Frequency of occurrence of the primary groups of food items in respect to size groups of crappie indicated greater utilization of crustaceans and insects by small black crappie from 60 to about 250 millimeters total length. Black crappie greater than 239 millimeters utilized fish more frequently though there was not a great change in frequency of occurrence of crustaceans or insects in these larger fish (Table 2).

Ten black crappie were collected in June and July 1972 by means of a small otter trawl with one-quarter inch stretched mesh netting. The fish ranged from 60 to 147 millimeters. Stomach analysis (Table 3) indicated the same dominant food items as found in larger crappie.

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Wildlife Sessions

AN EVALUATION OF STEEL TRAPS FOR TAKING FUR ANIMALS IN COASTAL LOUISIANA[1]

by

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ABSTRACT

During the winters of 1972-73 and 1973-74 an evaluation was made of the effectiveness of the leg-hold and killing type (Conibear) trap for taking fur animals in coastal Louisiana. The leg-hold trap caught significantly more nutria and raccoons than the Conibear trap. However, the killing type trap appeared to be more effective for taking muskrats in flooded marshes. Approximately 92 percent of the animals caught in the Conibear were killed by the trap, only 15.8 percent died in the leg-hold. Thirty percent of the nutria taken in the leg-hold trap were undersize and released. Survival of undersize nutria, held briefly in captivity, appeared good.

INTRODUCTION

It is imperative that methods used to take fur animals be periodically evaluated to determine if technological advances have progressed to the point that new techniques should be implemented. Only the most efficient and humane procedures currently available should be recommended.

In spite of long and vigorous efforts to develop more efficient traps, trapping methods have actually changed little since the early explorers discovered and developed the fabulous North American raw fur industry. Great strides have been made in transportation, industry, medicine, and many other human living conveniences, yet the leg-hold trap has changed little over the centuries and is even today the mainstay of the fur industry in the United States.

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[1] A joint contribution of the Louisiana Cooperative Wildlife Research Unit, Louisiana State University, Louisiana Wild Life and Fisheries Commission, Wildlife Management Institute and the U. S. Fish and Wildlife Service cooperating.

A significant improvement in the leg-hold trap was the development of "stop-loss" mechanisms which prevented the animal from moving freely and thereby freeing or further injuring itself in the trap. Although crippling loss was reduced, "stop-loss" traps did not effectively kill the animals captured. The leg-hold trap was further modified by attaching capsules containing poison or tranquilizing drugs to the jaw of the trap. When bitten, they effectively sedated the animal. Drug capsules are currently in limited use for capturing large carnivores in conjunction with leg-hold traps modified to minimize leg injury.

Live traps for taking fur animals have been in use for many years (Arthur 1928). Some designs were amazingly ingenious, such as the old "Gibbs Live Trap", but most currently used are a slight variation of the "drop-door" box trap. Live traps are bulky and expensive and are used only in specialized situations to capture animals for restocking, scientific studies or where other traps might prove hazardous to humans and domestic animals.

A chain loop trap evaluated by Bailey (1940) appeared to be an effective and humane design and was reported to have great potential. Now, nearly 35 years later, we know of no one who produces or uses the "Verbail" trap. Snares have been used to capture animals but unless carefully set they can be the cruelest trap yet devised.

The solution to the problems of crippling loss, struggling and suffering in the trap appears to be in the use of effective killing type traps. Several designs have been developed but only a few have proven to be effective and practical in a professional fur trapping operation.

The most successful design to date has been the body-gripping Victor Conibear trap invented in 1929 by Frank Conibear (Wilson 1969). Animals entering the trap are usually killed instantly when struck by the powerful jaws. Other designs similar to the Conibear appear to be equally effective.

Louisiana is the leading wild fur producing state in the nation. Annual production exceeds two million pelts with a value, to the trapper, of over ten million dollars. Nutria and muskrats taken primarily in the coastal marshes account for approximately 85 percent of the total value (Lowery 1974). Since the Conibear has gained wide national acceptance by professional trappers, we decided to compare its effectiveness with standard leg-hold traps currently used by trappers in coastal Louisiana.

