Kansas LPCH Population Monitoring

• Standard road-based surveys initiated in 1964
  – Initially only 3 routes
  – Now have 17 routes in the current EOR (325 mi.²)
  – Routes used to monitor habitat-specific trends

• Not good for estimating long-term **statewide** population trends
  – Poor distribution of survey effort across current EOR until recently
  – No routes north of Ark. River until 2001
Standard Survey Routes, 2012

- Shortgrass/CRP (GPCH & LPCH)
- Sandsage
- Mixed Grass

Legend:
- LPCH Range (2011)
- Survey Routes
- Native Rangeland
LPCH Trend (Sandsage)

Density Index (Bids/mi^2)

5-route trend (84 mi^2)
LPCH Trend (Mixed Grass)

Density Index (birds/mi.²)

- 7-route trend (131.7 mi.²)
- 4-route trend (73.4 mi.²)

>600% increase in <10 years
GPCH constitute 5-10% of all observations along these routes

Pop. near 0 in mid 1990s

* GPCH constitute 5-10% of all observations along these routes
Interpolated Prairie Chicken Breeding Density, 2011
Statewide LPCH Breeding Population Estimates

<table>
<thead>
<tr>
<th>Year</th>
<th>Population Estimate</th>
<th>Citation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>17,409</td>
<td>Waddell 1977</td>
</tr>
<tr>
<td>2005</td>
<td>18,000 – 29,000</td>
<td>Rodgers &amp; Houts 2005</td>
</tr>
<tr>
<td>2012</td>
<td>?</td>
<td>Aerial Survey Effort</td>
</tr>
</tbody>
</table>

Pop. decline expected in 2012 due to severe drought
ESA Five Factor Analysis

SEC. 4. [16 U.S.C. 1533] (a) GENERAL.—(1) The Secretary shall by regulation promulgated in accordance with subsection (b) determine whether any species is an endangered species or a threatened species because of any of the following factors:

A. the present or threatened destruction, modification, or curtailment of its habitat or range;
B. overutilization for commercial, recreational, scientific, or educational purposes;
C. disease or predation;
D. the inadequacy of existing regulatory mechanisms; or
E. other natural or manmade factors affecting its continued existence.

Threats from the 2008/2010 CNOR
LPC Conservation Actions

Factor 1: Habitat Degradation

- Loss of Native Rangeland
- Loss of Conservation Reserve Program (CRP) land
- Energy development
- Poor grazing management
- Tree invasion into native grasslands due to inadequate fire frequency
# LPC Conservation Actions

**Factor 1: Habitat Degradation**

Loss of *Native Range in EOR*

<table>
<thead>
<tr>
<th>Year</th>
<th>GAP Native Range Acres</th>
<th>CRP Acres</th>
<th>Est. Total Grassland Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>4,704,072</td>
<td>1,796,086</td>
<td>6,500,158</td>
</tr>
<tr>
<td>2005</td>
<td>5,150,754</td>
<td>1,950,585</td>
<td>7,101,339</td>
</tr>
<tr>
<td>% Change</td>
<td>+9.5%</td>
<td></td>
<td>+9.2%</td>
</tr>
</tbody>
</table>

*Estimates are course due to differing methodologies*
LPC Conservation Actions

*Factor 1: Habitat Degradation*

*CRP Enrollment in LPCH Counties (General & CCRP)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Enrollment (acres)</th>
<th>Expiring Acres</th>
<th>% of 2012 Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2,228,306</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>2,158,723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>2,148,686</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>1,921,880</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>1,905,895</td>
<td>378,088</td>
<td>19.8%</td>
</tr>
<tr>
<td>2013</td>
<td>128,008</td>
<td></td>
<td>6.7%</td>
</tr>
<tr>
<td>2014</td>
<td>69,641</td>
<td></td>
<td>3.7%</td>
</tr>
<tr>
<td>2015</td>
<td>60,049</td>
<td></td>
<td>3.2%</td>
</tr>
<tr>
<td>2016</td>
<td>43,778</td>
<td></td>
<td>2.3%</td>
</tr>
</tbody>
</table>

- 14.5% decline at county scale since 2008 CNOR
- Other programs have kept expiring acres in grass
LPC Conservation Actions

Factor 1: Habitat Degradation
Energy Development in LPCH Range

Wind Generation Facilities
- One operating & seven currently proposed

Drilling Activity
- Observed increase but nothing quantified
- Potential under only ~50% of range
  • Fairly conservative spacing regulations

Transmission lines
- One major line approved in EOR (V-Plan)
  • Follows existing line on edge of occupied habitat
- Two poorly sited proposed lines
Active & Proposed Wind Facilities

