

period is passed the chances for survival are considerably greater. Of the combined total of 14 returns of a known age of four, five or six years a considerable proportion (35.7 per cent) were banded as young.

3. Only one return Bank Swallow had attained the age of six years; individuals of this age are patriarchs of the species.

4. The probable average life span of the Bank Swallow is from two to three years; only 5.9 per cent of 169 returns had attained a known age of as much as four years while 81 per cent of all our returns are for those birds of a known age of two and three years. The extreme preponderance of individuals of a known age of two years, the considerably reduced number of three year old captures and the comparatively small number of one year old returns obtained, all suggest that the prevailing average age of this species, at least in the territory under consideration, ordinarily does not exceed three years.

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TRAPS FOR PINNATED AND SHARP-TAILED GROUSE

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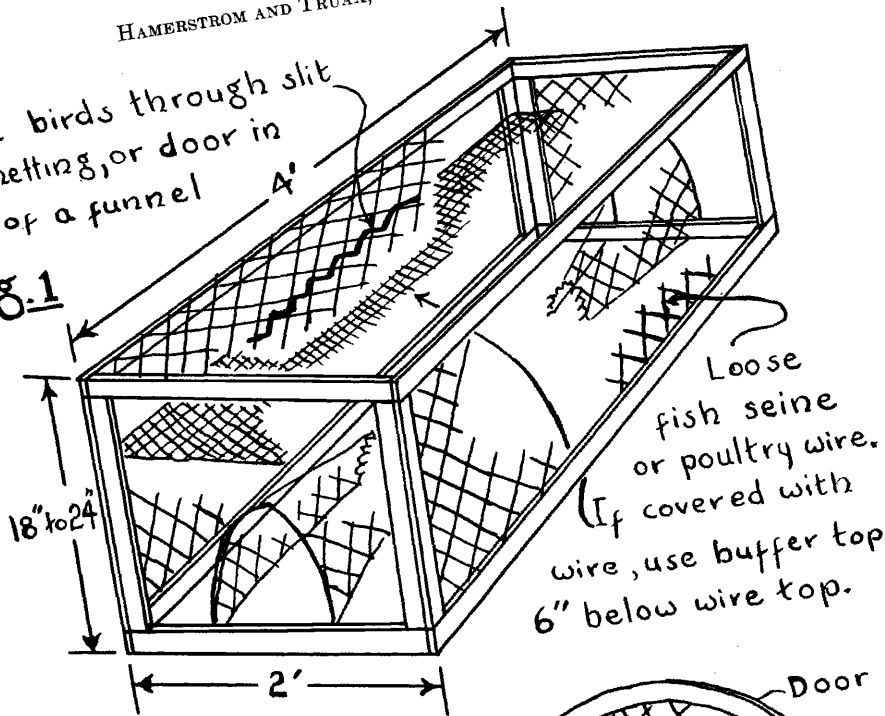
THE trapping techniques used in banding songbirds and waterfowl are readily available in Lincoln and Baldwin's "Manual for Bird Banders" (U. S. D. A. Misc. Pub. No. 58; 1929). In the case of upland game bird trapping, publication has not equally kept pace with the development of methods. Information on traps for Pinnated and Prairie Sharp-tailed Grouse (*Tympanuchus cupido americanus* and *Pedioecetes phasianellus campestris*) is particularly lacking. The purpose of this paper is to describe five traps which have been used for those species in Wisconsin. All but one of these traps (No. 3) were used in our work on the Central Wisconsin Game Project¹ during the winter of 1936-37.

