

AN ASSESSMENT ON THE STATUS OF THE  
NILE SOFT-SHELLED TURTLE (*TRIONYX TRIUNGUIS*)  
IN TURKEY WITH RECOMMENDATIONS FOR  
CONSERVATION

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**Introduction**

Forskål (1775) gave the first scientific description of the Nile Soft-shelled turtle, *Trionyx triunguis* (called by him "*Testudo triunguis*"), and noted that it was rare in the Nile ("in Nilo raro"). A century later, the species was found in the Levantine. It was, however, only in the early 1970S that it was realised that the range of the Soft-shelled Turtle extends as far to the west as south-western Anatolia (Basoglu, 1973). According to Kasperek and Kinzelbach (1991) who gave a first overview over the status of the species in the Mediterranean, there were only three major populations: in the wetlands of Dalyan and in the Dalaman area in south-western Turkey, and in the Alexander River in Israel. Although there are now also many records from other areas in the Mediterranean, significant populations are not known.

The status of the Nile Soft-shelled turtle in the Mediterranean is still insufficiently known. It is known that the species suffers from habitat destruction, disturbance as a consequence of tourist development, and direct persecution by fishermen. The *Convention on the Conservation of European Wildlife and Natural Habitats* (Bern Convention) at the Council of Europe in 1991 recommended giving the species better protection, and specifically addressed these recommendations to the Government of Turkey which is the only country which is both party to the Convention and situated within the range of the Nile Soft shelled-turtle.

In order to provide up-to-date information on the species, an assessment was carried out in August 1998 to provide information on the status along the Turkish Aegean and Mediterranean coast. This study covers all potential habitats along the Turkish coast west of Antalya and takes literature sources and previous experiences into account. Detailed recommendations for conservation and management of the species were prepared. This report is a direct consequence of

Recommendation No. 26 adopted on 6th December 1991, made by the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), and aims at supporting the implementation of that recommendation.

The field study was jointly supported the Mediterranean Association to Save the Sea Turtles (MEDASSET) and the British Chelonia Group (BCG). Recommendations for conservation and management were submitted to the Standing Committee of the Bern Convention and are available in document T-PVS (98) 59.

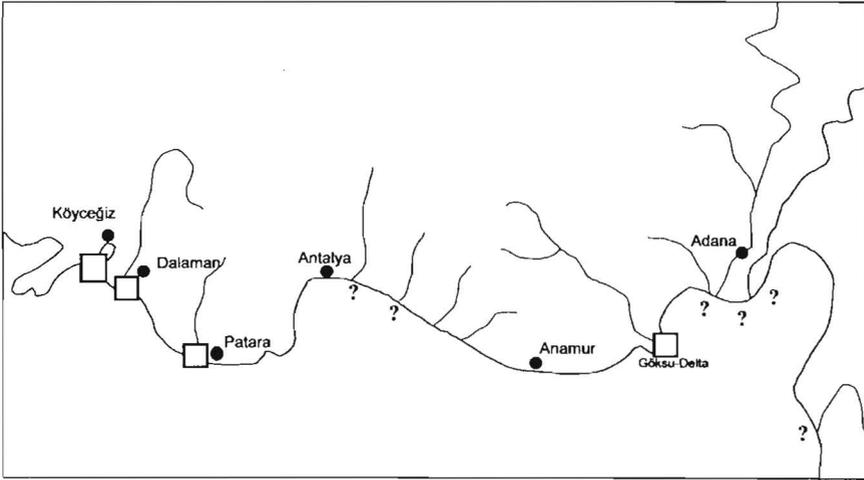


Figure 1. The occurrence of the Nile Soft-Shelled Turtle, *Trionyx triunguis*, in Turkey. The main populations are shown with large squares. The question marks indicate where *Trionyx* has been observed, but it is not known whether they occur there on a regular basis or reproduce.

### The Dalyan population

The Dalyan wetlands harbour one of the three major populations in the Mediterranean. The main population occurs in the Dalyan River, connecting Lake Köyceğiz with Dalyan estuary and the sea. The areas in which the Soft-shelled turtles were observed include; the thermal springs upstream of Dalyan town (including a nearby dead tributary of the river), the river within Dalyan town (up and downstream), the area of the fishery co-operative, the river branch near ancient Kaunos and the outlet of the estuary into the sea. The species however, does not, or at least not regularly, occur in Lake Köyceğiz, and not in the inner part

of Sülüngür Gölü. To date, the exact size of the population is not known but is thought to be as low as 50 adult individuals (cf. also Kasparek, 1990).

