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**Update Report and Review of Nature Conservation
Measures in Patara SPA (Turkey)**

Report by the NGO

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Marine Turtle Conservation in the Mediterranean*

UPDATE REPORT AND REVIEW OF NATURE CONSERVATION MEASURES IN PATARA SPA, TURKEY

Report to the 23rd Meeting of the Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)

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Commissioned by
MEDASSET
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INTRODUCTION.

Turkey is one of the main Mediterranean countries (with Greece and Cyprus) where major loggerhead nesting grounds are located (Groombridge, 1988). **In Turkey, Patara beach is an important nesting site mainly for loggerhead turtle**, first recorded during a survey conducted in 1988 (Baran and Kasperek, 1989). In 2000, two green turtle nests were also identified, representing the first record of this species in Patara (Erdogan *et al.*, 2001), the westernmost substantiated site for *Chelonia mydas* nesting in the Mediterranean (Kasperek *et al.*, 2001).

Since 1988, there has been considerable concern for this nesting beach in case **uncontrolled tourism development** may cause the loss or degradation of an important turtle nesting habitat and an archaeological site. The depletion of nesting beaches due to tourism development is one of the main threats in the Mediterranean, where many coasts have been urbanised the past few decades (Venizelos, 2001, 1989 - Baren & Kasperek, 1989).

The Patara issue was first raised by MEDASSET in 1988 and has since been supported by others at the Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) Meetings, where it was subsequently discussed on a regular basis. After the Standing Committee expressed the wish to examine the case of marine turtles in Patara as an urgent case in January 1996 (T-PVS (96) 50), **an on-the-spot appraisal was carried out on 21-23 August the same year** in order to clarify open questions. The appraisal Report that followed (T-PVS (96) 65) made detailed Recommendations, and the Standing Committee decided in December 1996 to open a file on Patara in order to monitor the effectiveness of conservation measures.

MEDASSET carried out a field survey in summer 1998, and subsequently submitted a report to the Standing Committee of the Bern Convention with detailed specific Recommendations for conservation and management (T-PVS (98) 49). Further updated reports and reviews of Conservation Measures were submitted in 1999, 2000, 2001 and 2002. **In view of the generally positive development it was decided at the 2001 Standing Committee Meeting to close the file despite some remaining problems. Turkey was asked to continue submitting reports to the Standing Committee on progress made.**

As a result of MEDASSET's ongoing "Save Patara" campaign begun in 1989 in collaboration with Turkish archaeologist Prof. Icik of Antalya University, the Programme Officer of UNEP/MAP was invited by the Turkish government to visit Patara on 12 March 2002 regarding the campaign proposal of "World Heritage Site Status".

The aim of this review is to monitor the progress made since 2002 in implementing the Recommendations made by the Standing Committee for the protection of Patara as proposed in 1996 and in 1998.

REVIEW OF SCIENTIFIC DATA CONCERNING MONITORING ACTIVITIES.

Location

Patara beach is located within Mugla and Antalya provinces and has a total length of approximately 12 km. The West and East sections of the beach are separated by the mouth of the river Esençöy. The 5 km long stretch of beach to the West of the Esençöy river belongs to the Mugla Province, and the 7 km long beach to the East of the river mouth is in Antalya Province.

Monitoring activities in the past

Patara was first identified as a nesting ground in 1988 (Baran and Kasparek, 1989). Since then, the different methodologies applied by each author do not allow an estimation of the sea turtle population trend. **Very little investigation has been done for example, on the nest distribution along the beach, on the reason for low hatching success etc., neglecting to develop conservation strategies for the case.**

Year	No. of Nests	Nesting success ¹ (%)	Hatching success ² (%)	Hatchlings reaching the sea (%)	Reference	MEDASSET technical reports on the situation in Patara
1988		24-29	-	-	Baran and Kasparek, 1989	-
1990	58	-	24	-	Baran <i>et al.</i> , 1992 in Erdogan <i>et al.</i> , 2001	-
1992	52	-	48	37.2	Baran, I. 1992 in Taşkin and Baran, 2001	-
1993	85	-	67	42.2	Baran, I. 1993 in Taşkin and Baran, 2001	-
1996	35	-	82	40.6	Baran <i>et al.</i> , 1996 in Taşkin and Baran, 2001	T-PVS (96) 53A T-PVS (96) 53
1997	52	25.4	86	43.5	Taşkin and Baran, 2001	T-PVS (97) 45
1998	62	-	-	-	Taşkin and Baran, 2001	T-PVS (98) 49
1999	79	29.9	-	-	Taşkin and Baran, 2001	T-PVS (99) 69
2000	85	52	22		Erdogan <i>et al.</i> , 2001	T-PVS (2000) 57
2001	-	-	-	-	Some monitoring carried out by Akdeniz University (not yet published)	T-PVS (2001) 72
2002	-	-	-	-	Monitoring was carried out by Akdeniz University (not yet published)	T-PVS/Files (2002) 14

TABLE 1: Summary of biological data on sea turtle nesting along Patara, 1988 - 2000

¹Nesting success (%) refers to turtle emergences that result in nests.

