

STOCKING EASTERN TURKEY POULTS WITH SURROGATE RIO GRANDE HENS

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Abstract: Within 12 hours posthatching, poults from captive-reared wild eastern turkeys (*Meleagris gallopavo silvestris*) were placed under broody domestic bronze turkey hens to imprint the poults (Gore and Synatske 1978). As many as 15 eastern poults were placed under each broody hen at night without disturbing the hens. After 1 week, surviving poults were removed and replaced with newly hatched poults. The week-old eastern poults were then placed with wild-trapped Rio Grande turkey hens (*M. g. intermedia*). Broodiness was induced in the wild hens by oral administration of 50% ethyl alcohol (1 ml/0.45 kg body weight), followed by an intravenous injection of 5 mg prolactin (NIH-P-S-12 Ovine) in 2 ml buffered saline (Cain et al. 1978). Following about 1 hour of quiet restraint, each hen was moved carefully into a closed cardboard box and the imprinted poults were placed under her. The next morning the hen and poults were permitted to move from the box into secluded holding pens. About 90% of the hens so treated exhibited broody behavior and successfully cared for the poults. Hen-poult family units were released after 3 - 5 weeks adjustment period. Observations at release sites and subsequent observations resulting from telemetry studies indicated that each surrogate hen with poults behaved as a family unit. During June, July and August from 1977 - 1979, 19 individual hens were released with a total of 156 poults. Survival rates of poults to adulthood (1:1.92) compared favorably to production and survival in established wild turkey populations in Southeast Texas.

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Attempts to establish eastern wild turkeys in East Texas have been limited because of a lack of wild-trapped broodstock. Pen-reared wild turkeys often lack the wildness necessary for survival. A cooperative project between the Texas Parks and Wildlife Department and Texas A&M University involving surrogates and very young poults has met with some success.

This study was undertaken to determine the feasibility of stocking wild eastern turkey poults with surrogate Rio Grande turkey hens in the Post Oak Savannah of East Texas. Success of this method of stocking turkey depended upon the development of a technique for inducing broodiness in wild turkey hens and imprinting young poults to accept a surrogate.

Successful transplants of wild trapped hens with their broods have been made in Arkansas (Rush 1973). However, the use of a wild surrogate for stocking hatchery-produced poults has not been reported.

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METHODS

During June, July and August from 1977 through 1979, young turkey poults were imprinted by placing as many as 15 under a broody domestic bronze turkey hen within 12 hours posthatching. Poults were removed from the domestic hens after 7 days, and placed with wild Rio Grande hens which had been subjected to induced broodiness by injections of 0.5 mg prolactin (NIH-P-S-12 ovine) in 2 ml buffered saline. During hours of darkness, wild hens were quieted by oral administration of 50% ethyl alcohol (1 ml/0.45 kg body wt.). After an hour of quiet restraint, hens were carefully placed in closed cardboard containers in individual 2.5×6.0 m holding pens and the 7-day-old poults were placed under them for body warmth. The following morning, the hens and poults were permitted to move from the cardboard container into the holding pens. After 3 - 5 weeks adjustment period, each hen was fitted with a 75 gm solar powered transmitter (150.850 - 151.450 MHz) for monitoring (Williams et al. 1968). Hen-poult family units were then taken to the pre-selected release site and held overnight in a temporary 1.2×2.5 m "quiet release" pen constructed of nylon netting and fitted with a horizontally movable opening for release of the birds. The horizontal door was lifted by remote wire leverage prior to daybreak, permitting the hen and poults to leave the pen at dawn.

RESULTS AND DISCUSSION

During the 3-year study, 347 eastern turkey poults were imprinted as described and placed with 31 wild Rio Grande hens. Greatest mortality in opults occurred during the 1-week imprinting and the 3-week adjustment period. A total of 19 hens and 156 poults were released into the wild on 2 study areas (Fig. 1, Table 1).

Imprinting

Five domestic bronze hens were selected each year solely on outward signs of being broody. These birds were purchased from a commercial egg producer and taken directly to the Tyler Management and Research Station within 24 hours and placed in 2.5×2.5 m covered poultry wire pens. Timing of purchase and transportation of hens was such that day-old poults could be placed with them the same day of arrival at the research station. Although crude nests were constructed for initial hen-poult use, a grass-filled depression in the ground, (preferably in a corner of the pen) appeared adequate for hen and poults. Each hen was given 10 to 15 eastern turkey poults within 12 hours posthatching. All poult transfers were accomplished during hours of darkness with as little disturbance as possible. The poults were placed under the hens in the nest. Generally, no problems occurred between poults and domestic hens, although during the 1st and 2nd years of the study, 1 of the 5 domestic hens would not accept poults.

