

1984

## River Otter in Arkansas III. Characteristics of Otter Latrines and Their Distribution Along Beaver-Inhabited Watercourses in Southwest Arkansas

Mark R. Karnes  
*The Ross Foundation*

C. Renn Tumlison  
*Oklahoma State University*

Follow this and additional works at: <http://scholarworks.uark.edu/jaas>

 Part of the [Terrestrial and Aquatic Ecology Commons](#), and the [Zoology Commons](#)

---

### Recommended Citation

Karnes, Mark R. and Tumlison, C. Renn (1984) "River Otter in Arkansas III. Characteristics of Otter Latrines and Their Distribution Along Beaver-Inhabited Watercourses in Southwest Arkansas," *Journal of the Arkansas Academy of Science*: Vol. 38 , Article 16.  
Available at: <http://scholarworks.uark.edu/jaas/vol38/iss1/16>

This article is available for use under the Creative Commons license: Attribution-NoDerivatives 4.0 International (CC BY-ND 4.0). Users are able to read, download, copy, print, distribute, search, link to the full texts of these articles, or use them for any other lawful purpose, without asking prior permission from the publisher or the author.

This Article is brought to you for free and open access by ScholarWorks@UARK. It has been accepted for inclusion in Journal of the Arkansas Academy of Science by an authorized editor of ScholarWorks@UARK. For more information, please contact [scholar@uark.edu](mailto:scholar@uark.edu), [ccmiddle@uark.edu](mailto:ccmiddle@uark.edu).

# THE RIVER OTTER IN ARKANSAS. III. CHARACTERISTICS OF OTTER LATRINES AND THEIR DISTRIBUTION ALONG BEAVER-INHABITED WATERCOURSES IN SOUTHWEST ARKANSAS

MARK R. KARNES  
The Ross Foundation  
P.O. Box 335  
Arkadelphia, AR 71923

AND  
RENN TUMLISON  
Department of Zoology  
Oklahoma State University  
Stillwater, OK 74078

## ABSTRACT

Forty-one river otter (*Lutra canadensis*) fecal deposit (latrine) sites were located during April 1983 through March 1984 along beaver (*Castor canadensis*) inhabited watercourses in Clark, Nevada, and Ouachita counties, Arkansas. Latrine sizes ranged from 64 cm<sup>2</sup> to 5.01 m<sup>2</sup> ( $\bar{x}$  = 0.30 m<sup>2</sup>; S.D. = 0.88), and contained 2 to 78 scats per latrine ( $\bar{x}$  = 9.2; S.D. = 13.8). The most common sites for latrines included elevated leaf or moss covered banks (51.2%), beaver lodges or bank dens (17.1%), and beaver scent mounds (12.2%). Other latrine sites included felled logs over open water, bare soil along elevated banks, and exposed sandbars. Otter presence fluctuated seasonally in beaver areas, with the periods of greatest occurrence being early summer and late winter.

## INTRODUCTION

Numerous studies concerning the effects of beaver pond formation on wildlife have been conducted (Beard, 1953; Rutherford, 1955; Speake, 1956; Knudsen, 1959; Arner, 1963; Reese and Hair, 1976; Allred, 1980). Practically all reports have found beaver ponds to be beneficial to the forms of life studied.

Analyzing harvest records, Tumlison et al. (1982) reported the possible existence of a commensal relationship by river otter (*Lutra canadensis*) with beaver (*Castor canadensis*), facilitated through the development of suitable otter habitat in beaver ponds. This study was initiated to define characteristics of otter latrines and investigate the extent of utilization of beaver-inhabited watercourses by otter in southwest Arkansas.

## METHODS AND MATERIALS

The study was conducted on eight beaver-inhabited watercourses during April 1983 through March 1984. Watercourse sizes ranged from small intermittent woodland branches to larger creeks and meandering sloughs in Clark, Nevada, and Ouachita counties (Fig. 1). On all watercourses beaver, through dam construction, had created ponds ranging from 0.8 ha to extensive areas of inundation 24 ha in size. Dominant vegetation of these beaver areas included bald cypress (*Taxodium distichum*), water tupelo (*Nyssa aquatica*), buttonbush (*Cephalanthus occidentalis*), green ash (*Fraxinus pennsylvanica*), smartweeds (*Polygonum* spp.), cattails (*Typha* spp.), and rushes (*Juncus* spp.).

Maximum depths in all areas sampled were greater than one meter during April through July and December through March. Due to dam removal and paucity of rainfall during the remaining months of the study, water levels were reduced to isolated pools and shallow channels in existing beaver runs.

Initially, only cursory investigations of study areas were conducted (April through June). During the remainder of the study, examinations were conducted at monthly intervals except at times when routine management activities provided more frequent examinations, or at times when, due to high water or ice cover, regular examinations were

prevented.

