

# BIRD-BANDING

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## TRAPS AND TECHNIQUES FOR TRAPPING CALIFORNIA QUAIL

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### INTRODUCTION

Though various types of traps and trapping techniques are known little of this information has been recorded in the literature. This paper is a compilation of the techniques and information on traps used most successfully by the writer during his investigations of the biology of the louse flies (family Hippoboscidae) (Tarshis, 1953) of the Valley California Quail (*Lophortyx californica californica* (Shaw and Nodder)) and the Coast California Quail (*Lophortyx californica brunnescens* Ridgway). The information presented here was obtained through conversation with many workers in the field as well as through personal experience gained in trapping more than 2000 quail.

### QUAIL TRAPS

A number of quail traps of varying size and construction were employed by the writer as no one trap was found to be satisfactory in every circumstance. Such factors as transportation, accessibility of the trap site to the field station, type of terrain, size of quail covey and presence or absence of grazing animals determined the choice of trap to be used in each particular area.

1. *The California Department of Fish and Game Collapsible Steel Trap.* This trap, long used by the California Department of Fish and Game, is essentially a  $\frac{3}{8}$ -inch mild steel wire framework 4 feet wide x 5 feet long x 12 inches high (Fig. 1). The entire framework, with the exception of the bottom, the escape door and a 4 x 8 inch opening, is covered with 1 inch mesh chicken wire. It is essential to use this particular mesh of chicken wire as larger mesh permits the juveniles to escape and the adults to poke their heads through to the outside which often results in their wringing their necks or having their heads bitten off by Cooper hawks. A trap covered with smaller mesh makes it too obvious to the quail. In using chicken wire, care must be taken to bend over sharp ends inside the trap to render them harmless to the birds.

The front, or entrance side, of the trap is in the form of a blunt apexed V with the apex extending into the trap. The sides of the V are covered with chicken wire and a chicken wire throat or tunnel is attached to the uncovered apex of the V. This throat, inside the trap, is approximately 10 inches long x 4 inches wide and sloped from a height of approximately 8 inches at the front to the height of a man's

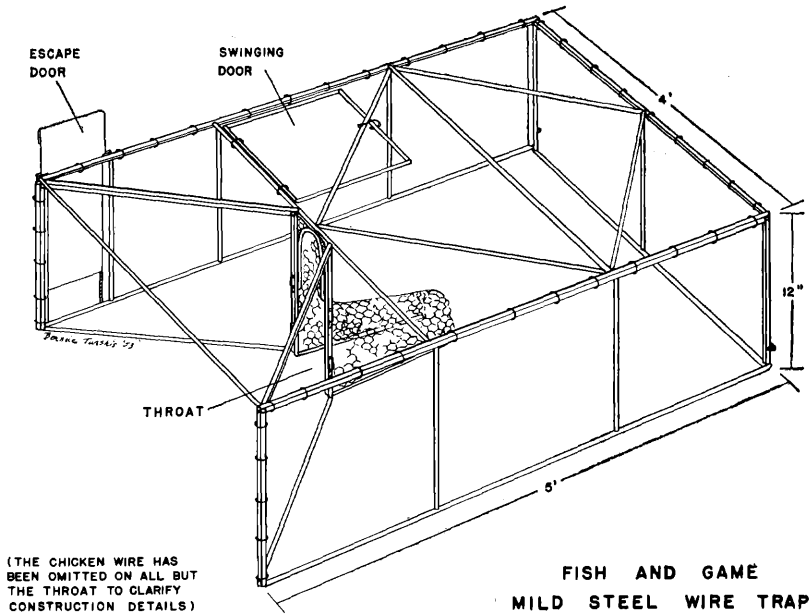


Fig. 1.

clenched fist at the farthest end. (A man's clenched fist generally approximates the size of the quail's body.)

On the left side of the trap is placed a sliding, galvanized sheet metal escape door (6 inches wide x 12 inches high) through which the trapped quail are removed. A swinging, steel wire framed, chicken wire door is placed across the left triangular corner inside the trap. During trapping this door is secured to the top of the cage, but when the quail are to be collected a few birds at a time are coaxed into this corner and the door released. Confining the quail in this smaller area makes it somewhat easier to get them through the escape door into the holding cage.

For ease in transporting this trap, the sides as well as the swinging door are attached to the top with steel rings; thus, the trap can be folded to make one flat unit. The throat is carried separately and has a metal frame with vertical prongs at the entrance end; incidentally, no frame is used for the throat on the other trap designs. When in use the sides of the trap are fastened together with steel spring snaps and the prongs on the throat fit into metal slots on either side of the doorway.

