

**Division of Wildlife**  
Ohio Department of Natural Resources

**2016 RIVER OTTER BRIDGE SURVEY RESULTS**

Annual river otter bridge surveys in watersheds throughout northeastern and southeastern Ohio (ODNR Division of Wildlife Districts Three and Four, respectively) have been conducted since 2000 as a standardized method of assessing the current distribution of river otters, as well as long-term trends. A total of 15 bridge sites in 12 watershed groups (six in each district) were sampled again in 2016 (Fig.1 A). Watershed groups typically contain two to six watersheds, and were assembled for the purpose of establishing groups of similar sizes to act as experimental units. This year was also the inaugural year for river otter bridge surveys in the remainder of state, including Districts One, Two, and Five. For Districts Two and Five, 15 bridge sites were selected within each of six watershed groups, for 90 bridge sites per district, similar to Districts Three and Four. District One, however, because of its smaller size selected 15 bridge sites within each of four watershed groups for 60 bridge sites (Fig. 1B). Overall, survey efforts across the state in 2015 resulted in 420 surveyed bridge sites.

Bridge surveys are conducted within three days of a rainfall or snow event to allow otters time to track up banks. The entirety of the survey area for each bridge is surveyed during one day. The surveyed area includes 300 m upstream and downstream from the bridge. Any otter sign (i.e., tracks, scat, fish kill remains, latrines) and distance from the bridge to the first detected sign is noted. A detectability index, as defined by the percentage of stream bank having suitable tracking conditions (sandbar, mud) available for detecting otters, is also determined for each site.

From 1 January - 15 February 2016, staff across the state conducted river otter bridge surveys. Staff from Districts Three and Four completed 180 surveys and sign was detected at 35 sites (19.4%; Fig. 3A). Detection rate increased slightly in comparison with 2015 results, when otter sign was detected at 28 (15.6%) bridge sites.

Overall, the trend in the number of positive sites is increasing in Districts Three and Four (Fig. 2A). The slope ( $\beta$ ) of the trend line for overall bridge survey detection was 0.64, indicating that, on average, for every additional year, bridge survey detections of river otters are expected to increase by 0.64; a slow, but positive trend. Positive trends were observed for watersheds in both District Three ( $\beta = 0.30$ ) and District Four ( $\beta = 0.34$ ; Fig. 2B).

Thirty-nine instances of river otter sign were observed at the 35 bridge sites in Districts Three and Four; most were tracks (33; 84.6%), but scat (4; 10.3%) and two latrines (5.1%) were also observed. Of the 35 bridge sites, 23 (25.6% of 90 sites) occurred in District Three and 12 (13.3%) were observed in District Four. River otter sign has predominantly been located near the original release sites since 2000 (Fig. 3B).

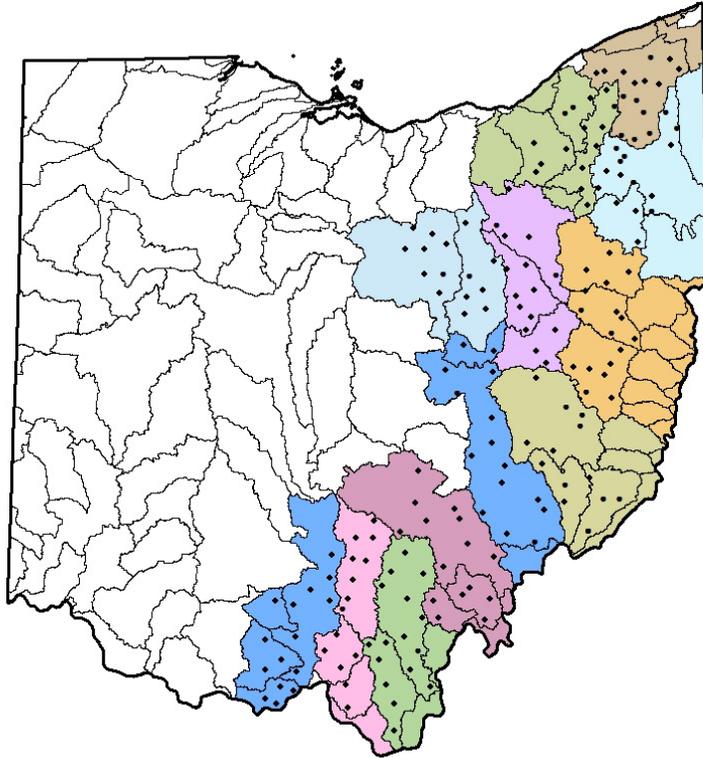
Surveys in central and western Ohio are necessary to assess the statewide distribution of river otters. Initial surveys were conducted in 2016. District One detected sign at 20 of their 60 sites (33%), and District Five staff detected river otter sign at 26 of their 90 sites (27%). Conversely, District Two detected sign at only two of 90 sites (2%; Fig. 4). Overall, there were 48 positive sites among the new survey locations in Districts One, Two, and Five. On these, 62 instances of sign were detected. Similar to the long-term surveys in eastern Ohio,

