



Department of Defense Legacy Resource Management Program

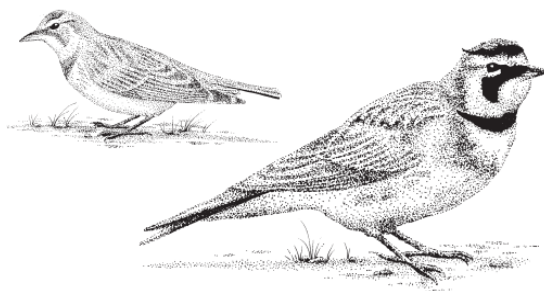
Legacy 09-213

Strategy for the Cooperative Recovery of Rare Species Affecting Training Ranges:

Streaked Horn Lark: 2010 Workshop Proceedings & 2009 and 2010 Working Group Meeting Minutes

The Nature Conservancy of Washington

March 2011



Streaked Horned Lark and Pacific Northwest Airports *A Collaborative Workshop*

9 March 2011
Water Resources Education Center
Vancouver, WA



*Hosted by The Nature Conservancy with support from the
US Fish and Wildlife Service and the Department of Defense Legacy Program.*

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Agenda

Part I: Welcome and Overview

- 8:30 – 9:00 Registration Open
Workshop Materials and Morning Fare Available
- 9:00 – 9:10 Welcome and Workshop Purpose
Hannah Anderson, The Nature Conservancy

Part II: National Perspective

- 9:10 – 9:25 Birds and Airports: National Overview
Hannah Anderson, The Nature Conservancy

9:25 – 11:50 Panel: Aviation

- 9:25– 9:45 Managing Wildlife Hazards at Airports
Laurence Schafer, USDA Wildlife Services
- 9:45 – 10:00 US Navy Bird Air Strike Hazard Program
Matthew Klope, Naval Facilities Engineering Command
- 10:00 – 10:15 PDX Wildlife Hazard Management Program
Nick Atwell, Port of Portland

10:15– 10:35 Break *Morning Fare Available*

- 10:35 – 11:20 Avian Responses to Grassland Management on Military Airfields in the US Northeast.
Kim Peters, New Jersey Audubon Society
- 11:20 – 11:50 Panel Discussion Period
Moderated Q & A for Aviation Panel

11:50 – 12:45 Lunch *Buffet provided for all participants, in the same space as presentations.*

Part III: Streaked Horned Larks in the Pacific Northwest

12:45 – 1:45 Panel: Natural History and Conservation

- 12:45 – 1:00 Streaked Horned Lark Ecology and Natural History
Scott Pearson, Washington Department of Fish and Wildlife
- 1:00 – 1:15 Lark Conservation and Recovery
Hannah Anderson, The Nature Conservancy

1:15 – 1:30 Larks in a Regulatory Environment
Cat Brown, US Fish and Wildlife Service

1:30 – 1:45 Panel Discussion
Moderated Q & A for Lark Natural History and Conservation Panel

2:15 – 2:30 Break

2:30 – 4:00 Panel: Larks on your Land

2:30 – 2:45 Department of Defense Approach to Rare Species Conservation
Paul Steucke, Environmental Chief, Joint Base Lewis-McChord

2:45 – 3:00 Larks at PDX – A Compatible Land Use Management Perspective
Dana R. Green, Port of Portland

3:00 – 3:15 Streaked Horned Larks at the Corvallis Airport
Randy Moore, Oregon State University

3:15 – 3:30 Streaked Horned Larks at the Olympia Airport
Michelle Tirhi, Washington Department of Fish and Wildlife

3:30 – 4:00 Panel Discussion
Moderated Q & A for Larks on your Land Panel

4:00 Adjourn

**Thursday, 10 March 2010, 8:45 – 12:00
Portland International Airport Field Trip**

The Port of Portland will host a morning field trip to Portland International Airport, where participants will have the opportunity to see the airfield and learn more about the wildlife program firsthand. We'll also see the SW Quad, where the larks are known to breed. Whether we see the larks themselves will depend on their cooperation. The majority of the tour will take place from the bus, but we will have the opportunity to disembark at the lark site. Bring weather appropriate clothing and binoculars, if you have them.

