

The Introduction of the San Juan Rabbit (*Oryctolagus cuniculus*) in Indiana

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Introduction

The European rabbit (*Oryctolagus cuniculus*) was established in the San Juan Islands, Washington, prior to 1900 (3). Following the end of World War II, at least two Friday Harbor, Washington dealers trapped or netted San Juan rabbits for shipment to propagators in Eastern and Midwestern States. Indiana sportsmen began importing and liberating these rabbits in 1949. The Indiana Department of Conservation had no control over the indiscriminate importation, propagation, and release of this rabbit until the passing of a 1953 law by the State Legislature. This law made it illegal to buy, sell, or trade wild rabbits, but it has not been enforced. By the mid-1950's several individual biologists and various farm groups were disturbed by the San Juan rabbit introductions. Latham (8), speaking to the Twentieth North American Wildlife Conference, expressed his growing fear of the possible consequences of these introductions in the Eastern and Midwestern States. Barnes (2), speaking on this subject to the Seventeenth Midwest Wildlife Conference, concluded that studies should be initiated in an attempt to better understand the problems presented by the propagation of this animal. Farmer delegates to the 1955 convention of the Indiana Farm Bureau, Inc. adopted the resolution as follows: "Resolved that the possession of, breeding or distribution of San Juan rabbits be prohibited" (10).

In Indiana, those who hunt with beagle hounds (beaglers), refused to believe that this rabbit was capable of the damage attributed to it in other parts of the world. They thought it to be a superior game animal to our native cottontail (*Sylvilagus floridanus*) (9). Holcombe (4), writing in a nationally distributed beagle magazine, expressed the opinion that "the San Juan is not a menace to the farmer" and "he is not the same rabbit that spread over all Europe and Australia. . . ." The attitude of the average sportsman was probably best expressed by an anonymous author writing in the January, 1955, Washington State Game Department Game Bulletin. He stated, "And to assume, as some persons have, that America's agricultural economy is menaced by our San Juan bunnies, borders on the fantastic" (1).

The Indiana Department of Conservation began a study of the San Juan rabbit in August, 1956, before doing more than making news releases discouraging the propagation and release of this rabbit. Among the objectives of this study were the determining of the origin and background of the San Juan rabbit and recording of its introduction in Indiana.

Methods

Library sources were searched for references to *Oryctolagus cuniculus*. Correspondence was carried on with investigators working with this species in Great Britain, New Zealand, Australia, and California.

¹ This investigation was made while employed as a Study Leader, Pittman-Robertson Project W-2-R, Indiana Department of Conservation.

Indiana propagators of San Juan rabbits were located by following leads furnished by conservation officers and sportsmen. Propagators were interviewed between September 24, 1956, and March 9, 1959, to determine the extent and success of San Juan liberations. I investigated all reports received by the Indiana Department of Conservation of established populations of wild San Juans.

Findings and Discussion

The San Juan rabbit is a variety of the European rabbit. Rabbits of this species have been introduced in various parts of the world and have caused agricultural damage wherever they have become established. Liberations were by far the most successful in Australia. The damage sustained by the natural communities of Australia provides the classic example of the dangers inherent in the transplantation of wild mammals or birds.

Rabbit hunters and beaglers are the major groups who have propagated San Juan rabbits in Indiana. Most propagators live in areas that are heavily industrialized, or where intensive farming is practiced. These land uses restrict the suitable cottontail rabbit habitat. The presence of a dense human population with its varied interests further reduces the number of cottontail rabbits available to the sportsman by closing to public hunting a portion of the remaining habitat. Cottontail rabbit numbers are subject to fluctuations that, over a period of years, are apparent and measurable. This combination of factors causes concern among rabbit hunters and beaglers. They turned to the propagation of the San Juan in an effort to solve the problem of rabbit scarcity.

Propagators are able to raise San Juans in captivity, using domestic rabbit raising techniques. Breeding stock no longer has to be imported since at least 202 breeders were being held by propagators during February and March, 1959 (Table 1).

A Marion County beagler began liberating San Juan rabbits in 1949. During the following ten years, at least 155 propagators released not fewer than 6,326 San Juans in 50 Indiana counties. Table 1 includes the numbers of rabbits released and the number of propagators in each county. All totals must be considered as minimum, since it is possible that all propagators were not found and interviewed.

