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Ecotourism Potential and Management of Kavak Delta (Northwest Turkey)

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ABSTRACT

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Wetlands are ecosystems where a high level of biodiversity is found. Being a suitable medium for the nourishment, reproduction, and accommodation of many species of living creatures, wetlands are museums of natural riches, not only of the country where they are located but also of the whole world.

Kavak Delta, one of the most important wetlands of Turkey, with coastal dunes and halophilic vegetation as well as being on the north–south bird migration route, provides not only opportunities for coastal tourism but also offers substantial potential for ecotourism. During observations, bird species, especially of the orders Anseriformes, Falconiformes, and Charadriiformes, were identified. Some 14 orders, 39 families, and 124 bird species were spotted in the delta. Also, dune and halophilic plants constitute a rich flora in the delta.

In this study, the potential for ecotourism and opportunities for coastal tourism in the area are outlined. Within this context, besides ecotourism activities, such as bird observation, botanic tourism, and angling, the use of beaches for coastal tourism is determined. Various recommendations are made for the optimal use of all tourism opportunities detected in the delta and for enabling sustainable coastal use and management.

ADDITIONAL INDEX WORDS: *Bird observation, wetland management, sustainability, GIS, remote sensing.*

INTRODUCTION

Tourism, as an economic activity, has an inevitable effect on the destination environment. The environment is often regarded as the major pull factor of tourist movements, contributing to the desirability and attractiveness of a tourist destination. As the environment is an indispensable asset to the tourism industry, the protection and conservation of environmental resources, such as natural, cultural, and historic resources, are prime considerations for the tourism industry, which depends on these resources as the primary inputs in the production of tourist output (Lim and McAleer, 2005).

The world's coastal regions cover 600,000 km in length and vary from 100 to 1000 m in width. They cover approximately 18% of the earth's surface (Burns, 1997). Coastal areas are sensitive to population increases, to socioeconomic developments, and to disturbances in the natural balance that have occurred because of recent climatic changes, which have had an undesirable effect on coastal areas (Clark, 1996). Because of the opportunities they present for tourism, recreation, industry, transportation, and various economic activities, around 60% of the world's population lives in coastal regions (Romao *et al.,* 2003; Yunis, 2001).

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Wetlands have recreational, historical, scientific, and cultural values. For instance, more than half of all U.S. adults (approximately 98 million) take part in recreational activities, such as hunting, fishing, bird watching, or wildlife photography. They spend a total of $59.5 billion annually. Painters and writers continue to capture the beauty of wetlands on canvas and paper, or through cameras or video and sound recorders. Others appreciate these wonderlands through hiking, boating, and other recreational activities. Almost everyone likes being on, or near, the water; and part of the enjoyment is the varied, fascinating life forms (Jennings, 2004).

With a comprehensive definition that encompasses everything from estuaries by the sea coast and salty marshes to reed beds and mountain lakes, wetlands are of considerable importance in terms of ornithology in relatively small areas. The habitat is friendly to birds, thus enabling them to thrive, resulting in both large numbers and a richness of bird species. Wetlands are ecosystems of high biodiversity, exceeded only by tropical forests. Being a suitable medium for the nourishment, reproduction, and accommodation of living creatures of many different species, wetlands are regarded as a museum of natural riches not only in the country in which they are located but also throughout the world. Wetlands, which have an important place in the lives of people living in the vicinity and which make a contribution to the regional

and national economy, also play an essential role among other ecosystems in terms of preserving natural balance and biological diversity.

Dunes are among the most essential components of the ecosystem of Turkey in that they have particular floristic and faunal characteristics. With a total dune area of 46,583 ha (Küçükkaya, 2001), Turkey's coastal dunes, especially the foredunes, are of great significance for their dynamic and natural peculiarities. The presence of dunes is of importance in terms of the formation of river deltas and shallow lakes. Dunes are also an important component of the coastal landscape. Because of their natural and restful beauty, they make a considerable contribution to the landscape value of the coast. Dunes are ecologically vulnerable biotopes to external influences. The destruction of dune vegetation and overgrazing can cause acceleration of wind erosion and disturbance of dune characteristics (Küçükkaya, 2001).

