IGHTLIGHTING:

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NALD F. LABISKY

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Fig. 1.—Nightlighting is currently the most commonly used technique for capturing pheasants throughout the United States. This cock pheasant eluded capture on this trapping attempt, but was subsequently pursued and captured.

NIGHTLIGHTING: Its Use in Capturing Pheasants, Prairie Chickens, Bobwhites, and Cottontails

Ronald F. Labisky

THE IDEA OF USING BRIGHT LIGHTS at night to blind animals temporarily so that they may be captured is certainly not new. Prehistoric man probably used the light from burning torches in capturing wild animals. Nightlighting in modern game management was first demonstrated by workers in South Dakota in the 1920's. Oscar Johnson (Leopold 1931:118) reported that about 22,000 pheasants, *Phasianus colchicus*, were captured in South Dakota during the winters of 1926–1927 and 1929–1930 by "shining" roosting birds with automobile headlights. However, nightlighting did not become a commonly used technique in wildlife biology until research studies, which proliferated rapidly after the mid-1940's, necessitated the capture of large numbers of wild birds and mammals.

Nightlighting has been used most commonly to capture pheasants, as is indicated by numerous published accounts, including reports from Idaho (Anonymous 1952), South Dakota (Smith 1954), Nebraska (Anonymous 1955), California (Hart *et al.* 1956:137), Illinois (Labisky 1959), North Dakota (Oldenburg 1961), Indiana (Ginn 1964), and Iowa (Lyon 1965:51). The pheasant lends itself well to capture by nightlighting because it principally inhabits agricultural regions and thus roosts in cropland terrain that is traversable by vehicles equipped for nightlighting (Fig. 1). Nightlighting has been a particularly valuable technique for capturing large numbers of pheasants in states such as Illinois, where bait trapping of pheasants in winter is precluded by an abundant, and usually available supply of waste grains. Vehicle-borne nightlighting rigs have also been used to capture cottontails, *Sylvilagus floridanus*, and nongame birds (Labisky 1959), skunks, *Mephitis mephitis* (Andrews 1963), and bobwhites, *Colinus virginianus* (Bartholomew 1967).

Nightlighting equipment installed on various watercraft has been effectively used to capture waterfowl and marsh birds (Leitch 1958; Lindmeier & Jessen 1961; and Cummings & Hewitt 1964). Battery-powered headlamps or hand-held lights have been used to capture large numbers of woodcocks, *Philohela minor* (Rieffenberger & Kletzly 1967), and a variety of gulls and shorebirds (Taapken & Mooyman 1961). Also, generator-equipped, backpack nightlighting units have been proven effective for capturing birds and mammals in environments, either aquatic or upland, where other methods of trapping were either inconvenient or unsuccessful (Drewien *et al.* 1967).

My previous article on nightlighting (Labisky 1959) was concerned primarily with the application of the technique to capturing pheasants. The purpose of this paper is to list improvements in equipment (and operational design) used in outfitting vehicles for nightlighting and to describe techniques for capturing bobwhites; prairie chickens, *Tympanuchus cupido;* cottontails; and pheasants.

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EQUIPMENT

The basic equipment (Fig. 2) for outfitting a vehicle for nightlighting consisted of a floodlight cluster, a power source to operate the floodlights, and a spotlight. A vehicle equipped with 4-wheel drive is recommended, although not essential, for nightlighting.

The floodlights have been operated from 110-volt a-c or 12-volt d-c power sources. The power supply for d-c systems was rigged by replacing the vehicle's factory-installed alternator with a high-amperage alternator. However, d-c systems provided less illumination than a-c systems because the available d-c lamps had lower candlepower ratings than a-c lamps. Consequently, under ordinary situations, a-c systems were favored for nightlighting work, and thus are given primary consideration in this report.

