

## REACTION TOWARD CAPTURE AMONG CERTAIN SPARROWS

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Among birds captured for banding purposes there is noticeable a considerable variation in the reactions of different genera toward the realization of confinement in a trap, and also a great difference noticeable between individuals of any one species. These variations and differences were well brought out during some bird banding work recently carried on near Woodacre, Marin County, California. Golden-crowned and Nuttall sparrows (*Zonotrichia coronata* and *Zonotrichia leucophrys nuttalli*), the former taken in some numbers, and the Marin Song Sparrow (*Melospiza melodia gouldii*) that occasionally appeared in the traps were the species upon which observations were made.

As compared with the lively little *Melospiza* the *Zonotrichia* are slow-moving birds, but there seemed to be much more than a mere matter of speedy movement governing the different reactions in the two genera. While the Nuttall exhibited a little more activity than did the Golden-crowned Sparrows they were taken in such relatively small numbers that a fair comparison between these two species could not well be made, so that the observations herein set down are confined almost entirely to the other two species named above.

Upon their realization of being confined within its walls individuals of the genus *Zonotrichia* run more or less around the trap, trying to find some opening through which to escape, but they do this in a heedless, haphazard manner, blindly as it were. The *Melospiza*, on the other hand, travel around much more rapidly inside the trap, but ever with a keen eye for an opening and with a brain ready to take instant advantage of any possibility that may attract the eye, it being understood that these reactions are what take place without extraneous causes, such as the sudden approach of a person or of a dog or cat to the trap, bringing about a state of overexcitement and making them "lose their senses", to use a colloquial expression.

The traps used in this work were almost all of the "Sprot" type, rectangles of wire netting about 24 by 30 inches and five inches high, placed on the ground. The entrance to this type of trap is a sort of funnel, of wire netting, projecting into one end. The large outside opening of this funnel is easily found by the birds wishing to enter, but the opening at the small end, on the inside of the trap, is almost invariably overlooked by the Golden-crowned Sparrow in its efforts to escape and is seldom found by the Nuttall, although captive birds pass across it again and again and often pick up food right beside it without discovering that it is a means of egress. If a song sparrow is in the trap, however, it behooves the bird bander to stop up the funnel entrance before he tries to herd the captives into the small catching box in the corner, for the sharp eyes and active brains of at least some members of the genus *Melospiza* are extremely apt to find that small opening and the birds to dart through it to liberty.

This difference in relative quickness of perception in the two genera was also shown in other ways during this banding work. A small door, hinged at the bottom, is arranged at a corner of each Sprot trap, to be laid open so that captive birds may be herded for examination or for banding into a small portable catching box that is placed before the opening. When it is necessary to leave a trap unvisited for so long a period as to run the chance of birds injuring themselves in trying to escape, I often leave this small door partly open, dropping the top at

such an angle as will permit the exit of a small bird, but not sufficiently open to allow the entrance of a cat, for instance, or even of an unwelcome quail. With such an arrangement of the door a captive song sparrow will find that opening, as a rule, very quickly, while often a Golden-crowned Sparrow may be in the trap for an hour or more without noticing this easy route to freedom. The majority of captive *Zonotrichia* undoubtedly do find this opening and soon escape, but I have often discovered one or more individuals in a trap with the catching box door partly down and have watched them run around without noticing that there is any opening there, though most of them would probably find it in time. Of course, when the door is left entirely open, as it is for any great length of time, birds of either genus will find the opening before long. I have sometimes found "Zonos" in a trap with the small door wide open and have succeeded in getting the catching box in position for use before the birds had noticed that there was nothing there to stop them. A *Melospiza* on the other hand, almost invariably went through that opening like a flash.

To cite another instance of the difference in quickness of perception in these two genera, when inserting one's hand into the catching box of a Sprot trap, or into a compartment of a Potter trap, when the captives are *Zonotrichia* it is necessary to be only ordinarily careful about guarding the possible avenues of escape between one's wrist and the sides of the door, for members of this genus are usually facing away from the opening while trying to avoid one's hand. With a *Melospiza* in the trap every precaution has to be taken, as a captive of this genus is as apt as not to be facing the door in defiant and watchful attitude, even after the hand is inserted, and will dash past one's wrist if any opening shows itself. More than one song sparrow has managed to slip past my guard in spite of extra care used to avoid such a contingency. The number of individuals of *Zonotrichia* under observation was something like twenty times as great as the number of *Melospiza*. A few of the former did get away from me, mostly through momentary carelessness on my part, but there were nearly as many such escapes among the relatively few individuals of *Melospiza* that entered the traps as there were among the hundreds of *Zonotrichia* that had done so.