Turkey is of specific ornithological importance because of its geographical location, extensive land mass, topographical structure, and different climatic regions. Located at the intersection of the continents of Asia, Europe, and Africa, Turkey constitutes a natural bridge that binds the West Palearctic region to the wintering areas in the south.

Turkey has a long coastline, of which, Çanakkale, the closest in vicinity to Kavak Delta, forms only one section, but the natural, cultural, and historical characteristics of Çanakkale make it an important city for tourist activities. The city of Çanakkale has a 750-km-long coastline, incorporating the Dardanelles Straits; outlets into the seas of Marmara and Aegean; the Gelibolu Peninsula, with the Gulf of Saros on its western side; and islands of Bozcaada and Gökçeada. (Kelkit and Ak, 2006).

Tourism is one of the world's largest industries (World Tourism Organization, 2006), and ecotourism is the fastest growing sector, with an estimated growth rate of 10%–15% (Scheyvens, 1999). Ecotourism, which can be defined as nature-based tourism that aims to minimize environmental impacts and to contribute economic development to local communities, has shown prospects for successfully funding conservation and sustainable development programs (Drumm and Moore, 2005). It has become an alternative approach for overcoming the problems of traditional tourism with the assumption that there will be minimum negative impacts and maximum benefits for the local people and their environment (Nyaupane and Thapa, 2004). Ecotourism, which is delineated as travel to natural areas, conserves the environment and improves the welfare of local people (Blangy and Wood, 1990; Boo, 1991; Cater, 1994; Wight, 1994). It focuses on the natural beauty, geology, flora, and fauna of a particular area along with its indigenous cultures. Locales around the world with pristine, unique, or grand natural and cultural attributes are spotlighted in a sustainable manner to preserve those attributes and, at the same time, to generate revenue for the destination area (Masberg and Morales, 1999). Ecotourism has been identified as an important and sustainable development initiative in Turkey since 1990.

Kavak Delta occupies an outstanding place within the coastal ecosystem of Turkey because it is on the north–south bird migration route and possesses coastal dune and halophilic vegetation. Having the characteristics of a wetland also mean that the Kavak Delta is used by many bird species as a place for accommodation and nesting. These features mean that the delta can be characterized as a natural reserve and is also an important area for ecotourism.

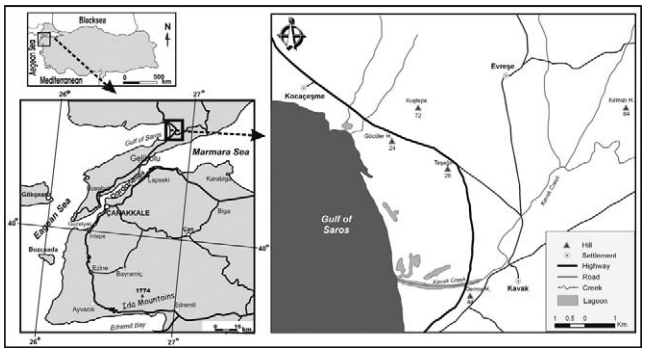


Figure 1. Location map of the study area.

Kavak Delta has a suitable structure for developing bird observation, botanic tourism, and sportive hand-line fishing. In addition, the area possesses a rich potential in terms of coastal tourism opportunities. Nevertheless, this potential is not used completely because of a lack of knowledge about the area. The objective of this study is to make a case for the ecotourism potential of the Kavak Delta by determining the dune and halophilic vegetation, noting seasonal changes in bird migration, compiling an inventory of bird species that use the area as an accommodation and egg-laying site, identifying suitable observation points for bird observation, and making recommendations regarding sustainable coastal use and management.

STUDY AREA

This study was carried out in the Kavak Delta, located between the coordinates 40°39′38″ N to 40°35′05″ N and 26°47′45″ E to 26°50′44″ E on the eastern coast of the Gulf of Saros in the northeast of the Aegean Sea (Figure 1). The delta is situated in the northwest part of the Gelibolu Peninsula and has an area of 2150 ha. The main Çanakkale–Istanbul highway constitutes the eastern border of the delta and is at a distance of 80 km from the city of Çanakkale, which is the regional capital of the province of Çanakkale.

The length of the delta coastline is 12.3 km, according to Global Positioning System (GPS) measurements of 2007. The delta is surrounded by the three small villages of Kocaçeşme, Kavakköy, and Evreşe (Figure 1). The Gulf of Saros, which has been declared an Important Bird Area (IBA), is located to the west of the area.