tracks were most commonly observed (44; 71.0%). Other types of sign were also observed, including scat (5; 8.1%), fish kills (4; 6.4%), and latrines (9; 14.5%).

The high detection rates in Districts One and Five were unexpected. Training for the new bridge surveys was done via an automated PowerPoint presentation. In-person and field training is likely necessary to successfully teach new observers how to discern river otter tracks and scat from that of other species, especially raccoons. Also, approximately a dozen observers emailed or texted photos for identification. Identification from photos tends to be much more difficult than identification in the field. When the track's identity was unclear, a liberal approach was taken and the track was recorded as a river otter, likely overestimating the number of true river otter tracks. Nonetheless, roadkilled carcasses and verified observations confirm the presence of river otters in Districts One and Five. Additional surveys are required before a baseline in the newly surveyed areas can be established.

Ohio's river otter bridge surveys continue to be an important tool for tracking distribution and relative abundance in eastern Ohio. Bridge surveys provide a less biased method of determining distribution and provide indices to relative abundance both temporally and spatially. However, the current survey techniques should be expanded to include trail camera surveys at a subgroup of survey sites in 2017. This would allow for statistical modeling of occupancy rates, landscape features associated with river otter occurrence, and the correlation between camera and human detection of river otters at bridge sites.

A



B

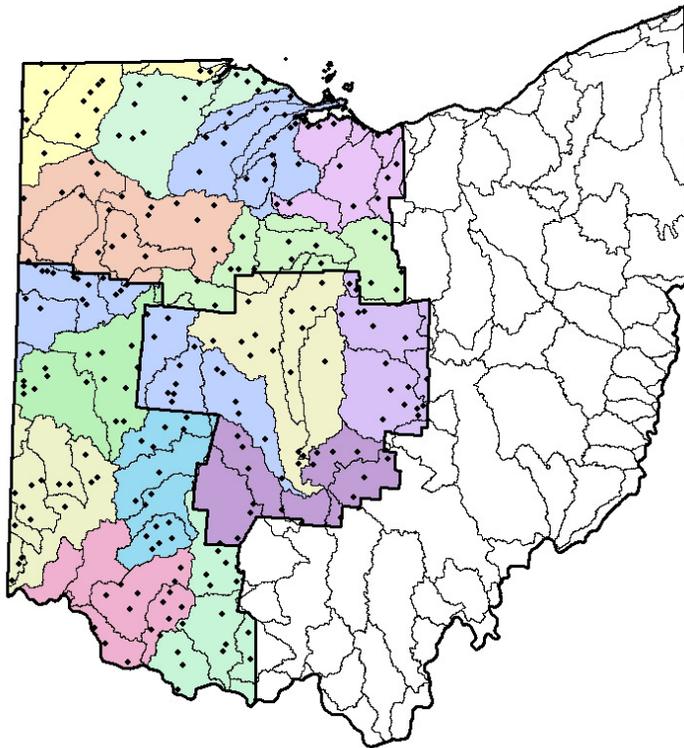


Fig. 1. A) Bridge sites surveyed by watershed group in eastern Ohio, 2000-2016, B) New bridge sites by watershed group in central and western Ohio surveyed in 2016.