Although the metal-framed Fish and Game Trap has proved to be satisfactory on many occasions because of its light weight and comparative ease in handling and transporting it has the disadvantage of holding only a small number of birds at a time. This trap has been used in open fields and near watering holes with a great deal of success.

2. *The Canoe Quail Trap.* The name of this trap is derived from its shape which, when in use, closely resembles that of an overturned

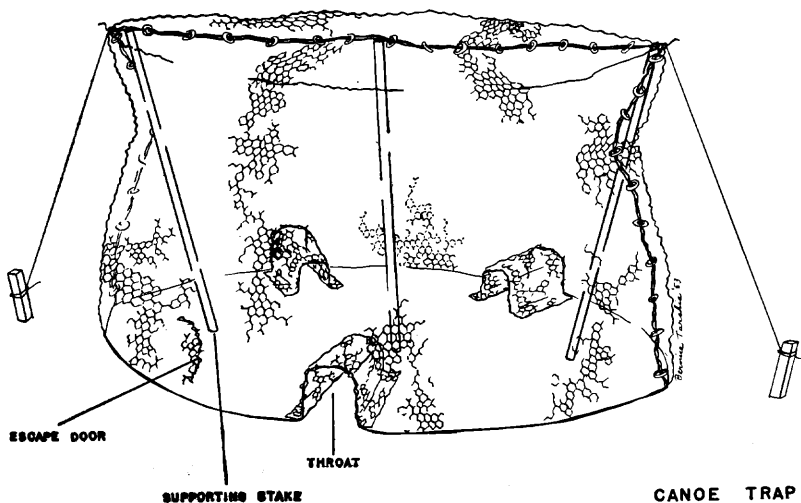


Fig. 2.

canoe (Fig. 2). Forty-eight inch wide, 1 inch mesh chicken wire is used to construct this trap. The length of the piece of chicken wire used depends upon the size trap desired. A long piece of chicken wire, for example 20 feet, is folded in half to make a double piece, 48 inches wide x 10 feet long. The two halves are fastened together along one long side and the open short side with hog rings secured with the use of a pair of hog ring pliers. The rings must be placed close enough together so that the quail cannot escape through the spaces between the rings. Several arched openings are cut along the open bottom edges of the trap to accommodate the throats which are attached when the trap is set up. These chicken wire throats, similar in design to the Fish and Game Trap throats, should be about 6 to 8 inches long x 6 inches high x 4 inches wide and should have a 2 to 3 inch flange along each side. These flanges lie on the ground and must be weighted with rocks and dirt since this throat does not have a steel wire frame to keep it in place. After this construction is finished the trap is placed over two or more stakes (the number depends upon the trap size) that have been driven into the ground. The sides of the trap are pulled out taut and the bottom edge pegged to the ground every eight inches or so. Earth is then heaped and patted around the pegs and over the edges of the wire to make the trap escape-proof. The tunnels are placed inside the trap and fastened to the previously cut arched openings by bending the cut wires of the throat around the wires at the opening. The flanges are weighted. A curved slit is cut low in the most convenient side of the trap for removing the trapped quail. The cut wires along the slit are bent over each other to hold the door closed when not in use. If the trap is fairly large it is also helpful to attach guy wires to the top corners and secure them to stakes driven into the ground a little distance from the trap.

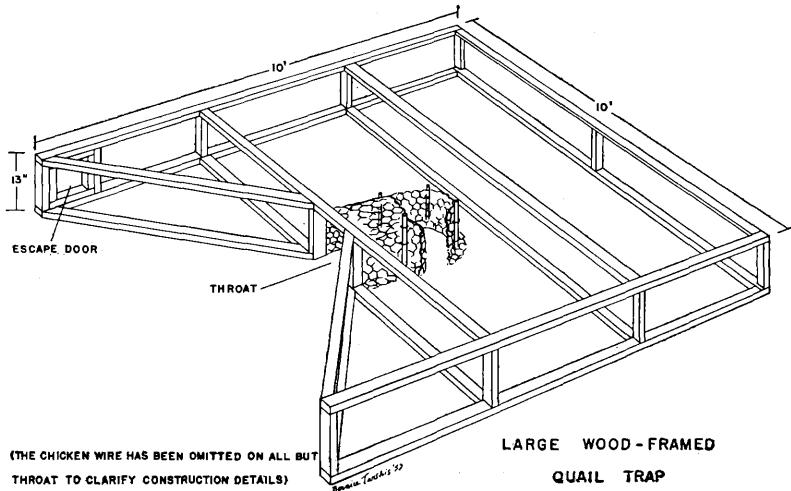


Fig. 3.

