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KUSCENNETI NATIONAL PARK (TURKEY)

On-the-spot appraisal

by

C de Klemm (France)

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1. INTRODUCTION

1.1 The on-the-spot appraisal for the purpose of renewal of the European Diploma awarded to the Kuscenneti National Park in 1976 and renewed in 1981 was carried out from 20-24 June 1984. The author was accompanied by Mr Peter Baum representing the Council of Europe Secretariat.

1.2 The appraisal included a thorough inspection of the park itself by boat, with visits to parts of the south shore of the lake which will be affected by the building of the dam on the River Kocaçay and by the lakeside embankment works. This inspection took one whole day.

1.3 During our visit, we were accompanied by Mr Nejat Ozbaykal, Head of the National Parks department. He was joined at the Kuscenneti Park by Mr Tansu Gurpinar, Head of Department in the Under-Secretariat of State for the Environment. Numerous other persons from the Forestry Department and the National Parks Directorate were also available to welcome us and answer our questions. We were provided with every facility, especially as regards vehicles and boats, with which to carry out our appraisal. We wish particularly to thank Mr Ozbaykal and his staff for their reception and for their excellent organisation of our visit.

2. THE KUSCENNETI PARK

2.1 The Park's ecosystem

2.1.1 The appraisal was carried out during the nesting season and we were able to approach very close to the bird colonies by boat. Most of the birds are relatively tame, which seems to indicate that they are rarely disturbed.

The colonies are flourishing and present a beautiful spectacle. The numbers of the various species do not seem to have dropped substantially since the 1983 survey, the results of which are given in the 1983 annual report on the park (SN-ZP (84) 16).

However, there are three factors which may endanger the park's ecosystem.

2.1.2 The abundance of jackdaws (*Corvus monedula*), the numbers of which appear to be on the increase, may be a danger to the eggs and young of other species during nesting. Measures taken so far do not seem to have been effective. It might be as well to make a study of depredations by this species in order to determine whether stricter measures are necessary.

2.1.3 The infestation of the willow population by certain species of insects.

The 1983 annual report mentioned increasing damage to the willows caused by the caterpillars of Hyponometa padellus and by Lepyronia coleopterata and Hyphantria cunea. The 1983 annual report added that, positive results in combating these pests had been achieved by biological control methods, using *Bacillus thuringiensis*. However, we found the situation particularly serious. Virtually all, if not all the willows were literally covered with webs woven by the caterpillars and were largely leafless. The cuckoo-spit foam produced by the homoptera larvae hung in long whitish swathes across the branches.

Furthermore, as we passed through the willow forest, either on foot or by boat, we constantly received drops of liquid which, in view of the fine weather, almost certainly came from the foamy deposits left by the homoptera or from the tree sap.

Obviously, this may be a case of exceptional infestation, in which case things would return to normal by themselves. This seems unlikely however since this is the third year running that Kuscenneti has been plagued in this way.

In order to avoid serious damage to the ecosystem which is particularly vulnerable because of its very small area, further measures will probably be necessary. It is difficult to say what methods ought to be employed. The use of *B. thuringiensis* ought normally to have been effective against lepidoptera caterpillars. If it has not been effective, it needs first to be established why. Where the homoptera larvae are concerned, it seems according to Professor Pavan that there is no known method of biological control suitable for destroying them. This being so, insecticides may have to be used. This is a serious decision to have to take in a national park, especially in Kuscenneti, owing to the presence of a very large number of nesting birds. However, it may be that this is the only way of ensuring survival of the protected ecosystem.

It is essential that if a decision is taken to this effect it must be reached in full knowledge of the facts and that the dates, places and conditions of application are strictly established so as to minimise any danger to bird life. For all these reasons it seems indispensable to call in a qualified entomologist who can make a reliable diagnosis and propose the most effective methods of controlling the insects concerned while causing the least damage to the ecosystem. Council of Europe technical assistance funds, if available, could be used to finance an assignment of this type.

2.1.4 A small river, the Sigirci, crosses the park before flowing into the lake. This river has frequently been seriously polluted by industrial effluent, especially sulphuric acid. Indeed, it may be chronically polluted by factory discharges. Continuous monitoring of pollution in the Sigirci is essential, as are administrative measures to avoid any discharge of effluent into the river.