Kavak Delta was formed from sediments carried down by the Kavak Creek and by other small rivers originating in the Korudağı Mountains. The flood plain of Kavak Creek, the delta, and the coastal dunes bordering the salt marsh sediments belong to the Quaternary period (Sümengen and Terlemez, 1991).

The study area has a transitional character between the

Black Sea and Mediterranean climate types. According to data from the Gökçeada Meteorology Station, which most closely characterizes the delta, the annual mean temperature is 15.2°C, the mean of January, the coldest month, is 6.6°C, whereas the mean of July, the hottest month, is 24.0°C, and the annual mean rainfall is 758.5 mm. The months when the highest and the lowest amounts of rainfall occur in the delta are January (146.7 mm) and August (6.1 mm), respectively. The delta is windy throughout the year, and the long-term annual mean wind speed is 4.4 m/s. The majority of the winds blow in a N–NE direction, whereas the strongest winds blow in a SW direction. The annual mean relative humidity is 71.1%, and the highest relative humidity is observed during the winter months (DGSMW, 2006).

Soils of the study area consist of sediments accumulated by Kavak Creek and by other small rivers as well as by mud flows originating in the Korudağı Mountains, extending to the northwest of the area. The morphology of the area is characterized by three different units: (i) the flood plain of Kavak Creek; (ii) the delta plain, composed mainly of salt-swamp and hydromorphic alluvial soils; and (iii) a bajada, with average slope of 2%–6%. According to soil taxonomy, the study area soils can be classified within three orders: Alfisol, Inceptisols, and Entisols.

MATERIALS AND METHODS

This study used topographical maps with a scale of 1 : 25,000, climatic data from Gelibolu Meteorological Station, and March 2007 Aster and July 2007 Quickbird satellite images and GPS data. ArcGis 9.1 and ERDAS 9.0 software were used, respectively, during the geographic information system (GIS) and remote-sensing procedures implemented in the study.

The study was carried out in two stages, namely, office and field studies. In the office procedure, the geographical features (geological, morphological, and climatological features; population; and sociocultural features and economic activities) of the area were identified. Topographical maps with a scale of 1 : 25,000 were digitized using ArcGis 9.1 GIS software. By using these data, a digital elevation model (DEM) of the area was created. This layer was used in the visibility analysis carried out for the bird observation points. Geometric correction of the satellite images was performed based on topographical maps. Aster and Quickbird satellite images were examined, and from them, a map was produced of unsupervised classification by using ERDAS 9.0 Image Processing software. To determine current land use and the borders of the wetlands, a land-use map was produced under a supervised classification process after checking the images during fieldwork. A visibility analysis was carried out for the proposed observation towers and the most suitable points to observe the area were determined using ArcGis.

In the fieldwork procedure, birds were observed during the period between November 2005 and December 2007. In May 2006, September 2006, and September 2007, studies were carried out to determine the dune and halophilic vegetation.

It was during this stage that the whole area was surveyed to determine suitable locations for bird observation points and the coordinates were plotted using GPS.

Interviews were conducted with residents of villages around the delta from which an impression was gained of their attitude toward the local environment and their ideas about ecotourism.

As a result of the study of satellite images, field studies, and interviews with the local population, the potential for ecotourism and coastal tourism in the study area were determined. Plans were drawn up for land use, and recommendations were made regarding ecotourism activities.

RESULTS AND DISCUSSION

Vegetational Features

Kavak Delta is attractive in terms of botanic tourism because it has many dune plants, *i.e.,* halophilic, secreting, and succulent plants. The dune plants in the area are halophyte plants seen in small islets such as *Juncus maritimus* Lam, *Teucrium polium* L., *Thalictrum lucidum* L., *Anchusa azurea* Mill. var. *azurea, Dianthus* L., *Petrorhagia* (Ser.) Link, and *Silene gallica* L. The halophilic marshy plants are *Arthrocnemum fruticosum* (L.) Moq., *Halimione portulacoides* (L.) Aellen, *Halocnemum strobilaceum* (Pall.) M. Bieb., *Salicornia patula* Duval-Jouve, *Salsola kali* L., and *Salsola ruthenica* Iljin, *Aeluropus littoralis* (Guan) Parl., *Puccinellia convoluta* Fourr., *Sueda prostrata* Pall. subsp. *prostrata,* and *Sporobolus virginicus* (L.) Kunth are among the herbaceous plants that are most frequently encountered on the banks of the salty marshes. Species of the genus *Limonium* L. are present in both halophilic and loose dune holes.

