The marking and banding studies were financed by grants from the Colorado State University Faculty Improvement Committee, to whom I am grateful.—Ronald A. Ryder, Colorado State University, Fort Collins, Colorado, November 28, 1963.

Invasion of Clark Nutcrackers and Piñon Jays into Southeastern Arizona.—During the autumn of 1961, Clark Nutcrackers (Nucifraga columbiana) and Piñon Jays (Gymnorhinus cyanocephala) invaded southeastern Arizona in large numbers. Piñon Jays were first observed on September 20 and were subsequently found on most of the oak or oak-grassland hillsides of southeastern Arizona in flocks of 10 to 200 birds; also four flocks totalling 200 were seen in the Sierra de Cananea, Sonora, México, in October. The Piñon Jays for the most part were found feeding in the oak and oak-grassland areas but occasionally they were found in the lower agave-desert grassland habitats. These latter birds were very likely in the process of moving into southeastern Arizona, for they were not subsequently seen at such low altitudes. After mid-December the Piñon Jays appeared to have completely evacuated southeastern Arizona as I had no report of them after December 20. It is not clear why they should remain for less than half the winter and then leave. I feel sure that the birds I observed after late October represented a semi-permanent winter population at least through December and not a much larger mass that was continually moving through the area, for during these months the flocks appeared to be localized for varying lengths of time in specific areas.

On October 10, 1961, a flock of 30 Clark Nutcrackers was observed flying up Gardner Canyon through an area of oak-grassland in the Santa Rita Mountains, Pima County, Arizona. Undoubtedly these birds were in the process of invading the area, because on all other occasions the nutcrackers were associated with higher coniferous habitats. Subsequent to observation in Gardner Canyon many flocks of Nutcrackers were noted at higher altitudes through the winter of 1961–1962 in the following mountains of southeastern Arizona: Santa Catalinas, Santa Ritas, Pinaleños, and Chiricahuas. These mountains are all south of the nutcracker's breeding and winter ranges. In the Santa Ritas one flock of approximately 35 birds spent the entire winter in one large bowl of a canyon at 6800 feet elevation in a pine environment. Similarly, in the Santa Catalinas, a flock of 40 was present all winter at 7800 feet in Bear Wallow, a ponderosa pine-Douglas fir area.

Each flock appeared to hold a particular section as a winter flock-feeding territory. On every occasion that I observed (at least once a week in the Santa Catalinas and twice a month in the Santa Ritas) I found the respective flocks some place in their canyon within an area of approximately 200 acres. The birds kept to a rather tight flock structure even though they were observed traversing the feeding area many times each day. Feeding was at first restricted to the upper parts of the trees, and as many as ten nutcrackers would alight in one tall pine or fir and all commence to search for cones. After a bird located a cone it would pick out the seeds; often the bird would have to hang upside down at the end of a branch to do so, or else it would break the cone off and pry out the seeds while sitting on a larger branch. Although there appeared to be a good cone crop, concentrated harvest of the cones by these large birds must have depleted the supply appreciably, for in late December much more feeding on the ground below the trees was observed. Only occasionally before this did the nutcrackers search for food on the ground. However, after late December they were actively searching through the forest litter for fallen pine and fir cones, and they fed in the trees much less frequently. From November to January ten nutcrackers were collected, five while feeding in the trees and five feeding on the ground. All stomachs analyzed demonstrated that only pine and fir nuts constituted the food supply whether the birds were feeding in trees or on the ground. After February the winter flock structure began to break up and smaller groups wandered over more of the mountain. I last saw nutcrackers in the Santa Catalinas on June 5, 1962.

On the basis of plumage characteristics the ten specimens collected were four adults (two male and two female) and six first-year birds (two male and four female). First-year birds were identified by weaker pigmentation of remiges and rectrices (tending toward brownish at the tips), dull or brownish coverts, and the more worn condition of the remiges and rectrices. A predominance of first-year birds is consistent with findings for other invading groups of corvids, especially jays.—Peter W. Westcott, Department of Zoology, University of Arizona, Tucson, Arizona, January 2, 1964.