# Streaked Horned Lark Recovery Implementation Strategy / ACTION PLAN

**2017-2018 - FINAL DRAFT**

This action plan was developed by the Streaked Horned Lark Working Group and is updated each year at the group's annual meeting. The purpose of this action plan is to identify the most important conservation actions that can be conducted over the next 3-5 years to support streaked horned lark recovery. Since this list of actions focuses on the near-term, it is not a complete list of all the specific tasks that are necessary to achieve recovery of the lark. Additional tasks will be identified as new information becomes available, and completed tasks will be dropped from this list. Text highlighted in gray or green indicates language from the Draft Recovery Plan for the Streaked Horned Lark. Tasks beneath the highlighted rows are specific conservation actions that the working group has identified to support those recovery actions.

Note on task ranking: Some of the tasks on this action plan have been assigned a number in the "Rank" column. Only the 15 highest priority tasks are ranked, and in some cases, several tasks are assigned the same rank (e.g., habitat protection in each recovery zone has a rank of 1). Beyond the 15 top priority tasks, some other tasks have an * in the rank column, which signifies increased emphasis, but not at the level of a numerical rank. These task rankings indicate the near-term priorities for implementation of a specific project, as opposed to the recovery action priority rankings (1a, 1b, 2, 3) in the recovery plan which indicate a general recovery action's longer-term level of importance for preventing extinction or significant negative impacts.

## Recovery Action 1. Determine Population Status, Trend, and Current Distribution

**Accurate, current information is essential to track progress towards recovery goals.**

### Recovery Action 1.1 Complete development of a rangewide population monitoring protocol.

1. Complete development of WV component of survey protocol in order to finalize range wide standardized survey and monitoring protocols that address occupancy, abundance, trends, use and spatial distribution.

### Recovery Action 1.2 Monitor the rangewide population, tracking trends and distribution.

- a. Implement rangewide survey protocol (e.g. roadside, off road, occupied, unoccupied).
- b. Continue to identify and incorporate new and historic sites into rangewide survey protocol.
- c. Continue to monitor priority sites.
- 2. Develop SHLA ID training program/materials and consider a certification process that integrates potential surveymen with (to be) established protocols.
- a. Develop an ID guide to the horned lark subspecies in the range of SHLA.

## Recovery Action 2. Conserve and Enhance Populations

**Increasing the number of sites managed for larks across the range will address the primary threat of habitat loss to the species. Improved management will increase survival and nesting success, resulting in population growth.**

### Recovery Action 2.1 Conserve larks in the South Puget Lowlands region

#### >> 2.1.1. Implement conservation actions on Core sites in the South Puget Lowlands region

**>> 2.1.1.1 Identify and conserve current and potentially suitable sites**

1. Identify and conserve suitable sites.

**>> 2.1.1.2 Implement conservation programs that enhance survival on Core sites.**

1. Conduct habitat restoration to increase and improve lark habitat.
   - a. Implement habitat restoration activities on breeding ground using all available tools (e.g., herbicide, fire). Focus on invasives that change the structure of the habitat.
   - b. Monitor effectiveness of lark habitat created by prairie enhancement.
2. Evaluate success of genetic rescue and consider future need.
3. Address identified threats: Initiate protection measures, reduce predator impacts, redirect recreation, airport disturbance, land management activities.
   - a. Redirect, adapt, or modify timing of incompatible aspects of land uses, e.g. airshows, police training, dog trials.

#### >> 2.1.2. Implement conservation actions on Matrix lands in the South Puget Lowlands region

**>> 2.1.2.1 Identify priority Matrix lands**

1. Identify priority matrix lands and work with appropriate partners to ensure larks are a priority for funding programs (e.g., easements) and landowner assistance (e.g. Partner Biologists).

**>> 2.1.2.2. Develop and implement conservation programs that enhance survival on Matrix lands.**

1. Enhance existing habitat and increase amount of available habitat where appropriate, and monitor effectiveness.
   - 2. Encourage partners to include management for larks in land protection plans when opportunities are available (e.g. America’s Great Outdoors Initiative, SWAPs, legislative initiatives, HCP, Safe Harbors).
   - 3. Address identified threats: Initiate protection measures, reduce predator impacts, redirect recreation, airport activities, land management activities.
      - a. Work with appropriate partners to develop and implement airport management guidelines to minimize take.