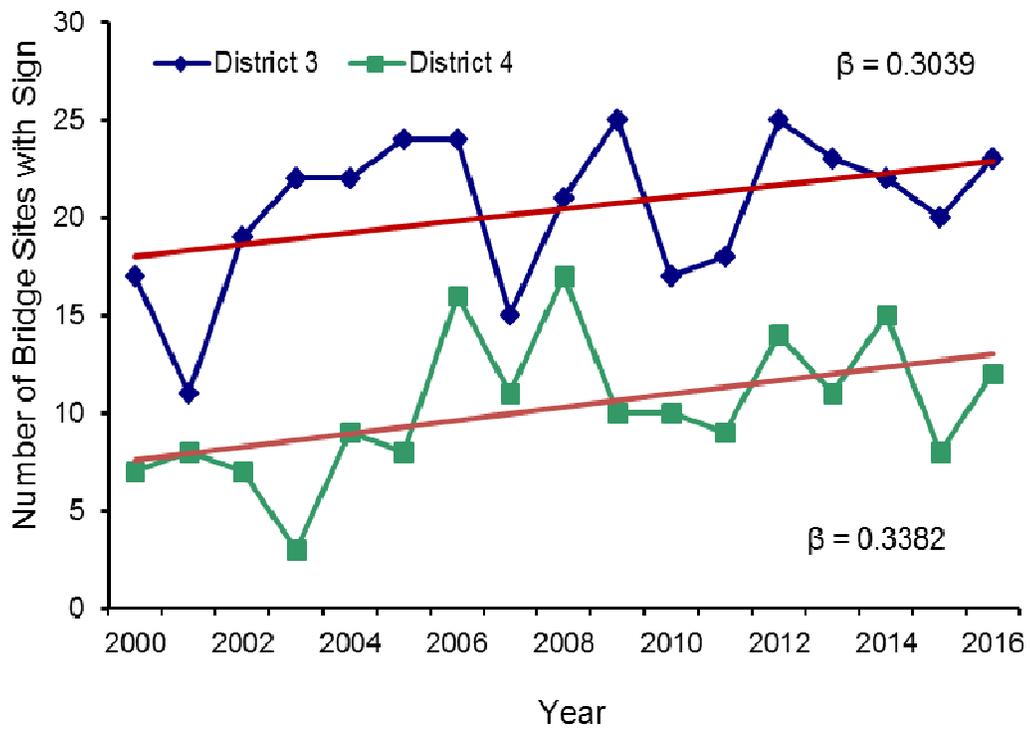
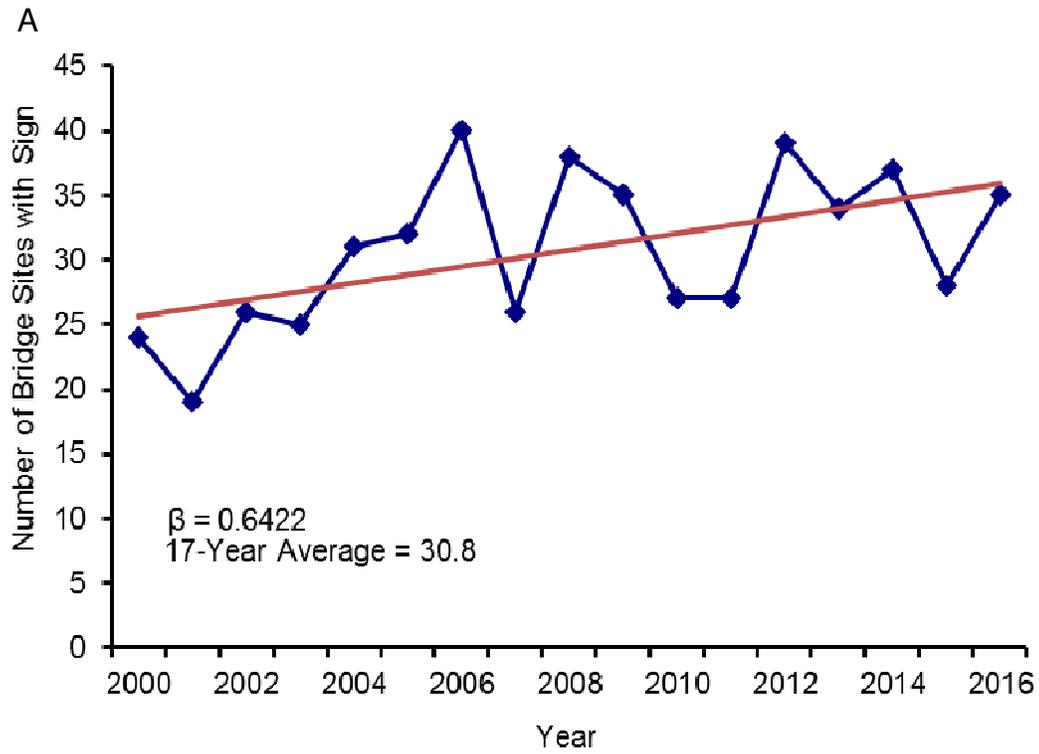