The a-c floodlight cluster consisted of five 150-watt PAR/FL projector floodlamps. These were held most satisfactorily by Killark Model SLH lampholders mounted in a Killark Model SY wiring trough. The trough was mounted at the top of a modified tripod

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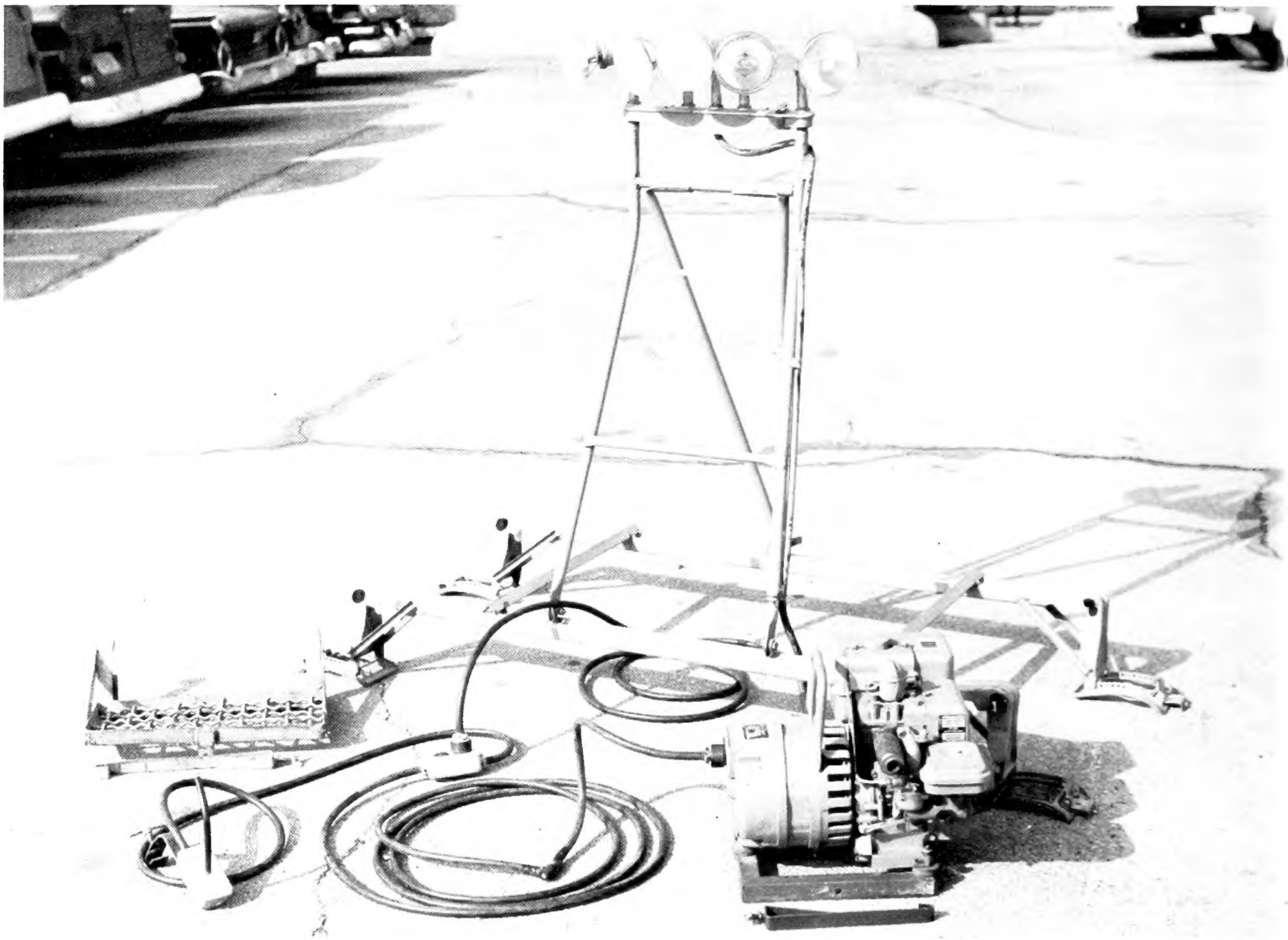

Fig. 2.—The basic equipment for nightlighting, excluding the hand-held spotlight, consists of a gasoline generator (with clamp), floodlight cluster, and wiring system. The toggle switch for the floodlights appears in the left foreground; the netter's platform (with clamp) is at left center; and the in-line fuse is visible in the center area of the major coil of cable. This identical set of equipment is used on the different vehicles shown in Fig. 1 and Fig. 4.