Participants will meet at 8:45 in the **PDX Conference Center**, which is inside the PDX Terminal up the stairs from the clock tower, around the corner from Coffee People. (*Call Hannah that morning at 360-701-8803 for assistance*).

Free parking in PDX parking garage for participants. You must **bring your parking ticket with you to the conference center** for validation.

We have limited space for the field trip and first priority will go to those that indicated interest with registration. **Please confirm your participation on sign-in sheet.**

Presentation Abstracts and Speaker Biographies

9:10 – 9:25 **Birds and Airports: National Overview**

Hannah Anderson, The Nature Conservancy

We will set the stage for the workshop by presenting a broad-scale national background to the issues revolving around birds at airports including safety concerns, general management guidelines, and rare and/or listed species conservation and management at airports.

Hannah Anderson is the Cooperative Conservation Program Manager for the South Puget Sound office of The Nature Conservancy of Washington. Her program focuses on promoting and facilitating recovery of rare species occurring in prairies and oak woodlands of the Pacific Northwest. She facilitates several cooperative efforts for rare species conservation including the streaked horned lark range-wide working group and the Joint Base Lewis-McChord Army Compatible Use Buffer Program. She has been engaged in streaked horned lark ecology and conservation since 2004, when she completed her Master's thesis with the species. She continues on-the-ground lark work in the south Puget Sound and the islands of the lower Columbia River.

9:25 – 9:45 **Managing Wildlife Hazards at Airports**

Laurence M. Schafer, USDA Wildlife Services Airport Coordinator, WA/AK

Every airport is responsible for providing a safe operating environment. Wildlife in and around airports put themselves and aviation safety at risk. Substantial lawsuits have been lost when airport management was shown to not be doing their due diligence in mitigating wildlife hazards. Wildlife strikes cost U.S. civil aviation \$500-\$600M in losses each year, are responsible for substantial delays and cancelled flights, and nearly always kill the wildlife causing the strike. An average of 7,300 strikes were reported each year between 2004 and 2008, and only about 25% of all strikes are actually reported. Birds are responsible for roughly 97% of all reported strikes with only 24% occurring between climb and descent. Simply, most wildlife strikes occur inside or immediately adjacent to the airfield. When species was confirmed, 12% of strikes involved grassland passerines (excluding European starlings). Ducks, geese, raptors, and gulls are the most commonly struck species and responsible for most damage. The principle hierarchy of airport wildlife management BMPs is habitat management, exclusion, harassment, and lethal reinforcement. Habitat management focuses on creating an environment that possess the fewest attractive components for the greatest number of hazardous species possible. Increasing the intensity of direct control efforts (i.e., harassment and lethal reinforcement) is not an acceptable substitute for creating or allowing the presence of things which attract hazardous wildlife. Food, water, and shelter are key attractants. Any sort of management that creates habitat for one wildlife species, creates a feeding source for other wildlife species. Managing habitat for threatened, endangered, and species of special concern limits habitat management options to deter other wildlife. In order to reduce total bird harassment and mortality on airfields should rely upon employing the best habitat management practices available. Synergistic and stochastic effects must not be ignored when developing habitat management alternatives on and around

airfields. Doing so could put airport management at risk of being viewed as not performing their due diligence in mitigating wildlife hazards.

Laurence M. Schafer began his career with USDA Wildlife Services after earning his BS in Wildlife Biology from the University of Montana in 1997. His first position was as a specialist at Atlantic City International Airport. In 1999, he became the Project Leader for the Wildlife Program at O'Hare International Airport, where he conducted his master's research on the efficacy of raptor translocation as a management tool. Though devastated to have to leave the soothing climate of Chicago, Laurence accepted a position as the Airport Coordinator/Staff Wildlife Biologist for USDA Wildlife Services in Washington and Alaska in 2002. While there, Laurence has assisted with the development of numerous Wildlife Hazard Assessments and Management Plans for WA and AK airports. His secondary interests are collaborating with the USDA Wildlife Services National Wildlife Research Center and other agencies to develop additional operational management tools and Wildlife Hazard Assessment techniques. If Laurence cannot be reached by phone, he's probably too busy fighting a fish or taking his Labradors hunting.

