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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

Standing Committee

31st meeting
Strasbourg, 29 November – 2 December 2011

Other complaints

**Sea turtle mortality in the British Sovereign Base
Areas (SBAs) of Episkopi and Akrotiri
(Cyprus)**

REPORT BY THE NGOS

*Document prepared by:
Medasset and Episkopi Turtle Watch*

Marine Turtle Conservation in the Mediterranean
**Sea turtle mortality in the British Sovereign Base Areas (SBAs)
of Episkopi and Akrotiri (Cyprus)**
UPDATE REPORT BY THE NGOS

30th August 2011

Document presented by

MEDASSET and Episkopi Turtle Watch

*for the 31st Standing Committee Meeting of the Contracting Parties to the Convention on the
Conservation of European Wildlife and Natural Habitats (Bern Convention)*

Following the complaint submitted on 16 August 2010 for the 30th Standing Committee Meeting (T-PVS (2010) 16E) and the information note submitted to the Bureau Meeting on 8 March 2011 (T-PVS/Files (2011) 5E) we wish to present to the Bureau a summary of the current situation in the Episkopi Bay area regarding this issue. Annexed to this document, for the consideration of the Bureau, is the letter that was sent to Defra and the SBA with comments on the T-PVS/File(2011)3E "Report by the Government".

A. Mortality rates

From 1 January 2011 to 30 August 2011 Episkopi Turtle Watch (ETW) has recorded 21 fatal strandings on Episkopi beaches; all have been discovered and reported either by ETW volunteers or to ETW by members of the public. Seven of the 21 deaths (33%) were due to deliberate killing by an obvious blow to the head. The remaining 14 most likely died as a result of interaction with fishing nets. Nine exhibited signs of ligature marks and torn flippers. The bodies of the remaining five were discovered floating near areas where witnesses state nets had been recently removed. It should be noted that military exercises frequently take place off Episkopi beaches and that military personnel also uses the area for watersports activity. In consequence of this the area west of Curium is substantially free of underwater debris other than set nets and "ghost" nets. The latter are generally removed when discovered.

Applying Sea Turtle Stranding and Salvage Network (STSSN) standards only 1 of the 21 strandings was severely decomposed and may have died outside the area; 11 were very freshly killed and 9 were moderately decomposed (dead for a maximum of 1-2 days). Analysis of water movement (via CYCOFOS www.oceanography.ucy.ac.cy) in the days and hours preceeding the discovery of each moderately decomposed stranding confirms that, together with other circumstantial evidence, there is a high probability that each death occurred within SBA waters.

ETW has not been informed of any additional strandings discovered by the SBA Environment, Police or Customs divisions at Episkopi. A summary of the strandings since 2008 is presented in the table below.

Year	ETW	<i>Caretta caretta</i>	<i>Chelonia mydas</i>	ATW	<i>Caretta caretta</i>	<i>Chelonia mydas</i>
2008	21	9 adults (8 female), 2 sub adult	10 juvenile and sub juvenile	Unknown		
2009	26	6 adults (4 female), 1 sub adult	19 sub adult and juvenile	21	11 adults (9 female)	2 adult (1 female), 8 sub adult and juvenile
2010	33	11 adult females, 1 juvenile	21 juvenile and sub adult	19 in total (No. of each species unknown)		
2011	21 until August 30 th 2011	3 adult (1 female)	2 adult male 16 juvenile and sub adult	15 in total (No. of each species unknown)		

A total of **101 strandings** have been recorded in Episkopi since 7 March 2008. The Episkopi area coastline is 15.5km in length. While the 20 deaths recorded to date in 2011 may appear to be an improvement compared to 2010 (when 26 deaths were recorded during the same period), this would be a false conclusion, which is principally explained by the fact that no fishing occurred in the area during January to mid May 2011. The following points should be noted:

1. No fishing took place from Zapalo harbour in 2011 until mid May because of problems with silting of the harbour. No deaths were recorded in Episkopi while fishing was suspended. However, deaths resumed immediately upon the resumption of fishing, around 17 May 2011 and the first dead turtle was found on 22 May 2011. This correlation is too direct to be ignored.
2. Furthermore, during the time that fishing from Zapalo harbour was suspended, other fishing vessels were operating west of SBA waters as normal. Current flows from west to east, hence turtles killed west of Episkopi would have washed into the area. The fact that none did so for a period of five months casts considerable doubt on the contention of the Republic of Cyprus (RoC) Fisheries Department and the SBA authorities that most of the strandings on the beaches monitored by ETW originate from outside the area.
3. The rate of deaths since 22 May 2011 has matched that recorded in the period 22 May to 24 August 2010.
4. In general the deaths occur in periods of calm weather which offer good fishing conditions. During periods of high winds which do not favour the setting of fishing nets, mortality rate is low.