Soft-shelled turtles regularly nest on the rear side of the sand spit which separates the estuary (Sülüngür Gölü) from the sea. Never more than two nests were ever found and nesting has only been confirmed by nests which had been destroyed by predators. Despite an intensive search, other (actual or potential) nesting habitats could not be located in the region. It seems from the low numbers of nests that only a portion of the Dalyan population lays eggs on the sand spit, and that an even higher proportion does not regularly reproduce in the Dalyan area at all.

Within Dalyan town, there are offers for 'turtle watching tours' on a commercial basis. Local people bring tourists by boat in the early morning to specific sites along the Dalyan River. In order to attract Soft-shells, people use chicken bones and other meat which they throw into the water. The excursion guides give few explanations about what tourists are seeing and many (I know from being there!) confuse the Soft-shelled turtle for the more famous marine loggerhead turtle (*Caretta caretta*) which nests at night on the nearby Dalyan beach.

In 1990 and 1994, two dead Soft-shelled turtles were found in the Dalyan River. They had apparently been killed by boats, probably speed boats ignoring the 5 miles per hour speed limit. Another adult Soft-shelled turtle was found dead next to the hot spring along the Dalyan River in winter 1998/99 by the author. The reason for its death could not be determined.

In the summer season of 1998, boats started to approach Dalyan beach, both at the main mooring site to the rear of the beach and further to the south-east towards Sülüngür Gölü, where tourists walk around and make campfires on the banks of the lagoon at or close to the Soft-shelled turtle nesting sites. They also leave a lot of garbage there.

In the Dalyan River, only very large individuals of Soft-shelled turtles can now be observed. Although this view is at first amazing, and many people enjoy these large individuals, there is an apparent lack of non-adult individuals. It is thought that this is due to the continuous low reproduction success, resulting in a population structure where adult individuals are over-represented. It appears that young Soft-shelled turtles do not replace adults to a sufficient degree and the resulting

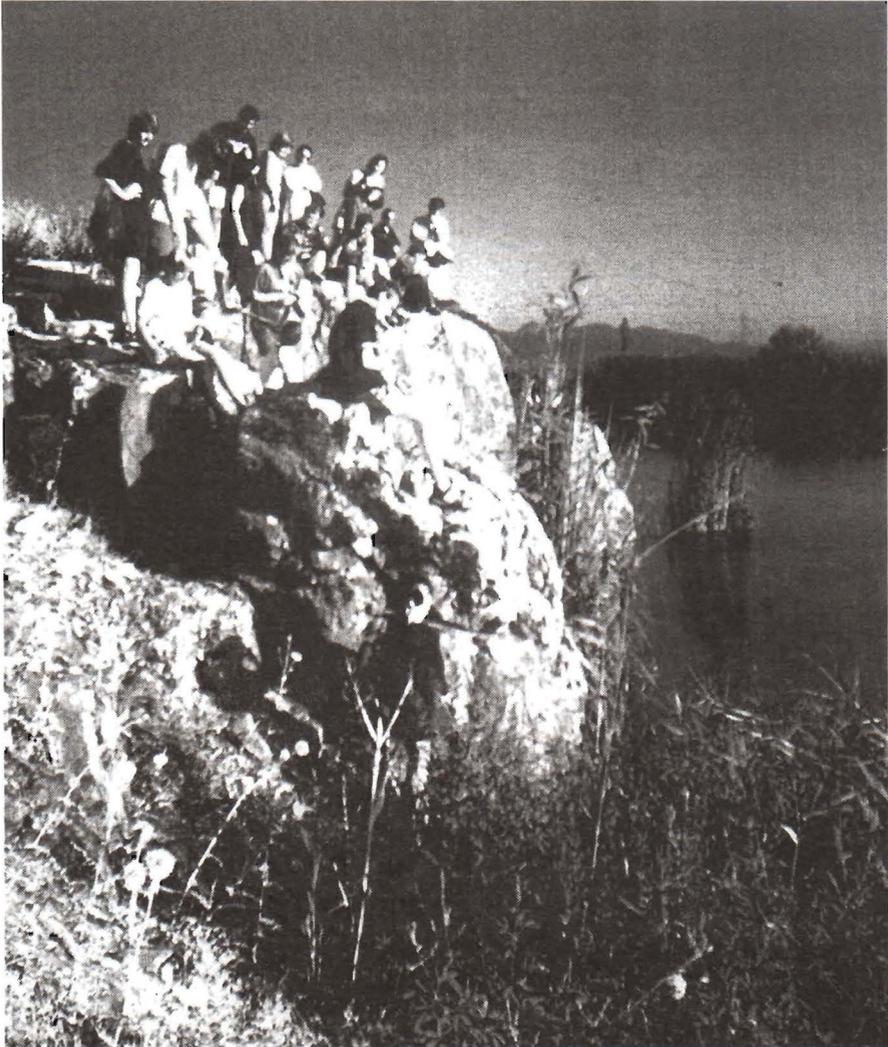
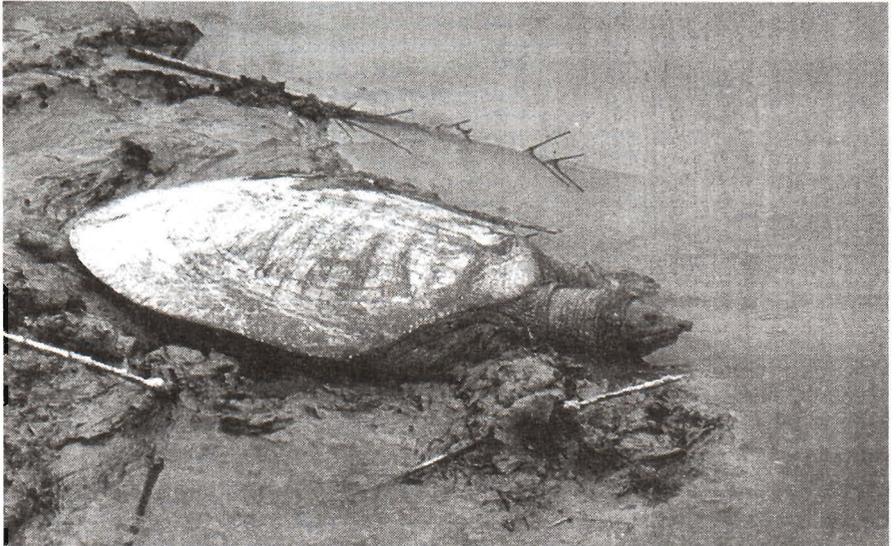