The Canoe Trap has been quite useful when used over "guzzler" openings (watering devices built by the California Department of Fish and Game), springs, seepages and other irregular terrain where a rigid, flat-bottomed trap could not be used. The construction of the trap makes it quite inconspicuous and very easily transportable, but because of the light weight it should not be used where large animals are grazing.

3. *The Large Wood-Framed Quail Trap.* Though the previously described traps are very good in many instances, when one is fortunate enough to find a good trapping site where there are large numbers of quail concentrated in a comparatively small area these traps are not adequate in size. Quail habitually pace and when confined in a trap that is too small they are very apt to smother or trample each other. To fill this need for a larger trap, in the summer of 1952 Mr. Ian McMillan, a Shandon, California, rancher, and the writer built an oversized wood-framed trap (Fig. 3). In design this trap is very similar to the Fish and Game Trap but has a 2 x 4 inch unfinished fir stock framework 10 feet square x 13 inches high. The entire trap is covered with 1-inch mesh chicken wire and the front forms a V, as in the Fish and Game Trap, but the throat of this large trap is higher and wider and has a turn at the exit end. There is an escape door in the left corner of the trap, but no swinging door across the triangular corner. This trap should be set up in a 2-inch-deep furrow so that the bottom framework is covered with earth and the trap made escape-proof.

This trap is most useful where there is a large concentration of birds, as mentioned before, and when trapping operations can be carried out over an extended period of time. The trap is too large to be easily or frequently moved. Though this trap was not used extensively the results of the few trials show that it is a very worthwhile

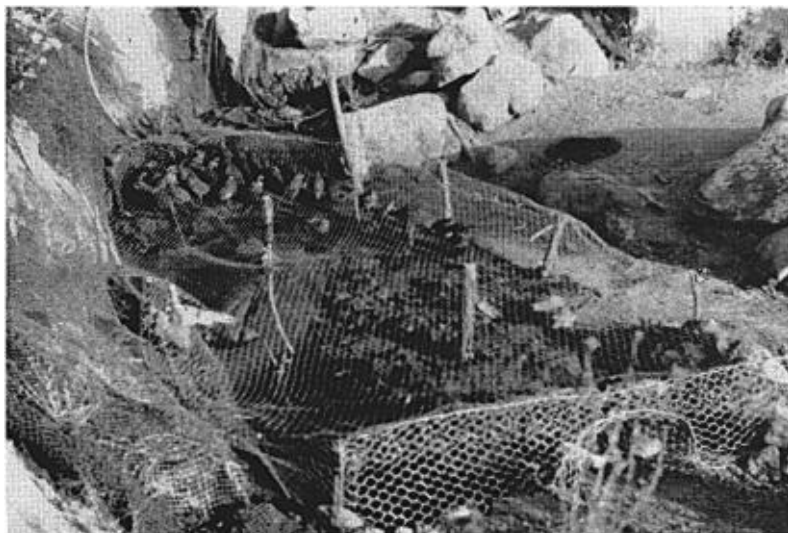


Fig. 4. The Chicken Wire-Fishnet Quail Trap.

piece of equipment (50 to 120 quail collected during each trapping) and one that should be included in large scale quail trapping operations. This trap is good to use in open fields or over the shallow watering holes that are always especially attractive to quail.

4. *The Chicken Wire-Fishnet Quail Trap.* This trap, unlike the previously described ones, must be built at the trap site (Fig. 4). First, about 14 to 16 inch stakes are driven into the ground to a depth of about 4 to 6 inches to form a rectangle (or almost any shape) of the size desired for the trap. A strip of 12 inch high, 1 inch mesh chicken wire is next attached to the outsides of the stakes to form the trap walls. Several additional stakes are placed inside the trap and  $\frac{1}{2}$ -inch mesh fishnetting is then placed as a roof over this framework. The netting is fastened to the stakes along the walls and within the enclosure with pieces of wire. Several arched openings are cut along the walls of the trap and chicken wire throats, the same as those used in the Canoe Trap, are secured to the trap. The bottom of the trap is then made escape-proof by heaping rocks and dirt around the bottom edges. An escape door is added to one side.

Like the Large Wood-Framed Trap this trap is ideal for use over watering holes and where there are large concentrations of birds. Though this trap has the disadvantage of having to be built at the trapping site it has the added advantage that it can be made to fit almost any terrain or any irregularly shaped area.

