

CONSERVATION ACTION PLAN

INTRODUCTION

The Conservation Action Plan (Plan) for Long-billed Curlews was developed and prioritized by a diverse group of partners interested in Long-billed Curlew conservation. This Plan includes a prioritized list of actions and needs that we believe will assist us to achieve long-term rangewide conservation of Long-billed Curlews (Table 2.1). As stated earlier, implementing effective conservation measures will require the cooperation of a coalition of local, regional, national, and international partners (Harrington et al. 2002). Since micro-habitat use by Long-billed Curlews varies within and across seasons and geographic areas, management will require local and seasonal components (Colwell and Sundeen 2000, Foster-Willfong 2003). In addition to this Plan, several states have developed objectives and actions designed to address state-wide conservation of Long-billed Curlews as part of their State Wildlife Grant programs (Hagen et al. 2005, Idaho Department of Fish and Game 2005, New Mexico Department of Game and Fish 2006).

The goal of this Plan is to identify appropriate management techniques to halt and, hopefully, reverse population declines in this species. To achieve this goal, several important steps have been taken towards identifying limiting factors and creating a prioritized rangewide Plan. The first step identified to achieve this goal was to estimate the rangewide breeding population size of Long-billed Curlews and determine how populations were distributed within their breeding range (Jones et al. 2008). A survey in

Alberta of breeding Long-billed Curlews (Saunders 2001) and the subsequent rangewide survey in 2004-2005 were the first broad-scale attempts towards achieving a defensible population estimates for Long-billed Curlews (Stanley and Skagen 2007, Jones et al. 2008). In addition, current and historical breeding-range studies have begun to identify local habitats used by Long-billed Curlews (Hartman and Oring 2006a, b, Redmond and Jenni 1982), and these characteristics can be used in landscape planning efforts. The Long-billed Curlew Symposium at the 2006 Western Hemisphere Shorebird Science Meeting in Boulder, Colorado, helped to facilitate discussion among Long-billed Curlew scientists and land managers (Oring 2006). Subsequent discussions have led to identification and prioritization of the needs outlined in this Plan.

Results from the rangewide breeding survey indicated that the overall population of breeding Long-billed Curlews is greater than previously thought (Table 1.2; Morrison et al. 2001, 2006; Jones et al. 2008). These results also indicated that breeding birds are generally evenly distributed throughout their present range (Jones et al. 2008). Because of this distribution, there are no broad-scale threats that have been identified that are negatively affecting the entire population and require immediate action or study.

However, current indications are that landscape changes, which led to the approximately one-third contraction in their historical breeding range, may still be limiting population growth of Long-billed Curlews in parts of their range.

Therefore, we recommend that conservation actions be prioritized as follows:

- (1) Evaluate monitoring methods, specifically those issues related to the BBS. We must ascertain if the trends produced from the BBS are reliable, particularly with regards to timing of the survey and precision (or bias). We need to know the current status of the species, and the direction and magnitude of any trend.
- (2) Identify the types and intensity of current threats, on breeding, migration, and wintering grounds. It is important to identify exactly where and what level of risk perceived threats pose to Long-billed Curlew populations.
- (3) Identify critical migration staging areas and determine if threats there (e. g. development, alterations to hydrology, contaminants, and disease) are limiting Long-billed Curlews' ability to gain weight and successfully complete migration. Reduction in stopover quality might also negatively affect survival and subsequent reproduction.
- (4) Identify critical winter areas and specifically determine how Long-billed Curlews are distributed throughout their wintering range.
- (5) Determine the causes of the breeding range contractions and identify those factors that continue to limit population growth throughout the breeding range.
- (6) Determine if Long-billed Curlews are positively responding to management actions designed for their conservation.
- (7) Assess if environmental factors on the wintering grounds could be limiting Long-billed Curlew population growth.

PRIORITY ACTIONS

Population Monitoring and Assessment

BBS data suggest a population decline, although the results are not statistically significant (1966-2007), except in USFWS Region 6 and the Central BBS Region (Sauer et al. 2008), where range contraction is still occurring. Precision of trend estimates is poor, which is probably related to the low numbers of Long-billed Curlews detected on each route (rangewide = 1.37 individuals/route; Sauer et al. 2008). The priorities are to evaluate the adequacy of the BBS to monitor breeding populations.

1.0. Inherent BBS assumptions should be tested to see if they are valid for Long-billed Curlews.

1.1. *Detectability*. A basic BBS assumption is that there is no relationship between detectability and density (i.e. a constant proportion is always detected, and the proportion detected is a function of the number of birds present). This can be examined using the rangewide survey dataset, since detectability was estimated using double-observer and time-removal methods.