(Fig. 2) made from 3- or 4-foot sections of 1-inch metal conduit. The tripod, depending on its design, was fastened to a sturdy, metal cartop carrier either with bolts or with clevis-type hinges. The clevis hinges permitted the floodlight cluster to be easily folded down for highway traveling or for avoiding low-hanging obstacles.

The lampholders were individually adjustable so that the area illuminated by the lamps could be controlled. The lamps were tilted downward when cruising in cover that absorbed light (e.g., heavy green vegetation) and lifted slightly in cover that reflected light (e.g., snow). The floodlights ordinarily were adjusted to yield a semicircle of adequate light extending about 10 yards on either side of the vehicle and 30 yards forward; beyond these distances the light was diffuse.

Electrical power for the a-c floodlamps was supplied by a 110-120-volt, 1,250-watt, gasoline-powered generator (Montgomery Ward model), which could be purchased with or without an electric starting motor. The 1,250-watt capacity of the generator was sufficient to supply the starting electrical surge for the five, 150-watt floodlamps, which subsequently drew only 750 watts. This generator was small enough to be mounted, by bolting it to the frame, under the hood of some vehicles. Usually, however, it was mounted on a platform, or angle iron frame, which could be readily clamped to the rear bumper of a vehicle (Fig. 3).

The power cable for the electrical system consisted of about 15 feet of neoprene-covered motor cord with 14-gauge, 600-volt wires. A polarized male plug to fit into the receptacle on the generator was attached to one end of the cable. About 10 feet from the generator an outlet receptacle, inserted in a handy box, was installed in the line (Fig. 2). A 20-ampere cartridge-type fuse (automotive) was installed in this line between the generator and outlet receptacle. One wire of the power cable was extended through the handy box for about 5 or 6 feet to a single pole, single throw, 25-

Fig. 3.—The generator, mounted on a frame, is clamped to the rear bumper of the vehicle with two steel-strap hanger brackets that hook over the top edge of the bumper. The curled end of the center clamp is hooked over the bottom edge of the bumper, and the threaded end of this clamp, which is inserted through a drilled hole in the rear piece of the mounting frame, is secured with a wing nut.

ampere, 110-volt toggle switch, which was installed in a second handy box equipped with a switch-type cover plate. The return wire from the switch to the receptacle was attached to the second, or free, terminal of the receptacle to complete the circuit. A second length of cable, about 8 feet, leading from the wiring trough for the floodlamps and terminating in a male plug to be inserted into the outlet receptacle, was used to complete the circuit to the lamps. The toggle switch controlled the floodlights. The handy box with toggle switch was outfitted with clamps so that it could be attached either to the center of the dash or on the roof of the vehicle above the driver's right shoulder. The switch was fitted with a 6-inch extension of semi-flexible rubber tubing so that it could be located easily and turned on or off with a flick of the hand.

The hand-held spotlight used in this work was a Unity Model S6, 100,000 candle power, 12-volt automobile searchlight. It was sometimes operated from the vehicle's cigarette lighter socket. Usually, however, a short electrical cable, terminating in a female receptacle, was run from the posts of the vehicle's 12-volt battery, through the firewall, to the interior of the vehicle. The spotlight cable was then fitted with a suitable male plug. The latter system offered the most trouble-free performance.

The a-c lighting system with a bumper-mounted generator has the advantage of being interchangeable among different vehicles, particularly those of similar make (Fig. 1 and 4). All equipment can be rigged and readied for operation by two men within 10 minutes.

