

## **Mortality of a Baltimore Oriole (*Icterus galbula*) from Entanglement in Fishing Line in Ohio, with a Compilation of Oriole and Other Avian Entanglement Records Involving Fishing Lines**

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**An adult Baltimore Oriole (*Icterus galbula*) was found entangled in fishing line and hanging from a tree branch along a reservoir in Ohio, and the occurrence was documented with photographs. There have been several other entanglement records involving Baltimore Oriole and Bullock’s Oriole (*Icterus bullockii*) in New Jersey, Oklahoma, Oregon, and an unspecified state, and there are numerous records for other bird species. Literature, databases, and the Internet were searched for other reported cases of injury and mortality to birds from recreational fishing line. Several compilations of bird entanglement records have appeared in recent decades; however, these concerned marine environments and most entanglements involved commercial fishing gear, whereas the present paper focuses on recreational fishing gear mostly in freshwater and inland environments. Undoubtedly there remain additional records in published and unpublished sources that were not discovered, but complete citations for all references are provided in order to assist others in compiling a more complete database of entanglement records.**

KEYWORDS: monofilament fishing line, mortality, *Icterus galbula*, *Icterus bullockii*, Icteridae

*“The causes of bird mortality are of interest to every student of ornithology.”* (Lincoln, 1931, p. 538)

There are a variety of natural causes of mortality for birds, including diseases, parasites, predators, starvation, severe weather, collisions with trees, and entanglement in natural materials (Lincoln, 1931; Bent, 1958; Jennings, 1961; Macdonald, 1963; Stewart, 1967; Batten, 1978; Sadler, 1993; Hager et al., 2009; Newton and Little, 2009); however, there are also an additional array of anthropogenic causes of bird mortality that includes marine fisheries (gillnets and other fishing gear), collisions with buildings, windows, vehicles, watercraft, wind turbines, TV towers, and power lines, entanglement in plastic debris, ingestion of plastic debris, oiling, hunting, predation by domestic cats, and poisoning (Lincoln, 1931; Bent, 1958; Coulson, 1961; Jennings, 1961; Macdonald, 1963; Glue, 1971; Mead, 1974; Batten, 1978; Norman, 1987; Schreiber and Mock, 1988; Manville, 2005; Newton and Little, 2009; Petersen et al., 2009; Ellis et al., 2013; Loss et al., 2013, 2014, 2015; Žydelis et al., 2013; Cannell et al., 2016; Kahle et al., 2016; Ryan, 1987, 2018).

Many reports of entanglements have concerned marine mammals and birds becoming entangled in active or derelict commercial fishing nets and lines, recreational fishing gear, and other plastic pollution (Laist, 1997; Žydelis et al., 2013; Kuhn et al., 2015; Ryan, 2018). Blettler and

Wantzen (2019) compared entanglements reported for marine and freshwater environments and concluded that much more attention was needed for entanglements of organisms in freshwater habitats. The present paper focuses more specifically on entanglement in recreational fishing line, with more emphasis on inland and freshwater environments. Entanglement can involve a piece of fishing line alone or might include a hook and other tackle attached to the line and can involve active (e.g., Burtch, 1920; Anthony, 1921; Anonymous, 1962) or lost/discarded fishing gear. Monofilament fishing line and associated fishing tackle such as hooks, lures, corks, and lead weights are often discarded or lost by recreational fisherman (Bell et al., 1985; Forbes, 1986; Cryer et al., 1987; O'Hara et al., 1988; Radomski et al., 2006; Carleton et al., 2019; author, pers. obs.), causing injury from penetration of hooks, entanglement in fishing line, a combination of hook penetration and subsequent tethering or entangling, and/or lead ingestion and poisoning (Zimmerman, 1976; Birkhead, 1982; McMullen, 1984; Scheuhammer and Norris, 1996; Franson et al., 2003; Scheuhammer et al., 2003; Sidor et al., 2003; Kelly and Kelly, 2004; Yorio et al., 2014).

On 1 June 2013, the author observed an adult Baltimore Oriole dangling from monofilament fishing line wrapped on a small branch of a slippery elm (*Ulmus rubra*) along the edge of a channel at the southeastern portion of Grand Lake St. Marys, Saint Marys Twp., Auglaize County, Ohio (Figs. 1A, B). The bird was photographed in place, then the branch was removed from the tree using a pole saw. Additional photographs were taken of the bird on the ground (Fig. 1C). The monofilament fishing line, cork, and lead head jig were collected and disposed in the trash. The dead adult oriole was left on the bank of the channel to decompose.

The oriole had fishing line wrapped around its neck, presumably resulting in asphyxiation (Figs. 1A, B, C). The bird might have been trying to gather the fishing line to use as nesting material (see below). The bird was not hooked on the small lead head jig, which was located within one meter of where the bird was hanging (Fig. 1B). This type of small foam cork and lead head jig with soft plastic body is a common rig used for catching crappies (*Pomoxis* spp.) and sunfishes (*Lepomis* spp.) at Grand Lake St. Marys. It's possible that the color of the fluorescent orange foam cork attracted the oriole. The height of the tree branch above the water would have prevented the angler from retrieving the lost lure and fishing line in this case. Baltimore Orioles are annual breeders in the area where the dead oriole was found, often being observed and heard from mid-Spring through mid-Summer (author, pers. obs.).