Grouse trapping offers particular difficulties. Pinnates, even

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Remove birds through slit
in top netting, or door in
place of a funnel

Fig. 1



Loose fish seine or
string netting

Fig. 2

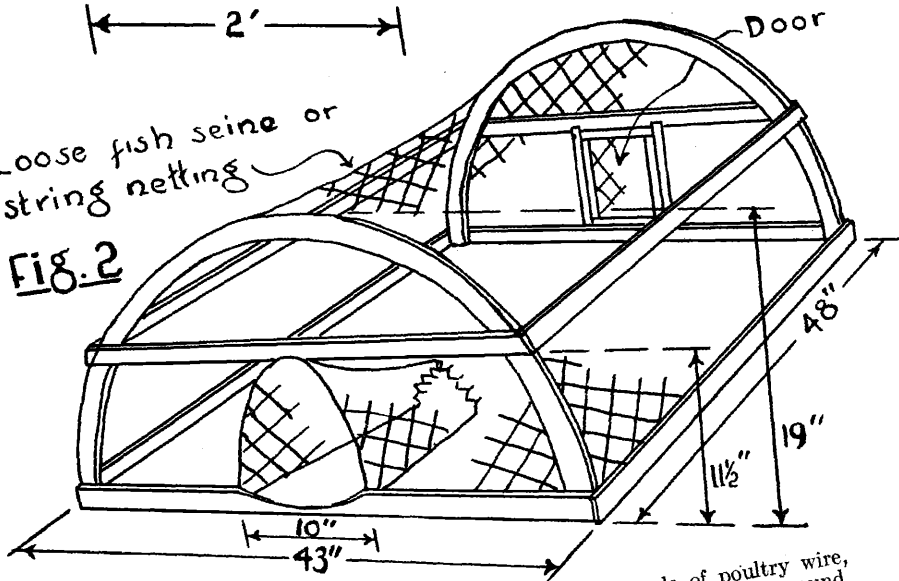
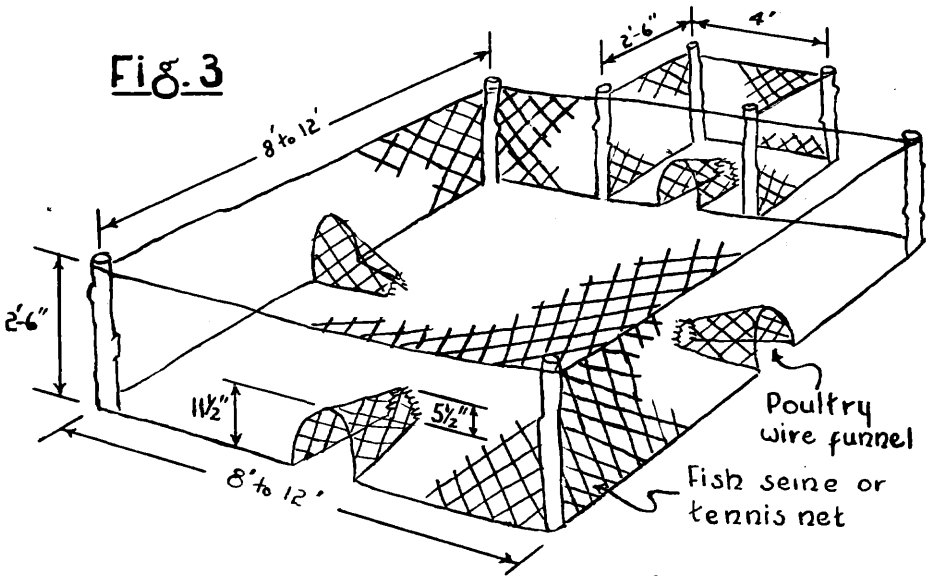


Figure 1. Portable funnel trap. Funnels are made of poultry wire, and may have a heavy wire frame at outer opening and along ground. Inner opening should not have a wire frame, in order to be easily adjustable to different sizes.

Figure 2. Half-wheel trap. By making a slit in the top covering for removing birds (as in fig. 1), two entrances can be used.



