

Otter in the Parishan Wetland

For the preparation and development of a management plan for the otter in the Parishan wetland, a collaborative approach has been utilized. Stakeholders' participation will result in the consideration of opinions, knowledge, and interests of relevant individuals and groups in the wetland for the preparation of the plan. The purpose of this approach is to increase plan continuity, the participation of stakeholders in the implementation of the plan, and the support.

The preparation process of a management plan requires consideration of the values of the wetland and otter species. In addition, threats to this valuable species (otters), as well as the capacities and potentials existing in the main respective bodies and groups to manage the wetlands must be recognized, thoroughly, and paid attention to. In the preparation process of a management plan in the Parishan lake, training workshops were carried out to increase the teachers' awareness level and sensitization, non-governmental organization (NGOs), and local communities between 2010 and 2011. Similar workshops were also carried out for the park rangers and people local to villages living around the Parishan lake.

Finally, a consultative assembly was carried out to finalize the preparation of management plan for the otter in the Parishan Wetland at the presence of local people, members of the subcommittee on biodiversity, and representatives of provincial and local government agencies. In the forthcoming management plan, not only the problems and threats to the otters living in Parishan wetland and necessary strategies to decrease these issues were considered but also the responsibilities of administrative bodies were determined.

The Parishan Lake is located about 15 km east of Kazeroun in a valley at the southern toe of the mountains locally known as Div kan. It is more or less a topographical depression which forms an elongated pan in between the shallow ridges in its eastern, southern and western sides. The area is located in the semi-arid part of Iran with short mild-temperate winters and long hot and dry summers. Precipitation regime of the area follows that of Mediterranean and major part of precipitation occurs during fall up to spring months. Summer months are generally dry. The catchment area of the Lake is about 270,000 ha. The surface area of the water body changes seasonally according to the hydrological condition and generally varies between more than 2500 ha to almost 5000 ha but historical documents show that in some severe drought periods (1987) the entire lake has dried out. The average annual precipitation of the area is around 450 mm ranging in between 700220-

mm/yr. The evaporation capacity in the area is high (on average 2470 mm per year) and ranges in between 1600-3350 mm/yr. The Lake is recharged by different sources including ground water flows, precipitation and runoffs from surrounding areas. The geological formations in the north of the Lake are of limestone nature which is generally characterized by extensive fissures. This Karstic feature of northern limestone causes several springs to appear in the eastern and western sides of the Lake. Also, significant seepage flows directly enter the lake from the northern slopes.

The Lake is generally a shallow water body with more or less impervious bed. When fully inundated, the depth of water in its deepest part is less than 5 meters. At low water level conditions, the depth of water in the lake is generally less than 2 meters. The Lake does not have a natural outflow and its main source of water loss is through evaporation from water surface and consumption by vegetation cover. However large number of water wells (more than 800) have been excavated around the Lake and are exploiting significant volume of ground water for irrigation uses which otherwise would recharge the wetland.

The Eurasian otter (*Lutra lutra*) is considered as one of the prominent species in clean ecosystems, which is currently facing an increasing number of threats in Parishan Wetland.

Otters are well-equipped for living in water and close of water. They have a long spiral-shaped body with long legs, and a muscular and slender tail. Otters have a flat head, where the nostrils, the eyes, and ears are all on the same line. These features enable this animal to utilize all three senses simultaneously while swimming.

Given the draught trend observed in this wetland, studying and evaluating the status of this species in the selected area are more necessary than ever before.

Accordingly, a project was defined with the aim of promoting the awareness of and empowering local communities for monitoring the current state of the otters in order to protect this species in Parishan Wetland. The current report has been developed based on this project.

The history of otters goes back to 30 million years ago. The fossil records remained from otters go back to the Miocene epoch. Some scientists believe that sea otters are fish eaters similar to their ancestors living about five to seven million years ago, i.e., during the late Miocene and early Pliocene epochs. In general, there is a wide range

of otters around the world, and these creatures live in highly different environments ranging from tropical climates to the North Pole.

It seems that this animal lives in the coastal areas of the Caspian Sea and in permanent rivers and lakes. It has not been seen in the central regions and southern coasts of Iran. The Eurasian otter can be found in the rivers and freshwater lakes in Zagros, Alborz, Kopet Dag, and Azerbaijan mountains. It is possible they may be present in Hamoun Wetland in the border between Iran and southern Afghanistan as well as the auxiliary branches of its rivers.

Otters are among aquatic animals that have fur instead of fat. The body of an otter is covered in two types of hair; thick protective long hair and short hair with dense configuration. The head of the otter is wide and located in the middle of the body with a length of 570-700 mm. The neck of the otter is also short, thick, and sturdy.

The eyes are located in the top of the head. Their ears are small and round, and when they dive into the water, the ears are closed and they will be almost completely covered by the fur. In fact, the external hearing holes have a veil or skin, which can close the ear hole. This species has a large mouth with strong teeth. Otters have short hands and webbed feet with five toes.

The usual diet of the otter varies based on geographical location. However, since otters are carnivores, considering their usual habitat, their main source of food around the world consists of fish. Nonetheless, since this species can live both on land and in water, it can feed on a large number of other animals.

In many countries around the world, fishing nets, especially eel bag traps and crab traps create some problems at the local level for the Eurasian otter. Some experts believe that the mortality rate of otters due to these problems is very low, while it can be significant in some region. Other studies show that the mortality rate of otters due to getting caught in fishing nets can be as much as 8 percent.

The important point regarding the health of otters in Parishan Wetland is the increasing use of plastic in agriculture, particularly in the northern banks of this wetland. This cannot be downplayed since lack of planning for the usage of these plastic items and failure to collect them after cultivation of crops will not only create visual pollution, but it will also have a significant impact on the lives of wetland fish, and in turn the survival of the otters.

The majority of rural families living around Parishan Wetland are farmers. The increase in the level of farming, especially rice fields in the western part of Parishan Wetland, significantly decrease the inflow of water into the wetland, while also increasing the agricultural wastewater poured into the wetland. Therefore, management of water consumption around this lake is an integral issue.

In the international Parishan Wetland, boat riding is an attractive activity for nature tourists. Therefore, during holidays, many nature enthusiasts and tourists swarm to ride boats in this small body of water. Since this wetland is an important habitat for many birds during various seasons, particularly in winter and spring, the chaos caused by the traffic of tourists and nature enthusiasts in the wetland can create serious problems for the biodiversity in this wetland.

Various biological locations in Iran have been introduced as areas where the Eurasian otter is present. Some sources claim that the Eurasian otter is certainly present in about 20 provinces in the country. This is while the ecosystems in each of these provinces are usually different from each other. On the other hand, recent sources show that the Eurasian otter lives in at least 16 provinces in Iran.