Latrine sites were identified and size, distance from water, and elevation above waterline were recorded. When possible, estimations regarding the length of use, freshness of scats, and number of animals using a latrine were also recorded. During some sampling periods no latrine sites were discovered although tracks indicated otter were utilizing an area, or at least frequenting a particular location. To derive a more

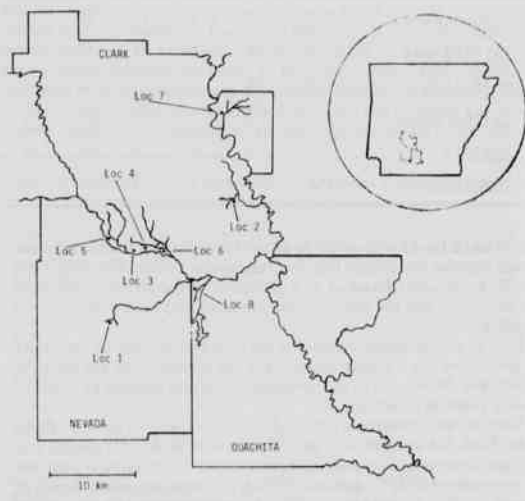


Figure 1. Locations of beaver-inhabited watercourses in southwest Arkansas.

## Mark R. Karnes and Renn Tumilson

Table 1. Numbers of latrines (track counts) recorded monthly along beaver inhabited watercourses in southwest Arkansas.

Location	Spring			Summer			Fall			Winter		
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
#1	1	0	0	0	0	0	0	0	NI	NI	NI	0
#2	NI	0(3)	5	0	0	0	0	0	9	1(3)	4(4)	3
#3	0	0	0(1)	0	0	3	0	0	0(1)	NI	0(2)	1
#4	NI	NI	NI	0(2)	0(2)	1	0	0	0	NI	0(1)	2
#5	NI	NI	NI	0(2)	1	0	0	0	0	NI	0(1)	1
#6	NI	NI	NI	0(1)	3	0(1)	0	0	NI	NI	NI	NI
#7	0	0	0	0	1	0	0	0	0(1)	0	1	0
#8	0	0	0	0	0	0	0	0	0	0(1)	1	3

NI: Not investigated during month.

complete understanding of seasonal use of the study areas track data was recorded along with latrine data (Table). Numbers of individual otter were recorded when track characteristics indicated the presence of more than one animal.

## RESULTS AND DISCUSSION

**Latrine Characteristics:** A total of 41 latrines was identified during the study (Table). The number of scats per latrine ranged from 2 to 78 ( $\bar{x}=9.2$ ; S.D.=13.8). The average latrine covered 0.30 m<sup>2</sup> (S.D.=0.88), ranging from 64 cm<sup>2</sup> to 5.01 m<sup>2</sup>. Distances from water and elevations above waterline ranged from 5 cm to 2.7 m ( $\bar{x}=59.9$  cm; S.D.=49.6) and 11 cm to 1.8 m ( $\bar{x}=37.6$  cm; S.D.=37.4), respectively.

Hewson (1973) reported finding spraints of European otter (*Lutra lutra*) in piles near the center of islands and beneath rhododendrons on a Scottish loch. Greer (1955) described river otter as having particular "toilets" near regular landings. Otter often defecate on large logs, rocks, logjams, sandbars, elevated banks, and any object protruding from the water (Melquist and Hornocker, 1983). The most common site for latrines found during this study were elevated debris-covered banks (21 sites or 51.2%) along main stream channels and beaver runs. Seven latrines (17.1%) were located on beaver lodges or bank dens. Interestingly, five latrines (12.2%) were found in association with beaver scent mounds. Muller-Schwarze and Heckman (1980) discussed the social role of scent marking in beaver. Along trails and dams on main travel lanes beaver scent mounds provide readily discernable signals to transient beaver that an area is currently occupied. Consequently, due to the strategic locations of these areas, otter latrines may also be deposited. Towell and Tabor (1982) described scent marking activities among otter as including "not only deposition of excrement but also scratching together mounds of soil and debris or twisting tufts of grass together, either of which may have scent deposits or spraints deposited on top". During this study no otter scent marking consisting of mounds of soil and debris were observed, although other latrines undoubtedly served a role in scent marking activities. Other less frequently encountered latrine sites included fell logs over water, bare soil on elevated banks, and exposed sandbars.

Many river otter latrine sites are used repeatedly (Melquist and Hornocker, 1983). Older scats at well established latrines often were difficult to classify according to age. Studying European otter, Jenkins and Burrows (1980) found 50% of spraints disappeared after two weeks and 83-94% disappeared after seven weeks. In this study exposure to rain and high water were major factors reducing the longevity of discernible scats. Scattered fragments of fish remains often indicated past use at well established latrine sites.