Figure 2. A group of tourists watching Nile Soft-shelled Turtles, *Trionyx triunguis*, at the Dalyan River in south-western Turkey.

population structure is such, that it may lead to an extinction of the species. The reason for the low reproductive success may be the heavy boat traffic in the Dalyan River which disturbs the natural activity pattern of the soft-shelled turtle. As a consequence, soft-shells are prevented from mating and eggs are not laid as frequently as would be usual under undisturbed conditions.



Fig. 3-4. Basking Nile Soft-shelled turtle, *Trionyx triunguis*.



It is therefore assumed that the recent lack of observations on successful reproduction is due to factors such as lack of suitable nesting habitats along the river, continuous disturbance by boats which impedes mating and reproduction and also low nest success on the sand dune, which separates the Dalyan estuary from the sea, due to disturbance and predators.

### **Recommendations**

With regard to the Dalyan population, it is recommended that the Government of Turkey:

- Initiates a scientific study with reference to the impact of tourist activities on the activity patterns of the soft-shelled turtles.
- Support the assessment of the population size and a survey on the spatial distribution of the population within the Köyceğiz/Dalyan wetland complex.
- Close the dead tributary of the Dalyan River, near the thermal springs to boats allowing the development of an area into which Soft-shelled turtles may retreat.
- Consider the closure of other areas to boats once results from the spatial distribution study are available.
- Immediately stop boats from landing at the already established mooring site in the lagoon to the rear of Dalyan beach.
- Prohibit access on the rear side of the sand spit which separates the Dalyan estuary from the sea, outside the already established mooring site.
- Clean the shores of the lagoon to the rear of the Dalyan beach of litter.
- Strictly enforce the speed limit on boats in the Dalyan River and estuary.
- Integrate nest protection measures against natural predators into any programme which is carried out for the protection of marine turtles on the Dalyan beach.

- Consider the establishment of artificial nesting habitats through the deposition of additional sand along the shores of the Dalyan River (prepare a feasibility study prior to action).

### **The Dalaman Population**

The Dalaman area appears to have the largest population of Soft-shelled turtles in the Mediterranean Sea. This population appears to be confined to Kükürt Gölü and Kargin Gölü and adjacent channels, in particular, the channel connecting Kükürt Gölü with the sea (Taslicay channel). The population size, estimated in 1991, is 30-50 individuals at Kükürt Gölü, 25-30 individuals at Kargin Gölü and 25-35 individuals in Taslicay channel (cf Gramentz, 1990, 1993, 1994). These figures still appear to be valid for 1998. This gives a total population of 75-125 adult and sub-adult individuals.

