Head to Head

Do mini-refuges supply wintering northern pintails with important diurnal roost sites? Response to Rave

By Robert R. Cox, Jr. and Alan D. Afton

Rave (1999) argued that Rave and Cordes (1993) and Cox and Afton (1998) reached different conclusions regarding use of mini-refuges by northern pintails (*Anas acuta*, hereafter pintails) in southwestern Louisiana because we: 1) misinterpreted Rave and Cordes (1993); 2) failed to account for differences in size of area used by pintails on mini-refuges and permanent, open-water pools (pools); and 3) studied pintails under different conditions (wet vs. dry) than did Rave and Cordes (1993). Herein, we address these arguments and again conclude that mini-refuges were used less than pools and that mini-refuges, as managed during our study and in previous winters, were not important diurnal roost sites for pintails. We also discuss the future of the mini-refuge program in light of past evaluations and recent developments.

Rave and Cordes (1993) studied time–activity budgets (behaviors) of pintails on mini-refuges. They presented no quantitative information on magnitude of use of mini-refuges by pintails, and they did not compare pintail preference or use of mini-refuges to other areas, including pools. In contrast, we quantitatively compared diel use of mini-refuges and pools by a large sample of radio-tagged pintails (Cox and Afton 1998). Our objective was to evaluate the importance (as measured by pintail use) of mini-refuges, as managed at the time, in relation to pools. Consequently, we believe that fundamental differences in objectives and study designs led to different conclusions regarding use and importance of mini-refuges.

Much of Rave’s (1999) commentary involves semantics regarding the word “attractive.” Although there is some disagreement about meanings of the words “use,” “preference,” and “selection,” these terms have a firm foundation in biological literature (see Johnson 1980, Thomas and Taylor 1990). In contrast, the word “attract” has no such foundation; this word (and variants thereof) was not listed in 6 dictionaries of biological and ecological terms (list available from Robert R. Cox) that we consulted when preparing this response. Webster’s Ninth *New Collegiate Dictionary* defines “attract” as “to cause to approach or adhere.” If mini-refuges are more likely than pools to cause pintails to approach or adhere, as Rave and Cordes (1993) speculated, then we believe that a logical prediction is that mini-refuges would receive more use by pintails, especially considering that mini-refuges were larger in total size than Lacassine Pool or Amoco Pool.

Rave (1999) showed that pintail density (an index of preference) was greater during the day in 1988 on mini-refuges than on Lacassine Pool, but only under the following assumptions: 1) all area on Lacassine Pool (including large areas of maidencane [*Panicum hemitomon*], which are not used by pintails [Robert R. Cox, personal observation]) was considered available, 2) all dry areas on mini-refuges were considered unavailable, and 3) all naturally flooded areas on mini-refuges (which were considerable during our study) were considered unavailable. Rave’s demonstration does not, however, change our conclusion that pintails used mini-refuges far less than pools, even though more total area was included in mini-refuges during our study than in either Lacassine Pool or Amoco Pool.

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Key words: *Anas acuta*, habitat use, Louisiana, mini-refuges, northern pintail, pools, radiotelemetry, refuges, waterfowl, winter
Finally, Rave (1999) contended that wet conditions during Cox and Afton's (1998) study "likely overwhelmed the attractiveness of flooded mini-refuge fields compared to the dry habitat conditions during fall 1988." Given the 4 "habitats" considered in our study (mini-refuges, Lacassine Pool, Amoco Pool, and OTHER, which included all other habitats), we fail to see how large-scale flooding of OTHER would negatively influence pintail use of mini-refuges more than that of Lacassine Pool or Amoco Pool. To the contrary, because most mini-refuges during our study were dry until flooded by rainfall (Cox and Afton 1998), wet conditions during our study may have increased pintail use of mini-refuges relative to pools. Notably, all information (including radiotelemetry and survey data) clearly indicated that diurnal use of mini-refuges by pintails, relative to Lacassine Pool, similarly was low from 1988-89 to 1992-93, which included wet and dry winters (Cox and Afton 1998).

In summary, we conclude that most of Rave and Cordes' (1993) and Rave's (1999) comments were focused on the potential importance of mini-refuges to provide habitat for pintails relative to pools, whereas we focused exclusively on the current importance of mini-refuges relative to pools as measured by pintail use (Cox and Afton 1998). We agree with Rave (1999) that pintails may prefer to roost diurnally on areas that provide food over those that do not, everything else being equal, and that mini-refuges potentially could provide important habitat for pintails in southwestern Louisiana, depending upon how these areas are managed (see Cox and Afton 1998:135). However, we stand behind our conclusions that diurnal use of mini-refuges was low relative to that of Lacassine and Amoco pools and that mini-refuges, as managed during our study and in previous winters, were not important diurnal roost sites for pintails. Ironically, Rave (1999) reiterated our major point and thus answered the question posed in the title of his commentary when he wrote, "... mini-refuges are not used by a large proportion of the pintail population in southwest Louisiana...."

