AN ABSTRACT OF THE THESIS OF

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Motion-wing decoys (MWD) have spread in use and popularity among duck hunters in the past decade, with little thought on possible effects on harvest. I examined use, efficiency, and hunter opinions of MWD at Neosho Wildlife Area (NOWA) in southeast Kansas during the 2001-2002 and 2002-2003 hunting seasons. A survey was conducted as part of daily hunting permits to determine MWD use and effects on harvest, early and late season harvest, and crippling loss. During the sampling periods there was an 18% increase in the percent of hunters using MWD. A difference was detected for total harvest by hunters hunting with and without MWD ($P \leq 0.001$). Mallards were the most susceptible to MWD use for both sampling periods ($P \leq 0.001$), while results for wood ducks, teal, others, and cripples lost showed mixed results for the sampling periods. Crippling rate was lower among hunters using MWD for both seasons, and both groups experienced a decrease in

crippling rate between early and late season. Multiple linear regression suggested that area hunted and hours hunted have an effect on cripples lost for both sampling periods ($P \leq 0.001$). MWD use during early season showed an increase in harvest probability of 1.81 and 1.58 (ducks/hunter/trip) for total harvest, and an increase of 3.8 and 3.91 (ducks/hunter/trip) for mallard hens in 2001 and 2002 respectively. However, there was a difference for all species between early and late season with the use of MWD ($P \leq 0.001$). The mallard drake-to-hen harvest ratio for hunters using and not using MWD was similar.

In general, my results suggest that effectiveness of MWD does decrease as the season progresses. Of hunters surveyed, 46.8% responded that duck behavior was unclear, and appeared to respond in some instances but not in others, while 58.8% were in favor of methods that improve hunting success as long as season length and bag limits were not affected. Roughly half of hunters surveyed (49%) would agree or strongly agree to volunteer not to use a MWD if asked. Surprisingly 70% would favor some type of regulation on MWD, while 35.5% would favor a complete ban on MWD if increases in harvest had a biological impact on waterfowl populations.

Use, Efficiency, and Hunter Opinions of Motion-wing Decoys at Neosho Wildlife Area

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duck hunters who provided information and comments relative to my survey.

PREFACE

My thesis contains two chapters. The first chapter contains work done through a hunter survey on use and efficiency of motion-wing decoys on duck hunting at Neosho Wildlife Area. The second chapter summarizes a post-season survey of duck hunter opinions and attitudes of motion-wing decoys. The abstract covers both chapter one and two. All chapters follow the style of the Journal of Wildlife Management.

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CHAPTER 1

Use and Efficiency of Motion-Wing Decoys at Neosho Wildlife Area

INTRODUCTION

Motion-wing decoys (MWD) were first developed in the Marysville area of northern California in the mid-1990s (G. Koehler, Ducks Unlimited, personal communication). The first MWD were simplistic in design and resembled a football goal post. Between the two "uprights", a spinning blade was attached with one dark side and one light side. The spinning blade produced the flash that resembles the wings of landing ducks which was found to attract ducks. These first models of MWD did not include a decoy body. The decoy and realistic wings were added later to make the decoys more marketable, even though the originals worked very well and are still used in that part of the country (G. Koehler, Ducks Unlimited, personal communication). The popularity of MWD spread eastward, reaching the central flyway around 1998-1999 (M. Kraft, Kansas Department of Wildlife and Parks, personal communication). The effects of MWD were immediately recognized through reported increases in hunter success. Through these reports of increases in hunter success, issues of fair chase and

amount of skill (decoy placement, calling ability, hunting location, etc.) required to harvest ducks while using MWD began to surface. The immediate success enjoyed by young and inexperienced hunters helped push the rapid growth of MWD use. Duck hunters participating in an Illinois snow goose hunter survey reported that only 7% used a MWD in 1999-2000 (Miller et al. 2000) however, 61% reported using MWD in 2000-2001 (Miller et al. 2001). In Missouri, 83% of surveyed hunters used a MWD in 2000 (Humburg et al. 2001). Discussions on where technology would stop stemmed from traditional sportsmen who view technological advances as a violation of fair chase. Other controversial hunting accessories have been researched, such as hunting with taxidermy mounted Canada goose decoys (Harvey et al. 1995) and hunting snow geese with electronic snow goose calls (Caswell et al. 2003, Olsen and Afton 2000).

Most studies investigating MWD suggest that the use of MWD does result in an increase in the number of ducks harvested (Ackerman et al. 2005, Caswell and Caswell 2004, Eadie et al. 2002, Humburg et al. 2001, Miller 2002, Szymanski 2004). Ackerman et al. (2005) reported that 70.5% of all dabbling ducks that were harvested during various studies were with the MWD operating ($P < 0.001$) and that 2.4 times as many ducks were harvested when the MWD was

used than when using only traditional decoys. Szymanski (2004) suggested that resident mallard populations, specifically hatch year ducks, were very susceptible to early season hunting. During a study in Minnesota, 87% of hatch year (HY) mallards and 69% of after hatch year (AHY) mallards were shot and recovered while the MWD was operating (Szymanski 2004). However, Eadie et al. (2002) demonstrated that HY and AHY harvest did not differ when the MWD was used, but a relatively high proportion of both age classes (73.5%) were harvested with MWD use.

In an attempt to protect resident duck populations both Minnesota and California have prohibited MWD use during the early segment of the season. Minnesota restricted MWD use on all public waters until the Saturday nearest 8 October (§97B.811), and California prohibited MWD use until 30 November (§ 507). Currently Washington (WAC 232-12-257), Pennsylvania (§141.6), and Oregon (635-065-0735) prohibit MWD use completely, and Arkansas has announced that MWD use will be prohibited after 1 July 2005 (Arkansas Game and Fish Commission Regulation, Amendment 35, enforcement code number 12.26). However, there are no regulations in Kansas or federal regulations restricting use of MWD (M. Kraft, Kansas Department of Wildlife and Parks, personal communication).

Recent studies have demonstrated that the use of MWD does increase harvest. In a Manitoba study where equal time was given to MWD use and non use, mallard (*Anas platyrhyncos*) harvest was five times higher when the MWD was operating in marsh habitats, and 24 times higher in field settings (Caswell and Caswell 2004). In Missouri, hunting parties (2-3 hunters) using MWD harvested 1.28 more total ducks than parties not using MWD (Humburg et al. 2001). Eadie et al. (2002) reported that pairs of hunters shot 4.84 ducks while hunting with MWD, compared to 1.73 ducks without MWD. In Minnesota mallard harvest was 4.71 times higher when MWD were used (Szymanski 2004). Results from the 2000-2001 Illinois snow goose hunter survey suggest that hunters averaged 1.77 ducks/hunter/day with MWD and 1.14 ducks/hunter/day without MWD (Miller 2002).

Data on the effect MWD have on specific species is very limited in the literature. Most research has focused on mallards, which seem to be the most susceptible to MWD use (Caswell and Caswell 2004, Eadie et al. 2002, Szymanski 2004). However, 66.1% of mallards, 72.6% of green-wing teal (*Anas crecca*), 93.9% of American wigeon (*Anas americana*), 64.5% of northern shovelers (*Anas clypeata*), 87.5% of northern pintails (*Anas acuta*), and 76.9% of gadwalls (*Anas strepera*) that were harvested and recovered

during a field study in California, were taken when the MWD was operating (Eadie et al. 2002). This study also allotted equal time segments to MWD use and non use.

The U.S. Fish and Wildlife Service sets duck season frameworks, which allow for northern states to open hunting seasons earlier than southern states. This allows individual states to set seasons based on historic and predicted duck migrations. Therefore, migrant ducks have an increased opportunity for exposure to MWD as they travel down the flyway. Based on this exposure, a hypothesis for this study was that early season ducks would be more susceptible to MWD than would late season ducks that had increased exposure and experiences with MWD as they migrated south. Therefore, hunters using MWD should harvest more birds in early season than in late season.

Crippling losses can be caused by several factors. However, one of the most common reasons is long range shooting (sky busting). Humburg et al. (1982) reported that shooter effectiveness declined as distance increased while waterfowl hunting. Caswell and Caswell (2004) suggest that mallard crippling rates declined while the MWD was operating, and Szymanski (2004) reported that mallard flocks were 2.91 times more likely to respond when MWD were operating. If ducks decoy closer to hunters while the MWD

was turned on then crippling rates should be lower (better shot selections), and may enable hunters to be more selective to harvest drakes. Based on the results of these two studies (Caswell and Caswell 2004, Szymanski 2004), my hypothesis is that crippling loss would be minimized by hunters using MWD, opposed to hunters not using MWD, and mallard drake to hen ratios would be greater while MWD were used. Generally shots would be at shorter distances, thus less chance of a resulting cripple and better field identification of mallard drakes.

More research is needed to determine if MWD lead to increases in total harvest, harvest of different species, or crippling rates. In Kansas, no research has been done to investigate the effects of MWD. The objectives of this study were to determine:

1. Percentage of hunters using MWD.
2. Effects MWD use, area hunted, hours hunted, number of MWD, and number of non-electronic decoys have on total harvest, harvest of different species, harvest in early versus late season, crippling rate.
3. Mallard drake to mallard hen ratios between MWD users and non-users.