²Hatching success (%) refers to nests that hatched.

Three quarters (74%) of all nests have been recorded on the East side of Esençoy, which has less human impact than the West side (Erdogan *et al*, 2001). Uneven distribution was recorded even within the East side of the beach (Taskin and Baran, 2001). An intense and increasing human presence on the beach together with an unsuitable nesting habitat could justify an uneven distribution of nests within one site (Aureggi, 2001), and recreational beach equipment such as sunbeds, cabanas, and umbrellas, are physical obstacles which deter nesting attempts (NRC, 1990). The uneven nest distribution at Patara may therefore reflect the varying degree of human disturbance (mostly tourism) along the beach. Although the number of nests for nearly a decade is not alarmingly low, Patara is characterised by a low average hatching success rate (Table 2):

Nesting Beach	Period	Hatching Success - Average %
Dalyan	1988 – 1996	36%
Fethiye	1993 – 1996	70%
Patara	1990 – 1996	48%
Belek	1990 – 1996	55%

TABLE 2: Hatching success on four different nesting beaches in Turkey (data from Türkozan *et al.*, 1998).

ASSESSMENT 2003.

A field conservation assessment, commissioned by MEDASSET, was undertaken at Patara beach on the 1 - 2 August 2003 in order to assess and update the status of the nesting area. The overall impression is that **the area is not managed, with no monitoring programme or conservation project in summer 2003**. Abandoned after the progress made in previous years and the closure of the file?

The whole length of the beach (12 km) was walked in the afternoon starting from the West end to the furthest East point across the Esençoy river. During the walk observations of the nesting habitat were carefully conducted. GPS (Global Positioning System) was used to mark points while walking. Each relevant point is described as a number of kilometres, which refers to the distance from the West end of the beach (starting point).

At the beach entrance to the West side, a sign is visible highlighting the importance of the beach for turtles (Photo 1). In this area the beach is quite developed, in fact there is a camping site located in the back part of the beach and other tents are on the beach (Photo 14). **Jeeps are rented at the entrance probably for “beach driving experience”** (Photo 3). Rubbish bins are only present on the beach near a small bar. Groups of tourists are taken on to the beach, probably as part of tours, for swimming (Photo 5).

The area with human presence is limited to about 1 km at the beginning of the West side, after which the developments end and little human presence was observed. Heading East the beach has about 60m. of a wide area of compacted wet sand which is probably subjected to frequent flooding. A step, probably formed by erosion, is located in the back part of the dunes where trees (mainly *Acacia sp.*) have been planted and are now covered by sand. In fact, from the sea looking at the dune only the foliage is visible emerging from the dunes.

At different places along the beach, holes in the sand had been dug by animals, whose prints seemed to belong to wild boar (Photo 6/Photo 7), possibly looking for nests.

After two kilometres from the start point, human footprints in the sand were reduced to a few, whereas vehicle tracks were always present along this section of the beach.

After about 3.7 km the beach becomes narrow, the flooded area is reduced to about 20m width. In this area few loggerhead tracks or predated nests were seen.

At 4.3 km the beach is narrow, the *Acacia sp.* trees which are at the top of the dunes in all other part of the beach, are at the waters edge.

At 4.5 km the beach is wide again with an area of wet compacted sand of about 40 meters width. A car park is located at the back of the dune and therefore more human presence was observed. In the car park there is a sign warning of the turtle nesting protected area and giving a contact number of the Specially Protected Areas Authority (ASPA) (Photo 8). One rubbish bin is located amongst bushes, which was full and probably not emptied regularly.

At km 5 there is the Esençoy River. A relatively small population of *Trionyx triunguis* has been recorded there (Kasperek, 2001). Tents are located on the side of the river's mouth on the West side and a van bringing tourists with a canoe was seen on the East side of the river's mouth.

At km 5.37 the East side of the beach starts. The beach is wide and has *Acacia sp.* trees covered by sand at the top of the dune and a fence is still visible in some parts (Photo 13). Near the river mouth animals, mostly goats were grazing on the beach (Photo 10). In this area there is a lot of accumulated natural and human debris probably carried here by the sea and the river (Photo 9).

At km 6.5 a fresh *Caretta caretta* track was seen, going from the sea up to the highest point of the dunes (Photo 2). The wind forms a permanent wavy pattern on the beach moving the sand into semi parallel lines. For this reason only fresh tracks were visible and evident on the beach between km 6 and 10. There were signs of predation by canids.

Vehicle tracks (Photo 4), horse prints, and rubbish (Photo 11) were seen in this section of the beach together with recent loggerhead nests (Photo 12).

The last 3 km of the East section ending at a bar located on the beach, are used by people accessing partly via the back of the dunes and some accessing via the official beach entrance near the bar. The bar closes in the evening.

THREATS.

A favourable nesting habitat is critical for sea turtle reproduction and is central to the survival of sea turtle populations (Witherington, 1999), likewise favourable marine habitats where turtles spend most of their life. A Conservation Management Plan should include strategies to reduce or eliminate threats to both nesting and marine habitats.

According to information reported by different authors and from observations during the 2003 assessment, the main threats affecting the sea turtle nesting population at Patara are summarized in table 3.