The evidence that deaths are occurring mainly within SBA waters and are linked to boats operating out of Zapalo Harbour is strong. ETW brought this evidence to the attention of the SBA Chief Officer who responded that he "has met with Akrotiri Community Council and made it clear that there is very strong circumstantial evidence linking fishing activity with turtle deaths and explained the sanctions available to him." No such reminder was provided to the community which uses Zapalo Harbour. All fishing boats observed by ETW committing fishing violations in Episkopi bay in the years 2006 to 2011 inclusive have been very obviously moored at Zapalo and not Akrotiri. Additionally, during its aerial surveys ETW observed that Akrotiri-based fishing boats generally tended to set nets off the south and east point of the Akrotiri peninsula (see map in Annex 2). Current flows in the area would mean that any turtles that died as a result of interaction with nets in this area would wash up on the RoC beaches rather than on Episkopi or Akrotiri beaches. Whilst we applaud the fact that the SBA is educating Akrotiri fishermen about responsible fishing, the action does not address the problem of strandings recorded at Episkopi.

In previous years Zapalo harbour has been used by a maximum of eight boats. Silting problems in 2011 have reduced this number to a maximum of four. ETW considers that it is inexplicable that the

SBA refuses to tackle the problems attributable to the operators, particularly as all of them are illegally accessing the harbour via a road which was closed by the Chief Officer of the SBA several years ago.

B. Violations of fishing regulations

Enforcement of fishing regulations within SBA waters is mainly the responsibility of SBA Customs. ETW and customs officers have worked hard to build a good relationship. Illegal fishing incidents have been observed and reported by ETW and, where possible, the customs officers have responded to them. As in previous years, violations have focused on nets set parallel to Curium beach, Tunnel beach and the Zapalo area. Observed violations have decreased in 2011, but this is in part due to reduced fishing activity from Zapalo during the year. Co-operation between ETW and SBA Customs has resulted in a small number of fines being issued to fishermen operating illegally. However:

1. The customs unit is poorly resourced and consequently illegal fishing still occurs (most recently ETW reported an offender 16 August but officers were unable to attend because of other commitments). Offenders generally have to exhibit a regular and predictable pattern of misbehaviour for the officers to have a chance of catching them. The customs team is endeavouring to mount joint operations with the Republic of Cyprus (RoC) Fisheries Department in Limassol, but that department is similarly short of resource.
2. Commercial licences are issued by the RoC and not the SBA. Licenses are issued to known repeat offenders who clearly have not been deterred by fines imposed on them. ETW proposes that an alternative sanction might have more impact, such as a suspension of the offender's licence.
3. Even with 100% enforcement of existing legislation the stranding level will remain unacceptably high. For most of the year, including two thirds of the day during summer months it is legal to set nets in very shallow water (5m) and in areas where turtles congregate. The situation is unlikely to alter without the increase of the minimum fishing depth limit and an extension of the time period it applies (currently the 5m depth restriction only applies 1 June to 30 September).

C. Co-operation with SBA authorities

ETW has consistently attempted to work with the SBAA in a constructive and friendly manner. Meetings were held between ETW and members of the SBAA environment division on 18 June 2010, 6 July 2010 and 7 July 2010. The tone of the meetings was friendly and agreements were reached:

1. To exchange specific items of information
2. To jointly conduct a turtle population survey from air and sea which would be based on protocols agreed at the meeting which took place on 7 July. Air surveys were to be funded by the SBA but mainly performed by ETW personnel due to manpower constraints within the SBA. An initial joint flight was to take place to ensure all parties were clear on protocol and procedures. Boat surveys were to be mainly conducted by SBA staff with ETW invited to participate (SBA and ETW Meeting Minutes, Annex 3).

ETW proceeded to provide all information that had been requested. Although the SBAA environment team did not reciprocate, despite a number of cordial reminders, ETW chose to continue its cooperation. Three joint flight surveys and one joint boat survey were then conducted during which ETW helped to collect survey data. The SBAA personnel involved expressed satisfaction with the level of cooperation shown by ETW; and the SBAA undertook to promptly supply ETW with a copy of the data collected during each survey. Nevertheless the SBAA failed to provide any material from the joint surveys. From late September 2010 onwards the SBAA excluded ETW from both flight and boat surveys. No explanation has been supplied for this exclusion. Throughout this period, ETW has continued to conduct conservation activities in accordance with its licence terms and has provided the SBAA with any information that it has requested in relation to these activities.

Despite several requests the SBAA has not accepted the NGOs' requests for a joint meeting and has not provided the survey results to the NGOs in order to facilitate discussion.

D. Population survey

The joint aerial surveys undertaken during July and August 2010 showed the concentration of turtles to be far closer to shore than the SBAA claims. During the joint snorkelling survey which took place close to Tunnel beach in less than 12 metres depth the SBA representative estimated that he had seen upwards of 50 turtles.

In light of the SBAA's apparent unwillingness to conduct a true joint survey, ETW resumed air and boat surveys at its own expense. Contrary to assertions made by the SBAA these have followed the protocols used by the SBAA – specifically with regard to the air survey utilising a straight line zig zag flight path and the use of GPS waypoints to mark turtle sightings. This was done for purposes of comparison and with a view to providing an enhanced combined data set, should the SBAA resume constructive collaboration. However, ETW has expressed its concerns **about the purported accuracy of this methodology** (Annex 4) and believes that the population survey by the SBA will inevitably underestimate the number of turtles present **and misstate their location**.

Since May 2010, ETW has recorded sightings on 19 flights. The number of turtles sighted ranged between 27 and 115 with an average of 57 per flight.