STUDY SITE

The Neosho Wildlife Area (NOWA) is located in southeast Kansas in the broad flat flood plain of the Neosho River below its junction with Flat Rock Creek (Figure 1). The 1,312 ha (3,243 acres) area is intensively managed for waterfowl by the Kansas Department of Wildlife and Parks (KDWP). Plantings of corn, milo, buckwheat, and millet are supplemented with interspersed moist soil and green tree units for an array of habitat types. These habitats are situated in five main pools (Figure 1). All hunters are required to obtain daily hunting permits before each hunt (Figure 2). Daily hunting permits collect hunter demographics, hunting location, hours hunted, species harvested and cripples dropped but not recovered. Daily hunting permits are perforated and split into two parts (Figure 2). The top of the permit collects hunter information and must be completed prior to hunting activities, while the bottom collects area hunted, hours hunted, species harvested, and cripples lost on that hunt and must be completed and returned at the end of the hunt. KDWP staff operates a waterfowl check station on weekends and on days expected to receive high hunter participation. On these days hunters must enter the check station to obtain a daily hunting permit and must check out upon

completion of their hunt. This allows KDWP staff to help hunters complete daily hunting permits correctly, and correctly identify waterfowl shot. All other days of the hunting season, hunters are required to obtain daily hunting permits from a self-help permit booth. From 1989-2003, daily hunting permits have indicated that NOWA has averaged 3,113 hunter trips and 4,711 ducks harvested per year (J. Silovsky, Kansas Department of Wildlife and Parks, personal communication). During this same time period, average harvest composition was reported at 57% mallards, 16% green-winged teal, and 19% others [including gadwall, American wigeon, northern pintail, northern shoveler, ring-necked duck (*Aythya collaris*), lesser scaup (*Aythya affinis*), and redheads (*Aythya americana*) (J. Silovsky, Kansas Department of Wildlife and Parks, personal communication).

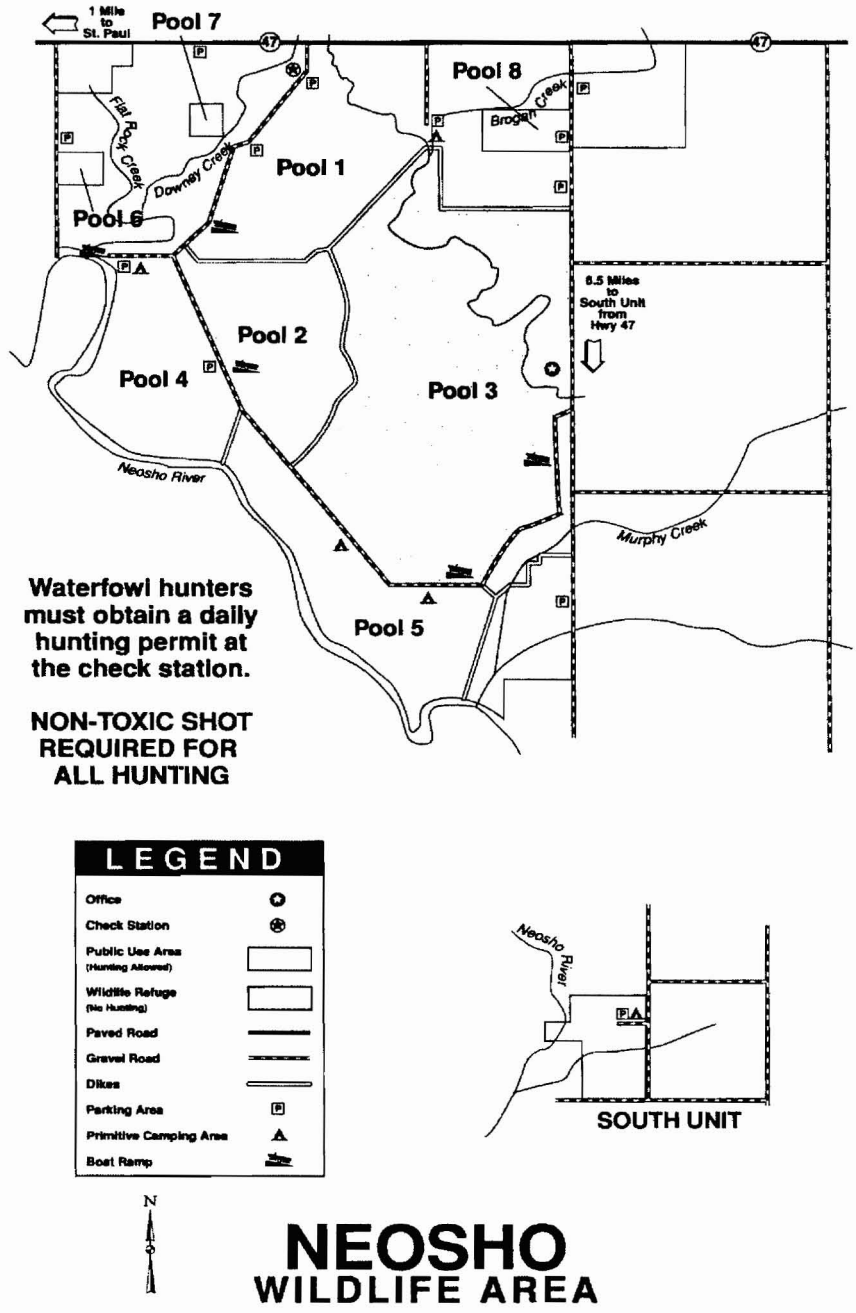
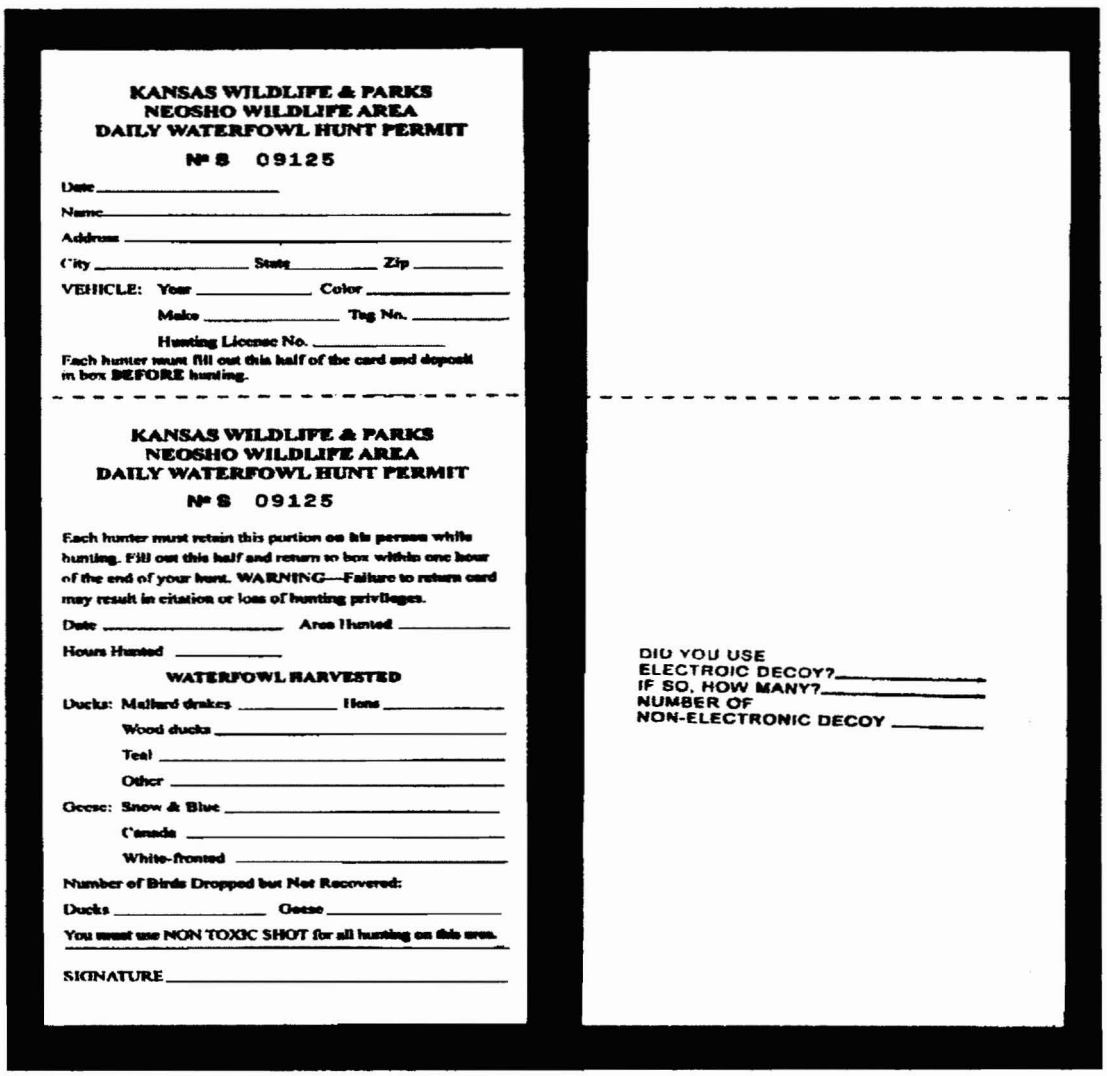


Figure 1. Map of study area, Neosho Wildlife Area, Neosho County, Kansas.



