

Priorities for the Conservation of the Nile Soft-shelled Turtle, *Trionyx triunguis*, in the Mediterranean

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Introduction

The Nile Soft-shelled turtle, *Trionyx triunguis*, is a mainly African species whose distribution range, however, extends as far as the Mediterranean basin. In the Mediterranean, it is confined to a few countries: The strongest populations are found in Turkey, with additional occurrences in Israel, Egypt, Syria and the Lebanon (plus a single record in Greece).

The Mediterranean population has been listed by IUCN–The World Conservation Union as “critically endangered” in the “Red Data Books” of 1996 and 2000; the Mediterranean population has been classified in the category “CR C2A” what means that the population suffers from a continuing decline in numbers of mature individuals and population structure, and that the (sub-) population does not contain more than 1000 mature individuals.

T. triunguis has also been included in Appendix II of the *Convention on the Conservation of European Wildlife and Natural Habitats* (Bern Convention) in December 1996, and CITES, the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* lists the species in Appendix III which means that the species needs special observation.

Relatively little is known on the population status of the Nile Soft-shelled turtle in the Mediterranean. Recent field surveys carried out by the author with support of MEDASSET, the Mediterranean Association to Save the Sea Turtles, revealed new information on the occurrence of the species there. This paper attempts to summarise our knowledge as a basis for better conservation and management. In order to initiate conservation measures and to coordinate conservation efforts, an action plan for the species would be very helpful. This paper may be regarded as a first step towards this goal.

Population Status

An overview over the occurrence and status of the Nile Soft-shelled turtle in the Mediterranean has been given by Kasperek & Kinzelbach (1991) a decade ago. The authors compiled all records from published and unpublished sources. It turned out that recent data are available for hardly any of the Mediterranean sites.

In order to close the gap of our knowledge in the status of the Nile Soft-shelled turtle in the Mediterranean, MEDASSET supported a three-year project to survey the Turkish coast where the largest populations were known or were supposed to occur in the Mediterranean. The author carried out that survey in the seasons 1998, 1999, and 2000 (MEDASSET 1998, 1999). Practically all suitable areas in Turkey were visited and in addition to direct observations, information was collected from fishermen on the

occurrence of soft-shelled turtles. During the survey, several new populations were found, and other populations were confirmed which had not been reported for a long time, or whose existence had only been suspected.

Our knowledge on the occurrence can be summarised as follows:

Greece

A single record at the Island of Kos, but no regular occurrence (Taskavak et al. 1999).

Turkey

At least 15 subpopulations are known to exist, among these the quite large populations in the Dalaman area and in the lower Seyhan River. The following table attempts to classify the various subpopulations according to population size and thus to set priorities for conservation and management:

<p>Category I: Largest population with the highest conservation priority</p>	<ul style="list-style-type: none"> • Dalaman • Seyhan
<p>Category II: Relatively large populations which are in strong need of conservation</p>	<ul style="list-style-type: none"> • Dalyan • Aksu/Acisu • Anamur • Göksu • Berdan River • Tuzla Drainage Channel • Karatas Drainage Channel • Ceyhan River
<p>Category III: Relatively small populations, but conservation required for the survival of the species</p>	<ul style="list-style-type: none"> • Patara • Fethiye (information insufficient) • Köprü Çayı/Acisu • Bozyazi (latest information from 1988) • Orontes (Asi) River (no recent information)

Syria

The most recent record is from 1988, and that record refers to an individual seen on the fish market (Kasperek & Kinzelbach 1991); it is thus not known whether the species reproduces in Syria.

Lebanon

Nile Soft-shelled turtles have apparently not been recorded in the country since the 1930's (Kasperek & Kinzelbach 1991).

Israel

A large population existed in Nahal Alexander (Kasperek & Kinzelbach 1991), but a big flood destroyed most of the population in 1993. However, about 50 individuals have survived and still breed there (Eyal Shy, pers. comm.). There are a few more streams along the Mediterranean shore which have *Trionyx* in small numbers, and a few which used to have them in the past. These small populations are apparently stable, but do not grow (Eyal Shy, pers., comm.). A population in the Hula Nature Reserve (Lake Kinneret) is apparently not indigenous, but has been introduced by man; efforts are made from time to time to re-locate the individuals to the Mediterranean system (Kasperek & Kinzelbach 1991, Shy, pers. comm.).

Egypt

The most recent published records are those by Baha El Din & Salma (1992) from northern Sinai and Lake Nasser. However, some verbal reports by participants of a workshop on "Marine Turtle Biology and Conservation in the Mediterranean" at Cairo in November 2000 indicate that the species survives in the Nile Delta. Surveys are planned by Mohamed Nada, to be carried out with support by MEDASSET.