2.2 Park management

2.2.1 The buffer zone on the lake is still marked and closed to navigation and hunting.

2.2.2 The number of visitors exceeds 30,000 annually, most of them visiting the park in the spring. A new building has now been completed. It houses the park's administrative services and a visitor's information centre with a small museum where a copy of the diploma is prominently displayed. The building is architecturally well designed. The museum contains mainly showcases filled with stuffed birds, of which several species such as the pink flamingo are not found in the park. No information is given about the ecology of the lake or the birds.

If dioramas could be set up showing the interaction between birds and the various elements in the ecosystem, they would certainly have considerable educational value.

2.2.3 Access to the park and especially to the nesting colonies is quite rightly closed to visitors, who are not allowed beyond the observation tower. This tower, a wooden construction, blends fairly well with the landscape and need not be altered. However, it is too far away from the colonies for the visitors to be able to see the birds sufficiently close up to gain very much from their visit. It might be necessary to consider building a second tower or moving the first one. The park has a full-time staff of ten, with an additional five being employed during the nesting season. The park's budget seems sufficient.

3. THE ECOSYSTEM OF LAKE MANYAS

The Kuscenneti National Park covers only a small area (59 hectares). The existence of nesting bird species and, at least to a large extent, of wintering populations will necessarily depend on the continuing ecological integrity of the lake ecosystem as a whole.

3.1 Sedimentation

It seems that the lake is silting up. There are some indications that it was once eight metres deep, but its average depth is now only two metres. While the surface level of the lake has fallen slightly in recent years, probably owing to lower rainfall in some years, the changes in depth must be due to sediment carried by the watercourses flowing into it, particularly the Kocaçay. It has been observed for some years that the delta of this river had received large quantities of silt and had shifted to the east. The reason for all this probably lies in deforestation of the Kocaçay basin.

In addition, a flow regulator installed on the lake weir has constituted a barrier to the sediment being carried away and has thus contributed to silting up. It is no longer in use.

3.2 Pollution

The intensification of farming, already considerable in the neighbouring regions, has led to a build-up of pesticides and fertilizers in the waters of the lake. This is added to the industrial pollution already mentioned.

3.3 Fishing

The lake still has very high biological productivity, as may be seen from the huge swarms of midges which we were able to observe. Fishing, mainly for carp and crayfish, is an important economic activity. Maintenance of the lake's ecological equilibrium is indispensable to the continuation of this activity and to the preservation of the bird colonies. This entails protecting the spawning grounds, which the Kuscenneti Park helps to do, keeping catches down to a level compatible with the natural reproduction of species and avoiding the introduction of exotic species. We learned in this connection that there were plans to introduce pike perch (Stizostedion lucioperca), a formidable predator likely to cause serious damage to local fish life.

3.4 Limnological studies

Preservation of the lake's ecosystem entails a thorough knowledge of the various mechanisms involved (physical, chemical and biological), about many of which eg circulation of water, sediment transport, pollution level, biological productivity, etc, little is known at present. Limnological studies were begun in 1979 but now seem to have been stopped. They should be resumed without delay.

3.5 The dam on the Kocaçay

3.5.1 The plan to dam the Kocaçay, the biggest watercourse emptying into the lake, is to be activated shortly and work should begin in 1984. The project involves large-scale water engineering works for power generation, irrigation and flood control..

The dam to be built 35 km from the mouth of the Kocaçay will be 250 m long and 70 m high. The reservoir thus created will cover 30 square km and hold 300 million cubic metres of water. 80 million kilowatt hours of energy will be produced annually. A channel from the watercourse carrying overflow from the lake will enable an additional 16,000 hectares to be irrigated, making a total of 36,000 hectares. Lastly, dikes will be built along parts of the lake shore so that land at present subject to periodic flooding can be permanently cultivated. The work will take approximately 15 years. The dikes should be completed in six years.