Fig. 4.—The crew of this nightlighting rig is cruising a grain-stubble field to locate roosting pheasants.

The net used to capture gallinaceous birds and cottontails had a 10-foot handle of 1-inch, thin-walled conduit, and a 30-inch hoop (diameter) of rolled $3/4$-inch, thin-walled conduit. The bag of the net was constructed of 1-inch heavy cord mesh and had a depth of about 15 inches. Nets with handles of lightweight materials or with bags of less than 1-inch mesh were ineffective because they could not be quickly forced down to the ground in heavy vegetation. Bags of fine cord, particularly those with mesh sizes larger than 1 inch, were unsatisfactory because netted birds often became entagled in the mesh and suffered wing abrasions.

To give the driver good visibility, the netter rode on the right fender of the vehicle. He was provided a detachable bumper platform on which to place his feet (Fig. 2). A safety rope, which the netter could grasp in his left hand, was attached across the hood of the vehicle. The platform and safety rope were essential to the safety and performance of the netter.

A two-man crew was adequate for the effective operation of this nightlighting rig. One man drove the vehicle, controlled the floodlights, and operated the spotlight, which he held out of the window of the vehicle. The other man netted the animals.

TECHNIQUES AND EFFICIENCY OF CAPTURE

Pheasants

Pheasants were located at night by cruising, with the floodlights in operation, through fields of relatively flat terrain that offered roosting cover, such as hayfields, small-grain stubble fields, and pastures (Fig. 4). Such cruising was done at about 5 mph. When a roosting pheasant was observed in the arc of the floodlights, the driver simultaneously switched on the hand-held spotlight, pinpointed the bird with the spotlight beam, and switched off the overhead floodlights. He then drove toward the bird, keeping it centered in the spotlight beam until the netter could leap from the vehicle and make his netting attempt (Fig. 5). Inasmuch as the spotlight was held in the driver's left hand, the vehicle had to be maintained to the right, or right rear, of the bird, which normally moved away from the source of light and noise. Consequently, the most effective vehicle maneuver in nightlighting was a counterclockwise circling action.

To net a pheasant, or other bird, the netter approached only from the rear or from the spotlighted, or "blinded," side of the quarry. In the capture attempt for pheasants, the netter usually made a headlong dive from a running approach. He placed the net swiftly over the bird by a forceful, forward thrust in such a manner that the hoop passed only a few inches over the bird; the hoop was kept essentially parallel to the ground at all times. This method of net placement allowed the netter to adjust for sudden, last-instant reactions of the bird, thereby increasing trapping efficiency and lessening the chances of injuring the bird. The action of the driver and the netter had to be closely coordinated to achieve a high degree of efficiency in capturing pheasants.

Most pheasants were captured at distances of 25–50 feet from the vehicle. Long chases, away from the vehicle, of elusive birds by a netter on foot were usually unsuccessful; they not only tired the netter but also wasted time and flushed birds that otherwise might have been captured. Although some birds were taken at or within a few feet of their roosting sites (Fig. 5), most birds either ran or flushed from their sites when they were disturbed (Fig. 1). The latter pheasants were spotlighted and pursued until they were captured or reached an inaccessible area. When a pheasant flushed, it could be "knocked down" at distances up to 150 yards by the spotlight beam if the bird was oriented in flight so that the light reached one of its eyes, temporarily blinding the bird. When a group of pheasants was flushed at one time, several birds could often be "knocked down" with the spotlight before they flew very far. In such cases the driver mentally noted the positions of the downed birds and subsequently pursued them one by one.

When pursuing running or flying pheasants, speeds of from 15 to 20 mph were often necessary to put the vehicle (and netter) in position to attempt capture; such chases often covered distances of several hundred yards. Under these circumstances, the driver had to be well acquainted with the terrain because his only light source was the spotlight beam which was directed at the fleeing bird.