Despite Recommendation No. 26, adopted on the 6th December 1991 by the Bern Convention, a considerable change occurred during the mid- 1990s when a new bridge was constructed near the mouth of the Taslicay channel into the sea. The road over this bridge leads to buildings on a small hill within the wetland where a disco and other buildings are situated. The road also leads to some construction sites on a hill between Kükürt and Kargin Gölü. It is worth mentioning Incebel summer village, built during the 1980s, where most buildings are now uninhabited and dilapidated and yet new developments are still proceeding there. These roads and construction activities pose as serious future threats to the wetlands and to the Soft-shelled turtle.

Waste water from Incebel summer village is being discharged into Kükürt Gölü without prior purification. Pollution is one of the main threats to this ecosystem and results in not only a extremely foul smelling environment, but more importantly, a dense layer of blue-green algae on the surface of the water and also eutrophication (The influx of nutrients eg. from sewage and the subsequent rich plant and algae growth) leading to a dense vegetation cover of common reed and *Phragmites australis*. If the current situation is not stopped immediately, the changing ecosystem will make the survival of the Soft-shelled turtles impossible.

It can be said that the nesting situation in Dalaman has become considerably worse during the last decade, with the four main nesting sites either being completely lost or the situation for nesting becoming increasingly difficult.

- *the rear side of the beach, south-east to the mouth of Taslicay* - the channel to the beach is now completely overgrown (apparently due to eutrophication). A new road separates the beach from the wetland and allows tourists to come easily onto the beach. This nesting site is therefore no longer available.

- *sandy hill on the left bank of the Taslicay channel* - the hill is now regularly used by sports fishermen due to the construction of a new bridge. The nesting success would apparently be very low due to the continuous disturbance. This nesting site has therefore lost its importance.

- *a natural sand dune in the south-east of Kükürt Gölü* - this nesting site is now completely inaccessible due to an increase in vegetation of a *Salicornia* field (a plant growing on soils rich in salts; typical plant in marshland along the Mediterranean coast) which makes it impossible for the turtles to cross. The sand dune is also covered in dense vegetation making nesting unlikely. This nesting site is therefore no longer available.

- *an artificial sand heap on the peninsula to the south-east of the Incebel summer village* - in 1998, rubble was found deposited along the shores of the peninsula and therefore this nesting site is no longer available.

In order to overcome the shortage of nesting sites for Nile Soft-shelled turtles in the Dalaman wetlands, rehabilitation measures and the establishment of artificial nesting sites are deemed necessary.

## **Recommendations**

With regard to the Dalaman population, it is recommended that the Government of Turkey:

- Immediately stop the discharge of waste water from Incebel summer village into Kükürt Gölü preventing further eutrophication of the lake.
- Treat the most polluted parts of the lake through an artificial increase of circulated water (prepare a hydrological feasibility study prior to action)
- Ensure that the road along the north-eastern shore of Kükürt Gölü does not harm the Soft-shelled turtle population through disturbance. That means that no up-grading and or repair of the

road should be carried out. The closure towards Incebel summer village should not be opened.

- If appropriate and feasible, take legal action against the owners of Incebel summer village for polluting the water bodies surrounding the village.
- Immediately stop all kinds of fishing (nets, lines, guns and dynamite) within Kükürt Gölü, Kargin Gölü and in Taslicay.
- Immediately stop the ongoing construction of buildings on the peninsula south-west of Incebel summer village, between Kükürt Gölü and Taslicay channel and within the coastal wetland to the south of Kükürt Gölü.
- Strictly limit the usage of boats in Taslicay channel between Incebel summer village and the sea.
- Rehabilitate and create nesting habitats
  - through the clearance of sand dunes in the south-east of Kükürt Gölü from vegetation. An area where Soft-shelled turtles can easily approach the dune should be selected and an area of some 20m x 5m of blank sand dune should be provided.
  - through widening of the southern arm of Kükürt Gölü and clearing it from vegetation.
  - through accumulation of sand in areas which are secure from human disturbance and where Soft-shelled turtles can lay their eggs. The possible areas for the creation of artificial sites are the peninsula between Kükürt Gölü and Taslicay channel, some areas on the northern shore of Kükürt Gölü and at the northern edge of Kargin Gölü.
- All rehabilitation measures must be carried out under scientific supervision and after a feasibility study. It is particularly important to avoid any habitat destruction and significant disturbance through the proposed measures.
- Ensure that the interchange between the sub populations of Kargin Gölü and Kükürt Gölü is always possible through keeping the connection of Kargin Gölü with Taslicay channel open from vegetation and not obstructing it with fishing nets.

- Declare Kükürt Gölü, Kargin Gölü and adjacent wetlands protected areas and ensure their effective protection on a regular basis.

