

**PENNSYLVANIA GAME COMMISSION  
BUREAU OF WILDLIFE MANAGEMENT  
PROJECT ANNUAL JOB REPORT**

**PROJECT CODE NO.:** 06700

**TITLE:** River Otter Research/Management

**JOB CODE NO.:** 70001

**TITLE:** River Otter Management Plan

**PERIOD COVERED:** 1 July 2016 to 30 June 2017

**COOPERATING AGENCIES:** None

**WORK LOCATION:** Statewide

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**ABSTRACT** A river otter management plan was created to help establish stable river otter populations in balance with their habitat through proper population monitoring and harvest management. The 2017 river otter harvest season was the second opportunity for trappers to legally harvest otters in Pennsylvania since 1951. During the 7-trapnight season, trappers caught 36 otters within Wildlife Management Unit (WMU) 3C and 3D. An equal number of otters were harvested in each WMU. The top otter-harvest counties were Susquehanna, Pike, Monroe, and Wayne. The majority of harvested otters were males (61%). The daily otter take was greatly influenced by weather conditions. We were comfortable with the level of harvest and trapper participation. The harvest rate across WMUs 3C and 3D was 0.84 otters/100 sq. miles. We continue to be very conservative in our approach to harvesting otters in Pennsylvania.

## **OBJECTIVES**

Establish stable river otter populations in balance with their habitat through proper population monitoring and harvest management.

## **METHODS**

The purpose of the river otter management plan was to provide an overview of the current state of knowledge pertaining to river otter biology, habitat, history, resource value, and population management and provide direction for future management. It represented our guide to managing otter populations in Pennsylvania for 10 years (2013-2022). It also served as an information and

education resource for anyone seeking answers to questions concerning river otter life history and past, present, and future otter management in the Commonwealth.

Objectives defined in the plan identified the necessary steps to achieve each of the 4 goals. Strategies consisting of actions and research needs were developed to attain each objective. Improved population and reproductive monitoring, harvest management, habitat assessment, population management, trapping regulations, damage management, outreach, and public engagement were among the most important needs identified.

In keeping with our agency mission, river otters must be managed for the benefit of other wildlife species, their habitats, and all Pennsylvanians for generations to come. Our otter management mission was to maintain stable otter populations in balance with their habitat for the benefit of other wildlife species and humans through proper monitoring, population management, and damage control. The goals of Pennsylvania's river otter management were to 1) maintain sustained otter populations within suitable habitat, 2) minimize otter damage complaints, 3) increase public awareness and knowledge of the benefits of otters and their habitat, and 4) develop guidelines to assess river otter harvest feasibility and implement a harvest management program.

Pennsylvania's otter management plan provided the necessary direction to achieve enhanced populations, habitat, and monitoring, increased public awareness and knowledge of otters, and sustained resource opportunities for both consumptive and non-consumptive users of this valuable furbearer. Only through careful planning and sound science will we maintain a healthy balance between otters and human interests, and manage sustained river otter populations for future generations.

### **Population monitoring**

We currently use a combination of population indices such as accidental capture frequency and local status and distribution field surveys to monitor otter populations. Prior to a harvest season for otters in Pennsylvania, mortality information was collected from records of accidental captures, highway accidents, and mortalities resulting from damage control and illegal take (Fig. 1). Based on records of 211 otter carcasses collected during 1996-2009, most reported mortality was a result of accidental captures (69%) and highway accidents (24%). A very small proportion (2%) of otter mortality was attributed to damage control measures and illegal take.

As river otter populations expanded throughout the Commonwealth, reports of accidental otter captures have steadily increased. Otters are typically captured in foothold or body-gripping traps set for raccoons or beavers. Some are released at the capture site by trappers or local wildlife conservation officers. Otter mortalities usually associated with body-gripping sets occur occasionally during beaver trapping and are not always avoidable.