KANSAS WILDLIFE & PARKS
NEOSHO WILDLIFE AREA
DAILY WATERFOWL HUNT PERMIT

Nº S 09125

Date _____

Name _____

Address _____

City _____ State _____ Zip _____

VEHICLE: Year _____ Color _____

Make _____ Tag No. _____

Hunting License No. _____

Each hunter must fill out this half of the card and deposit in box BEFORE hunting.

KANSAS WILDLIFE & PARKS
NEOSHO WILDLIFE AREA
DAILY WATERFOWL HUNT PERMIT

Nº S 09125

Each hunter must retain this portion on his person while hunting. Fill out this half and return to box within one hour of the end of your hunt. WARNING—Failure to return card may result in citation or loss of hunting privileges.

Date _____ Area Hunted _____

Hours Hunted _____

WATERFOWL HARVESTED

Ducks: Mallard drakes _____ Hens _____

Wood ducks _____

Teal _____

Other _____

Geese: Snow & Blue _____

Canada _____

White-fronted _____

Number of Birds Dropped but Not Recovered:

Ducks _____ Geese _____

You must use NON TOXIC SHOT for all hunting on this area.

SIGNATURE _____

DID YOU USE
ELECTROIC DECOY?_____
IF SO, HOW MANY?_____
NUMBER OF
NON-ELECTRONIC DECOY _____

Figure 2. Neosho Wildlife Area daily hunting permit and motion-wing decoy survey.

METHODS

Data were collected from NOWA daily hunting permits (Figure 2) during the 2001-2002 and 2002-2003 duck hunting seasons. For purposes of this study, a stamp was placed on the back of all daily hunting permits (Figure 2). The stamp requested hunters to record if they used an electronic decoy, if so how many, and the number of non-electronic decoys used. Information provided by hunters on each daily hunting permit and survey where entered together into a Microsoft Excel spreadsheet. SigmaStat (Jandel, 1995) was then used for statistical analysis. All variables on the daily hunting permit were explored during analysis, and included area hunted, hours hunted, species harvest, cripples lost, and total harvest. Simple calculations were performed on the Excel spreadsheet. T-tests were used to analyze use and non-use of MWD on harvest of specific species, cripples, and total harvest. Ratios were calculated based on birds harvested per hunter per trip for early and late season total harvest, harvest of specific species, and cripples with and without the use of MWD. These ratios were then directly compared between early and late season for that particular season. A one-way analysis of variance (ANOVA) was used to analyze MWD use and non-use on early versus late season species harvest

and cripples lost. Multiple linear regression was used on all species data to examine the effect that area hunted, hours hunted, number of MWD, and the number of non-electronic decoys would have on harvest of specific species and cripples not recovered. This allowed all variables on the daily hunting permit to be included in one statistical test. As outlined in the introduction, analysis focused on:

1. Effects of MWD use on total harvest
2. Effects of MWD use on harvest of different species (specifically mallard drakes, mallard hens, wood ducks, teal, and others)
3. Effects of MWD use on harvest during early and late season
4. Effects of MWD use on crippling rate
5. Effects of MWD use on mallard drake per mallard hen ratios (ducks/hunter/trip)

General calculations were performed in the Excel spreadsheet and include:

1. Percentage of hunters using MWD
2. Percentage of ducks harvested with MWD
3. Average number of ducks harvested with MWD
4. Average number of ducks harvested during early and late season with MWD

5. Average number of cripples with MWD
6. Average number of each species harvested with MWD

Data collection was dependent on hunter reports, therefore many variables were assumed to be constant. These variables include: amount of skill with decoy placement, calling ability, shooting ability, and hunting location selection. These variables along with water abundance and availability, weather conditions, hunting pressure, duck migrations, etc., which were also assumed to be constant, should be considered in future research.

Data collection on species harvested was limited given that daily hunting permits only request harvest information on mallard drakes, mallard hens, wood ducks, teal, and others. Therefore, the breakdown of species will be limited to these five groups (mallard drakes, mallard hens, wood ducks, teal, and others) for statistical analysis.

Delineations for the early season include opening day of legal hunting season to 30 November, and late season includes 1 December to the last day of legal hunting season. Eadie et al. (2002) identified early, mid, and late season in a study in California. These delineations were slightly modified (early and late season only) for my study and to Kansas duck seasons. Starting and ending dates for duck hunting seasons may vary, therefore a split

at this date will generally be close to the middle of the season in Kansas.

RESULTS

Due to statistical differences and stochastic events, including hunter numbers, total harvest, species harvest, duck migrations, water availability and abundance, etc, the data for 2001 and 2002 are presented separately. Only useable surveys were considered for data analysis. A survey was considered useable if the hunter provided information on MWD use or non-use.

2001

Hunter Participation and Total Harvest

In 2001, 81% (n = 3,392) of hunters provided a useable survey. Fifty one percent of hunters (n = 1,714) used a MWD at NOWA. MWD users harvested 63% (n = 3,158) of the total ducks harvested (Table 1), and averaged 1.84 ducks/hunter/trip, while hunters not using MWD (n = 1,823) averaged 1.09 ducks/hunter/trip (Figure 3). There was a difference for total harvest between hunters using MWD and not using MWD ($t = 11.612$, $df = 3390$, $P \leq 0.001$)

Species Harvest

Several different statistical tests were performed on the data to compare all variables available for analysis. Harvest composition for 2001 showed that hunters using a MWD harvested 68% (n = 1,700) of mallard drakes, and 70% (n = 444) of mallard hens (Table 1). For both mallard drakes

and hens, hunting with a MWD accounted for 68% (n = 2,144) of the total mallard harvest. Harvest of mallard drakes and hens was 2.06 and 2.17 (ducks/hunter/trip) times greater with a MWD (Figure 5). A difference was detected using t-tests for both mallard drakes ($t = -16.197$, $df = 2626$, $P \leq 0.001$) and hens ($t = 12.766$, $df = 2626$, $P \leq 0.001$) harvested with and without MWD. Two partial regression coefficients from multiple linear regression were shown to have an effect on the harvest of mallard drakes and hens, hours hunted and number of MWD (Table 2). Mallard drake-to-hen harvest ratios were similar during the sampling period for hunters using MWD and not using MWD (3.81:1 and 4.0:1 respectively).

One-hundred and seventeen total wood ducks were harvested in 2001 (Table 1). Sixty-eight percent (n = 80) were harvested without the use of MWD (Table 1). Based on ducks/hunter/trip, wood ducks showed a negative effect from MWD use, therefore more wood ducks were harvested without MWD use in 2001 (Figure 3). Hunters not using MWD experienced a 2.5 times (ducks/hunter/trip) greater harvest of wood ducks than hunters using MWD (Figure 5). Results suggested a difference ($t = 3.600$, $df = 2626$, $P \leq 0.001$) between MWD use and non-use for wood duck harvest. The partial regression coefficients from multiple linear

regression suggested that the number of MWD may have an effect on wood duck harvest (Table 2). However, the small sample size (n = 117) may play a role in wood duck analysis.

Hunters harvested 53% (n = 277) of teal with MWD (Table 1), and experienced a 1.07 times (ducks/hunter/trip) greater harvest with the use of MWD (Figure 5). Statistically, the difference between MWD use and non-use as related to teal harvest was significant (t = -2.058, df = 2626, P = 0.040), however the power of the t-test (0.0421) should be considered and interpreted cautiously. Two partial regression coefficients from multiple linear regression suggested an effect on the harvest of teal, including area hunted and hours hunted (Table 2).

In 2001, 59% (n = 700) of others were harvested with MWD (Table 1). Hunters reported a 1.41 times (ducks/hunter/trip) greater harvest of others with the use of MWD (Figure 5). Harvest of others with and without the use of MWD was not different (t = -0.263, df = 2626, P = 0.793). Three independent variables used in MLR suggested an effect on harvest of others, including area hunted and hours hunted and number of non-electronic decoys (Table 2).

Crippling Rate

In 2001, 59% (n = 368) of cripples were lost to hunters using MWD (Table 1). Hunters were 1.4 times (ducks/hunter/trip) more likely to cripple birds using MWD than without (Figure 5). Crippling rate (total ducks harvested and total ducks crippled / total ducks crippled) was 10.4% for hunters using MWD, and 12.3% for hunters not using MWD. Cripples lost to hunters using MWD were different from cripples lost to hunters not using MWD ($t = 3.018$, $df = 2626$, $P = 0.003$). Partial regression coefficients from multiple linear regression suggested that in 2001, area hunted and hours hunted (Table 2) suggested an effect on cripples lost while hunting at NOWA.

Early versus Late Season

Ratios were calculated based on duck harvest per hunter per trip for early and late season total harvest, species harvest, and cripples with and without the use of MWD (Table 3). For example, early season mallard drake harvest for 2001 with and without a MWD was calculated following this procedure:

Hunters not using MWD = 930

Total number of mallard drakes harvested without a MWD = 208

Therefore,

208 / 930 = 0.22 mallard drakes/hunter/trip

Hunters using MWD = 764

Total number of mallard drakes harvested with MWD = 402

Therefore,

402 / 764 = 0.53 mallard drakes/hunter/trip

The ratio was then calculated:

0.53 / 0.22 = 2.41

This product (2.41) represents the increase in harvest yield of mallard drakes by hunters using a MWD. In other words, there is a 2.41 times greater efficiency (per hunter per trip) of harvest of mallard drakes while using MWD, or a ratio of 2.41:1 (Table 3).