Inner door raised when trap is set — lowered to confine birds to catching compartment

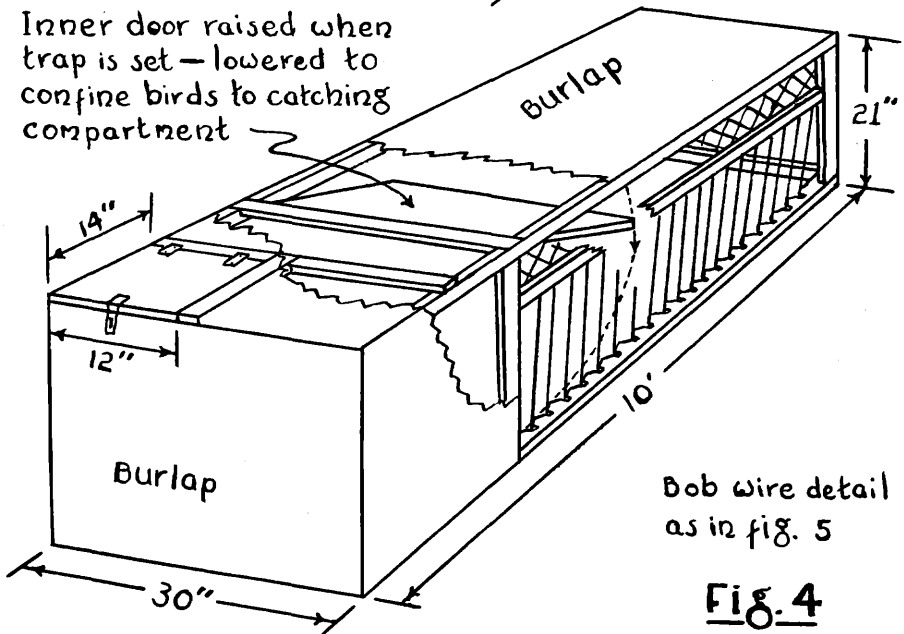


Figure 3. Non-portable funnel trap. Birds are removed from the catching compartment through a slit in the roof or a trap door.

Figure 4. Long-bob trap. The first five to ten wires next to the catching compartment, three at the opposite end, and every fifth between should be fastened down.

more than Sharptails, are not easily lead to enter a trap, and once in are very apt to injure themselves in their efforts to escape. They are large and strong and their wildness when caught is astonishing. They thrash against the sides and top of the trap, often skinning head, neck, and bend of wings. The problem becomes a double one: how to catch them, and how to catch them without injury. Sharptails are easier to work with on both counts.

The traps here reported on are built around two types of entrance, funnel and bob-wire. An inward-tapering wire funnel is used in many song bird traps, and has been used for many years on game farms for catching pen-raised birds. It is both a "confusion entrance"—one which is easily found from the outside, but, since captive birds closely follow the trap walls in trying to find a way out, overlooked on the inside—and one which is mechanically a one-way entrance. The bob-wire door, so-called from the hanging wires which swing freely inward but drop against a notched sill which keeps them from opening outward, has long been a part of the pigeon fancier's equipment.

To prevent injury, several types of buffer linings were added to all traps which were covered with wire netting. A soft top about six inches below the wire top was first used, but it became plain that a buffer lining was also necessary inside the side walls. Buffers may be fastened to the inner sides of the trap frame, or may be hung from the top covering at several points, allowing the bottom edges, which have been weighted, to hang free. Open mesh buffers which were woven and not knotted were found to separate to such an extent as to become useless almost immediately. Burlap can be used for top covering, and for the back of traps placed in shelters, but probably should not be used over the whole because birds could not see into the trap. Wire netting was finally abandoned almost entirely in favor of walls and tops made of soft materials. Knotted seine, one and three quarters inches mesh, was less dangerous than poultry-netting, but had to be loose. Tightly stretched seine was almost as bad as wire. Loose string netting over a half-round frame (half-wheel trap) appeared to be the safest system for small traps.

Even in completely buffered small traps, however, birds were able to cut themselves on the wire funnels. This fact lead us to experiment with bob-wire doors, which we found to be both safe and efficient. Perhaps because of the large size of the trap, birds in the non-portable funnel trap generally do not scalp themselves on the funnels.

A method for keeping predators out of the traps has still to be devised. Hawks and owls, even small dogs, can get through an entrance large enough for grouse. A few birds were killed in the traps by predators. Rabbits and squirrels also present a problem, for once caught in a trap, they cut holes through buffers or seine in their efforts to escape.