Reports of accidental otter captures provided annual trends in relative density and distribution. Two independent survey mechanisms, the annual Furtaker Survey and the annual Wildlife Conservation Officer (WCO) furbearer questionnaire, were used to monitor accidental otter captures. These techniques were not designed to provide complete counts of these captures, but rather to monitor temporal trends in otter abundance and distribution.

The annual Furtaker Survey was a mail questionnaire sent to approximately 3% of licensed furtakers (including junior and senior combination license holders) to assess harvest levels for various furbearers (Johnson 2016). Furtakers were asked to report the number and WMU locations of otters captured incidentally in traps set for other furbearers.

### **Otter harvest management**

Pennsylvania otter populations increased or remained stable across their range. The Pocono northeast maintained stable or increasing river otter populations for the past 20 years and was also the area where river otter populations historically sustained themselves, despite extirpation throughout the remainder of the Commonwealth. Wildlife Management Units 3C and 3D included the Pocono northeast area. A highly-regulated otter harvest was feasible in this portion of Pennsylvania.

We believed a conservative harvest of 2 otters per 100 mi<sup>2</sup> would provide trapper opportunity, while safeguarding core populations in Pennsylvania WMUs 3C and 3D. In an area of 4,294 mi<sup>2</sup> (area of WMU 3C and 3D), a harvest of 85 otters was targeted. In comparison to northeastern states with similar habitat conditions, Pennsylvania's proposed harvest rate of 1.99 otters/100 mi<sup>2</sup> was relatively low.

Late February was normally a period when the otter breeding season was just beginning. We expected a greater male otter proportion in the harvest. However, a wide variation in the timing of breeding was normal and expected.

Trap number and type restrictions was in effect. Each trapper was permitted to use up to 2 body-gripping traps. No more than 5 total trapping devices (foothold traps, body-gripping traps, and snares combined) were permitted. We felt that limiting the total number of trapping devices permitted as well as limiting the number of body-gripping traps was necessary to reduce the chance of a trapper exceeding the one otter bag limit.

Mandatory harvest reporting and female carcass retention and surrender was required. We gain important reproductive and population management information from female carcasses.

During concurrent beaver and river otter seasons, beaver trapping regulations applied to all otter trapping activities with the exception of number and types of trapping devices permitted (reduced to 5 trapping devices, 2 of which may be body-gripping traps). A trap tag totally visible above the water or ice level on each trapping device was required. Trap placement near beaver dams and lodges remained at 15 feet away from these structures. All general trapping regulations applied to river otter trapping.

Special beaver regulations applied in WMU 3C and 3D. During the period of calendar day overlap with river otter season, beaver trappers were limited to using no more than 5 trapping devices, 2 of which could be body-gripping traps.

The following river otter season format was adopted:

1. The river otter trapping season is held annually during the last full week in February for 8 days (7 trapnights).
2. River otter hunting is not permitted.
3. WMUs 3C and 3D are open for otter harvest.
4. The season bag limit is 1 otter per license year.
5. Both a river otter permit and furtaker license are required to trap otters.
6. Reporting an otter harvest within 24 hours of capture is mandatory.
7. Retention and surrender of entire female carcasses (excluding the pelt) is mandatory.
8. Beaver trapping regulations apply to all otter trapping activities with the exception of number and types of trapping devices permitted.
9. Trap number and type restrictions are in effect. No more than 2 body-gripping traps may be used. No more than 5 total trapping devices (foothold traps, body-gripping traps, and snares combined) are permitted.
10. Special beaver regulations apply in WMU 3C and 3D during the period of the calendar day overlap of beaver and river otter seasons. Beaver trappers are limited to using no more than 5 trapping devices, 2 of which may be body-gripping traps during the season overlap.

## **RESULTS**

### **Population monitoring**

There was an increasing trend in the numbers of incidentally-captured otters during 2007-2015, based on Furtaker Survey results (Table 1). If the number of otters captured per trapper was extrapolated to include all furtakers, the estimated number of captured otters averaged 174 each year during the 2007-2015 furtaker seasons. In 2016, the incidental otter take sharply decreased. A decrease in trapper effort and the start of regulated otter harvest are likely causes for this change.

