JOURNAL OF FIELD ORNITHOLOGY

Published by
Association of Field Ornithologists

VOL. 58, NO. 3 SUMMER 1987 PAGES 265–412

J. Field Ornithol., 58(3):265–269

NYLON FASTENERS FOR ATTACHING LEG AND WING TAGS TO BLACKBIRDS

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Abstract.—Aviary studies were designed to evaluate the durability, safety to the bird, and ease of attachment of red leg tags and wing tags to blackbirds using a Buttoneer II fastener gun and nylon fasteners. Male redwings retained 85% and female redwings 95% of leg tags after 35 wks attached with 3 nylon fasteners. Male redwings retained 72% and female redwings 87% of patagial tags after 36 wks attached with 2 nylon fasteners. A comparison between the band attachment method and the Buttoneer II fastener method showed that the latter retained tags for a longer period of time. This attachment method is easy to use and does not cause trauma to the wings or legs of the birds.

SOSTÉN DE NILÓN PARA PONERLES MARBETES EN LAS PATAS Y EN LAS ALAS A ICTÉRIDOS

Sinopsis.—Se diseñó un estudio en cautiverio para evaluar la durabilidad, seguridad al ave y facilidad de colocar marbetes en las patas y alas de ictéridos utilizando una pistola "Buttoneer II" y sostenedores de nilón. El 85% de los machos y el 95% de las hembras de *Agelaius phoeniceus*, retuvieron su marbete en la pata puesto con tres (3) sostenes de nilón por espacio de 35 semanas. Por su parte el 72% de los machos y el 87% de las hembras retuvieron su marbete en el ala unidos con dos broches de nilón por espacio de 36 semanas. La comparación entre el método de pegar con bandas o con broches de nilón mostró que el último retuvo el marbete por un periodo mayor de tiempo. Este método de sostén de marbetes es fácil de usar y no le causa trauma al ala o pata de las aves.

Durability, safety to the bird, and ease of attachment are important considerations when selecting a method for attaching leg or wing tags to birds. Several band or grommet attachment methods are available, but each has been found deficient. Durability, safety, and ease of attachment were used to evaluate an attachment method that we believed might improve on previous techniques. Hester (1963) used plastic wing tags attached to the patagium with poultry wing bands. Guarino (1963) used bands one size larger than recommended by the Bird-Banding Laboratory, to attach colored leg tags to Red-winged Blackbirds (*Agelaius phoeniceus*) and European Starlings (*Sturnus vulgaris*). Arnold and Coon (1971) used a grommet to secure a leg tag. DeHaven (1975), comparing Guarino's

