

RESULTS OF MONITORING OILED AFRICAN PENGUINS
SPHENISCUS DEMERSUS FOR THREE YEARS AFTER
 THE APOLLO SEA INCIDENT OF JUNE 1994

DE OVERLEVING VAN VRIJGELATEN ZWARTVOETPINGUÏNS GEDURENDE
 DRIE JAREN NA HET INCIDENT MET DE APOLLO SEA IN JUNI 1994

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Op 20 juni 1994 verging de erstanker Apollo Sea voor de kust van Dasseneiland (Zuid Afrika). Ongeveer 10 000 Zwartvoetpinguïns werden met olie besmeurd en de meeste van deze vogels werden in een Zuid-Afrikaans opvangcentrum ondergebracht. Van deze pinguïns stierf 54% en ongeveer de helft van de sterfte vond plaats binnen 48 uur na het verzamelen. In totaal 5213 Zwartvoetpinguïns konden na behandeling worden vrijgelaten en hiervan werden 4076 exemplaren uitgerust met een genummerd merkteken op de flipper. In dit artikel worden de resultaten besproken van het onderzoek in de kolonies van Dasseneiland en Robbeneiland, dat tot doel had de overleving van de gerehabiliteerde pinguïns vast te stellen. In figuur 1 is in drie uitzettingen het aantal pinguïns cumulatief weergegeven dat (1) vanaf 1 maand na vrijlating werd gezien, (2) na juli 1995 en (3) na juli 1996 werd waargenomen. Tot en met juli 1997 werden in totaal 2792 verschillende pinguïns teruggezien (68.5% van het vrijgelaten totaal). Deze vogels waren dus tenminste een maand na vrijlating nog in leven. Het aantal verschillende pinguïns dat werd teruggezien na juli 1995 en juli 1996 bedroeg respectievelijk 2353 (57.7%) en 1548 (38.0%). In figuur 1 kan worden afgelezen dat tot 30 juni 1995 in totaal 1745 verschillende pinguïns waren teruggezien. In het jaar daarna werden nog eens 891 verschillende exemplaren voor het eerst teruggezien en vervolgens werden nog eens 156 pinguïns voor het eerst teruggezien tussen juni 1995 en juli 1997. Ofschoon het aantal 'nieuwe' pinguïns nu steeds kleiner wordt, zijn nog steeds niet alle nog in leven zijnde Zwartvoetpinguïns teruggezien. Dit bleek uit het bezoek aan Robbeneiland in juli 1997, toen 13 van in totaal 42 gemerkte pinguïns nog niet eerder waren gezien. Het onderzoek beperkt zich bovendien tot Dassen- en Robbeneiland, terwijl een deel van de oorspronkelijke olieslachtoffers van andere kolonies afkomstig is geweest. In het tweede en derde jaar van onderzoek werden 2353 verschillende pinguïns teruggezien, waaruit blijkt dat liefst 84.3% van de vogels die tenminste een maand hadden overleefd nog steeds in leven waren. Het project bewijst dat er na de vrijlating van de pinguïns geen massale sterfte is opgetreden. In vergelijking met onderzoek naar de overleving van met olie besmeurde zeevogels elders in de wereld steken de resultaten van het Zuid-Afrikaanse werk aan Zwartvoetpinguïns dus buitengewoon gunstig af. De opvang en rehabilitatie van met olie besmeurde Zwartvoetpinguïns kan worden beschouwd als een belangrijke bijdrage aan de bescherming van deze bedreigde vogelsoort.