### **The Patara population**

During the assessment in 1998 a previous unknown population of Soft-shelled turtles was discovered in the Patara area. First, a sub-adult individual was observed in the lower course of the channel that drains the Ova Gölü. Then, a young individual was found in late August on the sandy beach at the mouth of the Esen Cayi. The young was apparently born in 1998 and therefore confirms successful reproduction.

Previously, there was only one record, i.e. a dead Soft-shelled turtle found on the Patara beach in 1988 (Baran & Kasperek, 1989, Kasperek and Kinzelbach 1991), but no further indications for a Soft-shell population have become available, despite intensive herpetological research and monitoring of the marine turtles on Patara beach.

The channel where Soft-shelled turtles occur has very high banks with steep inclines and the turtles seem unable to use them for nesting, although they consist mainly of fine sand and clay. It is assumed therefore, that Soft-shelled turtles, having little choice, swim down Esen river and nest on the beach around its mouth. The presence of visitors here is an imminent threat to both the nests and young. Therefore, it would be wise to provide a safer nesting option along the lower course of the channel which is only occasionally visited by the local population.

### **Recommendations**

With regard to the Patara population, it is recommended that the Government of Turkey:

- Considers flattening the banks of the channel at certain places. This would provide upstream nesting habitats and may attract Soft-shelled turtles to nest in a safe environment rather than at the mouth of the Esen river with its continuous tourist activities.
- Initiates a population assessment and a survey on the spatial distribution within the Patara area.

### **Other populations**

The 1998 surveys shows that three populations exist along the Turkish Mediterranean coast to the west of Antalya. It is unlikely that additional populations exist which have been overlooked.

Several records from the late 1980s and early 1990s show that other

records of the Soft-shelled turtle exist along the Turkish coast to the east of Antalya. The areas include Belek, Managvat, Bozyazlı, Göksu River, Cukurova and Orontes (Asi) River (Kasperek and Kinzelbach, 1991). However, these records refer to single observations or to dead individuals, and it is not known whether Soft-shells occur there on a regular basis. The Belek and Managvat areas have been heavily exploited for tourism in recent years, in particular, the lower course of the bed of the Managvat River which has now been built up, in some areas through the use of concrete banks. The present status of other smaller rivers in that area is not yet known and should be surveyed.

The only site where a viable population of Soft-shelled turtles in the east of Antalya is known to occur, is in the lower Göksu River and the nearby Paradeniz Gölü (Winden *et al.*, 1994). However, details on population size and distribution within the delta area are not sufficiently known. The population is thought to be larger than ten individuals but less than a hundred.

Soft-shelled turtles are regularly recorded in ,Cukurova, but only by fishermen at sea. An area where they regularly occur and nest however, has not yet been identified. The lower courses of the Tarsus (Berdan) River, and of Seyhan and Ceyhan should therefore be surveyed for possible occurrences and threats.

Within the Cukurova region and the Göksu delta, the Soft-shelled turtles are known to be aggressive and are disliked by fishermen because they frequently destroy their fishing nets. It has become evident through discussions with the fishermen that they kill Soft-shelled turtles whenever they come across them.

### **Recommendations**

With regard to the eastern Mediterranean coast, it is recommended that the Government of Turkey:

- Urgently implement Recommendation No. 26 (Bern Convention) concerning the lower Ceyhan and Seyhan Rivers.
- Initiates and supports a survey of all areas where Soft-shelled turtles may exist.
- Prevent the killing of turtles by fisherman and introduce them to conservation awareness.

## Conclusions and Recommendations

Taking into account that the Nile Soft-shelled turtle is under serious threat in the Mediterranean and that so far only four populations (three in the west: Dalyan, Dalaman and Patara, and one in the east, Gökusu delta) have been identified along the Turkish coasts, conservation efforts should be concentrated on the main populations and an appropriate stakeholder involvement should take place in order to enhance the effects of conservation measures.

It is therefore recommended:

- To donor agencies, including the Commission of the European Union, to support the Government of Turkey in the implementation of these recommendations, in particular ensuring that the proposed habitat rehabilitation measures are put into practice.
- To all relevant non-governmental organisations to provide technical expertise for assisting the Government of Turkey in the implementation of these recommendations.
- To launch an international campaign in order to assist the Turkish authorities in the implementation of these recommendations.
- To the Standing Committee on the Convention of the Conservation of European Wildlife and Natural Habitats to open a file on *Trionyx* to monitor progress made in the implementation of the recommendations to the Government of Turkey.

## Acknowledgements

I would like to thank MEDASSET and the British Chelonia Group for supporting the field work, and Stuart Crane, Roger H. C. Poland, and Lily Venizelos, for their help in compiling and editing the manuscript.

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