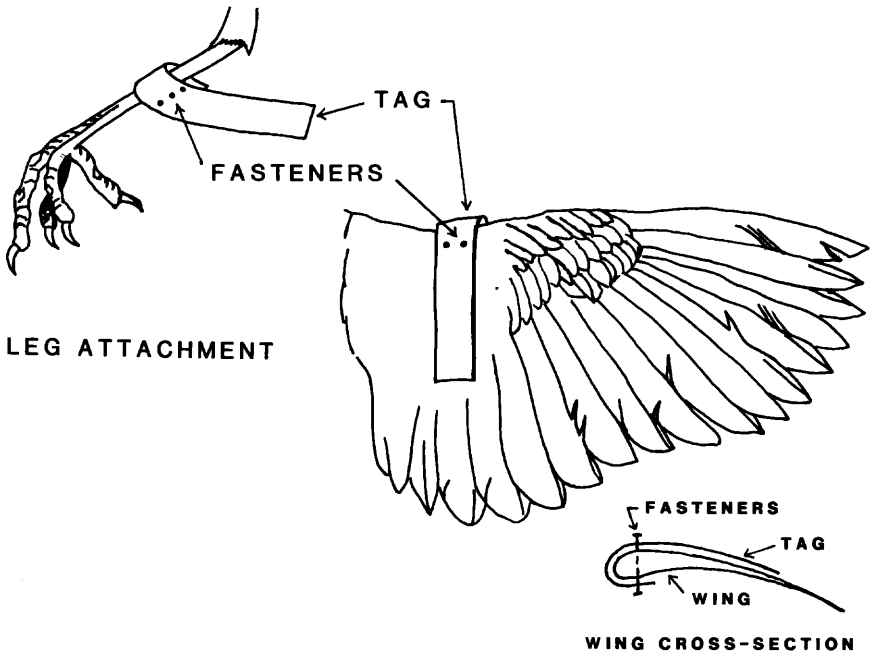

FIGURE 1. Leg and wing tag attachment method with nylon fasteners.

band method and the grommet method, found that tag losses were much higher with bands. Royall et al. (1974) found the band method potentially injurious; the hind toe may become hooked through the attachment hole. Also, the band frayed the tag, permitting eventual removal by the bird. DeHaven (1975) noted that tags attached with grommets tend to slip off when attached loosely or cause swelling when attached too tightly. Furthermore, the method is time-consuming and difficult for one person.

MATERIALS AND METHODS

The Buttoneer II (Reference to trade names does not imply U.S. Government endorsement of commercial products) fastener gun and nylon fasteners were obtained from the Dennison Manufacturing Company, Framingham, Massachusetts 01701 USA, at a cost of $24.50 (1985) for the gun and $24.50 (1985) for 5000 nylon 5 mm standard short fasteners. The fastener gun is 12.7 cm long and consists of a trigger mechanism, a swivel disc for advancing the fastener into the gun, and a heavy duty 1.6 cm needle positioned at the gun's head. The operation of the fastener gun is relatively simple; a nylon fastener is positioned in the needle by turning

TABLE 1. Retention of colored leg tags by groups of five Red-winged Blackbirds and Common Grackles during a 40-wk cage test using nylon Buttoneer II fasteners.

Weeks after tagging	Tags retained					
	Number of fasteners used on redwings			Number of fasteners used on grackles		
	1	2	3	1	2	3
0	5	5	5	5	5	5
4	5	5	5	0	3	5
8	4	5	5	0	3	4
12	4	5	5	0	3	4
16	3	5	5	0	1	4
20	3	5	5	0	1	4
24	3	4	5	0	1	4
28	2	4	5	0	1	3
32	2	4	5	0	1	3
36	2	4	5	0	1	3
40	2	4	5	0	1	3
% retention	40	80	100	0	20	60

the swivel disc counterclockwise, inserting the needle through the tag to be fastened, and pulling the trigger which cuts a fastener from the string and pushes it through the needle into the tag.

A two-phase test was conducted to evaluate nylon fasteners applied with the Buttoneer II fastener gun as a means of attaching red Saflag plastic leg and wing tags. For the first phase, male Red-winged Blackbirds and male Common Grackles (*Quiscalus quiscula*) were used to determine the number of nylon fasteners needed to securely hold a 1.9 cm × 10.1 cm red Saflag tag around the bird's leg (Fig. 1). The birds were divided into 3 groups, each consisting of 5 male redwings and 5 male grackles. Tags were attached with one fastener in the first group, two in the second, and three in the third group. Each bird was checked daily for tag loss during a 40-wk period.

The purpose of the second phase was to further evaluate the fastening arrangement that proved most satisfactory in phase one. In addition to leg tags, nylon fasteners were evaluated for attaching tags to the wing patagium (Fig. 1). In this phase leg tags were attached with three fasteners to 50 male and 50 female redwings; in a second group of birds, wing tags were attached through the patagia of 50 male and 50 female redwings with two fasteners. The leg tags were 1.9 cm × 10.1 cm and 1.9 cm × 7.6 cm while the patagial tags were 1.9 cm × 7.6 cm and 1.9 cm × 5.0 cm for males and females, respectively. A control group of 50 male redwings was housed under similar conditions as the tagged birds and monitored to determine if the fasteners or tags affected mortality. Finally, a comparison was made of the time required to attach five leg tags with nylon fasteners and five with grommets. In both phases, birds were held

TABLE 2. Retention rate of leg and patagial tags on male Red-winged Blackbirds during a 36-wk cage test using nylon Buttoneer II fasteners.