1.2. *Road Bias*. A preliminary analysis (Stanley and Skagen 2007) determined that Long-billed Curlew numbers did not vary as a function of distance from road. Another issue with roads would be to determine if trends along roads mirror the broader landscape for suitable Long-billed Curlew habitat. This could be examined by assessing habitat similarity near and away from roads using GIS. There may be regional differences in this effect. Densities of Long-billed Curlews on roads versus off-roads would likely be different, but that would not be an issue if the trends are the same and a constant proportion is detected (the detectability assumption specified above is being satisfied).

2.0. Currently, the BBS cannot be used to monitor Long-billed Curlews due to the low precision. This can be addressed two ways.

2.1. Increase the number of routes. This could be achieved by augmenting the number of BBS routes surveyed, along the lines of the current project in Canada that is conducting additional grassland routes (B. Dale, pers. comm.). We would statistically evaluate this by increasing the number of routes and investigating the periodicity (e.g., every 5 years), which they would be run.

2.2. Time-of-year. Perhaps the biggest concern regarding Long-billed Curlew monitoring is the timing of BBS surveys, which typically occur in June. This time period corresponds with the latter stages of breeding when Long-billed Curlews are most inconspicuous (late incubation period or, in some areas, after the young have already fledged and birds have departed the breeding area). This may create two potential problems: a) clumped distributions in June could lead to greater variance (lower precision) in estimates and b) lower detectability of curlews on routes, since Long-billed Curlews are more likely to be less visible and not as vocal. These problems could be examined by comparing data collected on the range-wide survey and the BBS. This assumes that inherent BBS assumptions are still being satisfied increased sample size does not mitigate these problems.

Currently, a survey is being conducted in northeast North Dakota to use the BBS routes to survey grassland and marshland breeding shorebirds (PPBSS; N. Niemuth, pers. comm.). This survey will be expanded in 2009-2010, and will survey approximately 15-45 routes in portions of South Dakota, North Dakota, and eastern Montana between 1–15 May. This project will use BBS techniques to improve our understanding of the population status of breeding shorebirds, including Long-billed Curlews, Willets (*Tringa semipalmata*), Marbled Godwits, Wilson’s Phalaropes, Wilson’s Snipe, and Upland Sandpipers (*Bartramia longicauda*) (SLJ and N. Niemuth, pers. comm.).

Migration Staging and Wintering Areas

Although work has been completed on estimating population size and determining breeding distribution, we have still not identified all of the important sites used by wintering and staging Long-billed Curlews, particularly in Mexico. As a general strategy, we believe we should initially emphasize identifying critical migration and wintering areas, assessing their functional ability to support Long-billed Curlews, and then, if warranted, develop conservation actions and evaluation measures for these areas (Table 2.1).

Habitat Assessment and Management

While many threats have been identified, there has been little work on Long-billed Curlew responses to suggested and implemented conservation and management

interventions. For example, there is some evidence that human activity can alter use of ocean beaches by shorebirds (Pfister et al. 1992). However, whether or not Long-billed Curlews are similarly affected by this type of disturbance has not been determined. Concomitantly, it is unknown if Long-billed Curlews would positively respond to beach closures if this action was taken. The effects of energy development on Long-billed Curlews are not fully understood. Pre-project investigations should be made a priority in areas suggested for wind power or oil and gas development (Texas Parks and Wildlife Department 2005). Consequences of increased biofuel production on Long-billed Curlews are unknown but could likely decrease breeding habitat in the eastern portion of their range. Knowledge of the response of breeding Long-billed Curlews to invasive species, such as cheatgrass, and the effects of both timing and method of eradication actions are needed to make informed management recommendations. Grazing, haying, and prescribed burning are all recommended management tools for maintaining native prairie grasslands for breeding Long-billed Curlews (Hagen et al. 2005). Determining the best timing and intensity of these management tools are important to maximize benefits and reduce disturbance (Hagen et al. 2005). However, recommendations can vary across the curlew's range, and management of other high priority wildlife species (e.g., prairie-dogs) could conflict with recommendations developed for Long-billed Curlews (Clarke and Jansen 2006, Foster-Willfong 2003, Montana Fish, Wildlife and Parks 2005). This spatial variation and possible management conflicts reinforce the need for local evaluation of management actions that can then be integrated into a rangewide perspective (Table 2.1).

Research

Research needs were identified and prioritized by the Long-billed Curlew Working Group. Research needs are focused on information gaps that could be helpful in identifying limiting factors and the risk posed by perceived threats. Also, priority research needs were identified to focus on data that is required for population modeling exercises (Table 2.1).

