TERN TRAPPING ALONG THE SENEGALESE COAST

DE VANGST VAN STERNS IN SENEGAL

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ABSTRACT

This paper reports the trapping of terns along the Senegalese coast in the 1990s. In spite of earlier education programmes, trapping of terns still seems a common habit in Senegal. During the winters of 1996 and 1997, a total of 210 rings was found, mainly in bracelets and necklaces. About 80% of the rings originated from the British Isles, The Netherlands and Belgium. The species most affected was the Sandwich Tern. It is estimated that at least 500 Sandwich Terns and an additional 500 terns of other species are annually caught along the coastline of Senegal. This estimate, however, is extremely optimistic. The actual number of terns trapped in Senegal is probably much higher, possibly even a tenfold of this. Tern catching is still believed to be an important mortality factor for these vulnerable species.

INTRODUCTION

The trapping of terns in the West African wintering areas has received much attention during the 1970s and 1980s (Mead 1978, Dunn 1981, Meininger & Boerma 1988, Staav 1990). These authors all report of local boys trapping terns by means of nooses or lines with hooks, baited with fish. Although some of the birds are killed to serve as food, it seems that most terns are caught for fun. Rings are of little interest for the children. Some take the trouble to hand them over to the local authorities, most of the rings, however, are probably thrown away or lost. Sometimes the rings are being fashioned into bracelets and necklaces. It appears from the above-mentioned papers, that along the coasts of Ghana, Senegal, Mauritania, Ivory Coast, Sierra Leone, Togo and Liberia, many thousands of terns were caught annually in these years. Hence, tern catching was

Table 1. Origin of terns and tropicbirds found in Senegal between 1 November 1996 and 31 December 1997.
Tabel 1. Herkomst (ringplaats) van sterns en keerkringvogels gevonden in Senegal van 1 november 1996-31 december 1997.

Country *land*	rings	%
United Kingdom & Ireland	75	35.7
The Netherlands	71	33.8
Belgium	22	10.5
Denmark	11	5.2
Italy	9	4.3
Spain	5	2.4
Germany	5	2.4
Estonia	4	1.9
Sweden	3	1.4
Senegal	2	1.0
Russia	1	< 1
Norway	1	< 1
Finland	1	< 1

believed to be an important mortality factor, in particular in juvenile terns. Since the 1980s, several education programmes have been started to discourage the trapping of terns. In Ghana this was effective, but for most other countries it is not known whether these programmes actually worked. Ring recoveries indicate that the trapping of terns has not completely ceased since then (Becker & Wendeln 1996, Stienen & Brenninkmeijer 1996), but the present extent of this practice remains unclear.

In 1991, the French BirdLife Partner 'Ligue pour la Protection des Oiseaux' (LPO) and the National Parks Authority of Senegal started a project to raise awareness amongst school children for the problem of tern catching. The project was funded by the Dutch and Swiss BirdLife Partners ('Vogelbescherming Nederland' and 'Association Suisse pour la Protection des Oiseaux', respectively) and the Dutch nature conservation society ('Vereniging Natuurmonumenten'). Project members of the LPO came across many Senegalese people (mainly children) wearing 'jewellery' made of rings. A search along several beaches led to the finding of many more rings. These recoveries are one of the few tools at our disposal to estimate mortality caused by tern catching.

RESULTS

The results of these searches were shocking. From November 1995 until December 1997, we found a total of 210 rings of terns and other seabirds. The rings originated from colonies scattered all over Europe; only a few birds were

Table 2. Number of Sandwich Terns ringed as a chick on Griend in 1990-97 and reported in Senegal.
Tabel 2. Aantal Grote Sterns geringd als kuiken op Griend in 1990-97 en teruggemeld uit Senegal.