Release techniques varied. Many rabbits were liberated and then left to fend for themselves. Others were carefully supplied with water, feed, and salt. Predator control was sometimes practiced on release sites. The liberated rabbits soon disappeared regardless of the release techniques employed, however.

The San Juan rabbit is not now established in Indiana primarily because of the lack of suitable habitat. Howard (5) (6) and Watson (11), who have studied this rabbit in Australia and New Zealand, agree that optimum habitat includes extensive areas of short grass interspersed with bare ground. These conditions were created in New Zealand by a combination of over-grazing by livestock and improper burning of the pastures. Rabbits were able to assist in the maintenance of these cover conditions, after their establishment, by burrowing and grazing. The rank growth

TABLE 1
San Juan Rabbit Propagation by County¹

County	Number of Propagators	Rabbits— Total Held 1959	Total Rabbits Released
Adams	1	0	9
Allen	3	0	184
Bartholomew	6	6	240
Brown	3	0	174
Cass	1	0	0
Clark	2	6	9
Clay	5	25	317
Daviess	2	0	226
Dearborn	2	0	130
Decatur	3	0	63
DeKalb	2	11	90
Delaware	3	9	211
Dubois	4	0	109
Fayette	2	0	80
Franklin	5	0	130
Gibson	7	16	164
Greene	4	0	399
Hamilton	9	0	498
Hancock	10	65	404
Henry	4	0	237
Howard	1	0	4
Huntington	1	0	42
Jay	2	3	1
Jennings	2	2	0
Johnson	3	0	50
Knox	2	0	58
Lawrence	2	6	30
Madison	7	5	481
Marion	3	0	310
Marshall	4	3	379
Martin	1	0	250
Morgan	1	0	36
Owen	2	0	0
Parke	1	10	30
Pike	11	0	281
Porter	4	0	49
Putnam	1	0	0
Randolph	2	24	51
Ripley	1	0	40
Rush	2	0	17
St. Joseph	4	0	23
Shelby	4	0	48
Sullivan	2	0	38
Union	2	0	56
Vigo	3	0	93
Warrick	1	0	0
Washington	2	0	31
Wayne	3	9	111
Wells	2	2	107
Whitley	1	0	36
Totals	155	202	6,326

¹ This table includes both San Juans and San Juan X domestic rabbits. All numbers and totals must be considered as the minimum.

of grass, forbs, and woody vegetation in Indiana has not allowed the establishment of this rabbit.

Released San Juans have persisted longer in Indiana barnyards than in the pastures, croplands, or timbered areas because of the presence of a variety of cover and food. Corn in cribs is usually accessible to them and board piles or buildings are available for cover. Reproduction occurs, but the young are usually killed by domestic cats and dogs after they leave the nest. Adult San Juans are not generally preyed on by these species since escape cover is usually available.

Both adult and young San Juans are vulnerable to predation on release sites away from farm buildings. Major predators include great horned owls (*Bubo virginianus*), and domestic dogs and cats. Road-killed San Juans are often found near release sites. Young rabbits kindled in burrows on poorly drained release sites may drown during periods of moderate to heavy rainfall.

The virus-caused disease, myxomatosis, has been introduced in Europe, Great Britain, and Australia to aid in the control of this rabbit. It has also been reported in California where it has produced mortality among domestic rabbits (*Oryctolagus cuniculus*). The continued importation and liberation of San Juan rabbits invites the introduction of this disease into the commercial rabbitries of Indiana. Two external rabbit parasites, not previously known to occur in this state, have been found on San Juans held by Indiana propagators (7).

I recommended (7), to the Indiana Department of Conservation, the adoption of a policy aimed toward the elimination of San Juan rabbit propagation in this state. In the absence of optimum habitat, additional San Juan liberations will probably merely waste the propagator's money. The possibility remains, however, that populations may become established in marginal habitats, needlessly exposing our native wildlife and agricultural economy to competition with this exotic species.

Summary

Indiana sportsmen began importing and liberating the San Juan rabbit (*Oryctolagus cuniculus*) in 1949. The release of this rabbit in Indiana's game coverts caused concern among biologists and farmer organizations, since it has become a problem species wherever it is established. An investigation, conducted by the Indiana Department of Conservation, found that more than 6,000 San Juan rabbits have been liberated in at least 50 Indiana counties. This rabbit is not now established in Indiana because of the lack of suitable habitat. Recommendations were made to the Indiana Department of Conservation advising the prohibition of further rabbit importations and the strict control of San Juan rabbit propagation in this state.

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