3.5.2 The probable effects of this work on the lake's ecosystem will be as follows:

- stabilisation of the level of the lake. This can prove beneficial if it enables a high water regime to be maintained in dry springs. If, however, the level of the lake were to be kept constantly below the level at which the willow wood is flooded, the effect on nesting could be serious. The dam on the other hand, by holding back a quantity of sediment, can slow down the silting up of the lake.
- the development of intensive farming will lead to an increase of fertilizers and pesticides, some of which may end up in the lake.
- some areas at present subject to seasonal flooding on the south bank of the lake will be turned into farm land. The possible effects of this work on lake fauna are not known.

3.5.3 The Turkish authorities are aware of the potential danger which the planned work represents for the ecosystem and have planned a number of counter-measures. For instance, the national parks directorate has asked for seasonal fluctuations in the level of the lake to be maintained. As regards fertilizers and pesticides, as it is intended to use the lake as a drinking water reservoir, it is planned to build a drainage ditch in the irrigated region to collect the polluted water and carry it away to the overflow channel from the lake downstream. Lastly, the birds' feeding grounds on the south bank will be preserved and even enlarged by the removal of old dikes.

3.5.4 Will these measures be sufficient to safeguard the integrity of the ecosystem? The Turkish authorities think so. Maintenance of an optimal level in the spring ought not to cause difficulty; irrigation is not necessary at that time so that there will be no competition between the needs of farming and of the birds, as regards either the nesting grounds inside the park or the feeding grounds on the south bank. As regards pollution, it is certain that the drainage ditch is a makeshift solution and that there will be a risk of contaminating the ground water.

Lastly, it is possible that some of the planned work may have the effect of destroying spawning or mating grounds in the lake.

3.5.5 An impact study could perhaps have determined more precisely the effects of the planned works on the lake's ecosystem. Recent legislation (Act of 9 August 1983) has made impact studies compulsory for certain types of work. At the time of the appraisal, regulations to be issued under the act specifying the categories of projects for which impact studies are compulsory had not yet been published. Furthermore, as the dam project has already been approved, it is unlikely that the new legislation will apply to it. Lastly, Turkey still lacks experience of impact studies and does not possess the necessary instruments. For all these reasons, it seems unlikely that an impact study will be made for the project in question.

3.5.6 The decision to build the dam and carry out the related work seems irreversible. Should harmful consequences result for the ecosystem the Turkish authorities have said they are prepared to take the necessary measures to avoid them. This will entail continuous monitoring of numerous parameters: phosphorus, nitrates, sedimentation, water level, aquatic invertebrates, fish, etc as well as procedures for taking emergency measures, eg maintenance of a minimum flow downstream from the dam.

At the date of the appraisal, the dangers to the lake's ecosystem were still only potential and they are not certain to occur. Renewal of the diploma is accordingly possible, on the understanding that if substantial damage should occur, particularly as regards the water level or the level of water pollution, the diploma should be withdrawn.

5. RECOMMENDATIONS

5.1. Recommendations concerning the Kuscenneti Park

5.1.1 Take all necessary steps to eliminate or at least substantially reduce the infestations of insects causing damage to the willows, after thorough analysis by a qualified entomologist;

5.1.2 Eliminate all pollution of the river Sigirci;

5.1.3 Use the small museum to show existing ecological relationships between the various elements in the ecosystem and to explain bird migration; avoid showing only stuffed birds, particularly birds which are not found on Lake Manyas;

5.1.4 Consider moving the present observation tower or possibly building a new tower in the same style to afford visitors better facilities for watching the birds;

5.2 Recommendations concerning the lake as a whole

5.2.1 Continue limnological studies and analyse sedimentation and pollution phenomena; carry out continuous monitoring of the ecosystem and the various species of vertebrates and invertebrates among the lake fauna;

5.2.2 Identify the present sources of pollution and endeavour to eliminate them;

5.2.3 Identify spawning grounds and other biotopes critical for fish, and take steps to protect them;

5.2.4 Avoid the introduction of any exotic species into the lake;

5.2.5 Take the necessary steps to ensure that construction of the dam has no harmful effects on the lake's ecosystem; in particular ensure that natural fluctuations in the water level are maintained and avoid pollution by irrigation water.

The diploma should be withdrawn in the event of failure to comply with this last recommendation.