Ringing year *Jaar van*	number ringed *aantal geringd*	Recovery *terugmelding* 1995	1996	1997	Total *totaal*
1990	150				0
1991	871				0
1992	2225				0
1993	1026				0
1994	3419	2	7	1	10
1995	3172		6	6	12
1996	2750		16	9	25
1997	2497			3	3

ringed in Senegal (Table 1). The vast majority (80%) of the rings originated from the British Isles, The Netherlands and Belgium. Of the 151 recoveries for which the ringing details are already known, 123 (81%) concerned Sandwich Terns *Sterna sandvicensis*, 22 (15%) Common Terns *S. hirundo*, 4 (3%) Roseate Terns *S. dougallii*, 1 (< 1%) Caspian Tern *S. caspia* and 1 Red-billed Tropicbird *Phaeton aethereus*. These figures lead to the alarming conclusion that the catching of terns seems still a common habit in Senegal, the Sandwich Tern probably being the most affected species. Observations on little boys trapping terns in Hann (near Dakar) and Kayar (fishing harbour 60 km from Dakar) confirmed that in particular Sandwich Terns are trapped.

It is, however, of utmost importance to assess the magnitude of this problem. How many birds are actually caught and will this have any serious consequences for the population size? Regrettably, it is impossible to say which proportion of the rings is reported. It is therefore impossible to calculate the exact numbers annually caught in Senegal. Nevertheless, we can calculate the minimum number of casualties assuming that all birds killed with rings were reported to the members of the LPO team, in particular for the Sandwich Tern, the most affected species. Many recoveries of this species originated from Griend (53°15'N, 5°15'W) in the Dutch Wadden Sea. For the period 1990-1997 we know exactly how many chicks were ringed in this colony and how many ringed chicks actually fledged. From Table 2 it can be seen that only one tern older than 2 years was found, whereas all other birds from Griend (N = 49) were of younger age when reported. This suggests that in particular young birds were caught. Nevertheless, it is surprising that no rings of terns ringed in 1990-1993 were found. Exactly from this period one should expect relatively high numbers of recoveries. Terns from these cohorts were exposed to trapping for 4-7 years in succession, including the first years of their lifes, whereas terns ringed in later

Table 3. Proportion of Sandwich Tern fledglings and adults ringed on Griend and caught in Senegal.

Tabel 3. Percentage jonge en volwassen Grote Sterns op Griend geringd en gevangen in Senegal.

Year of ringing *jaar van ringen*	Numbers ringed *aantal geringd*	Numbers found *aantal gevonden*	Percentage *% gevonden*
Fledglings *jongen*			
1994	986	6	0.6
1995	1292	6	0.5
1996	774	7	0.9
Total	3052	20	0.6
Adults *volwassen vogels*			
1994	73	1	1.4
1995	82	1	1.2
1996	111	0	0.0
Total	266	2	0.8

years were exposed to trapping for a relatively short time. This suggests that only recently obtained rings were handed over to the French BirdLife Partner. Possibly, older rings were already lost or people were not willing to report them. We therefore included only chicks ringed in 1994-1996 in the analysis. Birds ringed in 1997 were omitted from the analysis since our searches only lasted until December 1997. To avoid unrealistic biases of differences in age composition of the ringed chicks, we selected only those ringed chicks known to have fledged (i.e. more than 18 days old when last measured). During the LPO expedition, 0.6% (0.5-0.9%) of these fledglings was found (Table 3). The 1996 cohort appears to be the most affected. This is surprising because these fledglings were present along the African beaches for a relatively short time compared with other cohorts. Taking the differences in exposure time into account (3, 2 and 1 years for birds ringed in 1994, 1995 and 1996, respectively), on average 1.3% of each cohort is caught before reaching maturity, corresponding with an average annual proportion of 0.4%. Applying this figure to the total European population (50,000 breeding pairs according to Rose & Scott 1994) and assuming an average reproductive success of 0.7 fledglings per pair (Brenninkmeijer & Stienen 1992) the outcome is that about 450 individuals of each cohort are killed within three years from fledging. When they survive the first three years of their life, terns are still in danger of being trapped. Although the figures in Table 2 suggest that young birds are particularly attracted towards feeding on exposed baits, we also came across 2 rings of adults caught on their nest on Griend (Table 3). Although the sample size is extremely small, they amount to 0.8% of the adults ringed on Griend. Taking the differences in

exposure time into account 0.4% of the adults were trapped annually. Interpolating this figure to the total European population leads to the conclusion that additional to the 150 juveniles approximately 350 adult Sandwich Terns are caught annually.

