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Specific file

***Trionyx triunguis* in Dalyan and Dalaman
(Turkey)**

Report by the NGO

Document prepared by
MEDASSET (The Mediterranean Association to Save the Sea Turtles),
Marine Turtle Conservation in the Mediterranean

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Report to the 24th Meeting of the Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)

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Introduction

Of the populations of the Nile Soft-shelled turtle (*Trionyx triunguis*) known to be extant in the Mediterranean, those in the Turkey are said to be of the largest, and amongst these the populations in Dalaman and Dalyan are thought to be the biggest (Kaparek 2001). Since the last report by MEDASSET (MEDASSET 2001) the situation regarding this species has gone largely unreported, so a short trip to these two important sites was arranged in order to make a rapid assessment of their present status. The visit was conducted between 20-23rd of August 2004, and was comprised of direct observations, discussions with June Haimoff, who has lived in Dalyan for over 30 years, and who has a good historical knowledge of the area and its turtle populations, informal interviews with local tour operators and boatmen, and discussions with Dr. Siegfried Weisel, director of the Caretta Action Network (CAN) project in Dalyan, and who, with his volunteers, has been observing *T. triunguis* in Dalyan since his arrival in March 2004 (data to be published shortly).

Dalyan population

Population status

As with is the case with this species throughout its range detailed population status data for the Dalyan have not been collected. Practically nothing is known of the absolute numbers of individuals, their distribution and behaviour, population age structure and trends, their reproductive behaviour and reproductive success rate. One disturbing fact is that only large adults are reported as being observed, another is that all of several nest sites identified on the rear of the Kaunos beach sand bar were determined to have been predated by foxes, which are also believed to have a major impact on the nests of *Caretta caretta* on the front of the same sand bar (Weisel 2004, pers. com.). Given the longevity exhibited by many turtle species, one possible interpretation of these two facts is that the existing Dalyan population consists of a few, old adults, who have for many years not been achieving adequate breeding success. Haimoff (2004, pers. com.) has pointed out that over 20 years ago the *Trionyx* individuals observed during boat trips along the river were also large adult specimens and were usually seen in very small numbers (one or two individuals per trip). With so few records steadily occurring over such a long time-frame, it may be that only large adults become habituated to the presence of humans, or that hatchlings and juveniles avoid them and/or occupy other parts of the river/wetland system, only migrating to the main part of the river when they attain a certain size. However, neither does this 'evidence' contradict the view that a small aging population has existed for some time. If this is indeed the case, then urgent action is required in order to conserve this population, particularly as, unlike many other turtle species, the Trionychidae exhibit true genotypic sex determination (Seigel and Dodd 2000), which means that sex ratios cannot be manipulated using temperature to the immediate benefit of the conservation of the species. One boatman did report "hundreds" of individuals gathering during the winter in the warm waters of a 'dead' arm of the Dalyan River, which is fed by thermal springs. When asked for details he indicated that this number was probably below 50, but did say that the individuals were 'large' and of different sizes, suggesting the presence of younger adult specimens and possibly juveniles. However, such 'data' cannot be considered reliable and need to be verified, and set against knowledge of the life-cycle of this species. Clearly, a comprehensive baseline survey must be conducted on this population if appropriate conservation measures (which may be urgently required) are to be introduced.

Human-Trionyx triunguis interactions

Feeding

An early morning boat trip was taken upstream of Dalyan to witness the feeding of *Trionyx*, which has become a significant tourist attraction; these trips are advertised as taking place every day, and may involve several boatloads of tourists paying about 6 Euros each. Our boatman brought along restaurant fish waste and another supplied raw chicken skin and offal. This was distributed on rocks close to the water and within a few minutes two large *Trionyx* appeared (~70-90 cm), very warily approaching and coming out of the water only far enough to grab some of the food. In total 4 large adults were seen, all of which were very nervous in their behaviour, diving away in response to any sudden movement. Two of them tolerated each other in close proximity, but otherwise they fed singly, one individual sometimes appearing to drive off another from the food.

This regular *Trionyx triunguis* feeding is clearly generating significant income for those concerned, and this was confirmed by one of the tour operators with the comment “We make plenty of money out of *Trionyx*”. With its big size and three large claws on each flipper the species is indeed very impressive, stimulating considerable interest amongst the visitors. In being so readily observed, it could well provide a good subject as a flagship species to promote the conservation of all Dalyan’s turtle species and conservation in general. With this in mind the possibility of establishing a landing a short way from the feeding station, connecting the two with a walkway, and providing interpretation boards, was discussed. Presently however, the feeding practice is completely unregulated beyond the measures employed by the most environmentally-sensitive operator (see picture). As well as the obvious health concerns associated with the use of inappropriate, possibly contaminated food, notably raw chicken, the feeding site was also swarming with wasps attracted to the food waste. This encouraged most visitors to stay on their boats, and probably reduced the number of sightings as it seems likely that *Trionyx* has become very wary of motorised boats.

