A Research Partnership to Evaluate the Response of Waterfowl to the Moto-duck

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Early in their training, wildlife biologists are invariably taught the same lesson—resource management decisions must be based on the best biological information available. That simple message has not only provided guidance for generations of wildlife biologists, but it is also the principle upon which North American waterfowl management rests today. We may grumble occasionally about confusing regulations, but we have to admit that the waterfowling opportunities we all enjoy result from one of the best managed natural resources in the world.

So what do we do when faced with a new management concern about which we have little information? There is probably no situation more challenging for resource managers, and the controversy surrounding the moto (or roto) duck is our latest example. The issues underlying all sides of the moto-duck argument are now well known, and there are strong viewpoints on both sides. One clear message that has emerged is that we lack appropriate information to fully evaluate these devices. This is not to say that California hunters have no idea about the possible influence of moto-ducks, positive or negative. The knowledge gained by years of experience in the blind is hard won and much respected. However, biological information upon which management regulations must be based requires quantitative data collected in accordance with accepted scientific methods.

To address this need, a collaborative effort has been initiated by waterfowl biologists from the University of California at Davis, California Waterfowl Association (CWA), the Western Ecological Research Center (USGS), the Central Valley Habitat Joint Venture, and Louisiana State University (LSU). This partnership will consider several questions:

1) Effect on duck response—are birds more likely to decoy within gun range when using a moto-duck vs. traditional decoys? Are some species more or less responsive to moto-duck decoys?
2) Effect on hunter success—does use of the moto-duck affect the size of or time it takes to reach) the daily bag?
3) Effect on composition of the bag—does use of the moto-duck influence the species, age, or sex of birds harvested? Are the birds in better or worse condition relative to those shot using traditional decoys?
4) Seasonal effects—do birds habituate to moto-ducks or is there a seasonal change in the way they respond to these decoys?
5) Extent of use—what is the current use of the moto-duck and how might it influence hunter success or frequency of hunting?
6) Effect on harvest—ultimately, we need to determine whether use of the moto-duck affects overall harvest or impacts annual survival of ducks.

Obtaining this information is a challenging task, particularly in light of the short time frame over which this issue has arisen. No single study will likely provide a definitive answer to each question. However, a series of coordinated efforts and complementary analyses can provide useful insights into these issues. The proposed study (just underway at press time) comprises four parts. Part I focuses on evaluating bird response to the moto-duck and assessing kill rates with and without the use of moto-ducks (questions 1-4). Part II focuses on surveys of hunter use of the moto-duck and reported hunting success with and without the moto-duck (question 5). Part III focuses on duck banding efforts to increase the ability of managers to detect any changes in harvest or survival rates that may or may not occur (question 6). Part IV complements these efforts using statistical modeling techniques and analysis of banding data to assess any potential change in harvest and survival.

We emphasize that this study will not...
evaluate fair-chase or sporting considerations, nor will it address potential impacts of the moto-duck on hunter participation and enjoyment, or landowner interest in habitat management or restoration. These are important issues that must be addressed through other venues.

Assessment of Bird Response and Kill Rates

Part I of the study is designed similar to that used recently by researchers at LSU to evaluate the effect of electronic calls on the harvest of snow geese. Studying the effect of any type of decoy or calling device is complicated by variation among hunters in calling and shooting ability, location, time of day, season, weather, and numerous other factors. A significant concern is that there are so many variables, it will be impossible to isolate any specific influence of the moto-duck on hunter success. However, the study design circumvents many of these problems by using paired comparisons of the same group of hunters; in statistical jargon, this is known as a “matched-pairs” comparison. Using this design, comparisons are made for the same group of hunters when shooting with and without a moto-duck on the same day. Because comparisons are made only within each group, all other variables are effectively held constant.

To conduct these studies, we are working with volunteer hunters, drawn randomly from state lists. For each randomly chosen group, we will compare hunt success during alternating 30-minute intervals: (1) without a moto-duck, using only traditional calls and decoys and (2) with a moto-duck in addition to traditional calls and decoys. A coin flip will determine whether the moto-duck is on or off at the start of the hunt. Each experimental hunt will be three hours in length.

During each hunt, trained non-shooting observers will be located in the blind or at a nearby hidden location. Observers will record species, flock size, proximity of approach (especially whether ducks fly within 40 yards), total number of ducks shot at and killed, and the age, sex, and body condition of birds killed. Information on hunter experience, number of hunters, calling methods, decoy numbers and dispersion, blind location and habitat, weather, cloud cover, and wind speed will be recorded for each hunt.

The goal is to secure 40 to 60 volunteer hunts during the 1999-2000 waterfowl season (half in the early season and half in the late season). We will compare early season to late season hunts to evaluate seasonal changes in kill-rates or habituation by birds (i.e., do ducks learn to avoid motor-duck?). A concern with using volunteer hunters is that it is impossible to conduct a truly "double-blind" study, where neither the hunter nor the observer knows which treatment (moto or no-moto) is being used. Consequently, there is the possibility that personal bias may affect the results. However, there is probably no realistic way to create a double-blind situation during this study, and it is critical to emulate natural hunting conditions when shooting with or without a moto-duck.