MATERIALS AND METHODS

The study was conducted in a large tract of brackish coastal marsh located on Rockefeller Wildlife Refuge in southwestern Louisiana. The co-author, experienced with trapping in the coastal marsh, conducted the field tests. The three traps evaluated were the Victor Conibear Size 220, the "Number 2" and "Number 1½" Oneida Victor long spring leg-hold trap. All traps were obtained from commercial distributors and were not altered or modified in any way.

An equal number of each type of trap was tested simultaneously. Traps were randomly chosen but the trap site was selected to give a maximum probability of capture. The technique we employed, and used by commercial trappers in coastal Louisiana, involved placing the trap in a well used trail. The trap was usually not carefully concealed nor was it baited. Most nutria sets were made on slightly elevated sites in the marsh or on spoil levees or dykes. Except in localized areas of high muskrat densities, most coastal trappers set specifically for nutria; raccoon and mink were often taken incidentally (Table 1).

During the 1973 season a total of 1294 trap nights were used in the test. Due to the difficulty in obtaining some trap types, the trapping period was reduced in 1974 and involved only 1020 trap nights.

Traps were visited and the animals removed each morning. Undersize nutria were released and other animals, if still alive, were killed by a sharp blow to the skull.

A paired "T" test was used to test for significant differences between the effectiveness of the Conibear and the Victor #2 trap.

RESULTS

The relative effectiveness of the three traps tested for catching furbearing animals was evaluated in terms of the number of animals taken per 100 trap night efforts (Table 1). The Victor #2 leg-hold caught significantly ($P<.01$) more nutria than the Conibear 220. This difference was observed during both the 1973 and 1974 seasons. Overall average catch for the Conibear was 2.4 nutria per 100 trap nights and 4.8 for the Victor #2 leg-hold. No difference was detected between the Victor #2 and the Victor #1½ leg-hold traps for catching nutria.

The Conibear appeared to be superior to the leg-hold traps for capturing muskrats in flooded marshes. During the 1973 season, 5.3 muskrats were taken per 100 trap days with the Conibear compared to only 1.5 with the leg-hold trap. Only three muskrats were taken in 1974 and no meaningful evaluation was possible.

The leg-hold trap was obviously more effective than the Conibear for taking raccoons. With equal trapping effort, 27 raccoons were taken in the Victor #2 leg-hold trap compared to only 2 in the Conibear. Most of the raccoons, 77.4 percent, were taken in 1973.

Mink and opossum were the only other fur animals taken. Both of the mink were captured in the Conibear. One opossum was taken in the Conibear and three in the leg-hold traps. No comparison of trap efficiency could be made for these species.

A surprising number of non-target animals were taken in both the Conibear and leg-hold traps. Thirty-three Clapper Rails[1], one night heron, one Mottled Duck, one Robin and one Boat-tailed Grackle were inadvertantly trapped during the course of the study. In 1973, most of the birds were taken in leg-hold traps. The situation was reversed in 1974 when more were taken in the Conibear (Table 1).

A second means of evaluating trap performance was by comparing the dollar value of raw pelts taken (Table 2). The Conibear took a total of $324.50 worth of pelts compared to $504.00 taken with the Victor #2 leg-hold trap. The difference was $179.50, 55.3 percent more than the Conibear. Muskrats and nutria accounted for most of the pelt value trapped by the Conibear while nutria and raccoon were the most valuable species taken with the leg-hold trap.

Pelt values are subject to considerable fluctuation related to overall economic conditions and current fashion trends. During the period of study, raccoon pelts were in unusually high demand thus significantly inflating the total value of pelts taken in the leg-hold traps. The combined dollar value of nutria and muskrats were not appreciably different for the trap types tested.

Had muskrat populations in the area not declined in 1973-74, the total value of pelts taken in the Conibear trap may have exceeded that of the leg-hold trap.

The Conibear proved to be an effective killing type of trap. Of the 62 animals captured, only five remained alive in the trap (Table 3). Ninety-one percent of the nutria and 94.1 percent of the muskrats were killed by the trap. Only 15.8 percent of the animals taken in the leg-hold traps were dead when the traps were visited. All of the dead animals were either muskrats or immature nutria. Ninety-one percent of the nutria and 100 percent of the raccoons remained alive in the leg-hold traps. Twenty unmarketable immature nutria, 29.9 percent, were released alive from the leg-hold traps.