Threats	
Nesting beaches	
Natural	Human
<ul style="list-style-type: none"> - Predation - Inundation - Beach erosion - Shifting sand dunes 	<ul style="list-style-type: none"> - Tourist development - Increased human presence - Artificial lights - Animal grazing - Vehicles driving on the beach - Garbage on the beach - Recreational beach equipment - Sand and shingle extraction
At Sea	
Natural	Human
<ul style="list-style-type: none"> - Natural predators - Disease 	<ul style="list-style-type: none"> - Fisheries - Dynamite fishing - Collision with boats - Pollution

TABLE 3. Threats reported and observed at Patara.

RECOMMENDATIONS.

There is an urgent need to set up a long-term sea turtle monitoring, protection and conservation programme in order to collect information to provide the cornerstone for conservation strategies. A local university or organisation should be in charge of this project. Training could be provided to local people in order to involve them and have a local team working on site, supervised by turtle experts.

Recommendations are herein suggested taking into consideration the 1996 Bern Convention Recommendations (T-PVS (96) 65), those of MEDASSET as presented in T-PVS (98) 49, recommendations made in other research and those observed during this assessment.

Table 4. monitoring of the reaction of turkey to the recommendations worked out during an on-the-spot appraisal to patara in august 1996 and presented to the standing committee of the convention on the conservation of european wildlife and natural habitats (document t-pvs (96) 65).

Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats Recommendations in Report T-PVS (96) 65	Update Report by MEDASSET 2002 T-PVS/Files (2002) 14 July - September 2002	This Report August 2003 Observations and Recommendations
<p>Ensure that the protection of the Patara archaeological site continues to prevent any human settlement behind the beach.</p>	<p>No further human settlement.</p>	<p>Development is limited to the west side of the beach where camping sites are located. A small bar on the beach is located at the eastern end of the beach but only during the day. A local person informed us about a plan for future development.</p>
<p>Enforce regulations against illegal buildings.</p>	<p>Illegally constructed buildings still in situ but no new illegal buildings.</p>	<p>Recommendations:</p> <ul style="list-style-type: none"> - Remove tents that are located on the beach near the West entrance and near the west bank of the river - Remove the bar from the beach to somewhere near the entrance - Stop any further development
<p>Control tourist flow, because too large a volume of tourists will generate numerous problems for the environment in the Specially Protected Area (SPA) and in particular for marine turtles.</p>	<p>No control measure arrangements were observed.</p>	<p>The Western and Eastern ends of the beach are used by tourists. Beach access from several points.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> - Limit the access to the beach to few places avoiding the area with high density of nests. - Set up an awareness program directed at tourists, hotel managers, tour operators and local people. - Set up an Information Centre in Patara near the beach, for the following functions: <ul style="list-style-type: none"> - a focal point for villagers and for people visiting Patara - distribution of information on the importance of conservation of sea turtles. - distribution of awareness material - reception point for comments and suggestions.
<p>Organise regular monitoring of marine turtles during the nesting season, as was done in 1996.</p>	<p>Monitoring was carried out by Akdeniz University.</p>	<p>No monitoring was carried out.</p>

Alert the local population and tourists to the importance of protecting marine turtles.	A leaflet has been produced, but not on display in the village or near the beach. A Community meeting on eco-tourism was held in September 2002.	No information
Erect a barrier in front of the car parks for the middle and the north sections of the beach and ban motor traffic from the north section.	The barrier remains in place with no access to vehicles.	No information
Erect an information sign at the end of the hillside track at the edge of the beach and ensure that a fourth way onto the beach is not formed there, draw attention to the ban on walking in the dunes.	The sign erected has been destroyed and should be replaced.	No information
Continue plantations to stabilise the dunes, particularly the hedges on the top of the first range of dunes at the back of the beach, so as to accentuate the dark side of the horizon from which the marine turtles take their bearings.	The sand dunes are relatively stable. Local people continue to use the area for picnics. Large bins have been provided.	<p>There is evidence of erosion in different parts of the beach: The dynamic dune system, where it is bereft of its natural native vegetation, inundates the exotic <i>Acacia sp.</i> that have been planted at the top of the dunes.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> - Set up a restoration project for the dunes, which aims to re-establish a Mediterranean dune ecosystem by planting native vegetation.
Ensure that no powerful, tall, seaward-facing lights are erected in the village or between it and the beach.	The flood-lights of Beyhan Hotel can no longer be seen from the beach.	The beach was not visited at night because it is closed.

TABLE 5. monitoring of the reaction of turkey to the recommendations worked out by medasset in 1998 and presented to the standing committee of the convention on the conservation of european wildlife and natural habitats (document t-pvs (98) 49).