(see Research Partnership, page 39)
The best way to do that is simply to hunt!

However, to address concerns about unconscious bias affecting results, a second component of the study will duplicate that used during hunts, but there will be no hunters present. Instead, trained observers in blinds will monitor duck response (especially the number that come within 40 yards) during alternating 15-minute trial periods with a moto-duck present or removed. We will conduct these observations in a variety of locations and habitat types throughout the season in varying weather conditions.

Survey of Hunter Use and Success

Part II of the study will evaluate the current and projected use of the moto-duck throughout California. A statewide mail survey of CWA members and other hunters will be undertaken to assess: (1) the level of use of the moto-duck, (2) reported seasonal success of hunters with or without moto-ducks, and (3) attitudes toward the moto-duck. In a detailed companion survey, we will canvass for volunteer participation of volunteers who will be willing to record and report: (1) their extent of moto-duck use and (2) daily and seasonal hunt statistics with and without moto-ducks in the 1999-2000 hunting season. We hope to obtain 50 to 100 participants from a range of locations throughout California who hunt both private and public areas in different kinds of habitat. We will also solicit participation of volunteers who have kept similar daily and seasonal hunt statistics in previous years, allowing an evaluation of whether hunter success rate has changed between years.

Banding to Improve Precision of Harvest Rate Estimates

Part III of this study will use recoveries of mallards banded prior to the hunting season in California (i.e., preseason banding) to estimate harvest and survival rates. Estimates from the 1999-2000 hunting season will be compared to years when moto-ducks were used sparingly or not at all. An increase in harvest rate or decrease in survival rate outside the range of expected long-term values could indicate that moto-duck use has affected ducks at the population level. Because harvest rates tend to vary from year to year, changes we detect must be interpreted relative to other parts of the study. In addition, changes in harvest rates must be interpreted cautiously because of the new leg bands inscribed with a toll-free phone number. Because reporting bands is now easier, more are reported by hunters, making comparisons with earlier years more difficult.

Mallards are the focus for this part of the study because they are the main duck in the bag (20 to 25 percent of the statewide duck harvest), and many hunters have reported that mallards are attracted to moto-duck more than other species. In addition, California mallards represent a discrete sub-population that remains in the state (and subjected to moto-ducks) the entire winter. Liberal bag limits (seven birds daily) and a long hunting season (100 days) will allow ample opportunity to analyze harvest rates. A goal of our study is to enhance banding efforts in 2000, especially by areas with large late summer mallard concentrations (Sacramento Valley, Klamath Basin). This will not only help address concerns over the effect of the moto-ducks on harvest, but will also contribute to improved western mallard management.

Harvest and Survival Modeling

The final component of this study (Part IV) will complement the banding analyses. We will develop computer models to evaluate survival and recovery rates in years when the moto-duck was used extensively versus years when it was not. Other variables such as estimates of available habitat, population density, estimates of hunting pressure, and estimates of food availability can be incorporated into these models to help distinguish between the effects of moto-duck versus other factors that may influence survival.

Part IV of the study will also use a population model to estimate maximum sustainable harvest for California. This model will allow us to estimate the point at which decreased survival of adult and hatch-year mallards could have an impact on the population. Similar analyses are underway for the entire Pacific Flyway population of western mallards, but our efforts will be restricted to California and will complement those studies.

The Final Word:
The Annual Harvest Estimate and the Cooperative Parts Collection Survey

The study that we have outlined will provide useful information on the potential impact, if any, of the moto-duck on California waterfowl. However, the USFWS, in cooperation with the California Department of Fish and Game and other partners in the Pacific Flyway, will continue to undertake both the annual Harvest Survey and the Cooperative Parts Collection Survey. Ultimately, these surveys will provide the definitive word on whether there is any change in the total harvest or the species or age composition. Our studies will complement these efforts and provide insight on specific questions not addressed in detail by these other surveys (e.g., behavioral response of different species to the moto-duck or changes in kill-rates).

Perhaps the clearest message to emerge from the moto-duck debate is that California hunters care deeply and passionately about their waterfowl resource and hunting heritage. Our efforts to evaluate the effects of the moto-duck were not dictated or imposed by state or federal regulatory agencies—rather, they were motivated, initiated, and ultimately funded by California hunters. That speaks volumes for the sense of responsibility shared by waterfowlers throughout the state. Moreover, it serves as an important reminder of the principle that we strive to instill in our new generation of waterfowl managers and outdoor enthusiasts—waterfowl management must be based upon the best biological information available. That principle has served us well for over four decades of waterfowl management; there is little value in abandoning it now.