Sightings are adversely affected, particularly in winter, by winds causing waves and reducing water clarity. From the air the majority of sightings appear to be of large juvenile greens. The flights have been co-ordinated with boats on 6 occasions in 2011(9 August, 27 July, 26 April, 8 April, 2 March, 19 January). The boats have been directed to the centre of clusters in an attempt to verify species. On five out of six occasions the majority of turtles sighted were green juveniles. Adult greens and adult loggerheads were also sighted.

For the majority of the year the largest gatherings have been seen off the coastal area (average depths 5-20m) bounded by the west end of Curium Beach and the east end of Tunnel beach. From November to March, the location of the largest gatherings moved west towards Avdimou, Long beaches and Pissouri, and appeared to be almost exclusively comprised of green turtles. In periods of rough weather the gatherings appeared to move into deeper waters. On no occasion were the largest gatherings seen to be clustered around Akrotiri. Sighting reports during summer months from members of the public, servicemen and from the RAF helicopter rescue team based at Akrotiri support ETW's findings that the majority of turtles are seen in the areas referred to above. Most sightings reported by them were in water 5-12m deep. Boats directed to central points of clusters during ETW aerial surveys recorded depths ranging from 5 to 19 metres.

Given the inadequacies that ETW believes exist in the survey methodology (Annex 4), the aerial surveys in their current format cannot be used to determine with a sufficient degree of assurance the depths at which the sightings occur. They can only be used to provide a simple count of the number of turtles observed at the surface within a specific area. The boats ETW directed to cluster centres reported depths varying from 5 to 19 metres.

The aerial counts most likely represent a significant undercount of the total population. Weather factors dictate that air and boat surveys mainly take place early to mid morning. ETW snorkelling observations suggest that at this time of day many juveniles settle on the sea bed and are inactive. This behaviour conforms with that observed by researchers operating elsewhere within Cyprus. Unless water clarity is perfect turtles on the sea bed will not be visible from the air or from a boat.

ETW is currently refining its air and boat survey techniques and methodology with the assistance of experts in the field. The objective will be to establish the minimum populations of green and loggerhead turtles present in the area together with a maturity profile. Subject to funding availability this will form part of a larger collaborative project with researchers attached to the University of Exeter.

ETW aerial and boat survey reports and maps are available upon request.

E. Conclusion

Results from scientific studies (Kopsida et al., 2002; Panagopoulos et al., 2003; Kaska et al., 2004; Tomas et al., 2008, Casale et al., 2010, Margaritoulis et al., 2003; Casale, 2008), provide strong evidence that fishing-induced mortality is by far the most important threat for sea turtles in the Mediterranean. The results indicate over 132,000 captures per year, with probably over 44,000 incidental deaths per year, while many others are killed intentionally, the majority owing to small-scale fisheries. Casale 2011 highlights that available measures should be implemented with no further delay; and that turtle by-catch and intentional killing in small-scale fisheries should be recognized as a priority.

The local stranding co-ordinator of www.seaturtle.org (Robin Snape, Centre for Ecology and Conservation, University of Exeter) has confirmed that the stranding rate is higher than that which could be attributed to a natural death rate, particularly when considering the size classes concerned (mostly large juveniles and some breeding adults); that the stranding rate for green juveniles at Episkopi is very high for such a small coastal area and is suggestive of a significant local juvenile green foraging population. He has also joined a recent survey flight and commented on the large number of green turtles seen despite suboptimal conditions for observation. Satellite tagging results from one female green and boat sightings also suggest that the bay may also be a foraging ground for adult greens that do not nest in the area.

A preliminary conclusion that can be stated with confidence is that there is **a year round population of foraging turtles in the Episkopi area which urgently requires protection. The population is large and its size and composition are not directly linked to the relatively small nesting population in Episkopi.** In this case, the SBA, Defra and the RoC are failing to fulfil their duty to provide protection for two endangered species, despite repeated prompting. Under the Bern Convention and the Habitats Directive a duty of protection is owed to the species, not only to their habitats and nesting grounds. The SBA and Defra have acknowledged that manpower limitations prevent them from dealing with the problems without support from other parties. Despite this they have exhibited an unwillingness to effectively involve NGOs which could provide practical, academic, technical, financial and local resources necessary to successfully tackle the issue. MEDASSET and ETW wish to help and work with the SBAA, Defra and the RoC in resolving the sea turtle mortality problem.

Producing a credible comprehensive population survey is a worthwhile project which should provide a sound basis for long term effective protective measures which can benefit the entire community. We have been waiting a long time for the survey to get under way, ETW has offered all useful data, and now, not only is the process being prolonged, but the NGOs seem to have been sidelined. In the meantime turtles are dying in increasing numbers.





Both the UK and RoC have demonstrated on other occasions their commitment to sea turtle conservation and research. Defra supports protection of the species in several UK overseas territories; we request that the case of the Episkopi and Akrotiri SBA is dealt with equal care and support.

Given the adversely high numbers of turtle deaths in the area for the fourth consecutive year, we request that this case be kept under close scrutiny and be included in the 2011 Standing Committee Agenda for discussion.