The ring recoveries indicate that Sandwich Terns are not the only victims of this practice. According to Delaporte & Dubois (1990) Sandwich Terns comprise 54% of the total number of wintering terns (both *Sterna* spp and *Chlidonias* spp) in Senegal. Apart from Little Terns *S. albifrons,* which are far too wary to be caught (Dunn 1981), there is no reason to assume that Sandwich Terns are more easily caught than other tern species. This implies that additional to the 500 Sandwich Terns about 500 terns of other species are caught annually along the Senegalese coastlines.

DISCUSSION

During the past years, large numbers of terns have been ringed at the British Isles, in The Netherlands and in Belgium. It is therefore not surprising that most reports of terns originated from these countries. On the other hand, countries like France, Sweden, Norway and Finland either hold low numbers of terns (in particular Sandwich Terns) or practically no terns have been ringed in these countries. Sandwich Terns from various European countries have a very similar wintering distribution (Müller 1959, Møller 1981). It was therefore remarkable that whenever a bracelet or necklace was found, it often contained several rings of the same colony, suggesting that terns of a particular colony are more or less clumped together in the same wintering area.

Our calculations must be interpreted as extremely optimistic, since they suppose that all killed birds with rings were reported to the French BirdLife Partner. This seems very unlikely, since our searches did not cover the complete Senegalese coastline and we only reached a small proportion of the population through this project. Without any doubt a considerable part of the rings was already thrown away and certainly there is some reservation among the people to hand over the rings. Unfortunately, it is impossible to estimate the proportion of rings that was reported and it is therefore impossible to calculate the exact number of terns being caught. Meininger (1988) estimated that in the 1980s 5000-20,000 terns were caught annually in Senegal. It is well possible that also at present several thousands of terns are the victim of tern trapping along the West African beaches. If for example only 50% of the rings were reported, the conclusion would be that about 1900 terns are being caught annually in the 1990s. Our own judgement would be that the proportion reported was even lower, probably about 10%, which corresponds with almost 10,000 terns.

Since ringing studies are one of the few tools for yielding insight into the mortality of terns along the West African coastlines, we recommend that such studies are continued and extended to other countries. Furthermore, it would be interesting to know whether in particular juveniles or undernourished terns in poor condition are selected. One would for example expect that inexperienced juveniles (their fishing success being much lower than that of adults: e.g. Dunn 1972) are more inclined towards feeding on exposed baits. Moreover, the proportion of terns wintering above the equator is much larger in juveniles than in adult Sandwich Terns (Müller 1959, Møller 1981). Since trapping of terns is most practised in African countries situated above the equator, juveniles are probably most affected. In fact Dunn (1981) found that in particular young terns are trapped in Ghana. Also the figures presented in Table 2 suggest that in particular young birds are being trapped. On the other hand, we found that the proportion of adult birds trapped relative to the number ringed was the same as in immatures in Sandwich Terns. However, our sample size of adult birds trapped was extremely small, possibly resulting in a too high estimate of the annual proportion of adult birds being trapped.

Tern trapping was mainly observed near fishing harbours, where it was linked with fishery activities. Dunn & Mead (1981) showed that recovery rates of Common and Sandwich Terns in Ghana varied with sardine abundance. Fishery activities attracted the terns towards the shoreline, where they fed on offal thrown overboard and fish escaping from the nets. The arrival of the fish also meant fresh supplies of bait for the boys cathing the terns, thus resulting in an increased trapping pressure. Likewise, some of the variation in trapping rates we found in Senegal could arise from annual variation in bait fish abundance. Possibly, 1990-1993 was a period of fish scarcity, wich could explain why no terns from these cohorts were reported being trapped.