In 2001, the ratios between early and late season total harvest were similar. Early season hunters experienced a 1.81:1 ratio for hunters using a motion wing decoy, as opposed to 1.51:1 for hunters using a motion wing decoy in late season (Table 3). For early season, all species, except wood ducks (0.5:1), showed a greater harvest efficiency in ducks/hunter/trip while using MWD (Table 3). Mallard drakes and mallard hens showed the most obvious increase in harvest to hunters using MWD at 2.41:1

and 3.8:1 respectively during early season. In late season, all species, except wood ducks (0.67:1) and teal (0.83:1), showed an increase in ducks/hunter/trip while using MWD (Table 3). Again, mallard drakes and mallard hens demonstrated the highest harvest efficiency to hunters using MWD during late season at 1.71:1 and 1.63:1 respectively (Table 3). Ratios for cripples showed a slight decrease in harvest efficiency between early and late season at 1.57:1 and 1.24:1 respectively. Crippling rate for hunters using MWD and not using MWD during the early season was 12.8% and 14.1% respectively. During the late season the percentages fell to 9.0% for hunters using MWD and 11.0% for hunters not using MWD. A one-way ANOVA suggested a difference, for all species and cripples lost, between early and late season harvest by hunters using MWD (Table 4).

2002

Hunter Participation and Total Harvest

In 2002, 84% (n = 2,832) of hunters provided a useable survey, and 69% (n = 1951) used MWD at NOWA (Table 1). Seventy-seven percent (n = 3,162) of the total harvest was by hunters using MWD. These hunters averaged 1.62 ducks/hunter/trip, while hunters not using MWD (n = 919) averaged 1.04 ducks/hunter/trip (Figure 3). There was a

difference for total harvest between hunters using MWD and not using MWD ($t = -7.894$, $df = 2829$, $P \leq 0.001$)

Species Harvest

Harvest composition for 2002 showed that hunters using MWD harvested 79% (n = 1,633) of mallard drakes and 79% (n = 428) of mallard hens (Table 1). For both mallard drakes and hens, hunting with a MWD accounted for 79% (n = 2,064) of the total mallard harvest. Hunters reported a 1.71 and 1.69 (ducks/hunter/trip) times greater harvest of mallard drakes and hens while using MWD (Figure 5). T-tests suggested a difference for both mallard drake ($t = -6.885$, $df = 2829$, $P \leq 0.001$) and hen ($t = -4.881$, $df = 2829$, $P \leq 0.001$) harvest when using MWD and not using MWD. In 2002, partial regression coefficients from multiple linear regression suggested hours hunted, number of MWD, and number of non-electronic decoys may have an effect on the harvest of mallard drakes (Table 5). Partial regression coefficients from multiple linear regression suggested that hours hunted and number of MWD may have an effect on mallard hen harvest (Table 5). As in 2001, mallard drake-to-hen ratios were similar during the sampling period for hunters using MWD and not using MWD (3.82:1 and 3.78:1 respectively).

In 2002, 129 wood ducks were harvested at NOWA (Table 1). Sixty-two percent (n = 80) were harvested by hunters using MWD (Table 1). However, hunters experienced a 1.5 (ducks/hunter/trip) times greater harvest of wood ducks without MWD as opposed to using MWD (Figure 5). T-tests suggested that there was not a difference ($t = 1.544$, $df = 2829$, $P = 0.123$) between the two input groups. Partial regression coefficients from multiple linear regression suggested that the number of MWD may have an effect on the harvest of wood ducks (Table 5). As in 2001, a small wood duck sample (n = 129) should be considered before drawing conclusions.

Seventy-two percent (n = 523) of teal harvested at NOWA were harvested by hunters using MWD (Table 1). Again the harvest of teal with or without MWD was close to the same with a slightly greater harvest of 1.17 (ducks/hunter/trip) while using MWD (Figure 5). A t-test suggested no difference ($t = -1.302$, $df = 2829$, $P = 0.193$) between harvest of teal by hunters using MWD and those not using MWD. Partial regression coefficients from multiple linear regression suggested that hours hunted may have an effect on the harvest of teal (Table 5).

Seventy-nine percent (n = 495) of others were harvested by hunters using MWD (Table 1). Hunters

experienced a 1.67 (ducks/hunter/trip) times greater harvest of others while using MWD (Figure 5). A t-test showed a difference ($t = -4.326$, $df = 2829$, $P \leq 0.001$) between the two input groups. Partial regression coefficients from multiple linear regression suggested that two of the independent variables may have an effect on the harvest of others. These two variables were area hunted and hours hunted (Table 5).

Crippling Rate

In 2002, 67% ($n = 360$) of cripples were lost while using MWD (Table 1). Cripples lost were 1.1 (duck/hunter/trip) times greater for hunters not using MWD (Figure 5). Crippling rate for hunters using MWD and hunters not using MWD was 10.2% and 16.1% respectively. However, t-tests suggests that there was not a difference between cripples and the use of MWD ($t = 0.823$, $df = 2829$, $P = 0.410$). Partial regression coefficients from multiple linear regression suggested that three independent variables may have an effect on the number of cripples lost. These variables were area hunted, hours hunted, and number of MWD (Table 5).

Early versus Late Season

The same calculations for ratios (hunters using MWD: hunters not using MWD) were used for 2002 as in 2001 (Table

3). The ratios for total harvest were similar between early and late season at 1.58:1 and 1.54:1 respectively. Ratios for 2002 early season were similar to 2001, with mallard drakes and mallard hens showing the greatest increase in harvest to hunter using MWD at 2:1 and 3.91:1 respectively. Early season ratios ranged from 3.91:1 (mallard hens) to 0.77:1 (wood ducks). However, teal showed the greatest increase in harvest for hunters using MWD in late season at 2.67:1 (Table 3). Late season ratios ranged from 1:1 (wood ducks) to 2.67:1 (teal) for 2002. Crippling ratios did show a slight increase during the late season from 1:1 during the early season, and 1.3:1 during the late season. Crippling rate for hunters using MWD and not using MWD during the early season was 12.3% and 17.8% respectively. During the late season the percentages fell to 7.1% for hunters using MWD and 13.4% for hunters not using MWD. A one-way ANOVA suggested a difference, for all species and cripples lost, between early and late season harvest by hunters using and not using MWD (Table 4).

Table 1. Species harvest in relation to motion-wing decoy use at Neosho Wildlife Area in 2001 and 2002.

	2001		2002	
	MWD	No MWD	MWD	No MWD
Mallard drakes	1,700	808	1633	428
Mallard hens	444	194	431	113
Wood ducks	37	80	80	49
Teal	277	248	523	200
Others	700	493	495	129
Total ducks	3,158	1,823	3,162	919
Cripples	368	256	360	177
Mall. drakes/hunter	0.99	0.48	0.84	0.49
Mall. hens/hunter	0.26	0.12	0.22	0.13
Wood ducks/hunter	0.02	0.05	0.04	0.06
Teal/hunter	0.16	0.15	0.27	0.23
Other/hunter	0.41	0.29	0.25	0.15
Total ducks/hunter	1.84	1.09	1.62	1.04
Crip./hunter	0.21	0.15	0.18	0.20
Crip. Rate (%)	10.4	12.3	10.2	16.2
Mall. drakes/hens	3.81	4.00	3.82	3.78

Table 2. Statistical analysis from multiple linear regression for area hunted, hours hunted, number of motion-wing decoys used, and number of non-electronic decoys used in relation to species harvest and cripples lost in 2001.

Variable	Coefficient	t	df	P
Mallard drakes				
Hours hunted	0.1120	7.366	2911	<0.001
Number of MWD	0.206	7.394	2911	<0.001
Mallard hens				
Hours hunted	0.0462	9.402	2911	<0.001
Number of MWD	0.0615	6.863	2911	<0.001
Wood ducks				
Number of MWD	-0.00913	-2.227	2911	0.026
Teal				
Area hunted	0.0238	3.032	2911	0.002
Hours hunted	0.0153	2.360	2911	0.018
Others				
Area hunted	-0.0425	-3.618	2911	<0.001
Hours hunted	0.0905	9.363	2911	<0.001
Number of decoys	0.00159	2.083	2911	0.037
Cripples				
Area hunted	-0.0186	-2.872	2911	0.004
Hours hunted	0.0373	6.975	2911	<0.001

Table 3. Ratios of species harvest, cripples, total harvest, and mallard drake per hen harvest for early and late season, and in 2001 and 2002 at Neosho Wildlife Area (With MWD:Without MWD).

	2001		2002	
	Early	Late	Early	Late
Mallard drakes	2.41:1	1.71:1	2.00:1	1.48:1
Mallard hens	3.80:1	1.63:1	3.91:1	1.56:1
Wood ducks	0.50:1	0.67:1	0.77:1	1.00:1
Teal	1.35:1	0.83:1	1.14:1	2.67:1
Others	1.64:1	1.20:1	1.72:1	1.70:1
Cripples	1.57:1	1.24:1	1.00:1	1.30:1
Total harvest	1.81:1	1.51:1	1.58:1	1.54:1
Mal.drake/hen	0.63:1	1.04:1	1.10:1	0.95:1

Table 4. Statistical analysis from one-way analysis of variance for early and late season mallard, wood duck, teal, and other harvest, and cripples lost with and without motion-wing decoy use during 2001 and 2002.