Fig. 2. A) Number of bridge sites with river otter sign by year in eastern Ohio, and B) by year and district, 2000-2016. Red lines indicate linear trend.

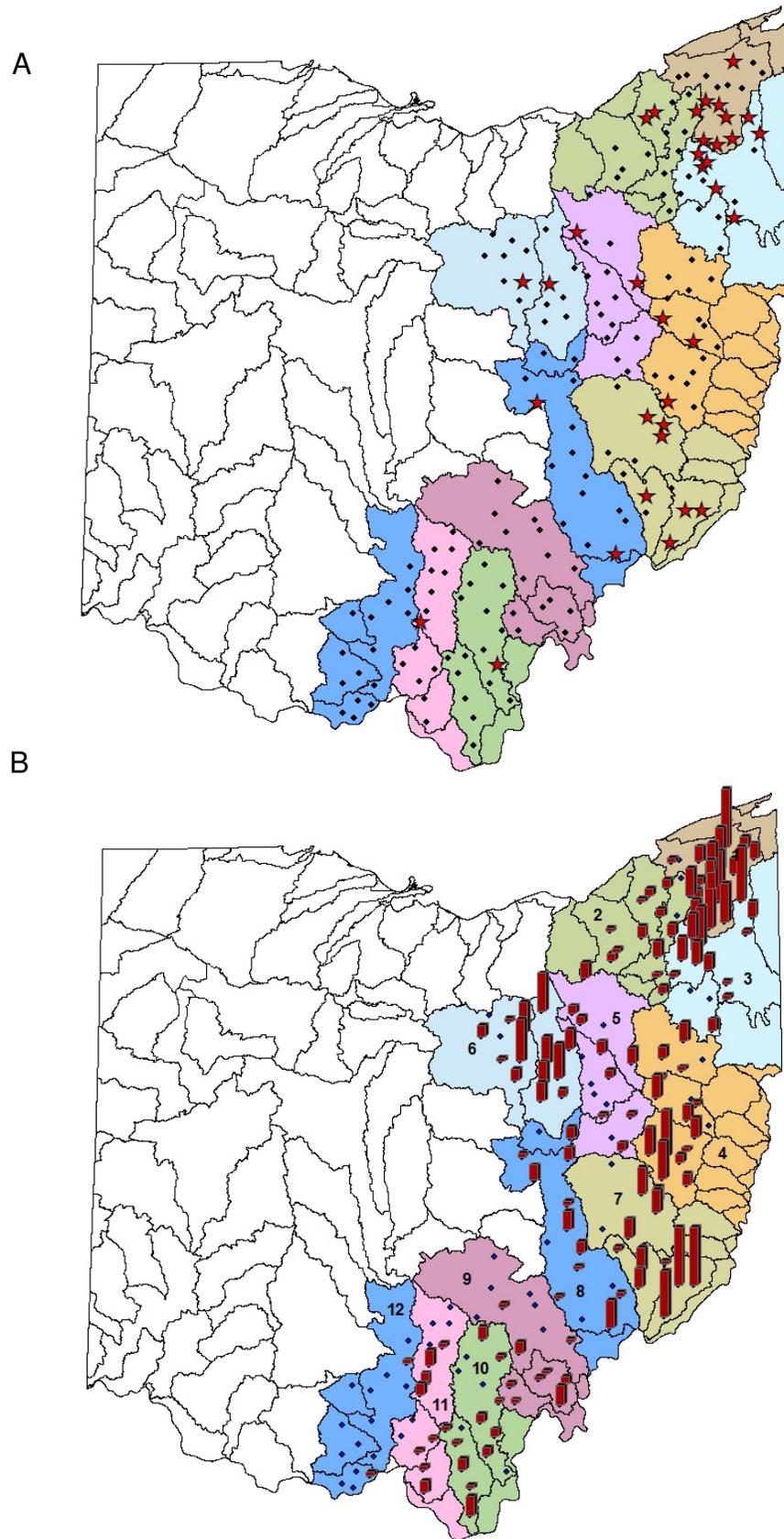


Fig. 3. A) Bridge survey sites within eastern Ohio with (red stars) and