9:45 – 10:00 US Navy Bird Airstrike Hazard Program

*Matthew W. Klope, Wildlife Biologist, Naval Facilities Engineering Command,
BASH Program Manager*

An overview of the Navy's BASH Program will be presented with emphasis on airport habitat management and wildlife issues. Topics will include the Navy's Natural Resources Managers responsibilities, the Facility Integrated Natural Resources Management Plan (INRMP), and NEPA review responsibilities for proposed projects that might increase the risk of a BASH event to the military aviator.

Matthew Klope has worked for the Department of the Navy for the past 31 years as a wildlife biologist managing natural resources management and environmental protection programs at two Navy facilities on the west coast. For the past ten years Matthew has been the Navy's BASH Program Manager for the NAVFAC Headquarters. His duties include the coordination between Aviation Operations, Aviation Safety and Natural Resources Departments regarding all aspects of the BASH Program involving Navy and Marine Corps airfields worldwide.

10:00 – 10:15 PDX Wildlife Hazard Management Program

Nick Atwell, Wildlife Manager, Aviation, Port of Portland

The overall objective of the Port of Portland's (Port) Wildlife Hazard Management Plan (WHMP) is to develop an integrated and adaptive program that effectively manages risk at the Portland International Airport (PDX) by reducing the probability of wildlife/aircraft collisions. Wildlife exclusion fencing was installed around the airfield perimeter in 1997 and has reduced the incursion of terrestrial wildlife onto the airfield to a manageable level. Avian species, however, remain a statistically higher risk for aircraft at PDX, especially during the critical phases of flight. Consequently, the risk evaluation process of the WHMP focuses on avian wildlife. It is recognized that the risk of a bird strike at PDX can never be completely eliminated, given the eco-regional location of the airport on the Pacific flyway and at the

confluence of two major river systems, all of which serve as major movement corridors for migratory and resident species of birds. Among the most hazardous birds to aircraft operations are raptors. The raptor monitoring, trapping, banding, and translocation program seeks to identify and monitor resident breeding Red-tailed Hawks and control the twice annual influx of non-resident migratory and transient raptors. The underlying premise of the Wildlife Hazard Management program is that it is possible to manage the risk to an acceptable level. The intent of the WHMP is to provide the necessary direction to do so, in a scientifically sound manner, utilizing non-lethal means wherever possible.

Nick Atwell started working for the Port of Portland dealing with Aviation Wildlife in 1998 and then moved onto the Natural Resources Department in 1999. There he worked as a Natural Resources Specialist which required being a Wildlife Biologist & Wetland Scientist. Nick's current responsibilities at PDX include managing a full-time proactive aviation wildlife management program, conducting research into new non-lethal wildlife deterrents, and making habitat modification recommendations while focusing on environmental policy/regulations. He is a certified Wetland Scientist & Aviation Wildlife Biologist with an Associate's degree in Natural Resources and a Bachelor of Science degree in Organismal Biology.

10:35-11:20 **Avian Responses to Grassland Management on Military Airfields in the US Northeast.**
*Dr. Kim Peters, Director of Research and Monitoring Program,
New Jersey Audubon Society*

Grasslands associated with airfields in the eastern U.S. frequently support breeding populations of regionally important grassland birds, but can also support bird species that are potentially hazardous to aircraft operations. Therefore, a better knowledge of how various species respond to management actions in airfield grasslands will have benefits for both conservation and air safety. We studied the relationships among avian habitat use, nesting success, grassland habitat management, vegetation, and landscape characteristics on three military airfields in the Northeastern U.S.: Joint Base McGuire-Dix-Lakehurst (New Jersey, LAKEHURST), Westover Air Reserve Base (Massachusetts, WARB), and Patuxent River Naval Air Station (Maryland, PRNAS).

Between 2007 and 2010, we estimated avian densities using line-distance sampling surveys performed bi-monthly during the breeding and migration periods. Data were analyzed as total avian density, as well as by functional groups (e.g., "BASH strike-risk", "conservation-value"). Models showed that on military airfields that were regularly mowed, strike-risk bird density was higher on transects with shorter average vegetation height. In contrast, densities of breeding conservation-value species on two of the bases were positively related to vegetation height. Horned lark was more likely to be present on plots that were mowed according to BASH standards. Models relating avian densities or horned lark presence to immediate conditions at each transect did not strongly indicate that birds were tracking habitat conditions, or changing patterns of use, within seasons.