Secreting plants consist of species such as *Halimione portulacoides* (L.) Aellen, *Limonium angustifolium* (Tausch) Turril, *Limonium virgatum* (Willd.) Fourr., *Artemisia santonicum* L., *Juncus maritimus* Lam., *Aeluropus littoralis* (Gouan.) Parl., *Cynodon dactylon* (L.) Pers., *Sporobolus virginicus* (L.) Kunth, *Hordeum marinum* Huds. var. *marinum,* and *Mentha pulegium* L.

The succulent plants are *Halocnemum strobilaceum* M. Bieb., *Arthrocnemum fruticosum* (L.) Moq., *Petrosimonia brachiata* (Palas) Bunge, *Salsola kali* L., and *Salsola ruthenica* Iljin.

Avifaunal Features

Turkey constitutes one of the most important bird migration routes in the Palearctic region. The richness of bird species has been enumerated by past and recent studies (Baran and Yilmaz, 1984; Ergene, 1945; Karakaş and Kiliç, 2004; Kasparek, 1992; Kasparyan, 1956; Kiliç, 1999; Kiziroğlu, 1989; Kumerloeve, 1963; Perktaş and Ayaş, 2004; Sert and Erdoğan, 2004; Tabur, 2005).

In this study, the bird species of Kavak Delta were observed during the fieldwork carried out between 2005 and 2007. The species determined at different habitats belonged to 14 orders (*Anseriformes, Charadriiformes, Ciconiiformes, Columbiformes, Coraciiformes, Falconiformes, Gaviiformes, Gruiformes, Passeriformes, Pelecaniformes, Piciformes, Podicipediformes, Procellariiformes* and *Strigiformes*). The 124

species recorded during the observations belonged to 39 families. The species most in abundance belonged to *Anseriformes* (Kiliç, 1999). The presence of *Falconiformes* (Işik, 1987) and *Charadriformes* (Kiliç and Eken, 2004) orders indicates the importance of the area in terms of avifauna. Paddy fields in the study area are important for the feeding of some species (*Chlidonias hybridus, Chlidonias niger*). A lot of hatchlings were observed near the Kavak River's mouth and its salty prairie surroundings. In the same area, adult and hatchling members of *Tadorna ferruginea* were observed.

According to International Union for the Conservation of Nature (IUCN) data, among these species, *Aquila clanga* (greater spotted eagle) is specified as being in the Vulnerable (VU) category, whereas *Limosa limosa* (the black-tailed godwit), *Falco vespertinus* (the red-footed falcon), and *Coracias garrulus* (the roller) are all specified as Near Threatened (NT) (IUCN, 2007).

Water Resources and Wetlands

Kavak Creek and the wetlands constitute the main hydrographic elements in the area. Wetlands are gathered into three groups, namely, (i) lagoons (areas continuously having water), (ii) seasonal water-logging area formed according to weather conditions (not always having water), and (iii) areas of eutrophication caused by discharge water from rice fields.

The Kavak Creek watershed covers an area of 783.4 km^2. The creek causes flooding in the delta, on average, every 2 years. A pond was constructed in Kavak Creek valley for irrigation purposes, and a dam is currently being constructed to prevent flooding.

Management of the Study Area

The delta was divided into sensitive zones in consideration of its physical features (Figure 2). The first zone includes sand dunes and lagoons. These areas are highly vulnerable to anthropogenic effects. The second zones include salt marsh and seasonal water-logging areas. The third zone covers areas where agriculture is carried out at present. When the area is evaluated in terms of sustainability, primarily the first and the second zones are suitable for natural life. Neither the first zone nor second zone is suitable for agricultural activity or animal grazing. The third zone, which is mostly used as a farming area today, is suitable for pasture only.

Demographic Structure and Economic Properties

A total of 3,589 people live in the three small settlements (Kavak, Evreşe, Kocaçeşme) (Figure 1) located in the vicinity of the study area (TUIK, 2000).