#### TRAPPING QUAIL

Once general trapping areas were decided upon, surveys were made to determine the exact locations of quail coveys and their feeding and watering areas. When the sites for the traps were selected, the general

area was littered with feed (pre-baited). Poultry scratch feed was used successfully as bait for quail, however, such baits as wheat, barley, rice, onion and lettuce seeds were also used with fair success. In selecting the bait it should be kept in mind that the birds will feed most readily on the food that is normally common in the particular area where they are being trapped.

The most suitable trap for the particular site was set up when the quail became accustomed to eating the scattered bait. Generally the quail became accustomed to the bait within 2 to 3 days, but the exact time can be best determined by observation. When first placed at the site the doors and throats were omitted from the traps or left open, depending upon the trap design. Bait was scattered over the same area as before, but the heaviest concentrations were placed inside the traps. The traps can be placed up on wood blocks rather than directly on the ground if one wishes or finds it necessary as it was in the case of the large wood trap which was so obvious and had so few openings. After a day or two the quail generally become quite accustomed to the sight of the traps but observations should be made to be sure this is the case and that they are feeding inside the traps.

When finally set up for trapping, with the doors closed, throats attached and so on, the traps should be camouflaged with flora peculiar to the area so that the quail will be less wary of them. The camouflage can be quite crude (merely a few branches laid across the top of the trap or a twig or two leaned here and there against the side of the trap) but restraint should be exercised as too much camouflage is far worse than too little and often makes the trap more obvious than it would be uncamouflaged.

The baiting, of course, is continued as long as trapping is carried on. When actually trapping, the inside of the trap and the throats are heavily baited and the areas in front of the throats as well as the quail trails leading to the trap are lightly baited. The throats should be cleansed of all debris and should lie in a direct line with one or more quail runs. These runs are easy to see and are sure indications of where the quail congregate and which routes they travel. Quail traps were generally baited and collections made twice a day, between about 8:00 A.M. and 10:00 A.M. and just at dusk in the evening. The baiting for the morning catch was generally done very early in the morning, before the quail left the roosting areas. Bait put around and inside the traps at night was usually consumed before morning by grain-feeding rodents. The baiting for the evening catch was done at the same time that the morning catch was collected.

The time chosen for collecting the catch each morning and evening varied with the time of the year and the temperatures in the area, that is, when it was cooler and the sun came up later the collecting was done later and so on. One only has to observe the quail a day or so to know at just about what hour they will finish feeding and drinking and retire either to their daytime loafing area or their night roost. The collecting should be done just as soon as possible after the birds not caught in the traps have left the area. Quail expire quite readily if left exposed to the direct sun or extreme heat for even short periods of time which means that they cannot be left very long in the traps

during the morning hours. Birds left in the traps much after dusk in the evening are easy prey for predators, so the evening collection cannot be delayed either. It is also much easier for the collector if there is a little light left by which to see when collecting.

In an area where quail would enter the traps at other times of day, more frequent collections would be essential. In our trapping we found small birds in the traps only early in the morning or late in the afternoon. In areas where small birds enter the traps at any time of day, if it is not feasible to visit the traps at intervals of not over two hours, the top of each trap should be made of 2-inch mesh to allow small birds to escape readily.

The necessity for limiting the trapping operations to a small area at a time cannot be stressed too much; that is, unless the available crew and transportation are such that each of several limited areas can be handled by a different group. As mentioned above, the birds cannot be left in the traps for any extended length of time and since all the coveys in an area will finish eating and drinking at almost the same time the collections could be made almost simultaneously. Since this is not possible with one or even two men the next best solution is to keep the trap sites close enough together that all birds can be collected within one to one and a half hours. Aside from the necessity of keeping the collecting time to a minimum for the quails' sake is the necessity of leaving enough free time for banding, taking blood smears, searching for ectoparasites, writing up data or any other operational procedures. If a sampling of a large area is desired it is best to trap in one limited area until a representative sampling is obtained and then to move on to one or more small areas at a time until the entire large area is covered.

When the Large Wood-Framed Quail Trap was used the writer and Mr. McMillan stayed at the trap site during the entire time that the quail were feeding and drinking and made several collections during each trapping period. We hid behind a blind until the trap contained quite a number of birds, then collected those and again hid behind the blind until the trap contained another group of birds which we emerged to collect and so on. With the unusually large throat used in this trap it was essential to stay near the trap and collect as we did since the birds were able to find their way out as well as into this trap with much more ease than with traps having the other types of throats described. When this trap is used as recommended, only in areas where there are great concentrations of birds, and this method of collecting followed one can be pretty well assured of getting large catches of quail. This trap and method work well in areas where there are not only large concentrations of quail but where the roosting and loafing areas are far enough from the trap site that only portions of the coveys at a time are near enough to the trap to be disturbed by the collecting operation. Quail are very wary birds and those near the trap at the time of collecting do not linger long and are sure not to be trapped during that particular morning or evening. If there are large enough numbers of quail available to make use of this trap advisable, but if it is not possible to collect as described here, one could