1. *Portable Funnel Trap* (figure 1). Easy to build, sturdy, portable, and versatile in the number of species it will catch, it is particularly good for pheasants, and might be termed the standard pheasant trap. Poultry netting is generally used as a covering, with a soft buffer top about six inches below the wire top. Traps which have been darkened with brush or straw thrown over the top tend to keep captive birds quiet.

In our work with Pinnated Grouse, the trap was discarded as unsuitable. Birds scalped themselves by thrusting their heads through the side walls, scraping against the angles of the mesh. In less than a half hour they were able to remove most of the skin from the hind neck and the top of the head in this way. When a complete buffer lining was installed the funnels, which necessarily project some distance into the trap, caused the same difficulty. Even one and one-half inch seine, when stretched too tightly, was not a safe covering. It should be added that other workers, notably the field men of the Wisconsin Conservation Department, have used wire covered funnel traps for pinnates without injury.

2. *Half-wheel Trap* (figure 2). A modification of the portable funnel trap, the half-wheel trap offers the same advantages with greater safety. It is much lighter, and by using removable funnel or bob-wire entrances a number could be "nested" for ease in carrying. The rounded top of loose string netting was found to absorb the impact of struggling birds better than the flat surfaces of the standard type.

3. *Non-portable Funnel Trap* (figure 3). Made of tennis netting or seine thrown loosely over posts set in before the ground freezes, this trap has great capacity and safety in operation. Although we did not use it ourselves, it has been thoroughly tested by Franklin Schmidt, its designer, who caught 658 sharptails and 221 pinnates in it during the four winters between 1930-31 and 1934-35. Because of the large size of the trap (8' to 12' by 8' to 12') its small catching chamber is important for handling the birds caught. It is most useful in places where birds are found in numbers, and is to date the most successful trap for these two species of grouse.

Schmidt also had a portable model of this trap, made on a smaller scale and supported on stakes driven into deep snow.

4. *Long-bob Trap* (figure 4). The injuries caused by wire funnels and the need for a portable trap with large capacity lead to the development of the long-bob trap. It is simply a series of bob-wires along two sides of a narrow rectangle, with a built-in catching compartment at one end. Unless a few bobs at each end and every fifth between are fastened down, birds can raise the bobs with their wings and escape. Although awkward to move from place to place, the trap was very efficient for both species and injured few birds.

A smaller model of the same trap was also used, but is not illustrated.