Species	F	df	df	P
2001				
Mallard drakes	130.563	3	3388	<0.001
Mallard hens	57.496	3	3388	<0.001
Wood ducks	8.571	3	3388	<0.001
Teal	9.056	3	3388	<0.001
Others	17.239	3	3388	<0.001
Cripples	5.446	3	3388	<0.001
2002				
Mallard drakes	41.721	3	2827	<0.001
Mallard hens	10.445	3	2827	<0.001
Wood ducks	8.837	3	2827	<0.001
Teal	42.461	3	2827	<0.001
Others	16.638	3	2827	<0.001
Cripples	8.840	3	2827	<0.001

Table 5. Statistical analysis from multiple linear regression for area hunted, hours hunted, number of motion-wing decoys used, and number of non-electronic decoys used in relation to species harvest and cripples lost in 2002.

Variable	Coefficient	t	df	P
Mallard drakes				
Hours hunted	0.0683	5.715	2451	<0.001
Number of MWD	0.141	4.886	2451	<0.001
Number of decoys	-0.00418	-3.511	2451	<0.001
Mallard hens				
Hours hunted	0.0252	5.521	2451	<0.001
Number of MWD	0.0358	3.254	2451	0.001
Wood ducks				
Number of MWD	-0.0110	-2.084	2451	0.037
Teal				
Hours hunted	0.0194	2.568	2451	0.010
Others				
Area hunted	-0.0338	-4.022	2451	<0.001
Hours hunted	0.0238	4.048	2451	<0.001
Cripples				
Area hunted	-0.0201	-3.010	2451	0.003
Hours hunted	0.0210	4.503	2451	<0.001
Number of MWD	-0.0268	-2.386	2451	0.017

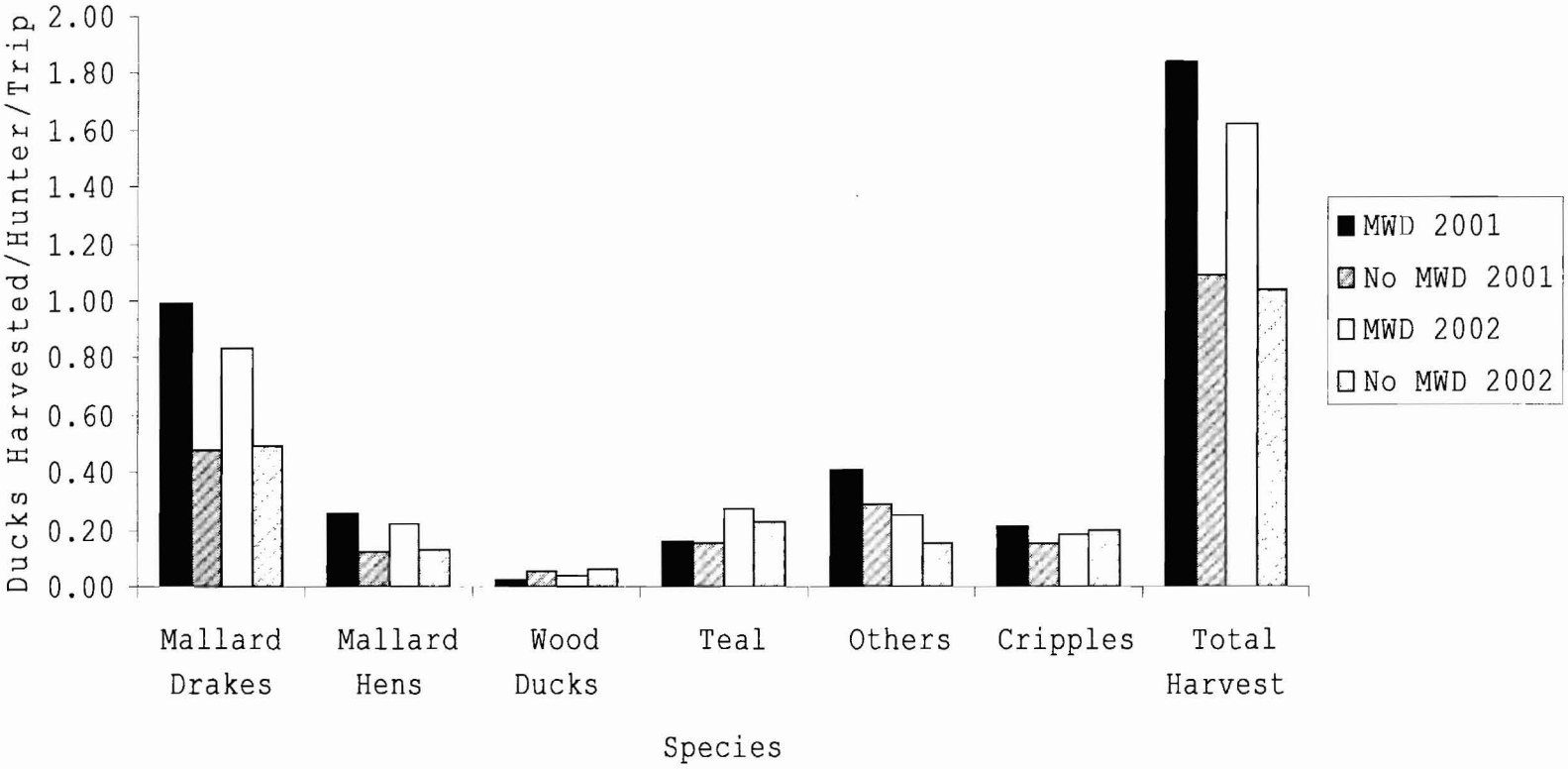


Figure 3. Species harvest (ducks/hunter/trip) with and without motion-wing decoys at Neosho Wildlife Area, Neosho County, Kansas during 2001 and 2002.

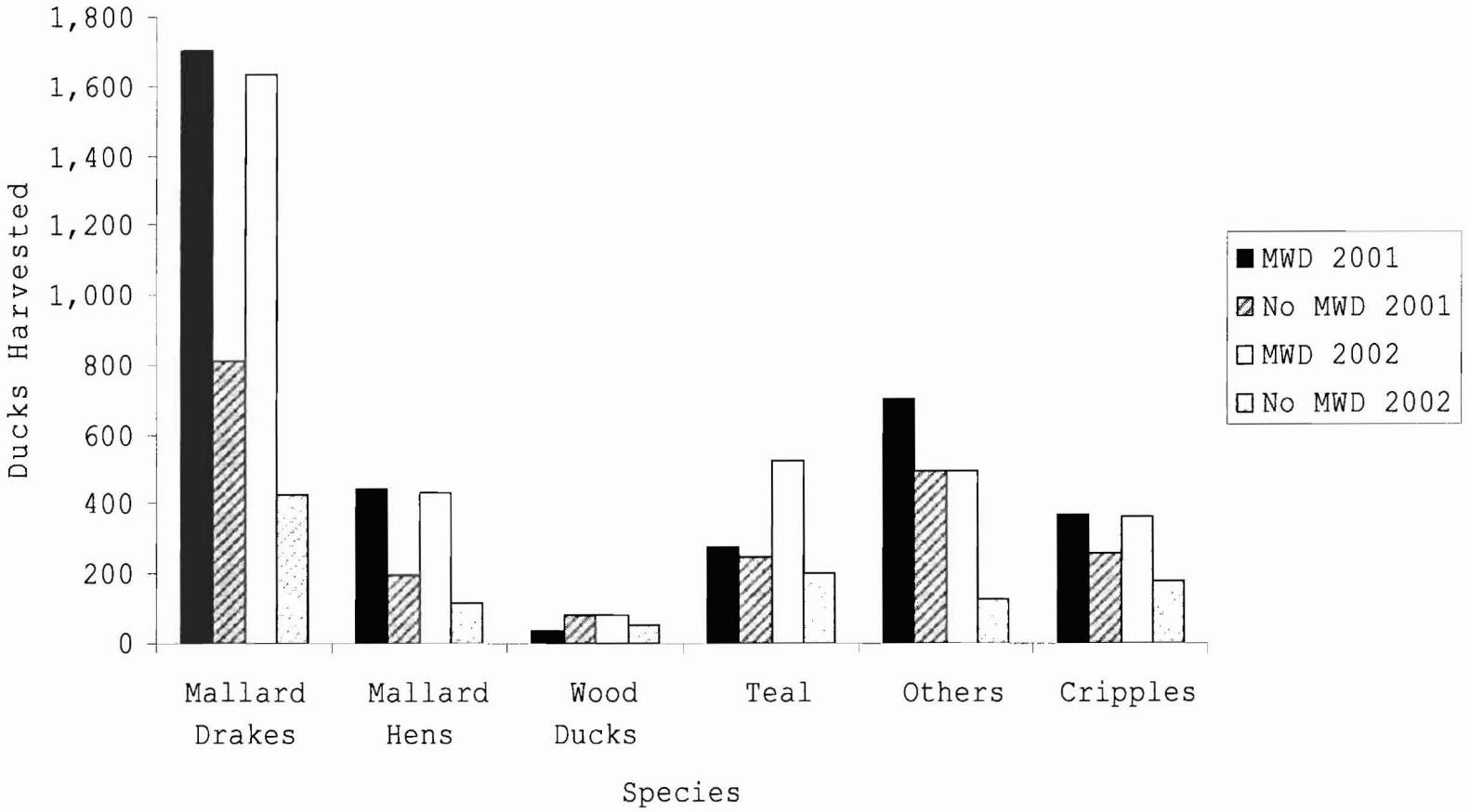


Figure 4. Total species harvest with and without motion-wing decoys at Neosho Wildlife Area, Neosho County, Kansas during 2001 and 2002.

