Strategic Habitat Conservation: Targeting Acres for Lesser Prairie-Chicken Programs

This is one in a series of projects illustrating the Strategic Habitat Conservation (SHC) framework developed by U.S Fish and Wildlife Service and U.S. Geological Survey. SHC is an iterative process for "setting and achieving conservation objectives at multiple scales, based on the best available information, and ecological models."

The Playa Lakes Joint Venture (PLJV) designed this project, following the SHC framework, to conserve Lesser Prairie-Chicken (LEPC) habitat and associated wildlife through strategic enrollment of land into Farm Bill conservation programs such as the Conservation Reserve Program (CRP). The four SHC elements (Figure 1) and their sub-elements (underlined) of this program are described below.
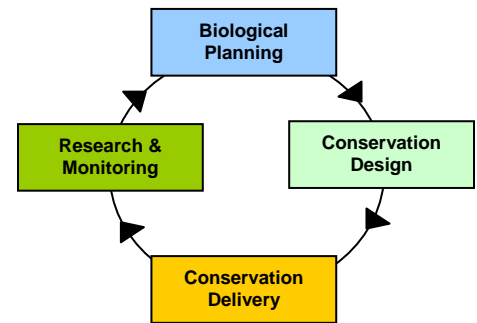

Figure 1. Four elements of Strategic Habitat Conservation (SHC).

1. Biological Planning

The PLJV completed a rigorous biological planning process to identify priority bird species in the PLJV region (including LEPC), develop abundance targets, identify limiting factors, and assess population status. Planning for LEPC was conducted in cooperation with the LEPC Interstate Working Group (LPCIWG) using the PLJV Hierarchical All Bird System. Results are documented in the PLJV Landbird Team Report and state Area Implementation Plans and are outlined as SHC sub-elements below.

1.1. Identify Priority Species – In this case, LEPC is the priority species but carries along with a guild of approximately 29 species (Figure 2).

1.2. Refine Species List – Since LEPC was the target there is no need to refine the species list.

1.3. Population Objective – The stated objective from Partners In Flight is to double the LEPC population across its range. The LPCIWG's objective is to maintain LEPC populations in Kansas, triple them in Oklahoma, New Mexico and Texas, and increase populations by 50% in Colorado. We chose to use the LPCIWG objective resulting in a population goal of 103,600 birds.

1.4. Current Status – Current landscape carrying capacity is approximately 44,072 chickens within the PLJV.

1.5. Identify Limiting Factors – Suitable habitat is the most limiting factor for LEPC (Kirsch 1974), requiring large blocks to support LEPC long-term (Crawford and Bolen 1976, Taylor and Guthery 1980).

1.6. Habitat Models – We developed suitable LEPC-habitat models specific to various vegetation communities based on literature and expert opinion. In short, suitable habitat is defined as 5,000 acre blocks consisting of ≥ 2,000 acres of native types such as mixed-grass, sand sage, and shortgrass, interspersed with ≤3,000 acres of cropland or CRP. Additionally, the block cannot contain developed areas, major highways, > 50 acres of other roads, or > 50 acres of woodland.

Figure 2. List of priority bird species associated with LEPC habitat.

2. Conservation Design

Strategic enrollment of land into conservation programs requires locating and prioritizing available acres based on their potential benefit to LEPC. A seamless landcover layer, produced by PLJV, allows consistent evaluation of acres across state boundaries, including application of spatial models and Decision Support Tools (DST).

2.1. Decision Support Tool – PLJV developed a DST that identifies which acres will likely afford the most benefit to LEPC if conserved and which are most likely to be enrolled in existing programs. The tool uses the above habitat model in a GIS-based moving window analysis to map areas of the JV meeting this definition resulting in 4.3 million acres of acceptable habitat. This model can then be used to target new acres adjacent to existing habitat (Figure 3).

2.2. Priority Area – Priority acres are located according to suitability, adjacently to existing suitable habitat, ownership, and program capacity (Figure 3).

2.3. <u>Habitat Objectives</u> – Add 4.6 million acres of suitable habitat, targeted with the habitat model to be adjacent to existing large block habitat or habitat near the threshold of becoming large block.

