

A Voluntary Program to Curtail Boat Disturbance to Waterfowl During Migration

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Abstract.—A voluntary waterfowl avoidance area (VWAA) was established on Lake Onalaska in Navigation Pool 7 of the Upper Mississippi River, Wisconsin, USA, in 1986, to reduce boating disturbance to migratory waterfowl. We monitored boater compliance with the VWAA program in 1993 and 1997. Of 1,664 “boating events” observed on Lake Onalaska, boats intruded into the VWAA on 127 occasions. Boating events have increased from 1.82 boating events/h in 1986-88 to 1.97 in 1993 and 2.58 in 1997. Despite a 60% increase in boating traffic, the lake-wide disturbance rates in 1997 were comparable to that in 1981. We attribute this to a significant reduction in the proportion of lake-wide boating events that resulted in disturbance, a direct consequence of the VWAA program. Rate of intrusion into the VWAA was 0.11 per boating event in 1997 compared to 0.18 per boating event in 1986-88. Boating disturbances to waterfowl within the VWAA occurred at about half the rate (0.24 to 0.28 disturbances · hr⁻¹) observed prior to establishment of the program (0.48 disturbances · hr⁻¹). We also identified access points used by boaters and boating activities that were most likely to result in intrusion into the VWAA and associated disturbance to waterfowl. Results of these analyses have provided useful information to resource managers for targeting public education efforts. The VWAA program has contributed to the value of Lake Onalaska as a waterfowl refuge and demonstrates an effective collaboration among government agencies and non-governmental organizations. *Received 23 November 2001, accepted 26 March 2002.*

Key words.—boating, diving ducks, human disturbance, migration, staging area, Upper Mississippi River, waterfowl.

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Several studies have documented boating disturbance of migratory waterfowl and all recommended restriction of boating activity in critical waterfowl staging areas (Korschgen *et al.* 1985; Thornburg 1973; Kahl 1991; Havera 1992). Waterfowl disturbance is problematic at several of the major waterbird refuges and locations throughout the world (see Dahlgren and Korschgen 1992). According to a 1995 survey (U.S. Fish and Wildlife Service, unpubl. data), recreational powerboat activity occurred on 117 of 504 (23%) refuges within the U.S. National Wildlife Refuge System. Thirty-eight (32%) of these refuges do not have authority to regulate and control powerboat use. Such is the

case on the Upper Mississippi River National Wildlife and Fish Refuge (UMRR). The U. S. Congress authorized a national wildlife refuge managed by the U.S. Fish and Wildlife Service (USFWS) in 1924 and a commercial navigation system managed by the U.S. Army Corps of Engineers in 1930, on the same area of the Upper Mississippi River. As a result, commercial and recreational boating were permitted on water areas within the UMRR.

Recreational boating disrupts feeding activities of diving ducks on Lake Onalaska, an impounded area of the Upper Mississippi River in the UMRR, and potentially could reduce the quality of the area as a staging site (Korschgen *et al.* 1985). Concern was partic-