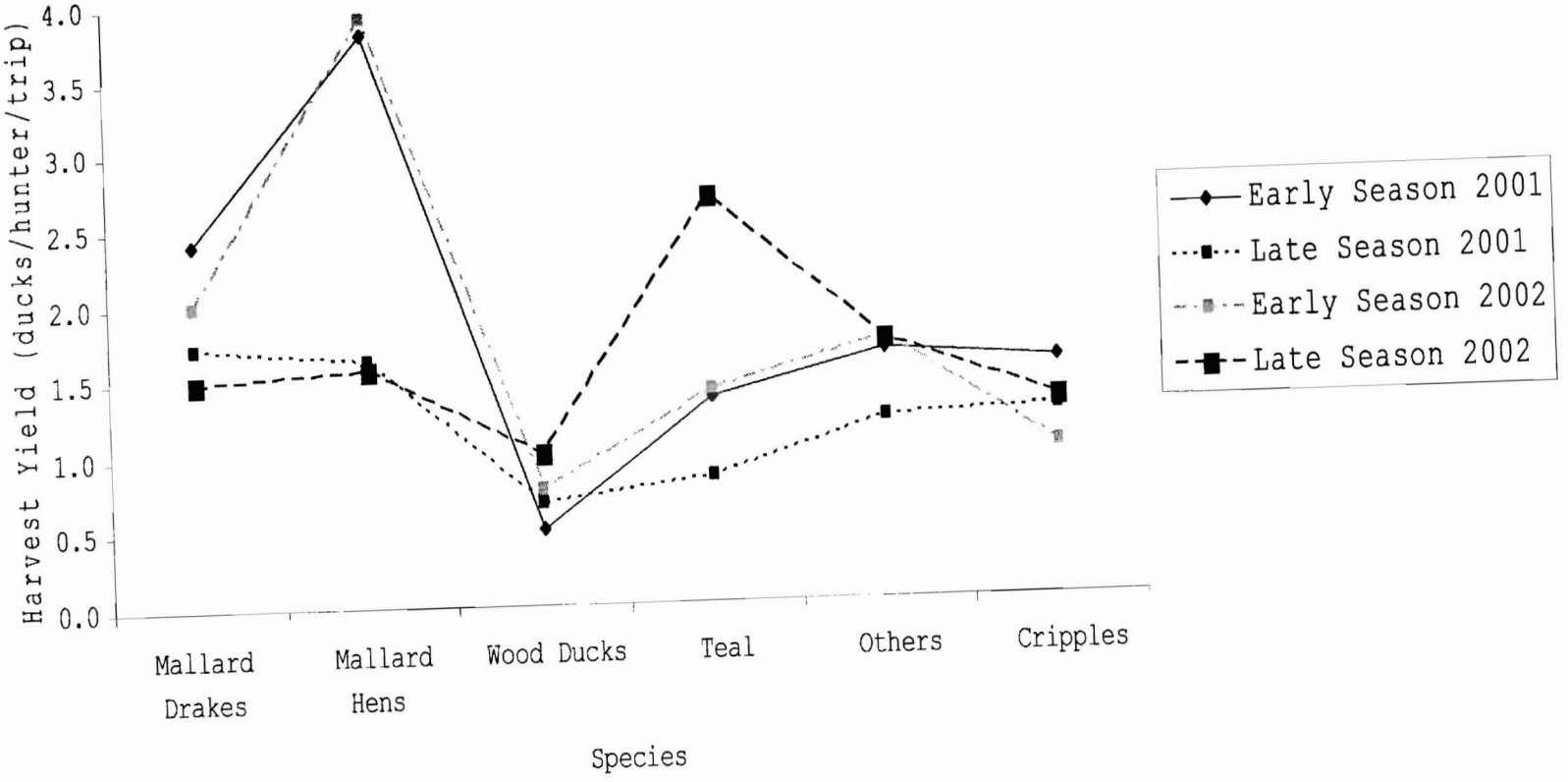


Figure 5. Harvest yields based on ducks/hunter/trip at Neosho Wildlife Area, Neosho County, Kansas during 2001 and 2002.

DISCUSSION

NOWA saw an 18% increase in the number of hunters using MWD, and a 14% increase in the number of ducks harvested by MWD users between 2001 and 2002. However, the increase in duck harvest may be due to the general increase in hunters using MWD, suggesting a shift in harvest to MWD users and not an overall increase in duck harvest (increased opportunity by hunters using MWD).

Mallards appeared to be the most susceptible to hunters using MWD (Figure 3). Harvest of mallard drakes was 2.06 and 1.71 times greater (ducks/hunter/trip) for hunters using MWD in 2001 and 2002 respectively. Harvest of mallard hens was 2.17 and 1.69 times greater (ducks/hunter/trip) for hunters using MWD in 2001 and 2002. These results suggest some degree of learning between 2001 and 2002 by mallards to MWD. No other species suggested the possibility of learning between the two hunting seasons. However, these results could be explained by poor mallard production during the spring/summer of 2002 or fewer mallards migrating to Kansas during the 2002 hunting season. Mallard drakes-to-hen ratios were similar between MWD users and non-users for both sampling periods.

Wood ducks were the only species that demonstrated a negative response (ducks/hunter/trip) to MWD for both 2001

and 2002 (Figure 3). However, sample sizes (n = 117 and n = 129) were small and should be considered before drawing conclusions (Figure 4).

Teal harvest was similar during 2001 and 2002 (Figure 3). In 2001, there was a significant difference ($P = 0.040$), however the power of the performed test should be considered. In 2002, there was not a significant difference between MWD use and non-use.

Others harvest also demonstrated mixed results between 2001 and 2002 in relation to MWD use (Figure 3). During 2001, no difference was found ($P = 0.793$), however in 2002 a significant difference was found ($P \leq 0.001$) between harvest of others with and without MWD.

Multiple linear regression was used to examine a number of independent variables provided on daily hunting permits at NOWA. Partial regression coefficients from multiple linear regression suggested that hours hunted was shown to have a significant effect on harvest of mallard drakes, mallard hens, and others for both 2001 (Table 2) and 2002 (Table 5). I conclude that this is due, in part, to the increased opportunity associated with hunting longer.

Predictions based on Eadie et al. (2002) would suggest that crippling loss should be minimized due to closer

responses when using MWD. Data collected during both duck hunting seasons suggests that hunters using MWD experience a lower crippling rate than hunters not using MWD. However, cripples/hunter/trip were higher among MWD users in 2001 (Figure 3). Both groups (hunters using MWD and hunters not using MWD) showed a decrease in crippling rate between early and late season for both duck hunting seasons. Partial regression coefficients suggested that hours hunted was one of the independent variables that had an effect on cripples lost. Besides the increase in opportunity associated with hunting longer, I suggest that hunters staying in the field longer are more likely to make bad shot selections thus crippling more birds. Through personal communication with several duck hunters at NOWA, many believe that hunters are less likely to record the correct number of birds crippled while hunting. Most suggest that this is due to embarrassment, inability to remember how many birds were actually crippled on each hunt, variations in definitions of a cripple, and failure to observe all indicators that a duck may have been struck by pellets. Trained observers, watching the same phenomena as hunters, reported crippling rates in the 20th percentile range for duck shooting tests, and the difference between crippling rates reported by hunters versus trained

observers is statistically significant to the 99th percentile (T. Roster, personal communication). However, the least reliable source of crippling data comes from hunter reports, while a more reliable source comes from trained observers with the recognition that the crippling rate they report is about 10% lower than what actually occurs (T. Roster, personal communication). Therefore, I believe that the crippling rate for each group (MWD users and non-users) is probably higher than reported in these results.

Eadie et al. (2002) explored the effects of MWD during early and late season in California, and suggested similar results to my study. Total duck harvest probabilities were similar between 2001 (1.81:1 and 1.51:1) and 2002 (1.58:1 and 1.54:1) for early and late season (Table 3). In 2001, ducks were 1.81 times more likely to be harvested with MWD during early season, and 1.51 times more likely to be harvested during late season (Figure 5). In 2002, probabilities were similar during early and late season at 1.58 and 1.54 respectively (Figure 5). All species besides teal during the late season of 2002 showed similar harvest probabilities between early and late season (Table 3). However, mallard (drake and hen) harvest probabilities were considerably higher than the other species. The increase

in harvest probability for teal in late season of 2002 (2.67) is not explainable from this study (Table 3) however, it is assumed that a mass migration of teal during this time resulted in a larger number of teal in the bag. The increase in harvest (ducks/hunter/trip) during the early season for 2001 and 2002 for mallard hens was alarming. Mallard hen harvest was 3.8 and 3.91 times more likely with MWD during the early season for 2001 and 2002, and sharply fell to 1.63 and 1.56 during the late season (Figure 5). Mallard drakes showed similar results during 2001 and 2002. Mallard drake harvest was 2.41 and 2 times more likely during the early season for hunters using MWD, and fell to 1.71 and 1.48 during the late season (Figure 5). Based on these results regulations on MWD during the early season (start of season to 30 November) may be necessary. However, historically NOWA does not observe peak mallard migrations until the late season (J. Silovsky, Kansas Department of Wildlife and Parks, personal communication). This suggests that migrant mallards may have already been exposed to MWD, and are not as vulnerable to MWD later in the season.