Many different bird species have been known to use artificial or unusual items (often man-made) as parts of nests or as the entire nest (Dixon, 1902; Verlis et al., 2014). Oriole biology and nests have been studied in detail (Sharp, 1903; Bent, 1958; Schaefer, 1976, 1980; Wedgwood et al., 1989), and Baltimore Orioles are known to use artificial materials to construct nests (Barthelemy, 1969; Wedgwood et al., 1989). Hunn (1926) reported the strangulation and death of a male Baltimore Oriole in a nest due to a "cord" that was woven into the nest. Hunn's record is among the earliest reports of bird entanglement and death, but it lacks specifics as to whether the "cord" was natural or artificial material. There are several other reports of entanglements in fishing line that resulted in either injuries or deaths of Baltimore Orioles and Bullock's Oriole in New Jersey, Oklahoma, Oregon, and an unspecified state (Groves, 1986; Stokes and Stokes, 1986; Mather, 1987; Heaton, 1993). Several examples of bird nests that contained fishing line were seen on websites, including one that was composed entirely of fishing line and associated tackle (Southwestern Bald Eagle Management Committee, undated), and there are other reports of fishing line being used as nest material by other species of birds (Dow, 1978; Inkley, 1984; Milwright, 1998; Smiddy and O'Halloran, 1998; Parker and Blomme, 2007). Use of fishing line and other unspecified string as nest material has resulted in entanglement, and in some cases mortalities, of chicks and adult birds (Slack, 1992; Smiddy and O'Halloran, 1998; Friesen, 2002; Parker and Blomme,



FIGURE 1. A and B) An adult Baltimore Oriole (*Icterus galbula*) entangled in monofilament fishing line and hanging from a branch of a slippery elm (*Ulmus rubra*) along a channel off Grand Lake St. Marys reservoir, Auglaize Co., Ohio, 1 June 2013. C) The same oriole on the ground after being removed from the tree. Photos by W.J. Poly.

2007). Some interactions of birds with fishing line do not result in death but still cause injuries, and some birds can be rehabilitated (Kelly and Kelly, 2004; Montesdeoca et al., 2017). Collisions with a tall TV tower was another substantial source of mortality of Baltimore Orioles and many other species of birds (Norman, 1987).

A wide variety of bird species representing raptors, piscivores, insectivores, and herbivores have become entangled in lost or discarded fishing line, often resulting in severe injury or death of the birds (Houston, 1966; Dunstan, 1969; Nero, 1972; Johnson and Sloan, 1975; Kovacs, 1975; Schreiber, 1975; Morgan and Glue, 1977; Anonymous, 1978; Batten, 1978; Denker, 1978; Mead, 1979; Mead et al., 1979; Knight et al., 1980; Lastavel, 1981; Birkhead, 1982; Inkley, 1984; Bartel, 1984; Kraak, 1986; Schreiber and Mock, 1988; Spearpoint et al., 1988; Parrish and Maurer, 1991;

Cooper et al., 1992; Harrigan, 1992; Clapp, 1993; Sadler, 1993; Taylor, 1996, 1997, 1999, 2004; Smiddy and O'Halloran, 1998; Stone and Okoniewski, 2001; Brown and Brown, 2002; Franson et al., 2003; Kelly and Kelly, 2004; Eaton and Hernandez, 2005; Parker and Blomme, 2007; Müller et al., 2007; Berón and Favero, 2009; Moore et al., 2009; Newton and Little, 2009; Abraham et al., 2010; Yorio et al., 2014; Perry and Wheeler, 2015; Fitzgerald, 2017; Heath et al., 2017; Montedeoca et al., 2017; Jones et al., 2018; Pon et al., 2018; Blettler and Wantzen, 2019; Carleton et al., 2019; Five Rivers MetroParks, 2019; Zaluski et al., 2019; and compilations of entanglements by Laist, 1997; Kühn et al., 2015; Ryan, 2018).

Other cases of entanglement and mortality of birds have involved the strong, cotton, thread-like string of hip chains, which are used to measure distance (Loegering, 1997; Brown and Miller, 1997; Woolley, 1998). Birds also can become entangled in a variety of natural materials, such as plants and spider webs (Needham, 1909; Woods, 1934; Tucker, 1955; Burnett, 1970; Bramlett and Pitts, 1989; Woodson, 1998; Hager et al., 2009).

This compilation of bird entanglements in recreational fishing line is not considered to be complete. Earlier compilations were focused on entanglements in and ingestion of plastics in marine environments primarily (Laist, 1997; Kühn et al., 2015; Ryan, 2018), whereas this paper focuses on entanglements in recreational fishing line in freshwater and inland environments where there has been less attention (Blettler and Wantzen, 2019). There are likely numerous other cases of birds being hooked or entangled in fishing line that are in published accounts in the journals, bulletins, and newsletters of ornithological societies (e.g., Clapp, 1993 and references therein) and in records of Federal and State natural resource agencies (e.g., U.S. Fish and Wildlife Service Bird Banding Laboratory), animal rescue and rehabilitation centers, bird banding databases (e.g., British Trust for Ornithology [BTO]), beach patrol records, or veterinary clinics or are unreported observations by the public (see Moore et al., 2009; Abraham et al., 2010). Also, there must be many cases where birds have died or become prey items and were not observed by humans. Addition of fishing line receptacles and signs (Fig. 2) at recreational fishing sites decreases the amount of fishing line and tackle in the environment and should reduce the chances of wildlife encountering and becoming entangled in discarded line (Carleton et al., 2019; Southwestern Bald Eagle Management Committee, undated).



FIGURE 2. An example of a sign and receptacle posted near recreational fishing sites to encourage proper disposal of fishing line, thereby reducing both litter and entanglements of wildlife (Courtesy of Five Rivers MetroParks; used with permission).

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