The African Penguin *Spheniscus demersus*, endemic to South Africa and Namibia, is a globally near-threatened species which has suffered a 90%

decline in population during the 20th century (Collar *et al.* 1994, Crawford & Whittington 1997). Important factors in the decline include (1) egg collection (ceased in 1967), (2) disturbance of breeding colonies during guano collection (ceased during 1980s), (3) vulnerability to predation and temperature fluctuations because removal of guano resulted in destruction of burrow nest-sites and forced birds to nest in exposed sites (ongoing), (4) competition with fisheries and seals for food (ongoing), (5) competition with increasing seal populations for breeding space (ongoing), (6) oil spills in the inshore marine environment (starting in the 1950s, but mainly since the 1970s; Rand 1952, 1969, Rowan 1969 Westphal & Rowan 1969, Randall *et al.* 1980, Morant *et al.* 1981, Crawford *et al.* 1990, Adams 1994, Barrett *et al.* 1995, Underhill *et al.* in press). As a flightless, swimming bird, the penguin is especially susceptible to any impairment of the waterproofing and insulative properties of its plumage.

On 20 June 1994, the *Apollo Sea*, a bulk ore carrier, sailed from Saldanha Bay, Western Cape (South Africa). Within hours the ship broke up and sank near Dassen Island (Erasmus 1995). Bunker oil on Dassen and Robben Islands contaminated about 10 000 penguins (Dehrmann 1994a, b, Oatley 1995). Most were taken to the cleaning station of the South African National Foundation for the Conservation of Coastal Birds (SANCCOB) (Moldan & Westphal 1994). About 54% of the oiled penguins died prior to release, about half of all deaths occurring in the first 48 hours after collection (Barrett *et al.* 1995). Of 5213 African Penguins released after cleaning, 4076 were discharged with flipper bands. In this note we report the results of three years of monitoring of these birds.

Searches for banded penguins at breeding colonies were made from soon after the time of release until July 1997. The most intensive searches were on Dassen Island where one or more observers were stationed almost continuously; however, at the time of writing, observations subsequent to April 1997 were not available for this analysis. Visits were made to Robben Island roughly fortnightly, but at low intensity for the period April-June 1997. Some searches for banded penguins were also made at other breeding colonies. We report three series of cumulative totals, plotting the number of different birds seen at the end of each month, assuming that the monitoring started on different dates (Fig. 1). The first cumulative plot is based on birds resighted at least one month after release; the second on birds that were resighted after July 1995; the third on birds that were resighted after July 1996. The second and third series provide minimum totals of the numbers of

