10:19½. Dived once, then chattered at neighboring male close to no. 9, but did not leave territory; perched at 10.
10:20. Repeated chattering, then perched at 3, preening. Bird flew over territory, male twittered.
10:22½. Chased another male off to SE; began feeding.
10:24. Perched at no. 1, twittering and watching.
10:25. Chased another male off to SE; gone some time while male B flew around perch 5 twice and returned to his own territory.
10:26. Returned and began feeding.
10:28. Perched at 3, preening and fluttering wings. Moved to 11 and then to 8.
10:29. Female entered territory. Male made four dives and then perched at 8. Left territory to NW and soon returned to 8.
10:30½. Perched in conifer 7; two dives and perched at 5.
10:31½. Two dives and perched at 5. Moved to 9, then to 8.
10:32½. Three dives, perched at 8, began feeding, perched at 4.
10:33½. Chased male B off to SE; female quiet.
10:34. Feeding; perched at 11, moved to 4.
10:35. Perched at 8, chased neighbor D to N, perched at 5, moved to 8 and then returned to 5.
10:37. Perched at 8, dived and returned to 8.
10:39. Feeding; perched at 3, twittering.
10:41½. Perched at 8, dived four times and returned to 8.
10:43. Chased another male (probably male B) off to SE.
10:44. Made four dives, then fluttered in bushes with female; made another dive and disappeared.
10:45. Returned and dived, then chased another male.

Department of Zoology, University of Utah, Salt Lake City, Utah, March 1, 1938.

ANOTHER JAY SHOOT IN CALIFORNIA

By EMMET T. HOOPER

As representatives of the Museum of Vertebrate Zoology, Mr. F. H. Test, Mr. Frank Richardson and myself were given the opportunity to be on hand at a jay shoot held by the Associated Sportsmen of Calaveras County on January 30, 1938. This was the first organized shoot held by the association since the one of April 26, 1936, when, also, representatives of the Museum were present. The first shoot has been reviewed by Miss Mary M. Erickson (Condor, vol. 39, 1937, pp. 111-115).

The purposes of this brief report are, in the main, three: To review the method of conducting the shoot, particularly as differing from the one reported by Erickson; to record the number and kinds of "predators" taken; and to give certain opinions regarding wild life voiced by sportsmen interviewed.

The area covered by the shoot was approximately the same as in 1936 (about 375 square miles) and chiefly in the blue oak and digger pine belt. However, this year only a few more than one-half the number of men hunted over this same area and they returned with about one-third the number of birds. The drain on the jay population in the area was thus much less than in 1936.

Approximately 20 men took part in the shoot; about 30 men were present at a dinner held afterwards. No formal record was made by the Association of the number of men hunting, nor of each hunter's kill. The fact that fewer men, than in 1936, took part in this shoot may be explained on one or more of several counts. A dance was held the night before in San Andreas; it was said by some that the "aftermath" was a bit too much for certain individuals who normally could be expected to shoot. Some held that the inclement weather that day kept indoors erstwhile hunters. Others complained that the lack at that time of keen competition lessened the incentive to get hunters afield. Possibly all these factors can be summated in one reason, namely, lack of interest in the shoot as held.

In contrast to the 1936 shoot, no barbecue for members, wives and friends was held at the close of the day of hunting. Instead, members only met at "Toms Place," a restaurant and bar in Angels Camp, to count the kill and—perhaps most importantly—to dine together. No competing hunting teams were formed; consequently there was no losing side to bear the expenses of the dinner, as in 1936.

One hundred and sixty-six (166) Steller Jays (*Cyanocitta stelleri*), 63 California Jays (*Aphelocoma californica*), 1 Sharp-shinned Hawk and 1 House Cat (scalp only) were brought in to be counted. In addition, other birds were reported shot, but the hunters "just didn't bother to bring them in." The number of birds collected per man ranged from 3 to about 50, averaging about 11. In 1936, the average number per man was about 30.

Several explanations were offered by the hunters to account for the discrepancy between the number killed during these two years. The inclement weather was said to have much to do with the fewer obtained this year. It was said to be important for this reason. "When the weather is cold and cloudy the jays remain within cover. They are not easily flushed. If they are flushed they fly to a tree, hop through the branches to the opposite side, then fly away to denser cover. On warm, sunny days they are flushed easily, fly into the bottom reaches of a nearby tree, then hop through the foliage to the top of the tree before again taking to wing. This latter performance allows for a closer approach to the tree before shooting." While scouting about during the afternoon of the shoot we saw comparatively few birds; perhaps the birds were "hanging close to the brush."