Agriculture is the main source of income for the population around the research area. Rice farming is the most important agricultural activity in the area. In addition, wheat, fodder plants, and various fruits are also grown. Apicultural activities are also carried out by several families in addition to cattle and sheep breeding. Fishing is a source of income in Kavak and Kocaçeşme. In Kavak village, the Kavak Creek is used as a marina and transit route. Because of the deepening of the creek bed, fishing boats are now able to come right up

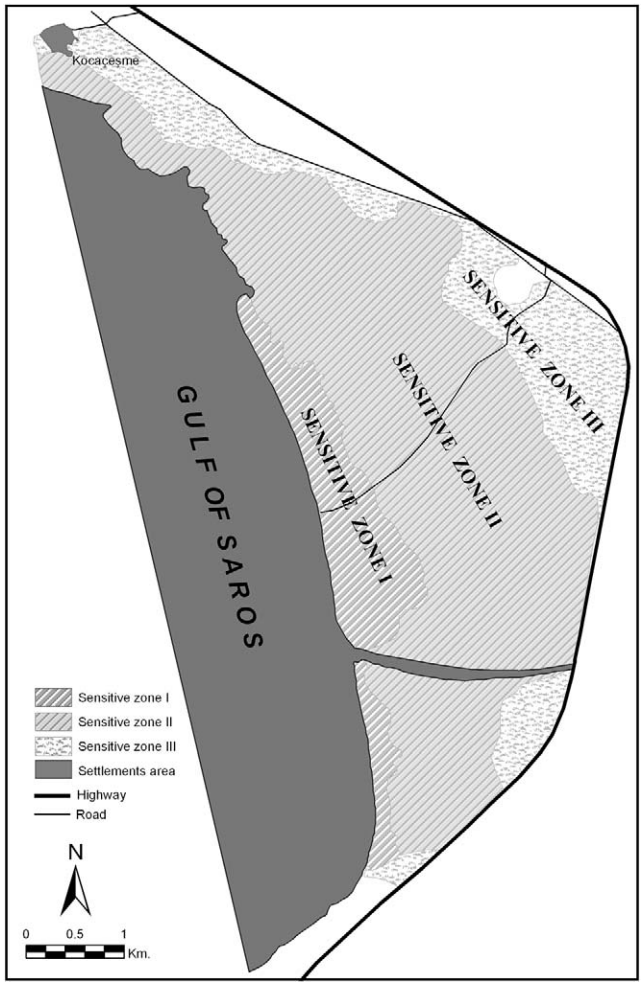


Figure 2. Proposed management map. **For a color version of this figure, see page 669.**

to the village, which is located 4 km from the coast. This provides a considerable benefit for fishermen in the region.

The main fish species caught are the common dentex (*Dentex dentex*), saddled seabream (*Oblada melanura*), bogue (*Boops boops*), john dory (*Zeus faber*), grey mullet (*Mugil saliens*), black scorpionfish (*Scorpaena porcus*), striped mullet (*Muhllus barbatus*), pickerel (*Manca suaris*), barracuda (*Sphyraena sphyraena*), garpike (*Belone belone*), pilchard (*Sardine pilchardus*), European seabass (*Dicentrarchus labrax*), gilthead seabream (*Sparus auratus*), common two-banded seabream (*Diplodus vulgaris*), chub mackerel (*Scomber japonicus*), bluefish (*Pomatomus saltator*), and Atlantic bonito (*Sadra sadra*).

Ecotourism: Potential and Possibilities

Kavak Delta has an important place within the coastal ecotourism of Turkey as a bird habitation area and because of its coastal dune and halophilic vegetation. These features constitute good potential for ecotourism. It has a suitable



Figure 3. Fishing boat marina on Kavak Creek. **For a color version of this figure, see page 669.**

structure for developing bird observation, botanic tourism, and sportive hand-line fishing.

Because of its wetlands, Kavak Delta is an area worth visiting in terms of bird observation throughout most of the year. The number of predatory species, singing birds, and gulls coming to the area, primarily from spring onward, is striking. Winter months are the best time for watching species, such as greyland geese, swans, garganeys, wigeons, pochards, and shovelers, which are nourished and rest in halophilic marshes, as well as ruddy shelducks and mallards, which number in their thousands and which fly in flocks.

Kavak Delta presents a rich botanic tourism potential because of its dune plants, the halophilic, secreting, and succulent plants.