Fourteen (34.1%) of the recent latrine deposits were determined to

represent repeated visits to an established latrine. Length of use for these latrines ranged from extended periods lasting more than two months (for two latrines situated on beaver lodges at locations 2 and 4), to repeat visits for a single latrine during a 36 hour period (location 8) after which the animal did not return. Melquist and Hornocker (1983) reported that traveling otter marked at traditional landing sites with the greatest amount of marking occurring at activity centers. When several otter congregated at activity centers, the area eventually became blanketed with scats. Liers (1951) reported that when several otter travel together each tries to be the last to leave its mark. In most instances it was impossible to ascertain the number of otter using a particular latrine, however using track counts it was determined that two latrines had been visited by more than one otter. One latrine located during August (location 5) was only minutes old when discovered and tracks along the bank indicated the presence of one large and three small otter, probably a female and young. During January, tracks in the vicinity of another latrine (location 2) indicated the presence of two otter. Melquist and Hornocker (1983) believed that frequent confrontations between unrelated otter traveling on the same stream were resolved by mutual avoidance; profuse fecal marking at activity centers served as signals to arriving otter that the site was presently occupied. Kaufmann (1983) presents a thorough discussion on the definitions and functions of dominance and territoriality. In his paper, Kaufmann summarized that there is an indivisible continuum in degrees of trespass onto territories, and functionally it is priority of access that is important rather than exclusive occupancy. This statement may describe otter dominance and territoriality. During the non-breeding season unrelated otter occupy the same general home range, move freely throughout the area, and use the same activity centers without associating with each other (Melquist and Hornocker, 1983).

**Seasonal Activity Trends of Otter:** Tumilson et al. (1982) compiled data indicating that trophic requirements of otter are supplied by beaver ponds on smaller streams through enhancement of all levels of the food chain. Otter were found to occur in all beaver areas throughout the course of the study (with the exceptions of October and November when all locations were virtually dry) indicating that otter make use of beaver areas so long as water levels maintain sufficient depth to provide foraging space.

Water levels probably exerted the greatest influence on seasonal habitation of beaver areas by otter. Humphrey and Zinn (1982) found seasonal changes in the distribution of aquatic habitat to be a factor involved in a seasonally declining mustelid abundance. Their observations of otter sign suggested that otter occupied permanent water bodies during the late dry season. Six of the eight locations used in this study were within 400 m of permanent creeks and rivers. This distance is easily within the expected limits of travel for a highly mobile animal such as the otter. Therefore, during the extremely dry months of October and

## The River Otter in Arkansas. III. Characteristics of Otter Latrines and Their Distribution

November otter probably returned to permanent creeks and rivers. Locations 1 and 8 were shallow intermittent branches on which beaver had constructed dams forming small ponds less than 4 ha in size. In April the dam and beaver at location 1 were removed, after which no further otter activity was observed. When the study was initiated a single beaver dam at location 8 was in disrepair, consequently no pond was present and water depth was less than 0.5 m. With the onset of rains during late November and early December, beavers reinhabited the area and repaired the existing dam. Otter presence was first recorded in January when the beaver pond had been refilled. These occurrences provide further substantiation that beaver greatly enhance otter habitat on intermittent streams.

Jenkins and Burrows (1980) concluded that changes in the numbers of spraints gave only an approximation of changes in the numbers of European otter present, although spraints could be used as indicators of the ways in which otter use habitat. Insufficient data prevents any conclusive interpretation of otter numbers, however, assuming that latrine deposition is a function of otter density (Melquist and Hornocker, 1983), and by including track counts which represent real otter numbers during a given examination period, seasonal trends of otter presence can be derived (Fig. 2).

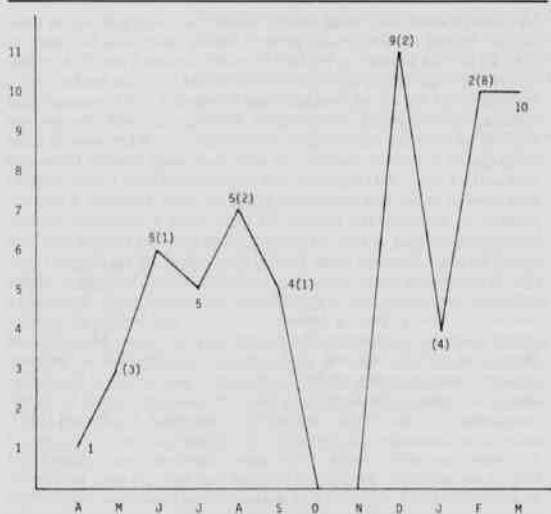


Figure 2. Numbers of otter latrines and tracks ( ) used to derive seasonal trends of otter presence in beaver-inhabited watercourses in southwest Arkansas.