We conclude that at present time at least 1000, but probably much more, terns are caught along the Senegalese coast annually. Since these birds have almost no economic significance for the local inhabitants, it can be considered as a total waste. More and better education programmes and conservation measures should be taken to protect the terns in their wintering areas. Present education programmes probably reach only a minority of the boys responsible for trapping, while the impact of the programmes is probably only short lasting. Not only the Senegalese government, but also European governments should feel responsible for the safety of the terns in Africa. Terns spend two-thirds of their life in West Africa where, besides trapping, a strong increase in commercial fishery is a potential threat for these vulnerable species.

SAMENVATTING

In de jaren zeventig en tachtig kreeg het vangen van sterns in de Afrikaanse overwinteringsgebieden grote aandacht. Er kwam vast te staan, dat jaarlijkse vele duizenden sterns werden gevangen langs de kusten van Ghana, Senegal, Mauretanië, Ivoorkust, Sierra Leone, Togo en Liberië. De sterns werden vooral gevangen door de plaatselijke jeugd met strikken of haakjes, waarbij een visje als aas diende. Dit vangen gebeurde voornamelijk voor het plezier; slechts een gering gedeelte van de gevangen sterns diende als voedsel voor de plaatselijke bevolking. In verscheidene landen zijn maatregelen getroffen om het vangen van sterns te ontmoedigen, maar van de meeste landen is niet bekend of deze maatregelen werkelijk hebben geholpen. In 1991 is de Franse vogelbescherming LPO (Ligue pour la Protection des Oiseaux) gestart met een project om het vangen van sterns langs de Senegalese kust te ontmoedigen. Via dit project kwamen de leden van de LPO een groot aantal mensen tegen, die armbanden en halskettingen van ringen droegen. Het merendeel van deze ringen (80%) was afkomstig uit Engeland, Nederland en België. Dit is niet zo vreemd, want in deze landen worden jaarlijks grote aantallen sterns geringd. De meldingen betroffen voornamelijk Grote Sterns (82%), maar er werden ook Visdieven, Dougalls Sterns, Reuzensterns en zelfs een Roodsnavelkeerkringvogel aangetroffen.

Een belangrijke vraag in dit verband is: hoeveel sterns worden er nu daadwerkelijk gevangen en is dit een serieuze bedreiging voor het voortbestaan van deze soorten? Aan de hand ringterugmeldingen afkomstig van Grote Sterns die zijn geringd op Griend, is berekend dat jaarlijks respectievelijk 0.4% en 0.4% van juveniele en adulte sterns wordt gevangen in Senegal. Dit komt op Europese schaal neer op ongeveer 500 Grote Sterns. Aangezien Grote Sterns ongeveer de helft uitmaken van het totaal aantal overwinterende sterns in Senegal, worden er dus jaarlijks ongeveer 1000 sterns gevangen. Dit is echter een zeer optimistische berekening, waarbij er vanuit is gegaan dat de plaatselijke bevolking alle ringen ook daadwerkelijk heeft ingeleverd. Dit is echter hoogst onwaarschijnlijk, omdat slechts een beperkt aantal plaatsen is bezocht door de leden van de LPO. Daarnaast zijn ongetwijfeld niet alle ringen bewaard en zal een aantal Senegalezen hun ringen niet hebben ingeleverd. Het aantal gevangen sterns ligt dus waarschijnlijk veel hoger. Helaas is het niet te achterhalen welk percentage van de ringen is ingeleverd en zal het werkelijke aantal gevangen sterns onbekend blijven. Het is echter goed mogelijk dat slechts 10% van de ringen is ingeleverd. Dit zou betekenen, dat er in Senegal jaarlijks ongeveer 10.000 sterns worden gevangen. Het blijft echter altijd gissen naar het werkelijke aantal, maar het is in ieder geval duidelijk geworden, dat er nog steeds aanzienlijke aantallen sterns worden gevangen. Dit vraagt om meer en betere voorlichting en beschermingsmaatregelen voor deze kwetsbare soorten.

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Yellow-legged Gulls *Larus cachinnans Geelpootmeeuwen (photo M.F. Leopold)*