Education and Outreach

Development of education and outreach tools were recurring themes in every category of the recommended conservation actions. Long-billed Curlew conservation will require public and landowner education and outreach on the value of conserving intact native shortgrass prairie. Long-billed Curlews are large, conspicuous birds and are a good flagship species of prairie grassland ecosystems. As such, they can be effectively used to introduce prairie conservation into classrooms and communities (Table 2.1).

Other Species Covered

Many grassland management actions, such as increasing dense nesting cover to increase waterfowl nesting, have the potential to negatively affect habitat use by breeding Long-billed Curlews (Prairie Habitat Joint Venture 2000). While a number of grassland breeding shorebirds overlap with Long-billed Curlews in range and general habitat use, this species may not be a good indicator or umbrella species for habitat management. However, many of these species will be covered in the monitoring survey discussed above. Marbled Godwits, Willets, and Upland Sandpipers generally use similar habitats

in portions of the Long-billed Curlew's range, but significant portions of their ranges do not overlap with curlews. In addition, micro-habitat needs (i.e. gradients of grass density and wetness) for Willets and Upland Sandpipers do not overlap well with Long-billed Curlews. Mountain Plover (*Charadrius montanus*) habitat requirements are generally quite different from those of Long-billed Curlews, although their ranges do overlap. In areas where Long-billed Curlews are a component of the breeding bird community, habitat managers should try to integrate adequate curlew habitat requirements needs into their management plans.

Priority Populations and Regions

Long-billed Curlews can be divided into ecological groups, based on vegetation regimes, ecoregions, and political boundaries (Table 1.2). Within each physiographic region, Long-billed Curlews appear to have some different micro-habitat requirements which need to be taken into consideration when implementing management actions. Population numbers have been estimated for these divisions (Table 1.2).

CONSERVATION STRATEGY

This Plan is a product of a diverse group of agencies, organizations, and individuals with an interest in Long-billed Curlew conservation. The conservation strategy outlined here will address threats to both breeding and non-breeding habitat and assess potential threats from non-habitat factors. During 2001 and 2002, the Temperate Breeding Group (Bart et al. 2002) of the shorebird monitoring group, Program for Regional and International

Shorebird Monitoring (PRISM), initiated work on a number of the conservation actions for Long-billed Curlews. In February 2006, a workshop was held on Long-billed Curlew research and conservation and management needs, which provided the basis for the conservation needs identified here. The conservation strategy for this species includes maintaining an active Long-billed Curlew working group, developing a broad-based partnership to deliver Long-billed Curlew and temperate breeding shorebird conservation, increasing available funding for Long-billed Curlew research, and increasing partner attention to the habitat needs of the species.

Completed and On-going Conservation Actions

Since its inception in 2001, the Temperate Breeding Group (Bart et al. 2002) of PRISM has initiated, and completed, work on a number of the conservation actions identified for Long-billed Curlews.

- (1) Completed the rangewide survey (Stanley and Skagen 2007, Jones et al. 2008).
- (2) Analyzed the population size estimates, including those in Canada (Jones et al. 2008).
- (3) Analyzed habitat and distribution data from the rangewide survey (Saalfeld et al. 2008).
- (4) Designed, and planning to conduct in 2009-2010, a BBS-based monitoring survey in portions of South Dakota, North Dakota, and Montana (SLJ, N. Niemuth, pers. comm.).
- (5) Conduct research on various aspects of the life history and ecology (Hartman and Oring 2006a, b; Oring 2006).
- (6) Established a Long-billed Curlew ListServ.

- (7) Established a web site to exchange current reports on Long-billed Curlew research (<http://www.fws.gov/mountain%2Dprairie/species/birds/longbilled%5Fcurlew/>).
- (8) Convened two workshops to discuss Long-billed Curlew conservation and status (LaCrosse, Wisconsin, in 2002 and Boulder, Colorado, in 2006). These workshops were attended by a wide range of agencies, organizations, and individuals. Participants at these meetings developed strategies and recommendations for specific actions needed to achieve the conservation of the species. In some cases, lead agencies, partners, and costs have been identified; in many cases, the scope of the action is unknown and will only be known after initial development of projects have been completed (Table 2.1).
- (9) A third workshop is planned for the 2009 Western Hemisphere Shorebird Group meeting in Mexico. It is hoped that this meeting will provide an opportunity for researchers from Mexico to be involved, to share their research, and to further implement the identified priority wintering and migration needs.

LITERATURE CITED

- Bart, J., B. Andres, S. Brown, G. Donaldson, B. Harrington, H. Johnson, V. Johnston, S. L. Jones, R. I. G. Morrison, M. Sallaberry, S. K. Skagen, and N. Warnock. 2002. Program for regional and international shorebird monitoring (PRISM), V. 0.7. <http://www.fws.gov/shorebirdplan/USShorebird/downloads/PRISMOverview1_02.doc> (accessed 10 January 2006).