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CHAPTER 2

Duck Hunter Opinions and Attitudes of Motion-Wing Decoys

INTRODUCTION

Since around 1999, MWD have become a controversial topic among duck hunters, waterfowl biologists and wetland managers. A perceived ability of MWD to attract ducks into closer gunning range has fueled the dramatic increases in use across the central flyway. Some suggest a violation of "fair chase" ethics based on the use of technological advances (electronic callers, unplugged guns, MWD, etc.).

Currently, few studies have been done investigating hunter opinions of MWD. In Missouri, most surveyed hunters favored continuing use of MWD as long as seasons were not affected, and 20% opposed further use because of concerns about "fair chase" or loss of traditional hunting methods (Humburg et al. 2001). However, 64% favored no special regulations on department areas relative to MWD, and 19% felt that MWD should be prohibited on department areas (Humburg et al. 2001).

Many studies have shown increases in MWD use (Eadie et al. 2002, Miller 2002). From these studies, demonstrating projected increases in MWD use and increases in harvest

from MWD use, waterfowl managers may at some point need information to determine what role MWD play in harvest on a local, regional, and nationwide basis, as well as opinions of hunters toward use and non-use of MWD. This information could be very useful to compare with harvest at each level, and could provide useful trend data for future management and regulations.

My objectives for this chapter were to gather hunter information (demographics and hunting experience) along with attitudes and opinions towards use and possible regulations of MWD.

METHODS

A cover letter and post-season survey were sent to all hunters that participated in the daily permit survey (Chapter 1) during the 2002-2003 duck hunting season. The survey was modified from Humburg et al. (2001). All hunters were assigned a number, which was written on return envelopes (enclosed with survey) to determine which hunters had responded to the survey. Mailing labels were created through the daily permit survey list. Once mailed, names were deleted to secure confidentiality with survey result. This method left only a number to associate survey responses with and not the individual hunters. This way "numbers" (hunters) that didn't return a survey could be re-associated with names if I had chosen to send follow-up surveys. However, due to time restraints and funding availability only one mailing was completed.

A total of 14 questions were asked on the survey along with sex and age of each individual hunter (Appendix A). The objective and directives of these questions were designed to gather information on:

1. Hunter demographics
2. Hunting experience, in general and specific to NOWA
3. Hunting time preference (weekday, weekend, and/or holidays)

4. Current use of MWD
5. Opinions of MWD
6. Opinions of possible regulations concerning MWD

Basic calculations were performed through a Microsoft Excel spreadsheet and included mean, range, and percentage of each selected answer on each question. Given that many survey question answers were designed to give general data (i.e., days hunted = 0, 1-2, 3-5, 6-10, 11-20, and >20), range and mean was calculated based on the number associated with each answer and not the actual number of each activity. Inferential statistical analysis was not possible due to lack of data available for comparison.

RESULTS

A post-season survey was mailed to 912 duck hunters from the 2002-2003 duck season at NOWA. Thirty-seven percent (n = 340) returned a completed or partially completed survey. However, all information that was provided by hunters was used to tabulate results. Not all hunters returned a complete survey. Therefore, each question has a different sample size to gather as much information as possible (Appendix A).

Sex and Age.--Males represented 98% and females accounted for 2% (n = 333) of hunters surveyed. Age (n = 335) ranged from 11 to 72 with a mean of 35.1 years of age (Appendix A).

1. In which county (if a nonresident, indicate state) do you reside.--Hunter residence was reported the most in Neosho and Crawford counties (n = 318) at 26.1% and 20.1%. However, non-resident hunters made up 16.7% of the hunters surveyed (Appendix A).

2. In which Kansas county did you hunt ducks the most during the 2002-2003 duck season.--Neosho county was clearly the county preferred for hunting by hunters surveyed (n = 329) representing 67.8% of responses (Appendix A).

3. How many days did you hunt ducks during the 2002-2003 duck season.--Thirty-seven percent (n = 340) of hunters reported hunting >20 days during the 2002-2003 duck season. Responses ranged from answers 2 to 6 with a mean of 4.76 (Appendix A).

4. How many days did you hunt ducks at the Neosho Wildlife Area during the 2002-2003 duck season.--Twenty-six percent (n = 340) of hunters hunted 1-2 days at NOWA during the 2002-2003 duck hunting season. Responses ranged from answers 1-6 with a mean of 3.49 (Appendix A).

5. In what year did your first hunt waterfowl.--This was the most commonly unanswered question on the survey. The years that respondents (n = 294) first hunted waterfowl ranged from 1945-2002, with a mean of 1984 - 1985 (Appendix A).

6. How many ducks did you harvest during the 2002-2003 duck season.--Twenty-eight percent of hunters (n = 338) reported harvesting >40 ducks during the 2002-2003 duck season. Responses ranged from answers 1 to 6 with a mean of 3.97 (Appendix A).

7. When do you hunt waterfowl.--Forty-four percent (n = 339) responded that they hunt waterfowl primarily on weekends and holidays, and 34.8% indicated no specific

preference. Responses ranged from answers 1 to 4 with a mean of 2.31 (Appendix A).

8. Do you own a motion-wing decoy.--Sixty-one percent (n = 329) responded that they own a motion-wing decoy, while 38.9% indicated not owning a motion-wing decoy (Appendix A).

9. In general, how many motion-wing decoys do you use while hunting.--Forty-seven percent (n = 337) stated that they use one MWD while hunting. Responses ranged from answers 1 to 5 with a mean of 2.11 (Appendix A).

10. How many days did you use a motion-wing decoy.--Twenty percent (n = 337) indicated using a motion-wing decoy >20 days during the 2002-2003 duck season. Responses ranged from answers 1 to 6 with a mean of 3.63 (Appendix A).

11. In general, how would you characterize the influence of the motion-wing decoy on duck behavior during the 2002-2003 duck season.--Forty-seven percent (n = 327) indicated that it was unclear, ducks appeared to respond in some instances and not in others. However, 34.6% responded that "Generally, ducks appeared to respond positively to the MWD", and only 3.1% responded that "The MWD appeared to have a negative affect - ducks flared or avoided the hunting location". Responses ranged from answers 1 - 5, with a mean of 3.43 (Appendix A).

12. Which of the following most closely reflects your opinion about motion-wing decoys.--Fifty-nine percent (n = 335) indicated that "I am in favor of methods that improve my hunting success as long as season lengths and bag limits are not affected, and 23% indicated that they do not favor technical advances such as motion-wing decoys because of issues of "fair chase" and traditional hunting methods. However, 5.4% indicated "I am in favor of any method that improves my hunting success even if season lengths and bag limits are affected". Responses ranged from answers 1 - 4 with a mean of 2.43 (Appendix A).

13. If you were asked, would you volunteer not to use a motion-wing decoy during the up-coming waterfowl season.--Twenty six percent (n = 335) responded that they would strongly agree, and 13.4% responded that they would strongly disagree. Responses ranged from answers 1 - 5 with a mean of 2.66 (Appendix A).

14. If motion-wing decoys prove to have a biological impact on waterfowl populations through increases in harvest, which of the following would you favor.--Thirty-six percent (n = 335) indicated favoring a complete ban on motion-wing decoys, while 24.2% responded that they would not favor any regulation restricting motion-wing decoy use. However, 5.4% indicated that they would favor allowing

motion-wing decoys, but shorten seasons and/or reduce bag limits. Responses ranged from answers 1 - 5, with a mean of 2.74 (Appendix A).

Comments.--At the end of the post-season survey, space was provided for any comments hunters may have relative to motion-wing decoys (Appendix B).

DISCUSSION

Respondents were typically (approximately 57%) from close geographic vicinities of NOWA (Neosho, Crawford, Labette, Montgomery, and Wilson counties), and specified hunting predominately in Neosho county. Forty-four percent of those surveyed indicated that they hunt primarily on weekends and holidays. Records kept by NOWA staff indicate that since 1989, most hunting pressure comes on these days (J. Silovsky, Kansas Department of Wildlife and Parks, personal communication). The draw of duck hunters to Neosho County, specifically NOWA could result in more competition among hunters, especially on weekends and holidays, and thus lead hunters to assume the need for hunting with MWD to compete with other hunters. I believe that samples from private ground or leases would provide different results based on the lack of competition among hunters. Most (61%) reported owning a MWD, and typically (47%) use one MWD while hunting. However, respondents indicated that they used MWD only some of the days they hunted, showing similar results for 0, 3-5, 6-10, 11-20, and > 20 days of hunting with MWD (Appendix A). Most hunters (74%) utilized NOWA for hunting between 1-10 days during the duck hunting season. Based on these results,

hunters are spending hunting days at locations other than NOWA. Although it is unknown where these other localities are, I assumed that they were not public lands, and that hunting pressure was lower. Again, I suggest that competition, or lack of competition, among duck hunters at these other locations accounts for the decline in number of days hunted with MWD. For future surveys, information on these other hunting localities and number of days MWD were used at NOWA would be helpful for interpreting these results.