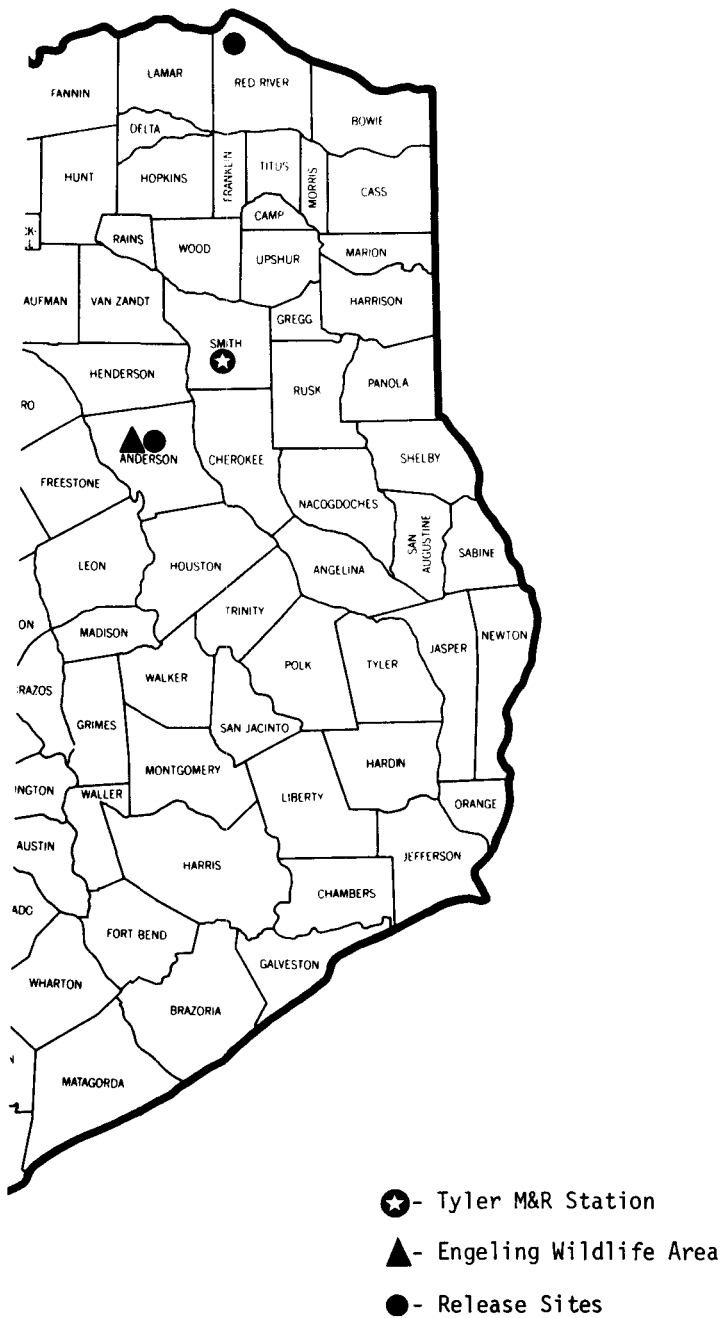


Fig. 1. Location of facilities and release areas for stocking eastern poult.

Table 1. Release data for surrogate Rio Grande hens and eastern poults.

Hen No.	Age	Date of Release	Number Poults	Status of Release^a	Known Mortality After Release
1	A	13 Jul 77	4	Success	3 poults
2	A	24 Jul 77	3	Success	3 poults
3	A	02 Aug 77	6	Success	3 poults
4 & 5	A	08 Aug 77	11	Success	3 poults
6	J	13 Jun 78	9	Failure	
7	A	18 Jun 78	10	Success	
8	A	18 Jun 78	9	Failure	
9	A	20 Jun 78	9	Success	
10	A	20 Jun 78	9	Success	
11	A	11 Jul 78	11	Failure	Hen
12	A	11 Jul 78	9	Failure	
13	A	18 Jul 78	9	Failure	Hen
14	A	18 Jul 78	6	Failure	
15	A	02 Jul 79	19 ^b	Success	Hen
16	A	10 Jul 79	9	Success	
17	A	10 Jul 79	6	Success	Hen
18	A	17 Jul 79	7	Success	
19	A	17 Jul 79	10	Success	Hen

^a Success or failure of hen and poults to leave the release pen as a family unit.

^b All poults of a proposed 2-hen release after 1 of the hens died enroute to release site.

Use of non-imprinted poults as replacements was necessary because of methods used in this study. As imprinted poults were taken from domestic hens, newly hatched poults were substituted. When losses occurred in the holding pens, poults of identical age class were used as replacements, and these poults were taken from brooder houses at the M&R Station. Use of imprinted poults as replacements could be accomplished by holding several imprinted poults with domestic hens until they were needed as replacement poults.