<table>
<thead>
<tr>
<th>Status</th>
<th>Concave Polygon Footprint (acres)</th>
<th>% of EOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>214</td>
<td>0.003%</td>
</tr>
<tr>
<td>Proposed</td>
<td>117,279</td>
<td>1.38%</td>
</tr>
<tr>
<td>Under Construction</td>
<td>27,713</td>
<td>0.33%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1.71%</td>
</tr>
</tbody>
</table>

* Projected build-out in draft HCP is even less at <1% of EOR
Active Oil & Gas Well Density, 2010

Legend

Active Oil and Gas Wells per sq. mile
actv_wells
0 - 4
5 - 8
9 - 16
17 - 32
33+

LEPC Estimated Occupied Range
US States

Colorado
Kansas
LPC Conservation Actions

Factor 1: Habitat Degradation

Poor Grazing Management

• Problematic throughout range
  – Especially in low rainfall areas where drought is more frequent
• Not quantified
LPC Conservation Actions

Factor 1: Habitat Degradation
Woody Encroachment

- Major threat in mixed grass prairie
- Habitat loss not quantified
  - adequate methods have been lacking
LPC Conservation Actions
Factor 2: Overutilization

- Harvest <2% of mortality (Hagen et al. 2006, Fields 2004)
  - Insignificant effect on pop. growth (Hagen et al. 2009)
- Harvest ranged from 120-910 birds, 2001-2010
  - Hunters ranged from 300 – 1,200
  - Harvest <5% of 2005 breeding pop. (worst case)
  - Sustainable harvest for grouse (20-30%)
- Mandatory permit recommended to commission
  - Accurate est. of harvest at multiple scales
  - Better species distribution
- Hunting generates revenue & interest
  - Justifies use of PR funds for conservation
Disease & Parasites

- No evidence of disease or parasite-related pop. effects
  - Antibodies for 3 sp. of *Mycoplasma* identified (Hagen et al. 2002)
  - Three helminth parasites documented
    - No significant effect on nest success or survival between heavily and lightly parasitized birds (Robel et al. 2003).

Predation

  - Primary predators are coyotes & gopher snakes. Others include skunks, bobcats, badgers, harriers, ground squirrels, & ravens.
- Predation on nests and young are primary reasons for declining populations (Hagen et al. 2009).
  - Habitat improvements that reduce risk are most effective
LPC Conservation Actions

Factor 4: Regulatory Mechanisms

KS Dept. of Wildlife, Parks, & Tourism (KDWPT)

Current Authority

- K.S.A. 32-807 – authority to conserve and manage state trust species
- K.A.R. 115-25-1 – hunting dates, units, & bag limits for chickens
- K.A.R. 115-15-3 - Required mitigation for publicly funded or permitted projects impacting T&E species
  - State threatened longnose snake
    - Some protection for LPCH (similar ranges)
    - Mitigation required for footprints disturbing >1 acre of veg. (e.g. wind facilities)
- Developed spatial planning tools
  - SGP CHAT
  - Kansas Natural Resource Planner
LPC Conservation Actions

Factor 4: Regulatory Mechanisms

Kansas Corporation Commission (KCC)

Oil & Gas Drilling

- K.S.A. 82-3-103 – permit for all drilling activities
- K.S.A. 82-3-(107-108) – Basic proration orders
  - Requires set-backs of 330 ft. from lease boundary
  - Equates to 10 acres per well (64/section)
- Many formations have specific proration orders
  - Much more stringent spacing and set-backs
# Specific Proration Orders for Sizeable Formations in LPCH Range

<table>
<thead>
<tr>
<th>Formation Name</th>
<th>Unit Size (Acres)</th>
<th>Set-Back (ft.)</th>
<th>Singular Completions</th>
<th>Dual Completion</th>
<th>Max Wells/Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hugoton/Panoma</td>
<td>640</td>
<td>1,250</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Novinger</td>
<td>320</td>
<td>660</td>
<td>1</td>
<td>NA</td>
<td>2</td>
</tr>
<tr>
<td>Glick</td>
<td>640</td>
<td>1,250</td>
<td>1</td>
<td>NA</td>
<td>1</td>
</tr>
<tr>
<td>Greenwood</td>
<td>640</td>
<td>1,250</td>
<td>1</td>
<td>NA</td>
<td>1</td>
</tr>
</tbody>
</table>
LPC Conservation Actions

*Factor 4: Regulatory Mechanisms*

**Kansas Corporation Commission (KCC)**

*Electric Transmission Siting*

- K.S.A. 66-1178 – Requires siting permit
  - public hearing required
  - 3 Member KCC Commission issues final order within 120 days of application
  - Several lines have been adjusted to minimize/eliminate LPCH impacts
    - Example: V-Plan in Red Hills
LPC Conservation Actions

Factor 4: Regulatory Mechanisms

County Commissions

- Provide the only level of regulation for wind power siting
- KDWPT has good relationship with all of the major power purchasers in Kansas and many of the wind developers
LPC Conservation Actions