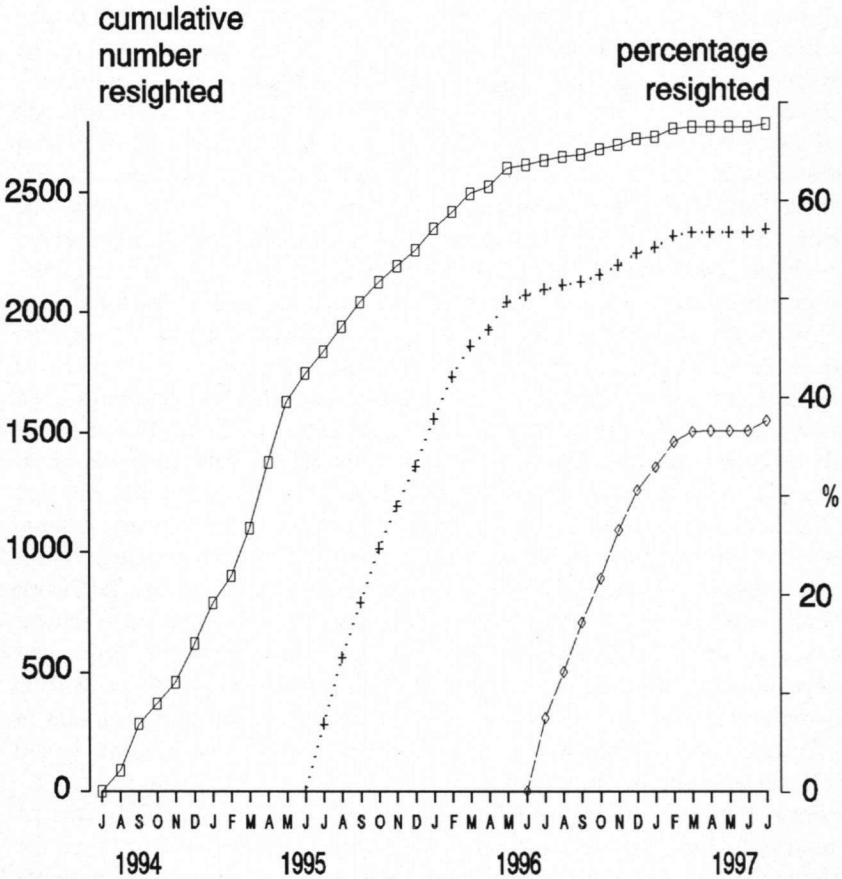


Figure 1. Cumulative numbers of African Penguins banded after the oil spill which were resighted (1) at least one month after release (solid line), (2) after 1 July 1995 (dotted line), and (3) after 1 July 1996 (dashed line). The plotted values are the figures attained by the last day of the relevant month. Percentages, out of 4076 birds, are shown on the right.

Figuur 1. Cumulatieve aantallen geringde Zwartvoetpinguïns die weer levend werden teruggezien (1) ten minste een maand na vrijlating (doorgetrokken lijn), (2) na 1 juli 1995 (stippellijn) en (3) na 1 juli 1996 (gestreepte lijn). De getallen geven de stand van zaken op de laatste dag van de betreffende maand weer, Percentages, berekend over het totaal van de 4076 vrijgelaten gerehabiliteerde pinguïns zijn op de rechter y-as weergegeven.

birds that survived at least one and two years, respectively, after being oiled.

The provisional total number of resightings of banded penguins in the three-year period from one month after release until July 1997 was 14 697; 3216 resightings were made in the first year up to June 1995, 6346 between July 1995 and June 1996, and 5135 after July 1996 (a total which is approximately 500 too low). By July 1997, 2792 different penguins (68.5% of those banded) had been resighted and had therefore survived at least one month after release (Fig. 1). The numbers of different penguins observed after 1 July 1995, and 1 July 1996 were 2353 (57.7%) and 1548 (38.0%), respectively; these are the minimum numbers that survived at least one year and two years after oiling. The plot of the cumulative numbers of resighted African Penguins (Fig. 1) shows that 1 745 penguins were observed up to 30 June 1995, a further 891 penguins were observed for the first time during the second year of fieldwork (1 July 1995-30 June 1996), and that 156 penguins were observed for the first time after 1 July 1996. After three years of fieldwork, it is clear that an asymptote is being reached, even allowing for the hiatus in data collection and availability from April 1997. However, some banded penguins remain to be observed for the first time since release (Fig. 1); for example, 13 out of 42 penguins observed during three days fieldwork on Robben Island in July 1997 were resighted for the first time since release (PAW pers. obs). It is known that a substantial proportion of the birds oiled during the incident were from colonies other than Robben and Dassen Islands (Underhill *et al.* in press). More fieldwork at the smaller breeding colonies in the Western Cape and at the colonies in the Eastern Cape and Namibia would have revealed more of these banded penguins.

From July 1995 to July 1997 (i.e. during the second and third years of monitoring), 2353 different penguins were resighted; this is 84.3% of the total number of resightings of penguins that survived at least one month (2792) (Fig. 1). Thus only 15.7% (439) penguins seen during the first year of monitoring were not confirmed to be alive in the second or third years.

The evidence from this monitoring project suggests that there was no post-release mass-mortality of penguins. We conclude that, once discharged after treatment at SANCCOB, most penguins are rehabilitated, successfully making the transition back to the wild. These results are thus in sharp contrast to those reported by Sharp (1994), whose data suggested that more than half of the number of seabirds cleaned after oiling were dead within a fortnight of release. It is not clear whether the success reported in this paper is attributable to the robustness of penguins or to the cleaning methods

employed by SANCCOB. However, together with results obtained elsewhere (long term survival of cleaned penguins is comparable with those of penguins which have not had the SANCCOB treatment (Whittington in press), and breeding productivity of cleaned penguins is not impaired as a result of oiling (Nel & Williams in press)), it is clear that the cleaning of oiled African Penguins is making a valid contribution to the conservation of this declining species.

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