In 2009 and 2010, we located and monitored 115 grasshopper sparrow nests, 86 eastern meadowlark nests, and 86 nests of other grassland-obligate passerines. Daily survival rates (DSR) were comparable to or higher than those reported in the literature from non-airfield sites.

DSR modeling did not reveal any strong predictors for grasshopper sparrow nesting success. We did observe a potential relationship between DSR and the distance of nests from active runways at WARB and PRNAS, but the direction of these relationships differed between sites. DSR models predicting eastern meadowlark nesting success indicated that horizontal vegetation cover was most strongly associated with success. Although mowing variables did not emerge as good predictors of nest survival for either target species, we did observe some direct mortality due to mowing. We also documented potential secondary mortality due to predation or abandonment. Only 7 horned lark nests were monitored during the study, and all but one nest failed. None of these nests were mowed over while active, likely due to the fact that most nests were initiated before spring mowing regimes were enacted.

Overall, our results suggest that management practices geared toward minimizing bird-aircraft collisions on airfields may not necessarily be in conflict with efforts designed to encourage less risky, vulnerable species. Because of the variable results observed among our study sites, we also strongly encourage that grassland management decisions be made on a site-by-site basis, as management strategies employed at one installation may be ineffective or detrimental at others, even within the same geographic region.

Dr. Kimberly Peters is Director of Research and Monitoring Programs at New Jersey Audubon Society. Founded in 1897, NJAS is one of the oldest independent Audubon societies and has no connection with the National Audubon Society. Kim has over 17 years of experience working with terrestrial and coastal birds in the eastern U.S. She began her ornithological career in 1994 working with gray jays in the Northeast Kingdom of Vermont, received a M.Sc. degree in Fisheries and Wildlife Science from North Carolina State University in 1999, and a Ph.D. in Zoology from Clemson University in 2005. Kim joined NJAS as Director of Research in 2005, and currently heads up their airfield research program, which has grown exponentially since its inception in 2004. The program examines avian response to grassland management on commercial and military airports, and includes several projects in New Jersey and other states in the region. The ultimate goal of the program is to influence airfield management strategies so that they reduce birds that pose a potential strike risk to aircraft, while simultaneously providing suitable habitat for small grassland breeders of conservation concern. Kim is also Co-PI for New Jersey Audubon's Delaware Bay and South America shorebird banding projects, which aim to document potential changes in shorebird stopover and overwintering ecology. In addition, she contributes to the organization's small scale wind farm projects, for which she is responsible for assessing mortality caused by wind turbines.

12:45 – 1:00 **Streaked Horned Lark Natural History**
Dr. Scott Pearson, Research Scientist,
Washington Department of Fish and Wildlife

The streaked horned lark (*Eremophila alpestris strigata*) is a rare migratory sub-species that is classified as a federal candidate for listing under the Endangered Species Act and is listed as endangered by the state of Washington and by the Species at Risk Act in Canada (Canadian Species at Risk Act 2002, c.29). Genetic data indicate that this subspecies is unique, isolated, and has little genetic diversity (Drovetski et al. 2005). Its breeding range has contracted over time with local extirpation from former breeding sites across the range (northern Puget trough, southern British Columbia, the Washington Coast north of Grays Harbor, and the Rogue River

Valley of Oregon) (Rogers 2000, Beauchesne and Cooper 2003, Stinson 2005). In Washington and Oregon, the streaked horned lark nests in grass and forb dominated habitats located in south Puget Sound prairies and airports, coastal Washington dune habitats and on islands in the lower Columbia River, and agricultural and grass dominated habitats of the Willamette Valley. The objective of this talk is to briefly describe lark taxonomy, distribution, life cycle, reproductive rates and demographics, and finally habitat associations.

Scott Pearson is a research scientist with Washington Department of Fish and Wildlife where he oversees the western Washington research team, conducts research on seabirds, shorebirds and on the streaked horned lark. Scott has been conducting research on the streaked horned lark since 2002 and, along with partners, has published results in journals and agency reports describing streaked horned lark genetics, breeding phenology, over-wintering distribution, habitat characteristics at the nest site and territory scales, effects of fire on lark habitat, use of nest enclosures to improve nesting success, demographic information (nest success, fecundity, survival) and population modeling.