Furbearer questionnaires were mailed annually to all WCOs to collect a variety of furbearer information. Accidental captures of otters during the previous calendar year are reported by WCOs via this survey. This second measure of otter accidental captures showed an increasing linear trend during 1995-2016 (Hardisky 2016). There was little or no change in beaver trapping effort during 1995-2015. However, beaver trapping effort decreased in 2016, due mainly to poor beaver pelt prices. Numbers of statewide accidental otter captures reported to WCOs, primarily by beaver trappers, decreased from 61 in 2015, to 52 in 2016 (Hardisky 2016). Regulated harvest of otters began in 2016 and likely contributed to a decrease in incidental otter captures within WMUs 3C and 3D.

### **Harvest results**

The otter season occurred in WMUs 3C and 3D during 18-25 February 2017 and was the second opportunity for trappers to legally harvest otters in 65 years. Previously, the last year otters could legally be harvested was in 1951. There were 995 otter permits sold. Resident otter permit holders numbered 980 and nonresidents totaled 15.

The harvest during the 7-trapnight season was 36 otters (Table 2). Eighteen otters were harvested in each WMU (3C and 3D). The top otter-harvest counties were Susquehanna, Pike, Monroe, and Wayne. Most otters (72%) were harvested by trappers living within WMUs 3C and

3D. Ten (28%) trappers resided outside of the trapping area. There were 5 nonresident trappers from New Jersey who harvested otters.

The majority of harvested otters were males (61%). The timing of the February season helped to reduce the take of females and avoided the possibility of harvesting a female that was rearing young.

As expected, the daily otter take was influenced by weather conditions (Table 3). During the 8-day season, record high temperatures occurred during 4 of 8 days. Melting snow, high water levels, and lack of storm systems reduced trapping success. As is the case with most mustelids, otter movements and subsequent harvest increased with approaching storm fronts.

### **Harvest rate**

We were comfortable with the level of harvest and trapper participation. The harvest rate across WMUs 3C and 3D was 0.84 otters/100 sq. miles. We were not concerned that we did not reach our target harvest of 85 (2 otters/100 sq. miles). Our target harvest was established to avoid any negative impact on the existing otter population. We believed our otter population in WMU 3C and 3D could withstand an annual harvest of 85 and continue to sustain itself each year. It was not necessary to reach our harvest goal. An under harvest will not negatively impact otter populations in this area.

We identified the following factors that likely contributed to the rate of harvest (otters/day):

1. Trap restriction (especially the 2 body-gripping trap limit) probably had a significant impact on success. We expected this impact. Body-gripping traps are extremely efficient at taking otters. Only allowing the use of two body-grippers limited trapper success.
2. Otter movements are not typical of many other furbearers and may have influenced daily harvest rates. Otters normally travel different circuits or routes each night. These travel circuits may not be repeated for several days. So, the longer a trap is set, the greater the chance of catching an otter. Trappers may have to wait several days before an otter travels to their sets.
3. High and fluctuating water levels, icing conditions, and abnormally warm weather made trapping very difficult in some areas and likely impacted success.
4. An unknown proportion of otter permit holders did not attempt to trap otters. We will try to estimate what proportion of permit holders participated in the otter season using a post-season survey. This information will help us estimate trapping effort in future years.

### **Harvest Recommendations**

We know that weather conditions during future otter seasons will have a significant impact on success rates and total catch. Based on trapping effort and success results, a 7-trapnight season is a reasonable season length. We recommend that the otter season be held during the last full week of February each year, starting on a Saturday at 7 am and ending on the following Saturday at sunset.

We believe trap number and type restrictions greatly reduced accidental capture of more than 1 otter per day. These trap restrictions should remain in place during future otter seasons. We

also do not anticipate an increase in trapper numbers or an increase in trapper effort until a significant increase in otter pelt prices occurs. Other than season length/dates, we do not recommend any additional season or bag limit changes.