We further request the Standing Committee to encourage:

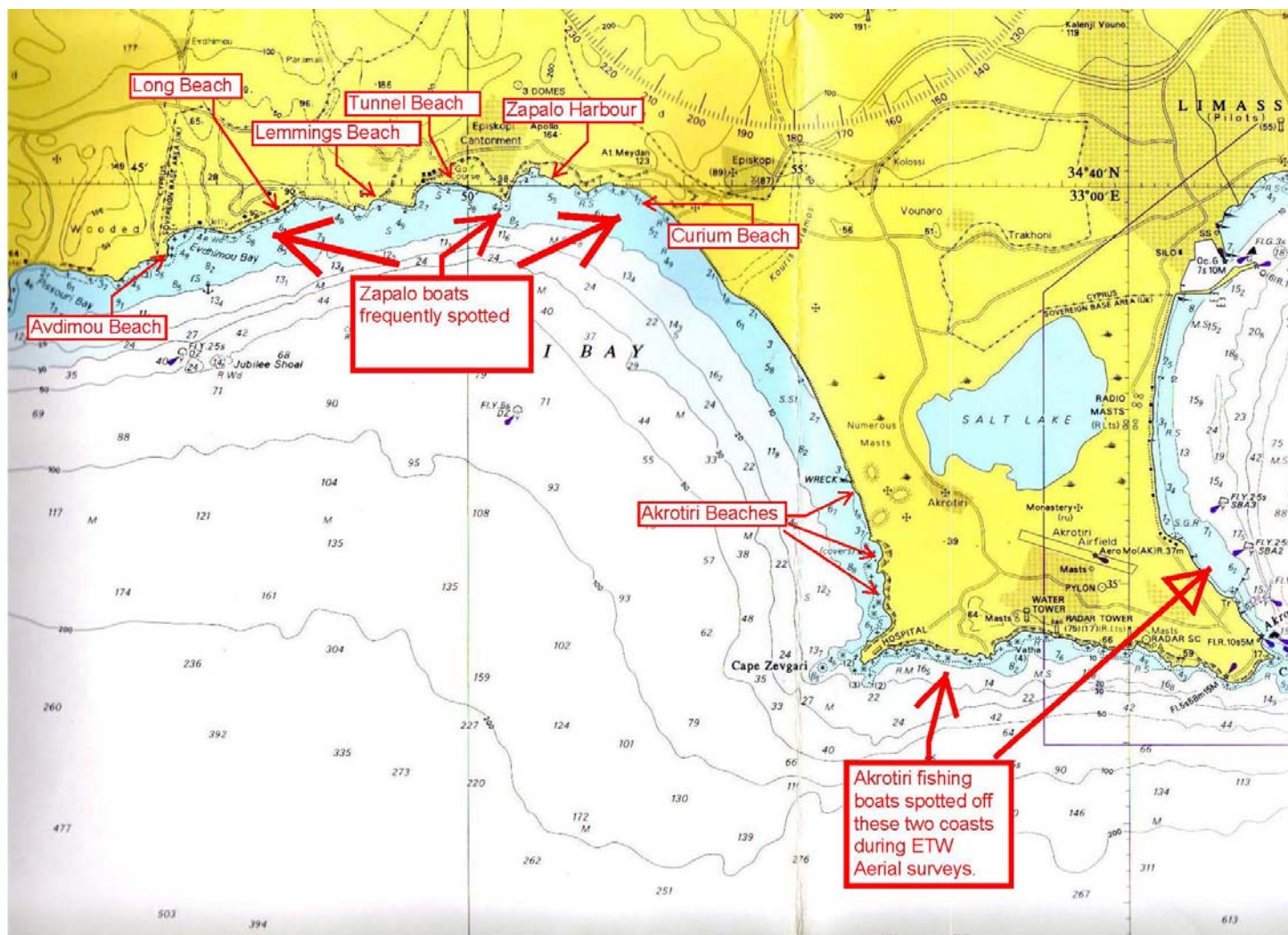
1. SBA authorities to use their regulatory and legislative powers to control fishing in designated areas.
2. That while education of fishermen is a must, implementation of stricter measures against repeatedly offending fishermen, including withdrawal of their license, should be implemented.
3. Cooperation with the relevant NGOs with a view to establishing a commonly accepted survey methodology and conclusions, should be included.
4. That in any case, the findings of the survey be shared with the NGOs.

Annex 1 - Photographs

	
<p>Photo 1: Loggerhead turtle which crawled ashore at Curium beach, on 13 July 2011, and died from its head injury</p>	<p>Photo 2: Female green turtle pulled from water in Episkopi Area on 22 June 2011 with obvious injury from deliberate blow to the head.</p>
	
<p>Photos 3 & 4: Adult male green turtle found dead in Episkopi Area on 24/08/201. Turtles are marked with spray in order to avoid double-counting. Turtle most likely died as a result of forced apnea due to net entanglement.</p>	

Note: Additional photos of recorded strandings are available upon request or can be viewed at: <http://www.seaturtle.org/strand/>

Annex 2 – Map of area and known fishing spots for boats moored at Zapalo and Akrotiri-based fishermen, documented during ETW aerial surveys



Annex 3 - SBA and ETW Meeting Minutes



Environment Department
Sovereign Base Areas Administration
Episkopi
British Forces Post Office 53
Tel: 25962482
Fax: 25816752
Email: sbaaenviro@cytanet.com.cy

Note on Meeting with Episkopi Turtlewatch held at the AEEIC on 6 July 2010

Present:

Pantelis Charilaou, SBAA Environment Department
Alexia Perdiou, SBAA Environment Department
Anneka Tait, SBAA HQ
Linda Stokes, Episkopi Turtlewatch
Ruth Baker, Episkopi Turtlewatch
Frank Lindop, Episkopi Turtlewatch
Tony Brearton, Episkopi Turtlewatch
Peter Draycott, Episkopi Turtlewatch

1. Licences

LS confirmed that the group is happy with the Protocol and expect to receive the licences. She asked for clarification in relation to live hatchlings found at excavations. It was confirmed that live hatchlings should be allowed to go to the sea.