1:00 – 1:15	Lark Conservation and Recovery <i>Hannah Anderson, The Nature Conservancy</i>
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Streaked horned larks occur not only at airports, but are also found in a variety of sites in the Pacific Northwest with habitat types ranging from native prairie, to coastal beaches and river islands, to agricultural lands. There is considerable momentum underway to recover the streaked horned lark throughout its range. Partners are working together at unprecedented rates including an inter-entity, range-wide working group that meets annually to share information, discuss conservation opportunities and prioritize recovery actions. We will briefly share the collective research, monitoring, and management actions conducted and underway throughout the range all aimed at conservation of streaked horned larks.

1:15 – 1:30	Larks in the Regulatory Environment <i>Cat Brown, U.S. Fish and Wildlife Service, Oregon Fish and Wildlife Office, Portland, OR.</i>
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The declining status of the streaked horned lark has been recognized by the Federal and state governments in the Pacific Northwest; the subspecies is a candidate for listing under the Federal Endangered Species Act, is listed as endangered in the state of Washington, and is considered sensitive-critical by the Oregon Biodiversity Information Center. The horned lark is also protected by the Migratory Bird Treaty Act. These designations offer a variety of protections to the streaked horned lark. If the subspecies is listed as threatened or endangered by the U.S. Fish and Wildlife Service, additional protections would come into play, including the prohibition against take in section 9 of the Endangered Species Act and the requirement for consultation in section 7. Airport managers with streaked horned larks at their facilities have options that would minimize the effects of listing, including candidate conservation agreements and programmatic consultations.

Cat Brown is a wildlife biologist with the U.S. Fish and Wildlife Service in the Oregon Fish and Wildlife Office in Portland. She works on various endangered species issues (consultation, listing, recovery planning and implementation, and candidate conservation), and is an instructor for classes on Section 7 Consultation for the Service's National Conservation Training Center.

2:30 – 2:45 **Department of Defense Approach to Rare Species Conservation**
Paul Steuke, Environmental Chief, Joint Base Lewis-McChord

Joint Base Lewis-McChord (JBLM) is the third largest U.S. Army installation with a community of approximately 85,000 people, including Service and family members, civilian workers, and retirees. JBLM has taken a proactive approach to sustaining the military's ability to train through candidate species conservation, including managing land for the species as well as supporting off-post habitat management and rare-species recovery. This is just one component of a strategy based in the philosophy of Sustainability, a concept that is rapidly overtaking traditional environmental, social, and business models of operation. Sustainability weaves the natural, social, and business worlds together so as to meet the needs of today's generation, without compromising the ability of future generations to meet their own needs. Simply put, it is the application of the golden rule, from generation to generation.

In 2002 JBLM (then known as Fort Lewis) emerged as a Sustainability leader within the U.S. Army. As currently structured, JBLM's Sustainability Program is guided by eight 25-yr goals across the six areas of Air Quality, Water Resources, Energy, Products & Materials Management, Sustainable Community Team, and Sustainable Training Lands. The two goals under the Sustainable Training Lands initiative are:

- (1) Maintain the ability of JBLM to meet current and future military missions without compromising the integrity of natural and cultural resources, both on the installation and regionally.
- (2) Recover all listed and candidate federal species in South Puget Sound.

To achieve these aggressive goals, JBLM is working regionally, creatively, and aggressively. Good progress has already been made, including efforts under the Army Compatible Use Buffer (ACUB) program. In collaboration with Washington Department of Fish and Wildlife (WDFW), Wolfhaven, the Nature Conservancy, and Washington Department of Natural Resources (WDNR), the Army provides funding for the development of prairie habitat conditions on secured non-military lands for the re-introduction of federal candidate species such as the streaked horned lark; the Mazama pocket gopher; and the Mardon skipper and Taylor's checkerspot butterflies. Other recovery efforts include the Oregon spotted frog and Western bluebird. In partnership with the WDFW and Northwest Trek Wildlife Park, 536 juvenile frogs have been released back into the wild at Dailman Lake on JBLM. Beyond the installation borders, JBLM native Western bluebirds have been successfully reintroduced back onto the San Juan Islands. In keeping with the integrative nature of Sustainability, these ongoing efforts, either directly and/or indirectly, support the military mission and both the social and ecological infrastructure of the installation and region.