1. Hunting – It was recommended:	July – September 2002 observations	August 2003 Observations and recommendations
To stop illegal hunting outside the hunting season.	The ban on hunting has been successful, and the bird population has noticeably increased.	The ban is still valid
To clearly mark the borders of the area in which hunting is totally prohibited.	Of the two signs erected, the one on the beach road has been removed.	No information
To extend the ban on hunting over the entire sand dune ecosystem.	More signs are needed and the old ones should be replaced.	No information
To stop illegal fishing with shotguns and dynamite.	Attempts are being made.	No information
To encourage the participation of local people and authorities in the control of illegal hunting activities.	Warnings have been issued by the police.	No information
2. Sand and shingle extraction – It was recommended:	July - September 2002 observations	August 2003 Observations and recommendations
To stop sand extraction from the sand dunes immediately.	Sand extraction has stopped.	No information
To ensure that sand extraction is controlled effectively and illegal extraction is punished.	No information.	No information

To rehabilitate damaged areas of the sand dunes.	No action taken.	No information
To make a full assessment of the loss and damage to sand dunes through sand extraction and agricultural encroachment.	Sand extraction has stopped. No further agricultural encroachment but agricultural chemicals from along the River Esen continue to impact on the area.	No information
To consider closure of the road to Çayağzı to all traffic at night (install barriers).	Barriers have been installed, with no access to vehicles.	No information
To encourage participation of local authorities and local people in the control of illegal sand extraction activities.	Sand extraction has stopped.	A local person informed us that the Ovakoy municipality is continuing to extract sand from the Esençoy river. Recommendations: Ban sand and shingle extraction from any part of the beach and near the Esençoy river.
To prepare an Environmental Impact Assessment (EIA) on the extraction of shingle from the river bed.	No apparent action.	No information
To prepare a management plan for the extraction of shingle from the bed of Eşen Çayı, taking into account the need for the conservation of the unique river landscape.	No apparent action.	No information
3. Waste disposal – It was recommended:	July - September 2002 observations	August 2003 Observations and recommendations
To immediately stop garbage disposal within the borders of the SPA.	Dumping operation has been moved to Dalamut/Gavdir out of the ASPA area.	Dumping operation has been moved to Dalamut/Gavdir out of the ASPA area.

To remove all solid waste from the sand dunes and to dispose of it in an ecologically sound manner.	Solid waste has been removed. No information on recycling process.	Solid waste has been removed for recycling. No information on recycling process.
To rehabilitate the sand dunes once the garbage has been removed.	Garbage has been removed, but no dune rehabilitation.	Garbage has been removed, but no dune rehabilitation.
To apply the "polluter pays" principle to the costs of the removal and ecologically sound disposal of the garbage.	No action taken.	No information
To co-operate with local authorities in order to avoid any future garbage disposal in the SPA.	Rubbish tip relocated outside the ASPA area.	Rubbish tip relocated outside the ASPA area.
4. Beach pollution – It was recommended:	July - September 2002 observations	August 2003 Observations and recommendations
To collect litter left by tourists on the Patara village beach, and to empty the litter boxes on a daily basis during the tourist season.	Litter is being removed regularly, but by tractor driven along the nesting beach.	The beach has rubbish bins located where there is tourist development or in the car park, but they are not regularly emptied. Rubbish, in particular plastic, was found on the East side of the beach. A lot of accumulated material was observed near the Esençoy river's mouth.
To collect litter from the north-western beach at least once a week during the tourist season.	No observed information, but reports indicate no action taken.	Recommendations: The beach should be regularly cleaned by the local municipality without using vehicles or mechanical methods. Beach cleaning can be regulated so that effect on sea turtle nests is low. Initiatives, like "a day for the environment" should be organized during the nesting season involving the local community, in particular children, and tourists to dedicate a day to collect rubbish on the beach. This would be an awareness day and would help to keep the beach cleaned.
To collect the litter around Eşen Çayı mouth on at least a 20-day basis.	No action taken.	

To consider whether to initiate a deposit system for plastic bottles, in particular to those sold by the kiosk on Patara Village Beach.	Still to be organised.	
To enhance efforts to combat illegal dumping of oil by ships along the coasts of Turkey.	No apparent action.	
To ensure that the entire beach is cleaned of crude oil after spillage has occurred.	No information available.	
5. Stabilisation of sand dunes – It was recommended:	July - September 2002 observations	August 2003 Observations and recommendations
To re-assess the need for the stabilisation and afforestation of the sand dunes to the present extent.	No additional planting and some fencing has been removed.	<p>There is evidence of erosion in different parts of the beach: the beach is subjected to constant wind action that moves the sand toward the high part of the dune and raise ridges on the beach. <i>Acacia</i> trees were planted in the upper part of the dune acting probably as barrier for the sand moved by the wind and enhancing erosion. Tall growing species increase sand deposition around them rather than stabilising the dune system as a whole.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> - Set up a restoration project for the dunes, which aims to re-establish a Mediterranean dune ecosystem, by planting native vegetation.
To consider leaving part of the sand dunes in its natural state, thus conserving some of the original, highly dynamic sand dunes along with their natural fauna and flora.	No action taken.	
To consider the replacement of alien species, in particular <i>Eucalyptus</i> spp., with local, autochthonous species.	No action taken.	