Action: AP to prepare and send licences to Episkopi Turtlewatch.

2. Beach Patrols

There will be a single roster for beach patrols which will be prepared by LS. Any volunteers who have been doing beach patrols for the SBAA Environment Department will be incorporated in the roster.

The SBAA Environment Department would prefer to cover Evdhimou Beach from a practical point of view but agreed to work with Linda in co-ordinating efforts across all the beaches.

Action: AP and LS to liaise for updating the EPI Turtlewatch roster.

3. Track Analysis at Tunnel Beach

LS mentioned that Andreas Demetropoulos suggested that due to the nature of the sand at Tunnel Beach, nests should be located using track analysis instead of a stick. It was agreed that this should be tried next time there are tracks on Tunnel.

3. Aerial Surveys

All agreed that the Environment Department and Turtlewatch aerial surveys should be co-ordinated and a standardised route and recording format should be followed in order to get meaningful results. A separate working group will meet to discuss.

Action: PC, AP, FL and TB to meet on Wednesday 7/7/2010 to discuss details of surveys.

Outcome of meeting: It was agreed that the next surveys will follow the methodology used by the SBAA Environment Department. The Surveys will be led by the SBAA but members from Turtlewatch will be participating in the surveys.

4. Evdhimou Beach

PD pointed out that the issue of illegal driving on the beach is still a serious issue and so is the potentially illegal placing of nets. He suggested that SBAP should increase their patrols.

Action: AP to re-iterate to SBAP that Evdhimou Beach should be patrolled more frequently especially in the early morning hours and late evening hours (especially Friday evenings and Saturday mornings)

5. Diving survey

All agreed that it may not be very productive but that we will give it a try through the diving club.

6. Turtle rescues

PC mentioned that there have been six or seven instances where fishermen released turtles from their nets.

7. Excrements

In view of the fact that there is a good possibility that the excrement could come from turtles all agreed to be careful about managing expectations.

Alexia Perdiou
9 July 2010

From: Frank Lindop [mailto:franklindop@hotmail.co.uk]

Sent: 09 July 2010 16:14

To: sbaaenviro@cytanet.com.cy; Tony Brearton; ruth baker; episkopiturtlewatch@hotmail.com

Subject: MOVING FORWARD WITH AERIAL SURVEYS.

Dear Colleagues,

Following our meeting on this subject on Wed 7 Jul 10, I received a call on the 8th July from Pantalis to clarify and confirm matters discussed the day before. They are as follow:

1. ECO will fund aerial surveys.
2. It is agreed that weekly flights are appropriate irrespective of met using both Ross Chapman and Paul Jones.
3. The pattern of surveys will be the wave configuration using GPS loaned to Turtlewatch by ECO.
4. Since ECO will pay for flights they will 'lead' the survey programme, but the organisation working to Pantalis will be made by Tony and Frank.
5. At least for the first surveys a member of the ECO team will participate in order to demonstrate GPS and confirm the survey areas as discussed on 7 Jul 10. This will probably be Alexia.
6. The format of report, submitted to all concerned by the observer is tentatively agreed as that currently evolved by Turtlewatch. Reports to date will, or have already been, distributed.

Please note that Pantalis is now on leave until 22 July. He will consider the matter of surface and sub-surface surveys on his return after study of existing reports.

PS> Have a good leave Pantalis. Thanks for your time this week.

All good wishes,

Frank

Annex 4 - Comments on the Document T-PVS/Files (2011) 3 “Report By The Government” submitted to the 31st Standing Committee Meeting of the Convention on the Conservation of European Wildlife and Natural Habitats



Ms Elaine Kendall,
Head of Wild Birds, Zoos and Wildlife Crime,
Department for Environment, Food and Rural Affairs (DEFRA),
Zone 1/14, Temple Quay House,
2 The Square, Temple Quay,
BRISTOL, BS1 6EB, UK

RE: Comments on the Document T-PVS/Files (2011) 3 “Report By The Government” submitted to the 31st Standing Committee Meeting of the Convention on the Conservation of European Wildlife and Natural Habitats

29 August 2011

Dear Ms Kendall,

The Mediterranean Association to Save the Sea Turtles (MEDASSET) and Episkopi Turtlewatch (ETW) volunteer group wish to submit comments on the document T-PVS/Files (2011) 3 “Report By The Government” prepared by the Department for Environment, Food and Rural Affairs (Defra, United Kingdom) for the 31st Standing Committee Meeting of the Bern Convention. In the following paragraphs the most important inaccuracies and misrepresentations are highlighted; followed by comments on the population survey methodology and conclusions. Headings in bold type correspond to the section numbers and headings of the T-PVS/File (2011) 3; quotations from the response are in italics.

