5 sites, including 29 ponds and damp areas situated at various altitudes between 500 and 2,310 m.

The dedicated monitoring procedure establishes and encodes the observation modes of the species. It entails collecting information that is particularly related to the period when eggs are laid and the various development phases of the tadpoles. The values recorded are studied by associating them with bioclimatic variables, such as altitude, air and water temperature to ascertain their effect on reproductive phenology.

The Red Frogs' monitoring procedure commits researchers to perform weekly checks by fishing the tadpoles with a special net in various points of the monitoring sites, noting down in a logbook the date of onset of every stage (eggs, mobile larva with external gills and a filiform tail, larvae with formed hind legs, larvae with formed front legs and the presence of the tail). Measurements are taken, using a millimetre sheet, on a sample of 10 tadpoles for every development stage that is present and identified.

This procedure, which was carried out in the study area Plan di Meje in Saint-Marcel in 2010, yielded the following results, precisely, egg masses were deposited at once during the second week of May, the first tadpoles were sighted on 8 June and the first metamorphoses were observed on 7 July, with development periods of about 44 days. The following year the egg masses were deposited at once during the third week of April, the first sightings of tadpoles occurred starting from 9 May, while the first metamorphoses were observed on 18 July, with development periods of about 90-95 days. Similar data indicate that the date of egg deposition is delayed as the altitude increases, though this delay varies depending on the years. In 2011 egg depositions were anticipated especially at high altitudes.

The studies underscored the fact that the reproductive phenology of the Red Frog seems to be a very effective indicator of the effects of climate changes in the mountains. It has, in fact, been proven that the date of thawing in mountain areas is the main decisive factor for the date of egg mass deposition. Thawing, even only of small portions of a pond, provides access to water, which is essential for the reproduction of frogs. Hence, the reproduction of mountain populations of the Red Frog is strongly bound to temperature variations and to the snow.

Regarding the development of tadpoles, there is evidence that they develop faster at high altitudes.

Note that this easy procedure allows everybody, even amateurs, to perform these monitoring activities and to make interesting comparisons between the various sites, including the effects of climate change on living species.