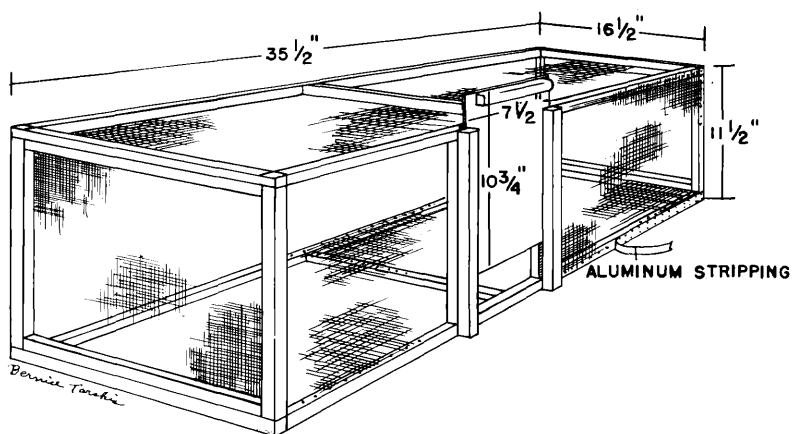


Fig. 5. Holding Cage for Trapped Quail.

substitute the type of throat used in any of the other traps for the large one used here and then collect as usual.

Wooden cages similar to the cardboard containers used to transport young chicks are generally used for collecting birds from the traps and transporting them from one area to another. These cages have open air vents and work very satisfactorily when the loss of winged ectoparasites is of no consequence. Since the objective of the writer's trapping was the collection of quail flies, burlap sacks were suggested as substitutes for wooden cages. This practice proved most costly so far as birds were concerned, since the quail sometimes huddled together in the almost airless sacks and completely smothered one another. After using the sacks a few times, the writer devised a fly-proof holding cage that was much more satisfactory.

The holding cage was designed to hold thirty birds. It measures  $16\frac{1}{2}$  inches in width,  $25\frac{1}{2}$  inches in length, and  $11\frac{1}{2}$  inches in height. The framework consists of  $\frac{3}{4} \times \frac{3}{4}$  inch finished fir stock. All sides, top and bottom are covered with No. 16 mesh bronze screen cloth. The top, bottom and two sides are made separately and the screen cloth is tacked down to each section on the underneath surface. Aluminum stripping is placed over the tacked edges of the screening to prevent the screen from raveling. The cage is put together as shown in Figure 5. After the cage is assembled, the two unscreened portions of the cage are then screened and aluminum stripping placed on top of the screen edges to prevent their raveling. The door is made of No. 28 gauge sheet metal and is centrally placed in one of the long sides of the cage. This entirely screened cage is light to carry, easy to clean and quite comfortable for the quail.

To remove the quail from the trap the open entrance of the holding cage is placed flush with the open escape door of the trap and the birds are gently urged into the cage. If the quail are to be kept for any length of time before release the use of a large holding cage is advisable. A wooden framed, chicken wire covered cage was used by



the writer (Tarshis, 1953). If the large holding cage is in an open area it is essential that some shade and protection from rain be provided the birds. For this purpose a large tarpaulin was often stretched over the cage. Leafy boughs were placed in the cage for the birds to rest upon. Food and water were also provided.

#### ACKNOWLEDGEMENTS

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#### SUMMARY

Four traps for trapping California quail (*Lophortyx californica californica* and *L. cal. brunnescens*) are described. Methods and procedures for trapping California quail are discussed.

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1953 The transmission of *Haemoproteus lophortyx* O'Roke of the valley California quail by hippoboscid flies of the species *Stilbometopa impressa* (Bigot) and *Lynchia hirsuta* Ferris and the elucidation of the biology of these ectoparasites. Manuscript of Ph.D. Thesis, Deposited in Library, University of California, Berkeley, California.

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## FURTHER BANDING AND NESTING STUDIES OF THE EASTERN NIGHTHAWK

BY RALPH W. DEXTER

An earlier report (Dexter, 1952a) summarized observations made on the nesting behavior of the Eastern Nighthawk (*Cordeiles minor minor*) on the roof tops at Kent State University during 1948-1951. Since that time the study has been continued. The same female parent has been recaptured and additional juveniles have been banded. Observations have also been made on the roof of the Akron City Hospital and at Kelley's Island in Lake Erie. In addition, a report is given on two hand-raised Nighthawks.