We continue to be very conservative in our approach to harvesting otters in Pennsylvania. Once we have learned more about regulated harvest impacts on otters in the trapping area, we will recommend adjustments to the season and regulation structure to constantly safeguard and preserve the sustainability of our otter populations.

## **RECOMMENDATIONS**

1. Annually determine river otter population status and distribution using Wildlife Conservation Officer Furbearer Survey results.

2. Establish a direct-census method of determining population levels such as mark-recapture to achieve a high level of accuracy.

3. Annually survey agency staff to obtain the number of otter damage complaints received and information on type of damage.

4. Develop an otter management decision matrix based on population and habitat status information to help guide regulatory action.

5. Monitor reproduction and age structure of harvested otters through annual carcass collection.

## **LITERATURE CITED**

Hardisky, T.S. 2016. Furbearer Population and Harvest Monitoring. Annual Job Report 61001. Pennsylvania Game Commission. Harrisburg, USA.

Johnson, J. B. 2016. Game Take and Furtaker Surveys. Annual Job Report 11101. Pennsylvania Game Commission. Harrisburg, USA.

Table 1. Incidental otter captures from Furtaker Survey responses.

Season	Survey respondents	Number of furtakers	Otter captures reported by survey respondents	Estimated total otter captures
2007-08	2,994	28,033 <sup>a</sup>	7	66
2008-09	2,622	29,717 <sup>a</sup>	12	136
2009-10	3,186	31,110 <sup>a</sup>	14	137
2010-11	4,421	35,267 <sup>a</sup>	24	191
2011-12	3,609	36,187 <sup>a</sup>	16	160
2012-13	3,223	39,913 <sup>a</sup>	17	211
2014-15	4,720	163,503	13	266
2015-16	4,443	166,301	19	228
2016-17	4,477	167,211	6	43

<sup>a</sup> Excludes junior and senior combination license holders.

Table 2. River otter harvest by county and WMU during 2017.

County	WMU 3C	WMU 3D	County total
Susquehanna	10		10
Pike		9	9
Monroe		6	6
Wayne	4	1	5
Luzerne		2	2
Bradford	2		2
Wyoming	2		2
Total harvest	18	18	36

Table 3. Daily river otter harvest in relation to weather conditions.

Report date (2017)	Otters harvested (previous night)	Temperature range (degrees F; Avoca, PA)	Precipitation (inches rainfall; Mt Pocono, PA)	Weather comments (temperature ranges in Mt Pocono, PA)
Sat, 2/18	-	25-63	0	Stable, warm weather, melting snow, rising water levels
Sun, 2/19	3	46-65 <sup>a</sup>	0	Stable, warm weather, record high temperatures
Mon, 2/20	3	30-50	0	Stable, warm weather
Tues, 2/21	3	26-48	0	Stable, warm weather
Wed, 2/22	9	42-57	trace	Approaching weak storm system, warm temperatures
Thurs, 2/23	8	36-70 <sup>a</sup>	0.05	Record high temperatures, light rain
Fri, 2/24	3	52-76 <sup>a</sup>	0	Record high temperatures, stable weather
Sat, 2/25	7	37-68 <sup>a</sup>	1.44	Approaching storm front, record high temperatures, heavy daytime rain

<sup>a</sup> Record high temperature

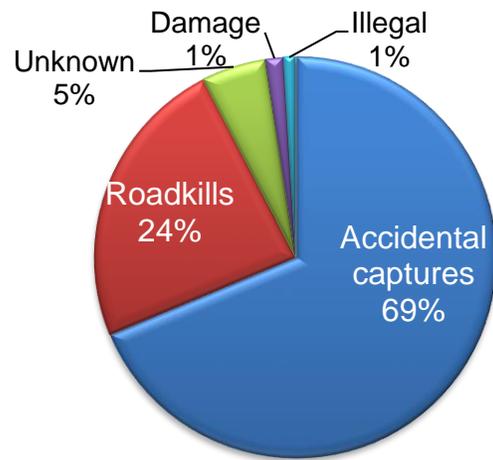


Figure 1. Reported mortality sources of river otters in Pennsylvania during 1996-2013.