Respondent opinions on duck response to MWD is somewhat split. Most respondents (47%) are unclear and suggest that ducks appear to respond in some instances and not in others. Forty-five percent responded that ducks, to some degree, respond positively to MWD use, while 3% responded that ducks respond negatively to MWD use. Although 45% are unclear, the answer does suggest that ducks do respond positively to MWD, and that these instances where ducks seem to not respond may be based on other variables (seeing hunters, bad calling, ducks recently shot at, etc.).

The opinions of respondents about MWD suggests that most (59%) are in favor of MWD use as long as season lengths and bag limits are not affected, and 48% would

agree or strongly agree to volunteer to not use MWD if asked. Five percent are in favor of MWD use even if season lengths and bag limits are affected, and 28 percent would disagree or strongly disagree to volunteer to not use MWD if asked. Twenty-three percent do not favor MWD use based on fair chase and violation of traditional hunting methods. Results suggest that hunters are not willing to sacrifice season length and bag limits in order to continue MWD use, and many (49%) would willingly not use MWD if asked.

Responses to possible regulations on MWD were mixed (Appendix A). Seventy percent indicated that they would favor some type of ban or partial ban (first part of season, or only on public lands), while 24% would not favor any regulation restricting MWD. Five percent were in favor of allowing MWD but shortening seasons which corresponds to question number 12, answer 1.

Results from the post-season survey suggest that respondents are somewhat concerned about the effects MWD are having or may have to the resource. Most (70%) favor a ban or partial ban if MWD are shown to have a biological impact on waterfowl populations, with 24% being opposed to any regulatory action on MWD. Responses suggest that if managers and biologists keep informing the public on possible negative effects MWD could have on duck

populations that most would support some degree of legislation restricting MWD use. Seventy percent would favor some type of regulation (complete ban, public land ban, and/or early season ban) on MWD, and 49% of respondents would voluntarily give up using MWD if asked. Therefore, more research on MWD and public education on effects of MWD on a statewide basis may help administration implement regulations on MWD, while at the same time assuring public support.

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APPENDICES

Appendix A. Summary of responses from post-season survey from 2002-2003 hunting season.

Sex		
Male	328	(98%)
Female	5	(2%)
In which county (if nonresident, indicate state) do you reside?		
Crawford	64	(20%)
Johnson	15	(5%)
Labette	28	(9%)
Montgomery	11	(3%)
Neosho	83	(26%)
Wilson	8	(3%)
Non-resident	53	(17%)
Others	56	(18%)
In which Kansas county did you hunt ducks the most during the 2002-2003 duck season?		
Neosho	223	(68%)
Cherokee	9	(3%)
Coffey	11	(3%)
Crawford	27	(8%)

Montgomery	7	(2%)
Other	52	(16%)

How many days did you hunt ducks during the 2002-2003 duck season?

0 days	0	(0%)
1 - 2 days	22	(6%)
3 - 5 days	42	(12%)
6 - 10 days	59	(17%)
11 - 20 days	91	(27%)
> 20 days	126	(37%)

How many days did you hunt ducks at the Neosho Wildlife Area during the 2002-2003 duck season?

0	6	(2%)
1 - 2	90	(26%)
3 - 5	88	(26%)
6 - 10	75	(22%)
11 - 20	49	(14%)
> 20	32	(9%)

How many ducks did you harvest during the 2002-2003 duck season?

0	17	(5%)

1 - 10	68	(20%)
10 - 20	59	(17%)
20 - 30	53	(16%)
30 - 40	45	(13%)
> 40	95	(28%)

When do you hunt waterfowl?

Primarily on weekends and holidays	148	(44%)
Primarily on week days	57	(17%)
Primarily during a vacation	16	(5%)
No specific preference	118	(35%)

Do you own a motion-wing decoy?

Yes	201	(61%)
No	128	(39%)

How many motion-wing decoys do you use while hunting?

0	80	(24%)
1	160	(47%)
2	81	(24%)
3	12	(4%)
4	3	(<1%)
>4	0	(0%)

How many days did you use a motion-wing decoy?

0	62	(18%)
1 - 2	33	(10%)
3 - 5	60	(18%)
6 - 10	61	(18%)
11 - 20	55	(16%)
> 20	66	(20%)

In general, how would you characterize the influence of the motion-wing decoy on duck behavior during the 2002-2003 duck season?

No apparent impact, ducks acted the same with or without use of the decoy	16	(5%)
The motion-wing decoy appeared to have negative affect - ducks flared or avoided the hunting location	10	(3%)
It was unclear, ducks appeared to respond in some instances and not in others	153	(47%)
Generally, ducks appeared to respond positively to the motion-wing decoy	113	(35%)
Ducks clearly responded positively to the motion-wing decoy	35	(11%)

Which of the following most closely reflects your opinion about motion-wing decoys?

I am in favor of any method that improves my hunting success even if season lengths and bag limits are affected.	18	(5%)
I am in favor of methods that improve my hunting success as long as season lengths and bag limits are not affected.	197	(59%)
I do not favor technical advances such as motion-wing decoys because of issues of "fair chase" and traditional hunting methods.	77	(23%)
I have no opinion about the use of motion-wing decoys.	43	(13%)

If you were asked, would you volunteer not to use a motion-wing decoy during the up-coming waterfowl season?

Strongly agree	88	(26%)
Agree	75	(22%)
Neutral	79	(24%)
Disagree	48	(14%)
Strongly disagree	45	(13%)

If motion-wing decoys prove to have a biological impact on waterfowl populations through increases in harvest, which of the following would you favor?

Complete ban on motion-wing decoys	119	(36%)
Ban MWD use during first half of season	64	(19%)
Allow MWD, but shorten seasons and / or reduce bag limits	18	(5%)
Ban MWD on public lands	53	(16%)
I would not favor any regulation restricting MWD use	81	(24%)

The space below and on the back of this page is left for any comments you may have relative to motion-wing decoys.

Numerous comments were provided by hunters relative to MWD. These comments are summarized in Appendix B.

Appendix B. Summary of comments from post-season survey from 2002-2003 hunting season.

I believe other factors (experience, calling ability, location selection, etc) have as strong an impact as MWD.

Ducks are getting used to them and they (MWD) are not as effective as they once were.

I use one to compete with other hunters on public lands, I am at a huge disadvantage without one.

I am skeptical that MWD will have a biological impact on waterfowl.

MWD work better in the early season than they do in the latter part of the season.

I think that MWD work good, but may have a negative impact on populations

MWD (and other technological gadgets) have made duck hunting a rich man's game.

MWD allow everyone to kill ducks, even if they have no experience (can't call, bad decoy and blind selection or placement, etc.).

Everyone that hunts public land has a MWD.

I would prefer to see a decrease in bag limits by one or two ducks, other than banning MWD, but don't shorten season length.

"Ban 'em"

Where will technology stop?

The limit is 6 ducks, it doesn't matter how fast you shoot six ducks, you can only shoot 6 ducks. MWD may help you do that more often, but regulations / limits are a well calculated number and if everyone went out and harvested a limit every time they went hunting, then there would be no adverse affects on nesting populations, that is why we have limits.

They work better on sunny days, opposed to overcast days.

MWD will not have a significant impact on populations in the long run.

It should be up to the individual hunter, we have enough regulations on waterfowl hunting already.

With the large increases in waterfowlers, MWD are going to have a significant impact on populations.

With or without MWD, I would still go hunting.

MWD take away from the big picture of traditional hunting, (scouting, practicing calling, etc).

A total ban is too extreme.

From all the reports, I thought MWD would really help my success, so far that hasn't been the case. I don't feel that they work as good as advertised.

I think they should be banned on all public land.

I have spent too much money on MWD not to use them.

Some people complain about fair chase, yet they use boats with mud motors, fancy shotguns, acrylic calls, fancy blinds, etc, how do we define fair chase?

I think habitat loss has a much greater impact than MWD.

Maybe KDWP should start a motion-wing decoy stamp.

MWD work better on private land which receives less hunting pressure and competition among hunters.

I think we should limit number of shells and number of hunters at Neosho.

I think they reduce cripples, by getting ducks closer while also making ducks easier to ID.

It doesn't really matter in Kansas, because most ducks have seen them up north already.

I think MWD create more cripples because ducks won't "finish" with them.

I think everything should be legal, fair chase does not apply to ducks and geese, they can fly, we can't!

If we ban MWD, what is next? Pump and automatic shotguns, 12 gauges, etc,

Instead of regulating MWD, we need to rotate refuge pools to allow all ducks to be hunted

Instead of only a portion that fly out of the refuge.

I think the MWD results speak for themselves. I have noticed much higher harvest numbers for myself while using one.

I think the more MWD you use the better results you will see.

Don't change something that don't need changed!

MWD are more trouble than they are worth.

I would favor a nation-wide ban on MWD, but not a state-wide ban.

If you can use battery powered decoys, why not battery powered tape players to call ducks?

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Brent S. Theede

Signature of Author

8/5/05

Date

Use, Efficiency, and Hunter Opinions of Motion-wing Decoys at Neosho Wildlife Area

Title of Thesis Report

Vicky Cooper

Signature of Graduate Office Staff

8-5-05

Date Received