6. Livestock grazing – It was recommended:	July - September 2002 observations	August 2003 Observations and recommendations
To assess the number of goats and cows regularly grazing in the sand dunes, and their impact on the natural vegetation cover.	No apparent action.	<p>Goats were seen grazing on the beach near the Esençoy river mouth and animal footprints were found on both parts of the beach.</p> <p>Recommendations: Animal grazing should be forbidden to avoid effect on the beach characteristics and on sand dune vegetation and stability.</p>
To monitor vegetation development under grazing pressure from domestic animals.	No apparent action.	
7. Illumination of the beach by artificial lights from buildings – It was recommended:	July - September 2002 observations	August 2003 Observations and recommendations
To immediately remove the floodlight on top of the Beyhan Hotel.	Floodlight can no longer be seen from the beach.	<p>The beach was not visited in the night because it was closed.</p>
To avoid any additional illumination of those hotels and buildings which are visible from the beach.	No additional illumination. ASPA facility lights still shine at night.	
To avoid any new construction which may be visible from the beach.	No new constructions.	
To better integrate those constructions which can be seen from the beach, into the landscape, e.g. by increasing the coverage with plants, by painting the outer walls with less bright colours, etc.	Beyhan Hotel now painted green to blend in with the landscape.	

8. Visitor management – It was recommended:	July - September 2002 observations	August 2003 Observations and recommendations
To erect a barrier and ban all vehicles from the north-western beach.	Makeshift barrier still in place, but tractor still has access to collect rubbish on nesting beach.	Vehicle tracks were present on the whole beach showing that the beach is often used for driving. Beach equipment such as umbrellas and chairs were seen on the beach during the day and were not removed at night.
To strictly enforce the regulations which prohibit the access to the entire beach at night, and to prohibit in particular people from staying on the north-western beach at night.	Barrier erected. No entrance fee system this year. Entry prevented.	<p>Recommendations:</p> <p>Driving should be strictly forbidden, in particular during nesting season in order to avoid impact on nesting females and on hatching success. Driving through the dunes could also have a negative effect enhancing erosion.</p> <p>ENSURE THAT BEACH FURNITURE IS CAREFULLY REMOVED EVERY NIGHT DURING THE NESTING SEASON.</p>
To mark those areas of the beach where intensive turtle nesting occurs and to prohibit tourists from entering these areas.	Some marker sticks were put around the sites, but largely ineffective, some being removed.	There was no monitoring of nesting beaches in 2003.
9. Marine turtle monitoring and nest protection – It was recommended:	July - September 2002 observations	August 2003 Observations and recommendations
To carefully evaluate all existing information on turtle nesting on the Patara beach in order to assess population trends and protection needs, and in order to better understand the spatial use of the beach by turtles.	Evaluation of statistical information published after September 2001.	No monitoring of nesting in 2003.

<p>To continue monitoring marine turtle nesting with standard methods which allow comparison with results from previous years.</p>	<p>Monitoring carried out. Comparative data published in autumn 2001.</p>	<p>No monitoring of nesting in 2003.</p>
<p>To consider regular relocation of turtle nests threatened by inundation, to be carried out by trained turtle specialists.</p>	<p>No apparent action.</p>	<p>Along the all beach there is a wide area (it varies between 20 meters up to about 80 m width) that is subjected to frequent flooding. The sand is wet and compacted.</p> <p>Recommendations: Ideally, sea turtle eggs should incubate in the natural nest. Relocation of eggs to a protected hatchery site should be undertaken only as last resort. In the case of Patara beach, where one of the main problems is loss of nests due to inundation or sand dune shifting, it is strongly suggested to implement an egg relocation program.</p> <p>A Hatchery programme requires:</p> <ul style="list-style-type: none"> - a research team working on the beach every season (all season: from nesting to hatching). - Personnel available to guard the hatchery - Training sections for team leaders and locals - Produce a training manual on how to find eggs and to move eggs correctly, in order to minimise embryonic mortality due to handling. - Placement of a cylindrical mesh enclosure over the top of each nest to reduce entry by burrowers, such as crabs and to control predation by mammals (foxes, wild boars etc.). - Check mesh enclosures at frequent intervals (at least every hour) when nest are due to hatch. - Control hatchlings on their way to the sea - Check hatchery condition: screen temperature, kind of sand, etc. - Monitor results of hatchery (determine hatching and emergence success within the hatchery by excavating hatched nests)
<p>To continue protection of turtle nests against predation by foxes.</p>	<p>Protection largely ineffective.</p>	<p>There was no monitoring of nesting beaches in summer 2003.</p> <p>Due to the short visit on the beach and to the strong constant wind, it was difficult to identify predator species from their print left in the sand, although evidence of canid attacks on turtle nests was found and wild boar prints were observed, with holes made by them. The latter was observed in the Western part of the beach.</p> <p>Recommendations: - Initiate a hatching monitoring programme: it consists of having at least two people assigned to each nest whilst the turtles are hatching. A team of</p>