As to *individual* reaction of members of these two genera it can be said that great differences appeared. This was the more noticeable among the *Zonotrichia*, naturally, on account of the greater number involved, but the proportion of individuals of this genus that "used their heads", as Dr. William E. Ritter recently expressed the idea, was observed to be very much smaller than was the case among the *Melospiza*, even though not enough were taken of the latter genus to enable one to reach an approximate estimate of this difference. Fortunately, enough of the *Zonotrichia*—over 400—were taken to show some interesting variations in this matter of using the head.

As mentioned above, most of the Golden-crowns that were driven into the catching box merely fluttered or ran around, trying to force their way through the netting at the end of the box or to jump through it on top; but occasionally some wiser individual tried the same trick that so many of the song sparrows tried and persistently faced the door, running around from one side of my hand to the other in an endeavor to get past the obstructing wrist. Some of this reaction may have been only a chance happening; but some attempts at escape in this manner appeared to be intentional and were deliberately repeated several times in succession. The same reaction was sometimes shown by Golden-crowns caught in the Potter compartment traps, where the larger door is harder for the bird bander to keep

protected and where a bird facing the door has quite a chance to get past the hand of the bander who may be careless enough to leave any opening between his wrist and the sides of the door.

It seemed as if the brains of some, if not all, of these sparrows did not readily retain impressions beyond a very limited succession, even when such impressions were quite closely related, as was shown in the case of many chronic "repeaters" that visited the Sprot traps. The repeaters evidently remembered the food that they had appreciated upon their previous visits, else they would not have returned, but they apparently forgot that their enjoyment invariably ended in their being caught in the small box at a corner of the trap. This box has wooden sides and has netting on the far end and on top. When driving birds into it the top is covered so that light shows only through the end netting and, thinking easily to escape that way, the birds usually entered the box readily enough for the first time or so, though some individuals even then showed great reluctance to enter it. Some of these birds, after several repeats, became more and more anxious to avoid entering the catching box until at last it became a matter requiring much patience to herd them into it. They apparently had learned to associate their entrance with the idea of being grasped by a human hand. The point that I wish to bring out is that these birds quickly learned and evidently remembered to associate food with the traps, for they would gather there to obtain the food; they learned and remembered that entrance to the catching box meant that they would be grasped by a person's hand, from which action they feared injury; the successive impressions of being unharmed by the hand and of being invariably set free they did *not* appear to retain.

In contradistinction to the above there were some individual repeaters that almost always entered the catching box with little or no fuss about doing so and which remained quiet in the hand when caught; but there is no way of knowing whether such reaction resulted from temporary paralysis caused by fear, from a recollection of ultimate freedom always having resulted from their being handled, from a philosophic acceptance of what slight discomfort they must endure in return for the food they get in the trap, or whether there was an entire absence of reaction as a consequence of innate stupidity! Toward the end of the banding season, as spring came on apace and the same individual Golden-crowns were simply making rounds of the traps, it seemed as if nearly all of them were growing more and more reluctant to enter the catching box.

As the winter sojourn drew to a close, one case of very evident use of the head was exhibited. In accordance with a plan to attract birds to my banding station at Woodacre, where the above observations were made, a brush pile was started with the idea of building it up to a good size. At first, brush was lacking, the pile was low and no sparrows came to it, although they occasionally visited bushes not many rods away. The pile was added to now and then, and sheltering material such as bits of old boards, pieces of roofing paper, even part of an old Ford car fender, were added until just as the northward urge was beginning to thin out the band, the pile had been built up to over six feet in height. One day its advantages were suddenly recognized by the remaining Golden-crowned Sparrows, which at once took possession of it. During the rest of their stay a couple of two-compartment Potter traps caught more sparrows at this brush-pile than did the three large Sprot traps at the old trapping ground that had been used for the previous six weeks; and it was the same lot of sparrows, as shown by their bands.

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