Domestic hens were given a new brood of poults each week. Hens showed no preference for brooding the poults at the nest site. There was no pattern in mortality during the period of imprinting. Losses were erratic, but usually amounted to 20 - 25%. It was important to establish average imprinting losses, since the number of surviving poults at day 8 determined the number of Rio Grande hens needed to provide surrogates for completion of the adjustment cycle prior to wild release.

Ground roosting was observed in all hens during the 1st week after release. Predator populations were extremely high on the study areas, and ground roosting may have resulted in poult losses. Observations of hens and poults at release showed a strong family bond. Ground roosting patterns are not fully understood.

Poult Transfer to Wild Hens

Rio Grande turkey hens were wild-trapped each year and placed in large holding pens for use in the study. Initially, age class of wild hens was not considered a factor in success, but it was soon noted that yearling hens did not accept poults as readily as older hens. Consequently, yearling hens were omitted as surrogates during the 2nd and 3rd year of the study.

To facilitate acclimation of poults to conditions exclusive of human activity, 2.5×6.0 m holding pens were maintained in an isolated location on the Engeling Wildlife Management Area. Since 2 wild hens were to be used simultaneously in separate pens, adjacent pens were constructed. Each pen was covered on the top and back with plastic to protect the birds from sun and rain. Approximately $\frac{1}{2}$ of the pen surface was shaded. Pens were constructed of wood, plastic and menhaden netting. A portable pole roost was placed in each pen 1 week after the wild hens had accepted the poults (when poults were 2 weeks old). This absence of a roost during the initial week was an exercise of caution for fear the wild hen might go onto the roost rather than brood the week-old poults.

Poults were taken from domestic hens at Tyler and transferred to the Engeling area along with wild hens to arrive at the area in late evening. Wild hens were kept enclosed in cardboard boxes in a cool area until darkens had settled. Hens were then given oral doses of alcohol and prolactin injections and placed in $46 \times 46 \times 92$ cm cardboard containers inside each pen. The birds were left undisturbed for 1 hour to permit the drug to take affect. Then each box was approached carefully, opened at one end, and the hen was grasped by both legs. While she was held within the box, 8 - 10 1-week-old imprinted poults were carefully placed under her. The lower flap of the box opening was turned up to prevent the wild poults from scampering out of the box. The poults were exceptionally wild at 1 week of age. The hen was quietly held in the box with poults for about 15 - 20 min, or until no response could be detected when pressured was released from her legs. Her legs were freed slowly, and the attendant quietly left the pen. The following morning, the hen and poults moved from the box at will. Boxes were later removed from each pen. Water treated with Gallomyecin was supplied in each pen by 2 4-liter poultry watering devices. Turkey poult starter was available in small troughs. Heavy ground cover was removed so that poults could be observed.

All released hens were monitored by radio telemetry to determine movements, roosting habits, mortality of young and other factors related to the releases. Care was taken to prevent human disturbance of hens and poults during a period of 3 to 4 days following release. After each hen had adjusted to release an attempt was made to locate her on the roost to determine if poults were present. Observations of poults on the ground during daylight hours were almost impossible because of dense ground cover and wildness of the hens. Hens were located by telemetry and collected after a careful determination of complete loss of poults, or after poults were 12 weeks old. Collection of hens was made to prevent cross breeding with surviving eastern birds.

SUMMARY AND CONCLUSIONS

The most critical problem in the study was mortality in the holding pens. It would be possible, at added expense, to minimize these losses by building more elaborate, weather-resistant, varmint-proof pens. Most of the loss was attributed to predation and heat. This study was conducted in mid-summer when temperatures were highest.

More success might be attained with an early summer schedule. From a natural production viewpoint, poults should be placed with hens by June 14. In this study, poults that were released were imprinted between mid-June and mid-July.

All adult hens were broody and appeared to have a protective attitude toward the poults. The technique of releasing wild hens with pen-reared poults was relatively successful and the results seem to vary according to habitat and predation. Generally, the successful hens maintained a home range of 240 ha or less after moving up to 1 km in various directions from the release site. No pattern of direction in movement from the release site was detected. The juvenile hen which did not accept the poults upon release maintained a home range of 650 ha. The most successful hens stayed within a 101-ha area.

During the 3rd year of the study (1979) high mortality rates occurred in wild surrogate hens. Four hens died in the hen-poult adjustment pens and 3 died immediately after release. The cause of this unusually high mortality was not determined, but over-heating was suspected.

Survival rates for poults to adulthood during this study was 1.92 per hen (Gore 1980), compared to 4.9 and 6.5 poults observed (1977 and 1978) per brood in wild eastern turkey populations in East Texas (Spencer 1980).

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