Nile Soft-shelled turtles at sea

Nile Soft-shelled turtles in the Mediterranean are typical brackish water turtles which occur in the lower course of river and streams. However, some records in the sea far away from fresh water indicate that the species more or less regularly enters the sea and apparently spends a part of the life cycle there.

Records in the sea have never been collected in a systematic way, and our knowledge is largely based on accidental and anecdotal reports. However, a survey on trawling fisheries in the sea off the Çukurova delta in southern Turkey gave some quantitative data and allows us to draw conclusions on the effects of fisheries on the population.

Until the mid-1990's, there had been only a few sporadic records of *T. triunguis* in the sea off the Çukurova (see review by Kasperek & Kinzelbach 1991). A systematic study was carried out by Oruç, Demirayak & Sat (1997) in the fishing seasons 1995/1996 and 1996/1997. They accompanied trawlers and registered all captured turtles. In the season 1996/1997 they recorded not less than 437 adult Nile Soft-shelled turtles entrapped in trawling nets.

The regional distribution of *Trionyx* entrapped in nets in the open sea is shown in the following table (number of animals caught). This clearly shows the importance of the sea in front of Ceyhan River mouth and the Bay of Yumurtalık for soft-shelled turtles. The open sea in front of Seyhan and Berdan Rivers is, according to these data, not much frequented by soft-shelled turtles. However, as the report gives no information on the distribution of trawlers, it cannot be ruled out that the above distribution pattern partly reflects the distribution of fishing boats and fishing trips. The number of soft-shelled turtles caught by midwater trawls is much higher than those caught by bottom trawls.

	midwater trawls	bottom trawls	total
Mersin	1	0	1
Tarsus	6	1	7
Seyhan	2	1	3
"Kanal" (which?)	1	2	3
Tuzla	10	4	14
Akyatan	0	3	3
Karatas	27	18	43
Ceyhan mouth	307	5	312
Yumurtalik	29	0	29
Kamis Burnu	6	1	7
TOTAL	389	35	424/422

Table: Distribution of Nile Soft-shelled turtles caught by midwater and bottom trawls between September 1996 and July 1997 in the Çukurova Delta according to Oruç, Demirayak & Sat (1997).

This report also show that large numbers of *Trionyx* were caught in particular during the winter months. The highest numbers were reached during December, with 107 Soft-shelled turtles caught alone on 16 and 17.12.1996. 69% of all soft-shells were caught in the period 1 December to 28 February, and only 14% between 15 September and 30 November, and 17% between 1 March and 15 May.

These results show on the one hand that Soft-shelled turtles are not rare in the sea, in particular during the winter months. On the other hand, the results show that trawling fishing is a very severe threat to the Soft-shelled turtle population, and that trawling fishing may have a much higher effect on turtle population than occasionally killing of turtles, which enter fishing traps, by fishermen.

Research Priorities

Despite the three-years survey in southern Turkey, our knowledge on the occurrence and status of the Nile Soft-shelled turtle in the Mediterranean is still insufficient. The highest research priority should be given to Egypt. We already have some information that the species still occurs there, and the extensive water bodies of the Nile Delta offer a wealth of habitats for the species. The delta has the potential to hold large *Trionyx* populations, and the actual situation needs to be surveyed.

No reproduction sites of *Trionyx* is known in Syria and the Lebanon, although one can assume that the species occurs there. Field surveys should therefore be carried out with high priority.

The population in Turkey has been relatively well surveyed in recent years, but still unknown is the species' status in the Orontes River (Asi River) at the border with Syria. The river course should be surveyed, including both the area in Syria and Turkey.

Information on the population in Israel is not sufficient. Better information on population size and population growth should become available through compiling already avail-

able unpublished information and from additional surveys.

In order to better understand the biology of *Trionyx* and to elaborate the needs for conservation and management, the period spent by the species in the sea is an important point. As trawl fishing in the sea threatens the species, the period spent in the sea is of critical importance. However, we do not know how regularly soft-shells enter the sea, and how long they stay there. Efforts should therefore be undertaken to find out more on the life cycle of the Nile Soft-shelled turtle and its relationship with the sea.

We also do not know the fate of Soft-shelled turtles caught by trawlers: how many of them die in the nets, how many escape and how many are released? Research should be done on this, and also on the feasibility of applying the “Sea Turtle Excluder Device” for this species.

Finally, we do not know the population size. Due to the secret life of the species, it is extremely difficult to estimate its population size with relatively simple methods. However, studies should be made to better understand the number of individuals involved.

Recommendations for Conservation and Management

The conservation needs could only be assessed for the population of Turkey. Potential and actual threats to the population in Israel (and elsewhere) are not sufficiently known and cannot be covered here.

Category I: Dalaman and Seyhan populations

It was found that the largest populations of *Trionyx* in Turkey exist in the Dalaman area and in the Seyhan River (Category I populations). The habitats at Dalaman River are highly threatened by a number of factors, described in detail by Kasperek (1999). The population of Seyhan River in the Çukurova is threatened by trawl fishing in the sea where *Trionyx* stays especially in winter, and by potential long-term effects of an extreme pollution through sewage from the city of Adana.