- Clarke, J. N., and K. C. Jensen. 2006. Nesting success, brood survival, and habitat use of Long-billed Curlews in grazed landscapes of western South Dakota. Wader Study Group Bulletin 109:31.
- Colwell, M. A., and K. D. Sundeen. 2000. Shorebird distributions on ocean beaches of northern California. *Journal of Field Ornithology* 71:1-14.
- Foster-Willfong, J. M. 2003. Census methodology and habitat use of Long-billed Curlews (*Numenius americanus*) in Saskatchewan. M. S. Thesis, University of Regina, Regina, Saskatchewan, Canada.
- Hagen, S. K., P. T. Isakson and S. R. Dyke. 2005. North Dakota comprehensive wildlife conservation strategy. North Dakota Game and Fish Department. Bismarck, North Dakota <<http://gf.nd.gov/conservation/cwcs.html>> (accessed 12 October 2006).
- Harrington, B. A., S. C. Brown, J. Corven, and J. Bart. 2002. Collaborative approaches to the evolution of migration and the development of science-based conservation in shorebirds. *Auk* 119:914-921.
- Hartman, C. A., and L.W. Oring. 2006a. Long-billed Curlew nest-site selection and nest survival at large and small spatial scales. Wader Study Group Bulletin 109:31.
- Hartman, C. A., and L. W. Oring. 2006b. Population ecology of Long-billed Curlews breeding in north-eastern Nevada. Wader Study Group Bulletin 109:31.
- Jones, S. L., C. S. Nations, S. D. Fellows, and L. L. McDonald. 2008. Breeding abundance and distribution of Long-billed Curlews (*Numenius americanus*) in North America. *Waterbirds* 31:1-14.
- Morrison, R. I. G., R. E. Gill, Jr., B. A. Harrington, S. K. Skagen, G. W. Page, C. L. Gratto-Trevor, and S. M. Haig. 2001. Estimates of shorebird populations in North

America. Environment Canada, Canadian Wildlife Service Occasional Paper no. 104, Ottawa, Ontario, Canada.

Morrison, R. I. G., B. J. McCaffery, R. E. Gill, S. K. Skagen, S. L. Jones, G. W. Page, C. L. Gratto-Trevor, and B. A. Andres. 2006. Population estimates of North American shorebirds, 2006. Wader Study Group Bulletin 111:67-85.

Oring, L. W. 2006. Long-billed Curlew symposium. Wader Study Group Bulletin 109:30.

Pfister, C., B. A. Harrington, and M. Lavine. 1992. The impact of human disturbance on shorebirds at a migration staging area. *Biological Conservation* 60:115-126.

Redmond, R. L. and D. A. Jenni. 1982. Natal philopatry and breeding area fidelity of Long-billed Curlews (*Numenius americanus*): patterns and evolutionary consequences. *Behavioral Ecology and Sociobiology* 10:277-279.

Saalfeld, S. T., W. C. Conway, D. A. Haukos, and M. Rice. 2008. Local and geospatial landscape analysis of habitat use by Long-billed Curlews (*Numenius americanus*) breeding the United States. A final report to U.S. Fish and Wildlife, Region 6, Denver, Colorado.

<http://www.fws.gov/mountain%2Dprairie/species/birds/longbilled%5Fcurlew/Saalfeld_LBCU_Report_November_25_2008_final.pdf> (accessed 12 January 2009).

Sauer, J. R., J. E. Hines, and J. Fallon. 2008. The North American breeding bird survey, results and analysis 1966 - 2008. Version 5.15.2008. U.S. Department of Interior, Geological Survey, Patuxent Wildlife Research Center, Laurel, Maryland.

<<http://www.mbr-pwrc.usgs.gov/bbs/>> (accessed 8 September 2008).

- Saunders, E. J. 2001. Population estimate and habitat associations of the Long-billed Curlew (*Numenius americanus*) in Alberta. Alberta Species at Risk Report No. 25. Edmonton, Alberta. <[http://mountain-prairie.fws.gov/species/birds/longbilled_curlew/LONG-BILLED CURLEWS -Alberta.pdf](http://mountain-prairie.fws.gov/species/birds/longbilled_curlew/LONG-BILLED_CURLEWS_-Alberta.pdf)> (accessed 14 September 2006).
- Stanley, T. R., and S. K. Skagen. 2007. Estimating the breeding population of Long-billed Curlew in the United States. *Journal of Wildlife Management* 71:2556-2564.