		<p>volunteers (locals, student, foreign volunteers, etc) should be trained and involved in “hatching monitoring” program. Human presence near a nest will deter dogs or other predators. In addition, crab predation on hatchlings can be reduced by following them until they are in the water.</p> <p>Costs are low, but recruitment, training and coordination of volunteers is necessary. In addition, it is assumed that there will be a research team working from the start, to identify nest positions and the date laid along the beach.</p> <p>- Individual nest protection together with hatching monitoring: it consists in protecting each individual nest with a cage or a screen. It requires an information campaign to local people and tourists alike in order to avoid human disturbance, high manpower and accurate nest mapping (by an expert). The cost involved is of the materials to produce enclosures and manpower.</p>
10. Protection of the Nile Soft-shelled Turtle – It was recommended:	July - September 2002 observations	August 2003 Observations and recommendations
To study the biology and ecology of the population, in order to get a better understanding of its conservation needs.	No apparent action.	Attention should be paid to the soft-shell turtle (<i>Trionyx triunguis</i>), setting up a monitoring programme in the area of Esençoy river.
To create artificial sand banks along the canal in order to provide nesting habitats.	No apparent action.	No apparent action.
To immediately stop the fishing with shotguns and explosives in the river and in the canal.	Attempts made, but no information regarding the success.	No information

11. Public awareness building for environmental issues – It was recommended in 1998:	July - September 2002 observations	August 2003 Observations and recommendations
<p>To produce leaflets for visitors and other sources of information in order to raise the understanding of environmental matters in the protected area, and publicise necessary restrictions.</p>	<p>No leaflet on display at beach or village. A permanent information centre at beach is under discussion.</p>	<p>No information</p>
<p>To inform local people about the environmental issues of the SPA on a regular basis, in order to enhance the understanding of protection measures, and to create pride in an unspoilt environment.</p>	<p>A community meeting was held on 7th September 2002 in order to promote eco-tourism.</p>	<p>No information</p>
<p>To integrate environmental planning into local administration.</p>	<p>Under discussion.</p>	<p>No information</p>
12. International co-operation:	July - September 2002 observations	August 2003 Observations and recommendations
<p>To link external assistance for conservation measures to progress made on implementation level.</p>	<p>Attempts are being made, but no success so far.</p>	<p>No information</p>
<p>To link external assistance to the political will of the Government of Turkey to enforce conservation measures.</p>	<p>Attempts are being made, but no success so far.</p>	<p>No information</p>

CONCLUSION.

Thanks to the past actions of the Turkish Ministry of Environment, with the intervention of MEDASSET and the Bern Convention, Patara beach is still an important nesting beach where tourist development is limited to restricted parts of the 12 km Patara beach. The area is a Protected Area (SPA) but needs to be managed with viable short and long term Management Plans to avoid any further development and sand extraction activity, and to establish conservation and protection measures.

The main problem of beach erosion which causes inundation and loss of many nests, could be solved by initiating a dune restoration programme in order to stabilise the dynamic beach/sand dune ecosystem, restoring them to a more flexible and more original Mediterranean ecosystem, mainly destroyed in the past by overgrazing and misuse of the dunes.

At the same time it would be necessary to establish a long term monitoring program, which would allow the accumulation of scientific records of the nesting population, and allow a hatchery programme, and nest caging.

These are probably the most urgent recommendations in order to preserve as many nests as possible and to reduce predation.

In parallel, conservation awareness has to be reinforced by setting up an Information Centre near the beach, and involving the local community and tourists through activities such as “a day for the environment”.

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Updated reports prepared from 1990 and published as T-PVS since 1996:

T-PVS (96) 53A: MEDASSET (*P. Yilmaz, University of Akdeniz*): Conservation of Loggerhead Turtles, *Caretta caretta*, and Construction Projects on the Beach of Patara (Turkey), 2 pages. (*Follow-up report with Comments on the: 'Status Report on Patara Specially Protected Area, Turkey' by the Authority for the Protection of Special Areas, APSA (23/5/96)*).

T-PVS (96) 53: MEDASSET: Conservation of Loggerhead Turtles, *Caretta caretta*, and Construction Projects on the Beach of Patara (Turkey), 9 pages. (*Brief Update on MEDASSET's action to "Save Patara" 1989-1996*).

T-PVS (97) 45: P. Yilmaz, University of Akdeniz: Marine Turtle Conservation in Patara, Turkey, follow-up report, 4 pages.

T-PVS (98) 49: MEDASSET (*additional information P. Yilmaz, University of Akdeniz*): Specific Site, Marine Turtle Conservation in Patara, Turkey, 13 pages.

T-PVS (99) 69: MEDASSET: Specific Site, *Caretta caretta* in Patara (Turkey), 11 pages. (*Status Report and Review of Nature Conservation Measures*).

T-PVS (2000) 57: MEDASSET, (*information supplied by P. Yilmaz, University of Akdeniz and Trevor Jones*): Conservation of the marine turtle, *Caretta caretta*, in Patara Turkey, 13 pages. (*Update Report and Review of Nature Conservation Measures*).

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ADDENDUM 1.

Subject: Patara
Date: Fri, 12 Sep 2003 11:24:29 +0100
From: "Tracey-Anne Cutbush" <ta.cutbush@virgin.net>
To: <medasset@hol.gr>

Dear MEDASSET,

I have just returned from a holiday in Patara, Turkey and thought you should know what my husband and I found there, particularly in light of many of the recommendations that have been made to improve the area's conservation concerns.