Adult, or essentially full grown, pheasants were captured more easily when they were found roosting singly or in groups of two or three than when they were found in larger groups. If a single member of a large group flushed, several of the other pheasants in the group usually flushed also, some of which often flew into nearby fields that were inaccessible to the nightlighting rig. Many of the pheasants that flushed flew only short distances before alighting and were available for subsequent capture attempts. Young pheasants, still in broods, were very easily captured.

Pheasants were usually easier to capture after they had been roosting for a few hours than they were shortly after sunset or immediately before sunrise. Repeated nightlighting within the same field caused pheasants to become skittish, which made them increasingly difficult to trap, but did not markedly alter their nighttime use of the field.

Although there were never nights during which a worthwhile number of pheasants could not be captured by nightlighting, nighttime conditions influenced the susceptibility of birds to capture. Strong wind

Fig. 5.—In this capture effort the relative positions of vehicle, netter, and pheasant about to be captured at his roosting site are typical.

(15 mph or more) caused roosting pheasants, particularly those in large flocks, to flush wildly. Wind also caused vegetation to wave, which made it difficult for the observers to locate and follow pheasants that ran from their roosting sites.

Although fog or rain often caused pheasants to "hold tight" to their roosting sites, these same weather conditions usually hindered the trapping operation more than they aided it because of low visibility, reduced effectiveness of lights, and, in the case of rain, soft fields. Pheasants were most susceptible to capture when the vegetation was wet with dew or covered with frost. Cold temperatures (–10° to 10°F.), particularly when the ground was covered by snow, caused roosting pheasants to be flighty. Under the latter conditions in Illinois, pheasants often roosted in corn stubble (rather than in small-grain stubble or hay), which made their capture by nightlighting very arduous because it is difficult to maneuver the vehicle in row-crop fields. Pheasants were more susceptible to capture by nightlighting on moderately cold, cloudy nights following rain in autumn, and on relatively warm nights following a marked cold spell in winter. In late winter and spring, soft fields, which prevented vehicle access, hampered the capture of pheasants more than any other factor.

Pheasants were skittish and difficult to capture on bright moonlit nights, particularly when the vegetation was dry or covered by snow. When the vegetation was dew-laden or frosty, moonlight seemed to have little effect on the flightiness of pheasants.

Nearly half of all pheasants initially observed during nightlighting operations in autumn (prehunting season) were captured, whereas only about a third of those located in winter (posthunting season) were captured (Table 1). Although total pheasant numbers were less after each hunting season than before, the number of roosting pheasants per unit of trappable cover was greater after the hunting season than before. Fall plowing of small-grain stubble and hay fields severely reduced the amount of cover that had been used by roosting pheasants in autumn, and by the beginning of winter the birds were concentrated in the fields that offered vegetation suitable for roosting. Even when large blocks of roosting cover were available, pheasants often roosted in large flocks, sometimes as many as 200 birds, on winter nights. In general, the percentage of pheasants captured varied inversely with the number of pheasants that were flushed per unit of cover searched.

The time required to capture a pheasant averaged 5.5 minutes in autumn and 6.8 minutes in winter during the 6 years, 1956–1962 (Table 1). In autumn the capture time per bird decreased as population abun-

TABLE 1.—Statistics on the efficiency of capturing pheasants by nightlighting during prehunting season (October and early November) and posthunting season (principally January) periods on the intensively farmed, 23,200-acre Sibley Area in Ford and McLean counties of east-central Illinois, 1956–1962.