1. SBAA Fisheries Legislation

The current SBAA Fisheries Ordinance and Regulations were made in 2005.

The change to the law occurred in late December 2005. During 2005 the SBA customs authority was carrying out an active campaign against illegal fishing. The first year in which the change in regulations could possibly have had an impact on mortalities was 2006 and this was borne out by the increase to five deaths experienced in that year. In 2007 the number increased to eight.

The statement that a 5m limit during summer months is applied across the whole of Cyprus apart from Lara Bay is incorrect. A precedent already exists within the SBA for the creation of a specially protected area. A year round fishing reserve exists off the Akrotiri coastline with depth limits exceeding 5m. The reserve was created to provide a safe recreational facility for the RAF dive club. It is unfortunate that the SBA authorities are reluctant to take similar measures to protect endangered marine wildlife.

2. Nesting within the SBAs

The tables below show the nesting interest at Akrotiri and Episkopi bays.

We cannot comment on the Akrotiri figures, but those for Episkopi contain several inaccuracies and are on an inconsistent basis. For example, some years' figures include Avdimou beach; others do not. On a like-for-like basis in 2010 there were 13 nests: two were green turtle nests; the other 11 were loggerhead. In 2009 there were 17 nests, all loggerhead.

Even accepting the SBA's figures, they do not support the statement that nesting activity has increased. A single adult female loggerhead may lay between 1 and 3 nests in a season whilst a single adult female green may lay up to 5 nests in a season. Unlike the SBA, ETW have been directly involved in monitoring nesting activity in the Episkopi area for more than 8 years. ETW have seen no evidence of an increase in nesting activity during that time based on the data collected. The "rise" from 2006 onwards merely reflects the improved monitoring systems which were put in place when ETW took over as co-ordinators.

Furthermore, it is common knowledge that there is no direct link between nesting levels and the number of turtles present in an area for foraging purposes.

3. Dead turtles

The searching effort for dead turtles was intensified during 2009 and 2010. In addition to the two Turtlewatch groups which are patrolling the nesting beaches daily during the nesting period, the Environmental Wardens, SBA Police Officers, Customs Officers and Area Office Field Assistants are on the look out for dead turtles.

The increased number of dead turtles cannot be attributed to an intensification of searching efforts. ETW did not change its methods of monitoring beaches for dead turtles or the frequency of its inspections between 2005 and 2011. ETW believes that the effect of the SBAA intensified search effort on the number of strandings recorded at Episkopi has been negligible; since 2005, Environmental Wardens, SBA Police Officers, Customs Officers and Area Office Field Assistants have found 5 of the total 100 dead turtles.

"It should be noted that some information (measurements, species) is missing on some of the dead turtles either because they were only seen in the water, or were buried before any measurements were taken.

The statement is irrelevant. In the cases with missing details, photographs exist together with evidence of the disposal of the body; in the few cases where the turtles concerned had been found by the SBA environment department, they were removed for disposal and reported to ETW later without further detail. That does not change the fact that the strandings occurred and were recorded.

Also, there may have been some double counting.

This statement is untrue as far as it relates to the fatalities dealt with by ETW, which constitute the vast majority. The procedures, which are rigorously followed, include indelibly marking the carapace by spray-painting it and ensuring that carcasses are removed from the beach for disposal either by the SBA environment department or by the local municipality. This eliminates the possibility of double counting. Furthermore, ETW only record dead turtles once it can confirm that they have been brought ashore and so avoids double counting.

4. Cause of death

The main cause of death appears to be incidental entanglement in fishing nets. This includes mostly drowning and a small proportion of deliberate killings.

At least 40% of the turtles dealt with by Episkopi Turtlewatch in 2010 were deliberately killed, by an obvious blow to the head or, in one case, by deliberate drowning in a hand-held net (see Fig. 9 in Complaint for details). 40% of deliberate killings is not a small proportion.

This, however, is not an isolated problem occurring within SBA waters only, which could be rectified through modification of the existing SBAA Fisheries legislation, as recommended in the complaint. This issue should normally be the same around the whole coast of Cyprus and the whole of the Mediterranean. According to IUCN, “a recent review of sea turtle by-catch in the Mediterranean estimated over 150,000 captures per year (all species, sizes and origin combined) within the basin (over 50,000 by pelagic longlines, 40,000 bytrawls, 35,000 by demersal longlines and 30,000 by set nets) and in excess of 50,000 deaths per year”(Sea turtles in the Mediterranean, Distribution, threats and conservation priorities, IUCN Report 2010).

The IUCN report highlights the magnitude of bycatch as a threat to the survival of the species; therefore every step to mitigate the threat locally is paramount and necessary. The fact that fisheries interaction is a general, regional and worldwide problem does not mean that an identified local problem should not be dealt with by the SBAA and the RoC through conservation measures and regulation adjustments. Protecting sea turtles and their habitats in the territory under its sovereignty is an obligation that the UK and the RoC have explicitly committed to through a number of national, regional and international legal instruments.