without (black circles) river otter sign. B) Cumulative bridge survey detections in eastern Ohio, 2000-2016.

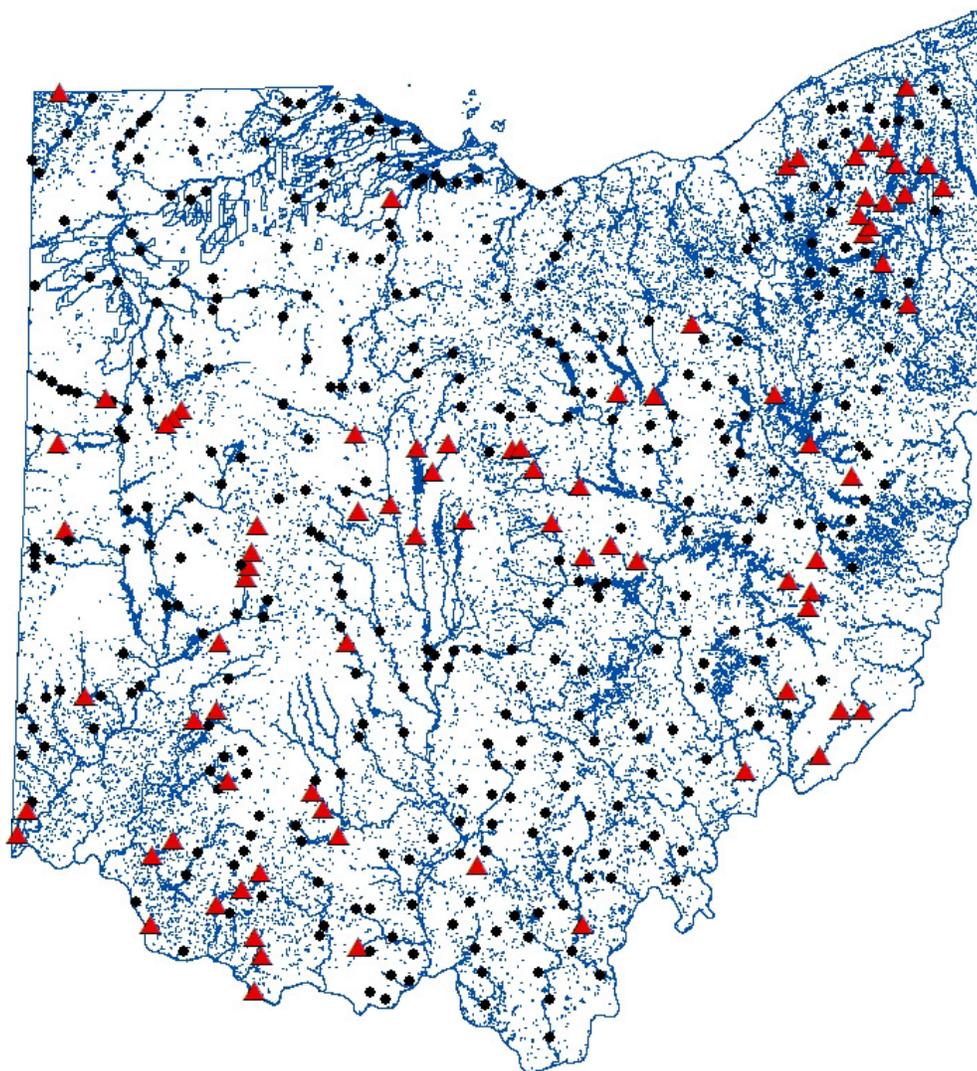


Fig. 4. Bridge survey sites across Ohio with (red triangles) and without (black circles) river otter sign, 2016.