

NR 6.18/103
C.1

COLORADO STATE PUBLICATIONS LIBRARY local
NR6.18/103
Carpenter, Len H/A night-viewing device
3 1799 00014 9229

Outdoor Facts

PUBLISHED BY THE COLORADO
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE



Game Information Leaflet

Number 103

"A NIGHT-VIEWING DEVICE TO MONITOR ACTIVITIES OF WILDLIFE"¹

Wildlife managers have been limited in attempts to study the behavior of animals by their inability to make accurate observations at night. Several workers have reported on various systems that have been used to monitor nighttime activities of different wildlife species (Swanson and Sargeant 1972, Ozoga and Gysel 1965, Richter 1955, and Reed et al. 1973). This leaflet describes a night-viewing device similar to that used by Swanson and Sargeant (1972) whereby available natural light is intensified. As a result, this device is not limited to short viewing distances as were older infra-red instruments.

night-viewing device with a 300-mm telephoto lens to discriminate among activities at the longer distances. To reduce observer eye fatigue the device also comes equipped with the biocular viewer which displays a television-type image with a green tint. The night-viewing system is very portable, weighing less than 12 lbs (5.4 kg), and can be supported by an ordinary camera tripod. The current list price for the system is approximately \$3,500.

DESCRIPTION AND USE

During two winters of use the night-viewing device has performed satisfactorily under a wide array of nocturnal light conditions, including snowstorms. A clear moonlight night with a snow background provides optimum conditions. In situations where discriminations among different animal activities, such as counts of animals, are

As part of a research study to measure the carrying capacity of mule deer winter ranges it became necessary to determine activity patterns of deer throughout 24-hr periods. A night-viewing device (Model 221) developed by Apollo Lasers, Javelin Division, of Los Angeles, California² was purchased to permit nocturnal measurements (Fig. 1). The objective lens collects available light and focuses it within the unit similar to the way a camera lens focuses light. The focused light is then converted into electrical energy in an "image intensifier" tube which is charged by a single 4.5-volt mercury battery. The energy is amplified approximately 50,000 times and then converted back to light at the other end of the image intensifier tube. This amplified scene is then displayed on a phosphor screen at the back of the tube. The recreated scene is then viewed by the observer through an eyepiece lens or a "biocular" viewer.

We made observations of deer within a 10-acre (4-ha) pasture where distances from an observation tower to animal could vary from 10-600 ft (3-183 m). As a result, it was necessary to equip the



Fig. 1. A light-intensifying device mounted on a tripod was used to monitor nocturnal behavior of captive mule deer. (Photo by Paul F. Gilbert)

¹Contribution from Federal Aid Project W-38-R.

²Use of brand names in this publication is for the benefit of the reader and does not imply endorsement of this product by the Colorado Division of Wildlife.

not required, the effective distance of the night-viewing device could extend beyond the 600-ft (183-m) limitation encountered in this study.

OTHER POTENTIAL USES

The potential uses of the night-viewing devices are numerous and are really limited only by the capability of the instrument and the user's imagination. Some obvious possibilities are: locating ground-roosting birds (waterfowl, pheasant, quail, sage grouse, etc.) for subsequent capture and marking; aiding in damage assessments by monitoring big game causing damage to haystacks and crops; evaluating deer highway crossing aids such as underpasses, overpasses, and one-way deer gates; observing and documenting activities of nocturnal birds and mammals; and recording illegal activities of hunters for evidence in court cases.

LITERATURE CITED

- Ozoga, J. J., and L. W. Gysel. 1965. A mechanical recorder for measuring deer activity. *J. Wildl. Manage.* 29(3):632-634.
- Reed, D. F., T. M. Pojar, and T. N. Woodard. 1973. A video time-lapse system for wildlife surveillance. *Colo. Div. Game, Fish and Parks Game Info. Leaflet No. 94.* 3 p.
- Richter, W. C. 1955. A technique for night identification of animals. *J. Wildl. Manage.* 19(1):159-160.
- Swanson, G. A., and A. B. Sargeant. 1972. Observation of nighttime behavior of ducks. *J. Wildl. Manage.* 36(3):959-961.

Len H. Carpenter
Asst. Wildlife Researcher
May 1976