Sportive angling can be recommended as another ecotourism activity in the area, centered upon Kavak Creek, which traverses the delta to reach the Gulf of Saros and flows in a deepened bed along approximately 4 km between Kavak village and the coastline (Figure 3). This activity can be carried on throughout the entire year on both banks of the Kavak Creek, which has a rich fish diversity.

The study area also possesses suitable areas in terms of coastal tourism, apart from that which offers potential for ecotourism. Opportunities for coastal tourism exist in three distinct sections by the coast of the Gulf of Saros between June and August, when climatic conditions are appropriate. These sections can be defined as south of Koçaçeşme village in the north of the area, the northern part of the region where Kavak Creek runs into the Gulf of Saros, and the coastal zone to the north of secondary houses located on the southern border of the area (Figure 4). The closest proposed bird observation tower in the south part is 100 m south to the beach. This is the only suitable point in the south part of study area that might cause problems during observations. The other places have no problems related to observations because they are far from beach.

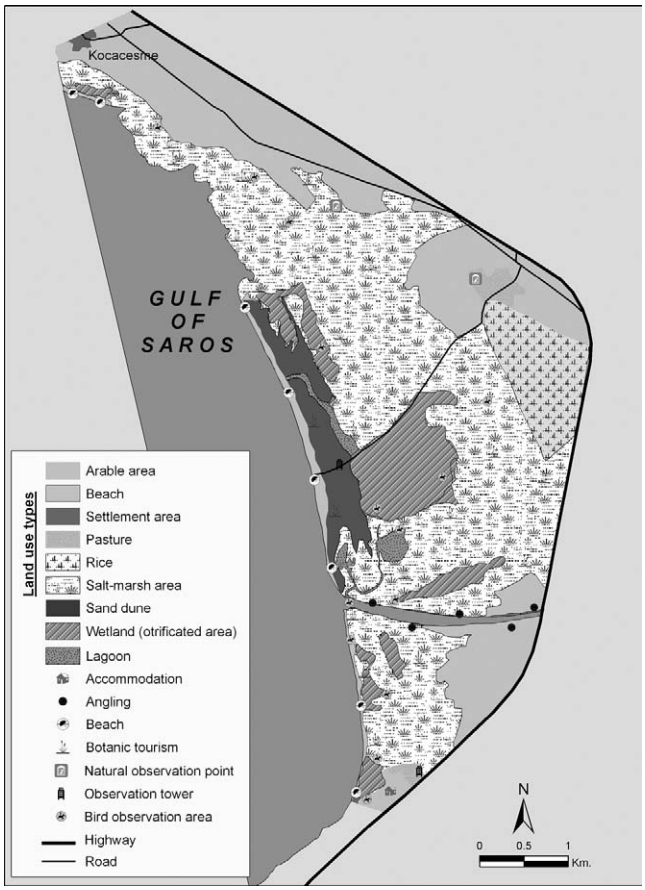


Figure 4. Land use map. **For a color version of this figure, see page 669.**

CONCLUSIONS

Kavak Delta has a rich ecotourism potential, including as it does, one of the most important bird areas in Turkey, coastal dune and coastal halophilic vegetation, and convenient places for sportive hand-line fishing. In addition to having a shallow and clean sea with attractive beaches and coastal tourism potential, the Gulf of Saros coast can make a distinct contribution to the area in terms of tourism.

Even though Kavak Delta loses its richness of species for a time because of the wetlands drying in summer, it is a natural area that can be visited in every season in terms of bird observation. With a view to using this potential in the area rationally, it is necessary to build observation points. To this end, four different bird observation points are suggested (Figure 4), which are away from populated or coastal tourism areas. Two of them are natural observation points on small hills in the area, whereas the other two consist of towers to be constructed. To determinate the visibility conditions at the suggested observation points, a visibility analysis was carried out using GIS. The results show that the suggested observation points would be sufficient for watching birds throughout the whole area.

With a view to evaluating the coastal dune and coastal hal-

ophilic vegetation in the area within the framework of botanic tourism, the plant species that have been identified should be mapped, and these maps should be placed at suitable points in the area to inform visitors.

