

Establishment of Artificially Propagated Quail.—On January 23, 1946, twelve pairs of artificially propagated California Quail (*Lophortyx californica*) were liberated at the farm of the writer, near Shandon, San Luis Obispo County, California, in territory previously occupied by quail, but where they no longer occurred. Food, cover, and water were made available, and the birds accepted the immediate territory where released as their winter habitat. The proximity of this territory to the farm activities offered unusual opportunity for observation, and the following is a summary of the most important notes taken over a period of one year.

The birds remained within 150 yards of the spot where released for a period of 37 days. During this time they were extremely secretive and cautious and it was necessary to make a bush to bush search of the area to ascertain their presence. They roosted in the larger bushes, horehound (*Marrubium vulgare*), and lupin (*Lupinus albus*), that grew from the sides of a steep-walled gully. Marsh Hawks (*Circus cyaneus*), and Sharp-shinned Hawks (*Accipiter striatus*), were seen in the territory occasionally for a few days after the birds were released. No predation resulted, however, as on February 12 the covey of 24 birds was still intact, and after this date these hawks, which do not breed in the vicinity, were not seen again for a period of approximately five months.

On March 12, it was noticed that the birds' behavior had changed, indicating they were pairing off and seeking nesting territories. With hawks absent, they showed less caution and ranged freely over exposed areas far beyond the limits of their winter territory. They abandoned the bushes as a roosting site and came to roost in the various trees and shrubs about the farm house. Feed was placed in the house yard, and this became the focal point of their activities. All seemed successful in finding mates and only congregated at roosting time. Six pairs were noticed going to roost in trees and shrubs about the house on May 2; they were assumed to be pairs that had met with failure in their first nesting.

The first young were noticed on May 14. A brood that numbered about 14 chicks, a week old, was seen at a spot some 200 yards from the place where the birds were released, and on four consecutive days they were seen within 30 feet of this same spot. What appeared to be the same pair of adults was seen at various times later with only two chicks; these two were seen often later at different stages of growth and were finally noticed going to roost with the adults on July 8. It was concluded that these were the only young reared from the first nesting, as it was not until 36 days after the first young appeared that any more were seen. The winter covey had disbanded and paired off during a period of 4 or 5 days, and it does not seem probable that other phases of the nesting cycle should not follow to some extent the same sequence in all pairs.

On June 19, the second brood was first seen and in the next three weeks, four more pairs were known to hatch broods successfully. These late hatchings suffered little mortality; they all frequented the immediate territory about a favorite watering site, and while they usually congregated during the day, the parent birds discouraged intermingling of the broods. The last brood to hatch was noticed on August 2. The eight young appeared less than a week old and were evidently vigorous and healthy; they were seen regularly near one particular spot for 15 days, during which time they suffered no mortality and showed no ill effects from their late hatching.

Already mentioned is the fact that hawks predatory to quail were absent during the spring and early summer. Horned Owls (*Bubo virginianus*) were common at all times and while three were shot within the territory, there was no indication that they molested the quail.

Marsh Hawks began to reappear in the later part of June. On June 28 one was observed harrying the quail as they took cover at the edge of a wheat field. The stand of wheat, which was two feet tall intermingled with a somewhat higher growth of lambs quarter (*Chenopodium album*), was evidently adequate protection against Marsh Hawks, as on this and three subsequent attacks under the same conditions, the hawk was unsuccessful. What was assumed to be the same hawk was shot while harrying the quail on July 4. This species was common throughout the late summer and fall. On August 31 one was shot when it alighted to eat a fledgling dove it had caught in the quail territory. None of the four attacks by these hawks that was observed was successful.

Cooper Hawks (*Accipiter cooperii*) were seen only in late summer and fall. On September 24 and September 27, one was seen attacking the covey and on both occasions was unsuccessful.

The Sharp-shinned Hawk was the most common hawk in the territory; none was seen molesting quail.

A feral house cat was seen on different occasions in the territory and was shot on December 30 at a spot one-half mile distant. Coincidental to seeing this cat, disturbances were heard among the quail at night. No mortality was noticed.

The attempt to establish quail in this particular spot has thus far been successful beyond all expectations. As of January 23, 1947, 49 birds comprised a population derived from the original plant of 24. It is intended to keep the covey under close observation, to encourage its increase and expansion, and incidentally to seek the factors that control quail abundance.—IAN I. McMILLAN, *Shandon, California, March 3, 1947.*