

INTRODUCTION OF THE RING-NECKED PHEASANT TO THE TEXAS GULF COAST

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Abstract: A total of 967 wild-trapped pheasants (*Phasianus colchicus torquatus*) was released over a 7-year period (1964 - 71) in the Sloan-Trull study area of Matagorda County, Texas. On the Maxwell-Boyt study area in Liberty County, Texas, a total of 1,975 pen-reared pheasants (*P. c. torquatus* × *P. c. talischensis*) were released during a 5-year period (1968 - 73). The success of these releases was evaluated by measuring dispersal, brood production and survival. On 3 sites during 1977 - 1978, 30 pheasants were tracked by radio telemetry to determine dispersal and mortality during the 1st 30 days after release. Dispersal averaged 439, 450 and 134 m on the 3 sites. Mortality for the 1st 30 days was 40%, 40% and 80%. Annual mortality rates for the Sloan-Trull and Maxwell-Boyt study areas were calculated at 67% and 77% respectively, from a 3-year telemetry study (1976 - 79). Brood sightings reported by landowners, crowing cock counts and hunting results indicate a self-sustaining population. Both study areas have been hunted for 5 years (1976 - 80).

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Many attempts have been made in the United States to introduce ring-necked pheasants (*Phasianus colchicus*) to various habitats that have been altered by land use practices to be less suitable for native upland game species. With the exception of the Panhandle, no attempts have been successful in establishing self-sustaining pheasant populations in Texas until the coastal pheasant stocking program began.

In 1964 a program was initiated to stock wild-trapped pheasants obtained from the California Department of Fish and Game to the mid-coast area of Texas. In 1966, through the efforts of the Exotic Game Bird Project, hybrid pheasants were produced at the Texas Management and Research Station located in Tyler, Texas. The hybrid was produced using wild-trapped Chinese ring-necked pheasants (*P. c. torquatus*) from the Sacramento Valley of California with western Iranian black-necked pheasants (*P. c. talischensis*) obtained from Oklahoma and Missouri. This pen-reared hybrid pheasant was released on the upper Texas coast. The California pheasant was selected because of the similar climatic conditions, habitat and agricultural practices of the Sacramento Valley and that of the coastal counties of Texas. Brood production, dispersal, and survival of the populations were measured to determine the success of releases of wild-trapped and pen-reared pheasants on the Texas Coast.

Appreciation is extended to all Texas Parks and Wildlife Department personnel and cooperating landowners who have assisted in establishing pheasants in the coastal area.

METHODS

Middle Coast

Two major release sites were selected to initiate the coastal pheasant stocking program: The Sloan-Trull Ranches in Matagorda County, located on the middle coast, for the wild-trapped pheasant and the Boyt-Maxwell Ranches in Liberty County, located on the upper coast, for the pen-reared cross pheasant (Fig. 1).

The climate along the middle coast of Texas is subtropical with an average annual rainfall of 96.5 to 106.7 cm. The greatest rainfall usually occurs during May through September. Tropical storms and hurricane systems often produce heavy rainfall during this period. The average daily minimum temperature during January is 6 - 9 C; the average maximum is 32 - 34 C in late July.