Human-Trionyx triunguis interactions

Fishing and boating

Data gathered by Weisel (2004, pers. com.) suggest an inverse correlation between both the number of surfacing events and the period spent on the surface, and the amount of boat traffic in the area, but whether the high levels of boats traffic on the river has a significant effect on the behavioural ecology of the species, is not known. Data on the regional distribution of high numbers of *Trionyx triunguis* entrapped in nets in the open sea suggest that the sea in front of the Ceyhan River mouth (74% of reported trappings) and the use of midwater trawls (92% of reported trappings) are of major importance in relation to 437 entrapments recorded during the 1996/1997 season (Oruç, Demirayak, & Sat, 1996), although these data were not contextualised by data indicating the relative amount of fishing conducted in the area and the proportion of fishermen using -water trawls. Most of Dalyan’s fishing vessels have reportedly been converted into tourist pleasure boats, of which some 600 are said to exist, with half of these available for public hire. It is not known what effect the fishing that does continue in the Dalyan area has on *Trionyx*. However, one boatman did report that *T. triunguis* individuals “occasionally” get caught in the fishing traps stationed in the Dalyan River estuary. Oruç (2001) states that her study suggests that the great majority of turtles entrapped in fishing nets in the Eastern Turkish Mediterranean are released alive. This may well be true for *Caretta caretta* and *Chelonia mydas*, but given that *T. triunguis* is very powerful and can cause considerable damage with the three large claws on each flipper (Weisel 2004, pers. com.) it seems likely that at least some individuals of this species caught in nets and traps are killed before they are released so as to avoid injury to humans.

Research Priorities

At Dalyan there is an urgent need to make a detailed study of the life cycle and population biology of the species in order to establish baseline data, allow meaningful interpretation of what little data already exist, and enable the elaboration of needs for the conservation and management of this population.

Update of previous information relating to recommendations made for the Dalyan area by MEDASSET (2000). That the Government of Turkey:

- initiates a scientific study on the impact of tourist activities on the activity patterns of soft-shelled turtles
Some informal observations made by Weisel 2004
- supports the assessment of the population size and spatial distribution of the population within the Köycegiz/Dalyan wetland complex
Action not undertaken
- closes the dead arm of the Dalyan River near the thermal springs for boats and establishes an area which soft-shelled turtle may escape from continuous disturbance by heavy boat traffic, and which they may use for basking and mating
Action not undertaken
- consider the closure of other areas for boats once the results of the study on spatial distribution have become available
Action not undertaken
- considers the establishments of artificial nesting habitats by depositing sand in certain areas along the shores of the Dalyan River (prepare a feasibility study prior to action)
Action not undertaken
- immediately stops boats from landing outside the established mooring site in the lagoon to the rear of Dalyan/Kaunos beach
Action not undertaken
- prohibits people walking on the rear side of the sand spit on either side of the established mooring site in the lagoon to the rear of Dalyan/Kaunos
Action not undertaken
- cleans the shores of the lagoon to the rear of Dalyan beach of litter
This may have been carried out
- strictly enforces the speed limit of boats in the Dalyan River and the estuary
No evidence of this – in fact, several boats were seen speeding during short visits to the river

No evidence was found of a detailed scientific research having been conducted at the site, that a feasibility study had been carried out, or that international donor agencies have been formally involved in the implementation of any of these recommendations

Dalaman population

Population status

As with the Dalyan population little detailed information is available concerning absolute numbers, distribution and behaviour, population age structure and trends, and reproductive behaviour. However, at 11:00 am a visit to the lake in front of the Hotel ThermeMaris encountered a large group of *T. triunguis* swimming around close to the Hotel, with two individuals seen hauled out on muddy banks under vegetation on the distant shore. There were estimated to be some 42^{±3} individuals present, with carapace lengths of approximately 50-80 cms. The turtles stayed around the feeding point over the next hour, gradually moving away and leaving the surface waters as the floating 'mud' (used for therapeutic purposes at the spa) accumulated. Subsequent observations in the area where the lake discharges into the river, in the river itself, and in the area where the river enters to sea, encountered no turtles, or evidence thereof.

One observation that might be of significance to the conservation of this species is that many of the individuals observed (including those seen at Dalyan) have white markings on their skin and shells (see picture). Although those carrying many such markings did not appear to behave any differently from those that did not, these markings might be fungal in nature or signify a nutritional disease. Chelonians are known to be subject to diseases, infectious and otherwise (Flanagan 2000), and, given that it is an important factor in natural selection (Bush et. al 1993), it would be wise to investigate this phenomenon.