The proportionately greater number of Steller Jays over California Jays collected was explained by some men interviewed. With the advent of winter the jays migrate down-mountain, the "Mountain Jays" (Steller) moving from the yellow pine belt down into the blue oak-digger pine belt; "Blue Jays" (California) in turn migrate [possibly as the result of the population pressure from the increased number of Steller Jays in the blue oak belt] farther down-mountain onto the lower foothills. The reverse process occurs in the spring; the birds move to higher levels. Comparison of the relative numbers of the two kinds killed in January (the present shoot) with those taken in April (1936 shoot) will substantiate the above observations. In January, there were 2.6 Steller Jays per 1 California Jay taken; in April-taken jays the ratio of Stellers to Californias was about .54 to 1.

Little new information regarding the effect of jays on quail populations can be added to that already given by Miss Erickson. Several men stated that they have noticed no change in either the quail or the jay populations since the 1936 shoot. It is probable that only the surplus population—at least as regards jays—is taken, when shoots are held no more frequently than once every 1½ years. Normally (that is, without shooting) this same surplus would be removed by environmental factors exclusive of man.

Feral House Cats apparently have no friends among the sportsmen of Calaveras County. Each association member probably secures considerable satisfaction each time he bags a feral cat. One man reported that he had taken 7 domestic cats in his steel-trap line within a period of 1½ weeks. This line was located about 1½ miles from the nearest human habitation and 5 miles from a main highway. Wholesale dumping of cats brought from larger cities was reported to be still a not uncommon practice.

Periodically each local association of sportsmen (for example, the Calaveras County Sportsmen's Association), if a member of the California Sportsmen's Association, is urged to file with headquarters a report of number and kinds of predators killed. A cup, plaque or some other such prize is awarded the local association which has amassed the most points for the period. Points allowed per predator kind are pro-rated in a ratio

directly proportional to the amount of damage a predator kind is supposed to do to game kinds and inversely proportional to the abundance of the predator. The following list of predators, with the point value of each kind, was copied from a "Predator Report" blank:

Mountain Lion	500	Water Snake	20
Bob Cat	100	Skunk	10
Coyote	100	Weasel	10
Wild House Cat	50	Ground Squirrel	10
Crow	50	Magpie (Bluebill)	10
White Pelican	50	Blue Jay	5
Horned Owl	20	Butcher Bird	5
Cooper Hawk	20	Field Rat	5
Sharp-shinned Hawk	20	Jack Rabbit	5

Founded on conversations with sportsmen at the conclusions of the two jay shoots I have attended, the following impressions are foremost: Interest in the shoot, as such, is waning, but will be revived. Whereas the jays were once killed primarily for the purpose of removing game predators, they are now sought principally for the pleasure derived from hunting, and *secondarily* because some benefit to "food game" kinds may result. In other words, jays have become game; they are hunted for the same more or less intangible reasons (exclusive of source of food) that other game kinds are sought, namely, physical and mental recreation, "sport of the chase," and joy of good fellowship and companionship.

Museum of Vertebrate Zoology, Berkeley, California, April 5, 1938.

THE NEED OF OAK-TREE INSECT-PEST CONTROL METHODS NON-DETRIMENTAL TO BIRD LIFE

By C. B. LASTRETO

Personal observation and experience have convinced me that current methods to prevent the defoliation of ornamental oak trees caused by the well-known caterpillar pest are ineffectual and are detrimental to bird (and other wild) life, even destructively so. For over a quarter of a century I have owned a six-and-a-half acre tract well covered with oak trees of three species, and half of it covered additionally with a thick growth of elderberry, toyon, madrone, and other trees, and snowberry, wild honeysuckle, wild rose, poison oak and other indigenous shrubs. At various times during that period, spraying was practiced on neighboring estates, while I too had it done on three or four occasions. In spite of all this the trees suffered, some much more so than others. When I did not have mine treated, I frequently observed, in a general way, that mine were better off than the others. Many other interested property owners concur, all of which confirms my conclusion that spraying methods have been ineffectual, at least very unsatisfactory.

There is no question that bird life in my oak belt neighborhood in Atherton, San Mateo County, California, both resident and migratory, has diminished during the period cited. There probably are other causes than spraying, but this almost certainly is at least one of them. The poison, diffused on treetops, into the atmosphere, and falling upon the ground and the covering vegetation, most probably kills more than the caterpillar; all the living beings that depend on the vegetation from the tree-leaves to the plants and grasses, ingest the poison as certainly as does the caterpillar. Probably other pupae, larvae, eggs, insects, etc., that are food for birds, having absorbed poison themselves, are lethal to the birds. In springtime, contemporaneous with the spraying and the breeding season, this is the more important and consequential.