The values presented in Figure 2 probably represent conservative measurements of otter presence in beaver areas, especially during the first months of the study. The relatively low numbers of latrines and tracks recorded during April and May probably resulted from insufficient sampling of areas rather than low otter presence. The decreased values recorded during January also reflect insufficient sampling during snow and ice cover. Five of the eight locations could not be sampled during January. During the January examination period only one latrine was identified, however four individual sets of tracks were detected at two locations (Table). In February, when weather conditions permitted resumption of sampling, values increased. Also, due to elapsed time between monthly examination periods and the random arrangement of potential latrine sites it is doubtful that all latrines were identified.

Otters breed in late winter or early spring (Towell and Tabor, 1982).

The breeding season in Arkansas probably closely resembles those reported for other southeastern states (McDaniel, 1963; Lauhachinda, 1978). The period of greatest otter presence recorded during this study occurred during late winter. This period would coincide with the reported breeding season, indicating that otters may utilize beaver areas as breeding and rearing sites. Finally, this indication is strengthened by a reported preference for active and abandoned beaver bank dens and lodges as den and resting sites by otter (Melquist and Hornocker, 1983).

## LITERATURE CITED

- ALLRED, M. 1980. A re-emphasis on the value of the beaver in natural resource conservation. *J. Idaho Acad. Sci.* 16:3-10.
- ARNER, D. H. 1963. Production of duck food in beaver ponds. *J. Wildl. Manage.* 27:78-81.
- BEARD, E. B. 1953. The importance of beaver in waterfowl management at the Seney National Wildlife Refuge. *J. Wildl. Manage.* 17:398-436.
- GREER, K. R. 1955. Yearly food habits of the river otter in the Thompson Lakes region, northwestern Montana, as indicated by scat analysis. *Amer. Midl. Nat.* 54(2):299-313.
- HEWSON, R. 1973. Food and feeding habits of otters *Lutra lutra* at Loch Park, northeast Scotland. *J. Zool.* 170:159-162.
- HUMPHREY, S. R., and T. L. ZINN. 1982. Seasonal habitat use by river otter and everglades mink in Florida. *J. Wildl. Manage.* 46(2):375-381.
- JENKINS, D., and G. O. BURROWS. 1980. Ecology of otters in northern Scotland. III. The use of faeces as indicators of otter (*Lutra lutra*) density and distribution. *J. An. Ecol.* 49:755-774.
- KAUFMANN, J. H. 1983. On the definitions and functions of dominance and territoriality. *Biol. Rev.* 58:1-20.
- KNUDSEN, G. J. 1959. The case for the beaver pond. *Wis. Cons. Bull.* 24:3-6.
- LAUHACHINDA, V. 1978. Life history of the river otter in Alabama with emphasis on food habits. Ph.D. Diss. Auburn Univ., Auburn, Ala. 169 pp.
- LIERS, E. E. 1951. Notes on the river otter (*Lutra canadensis*). *J. Mamm.* 32(1):1-9.
- MCDANIEL, J. 1963. Otter population study. *Proc. Ann. Conf. Southeast. Assoc. Game and Fish Comm.* 17:163-168.
- MELQUIST, W. E., and M. G. HORNOCKER. 1983. Ecology of river otters in west central Idaho. *Wildl. Monog.* No. 83, 60 pp.
- MULLER-SCHWARZE, D., and S. HECKMAN. 1980. The social role of scene marking in beaver (*Castor canadensis*). *J. Chem. Ecol.* 6(1):81-95.
- REESE, K. P., and J. D. HAIR. 1976. Avian species diversity in relation to beaver pond habitats in the Piedmont region of South Carolina. *Proc. Ann. Conf. Southeast. Assoc. Fish and Wildl. Agencies* 30:437-447.
- RUTHERFORD, W. H. 1955. Wildlife and environmental relationships of beavers in Colorado forests. *J. For.* 53:803-806.
- SPEAKE, D. W. 1956. Waterfowl use of creeks, beaver swamps, and impoundments in Lee County, Alabama. *Proc. Ann. Conf. Southeast. Assoc. Game and Fish Comm.* 10:178-185.

Mark R. Karnes and Renn Tumilson

TOWELL, D. E., and J. E. TABOR. 1982. River otter (*Lutra canadensis*). Pages 688-703 in J. A. Chapman and G. A. Feldhamer, eds. Wild mammals of North America. Johns Hopkins Univ. Press, Baltimore and London.

TUMLISON, R., M. KARNES, and A. W. KING. 1982. The river otter in Arkansas. II. Indications of a beaver-facilitated commensal relationship. Proc. Ark. Acad. Sci. 36:73-75.