3. Conservation Delivery

Using the GIS model there are many ways to drive enrollment of acres that actually contribute to LEPC conservation:

3.1 *Increased Payment* – Landowners desirous of enrolling their acres in CRP may receive a higher payment for acres contributing to LEPC habitat. Payments would be structured so that those contributing most to LEPC habitat would receive more while those not contributing may not be eligible for a specific LEPC program.

3.2 *Tiered Solicitation* – Groups specializing in landowner outreach may chose to use a tiered approach to contact landowners and provide information regarding their eligibility in the program.

3.3 *Additional Incentives* – In addition to Farm Bill programs, wildlife agencies and conservation groups may provide addition funds to highest priority lands to further incentivize enrollment.

4. Monitoring and Research

The success of this, and any SHC program, is dependent on its ability to adapt to new and better information gathered through research, and that success can only be measured through established monitoring.

4.1. <u>Target Research</u> – The biological models used to assess the importance of acres to LEPC are based on data from field studies where possible and assumptions are used when no empirical data exist. We propose to test these assumptions and target new research to gain needed empirical data.

4.2. <u>Establish Monitoring</u> – The success of this program will be measured by monitoring: 1) the number and location of acres enrolled for LEPC conservation, 2) the habitat condition of these acres relative to LEPC needs, and 3) periodic survey of enrolled acres for LEPC use.
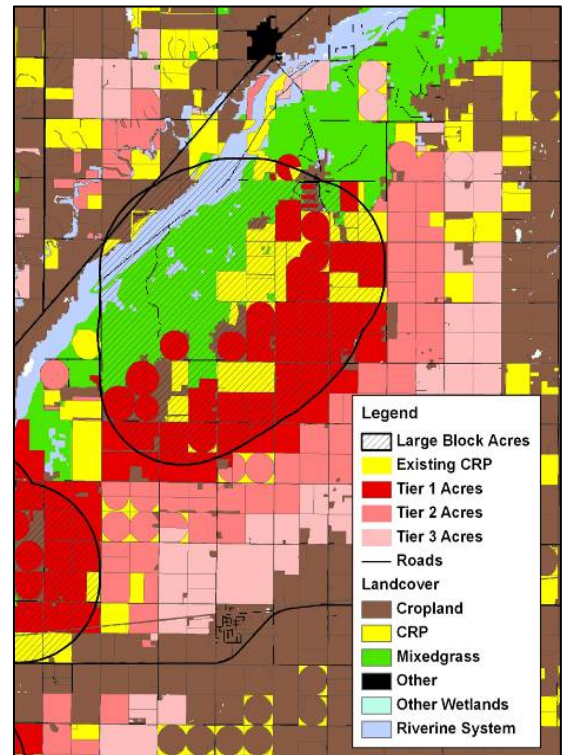

Figure 3. Map produced by the DST showing the priority level (Tier 1 = highest priority (red), Tier 2 = medium priority (dark pink), Tier 3 = low priority (light pink)) of crop fields near existing large blocks of suitable LEPC habitat.

4.3. <u>Feedback Loop</u> – The information gathered through research and monitoring will be used to adapt and improve all aspects of this project such as the LEPC-habitat models developed through *Biological Planning*, the DST developed under *Conservation Design*, and the enrollment strategies in *Conservation Delivery*.

This approach to LEPC conservation results in substantial savings of conservation dollars and much improved habitat targeted for LEPC because it is strategic rather than opportunistic. The DST can be used to target acres for program enrollment and can also be used to evaluate planned habitat restoration programs. For example, according to the DST, in the Texas panhandle if 20,000 acres of CRP are placed randomly on the landscape they have no noticeable effect on LEPC numbers. However, if CRP acres are spatially targeted and planted with native grasses, 217 chickens can be supported. This benefit occurs because strategic targeting of acres allows land managers to build large blocks of habitat with CRP as opposed to small, fragmented parcels of habitat that result from opportunistic enrollment of acres.

Literature Cited:
Crawford, J. A., and E. G. Bolen. 1976. Effects of land use on Lesser Prairie Chickens in Texas. Journal of Wildlife Management 40: 96-104.
Kirsch, L.M. 1974. Habitat management considerations for prairie-chickens. The Wildlife Society Bulletin 2:124-129.
Taylor, M. A., and F. S. Guthery. 1980. Status, ecology, and management of the Lesser Prairie Chicken. U.S. Department of Agriculture Forest Service General Technical Rep. RM-77, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.