Mr. Steucke has a BS Engineering degree and is (since 1997) the Environmental Chief at Joint Base Lewis-McChord, Washington. JBLM Public Works was ISO 14001 certified in 2000. In 2001, JBLM forests were certified sustainable by the Forest Stewardship Council, and in 2002, JBLM began its quest to achieve a sustainable installation by 2025.

Mr. Steucke was a member of the Sustainable Washington Advisory Panel drafting committee and is passionately working to bring about a sustainable planet. He is married to his wife, Stacy of 22 years with four daughters, aged 20 to 28.

2:45 – 3:00 **Larks at PDX – A Compatible Land Use Management Perspective**
Dana R. Green, Natural Resources Manager/Aviation, Port of Portland

The proposed listing of SHL’s has management implications for both current airfield operations and also future airfield development of aviation reserve properties at PDX, such as the SW Quad. This presentation will look at these issues at several scales and will assess management implications as well as management options from the airport’s perspective, both pre-listing and post listing.

Dana Green is the Aviation Natural Resources Manager for the Port of Portland, with program responsibilities at PDX and the General Aviation airports of Hillsboro, and Troutdale. He is responsible for all aspects of natural resource management on airport properties, as well oversight of the wildlife hazard management program specific to aviation safety in an airport environment.

Before joining the Port in 2001, Dana worked for 15 years as a Natural Resources Manager for the United States Air Force, holding management positions on Eglin Air Force Base, the U.S. Air Force Academy, and Peterson Air Force Base. He has almost 35 years of career experience in the fields of forestry, fire ecology, wildlife management, threatened and endangered species management, and natural and cultural resources program management. Dana graduated from the University of Montana with a B.S. in Forest Management.

3:00 – 3:15 **Streaked Horned Larks and the Corvallis Airport**
Dr. Randy Moore, Oregon State University

Corvallis Airport (CVO) harbors the largest known concentration of breeding STHL in existence. CVO is more consistently occupied than any other study site in the south Willamette Valley; it annually hosts between 73-100 pairs, a significant portion of the global population. It also hosts a robust wintering population of usually 100-200 individuals. 4+ years of intensive study has provided good data on wintering and breeding ecology with which to begin crafting a site management plan. The plan should focus on encouraging larks to use alternate agricultural habitat, and on discouraging them from using runway rights of way in winter when the species occurs in flocks.

Randy Moore Received his PhD in Wildlife Ecology from Oregon State University in 2006, the dissertation part of which had nothing to do with streaked horned larks. But he did begin studying them for a side project in 2003-2005; after completing his degree, he undertook

studying STHL ecology full-time. During the 8 years he has been working with STHL in the Oregon segment of their range, he has intensively studied their breeding and wintering ecology at the Corvallis Municipal Airport and PDX, among other non-airport sites. He has been mistaken for an industrial saboteur only once during this period.

3:15 – 3:30 **Streaked Horned Larks at the Olympia Airport**

Michelle Tirhi, District Biologist, Washington Department of Fish and Wildlife

Managing threatened and endangered wildlife in an intensively-used landscape is always a challenge. The South Puget Sound region presents a unique opportunity to creatively manage seven state listed/federal candidate prairie species within urban growth boundaries and urban fringe. The Washington Department of Fish and Wildlife has worked closely with the Olympia Airport since 2005 on preserving a remnant population of Streaked Horned Larks while maintaining the functionality of the airport. This has been a challenging yet rewarding experience in that both wildlife and airport managers have kept open minds and focused on the dual needs of the agencies involved. The Department has reviewed and provided management guidance on the airport's 5-year, 20-year and Master Plan update as well as ad hoc airport management tasks, as needed. This talk will provide an overview of issues and solutions that have arisen thru this working relationship.

Michelle Tirhi earned her Bachelor of Science degree in Wildlife Management from Washington State University completing post graduate work at Brookhaven National Laboratory in Upton, New York on Lyme Disease in deer. Michelle completed graduate courses at University of Washington on Canadian Lynx. From 1991 to 1997, Michelle worked as a Threatened and Endangered Recovery biologist for the Washington Department of Fish and Wildlife (WDFW). From 1997 to 2006, she was the WDFW Urban Biologist for the South Puget Sound region and in 2007, assumed the District Biologist position for Pierce and Thurston Counties. Her duties include conducting biological surveys and inventory, working with cities and counties on wildlife regulatory issues, and managing terrestrial wildlife in the South Puget Sound region. Her night job consists of a daughter (age 10), son (age 8), and husband.

