

The impacts of the Ilisu dam on the environment

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Throughout the world, aquatic ecosystems (mainly stream waters) and, mediately, terrestrial ecosystems are being endangered by big dam projects (WCD 2000).

One of the two major rivers in our region, the Euphrates, has been transformed into dams during the years 1975-2000. The portion of the Euphrates from its source to the Turkish border has lost its quality of being a river and morphed into a series of artificial lakes. During the construction of the dam and in the following years people failed to question how the natural environment and wild life of the region would be affected. The economic, social and engineering aspects of the GAP (Southeast Anatolia Project) outshadowed the environmental dimension. The projects were implemented without sufficiently considering their impact on the environment. In many instances, it is no longer possible to assess the losses they inflicted on the particular flora and fauna of the Euphratic region.

Due to various common characteristics in their geologic history, the rivers Tigris and Euphrates are mostly considered as elements of a single water system. That is why some habitat life forms that were lost in the Euphrates ecosystem can still be found in the Tigris river basin.

One of the foremost examples of these habitat life forms is the Euphrates softshell turtle (*Rafetus euphraticus*). This life form, which exists only in the Euphrates-Tigris water system and is an endangered species (IUCN 2004a), is dependent on stream waters. Dam reservoirs consisting of stagnant and deep waters do not allow this turtle to feed on and fail to offer the shelter of islands and sand banks for laying eggs, resting, basking in the sun and breathing. The existing limited population in the Euphrates water system is confined to areas of still flowing tributaries and some free flowing parts of the river (GAP 2002).

Some characteristic plants like the Euphrates poplar (*Populus euphratica*) today exist along the banks of the Tigris rather than those of the Euphrates.

Negative impacts of dams on the environment

The impacts of dams on life creatures and their environment are multi-faceted. The impacts of dams is not limited to the terrestrial habitat areas which will be inundated by the reservoir. With the morphing of stream waters into large stagnant water dams, the plant and animal species adapted to stream waters will fail to adapt and disappear suddenly or over time. They will be replaced by species adapted to stagnant and deep water, which are mostly more common species. Dams will completely destroy the river banks, without supporting the plant and animal species at home in the river banks. These are, however, of vital importance due to the permanently changing water level. The shallow border areas between water and land with their reeds, shrubs and bushes, which allow for a dense plant covering, spawning grounds and nesting places are of vital importance for insects, beetles, different invertebrates and the birds, amphibians and reptiles depending on them.

Living populations consist of allied individuals with the shared ability to exchange genes. One of the biggest dangers any life form can face is to be divided by dams into tiny populations

that are deprived of the conditions to interact. There are abundant examples that show how biological functions of small populations like reproduction, feeding and protection decrease, genetic diversity declines and the populations inevitably disappear. (IUCN 2004b, PRIMACK 2004).

Upstream of the dam site high riverine nutrient loads reaching the dam reservoir will undergo eutrophication. Particularly fish population will not be able to survive in the deep water of the reservoir. Together with high sedimentation rates, this may result in total extinction of benthic organisms in the reservoir area.

The water leaves the dam reservoir after depositing the most part of the carried sediment and nutrient and continues its way downwards. This process means that downstream is a lack of this important material resulting in negative alteration of the river structure directly after the dam site and even up to the far off river delta. Downstream the cold and unnatural changing of quantity of water from the reservoir will lead to erosion and disturbance of the river bed. Thus, islands in the river will be destroyed. Furthermore the groundwater level will withdraw and retreat. Many other negative impacts downstream may additionally occur, such as the increase of irrigation on the fields resulting in sudden habitat and climate change and the spreading of tropical diseases.

Birds in the Hasankeyf region

The planned Ilisu dam reservoir area, up to 136 km long and including Hasankeyf, is situated in the Tigris valley, which consists of deep canyons with many banks and wonderful visual beauties. It is of irreplaceable importance for the existing habitat.

Ornithological research has been conducted only in the region close to Hasankeyf. Research conducted over the last years has resulted in the identification of 123 bird species (KILIC and others 2002). It is known that in the region there are some other bird species, as discovered or observed by other research teams. To sum up, the following points concerning the bird species existing in the region and endangered by the planned Ilisu dam can be mentioned:

- Among the bird species endangered on different levels in Turkey, 18 species can be found in the region (KILIC & EKEN 2004)
- Among the endangered bird species the golden eagle (*Hieraaetus fasciatus*) broods in the hollow steep rock face near Hasankeyf in the Tigris valley (KILIC and others 2003). Among this species of eagle, only three reproducing couples are known in the Southeast Anatolia region (it seems that the brooding ground near Halfeti close to the Euphrates river bank is not used any more due to the increased reservoir water of the Birecik dam). The brooding grounds of the golden eagle are far apart from one another and share some specific characteristics. Rocks that form steep walls near river banks can be of critical importance for this species.
- The coloured kingfisher (*Ceryle rudis*), occurring in our region, belongs to the endangered bird species in Turkey (KILIC & EKEN 2004). The coloured kingfisher exists in only two areas of Turkey, in South Eastern Anatolia and in the Eastern Mediterranean. It nests and broods in the steep soil slopes near to rivers. After the construction of dams and the following negative alteration of river banks, it will no longer find the Euphrates area suitable.
- An important part of the total 20-30 storks (*Ciconia ciconia*) overwintering in our country (KILIC & EKEN 2004) is observed near the Tigris river, at least one pair in Hasankeyf. It can be determined that due to the need of shallow water for feeding the small stork population, their overwintering in Turkey is under high risk.
- The small kestrel (*Falco naumanni*), an endangered species worldwide, is nesting periodically as a colony of approximately 35 pairs in the rock walls of Hasankeyf (IUCN 2004a).

- The blackstart (*Cercomela melanura*) has been observed for the first time in our country in the vicinity of Hasankeyf (COFTA and others 2005).
- The small and big caves and grottos in the steep rocky walls near to the river account for a suitable nesting location for many different bird species. In these areas countless birds are found in high concentrated flocks. Thus the natural rocky walls and rocks near to the river are very important areas for the bird populations.
- For a large number of migratory birds, the different areas of the Tigris river are used in the spring and autumn for resting and feeding. Furthermore there is a strong probability that the river is used as orientation point for high flying and gliding migratory birds. These birds are using the soaring warm air mass to reach suitable altitudes. As such air mass does form over wide water surfaces, the soaring birds do not directly cross the seas and lakes but prefer longer routes over land. Soaring birds are benefitting particularly from suitable movements of air mass occurring over valleys. River beds covered with wide waters can impede the formation of suitable movements of air mass and thus obstruct the migration of birds.

Birds are accepted as an indicator of change and adverse effects on the ecological value of any given area because it is relatively easy to observe and identify them and track the changes they undergo over time. Due to the notable quantity and variety of bird populations, the region around Hasankeyf and the Tigris valley accounts for one of the remaining healthy river systems in Southeast Anatolia. As such, it should be protected.

Sources

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