

Short communications

A handicapped Ruddy Turnstone *Arenaria interpres* loses mass and delays primary moult

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After nightfall on 17 November 2001, during routine fieldwork for breeding Leach's Storm Petrels *Oceanodroma leucorhoa* on Dyer Island (34°41'S, 19°25'E), Western Cape, South Africa, a Ruddy Turnstone *Arenaria interpres* was mistnetted. Because of swellings to its legs and feet, it was difficult to extract from the mistnet. Examination showed that the swellings were caused by several fine plastic threads that had become entangled around the lower sections of both legs (Fig. 1). On the left foot, the entanglement was immediately above the ankle, which had become so swollen that the turnstone would have had severe difficulty foraging. On the right foot, two of the claws were entangled, and had turned black. It was not possible to determine the period over which the swellings had developed, but it would certainly have been several weeks or months.

Because the threads had almost entirely severed the affected extremities, it was a trivial procedure to amputate the left foot, and the two necrotic toes on the right foot (Fig. 2). The wounds did not bleed.

The turnstone was an adult in nonbreeding plumage, and weighed 82 g. The primaries were badly abraded, but primary moult had not yet commenced. The bird was released immediately, unringed. It flew off into the dark. There is no information on its subsequent fate.

The mean mass of adult Ruddy Turnstones in southern Africa in November is 106.8 g, with standard deviation 7.3 g (Summers *et al.* 1989). The mass of the trapped bird was 23% below the mean. This is 3.4 standard deviations ((82-

106.8)/7.3) below the mean. If we assume a normal distribution for masses, the probability that a turnstone has a mass 3.4 standard deviations below the mean is 0.00035.

By 17 November, approximately 89% of all adult turnstones will have commenced primary moult. This is calculated from the estimates of primary moult parameters for turnstones generated by the Underhill & Zucchini (1987) model for primary moult. For turnstones in southern Africa, this model considers the distribution of the starting dates of primary moult to be a normal distribution with mean starting date 9 October and standard deviation 31.5 days (Summers *et al.* 1989). 17 November is 39 days (or 1.24 standard deviations) after the mean starting date; 89% of the normal distribution lies within 1.24 standard deviations of the mean.

This observation can be compared to that of Marks & Underhill (1994), who observed retarded moult in a handicapped Bristle-thighed Curlew *Numenius tahitiensis* on Laysan Island in the central Pacific Ocean. This bird had a dislocated intertarsal joint, which greatly reduced its ability to forage. Although the curlew maintained its body mass above average, it commenced moult late, and moulted slowly. In spite of its handicap, this bird is known to have subsequently made at least three transoceanic migration journeys of 4,000 km each between Laysan Island and Alaska.

The observation may also be compared to those of two Red Knots *Calidris canutus* that had severe infestations of parasitic lung trematodes *Cyclocoelum mutabile* (Underhill *et al.* 1994). The knots were killed by flying into a lighthouse

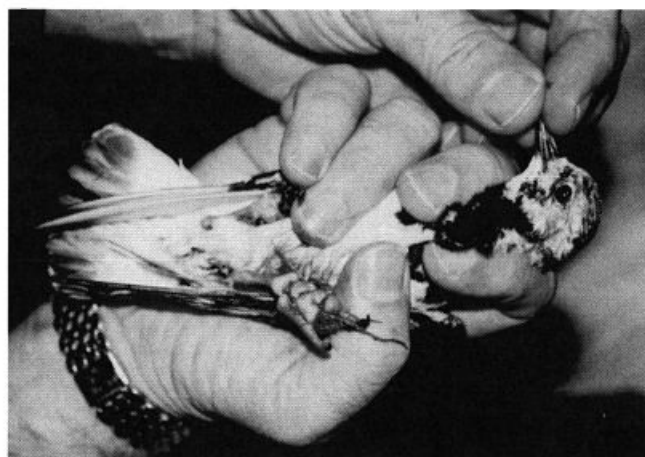


Fig. 1. Swellings on legs and feet of a Ruddy Turnstone, caused by plastic thread.



Fig. 2. The turnstone after removal of the swollen and necrotic tissue.



in Germany; on dissection they were immediately seen to be nutritionally stressed and further investigation revealed the parasites. Both birds were lagging behind their cohorts in primary moult; one had average mass, the other was 10% below average.

There are few observations in free-living birds of the impact of nutritional deficiencies on moult (Murphy 1996). However, in laboratory experiments, nutritionally stressed White-crowned Sparrows *Zonotrichia leucophrys* were unable to delay moult, but reduced body mass and/or slowed down the rate of moult (Murphy & King 1991). Both the Bristle-thighed Curlew and the two Red Knots fitted this pattern. The Ruddy Turnstone appears to have been so nutritionally stressed that it both lost mass and postponed the onset of primary moult.

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