Natural History of the Streaked Horned Lark

(Eremphila alpestris strigata)



Population Status:

The Streaked Horned Lark is a genetically distinct subspecies of the Horned Lark that historically occurred on grass and forb dominated landscapes in the Rogue and Willamette Valleys, the Puget lowlands and Georgia Basin of Washington and British Columbia and the coastal beaches in Washington. The historic distribution has been significantly reduced; today, breeding populations remain in the Willamette Valley, dredge material islands of the Columbia River, coastal beaches of Washington from Grays Harbor south, and the grasslands of South Puget Sound. Populations have been lost from British Columbia, northern Puget Sound, and along the coast north of Grays Harbor in the northern portion of the historic range and from Rogue River Valley in the southern portion of the range.

Conservation Status:

Federal Candidate for listing as endangered or threatened under the US Endangered Species Act
Listed as Endangered in Canada by the Committee on Status of Endangered Species in Canada
Listed as Endangered under the Washington State Endangered Species Act
Red Listed in British Columbia
Designated as State Sensitive Species in Oregon

Threats:

The very small population of animals that is unique and isolated with low genetic diversity makes the birds extremely vulnerable to inbreeding as well as catastrophic events. Demographic modeling indicates that the Washington population is declining rapidly primarily due to low survival and fecundity. Nest predation has been documented as the primary cause of nest failure. Nesting and wintering habitats have been lost to human development, and habitat changes associated with plant community succession and invasion by non-native and invasive grasses and shrubs.

Habitat:

Larks occur on treeless, grass and forb dominated landscapes. Within those non-forested habitats, they select sparsely vegetated areas with both short vegetation and low vegetation density and a relatively high percent of bare ground. Streaked horned larks avoid areas dominated by shrubs and non-native turf-forming grasses.

Breeding:

Migratory portions of the population, arrive on their breeding grounds late February or early March. The nesting season starts in April and continues into August. For migrant populations to the north, they depart the breeding grounds in October and move to over-wintering areas in southern Washington and in the Willamette Valley of Oregon.

The males hold territories and females select nest sites within those territories. Nests are constructed of grasses and small sticks on the ground at the northern base of forb or bunch grass.

Typically, 2-3 nesting attempts are initiated per season.

Females lay from 1 to 5 eggs in each clutch, usually about 3. The incubation period lasts about 12 days, an additional 9 days pass until the young birds fledge from the nest. Both parents feed insects to the young, both on and off the nest.

Wintering:

Streaked horned larks spend their winters in flocks in the Willamette Valley, Washington Coast, and Lower Columbia River islands.