	Red-winged Blackbirds												
	Leg tags retained (three fasteners)						Patagial tags retained (two fasteners)						
	Males			Females			Males			Females			
Weeks after tagging	Number retaining leg tags	Number surviving[1]	% retention	Number retaining leg tags	Number surviving	% retention	Number retaining leg tags	Number surviving	% retention	Number retaining leg tags	Number surviving	% retention	Control birds
0	50	50	100	50	50	100	50	50	100	50	50	100	50
4	50	50	100	50	50	100	50	50	100	50	50	100	48
8	50	50	100	50	50	100	45	45	100	41	41	100	43
12	45	45	100	48	48	100	40	41	98	37	38	98	39
16	42	42	100	48	48	100	40	41	98	37	38	98	39
20	37	38	98	44	45	98	40	41	98	35	38	92	31
24	26	29	89	37	39	95	26	34	76	33	37	89	31
28	23	27	85	36	38	95	21	29	72	27	31	87	30
32	23	27	85	35	37	95	21	29	72	27	31	87	29
36	23	27	85	35	37	95	21	29	72	27	31	87	29

[1] Natural mortality when n drops below 50.

in 2.4 m × 3.6 m × 5.5 m outdoor pens and were furnished with wooden perches, water, and feed.

RESULTS AND DISCUSSION

Results from the first phase are given in Table 1; they show that three fasteners were the most effective in holding tags to the legs. At 40 wks, male redwings with 1, 2, or 3 fasteners, had a 60, 20, and 0% loss, respectively. Male grackles, with 1, 2, or 3 fasteners, had a 100, 80, and 40% loss of tags, respectively. The difference in retention rates between redwings and grackles can be attributed to the latter's larger, more powerful beak. Royall (1974) reported similar findings and also showed that redwings and grackles were least tolerant of red tags.

In the second phase, males retained 85% of the leg tags and 72% of the wing tags while female redwings retained 95% of the leg tags and 87% of the wing tags (Table 2). These percentages are greater than those reported by DeHaven (1975) using the band method. In that test, 50% of the leg tags attached to male redwings were lost after 4 wks and all were lost after 32 wks. Clearly, tags attached by the fastener method have a higher retention rate than those with the band attachment method.

There were no significant differences ($z = 0.59$, $P = 0.5$) in mortality between tagged and untagged redwings (Table 2) suggesting that fasteners and tags had no effect on redwing mortality. However, if the leg tag was attached too tightly, swelling occurred. This problem can be avoided through experience with the attachment method.

The mean time required to attach a leg or wing tag to a male Red-winged Blackbird with nylon fasteners was 9 s compared to 27 s with grommets. Also, two persons were needed to attach tags using grommets; one person could easily do the job with the nylon fasteners.

ACKNOWLEDGMENTS

I wish to thank Jerome F. Besser, Mary L. Eschen, Joseph L. Guarino, Michael M. Jaeger, C. Edward Knittle, George M. Linz, and Steven A. Spykstra for their assistance on this manuscript.

LITERATURE CITED

ARNOLD, K. A., AND D. W. COON. 1971. A technique modification for color-marking birds. Bird-Banding 42:49–50.

DEHAVEN, R. W. 1975. Effect of color and attachment method on retention of leg tags by blackbirds. West. Bird Bander 50:48–50.

GUARINO, J. L. 1963. Blackbird and starling movements traced by banding and color-marking. Inland Bird Banding News 35:65–66.

HESTER, A. E. 1963. A plastic wing tag for individual identification of passerine birds. Bird-Banding 34:213–217.

ROYALL, W. C., JR., J. L. GUARINO, AND O. E. BRAY. 1974. Effect of color on retention of leg streamers by Red-winged Blackbirds. West. Bird Bander 49:64–65.

Received 25 Apr. 1986; accepted 2 Sept. 1986.