Human-Trionyx triunguis interactions

Feeding

The lake in front of the Hotel ThermeMaris is a regular feeding point for *T. triunguis*, where signage advises visitors to give them only bread. This group was clearly habituated to human presence and to being fed, with individuals tending to aggregate below where people positioned themselves, and making no sudden dives in response to human movement. Some intra-specific aggression was observed (both male-on-male and female-on-male), although not in the context of feeding, because no food was provided, yet no aggressive behaviour was seen being shown toward a single adult Stripe-necked Terrapin (*Mauremys caspica*), which was swimming amongst them and which, with a carapace length of ~20 cms., was much smaller than all the *T. triunguis* specimens present.

Human-Trionyx triunguis interactions

Fishing and boating

Just two boats were seen at the site, both hauled up on a small beach area, and no evidence of fishing was observed.

Research Priorities

This population at Dalaman appears consist of a significant number of individuals, but although smaller individuals than those observed at Dalyan were seen, none smaller than about 50 cms. in length were encountered. This again raises questions concerning the age structure of the population and the distribution of adults and juveniles, along with the need to set this information against knowledge of growth rates. It was interesting to see that during the 60 minutes of observation the individual *Mauremys caspica* was not attacked or even specifically approached by any of the *T. triunguis*, which might suggest a lack of aggression towards smaller individuals. However, intra-specific aggression might well be a very different phenomenon. Clearly, there is a need to gather basic knowledge on the status of the Dalaman population, and its behavioural ecology.

Despite the possible effect of the presence of humans on the turtles' behaviour (which could be largely overcome with the use of a hide), the ease of viewing *T. triunguis* at this site makes it a good place at which to study the species, particularly with a view to gathering behavioural data, such as the time spent on the surface and underwater and intra-specific interactions.

It should be noted that any study of growth rates in this species, which are conducted at Dalyan, Dalaman, or at any other site where the mineral content and temperature of the waters are affected by thermal springs, need to be contextualised with data from 'normal' waters.

Update of previous information relating to recommendations made for the Dalaman area by MEDASSET (2001).

MOST OF THESE ITEMS, COULD NOT BE FOLLOWED – UP BECAUSE OF LACK OF TIME AVAILABLE

- avoid 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

No apparent change

- 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

Not known if action taken

- 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)

Not known if action undertaken

- 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)

No apparent change

- 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

Not known if action taken

- stops immediately all kind of fishing (with nets, lines, guns, and dynamite) within Kükürt Gölü, Kargin Gölü, and in Taslıçay
Not known if action taken – but no evidence of fishing seen
- 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
No apparently brand new buildings seen
- strictly limits the usage of boats in Taslıçay channel between Incebel summer village and the sea
No boat usage observed
- restores and creates nesting habitats (which may also serve as basking sites)
No evidence of this
- 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
Not known if action undertaken
- widens the southern arm of Kükürt Gölü towards the beach, clearing vegetation
Not undertaken
- accumulates sand in areas which are secure from human disturbance, and where soft-shells may lay their eggs
No evidence of this
- 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)
Not known if action taken
- declares Kükürt Gölü, Kargin Gölü and adjacent wetlands a protected area, and monitor the effectiveness of protection measures on a regular basis
Not known if action taken

No evidence was found of a detailed scientific research having been conducted at the site, that a feasibility study had been carried out, or that international donor agencies have been formally involved in the implementation of any of these recommendations

Overall Priorities for European and International Donor Agencies (adapted from MEDASSET 2001)

- to support detailed baseline research into the population biology of this species, particularly in Turkey in those areas where populations are thought to be the largest. This should be aimed primarily at understanding the status of the local and regional population, the species' life cycle, and its behavioural ecology, but could usefully include research into the potential for using *Trionyx triunguis* as a conservation flagship species
- to support the drafting of an action plan for the species which sets priorities and enhances co-ordinated efforts towards its conservation
- 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, targeting the tourist sector and local communities
- to monitor progress made in the conservation of the species.

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Photo 1: Dalaman,
Trionyx triunguis

Photo 2: Dalaman,
Trionyx triunguis



Photo 3: Hotel
ThermeMaris *T.*
triunguis - with
single *Mauremys*
caspic (middle left)



Photo 4: Hotel ThermeMaris *T. triunguis* waiting to be fed

Photo 5: Hotel ThermeMaris many *T. triunguis* gather to be fed (n.b. background - beach destroyed by building works)



Photo 6: The only boat tour operator specifying *Trionyx*-watching also suggests how visitors should best behave near them



Photo 7: Visitors gather at the feeding site

Photo 8:
T. triunguis feeding



Photo 9:
12:15 pm floating 'mud' has appeared and the turtles have all left