

tion along the Pacific coast consist in decrease in size in both sexes, and increase in whiteness of the female, from north to south, the extreme in both respects being manifest in birds from the southern portion of the peninsula of Lower California; there is greater aggregate difference between birds of upper California and those of southern Lower California than there is between the former and those of the eastern United States; the "slightly paler" coloration of Californian females is a difficult diagnostic character to use, because of the great range of variation in intensity and extent of the whiteness—many Eastern and Californian birds being indistinguishable; in the material examined, all Cape district females are distinguishable from Eastern females on basis of color, while nearly all males, as well as females, are distinguishable on basis of size.

A few further comments seem in order: Purple Martins at hand from the Lower California peninsula at about latitudes 27° and 31° are a little larger than Cape birds, but the females are nearly or quite as white below. So I put all the material I have seen from Lower California under the name *Progne subis hesperia*. The smallest and whitest individuals from upper California come from the southern part of the state—Mount Wilson and the San Jacinto Mountains. But larger and darker birds come from the same localities; so I put all under the name *Progne subis subis*. Arizona birds show, just as Ridgway says, tendencies toward *hesperia*, but to only slight degree, and they should remain under *subis*. To summarize:

Progne subis subis (Linnaeus). Northern Purple Martin. Breeds at various points throughout the United States and southern British provinces, from the Atlantic to the Pacific, and northward from the Gulf coast and the Mexican boundary.

Progne subis hesperia (Brewster). Lower California Purple Martin. Breeds in the peninsula of Lower California from the Cape district north at least to latitude 31°.

Museum of Vertebrate Zoology, University of California, Berkeley, October 25, 1927.

FROM FIELD AND STUDY

Can Hawks Prevent Mouse Plagues? A Reply.—In the September, 1927, issue of the CONDOR (pp. 249, 250) appeared an interesting discussion regarding the control of rodent pests by raptorial birds. It was my great good fortune during 1923 to spend two or three days in the field with Major Brooks and I have only the highest regard for his ability as an observer and recorder of facts concerning bird life. In this case, however, I fear that he has fallen into the error, which seems to be somewhat prevalent in this age, of making infrequent or occasional observations in a given locality and assuming that such observations represent typical or average abundance, or scarcity as the case may be, of species encountered. Whereas, it may be that because of fluctuations caused by climatic or seasonal conditions the facts are quite to the contrary.

The region in which the mouse plague in question occurred is in the extreme southwestern part of the San Joaquin Valley amid almost desert-like surroundings, even to a flourishing group of mesquite; while Snelling, although as Major Brooks states, only 180 miles away, is in the extreme eastern portion of the central part of the San Joaquin Valley and very near the typical Sierra Nevada foothill associations. The large winter assemblages of hawks which he mentions as having been observed on January 2, 1923, have long been known to the writer, and probably to other observers as well, as occurring commonly in that and other portions of Merced and Stanislaus counties, but are almost unknown in the southwestern portion of Kern County.

It might seem logical to assume that because of a great abundance of hawks at Snelling it must naturally follow that raptores were equally abundant at the same time in all parts of the San Joaquin Valley; but there is little likelihood that this ab-

normal abundance extended very many miles south of the district in which it was observed by Major Brooks.

It is true that hawks and predatory mammals were abundant during the winter of 1922-23; but residents of this Valley are painfully aware of the fact that the four years following showed a continually decreasing amount of spring rainfall in the southern Sierra Nevada and adjacent portions of the San Joaquin Valley. This lack of rainfall was responsible for the drying up of many springs and a flow of water in the rivers hardly sufficient to meet the immediate demands of irrigation. The near failure of certain grain crops was not the only serious consequence. Much of the western portion of the central and southern San Joaquin Valley is used for sheep pasture, and whereas in normal seasons these open plains support a knee-high growth of alfalfa and wild flowers, yet, during this period of drouth, there were two years when the seeds of this wild vegetation did not sprout over large areas, and patches of bare ground were visible at a time when a heavy growth of grass should have been present.

The scarcity of food supplies thus brought about may have been the cause of a very noticeable decrease in the number of small mammals inhabiting the region. Rabbits and antelope squirrels became noticeably scarce, and with the failure of these, and other mammals, to breed in normal numbers the raptorial birds of the Valley were faced with an ever decreasing supply of food. Migrant hawks finding their former haunts barren no doubt moved to more favorable locations, while resident birds were also compelled to leave for other parts. The following incidents may give some slight clue as to the actual decrease in the number of birds of prey during the four-year period following 1923.

A four mile growth of cottonwoods along a certain dry stream bed in western Fresno County normally supported six nesting pairs of *Buteo swainsoni*, but this number dwindled to a single pair. Four pairs of *Buteo borealis calurus*, which could usually be counted on to furnish nesting records in a given area, disappeared entirely. A Prairie Falcon route covered annually by the writer could always be counted on to produce four nesting pairs of falcons, with a fifth pair as a possibility; but only a single pair remained. A colony of some thirty pairs of Great Blue Herons, located in a dry wash at least twenty miles from any pond, was supported, according to my observations, entirely by the small mammals and reptiles occurring on the plains. During the period of drouth this colony became entirely untenanted.

Such, then, was the condition of the mouse-eating bird population of the San Joaquin Valley at the time the plague occurred; and it will take years for this population ever to build up to the numbers observed in 1923, if indeed it is ever possible under present conditions, with an ever increasing number of automobile parties invading even the remotest sections of the country.

This condition of drouth reached its height during 1925 and 1926 when the flow of water in the Kern River was so low that practically the entire supply was needed for irrigation, and Buena Vista Lake eventually dried up. Here, then, was a vast area of rich land which was immediately put under cultivation and planted to Sudan grass, Egyptian corn and barley. The resulting growth was luxuriant beyond belief, and amazing yields of grain were the result. Mice are known to breed and increase with astonishing rapidity, under favorable conditions; and the Buena Vista Lake region suddenly became an especially favorable environment for the remnant of the mouse population which had survived the dry years. With abundance of food to be had, with opportunity for perfect concealment, with raptorial birds present in very limited numbers, and with four-footed predators greatly reduced by coyote poisoning campaigns, it is not surprising that mice increased to the point where a so-called mouse plague resulted.—JOHN G. TYLER, *Fresno, California, September 21, 1927.*

Fly-catching Habits of the Western Tanager.—Although it is a recognized and well established fact that the Western Tanager (*Piranga ludoviciana*) catches and devours many species of insects, I know of no recorded instances of their eating so large an insect as a cicada. Therefore the following incident may be worthy of record. While collecting insects on the morning of July 3, 1927, in the Cuyamaca Mountains, San Diego County, California, I noticed a small flock of eight or ten Western Tanagers in an open field. I was stalking a particularly lusty-voiced cicada when suddenly it took flight, flying low over the field in the direction of the tanagers. A female tanager arose and remained in the air on hovering wings for a moment, then suddenly darted