Factor 5: Other Natural or Manmade Factors

- No other factors identified as causes for pop. declines outside those already discussed
Major LPCH Conservation Efforts

**NRCS**
- Lesser Prairie-Chicken Initiative (LPCI)

**FSA**
- General sign-up CRP *(Already Discussed)*
- LPCH State Acres for Wildlife Enhancement (SAFE)

**KDWPT**
- Landowner Incentive Program (LIP)
- Private Land State Wildlife Grant (SWG)
- State Wildlife Habitat Incentive Program (KSWHIP)
- Voluntary mitigation projects

**USFWS**
- Partners for Fish & Wildlife

**Other Partnership Efforts**
- 5 Positions (NRCS, TNC, KDWPT, & PF)
- USFWS cooperative agreement with KDWPT

Collaborative Research Project
<table>
<thead>
<tr>
<th>Code</th>
<th>Practice</th>
<th>Amount</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>314</td>
<td>Brush Management</td>
<td>2,118.40</td>
<td>Acres</td>
</tr>
<tr>
<td>338</td>
<td>Prescribed Burning</td>
<td>14,318.30</td>
<td>Acres</td>
</tr>
<tr>
<td>340</td>
<td>Cover Crop</td>
<td>36.60</td>
<td>Acres</td>
</tr>
<tr>
<td>382</td>
<td>Fence</td>
<td>155,067.10</td>
<td>Feet</td>
</tr>
<tr>
<td>472</td>
<td>Use Exclusion</td>
<td>7,657.60</td>
<td>Acres</td>
</tr>
<tr>
<td>500</td>
<td>Obstruction Removal</td>
<td>440.30</td>
<td>Feet</td>
</tr>
<tr>
<td>516</td>
<td>Pipeline</td>
<td>170,559.00</td>
<td>Feet</td>
</tr>
<tr>
<td>528</td>
<td>Prescribed Grazing</td>
<td>98,151.30</td>
<td>Acres</td>
</tr>
<tr>
<td>533</td>
<td>Pumping Plant</td>
<td>19.00</td>
<td>No.</td>
</tr>
<tr>
<td>614</td>
<td>Watering Facility</td>
<td>113.00</td>
<td>No.</td>
</tr>
<tr>
<td>642</td>
<td>Water Well</td>
<td>54.00</td>
<td>No.</td>
</tr>
<tr>
<td>645</td>
<td>Upland Wildlife</td>
<td>609.50</td>
<td>Acres</td>
</tr>
</tbody>
</table>

* KDWPT field biologists assist with site evaluations and planning
SAFE

- Targets expiring CRP
- Initial allocation of 30,000 acres
- >28,500 acres already enrolled
- Future changes
  - Request additional acres
  - Re-evaluate focal areas
KDWPT Programs

LIP (2007-2011)
- 22,531 acres improved mostly in Red Hills

Private Land SWG (2009-2011)
- 6,927 acres improved throughout range

KSWHIP (2008-2011)
- 5,844 acres improved throughout range

Voluntary Mitigation for ITC Transmission Line
- 1,288 acres improved in Red Hills

Total = 36,590 acres

Primary practices include tree shearing, prescribed burning, grazing management, and native grass establishment, and perimeter fencing
USFWS Partners Program
(2009-2012)

- 10 Agreements since 2009
  - tree shearing, prescribed grazing, and prescribed burning
  - 8,540 acres affected in Red Hills
Other Conservation Partnerships

• USFWS Cooperative Agreement with KDWPT (1999)
  – Numerous grants over last 12 years
  – Many other contributing partners (e.g. Comanche Pool)
  – 26 wildlife extension agreements from 2000-2011 in Red Hills
  – 89,629 acres improved

• 5 positions in NRCS offices to deliver LPCH conservation programs and educational materials
Collaborative Research Project

Multi-year study starting in 2013
  - Multiple agencies and two universities
  - Multiple habitat types in at least 2 states

Evaluate habitat use & demographics relative to:
  1. Energy developments
  2. Grazing practices
  3. CRP type and juxtaposition

Greater than $2.5 million already committed
  - Mostly PR money

KANSAS COOPERATIVE
Fish and Wildlife Research Unit

Kansas
Department of Wildlife, Parks and Tourism

Oklahoma
Department of Wildlife Conservation

US Forest Service
Department of Agriculture

Colorado Parks and Wildlife
Conclusions

• Most serious current threats in Kansas
  • Inadequate burning and grazing south of Ark. River
• Current threats can’t be regulated
• Best tools are voluntary conservation programs
  • almost solely private land
  • landowner co-operation is essential for effectiveness
• Maintaining state authority provides best hope to conserve species
  • established landowner relationships
  • knowledge to guide research and develop conservation programs
  • larger staff to monitor and deliver conservation (PR Funded)
  • demonstrated large-scale success with CRP