Sadly, I have to report that we were very disappointed with the lack of progress that has been made to the conditions on the beach.

Turtle Monitoring.

We were told by a number of concerned locals that there had been almost no monitoring of the turtles this year and that it was impossible to estimate the number of nests laid this summer. Indeed, we saw only 2 marked nests which were within the most popular and busiest part of the beach. **This is the first time I have seen NO marked nests outside of this area.**

We also spoke to other visitors to the area and were shocked to hear that many of them were unaware of the protected status of the area or their need for awareness of the Turtles.

Access.

The signs at the entrance to the beach are unchanged. It is totally unclear where people may or may not walk or sit without disturbing nests. On a number of occasions we saw people sitting at the back of the beach, some with umbrellas stuck into the sand - one particular couple were only metres away from a hatched nest. I am very concerned that this sign is so ambiguous and that no-one is enforcing the rules of the beach. Also, there are signs stating that it is prohibited to enter the bushed areas at the back of the beach, however we often saw people taking a short cut through these areas.

Beach Furniture.

1) **Umbrellas are still being stuck straight into the sand.** No umbrella stands are being used at all. This I do not understand as 3 years ago concrete blocks were available to prevent this however, this is no longer the case. **There is a strip of about 200m at the front of the beach in the middle of which is a marked nest. However, all around umbrellas are stuck into the sand every day.**

2) Sunbeds are still available on the beach in this 200m strip. It is the busiest and most popular part of the beach. It should also be noted that the beds still remain in a long line across the beach at night. Although they are collected up by the Beach staff, they are stacked in a long line approx 20m long and no more than 30m from the waters edge. **This is clearly a significant obstruction to nesting and emerging turtles.**

3) **Small boats are still left by the water edge overnight.**

Litter.

1) Bins are located on the beach every 20m or so within the busy 200m of the beach. We saw no vehicle tracks or vehicles collecting the rubbish in this area so assume it is done by hand. This is an improvement since our last visit. However, visitors are still very lazy regarding the disposal of their litter and regrettably often leave it on the beach.

2) Sadly, **outside the 200m area litter is a dire problem.** Every day we did a litter pick of a 200 - 300m area of the beach and were shocked to find that we filled 2/3 bags every day! Some of the items collected were: plastic bottles, used sanitary towels, plastic bags, newspapers, cigarette packets, light bulbs, glass bottles, a paint pot, plastic tubing, food packets, rags, string, discarded clothing, sun cream bottles, plastic bottle lids, and of course hundreds and hundreds of cigarette butts. **There appears to be no action taken regarding areas of the beach outside the 200m that tourist use.**

Animals.

Animals are still allowed on the beach despite the sign at the entrance stating that they are prohibited. We saw several dogs roaming freely and even one tethered up behind the Beach Bar.

Sea Traffic.

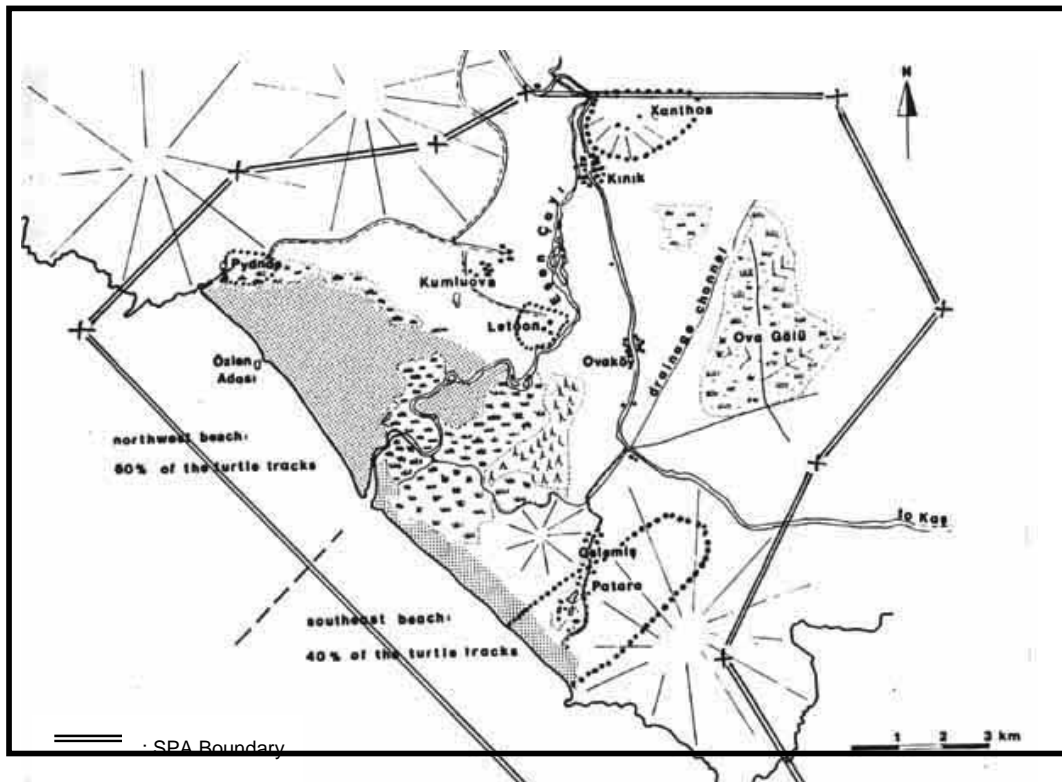
There is an increasing amount of traffic in the water which travels at some speed despite the risk of causing harm to any young hatchlings or indeed any turtle inhabitants. If the speed restriction is still recommended I doubt that it is being adhered to.