Detailed recommendations have been elaborated for the Dalaman area (Kasperek 1999): The Dalaman population is one of the two largest populations, and the most threatened one. Regarding the Dalaman population, it is recommended that the Government of Turkey

- avoids any tourist and other development of the beach around the mouth of outlet of Kükürt Gölü into the sea, in particular the construction of a marina and a power plant
- takes immediate steps to stop the discharge of waste water from the Incebel summer village into Kükürt Gölü, thus avoiding further eutrophication of the lake
- cleans the most polluted parts of the lake through an artificial increase of the circulation of the water of the lake (prepare a hydrological feasibility study prior to practical action)
- takes care that the road along the north-eastern shore of Kükürt Gölü does not harm the soft-shelled turtle population through disturbance (no up-grading and no repair of the road, no opening of the closure to Incebel summer village)
- considers taking, if appropriate and feasible, legal action against the owners and managers of Incebel summer village, as they pollute the natural water bodies around the summer village

- stops immediately all kind of fishing (with nets, lines, guns, and dynamite) within Kükürt Gölü, Kargin Gölü, and in Taslıçay
- stops the ongoing construction of buildings on the peninsula south-west of Incebel summer village, between Kükürt Gölü and Taslıçay channel, and within the coastal wetland to the south of Kükürt Gölü
- strictly limits the usage of boats in Taslıçay channel between Incebel summer village and the sea
- restores and creates nesting habitats (which may also serve as basking sites)
- clears the sand dune in the south-east of Kükürt Gölü from vegetation. An area where soft-shells can easily approach the dune (clear the scrub between the dune and the water, if necessary) should be selected, and an area of some 20x5 m of blank sand dune should be provided
- widens the southern arm of Kükürt Gölü towards the beach, clearing vegetation
- accumulates sand in areas which are secure from human disturbance, and where soft-shells may lay their eggs.
- makes sure that the interchange between the sub-populations of Kargin Gölü and Kükürt Gölü is always possible (keep the connection of Kargin Gölü with Taslıçay open from vegetation and do not close it with fishing nets).
- declares Kükürt Gölü, Kargin Gölü and adjacent wetlands a protected area, and monitor the effectiveness of protection measures on a regular basis.

All rehabilitation measures have to be done under scientific supervision, and after preparation of a feasibility study. It is particularly important to avoid any habitat destruction and significant disturbance through the proposed measures.

Regarding the Seyhan population, it is recommended that the Government of Turkey

- takes immediate steps to control trawling which gives rise to the death of annually large numbers of Nile Soft-shelled turtles in the Çukurova area.
- stops pollution from sewage from the metropolis of Adana.

Category II populations

Regarding the ***Patara population***, it is recommended that the Government of Turkey

- initiates a population assessment and a survey on the spatial distribution within the Patara area
- considers the flattening of the banks of the channel at a few places. This would provide upstream nesting habitats, and may attract soft-shells to nest at a safer place rather than at the mouth of Esen River with continuous tourist activities.

Regarding the newly found populations at ***Aksu/Acisu*** and ***Köprü Çayı/Acisu***, it is recommended that the Government of Turkey

- initiates a survey of the spatial distribution and movements within both areas in order to demarcate the habitats
- avoids any further development of the river banks
- establishes protected areas around these sites.

Regarding the ***other populations in Turkey***, it is recommended that the Government of Turkey

- assesses the influence on the population of the killing soft-shelled turtles by fishermen
- takes steps against the killing of turtles by fishermen through awareness-building among them.

General Considerations

Taking into account that the Nile Soft-shelled turtle is critically endangered in the Mediterranean, and that so far only a few significant populations (Dalaman, Seyhan, Nahal Alexander) have been identified, conservation efforts should be concentrated on the main populations, and an appropriate stakeholder involvement should take place in order to enhance the effectiveness of conservation measures.

It is therefore recommended to international donor agencies, including the Commission of the European Union, and to non-governmental organisations

- to support the Government of Turkey in the implementation of these recommendations, in particular for implementing the proposed habitat rehabilitation measures in the Dalaman area
- to support the drafting of an action plan for the species which sets priorities and enhances co-ordinated efforts towards the conservation of the species
- to provide technical expertise for assisting government agencies in the implementation of these recommendations
- to launch an international campaign in order to draw attention to this species and to assist responsible government authorities in the implementation of these recommendations
- to monitor progress made in the conservation of the species.

Acknowledgement

The author wishes to thank the LIFE Project “Çukurova Delta Biosphere Reserve”, in particular Prof. Dr. Türker Altan, for supporting the field surveys in the area there, and to Eyal Shy and Eliezer Frankenberg for providing information on the population in Israel.

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