To develop sportive hand-line fishing, one of the potential ecotourism activities in the area, promotional plates informing visitors about the characteristics of fish species in the location, the months when fishing is permitted, and other wildlife in the creek should be placed at suitable locations on both banks of the Kavak Creek. Moreover, it should be ensured that these activities be controlled by the authorities for sustainability.

Various administrative and infrastructure-oriented measures should be taken to establish sustainable ecotourism in the area. These measures may be expressed as follows: determining the routes to be followed by visitors to prevent any damage to sensitive areas in terms of both bird species and plant species; establishing the infrastructure necessary for visitors following various obligatory measures stipulated by the authorities; providing opportunities to residents in the villages with a view to meeting the accommodation, resting, and shopping needs of visitors; training and assigning field guides with sufficient information about the ecotourism opportunities in the area and able to direct visitors knowledgeably; educating local people about ecotourism to ensure their participation in proposed activities; preparing brochures to promote various aspects of the area; and making contacts with national and international tour operators to include the Kavak Delta on tour routes.

In regard to coastal tourism, various measures should be taken to effectively maximize the potential of the area. These measures can be summarized as follows: establishing touristic facilities to meet the requirements of visitors, preventing possible negative effects by coastal tourism on bird observation, and placing promotional signs informing participants of coastal tourism about the uniqueness of the nearby bird population.

Despite its rich ecotourism potential, the study area is exposed to various anthropogenic influences, such as agriculture, animal grazing, and hunting, from the villages surrounding it. For instance, the Kentish plover (*Charadrius alexandrinus*) is among the bird species that still shelters in the pastures. Agricultural activities, such as rice and sunflower growing, which negatively affect ecotourism activity, primarily in the east and northeast of the area, should be removed from the area.

The first and second zones in particular should be left in a natural state in terms of sustainability. They should be protected against anthropogenic influences. Similarly, all agricultural activities should be prohibited, including animal grazing. Agricultural activities should also be terminated in the third zone where farming is carried out at present, and it should be used only for pasture (Figure 2).

To sum up, ecotourism activities should be commenced in the Kavak Delta, which is an important wetland with opportunities for bird observation, botanic tourism, and sportive angling. In this context, it is necessary first of all to prevent anthropogenic influences from exerting a threat in the area, which should take on preservation status for the sustainability of wildlife species that live there.

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LITERATURE CITED

Baran, İ. and Yilmaz, İ., 1984. Ornitoloji dersleri. *Ege Üniversitesi Fen Fakültesi Kitaplar Serisi,* 87: 1–323.

Blangy, S. and Wood, M.E., 1990. developing and implementing ecotourism guidelines for wildlands and neighboring communities. a guide for planners and managers. *In:* Lindberg, K. and Hawkins, D.E. (eds.), *Ecotourism: A Guide for Planners and Managers,* 1st edition. North Bennington, Vermont: The Ecotourism Society, pp. 32–55.

Boo, E., 1991. Ecotourism: a tool for conservation. *In:* Kusler, J.A., (ed.), *Second International Symposium: Ecotourism and Resource Conservation* (Miami Beach, Florida), Madison, Wisconsin: Omnipress, pp. 517–519.

Burns, R.F., 1997. Global coastal zone. *Sea Technology,* 1: 27–29.

Cater, E., 1994. Introduction. *In:* Cater, E. and Lowman, G. (eds.), *Ecotourism: A Sustainable Option?* New York: Wiley, pp. 3–17.

Clark, R.J., 1996. Integrated coastal zone management. *Sea Technology,* 1: 55–59.

DGSMW (Data of Gelibolu Meteorology Station). 2006. Climate data. Ankara, Turkey: Directorate General of State Meteorological Works.

Drumm, A. and Moore, A., 2005. *Ecotourism Development—A Manual for Conservation Planners and Managers, Volume 1: An Introduction to Ecotourism Planning,* 2nd edition. Arlington, Virginia: The Nature Conservancy.

Ergene, S., 1945. Türkiye kuşları. *İstanbul Üniversitesi Fen Fakültesi Monografileri,* 4, 1–361.

IUCN (International Union for Conservation of Nature). 2007. IUCN Red List of Threatened Species. http://cms.iucn.org (accessed March 11, 2008).

Işik, K., 1987. Ormanlar ve milli parklar. *In:* Kence, A. (ed.), *Türkiye'nin Biyolojik Zenginlikleri.* Ankara, Turkey: Çevre Sorunları Vakfı Yayını.