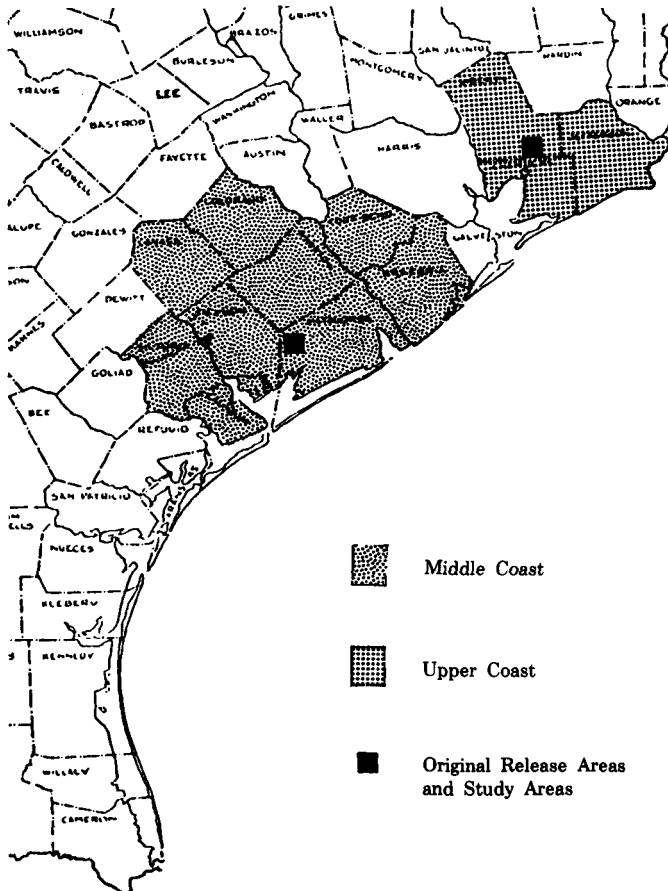


Fig. 1. Pheasant release areas on the Texas Gulf Coast.

Major soils occurring on the middle coast are Lake Charles-Bernard and the Edna-Telferner consisting of nearly level to gently undulating soils that are very slowly permeable. Both the soil series are considered very dark gray clay loam surfaces and dark gray clay subsoils. Many of the all weather roads in the area are constructed of oyster shell, which provides game birds an abundant source of calcium.

The vegetation in this area is in successional stages resulting from extensive farming practices. Principle agricultural activities are soybean, rice, sorghum and cattle production. Crop lands are rotated every 1 to 3 years between row crops and rice production. Pasture lands, fallow rice fields, and irrigation canal levees provide vegetative cover for pheasants. Crop lands and pastures comprise 57% and 29% of the study area, respectively, while fallow rice and canal levees comprised 14% of the habitat.

Upper Coast

Climate along the upper Texas Coast is also classified as being subtropical. Normal annual rainfall in this area is 121.9 to 132 cm. Average minimum temperatures in January are approximately 6 - 7 C. Average maximum temperatures in July are 33 - 34 C.

Soils occurring in this area are of the Beaumont-Morey association characterized as level, clayey and silty prairie soils, and the Crowley-Acadia association being nearly level, prairie soils with a silty surface.

Rice, cattle and soybeans are the principle agricultural activities, with rotation of crops and cattle grazing similar to the middle coast. Crop lands and pastures comprised 22% and 24% of the study area while fallow rice and canal levees comprised 54% of the habitat.

Selection of Release Areas

A combination of factors was used in selecting areas of the Texas Gulf Coast for introduction of pheasants. Consideration was 1st given to areas where native game birds such as prairie chickens and quail were being displaced due to land use practices, but with habitat perceived as suitable for pheasants. Secondly, areas were considered that provided the type of habitat where an introduced pheasant population could complement existing native game birds.

Information on climatic tolerances and habitat types of the native range of introduced pheasants was supplied by the biologists for the Federal Foreign Game Investigation Program under the guidance of Dr. Gardiner Bump and Wayne Bohl. Similar habitat and climatic conditions exist in California's Sacramento Valley and are described in Allen (1956). Consideration was given to the selection of release areas with climatic conditions similar to the native range of the Sacramento Valley pheasant (Allen, 1956).

Principal production areas of grain crops shown in (Anon. 1969) were used to select general areas of potential pheasant habitat. Further, the assistance of biologists and game wardens from various locations was obtained in locating pheasant habitat within their areas of responsibility.

Local landowners of potential release areas were contacted and requested to cooperate in assuring that good food and cover would be preserved in release areas. Where possible, release areas were selected on large single ownerships to limit illegal hunting of released birds.