DISCUSSION

The four million acres of Louisiana coastal wetlands are presently yielding eight to ten million dollars worth of raw fur annually; a value which exceeds the combined total of all of the other states. Nutria, muskrats and raccoons account for over 90 percent of the value. Field information was obtained using techniques employed by commercial trappers in the region and should have general application in other areas of the coast. Approximately 4,000 trappers have trapped the coastal area in recent years and, over the years, a life style has evolved which is based on income derived from the bountiful fish and wildlife resources. It is in behalf of the perpetuation of this unique culture that we undertook this study.

The Conibear is a significant improvement over the leg-hold trap for capturing furbearing animals in many regions of North America (Wilson 1969, Collier 1957). We have found no quantitative evaluation of the relative effectiveness of the Conibear versus the leg-hold trap for capturing fur animals in coastal marshes.

Our studies indicate that, under the conditions tested, the leg-hold trap is more effective than standard factory Conibears for trapping nutria and raccoons. Raccoons, in particular, appeared to avoid entering the Conibear.

Professional trappers who were asked to comment on the Conibear type trap criticized their high cost, weight, bulkiness and potential danger to the trapper and domestic animals. They were strongly opposed to the use of killing type traps for taking nutria because a dead, cold animal is far more difficult to skin. More importantly, they objected because a large number of undersize nutria are

[1] Bird names follow: American Ornithologists Union. 1957. Checklist of North American birds. Port City Press, Baltimore, Md. 691 pp.

Table 1. Animals captured per 100 trap day efforts in Coastal Louisiana.[1]

Species	1973 SEASON Conibear 220	1973 SEASON Victor #2 (Leg Hold)	1974 SEASON Conibear 220	1974 SEASON Victor #2 (Leg Hold)	1974 SEASON Victor #1½ (Leg Hold)	TOTAL Conibear 220	TOTAL Victor #2 (Leg Hold)	TOTAL Victor #1½ (Leg Hold)
Nutria[2]	3.1	4.6	1.2	5.3	6.2	2.4	4.8	6.2
Common Muskrat	5.3	1.5	0.0	0.3	0.6	3.4	1.1	0.6
Northern Raccoon	0.0	3.7	0.6	0.9	0.6	0.2	2.7	0.6
North American Mink	0.3	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Virginia Opossum	0.2	0.5	0.0	0.0	0.0	0.1	0.3	0.0
Birds	0.5	1.7	5.3	1.1	0.3	2.1	1.5	0.3
Trap Night Efforts	647	647	340	340	340	987	987	340

[1] Trapping techniques were limited to those currently in local use.
[2] Nomenclature after Lowery 1974.

Table 2. Comparison of estimated dollar value of salable raw pelts taken in Conibear and Victor #2 leg-hold traps.

Species	Conibear 220 Number Pelts	Conibear 220 Price Per[1] Pelt	Conibear 220 Value	Victor #2 (Leg-Hold) Number Pelts	Victor #2 (Leg-Hold) Price Per Pelt	Victor #2 (Leg-Hold) Value
Nutria	24	$6.00	$144.00	48	$6.00	$288.00
Common Muskrat	34	$4.50	$153.00	11	$4.50	49.50
Northern Raccoon	2	$6.00	12.00	27	$6.00	$162.00
North American Mink	2	$7.00	14.00	0	$7.00	0
Virginia Opossum	1	$1.50	1.50	3	$1.50	4.50
TOTAL			$324.50			$504.00

[1] Prices based on average estimates for the 1973-74 season in southwestern Louisiana.

Table 3. Condition of animals when removed from two types of traps tested in Coastal Louisiana marshes.

Species	Conibear 220 Dead No.	Conibear 220 Dead %	Conibear 220 Alive No.	Conibear 220 Alive %	Conibear 220 Released No.	Conibear 220 Released %	Leg-Hold Dead No.	Leg-Hold Dead %	Leg-Hold Alive No.	Leg-Hold Alive %	Leg-Hold Released No.	Leg-Hold Released %
Nutria	21	91.3	2	8.7	0	0	6*	9.0	61	91.0	20*	29.9
Common Muskrat	32	94.1	2	5.9	0	0	12	80.0	3	20.0	0	0
Northern Raccoon	2	100.0	0	0	0	0	0	0	29	100.0	0	0
North American Mink	1	50.0	1	50.0	0	0	0	0	0	0	0	0
Virginia Opossum	1	100.0	0	0	0	0	0	0	3	100.0	0	0
Total	57	91.9	5	8.1	0	0	18	15.8	96	84.2	20	17.5