<table>
<thead>
<tr>
<th>Task</th>
<th>Rank</th>
<th>Implementing Party</th>
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<tbody>
<tr>
<td>1. Implement rangewide survey protocol (e.g. roadside, off road, occupied, unoccupied).</td>
<td>2</td>
<td>Working Group</td>
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<td>*</td>
<td>USFWS, WDFW, CNLM, OSU</td>
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<tr>
<td>1.1. Identify and conserve current and potentially suitable sites.</td>
<td>1</td>
<td>CNLM, NRCS, USFWS, JBLM, Thurston Co., WDFW</td>
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<td>1.1.2. Implement conservation programs that enhance survival on Core sites.</td>
<td>*</td>
<td>JBLM, CNLM, USFWS, WDFW</td>
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<td>9</td>
<td>USFWS, WDFW, CNLM, Private</td>
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<td>CNLM, Ports, FAA, WDFW, JBLM</td>
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### Recovery Action 2.2 Conserve larks in the Coast and River region

#### 2.2.1 Implement conservation actions on Core sites in the Coast and River region

- **2.2.1.1 Identify and conserve current and potentially suitable sites**
  - Where feasible, incorporate potential core sites into NWR system for management.
  - 1. Identify potential core sites for recovery.
  - 2. Secure core sites (includes acquisition, endowment).

- **2.2.1.2 Implement conservation programs that enhance survival on Core sites**
  - 1. Conduct habitat restoration to increase and improve lark habitat
  - 2. Address identified threats: Initiate protection measures, reduce predator impacts, redirect recreation, airport disturbance, land management activities.

- **2.2.2 Implement conservation actions on Matrix lands in the Coast and River region**

  - **2.2.2.1 Identify priority Matrix lands**
  - 1. Identify priority matrix lands and work with appropriate partners to ensure larks are a priority for funding programs (e.g., easements) and landowner assistance.

  - **2.2.2.2 Develop and implement conservation programs that enhance survival on Matrix lands**
  - 1. Enhance existing habitat and increase amount of available habitat where appropriate, and monitor effectiveness.
  - 2. Encourage partners to include management for larks in land protection plans when opportunities are available (e.g., America’s Great Outdoors Initiative, SWAPs, legislative initiatives, HCP, Safe Harbor Agreements).
  - 3. Address identified threats: Initiate protection measures, reduce predator impacts, redirect recreation, airport activities, and land management activities.
    - a. Redirect, adapt, or modify timing of incompatible aspects of land uses, e.g. dredged material placement, airport management practices.
    - b. Implement habitat restoration activities on potential core sites (e.g. St. Johns, Sauvie, Gov’t island).
    - c. Test and refine habitat suitability model for dredged material sites.

### Recovery Action 2.3 Conserve larks in the Willamette Valley region

#### 2.3.1 Implement conservation actions on Core sites in the Willamette Valley region

- **2.3.1.1 Identify and conserve current and potentially suitable sites**
  - Where feasible, incorporate potential core sites into NWR system for management.
  - 1. Identify potential core sites for recovery.
  - 2. Secure core sites (includes acquisition, endowment).

- **2.3.1.2 Implement conservation programs that enhance survival on Core sites**
  - 1. Enhance existing habitat and increase amount of available habitat where appropriate, and monitor effectiveness.
  - 2. Address identified threats: Initiate protection measures, reduce predator impacts, redirect recreation, airport disturbance, land management activities.
    - a. Redirect, adapt, or modify timing of incompatible aspects of land uses, e.g. dredged material placement, airport management practices.
    - b. Implement habitat restoration activities on potential core sites (e.g. St. Johns, Sauvie, Gov’t island).
    - c. Align SHLA habitat enhancement with fire training needs.

#### 2.3.2 Implement conservation actions on Matrix lands in the Willamette Valley region

- **2.3.2.1 Identify priority Matrix lands**
  - 1. Identify priority matrix lands and work with appropriate partners to ensure larks are a priority for funding programs (e.g., easements) and landowner assistance.
    - a. Apply landscape-scale analysis tools to identify priority Matrix lands using ArcGIS.
  - 2. Facilitate lark-beneficial habitat management.
    - a. Implement habitat restoration activities on breeding and wintering grounds.
    - b. Monitor effectiveness of lark habitat created by habitat enhancement (prairies or vernal pools) or modification of agricultural practices.
    - c. Align SHLA habitat enhancement with fire training needs.