Jennings, S., 2004. Coastal tourism and shoreline management. *Annals of Tourism Research,* 31(4), 899–922.

Karakaş, R. and Kiliç, A. (2004). The birds of Dicle Dam (Diyarbakır). *Turkish Journal of Zoology,* 28, 301–308.

Kasparek, M., 1992. *Die Vögel der Türkei: Eine Ubersicht.* Heidelberg, Germany: Max Kasparek Verlag, 128p.

Kasparyan, A., 1956. A preliminary systematic list of the birds of Turkey. İstanbul *Üniversitesi, Fen Fakültesi, Mecmuası,* 21, 27–48.

Kelkit, A. and Ak, T., 2006. Coastal land use planning: a case study of Kordonboyu (Çanakkale). *Journal of Coastal Research,* 22(4), 951–957.

Kiliç, A., 1999. Karapınar (Konya) yöresinin kuşlari. *Turkish Journal of Zoology,* 23, 1, 91–97.

Kiliç, D.T. and Eken, G., 2004. *Türkiye'nin Önemli Kuş Alanları 2004 Güncellemesi.* Ankara, Turkey: Doğa Derneği Yayınları, 232, 74–100.

Kiziroğlu, İ., 1989. *Türkiye Kuşları.* Ankara, Turkey: Ogm Yayınları.

Küçükkaya, İ., 2001. Kumulda rehabilitasyon çalişmalari. *In:* Özhan, E. and Yüksel Y. (eds.), *Türkiye'nin Kıyı ve Deniz Alanları III: Ulusal Konferansı Bildiriler Kitabı.* Ankara, Turkey: Kay Türkiye Milli Komitesi, Orta Doğu Teknik Üniversitesi. Kumerloeve, H., 1963. Zur kenntnis der avifauna kleinasiens. *Bonner Zoologische Beiträge,* 12, 318.

Lim, C. and McALeer, M., 2005. Ecologically sustainable tourism management. *Environmental Modelling & Software,* 30, 1431–1438.

Masberg B.A. and Morales, N., 1999. A case analysis of strategies in

ecotourism development. *Aquatic Ecosystem Health and Management,* 2, 289–300.
Nyaupane, G.P. and Thapa, B., 2004. Evaluation of ecotourism: a comparative assessment in the Annapurna conservation area project, Nepal, *Journal of Ecotourism,* 3, 20–45.
Perktaş, U. and Ayaş, Z., 2004. Birds of Nallıhan Bird Paradise (Central Anatolia, Turkey). *Turkish Journal of Zoology,* 28, 135–143.
Romao, T.; Camara, A.S.; Molendijk, M., and Scholten, H., 2003. Coastal Management with Aerial Photograph Based Mosaics. http://gasa.dcea.fct.unl.pt/gasa/gasa97/tir/coast/coast.htm (accessed January 18, 2008).
Scheyvens, R., 1999. Ecotourism and the empowerment of local communities. *Tourism Management,* 20, 245–249.
Sert, H. and Erdoğan, A., 2003. The avifauna of Termessos National Park (Antalya-Turkey). *Turkish Journal of Zoology,* 27, 19–26.
Sümengen, M. and Terlemez İ., 1991. Güneybatı Trakya yöresi Eosen çökellerinin stratigrafisi. *MTA Dergisi,* 113, 17–30.
Tabur, M.A., 2005. Birds of Lake Beyşehir (Isparta-Konya). *Turkish Journal of Zoology,* 29, 361–369.
TUIK (Türkiye İstatistik Kurumu), 2000. *2000 Yılı Genel Nüfus Sayımı sonuçlari.* Kaynak, Turkey: TUIK.
Wight, P., 1994. Environmentally responsible marketing of tourism. *In:* Cater, E. and Lowman, G. (eds.), *Ecotourism: A Sustainable Option?* New York: Wiley. pp. 39–56.
World Tourism Organization, 2006. Tourism Fact Sheet 2006. http://www.world-tourism.org/facts/menu.html (accessed January 21, 2008).
Yunis, E., 2001. Sustainable Development and Management of Tourism in Coastal Area, World Tourism Organization. http://web.invemar.org.co/redcostera1/invemar/docs/518Management%20of%20Tourism.pdf (accessed February 13, 2008).