**Future of the mini-refuge program**

We met with 25 wildlife professionals in Lafayette, Louisiana, in March 1999 to: 1) discuss whether the mini-refuge program should continue; 2) re-examine goals of the program; 3) decide how to improve management of mini-refuges; and 4) decide how best to fund, administer, and support the program. Most attendees recognized the potential of the program to provide habitat for wintering waterfowl in the intensively hunted region of southwestern Louisiana (Cox et al. 1998). Two committees were formed to: 1) write a biological management plan that will reconsider all aspects of the program, including goals and objectives, numbers and locations of mini-refuges, and specific treatments to be applied to sites, and 2) develop a marketing plan to generate additional public and financial support for the program.

Even though lands are enrolled in the mini-refuge program at essentially no cost, habitat on these areas is not provided at very small cost, as stated by Rave (1999). During winters 1988-89 through 1991-92, flooding (pumping) costs averaged $29.75 (U.S. dollars, not adjusted for inflation to present) per ha flooded each winter, while administrative costs (salaries, travel, signs, telephone costs, and supplies) averaged $4.11 per ha enrolled in the program each winter, irrespective of flooding (Lacassine National Wildlife Refuge 1992). Consequently, flooding and administrative costs for mini-refuges comparable in total size to Lacassine Pool (6,793 ha) would exceed $230,000 annually, not accounting for inflation. This figure does not include an allowance for law enforcement activities on mini-refuges, which thus far have been assumed jointly by United States Fish and Wildlife Service and Louisiana Department of Wildlife and Fisheries personnel in addition to regular duties, with no monetary compensation for increased workload. Consequently, we believe that the newly appointed committee faces a difficult but important task of developing biologically beneficial, yet achievable, objectives and corresponding management prescriptions for the program, within constraints of expected funding, which to date has been limited.

Given the large numbers of waterfowl wintering in the region and past, present, and likely foreseeable budgets for the program, we believe that providing food resources throughout winter or hunting seasons for a large portion of pintail and other waterfowl populations in southwestern Louisiana via mini-refuges is an unrealistic goal. Accordingly, we believe that mini-refuges are most beneficial by functioning primarily as daytime roosts, allowing pintails and other waterfowl to access food resources nocturnally on nearby private lands that are usually hunted during the day (Cox and Afton 1996, 1997; Cox et al. 1998). We reiterate our earli-
er recommendation that juxtaposition of daytime roosts and agricultural resources be considered seriously when developing future management plans for pintails in the region (Cox and Afton 1996, 1997). Mini-refuges established in areas of abundant rice and fallow agriculture (Cox and Afton 1997) relatively far from major diurnal concentrations of waterfowl (Lacassine and Amoco pools) offer considerable savings in terms of flight energetics and, consequently, daily energy expenditure for pintails and other waterfowl (Cox and Afton 1996).

We believe that location and habitat management (cover and water-level manipulation) of mini-refuges are important for increasing pintail use. We do not believe that simply pumping more water onto mini-refuges will ensure greater pintail use. Habitat management recommendations provided in Cox and Afton (1998) might provide a reasonable starting point for site prescriptions. The Vincent (Mouton) mini-refuge, located 8 km north of Kaplan, Louisiana, has been enrolled annually since the program's inception and is a flagship area for the program. Indeed, half of the pintail locations on mini-refuges (30 of 60 diurnal and nocturnal locations combined) during our study occurred on this 259-ha area. Each winter, this area has been managed to provide shallow water with little residual cover. Also possibly of relevance, this area is relatively far from Lacassine and Amoco pools. Finally, we reiterate our earlier statement (Cox and Afton 1998) that studies relating use by pintails and other ducks to cover and water-level manipulations should be beneficial in developing detailed management plans. Success of mini-refuges ultimately should be evaluated collectively (considering the entire program) in terms of amount of use received by regional populations and subsequent enhanced fitness (survival and reproduction) of target species.

Acknowledgments. We again thank all individuals and organizations listed in Cox and Afton (1998). We thank C. D. Ankney, E. F. Bowers, R. N. Helm, D. H. Johnson, R. E. Kirby, B. D. Leopold, R. Myers, T. L. Shaffer, M. A. Sovada, and B. C. Wilson for critical comments on the manuscript.

Literature cited


