

## AN EVALUATION OF SOME COTTONTAIL RABBIT MARKING TECHNIQUES

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### ABSTRACT

Three marking techniques were applied to 274 cottontail rabbits (*Sylvilagus floridanus*) handled during a study of rabbit populations within large outdoor enclosures. Initial eartagging with metal and colored vinyl tags was considered unsatisfactory since at least 20 percent of the tags were known to be lost. However, with modifications to the techniques no further losses of tags were detected.

Three pelage dyes were used to facilitate identification of groups of rabbits when the rabbits were flushed. All three proved to be satisfactory, however, picric acid was retained longer than the others.

Tattooing appeared to be 100 percent efficient with no known loss of identifying marks. Other advantages of tattoo marking are discussed.

### INTRODUCTION

In a study of cottontail rabbit (*Sylvilagus floridanus*) populations within large outdoor enclosures in East Tennessee, 274 were eartagged, tattooed and/or tail-dyed for future identification. Marking techniques were based on procedures previously presented in the literature. Through our experience with these techniques, however, certain modifications were developed to increase their efficiency. Also, through the facility of working within enclosures, it was possible to evaluate how well the various markings were retained without the confusion of marked animals leaving the study area and unmarked animals entering. The enclosed areas are characterized by dense, scattered blackberry and honeysuckle thickets interspersed with pasture and open woodlands.

### MATERIALS AND METHODS

In this study it was desirable not only to be able to identify a rabbit once it was trapped but also to be able to distinguish groups of rabbits (native versus stocked) when they were flushed during census drives. Therefore, both color markings and numbered tags were applied to each animal handled.

Live trapping was conducted from September, 1972 through February, 1973 using wooden box-traps. Captured rabbits were placed in a cloth sack where they were held for marking with only the ear or hindquarters exposed.

Eartagging followed the technique presented by Labisky and Lord (1959). Briefly, this involves folding a piece of colored vinyl over the inside and outside surfaces of the ear and holding it in place with a metal eartag (Fig. 1). Blue, red and yellow vinyl was used in the eartags of native (n=80), Fall-introduced (n=88), and Winter-introduced (n=106) rabbits, respectively. The colored vinyl was obtained from Safety Flag Co. of America, Pawtucket, Rhode Island. Metal eartags (No.

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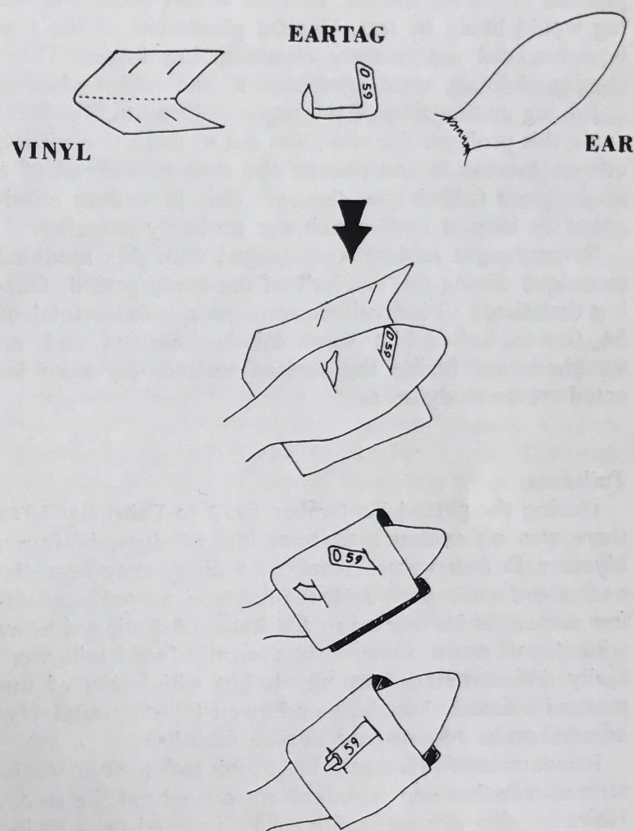


Fig. 1. Eartagging technique used for making cottontail rabbits.

3 monel-metal, self-piercing) were obtained from National Band and Tag Co., Newport, Kentucky.