* All were immature animals.

released alive from the leg-hold trap. We found that 30 percent of the nutria taken in our leg-hold traps were undersize and therefore released. A preliminary effort to determine survival of immature animals indicated good survival; only one of nine nutria held for observation died. The cause of death was not determined. Further studies of the incidence of release and survival of previously trapped nutria are planned. If the results substantiate our preliminary findings, it would be a significant disadvantage to the use of the killing type trap.

The Conibear was found to be highly effective for taking muskrats in flooded marshes. Water levels were abnormally high during the 1973 season which may have increased the efficiency of the Conibear for taking muskrats. Leg-hold traps must be carefully placed in deeply flooded "runs" since animals tend to swim over the trap pan. Water depth appears less critical with the Conibear trap. The large size (#2) leg-hold trap used during the 1973 season may have had some influence on the muskrat catch. Trappers generally use the trap sizes such as the Victor #11 or #1VG "stop-loss" for taking muskrats. We feel that water level was a far more important factor than trap size in influencing the muskrat catch.

Lunn (1971) reported that the Conibear 220 did not perform as well as other Conibear sizes because of its single spring design. Our field studies indicated that the Conibear performed well on nutria, muskrat and raccoons. Over 90 percent of the animals captured appeared to be killed almost instantly. A second spring added to the Conibear 220 would increase the cost and weight significantly. Unless the double spring design caught more per trap day effort, we see no need for the additional spring. Naturally, traps should be used only for those species for which they were recommended and springs weakened by deterioration or prolonged use should be replaced.

Pelt damage, resulting from predators or fighting in the trap, was not significant for any of the traps tested. One muskrat in the Conibear was partially eaten by a predator and one in a leg-hold trap was damaged by fighting, apparently with another muskrat. Pelt damage, due to conflicts between

trapped and untrapped animals, may be more severe in areas of high muskrat populations (Arthur 1928). The use of Conibear traps in such situations may reduce the incidence of damaged pelts.

In summary our data indicates that the Conibear trap is effective and practical for trapping muskrats, especially in deep water. Nutria and raccoons apparently avoided the Conibear, resulting in a significantly greater catch per effort for the leg-hold design. Perhaps the Conibear trap or trapping techniques can be modified to increase its efficiency for taking raccoons and nutria. Professional trappers in the coastal region have expressed opposition to killing type traps for reasons other than their apparent lower effectiveness and until solutions to these problems are resolved, it appears that they will be reluctant to change.

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IMPACT OF SITE PREPARATION ON FLATWOODS WILDLIFE HABITAT[1]

by

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ABSTRACT

Habitat differences 9 years after planting of slash pine are compared for three levels of site disturbance in a north Florida flatwoods. Observed wildlife abundance is discussed in light of structural (quality, occurrence and stratification) and nutritional habitat differences. Where grasses and forbs were most productive (low site preparation intensity), ground arthropods, small mammals, herbivores, birds, and insectivores were most abundant. Increased site preparation accelerated pine overstory and shrub midstory development with greater foliage arthropod abundance. Rapid vegetation successional changes may prevent animal and plant populations other than transients from effectively utilizing intensive site prepared slash pine plantations. Growth and development of slash pine overstories was favored by intensive site preparation at the expense of understory wildlife habitat.

INTRODUCTION

Manipulation of southeastern U. S. softwood forests has greatly intensified as the demand for wood based products has escalated, the land base has declined and forest ownership has shifted to large corporations. Site preparation and single species tree planting have been employed to increase seedling survival and growth, control density, reduce competition with other species, reduce the risk and uncertainty of a harvestable crop, and concentrate photosynthesis and nutrients into selected marketable products. Current ecological concern with intensive forestry relates to an apparent loss of spatial, temporal, and vertical ecosystem diversity since a diversity of plants and niches are considered desirable for a variety of wildlife, esthetics and ecosystem stability. Present and future energy costs plus labor and equipment, public pressure, and potential economic returns from marketable wildlife, livestock, and recreational values have increased interest in the management of wildlife and its relationship to forest management practices.

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