40 Years of Counting
Lesser Prairie-Chickens

Lek Surveys on a
20 Square-Mile Tract
in Hamilton County
Kansas

Randy Rodgers
Hamilton County, KS Lesser Prairie-Chicken Survey Area

Mean Annual Precipitation = 17.5”  Drought Year * ≤ 15”  Wet Year * ≥ 20”
### Land Cover Composition of 15 Kansas Lesser Prairie Chicken Survey Areas

<table>
<thead>
<tr>
<th>Land Cover Type</th>
<th>5 m²</th>
<th>14 m²</th>
<th>Survey Areas</th>
<th>20 mi²</th>
<th>Survey Areas</th>
<th>TOTAL</th>
<th>2001-05 Mean No. LPC / mi²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BA</td>
<td>CK</td>
<td>CM</td>
<td>FI</td>
<td>FO</td>
<td>GO</td>
<td>HM</td>
</tr>
<tr>
<td>Sandsage Shrubland</td>
<td>6</td>
<td>16</td>
<td>31</td>
<td>.73</td>
<td>&lt;1</td>
<td>24</td>
<td>&lt;1</td>
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<tr>
<td>Sand Prairie</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13</td>
<td>&lt;1</td>
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<tr>
<td>Western Wheatgrass Prairie</td>
<td>8</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Mixed Prairie</td>
<td>69</td>
<td>23</td>
<td>69</td>
<td>26</td>
<td>26</td>
<td>6</td>
<td>45</td>
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<tr>
<td>Mixed Prairie - Disturbed</td>
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<td>&lt;1</td>
<td>12</td>
<td>2</td>
<td>&lt;1</td>
<td>1</td>
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<tr>
<td>Shortgrass Prairie</td>
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<td>1</td>
<td>17</td>
<td>2</td>
<td>51</td>
<td>21</td>
<td>15</td>
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<tr>
<td>Conservation Reserve</td>
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<td>1</td>
<td>1</td>
<td>21</td>
<td>36</td>
<td>2</td>
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<tr>
<td>Cropland</td>
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<td>17</td>
<td>11</td>
<td>36</td>
<td>45</td>
<td>19</td>
<td>5</td>
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<tr>
<td>Other</td>
<td>16</td>
<td>11</td>
<td>19</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

2001-05 Mean No. LPC / mi²: 0.9, 9.0, 2.7, 2.5, 4.7, 9.1, 9.6, 8.2, 1.4, 3.4, 8.3, 5.7, NA, 0.9, 0.0
Survey Methods

-- Survey Occurs from March 20 – April 20

-- Listening Runs (2) Began 40 Minutes Before Sunrise

-- Stations: 1 Mile Apart Along Two 5-Mile Road Segments

-- Leks Within 1 Mile of Road were Located & Flushed on Foot No Later Than 90 Minutes After Sunrise

-- 2 Flush Counts Per Lek Were Typical . . . Sometimes 1 . . . with the Higher Count Used

-- Leks were Defined as Having $\geq$ 3 Displaying Males
Savory-Style Grazing Begun Late-1990’s
Savory Grazing Expanded but Modified with Larger Pastures
REST

Image Date: March 2014
Vegetation Conditions Have Been Highly Variable on These Deep Sandy Soils

Average Conditions: Sand Sagebrush, Sand Dropseed, Yucca
Above Average Conditions
Drought Conditions
After Heavy Grazing
Periodic Dominance of Various Herbaceous Species Also Occur Frequently

Sand Dropseed -- Wild Buckwheat Mosaic
Prairie Annual Sunflower
After Rest & Rain

Sand Bluestem

Sand Dropseed
Hamilton County, KS Lesser Prairie-Chicken Survey Trend
Flush Count = 79
1988

Flush Count = 133
Flush Count = 108
Flush Count = 99

1990

Flush Count
1993 *

Flush Count = 61
1995

Flush Count = 52
Flush Count = 117
Flush Count = 156
Flush Count = 108
Flush Count = 84

2004 *
Flush Count = 46
2012 *

Flush Count = 14
Flush Count = 9

2013 *
Flush Count = 5
61 Leks Located Within Survey Area  1979-2019
61 Leks Located Within Survey Area  1979-2019
After 39 Consecutive Years of Occupancy, This Lek was Abandoned in 2018 due to Heavy Vegetation and Low Populations
But . . . It was Reoccupied in 2019 by 6 Males
Lek Persistence in Hamilton County, KS

Mean Lek Duration was 2.6 Years
Maximum Lek Duration was 39 Years
General Observations

Over 41 Springs:
- Mean No. Leks was 5.4 / Year . . . Range of 1 to 11
- Mean Lek Flush Count was 12.8 / Lek . . . Maximum of 34
- Mean Survey Flush Count was 72.2 / Year . . . Range of 5 to 156

Short Duration of Leks or Lek “Shifting” was Common with
- Approximately 61 Sites Used (excluding shifts < 100 m)
  -- Mainly due to Annual Changes in Vegetation
    Driven by Precipitation and Grazing Patterns

Accurate Listening-Based Surveys of Low Populations are
- Probably More Challenging than Surveys of High Populations
  -- When Populations are Low . . .
    -- Less Acoustic Synergy - Among Males on the Lek
      - Between Leks
    -- Results in Proportionally Less Vocalization
      & Shorter Duration of Vocalization / Morning
LPCH Populations Averaged 82% Lower in the Last Decade Than in the First Decade of the Survey
LPCH Population Decline
on the
Hamilton County, Kansas Survey Area

-- Driven Mainly by Droughts (Particularly 2010-14) and Other Extreme Weather Events

-- Intensified Grazing Associated with Implementation of a Savory-Type Grazing System in the Late 90’s Probably also Contributed to This Decline
Each successive LPCH Population Peak Since 2000 Has Been Lower Than the Prior Peak