- **2.3.2.2 Develop and implement conservation programs that enhance survival on Matrix lands**
  - 1. Enhance existing habitat, increase amount of available habitat where appropriate, and monitor effectiveness of habitat management.
    - a. Investigate potential of leasing and managing sites for lark habitat
    - 2. Facilitate lark-beneficial habitat management.
      - a. Encourage federal & state agencies to promote incentive programs to benefit larks on working lands.
      - b. Refine and implement management prescriptions to create breeding habitat and winter habitat in agricultural matrix.
  - 3. Encourage partners to include management for larks in land protection plans when opportunities are available (e.g., America’s Great Outdoors Initiative, Willamette Wildlife Mitigation Program, SWAPs, legislative initiatives, HCP, Safe Harbor Agreements).
  - 4. Address identified threats: Initiate protection measures, reduce predator impacts, redirect recreation, airport activities and land management activities.
    - a. Redirect, adapt, or modify timing of incompatible aspects of land uses, e.g. airport mgmt practices.
    - b. Work with appropriate partners to develop and implement airport mgmt guidelines to minimize take.
### Recovery Action 3. Identify Limiting Factors and Develop Solutions

**Better information and new tools are essential to make progress towards recovery.**

#### Recovery Action 3.1 Conduct research on threats to population viability

1. Identify potential sink habitats and identify a process for potential management actions (e.g., creating recipient habitats, dissuasion at current sites), use qualitative approach as first step.  
   -  *WDFW, OSU, USFWS, CNLM*

2. Track current climate change science to inform the role of climate change to streaked horned lark conservation decision making, e.g. northward expansion of prairie habitat.  
   -  *WDFW, Smithsonian*

3. Complete study on genetic variability and population structuring.  
   -  *WDFW, Smithsonia*


#### 3.1.1. Develop acceptable methods of predator control and implement where needed.

1. Determine factors limiting juvenile and adult survivorship in OR & WA (e.g., predation). Does adult and juvenile survivorship (esp. females) limit population growth?  
   -  *OSU, WDFW, CNLM, JBLM, others*

2. Evaluate need to control predators (e.g., at airports) and if implemented, evaluate the effect of predator management (e.g., at Coast, McChord) and its influence on population trend.

#### 3.1.2. Investigate the effects of various herbicides and pesticides used in the agricultural landscapes where larks are found.

1. Evaluate effect of chemical applications (e.g., zinc phosphide, Maki baits, herbicides) to larks (i.e., are they affected?) and if so, are there different application techniques that can eliminate negative effect?  
   -  *OSU, FWS, PoP*

#### 3.1.3. Determine additional critical research areas to advance recovery.

1. Understand migratory and wintering movements.  
   -  *OSU, WDFW, CNLM*

   - a. Collect and integrate existing color banded resight information from Oregon and Washington to inform conservation planning and habitat management.

   - b. Inform and mobilize community science efforts (e.g. Audubon) to collect lark locations and new color band resights, especially in winter.

2. Identify important features that affect habitat quality and lark productivity.  
   -  *WV Partner Biologist, WVNWRC, OSU, CNLM*

   - a. Determine the effect of field operations (activities and timing), habitat parameters, and seasonality on nest success on working lands in OR (e.g., grass seed, clover, mint, Christmas trees, row crops, pasture).

   - b. Understand habitat quality in relation to food availability, including wintering habitat quality.

   - c. Use juvenile habitat use.

3. Evaluate the effect of habitat enhancement actions on lark vital rates.

4. Complete consolidated rangewide demographic database for lark data.

   - a. Update and refine rangewide life-stage simulation analysis to identify what management efforts should be implemented to reverse population declines and where those efforts would be most effective.

#### Recovery Action 3.2 Develop tools to protect and enhance populations, to create new populations, and to expand the distribution of the lark.

##### 3.2.1 Evaluate appropriateness and feasibility of population augmentation, relocation or reintroduction (e.g., investigate lark colonization, captive rearing, hacking, cross fostering, genetic rescue, translocation).

1. Implement strategies to move or dissuade larks from high risk areas.  
   -  *FAA, WDFW, OSU, Oregon Zoo, CNLM*

#### 3.2.2 Evaluate the role of conspecific attraction in establishing conditions that are needed to attract a breeding population to a new site.

1. Further research the effect of song playback, decoys, or other social cues on lark colonization of new sites.

#### Recovery Action 3.3 Develop tools to enhance habitat and lark survival and reproduction on Matrix lands.

##### 3.3.1 Evaluate and map high priority Matrix lands (e.g. potentially suitable agricultural lands near currently occupied sites, within Priority Conservation Areas, etc.) to direct incentives and outreach to the areas most likely to provide successful lark habitat sites.

##### 3.3.2 Develop a list of practices to protect larks during the breeding season on agricultural lands.

1. Determine the effect of field operations (activities and timing), habitat parameters, and seasonality on nest success on working lands in OR (e.g., grass seed, clover, mint, Christmas trees, row crops, pasture).