The tails of all rabbits were dyed to facilitate class identification (i.e., native vs. stocked) upon flushing during census drives. Native rabbits were tail-dyed black using a preparation of Nyanzol D powdered dye. The Nyanzol D concentrate was prepared as described by Melchoir and Iwen (1965). Rhodamine B, a bright red biological stain, was used to mark the Fall-stocked rabbits. A marking mixture was prepared using a concentrated solution of Rhodamine B powder and 95 percent ethyl alcohol. A concentrated solution of picric acid dissolved in ethyl alcohol provided a bright yellow dye to mark the Winter-stocked rabbits. All dyes were applied with a plastic squeeze bottle to the rump, tail and abdomen. The dyes were worked into the fur with the fingers to assure good coloring.

Midway through the study, tattooing was used in addition to the eartagging and tail dyeing techniques. The tattoo was placed on the inside surface of the ear where hair is sparse.

### RESULTS

#### Eartags

Often when a marked rabbit was killed by a predator, the eartag could be located in the vicinity of the kill.

However, 40 eartags were located where there was no sign of predation. Also, among 218 rabbits recaptured during the study period, 16 exhibited torn ears where the tags had been lost. These data indicate a minimum loss of approximately 20 percent. No evidence of fading of the colored vinyl was noted.

Early in the study it was learned that if the eartag pinched or chafed the ear, necrosis would occur and the tag would likely be lost. Careful placement of the tag, however, did not entirely eliminate tag losses. These continued losses were attributed to the rabbit clawing at the tag or snagging of the tag in vegetation. To overcome this problem the vinyl was cut to form two pieces, one on the inside and one on the outside, instead of a single piece folded over the ear. This procedure eliminated the loop of vinyl which was probably snagging.

Seventy-eight rabbits were tagged with this modified technique during the last half of the study period. During that time, 39 individuals were recaptured a total of 54 times; no rabbits were missing eartags and no sloughed tags (using the revised techniques) were located on the study area.

#### *Tail-dyes*

During the period September 1972 to February 1973 there was no evidence of total loss of dyes, however, Nyanzol D faded from black to a dingy gray near the end of the study period. This presented no problem unless such a rabbit flushed at a distance and slipped away with its tail down. Otherwise, even the faded tails were easily differentiated from the bright white tails of unmarked animals. Melchior and Iwen (1965) found Nyanzol D to be retained up to nine months.

Rhodamine B faded to a light pink two to four weeks after application and remained so throughout the study. However, this dye was quite easily detected on a sitting or running rabbit. Other studies using this dye (Dell 1951-1952 and Lord 1959) do not discuss its retentive capabilities; the present study indicates that Rhodamine B will last at least six months in the field.

Picric acid exhibited greater retention than the other dyes. Seven months after the initial stocking of some yellow-tailed rabbits, a flush count showed that these rabbits still had yellow tails; it appeared that little or no fading had taken place.

An additional advantage of dyes was in the identification of the remains of dead animals. By applying dye to the belly fur in addition to the tail, relative mortality

among the groups of rabbits was made possible by dye (or lack of it) traces on the belly fur.

#### *Tattooing*

Tattooing was the most reliable marking technique used. Although the oldest tattoos inspected were only three months old, these markings were completely healed and had formed distinct, clearly legible numbers. In no case was there any sign of infection or necrosis resulting from the tattoo. Tattooing also appeared to have three major advantages over the other forms of marking:

1. Tattoos are more simple to apply and less time consuming.
2. There is no added weight to the rabbits ear which might cause some alteration in the animals behavior.
3. Tattooing eliminates the possibility of making the rabbits more visible to predators while tagging with colored vinyl streamers and dyes probably does.

The major disadvantage is the inability to detect the mark when the rabbit is flushed; the animal must be in hand for positive identification.

In livetrapping programs on cottontails, rabbit capture success may periodically drop to near zero (Brady 1973), every piece of data becomes extremely important. For this reason, whenever the identity of each individual animal is to be recorded, tattooing provides the opportunity to gather data on individuals within a population.

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Richard J. Raridon, State Director of the TAS Collegiate Division, has been elected to the position of President-Elect of the Association of Academies of Science. The AAS is composed of representatives from forty-four state and city academies. Dr. Raridon has served as Secretary-Treasurer of AAS for the past four years.