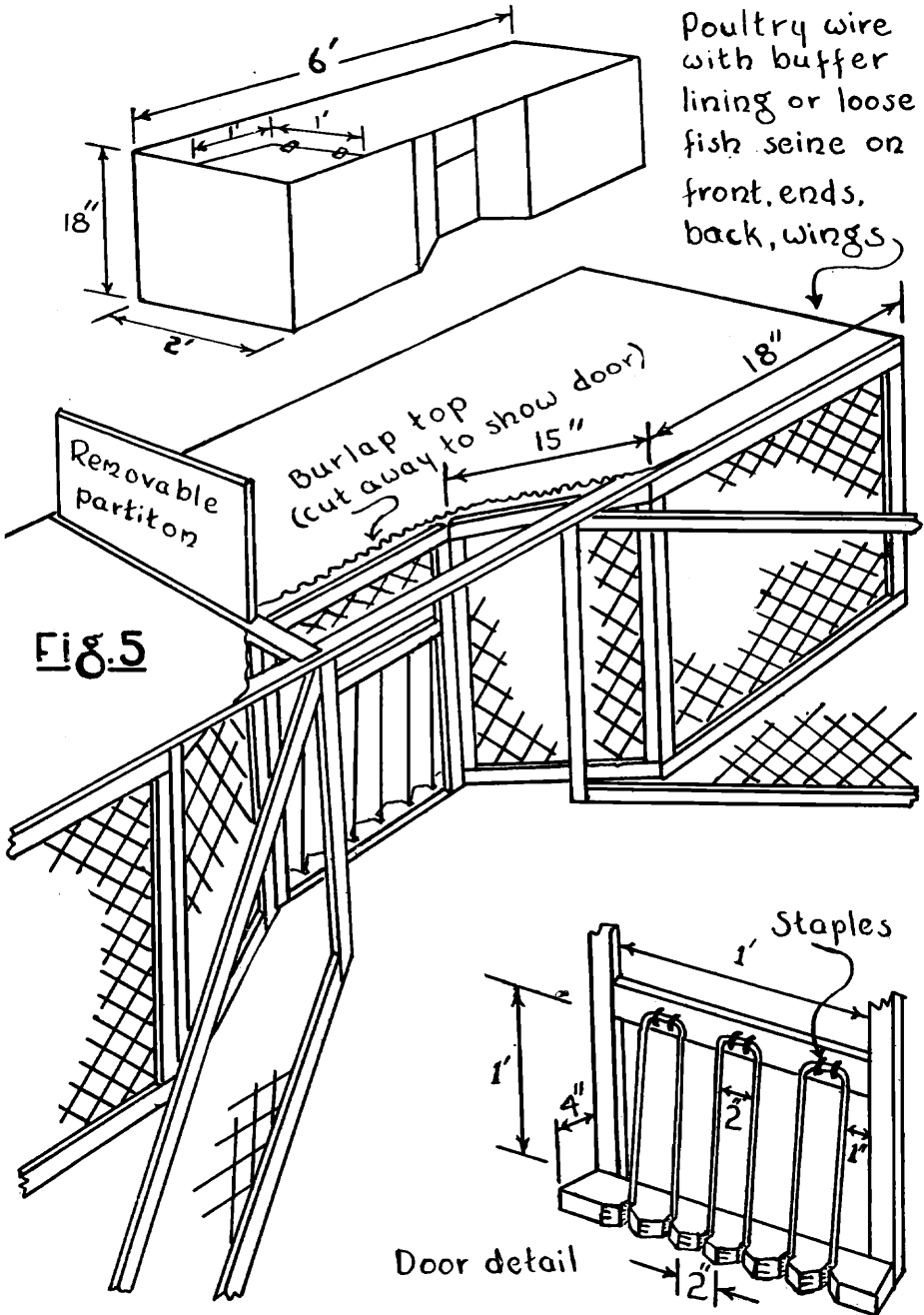


Fig. 5

Figure 5. Wing-funnel trap. The removable partition makes one end of the trap a catching compartment. Wings are six feet long.

5. *Wing-Funnel Trap* (figure 5). The four traps listed above are best used in open fields. Where birds were coming to a feeding shelter the wing-funnel trap was more successful. It was based upon Ralph King's (unpublished) Ruffed Grouse trap, and like it was made in demountable panels for easy carrying. Complete buffering inside prevented injuries, and the bob-wire door proved a very effective entrance. Placed under a feeding shelter with the wings extending out in front, the trap kept free of snow—a distinct advantage in stormy weather. Sharptails only were caught, but the trap could probably be used for any bird using feeding shelters.

As illustrated, this is essentially a three-entrance trap, since birds between the wings or between one wing and the front wall are lead to the entrance. A simpler one-entrance trap can be made by bringing the inner ends of the wings about eight inches into the trap and fastening the door directly to them. The inner ends of the wings then replace the oblique front panels. Such an arrangement, however, leaves a cul-de-sac on either side of the door.

Baiting. Ear corn and buckwheat were used as bait. Open field traps can be placed on flattened buckwheat shocks on which ear corn has been thrown. Bait should be placed well in the trap, else it can be reached from the outside. A small amount of grain in front of the entrances is helpful in leading birds into the trap. It was found best to trap at places where birds were already coming to feed on grains, as in food patches or feeding shelters.

Traps should be left open in position for several days or weeks to accustom the birds to feeding near and under them. The portable funnel and half-wheel traps can be propped up or turned on their sides. The netting on the sides of the non-portable funnel trap and the bobs of the long-bob trap can be raised, and the ends and door of the wing-funnel trap left off, until trapping begins. Once the traps have been set, it is well to have as little feed as possible available outside of them.