Release Methods

Middle Coast. — All releases of pheasants were made using the direct method. Releases of wild-trapped California pheasants were made during Septmeber and October. Ages of birds at release varied from approximately 8 weeks at adult. Releases were made in an approximate 50:50 sex ratio.

Small areas were saturated with large releases to build broodstock to self-sustaining threshold. Fifty to 75 wild-trapped birds were released each year for a 3-year period on the same release area. New release areas were established 12.8 - 16.0 km from previously stocked areas.

Upper Coast. — Releases of pen-reared hybrid pheasants were made from July to October in an approximate 50:50 sex ratio. Release areas were stocked with 400 8- to 14-week-old birds each year for 3 consecutive years. Three sites within 1 release area were chosen and 133 birds were released at each of these sites. This early release technique was altered due to a bunching habit exhibited by the pheasants (Mabie 1980). Later, 16 birds every 0.3 or 0.5 km were released along ranch roads within the stocking area. Distances between stocking areas were the same as for the middle coast.

Releases

Middle Coast. — A total of 967 wild-trapped birds from California was released on the Sloan-Trull study area from 1964 through 1971. This area is comprised of approximately 2,000 ha. Historic records also show that 614 pen-reared California pheasants were released in Matagorda County in 1965. Releases have expanded on the middle coast to include Brazoria, Fort Bend, Wharton, Lavaca, Colorado, Victoria, Calhoun and new areas of Matagorda County. Approximately 1,648 wild-trapped and 14,214 pen-reared cross pheasants have been released from 1964 - 1980 (Fig. 1).

Upper Coast. — A total of 1,975 pen-reared cross pheasants was released in Liberty County on the Maxwell-Boyt study area from 1968 - 1975. This area is comprised of approximately 4,000 ha. Releases have expanded on the upper coast to include Chambers, Jefferson and new areas in Liberty County. Approximately 17,000 pen-reared cross pheasants have been released from 1968 - 1980.

Measurements of Success

A crowing cock route was established in 1969 for the Sloan-Trull release site. From 1969 to 1980 call counts were conducted on 2 mornings during mid-April. The census period began 30 min before sunrise with stops at 1.6-km intervals. All calls heard during a 3-min period were recorded. Roadside censuses were also

conducted along the same routes during June, July and August. Sight observations, landowner interviews and incidental observations were used to determine dispersal and reproductive success. A telemetry study was initiated in 1976 to determine habitat utilization, survival, nesting and production of released pheasants (Reid and Mabie 1980).

A crowing cock count line was established for the upper coast on the Maxwell-Boyt Ranches in Liberty County in 1971. This line was run from 1971 - 1980 in the same manner as described. Roadside counts, landowner interviews, incidental observations and telemetry studies were also conducted on the upper coast to determine dispersal and reproductive success.

RESULTS AND DISCUSSION

Crowing Cock Counts

Sloan-Trull Area — Although the number of crowing cocks heard on a transect has no real relationship to the hen population, this technique, which was initiated on the middle coast in 1969, provided the most reliable data in determining release success and expansion. Pheasants heard calling increased steadily until 1976 and then a decline occurred through 1980 (Table 1). This decline was attributed to poor nesting conditions due to torrential rains each spring for 3 consecutive years, 1977 - 1980. The last release in this area was made in 1971.

Maxwell-Boyt Area — Crowing counts were conducted on the upper coast release area from 1971 through 1980 (Table 1). A steady increase in crowing pheasants

Table 1. Wild-trapped and pen-reared cross pheasant crowing cock census results, 1968-80.

Date	Matagorda County, Sloan-Trull Release Area		Liberty County, Maxwell-Boyt Release Area	
	Line Length (km)	Calls/ 3-Min Stop	Line Length (km)	Calls/ 3-Min Stop
1968				
1969	35	0.06		
1970	35	1.9		
1971	35	4.3 ^a	18	4.4
1972	35	4.0	18	4.2
1973	35	3.7	19	5.9
1974	35	4.0		
1975	35	4.1		^a
1976 ^b	32	9.1	32	8.3
1977 ^b	32	7.3	32	10.3
1978 ^b	32	4.5	32	7.1
1979 ^b	32	3.5	32	2.8
1980 ^b	32	2.7	32	6.3

^a Last release.