Capture Period and Year	Pheasant Density (Birds per Square Mile)	Number of Pheasants Captured	Capture: Flush Ratio* (Percentage Captured)	Average Capture Time (Minutes per Bird)
Autumn or Prehunt				
1956	150	267	37	7.0
1957	145	220	47	7.4
1958	295	354	50	4.8
1959	210	183	53	5.4
1960	285	181	40	5.3
1961	370	369	54	4.1
Total or Mean		*1,574*	*46*	*5.5*
Winter or Posthunt				
1957	60	189	36	8.5
1958	110	127	42	10.0
1959	95	177	16	5.0
1960	110	182	40	5.4
1961	150	187	38	6.0
1962	(160) †	260	37	No data
Total or Mean		*1,122*	*31*	*6.8‡*

*Efforts were made to include only the initial flush of pheasants; repeat flushes were ignored because they were a product of capture attempts.
†Estimate.
‡Excludes 1962.

dance increased. In winter there was little relationship between capture time and population abundance because the birds were usually concentrated in fields offering roosting cover.

Mortality attributable to the nightlighting operation totalled 1.7 percent of 2,696 pheasants captured and processed (weighed, measured, and marked). The majority of this mortality occurred during the time that the pheasants were held in burlap bags prior to processing. Such losses were mitigated if only one or two pheasants were placed in each burlap bag, if cocks and hens were held separately, if the pheasants were held no longer than 1 hour prior to processing, and if the bags containing the captured birds were kept outdoors.

Prairie Chickens

Efforts to capture prairie chickens by nightlighting were restricted to a single colony of birds located on a 10,000-acre tract of agricultural land in south-central Illinois. This colony numbered about 300, 200, and 150 prairie chickens in the autumns of 1962, 1963, and 1964, respectively. In autumn these birds were found roosting, usually in small groups, in as many as 20 different fields of small-grain stubble or tame hay.

Prairie chickens were much less susceptible to capture by nightlighting than were pheasants. Only 57, or about 17 percent, of 327 prairie chickens that were initially observed (repeat flushes not included) while nightlighting during the late summer and early fall periods of 1962–1964 were captured (Fig. 6). The capture efficiency was about 19 percent in August (17 of 88 birds), nearly 28 percent in September (28 of 101 birds), and only about 9 percent in October (12 of 138 birds). Young birds were more easily captured than adults in August and early September, but had gained the wariness of adults by October.

The techniques for nightlighting prairie chickens were essentially the same as those used in capturing pheasants. However, the entire tempo of the operation, after observation of the bird, had to be accelerated to effect capture. Even with experienced nightlighting personnel, the capture of prairie chickens was not assured.

Prairie chickens were almost impossible to capture by nightlighting on clear and/or moonlit nights. Under these conditions the spotlight was completely ineffective in "knocking down" prairie chickens that flushed. The flushed birds usually flew out of sight before alighting, which prevented subsequent capture attempts.

Cloudy, cool, and damp nights in early autumn were the best for capturing prairie chickens. To illustrate, on one night in mid-September, 1963, 21 (55 percent) of 38 prairie chickens that were flushed were captured —9 were adults and 12 were juveniles. This particular night was characterized by the arrival of a low-pressure weather front. It was very dark, due to a heavy cloud layer; mildly wet, due to a persistent mist; and cool (about 45° F.). The success in capturing prairie chickens on this night was convincing evidence that they could be effectively captured by nightlighting under proper nighttime conditions.

Fig. 6.—This prairie chicken, captured by nightlighting, was marked for subsequent identification with a plastic backtag prior to its release. (Most of the pheasants and bobwhites captured by nightlighting were also marked with backtags to facilitate behavioral and ecological studies.)

Bobwhites

Bobwhites were susceptible to capture by nightlighting, but the problems involved in capturing them were much different from those encountered in capturing pheasants or prairie chickens. Locating coveys of roosting bobwhites was perhaps the most time-consuming part of the operation. This problem was most acute in areas where bobwhite densities were low or where uneven topography, often characteristic of good bobwhite range in Illinois, made it impossible to use a vehicle. Beforehand knowledge of covey ranges lessened the cruising time expended in locating roosting coveys at night. Bartholomew (1967:3) tried to expedite the problem of locating coveys at night by working pointing dogs ahead of the lights, but concluded that the systematic search of fields with the nightlighting rig was still the best method for locating roosting bobwhites.