I hope that this is both interesting and useful to you. Sadly, as I have outlined it is difficult to see that there has been a great deal of progress.

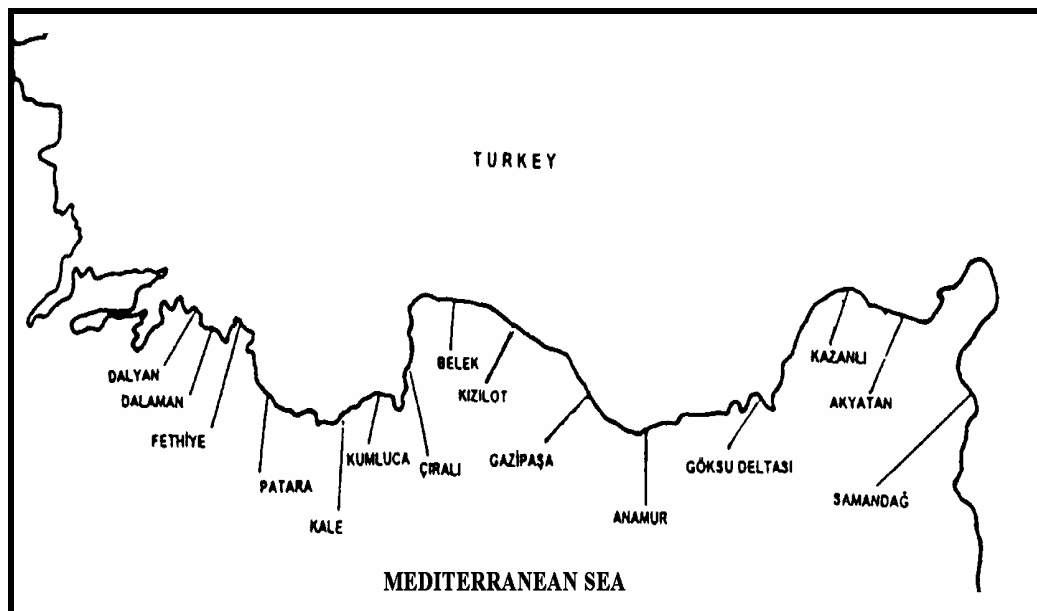
Finally, and perhaps most worrying of all I have to report that there is some excitement amongst some of the locals who seem to be under the impression that there will be a change in the protection status of Patara next year. There is a lot of speculation that development will be allowed to happen very soon in places that it has previously been prohibited. Of course, this is just talk but we have never heard this before and there is no smoke without fire.

Kind regards,

Tracey-Anne Cutbush.

ADDENDUM 2.

Map of the Patara beach and SPA. The dotted lines show the borders of areas which have been protected as "archaeological sites".



The 17 major marine turtle nesting areas of Turkey as assessed by WWF/International in 1988.



Photo 1: Sign at the west entrance to the beach.

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Photo 2: Fresh *Caretta Caretta* track.

© 2003 MEDASSET – Photo: M. Aureggi.



Photo 3: Jeeps at the west entrance to the beach.

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Photo 4: 4-wheel drive vehicle tracks on the beach.

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Photo 5: Tourist group on the beach.

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Photo 6: Wild boar print on nesting beach.

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Photo 7: Holes on the beach, made by wild boar, looking for eggs.
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Photo 8: Sign at the car park at km 4.5 and garbage bin.
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Photo 9: Accumulated derbis on the beach.
© 2003 MEDASSET – Photo: M. Aureggi.

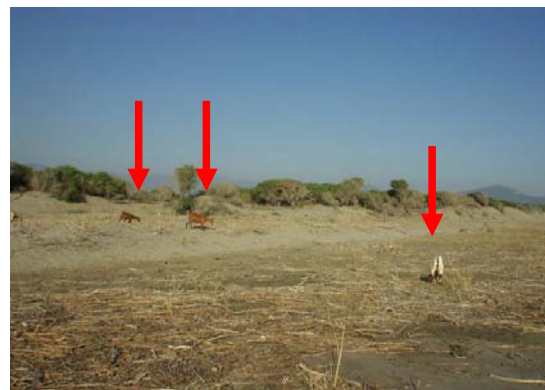


Photo 10: Goats grazing near river mouth.
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Photo 11: Rubbish, and buried Acacias in the distance.
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Photo 12: *Caretta caretta* nest amongst the roots.
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Photo 13: Buried fence at km 5.37 and wind action pattern on the sand.

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Photo 14: Camping at the back of the beach at the western entrance to the beach.

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