

FADING OF NUMBERS FROM PATAGIAL TAGS: A POTENTIAL PROBLEM FOR LONG-TERM STUDIES OF VULTURES

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Abstract.—New World vultures cannot be banded with conventional leg bands. As a result, commercially available cattle eartags are commonly used to mark individuals in field studies. Although there is no evidence of numbers fading from these tags when they are used to mark cattle, I recorded at least four cases (3.8% of marked birds, 25% of resighted birds) in which tags became partially or completely illegible less than 3 yr after being used to mark Turkey Vultures (*Cathartes aura*). Because tag fading could adversely affect long-term studies of vultures, workers should be aware of this potential problem so that appropriate precautions can be taken.

DESCOLORACIÓN DE LOS NÚMEROS DE MARCADORES EN EL PATAGIO: PROBLEMA POTENCIAL PARA ESTUDIOS DE LARGO ALCANCE EN BUITRES

Síntesis.—Los buitres del Nuevo Mundo no se pueden anillar en las patas de forma convencional. Como resultado, y para marcar a estas aves, se utilizan los marbetes comúnmente utilizados en las orejas de las reses. No hay evidencia que indique la descoloración de éstos cuando son utilizados en ganado. Sin embargo, he documentado al menos cuatro casos (3.8% de las aves marcadas, 25% de las aves reavistadas) en donde los marbetes están parcialmente o totalmente ilegibles, tres años después de ser colocados en individuos de *Cathartes aura*. De no poderse identificar animales marcados, como buitres, se pueden afectar estudios a largo alcance. A tal efecto se deben tomar las precauciones adecuadas para evitar este tipo de problemas.

New World vultures thermoregulate, in part, by urohidrosis, excreting liquid feces onto their feet and legs to cool themselves (Mahoney 1983). As a consequence of this behavior, Black Vultures (*Coragyps atratus*) and Turkey Vultures (*Cathartes aura*) cannot be marked with conventional leg bands because there is a danger of skin lesions, loss of toes, and foot deformities caused by excrement building up beneath the band (Henckel 1976, Stewart 1984). As an alternative, cattle eartags manufactured under the brand name Allflex® (Allflex USA, 2004 Chennault Ave., Carrollton, Texas) have been employed as patagial tags to mark vultures in several studies (Wallace et al. 1980, Sweeney et al. 1985, Rabenold 1987, Prior and Weatherhead 1991, Kirk and Gosler 1994, Parker et al. 1995, Buckley 1996).

The convenience, ease of application, and ready availability of these commercial eartags make them practical and cost-effective markers for vultures. For long-term studies, it is essential that markers last for the life of the individual, and the tags' manufacturers report that they have no evidence of numbers fading from tags, which may remain on cattle for up to 20 yr (Wallace et al. 1980). However, during a field study of Turkey

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Vultures and Black Vultures in southern Texas, I recorded several instances of numbers fading from tags within less than 3 yr of application.

Between 1988 and 1991, I trapped 107 Turkey Vultures and 247 Black Vultures on the Welder Wildlife Refuge, Sinton, Texas (28°06'N, 97°22'W) using cannon nets and a large (8 × 8 × 2 m) walk-in trap. I placed a single Allflex® cattle eartag bearing a one- to three-digit number in black on the right wing of each bird. Black Vultures were marked with "large" (ca. 57 × 70 mm) red tags and Turkey Vultures with "maxi" (75 × 100 mm) orange tags. I resighted many tagged vultures between 1988 and 1991, but observed no faded tags. However, on 2 Sep. 1991, I observed a tagged adult Turkey Vulture in a roost tree whose three-digit identification number had become partially illegible. The initial digit was legible as was the upper portion of the second digit, but the terminal digit had faded completely. This individual was observed subsequently on several occasions up to 6 May 1992. On that date, the numbers remained as when fading was first noted, but the orange base color of the tag had faded somewhat.

On 5 Sep. 1991, I observed a Turkey Vulture at close range as it perched on a gate post. This vulture's tag had also faded. The initial two digits were clear but only a vague outline of the terminal digit could be discerned. I later observed what was probably the same bird on 25 Nov. 1991, and the third digit of its tag had faded completely. The first two birds for which I observed tag fading were marked in the period 9–27 Jun. 1989. Thus, the observed partial fading had occurred in a period of less than 30 mo.

A third Turkey Vulture with a partially faded tag was observed on 7 Oct. 1991. This individual (marked 5 May 1989) possessed a partially faded tag on which the initial two digits were visible, but the terminal digit was difficult to read. When this bird was resighted on 15 Mar. 1992 only the upper half of the initial digit was clearly visible, while the following digits were very faint. I made several sightings in mid-April 1992, in an area previously frequented by this bird, of a Turkey Vulture whose tag had faded completely. I believe these sightings were of the same individual. The last individual to show fading of its tag was a Turkey Vulture I observed on 21 Oct. 1991. On this individual's tag none of the three digits was legible.

Overall, a minimum of four individual Turkey Vultures showed partial or complete fading of their tags within 30 mo of initial application. Other Turkey Vultures were observed, however, whose tags showed no sign of fading. Two birds tagged in April 1989 and one tagged in July 1989 were seen August–December 1991 and their tags had not faded. Nine individuals tagged in 1990 and resighted in late 1991 also possessed unfaded tags. The percentage of tags in which fading occurred was between 3.8% (4 of 107 [the total number of Turkey Vultures tagged]) and 25% (4 of 16 [total number of individuals seen at least a year after initial tagging]).

In contrast to the fading observed among Turkey Vultures, no fading of tags on Black Vultures was observed even though many more Black

Vultures were marked. In all, 37 sightings of 15 individual Black Vultures tagged between April and July 1989, were made August–December 1991. None of the numbers on these tags had worn or faded. Six of these individuals were also sighted March–May 1992 (a total of 10 sightings) and again no evidence of fading was seen. One of these birds tagged on 1 May 1989 was found freshly dead on 24 Jun. 1992. Although the tag had darkened a little in the three years since it had been deployed, the number was clearly legible.

My observations show that numbers can fade relatively quickly from cattle eartags attached to Turkey Vultures, but such fading is not inevitable. I observed no fading of tags attached to Black Vultures and, similarly, Patricia Parker (pers. comm.) has recorded no tag fading among the more than 600 Black Vultures she has marked in the course of her long-term fieldwork in North Carolina (Rabenold 1987, Parker et al. 1995). It is unclear whether the fading I observed was a function of the size or type of tag used, the species on which tags were deployed, or if the tags were in some way defective. However, given the difficulties tag fading could cause for workers engaged in long-term studies, individuals planning to use such eartags need to be aware of the potential problem. To avoid misidentifications, studies involving few birds could employ unique color combinations of tags. Alternatively, if many birds must be distinguished, tags could be supplementarily marked, perhaps by uniquely notching or shaping them so that identification in the field is possible if a number fades. Finally, tags could be embossed with unique identification numbers (preferably United States Fish and Wildlife Service band numbers), which would not only permit identification of individuals in the hand, but would also enable information on long-distance movements to be gathered.

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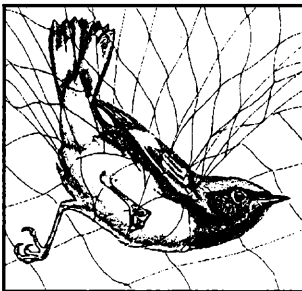
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