Usually the first indication of the presence of a roosting covey was when the birds flushed in the light ahead of, and usually close to, the vehicle. If a covey was sighted in a roosting rosette and could be pinpointed in the spotlight beam, all or most of the covey members could be captured in a single netting attempt. When a covey flushed, individuals scattered in all directions, but usually alighted within 5–75 yards of the flush point. Consequently, the floodlights were often left on when a covey flushed so that both driver and netter could observe the flightlines and flush distances of as many of the birds as possible. In these instances the spotlight was still used to "knock down" individual birds, particularly those that flew beyond the area illuminated by the floodlights.

The techniques used for trapping bobwhites depended on the type of habitat. When vegetative cover was relatively light, as in fields of small-grain stubble, birds from a flushed covey usually walked or ran after alighting. It was not unusual for a covey to "pop" into the air, alight immediately, and then run, often stay ing together in a loose unit. Capture efficiency was high under these circumstances because the fleeing birds could be easily observed on the ground. Inasmuch as scattered bobwhites were not particularly prone to flush, the birds were relatively easy to net (Fig. 7). A skilled netter could sometimes maneuver so as to make multiple catches, usually two or three birds.

Bobwhites were more difficult to capture when roosting in heavy vegetative cover. After the covey was flushed, individuals usually settled into the cover and remained sedentary. Most of these birds had to be relocated by slow, methodical cruising, and the best method was to cruise in a spiral pattern, moving outward from the flush site. To capture a bobwhite in this heavy cover, it was necessary to see the bird on the ground, detect it by its movement (by sight or sound) in the vegetation, or reflush it. When a bird was either seen or detected by its movement, netting was usually done in the illumination of the floodlights. Reflushed bobwhites were spotlighted and pursued in the normal way, and the netter usually trapped the bird by thrusting the net over the spotlighted site where it alighted. When nightlighting in heavy vegetation, many of the captured bobwhites were netted "blind"—the netter trapped the bird by placing his net over a spot of vegetation where the spotlight operator had detected movement and directed the light beam.

Wind was the weather condition that most hampered the capture of bobwhites by nightlighting; it set the vegetation in motion, making it difficult or impossible to detect the birds' movements. Quiet, dark, cloudy nights with heavy dew, light rain, or frost were favored for nightlighting bobwhites.

About half of all bobwhites flushed in farmland habitats, but only a third of those flushed in nonfarmland habitats, were captured by nightlighting in autumn (Table 2). The capture efficiency in the two broad habitat types was influenced by two factors. First, nightlighting for bobwhites on farmland was done principally in fields of small-grain stubble, where often the vegetation was either short (sometimes mowed) or light to moderate in terms of stem density. In such cover bobwhites were observable and, thus, easily trapped. On nonfarmland, nightlighting usually had to be conducted in fields of undisturbed grasses and weeds that were interspersed with deciduous woods. Scattered bobwhites were difficult to relocate

Fig. 7.—Here an undetected bobwhite from a previously flushed covey was reflushed as the netter approached another spotlighted covey member (on ground) from the outer fringe of the area illuminated by the floodlights. The driver instantaneously centered the flushing bobwhite in the spotlight beam so as to quickly "knock" him down.

Table 2.—Statistics on the efficiency of capturing bobwhites by nightlighting during autumn (prehunt) on farmland habitats and on nonfarmland habitats in south-central Illinois, 1963–1967.

Type of Habitat and Year	Number of Coveys Flushed	Number of Bobwhites in Coveys	Number of Bobwhites Captured	Percentage of Bobwhites Captured
Farmland*				
1963	15	147	91	62
1964	8	102	36	35
Total or Mean	*23*	*249*	*127*	*51*
Nonfarmland†				
1963‡	17	227	101	44
1964‡	17	196	74	38
1965‡	9	110	41	37
1966	8	109	21	19
1967	11	195	45	23
Total or Mean	*62*	*837*	*282*	*34*

*Bobwhite densities averaged about 1 covey per square mile.
†Bobwhite densities averaged about 12 coveys per square mile.
‡Two nightlighting rigs, working as a dual unit, were used in trapping in 1963 and at least part of the time in 1964 and 1965.

in this dense vegetation. Second, on nonfarmland many flushed bobwhites flew into nearby woods or rough terrain where they could not be pursued. This problem was not often encountered on the comparatively flat, farmland terrain.