   - a. Identify “lark compatible crops” (i.e., those that can allow successful breeding by larks) and develop management prescriptions to enhance breeding success.

   - b. Understand habitat quality in relation to food availability, including wintering habitat quality.

2. Understand migratory and wintering movements.

   - a. Collect and integrate existing color banded resight information from Oregon and Washington to inform conservation planning and habitat management.

   - b. Inform and mobilize community science efforts (e.g. Audubon) to collect lark locations and new color band resights, especially in winter.

3. Complete study on genetic variability and population structuring.

   - a. Update and refine rangewide life-stage simulation analysis to identify what management efforts should be implemented to reverse population declines and where those efforts would be most effective.

#### 3.3.3. Evaluate novel habitat creation options such as leasing habitat for larks, selective field fallowing, or conservation burning.

1. Refine and implement management prescriptions to create breeding habitat and develop winter habitat prescription in agricultural matrix and understand effect on lark vital rates.  
   -  *WVNWRC, WV Partner Biologist*

#### 3.3.4 Develop incentive programs for agricultural producers to create and maintain appropriate lark habitat on working lands.

1. Investigate the value and feasibility of restoration techniques (e.g. grazing, conservation burning) for larks and its potential as an incentive for private landowners.

#### Recovery Action 3.4 Develop a Programmatic Safe Harbor Agreement to promote lark habitat creation on private agricultural lands.

1. Evaluate interest level and needs of agricultural landowners who might participate in a Safe Harbor Agreement on private farm lands.  
   -  *USFWS, WV Partner Biologist, OFB*
### Recovery Action 3.5 Develop a mitigation strategy for offsetting the effects of non-federal development in occupied lark habitats.

1. Develop mitigation strategies and standardized criteria. Incorporate new USFWS mitigation policies and lark recovery objectives.

### Recovery Action 3.6 Develop strategies to integrate lark conservation into landscapes managed for recovery of other rare prairie and grassland species in the range of the lark.

1. Encourage lark compatible elements in prairie and grassland habitat restoration and mitigation projects.

### Recovery Action 3.7 Develop a Memorandum of Understanding with the Federal Aviation Administration (FAA) to guide FAA contributions toward conserving lark populations, including establishing new lark populations at non-airport sites.

### Recovery Action 3.8 Develop other strategies necessary to address factors affecting larks and their habitat.

1. Evaluate impacts of management actions that occur in lark occupied areas.
   a. Evaluate existing data and ID information gaps regarding the role of disturbances (e.g., recreation, military activities, industrial uses, researchers, habitat enhancement actions, dredge material deposition, airfield management actions, agricultural activities) that may affect survival in all life stages (i.e. nests, juveniles, adults), and prioritize development of BMPs for certain actions.

## Recovery Action 4. Promote Outreach and Cooperation with Stakeholders and Partner Agencies

*Recovery will require working in partnership with Federal, state and private entities to recover the lark across the range.*

### Recovery Action 4.1 Facilitate coordination and information sharing.

1. Maintain range-wide working group and coordination.
2. Open and maintain working groups/informational sharing forums about larks revolving around industry-specific issues (e.g. airports, water ports, agriculture, developers/land use planning).
3. Continue coordination between habitat managers for larks and other grassland species (e.g. workshop).

### Recovery Action 4.2 Develop outreach and education materials.

1. Develop and disseminate habitat prescriptions specifically for agricultural producers (e.g. abridge Tech Note for lay audience).
2. Conduct outreach to permitting entities (e.g. counties/cities, ODSL, USACE regulatory branch) regarding potential for lark impacts from development and other permitted activities.
3. Develop materials on habitat management and restoration for land managers including habitat targets.
4. Reach out to additional partners by promoting regional recovery and habitat management (e.g. WA/OR State Lands, WA/OR State Parks, land trusts, mitigation banks, SWCDs, Pacific Birds Habitat Joint Venture, North Pacific LLC, LCREP).
5. Partner with larger entities (e.g. Cornell Lab of Ornithology) to expand understanding and support for lark conservation.

### Recovery Action 4.3 Facilitate coordination and information sharing.

*USFWS, Working Group

### Recovery Action 4.4 Develop outreach and education materials.

*WDFW, OSU, CNLM, JBLM

### Recovery Action 4.5 Develop and implement a post-delisting monitoring plan.

*As the lark approaches the targets established in this recovery plan, a plan to monitor after de-listing will be needed to ensure that the rangewide population remains secure.*