^b Hunting season open during these years.

was observed and the last release made in this area was 1975. A decline was recorded in 1979 also due to torrential rains during that spring which caused poor production.

Nesting, Production and Brood Observations

A 3-year telemetry study was conducted from 1976 - 1979 to determine habitat utilization, nesting and survival of pheasants along the middle and upper coast areas (Reid and Mabie 1980). During this study, 12 transmittered hens were found nesting in the Matagorda County area. First nests were found April 19 and the last nest was found July 28. Average clutch size was 8.6 eggs per nest. Seven nesting hens were located on the Boyt Ranch in Liberty County, upper coast area. Earliest nest was observed on April 12 and the latest nest was found on August 1. Average clutch size was 8.3 eggs. Accurate counts of brood size were difficult to obtain due to heavy vegetation.

During 1976, Department biologists interviewed 37 landowners who reported observing 131 broods with average brood sizes of 7.09. In 1977, 56 interviewed landowners reported 131 broods with average brood sizes of 6.9.

Dispersal and Mortality of Released Pheasants

In 1977 and 1978, 30 pen-reared pheasants 8 to 10 weeks of age were fitted with radio transmitters and released in groups of 10. Subsequent monitoring showed that in a 30-day period these groups of birds moved average distances of 439, 450, and 134 meters from their release points (Mabie 1980). Mortality rates for each group were 40%, 40%, and 80% during the 1st 30 days. All birds survived the 1st 5 days after being transmittered. Therefore, mortality was not attributed to transmitters (Dumke 1973). Mallette and Bechtel (1959), found that neither game farm pheasants nor wild-trapped pheasants dispersed from their release sites to any extent, and movement probably was influenced more by agricultural practices than by any other factor. This was found to be true on the Gulf coast. High mortality rates were attributed to the massive hawk migrations into the area during September and October of each year. Burger (1964) explained that releases of large numbers of birds unquestionable creates a surplus prey population.

In 1976 research to determine habitat utilization, nesting and survival of pheasants in established areas of Matagorda and Liberty counties indicated annual mortality rates of 67% in Matagorda County and 77% in Liberty County (Reid and Mabie 1980). Average home range for 32 pheasants released in the middle coast area was 22.2 hectares and for 28 birds transmittered on the upper coast the range was 42 hectares.

Hunting Seasons

The 1st pheasant hunting season was set in 1976 for 9 days with a 2 cock per day bag limit in portions of Matagorda and Liberty counties. The seasons were expanded in 1977 to include all of Liberty County and in 1978, Liberty, Jefferson and Matagorda counties and a portion of Wharton County were opened to hunting. The season was again expanded in 1979 in all areas to a 30-day season and 2 cock

per day bag limit. As the result of strict control by landowners, however, only 2,000 cocks have been bagged on the upper coast and approximately 600 on the middle coast area during the past 5 hunting seasons according to landowner estimates. Since all lands in these areas are private, it is difficult to obtain hunting rights. Consequently, harvest will remain low until such time that landowners begin to open up their lands to hunting.

CONCLUSIONS

No differences were found between the adaptability of wild-trapped pheasant of the middle coast and pen-reared pheasant of the upper coast. Dispersal in both areas has been minimal.

Crowing count indices from 1969 through 1980 indicated that the number of breeding pheasants in these areas was sufficient to sustain the population. Brood observations in those areas where stocking efforts were complete showed that reproduction was occurring. The major limiting factor along the coast of Texas seems to be torrential rains during peak nesting periods.

The pheasants on the Gulf Coast of Texas, both wild-trapped and pen-reared, are expanding at a slow rate. Populations in those areas where stocking efforts are complete are maintaining a level which supports a huntable surplus of cocks. Stocking is continuing on a planned schedule to include all suitable habitat.

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