The Report on the Republic of Cyprus within the IUCN Report indicates that set nets constitute a threat to turtles.

Casale (Incidental catch of marine turtles in the Mediterranean Sea: captures, mortality, priorities. WWF Italy, Rome, 2008), which underpins the fishing segments of the IUCN report, suggests that a conservative approach would be to consider the mortality rate induced by set nets as 60% resulting in at least 16,000 of the 50,000 estimated deaths per annum. Use of set nets is the predominant commercial fishing method used in Cyprus including the SBA.

The main cause of mortality induced by set nets is drowning due to forced apnea. Set nets have different turtle catch rates according to the depth at which they are set. Nets in shallow waters have a higher mortality rate than those set in deeper waters.

The report on nesting activity at Northern Cyprus within the same report also indicates that the incidental fisheries catch is a major threat to turtles. The report mentions that the average number of turtles caught by fishermen is 4 turtles/year/boat.

The IUCN report also states that the number of active fishing vessels is estimated to be 180 and the mortality rate associated with capture is 10%. This produces an annual estimate of 72 deaths. Within the SBA it is doubtful that the number of fishing vessels exceeds 20 and yet despite this and a much smaller coastline between them they produced 60 deaths in 2010 (number reported in T-PVS/Files (2011) 3 “Report by the Government”). We see this as positive proof that there is a problem that requires addressing within the SBA rather than evidence that the situation merely reflects what happens elsewhere.

5. Addressing the issue

In an effort to adequately address the issue of sea turtle deaths in Episkopi the following facts need to be recognised by DEFRA and SBA Authorities:

- Sea turtles are not uniformly distributed across the Mediterranean (nor are fishing methods standardised) and hence suggesting that introducing any fishing legislation can only have a positive impact if they are applied in a uniform manner across Cyprus and the Mediterranean as a whole **is false**. Catch levels are highest where concentrations of turtles exist and this is where protection methods should be applied taking into consideration the fishing methods and gear employed in the area.
- The older the turtle is the higher its reproductive value and the greater the impact its death has on the long term viability of the population. All deaths recorded in the SBA are of large juveniles and adults in the neritic stage. Turtles in this stage are ranked as the most important – a ranking, which Casale states is likely to be particularly apt in the Mediterranean.
- Atlantic juvenile loggerhead turtles are abundant in the western Mediterranean (in many areas they outnumber the genetically separate Mediterranean loggerheads) and form a large element of

the catch figures quoted in the phrase taken from the IUCN report. Their capture and possible death is regrettable but does not impact upon Mediterranean nesting populations. Deaths of adult loggerheads in the eastern Mediterranean are deaths of turtles from the Mediterranean stock which do impact the Mediterranean population.

- Genetic studies of loggerheads show a population substructure within the Mediterranean with limited gene flow amongst groups of rookeries such as Greece, Cyprus, Turkey and Israel. Hence the loss of females from one nesting site including those within the SBA cannot be easily compensated for. Nearly a quarter of all recorded deaths in the SBA in 2009 and 2010 were of adult female loggerheads. The inference that Casale and others draw from the existence of a population substructure is that each nesting site should be treated as an independent management unit.
- Green turtles of all ages are concentrated in the Eastern Mediterranean basin. They are thought to be genetically distinct from Atlantic green turtles. A study which seems likely to confirm this is in progress. The population of turtles nesting annually in the Mediterranean is estimated to consist of just 339-360 *Chelonia mydas* (Broderick et al, 2002). In 2011, to date, five female turtles of near breeding age have died in Episkopi waters.

The claim that the change in the depth for casting fishing nets from 10 to 5 metres caused an increase in deaths, is based on the wrong assumption that the limit changed in 2008 whereas in reality it was in force in 2005, 2006 and 2007 when Turtlewatch reported very few deaths.

As has been pointed out in point No.1, the new limit was not in force in 2005. In 2006 and 2007 the level of deaths started to increase. Turtlewatch volunteers first started seeing regular fishing at the 5m depth (and below) from September 2007 onwards.

Additionally, in order to establish the trends in deaths a consistent methodology is required. This only took place in the last two years as far as the SBAA can confirm.

This is untrue. Episkopi Turtlewatch has applied a consistent methodology since 2005.

Furthermore, the preliminary results of the turtle survey undertaken by the SBAA Environment Department indicate [...] hatchlings.

There was an agreement (minuted by the SBA) that the surveys (which were an initiative of Episkopi Turtlewatch) would be carried out on a joint basis and that information would be shared. During the 4 joint surveys conducted in July-August 2010, the SBA environment officers stated that they were happy with the methodology and with ETW's co-operation and support. However, since September 2010, SBA authorities excluded ETW from surveys without any explanation and, despite several written requests, have declined to make available the data collected and the results of the surveys (including the data collected during the joint surveys).

In view of the above ETW cannot comment on the results stated until it is granted access to this information.

At a meeting between SBAA and ETW on 7 July 2010 a new survey methodology was devised by the SBAA based on the input and experience of both parties. The findings of the two experimental flights conducted by ETW prior to 7 July 2010 played an important part in this. It is disappointing that the SBAA has chosen to ignore ETW's input and co-operation.