The use of two nightlighting rigs usually improved the capture efficiency for bobwhites (Table 2), particularly in heavy vegetation or rough terrain, because it was possible to note where more of the birds from a covey alighted after the initial flush. Also, one rig and crew could often intercept and quickly capture individuals that were flushed by the other rig.

The time required to capture a bobwhite is unpredictable. Usually attempts to capture birds from an average-sized covey reached the point of diminishing returns within 30–45 minutes in light cover and 60–90 minutes in heavy cover. On one occasion, where the birds were roosting in clipped grain stubble, we captured 16 birds from a covey of 18 in less than 30 minutes. On the other hand, we captured only 4 of 22 bobwhites during a 2-hour period following a covey flush from a field of tall grasses and weeds.

Although we did not engage specifically in nightlighting for bobwhites during the winter, those bobwhites flushed while trapping pheasants were susceptible to capture. They were exceptionally vulnerable when snow covered the ground because they were readily visible against the white background.

Mortality of bobwhites attributable to the nightlighting operations averaged less than 1 percent. Roosting behavior was not seriously affected by nightlighting activities, as nightlighted coveys could be relocated at, or near, the same sites on subsequent nights.

Cottontails

Capturing cottontails (Fig. 8) by nightlighting was a difficult task. We have, however, captured more than 300 rabbits by nightlighting during the past decade. Nightlighting, by itself, was not a feasible technique for capturing large numbers of cottontails for population studies. However, it did prove to be an adequate and convenient technique for capturing live cottontails for laboratory studies or for stocking enclosures with animals for subsequent biological investigations.

Nightlighting cottontails was a hard and fast operation. At night the cottontail was strikingly "an animal of the edge." Generally, it foraged only short distances, usually less than 50 yards, into fields, or, more accurately, away from its escape cover. And as soon as the cottontail was disturbed, it streaked toward its escape cover. Consequently, the first and most important step in attempting to capture a rabbit was to

Fig. 8.—Although success in capturing cottontails by nightlighting on any given night is unpredictable, an experienced crew can usually capture a few rabbits on almost any night

maneuver the vehicle between the rabbit and its escape cover. To accomplish this, spurts of speed up to 35 mph were often necessary, and thus only fields with smooth terrain could be safely and effectively nightlighted. Because the "target" rabbit had to be kept in the spotlight beam at all times, it was imperative that nightlighting be done in fields in which the vegetation permitted the rabbit to be seen at all times; when the animal was lost from view, it usually escaped. If a rabbit could be cut off from escape cover, it often paused momentarily; at this moment the rabbit was potentially most vulnerable to capture. To effect capture at this precise time, the driver had to have the vehicle in such a position that the netter could literally pounce, directly from the vehicle, upon the rabbit with the net.

An experienced nightlighting crew can, on the average, expect to capture about one of every five rabbits flushed. On different nights in autumn, we have captured as many as 13 of 36 cottontails (36 percent) in 3 hours of nightlighting and as few as 3 of 51 (6 percent) in 7 hours.

Subadult cottontails were more susceptible to capture by nightlighting than were full grown rabbits. However, the nighttime behavior of cottontails, and thus their trappability, was quite unpredictable at any time. Cottontails were most skittish on very cold, moonlight nights when snow covered the ground and were most susceptible to capture on dark, cloudy nights when the vegetation (or ground) was wet. As a rule, cottontails held best on cold, rainy nights in autumn, on cool nights following a thaw or snow in winter, on warm, humid nights in spring, and on cool, dewy nights in summer.

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