

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.

Further evidence, of more scientific character, is presented in a report of Allen Frost, "Effect upon Wildlife of Spraying for Control of Gipsy Moths" (Journ. Wildlife Management, vol. 2, 1938, pp. 13-16). At a state park in New York, areas within and without the park and purposely well delineated by north-south lines and east-west boundaries, were set apart for controls. All the areas were surveyed before and at different times after the spraying with the same poisons generally used. In some areas sprayed there were no birds left; in the one least affected, a reduction of 50 per cent was noted; and in the others but one or two or three birds could be found. Evidence of like fatality to other wild life is also described, even to the observed exodus of snakes, which is indicative of other effects.

In the search for other remedies I have learned that a contact spray like that of nicotine or tobacco juice has a degree of efficiency when applied precisely at the time or times of the activity of the caterpillar; that it is not toxic; hence presumably does not poison directly and indirectly birds, mammals, or other insects that may be beneficial ones, bees for example; that it evaporates or volatilizes in a few days and leaves the vegetation unaffected. But it does have the objection of the impracticability of general opportune timeliness, as too late for the earlier larvae and too early for the unmetamorphosed ones and the escape of many in unreached spots.

Any process of spraying presumably has a disturbing effect on birds especially during the nesting period which is when most of the spraying is done; the parents are scared away, nests destroyed and nestlings possibly smothered.

Lamps illuminated at night and surrounded by electrocuting meshes do attract and kill moths in great quantities; but as Prof. W. B. Herms has found by experiment, the moth of the California oak worm (*Phryganidia californica*) has its idiosyncrasy for an ultra violet light, practically invisible in the hours of dusk when it is on the wing. On a San Mateo estate this lamp and also one of mercury vapor were totally ineffective.

This leaves me at least with no means that I would other than condemn; all methods are inefficient and positively with no lasting effect. We much need some better process that may replace those which are all of them disastrous to bird life and even to other valuable life; and even though the oak trees do not perish nor probably even suffer from lasting injury, it is desirable for their sake to relieve them of this pest. And as it is, it will be understood why I disadvise spraying and do not myself do it.

San Francisco, California, April 15, 1938.

HIGHLIGHTS OF ORNITHOLOGICAL WORK IN UTAH

By WILLIAM H. BEHLE

Looking back over the published record of the ornithological work done in Utah, one is confronted with somewhat of an anomalous situation. Most of the known ornithological features of the area were discovered in the early days of exploration and survey. An annotated list of the birds of the then Territory of Utah was published as early as 1874, just 27 years after the arrival of the first colony of Mormon pioneers who entered the region for permanent settlement. Yet despite this early activity, there has been comparatively little advance made in the ornithological knowledge of this faunally attractive region since the decade of 1870. Of late there have been signs of a renaissance in bird work in the state, however, so that it now seems desirable to summarize the work in ornithology that has already been done and so prepare the way for future intensive work.