As noted in point 4 the mortality rate of set nets decreases as the depth at which the net is set increases. To suggest that a move from 5m to 10m would be harmful is to ignore a wealth of scientific research conducted in the Mediterranean which points to the contrary. Indeed whilst the NGOs have requested a reinstatement of a 10m limit, ETW would in fact prefer a 20m one. A 10 m limit was suggested only as a compromise on the basis that it might be easier for the SBA to persuade local fisherman to adhere to a limit which had existed in the recent past.

A summary of actions undertaken by SBA Police, Customs and Environment Department during the 2010 turtle nesting season is presented below [...]

However well-intentioned these efforts may have been, they have proven to be ineffective, which suggests that the effort is misdirected.

It is noteworthy that during the period from 27 December 2010 to 21 May 2011 (inclusive) no dead or injured turtles were found on the beaches we cover or in the sea off these beaches. This is the longest death-free period since 2007 (in each of 2008, 2009 and 2010 the longest death-free period was two months). The lull in mortalities coincided with Zapalo harbour being unused by fishing boats during early January to 17 May 2011 (we believe that this was due to silting up). However, fishing from other harbours did continue.

Unfortunately the reduction in the level of deaths proved to be no more than temporary. Fishing resumed from Zapalo harbour in mid May and after the first weekend of good weather turtle deaths resumed with a vengeance. Details of the 2011 deaths will be presented in the upcoming report to the Bern Convention.

A factor in the disagreements on estimated time and probable location of death may be the lack of training and experience on the part of SBA environment staff. On 13 July 2011 a turtle crawled ashore at Curium Beach alive but badly injured from a deliberate blow to the head. It died shortly afterwards in the presence of 100 people including off duty SBA policemen and an ETW volunteer who was called to attend to it. A member of the SBA environment team, who has attended many of the strandings in the area, later arrived to remove the body and stated that the turtle must have been dead for at least a day because its eye was bulging (under STSSN standards bulging eyes can be a sign of moderate decomposition: however, they are also to be expected when a turtle has been hit on the head). ETW has informed the SBA environment team of its concerns regarding the need for further training of the members of the SBA team who are not biologists, but has not yet received an acknowledgement.

6. Population Survey

ETW wishes to express its concerns about the purported accuracy of methodology used in the population survey:

1. The aircraft is moving at high speed rather than hovering, as it is not a helicopter. There is a delay between sighting and logging a waypoint with the manually-operated GPS. During this period the aircraft has moved away from the point at which the turtle was sighted. ETW has undertaken several exercises to determine the extent to which the GPS point logged from the air can be deemed accurate. The tests have been as follows:
 - a. Waypoints of fixed landmarks have been taken at ground level. Waypoints of the same landmarks have been taken from the air flying at the same altitude and speed and in the same plane as that used for surveying.
 - b. Combined air and boat surveys have been undertaken. During these the boat has been directed to the centre of turtle clusters seen from the air. The boat has taken GPS readings at these centre points. These have been compared with GPS readings taken from the air.

In each instance there was a substantial difference recorded between the accurate GPS co-ordinate at ground level and that recorded in the plane. The differences ranged from 0.6km to 1.6km. The flight pattern used means that most distortion occurs in respect of distance from shore rather than distance along the shoreline.

2. In its response to the complaint submitted to the Bern Convention, the SBA appeared to suggest that waypoints were taken immediately above a sighted turtle. Even if the time delay in recording is ignored, this is factually inaccurate. The SBA creates a waypoint when it sees a turtle which is in sight of the aircraft. Objects immediately below the aircraft cannot be seen because the fuselage obstructs the view. The turtle may be several hundred metres away.
3. We would expect the ETW and SBAA flights to produce broadly similar (if geographically inaccurate) results but based on the original response submitted by the SBAA it seems that they

do not. ETW considers that that is because of deficiencies in the methodology used by the SBAA:

Best practice in conducting flight surveys requires that there is a dedicated data recorder in addition to the observers. The data recorder should not double up as an observer. This is because several seconds pass in logging a GPS point and other data during which the recorder cannot possibly be observing. The speed of travel means that a person fulfilling a dual function will unavoidably miss sightings. The number missed will naturally be increased in areas where density is highest. ETW has undertaken 18 flights separately from the SBA. All have featured a dedicated data recorder and an observer for each side of the aircraft. ETW understands that the SBA has undertaken 13 flights. Of these it knows that a minimum of 5 have been undertaken with one person acting as data recorder and sole observer combined.

7. Conclusion

It is disappointing that Defra devote more energy and resource to disparaging the complaint and denying that there is an issue than they devote to dealing with the issue. The SBAA do not seem to appreciate that the NGOs are not interested in scoring points but in working to resolve this important issue of turtle deaths. ETW had hoped that the meetings of 6 and 7 July 2010 and subsequent joint survey outings represented the start of a mutually cooperative and productive relationship. Unfortunately this has proved not to be the case despite ETW's best efforts.

MEDASSET and ETW hereby request once more that a joint meeting be organised by the SBAA - including the 3 involved NGOs (ETW, MEDASSET and Terra Cypria), the RoC and Defra - at which the SBAA survey results can finally be disclosed to the NGOs and the case thoroughly discussed in order to seek a solution through consensus.

Yours sincerely,

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