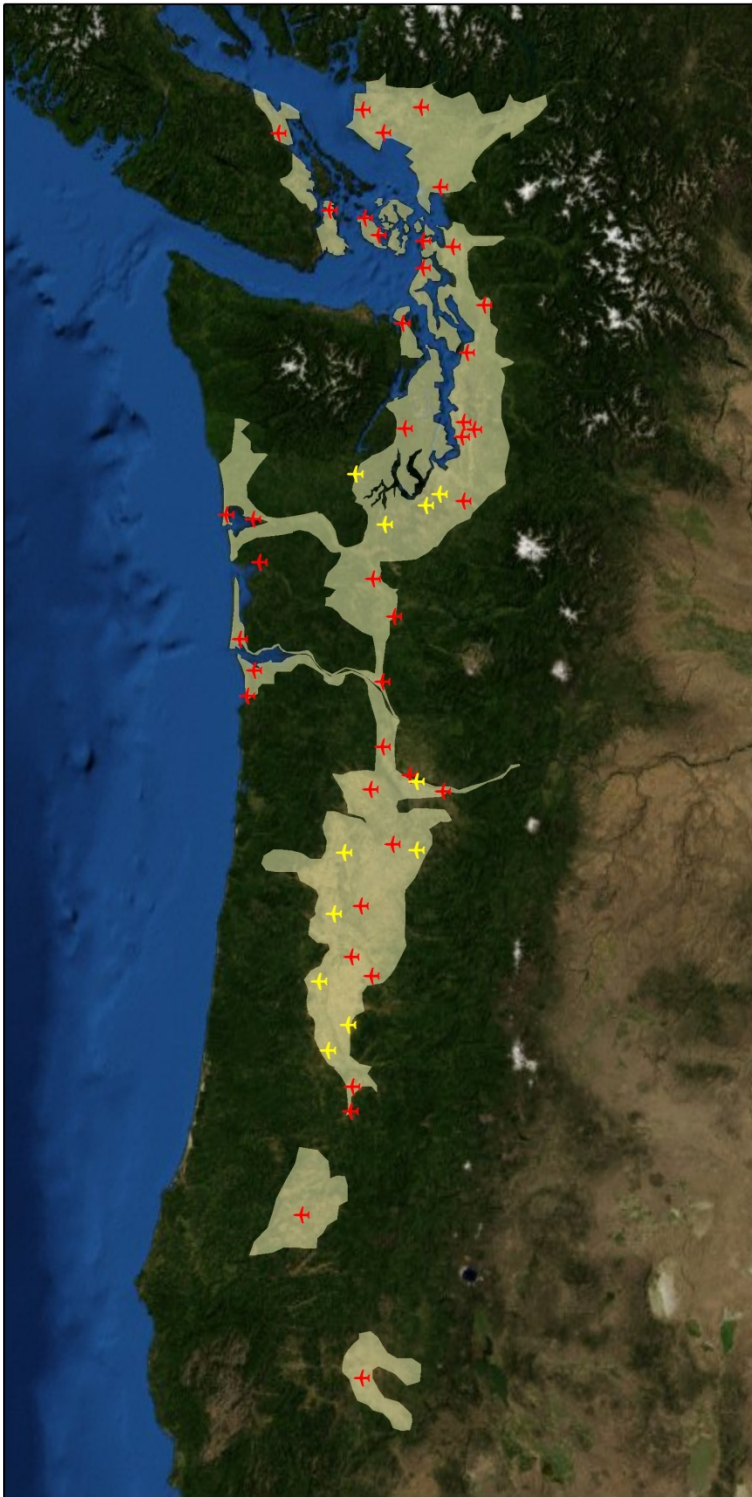
For more information on Streaked Horned Larks, the following references are available at www.southsoundprairies.org/documents.htm



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Streaked Horned Lark Distribution



Streaked Horned Lark Estimated Historic Range and Airports 2011

Legend

- + Airports - confirmed larks
- + Airports - unconfirmed
- Historic Range





Streaked Horned Lark Current Range 2011

Legend

- Confirmed Occupied
- Current Distribution*
- Historic Range



* Due to shifts in land use, particularly from agriculture, only small portions of this area are truly occupied at any one time.



Birds and Airports: A National Literature Review

Can airports be managed to both minimize bird strikes and protect vulnerable grassland bird species such as the streaked horned lark?

This workshop addresses two potentially conflicting issues:

1. Airports present some of the best remaining habitat for grassland birds, including the vulnerable streaked horned lark, and
2. Birds are a known hazard to aircraft.

Reconciling these two issues requires an understanding of their current state of knowledge. This summary provides a summary of the scientific literature on the issues, and notes studies which address the intersection of the two.

1. Airports are some of best remaining habitat for grassland birds, including the vulnerable streaked horned lark

Many species of birds that depend on grassland or savanna habitats have shown substantial overall population declines in North America. During the last 25 years grassland birds have shown steeper, more consistent, and more geographically widespread declines than any other behavioral or ecological guild of North American bird species (Askins et al. 2007). Declines in grassland bird populations can be attributed to a wide variety of factors, including habitat fragmentation and degradation, nest parasitism, pesticides, invasion of woody vegetation, and agricultural intensification (Askins et al. 2007; Johnson & Igl 2001).

Airports and military installations often provide some of the largest areas of grassland habitats available and are therefore attractive to grassland birds (Blackwell et al. 2009; Seamans et al. 2007; Kershner & Bollinger 1996; Osborne & Peterson 1994; Vickery et al. 1994). They host some of the largest remaining populations of grassland birds such as upland sandpipers, grasshopper sparrows, horned larks and vesper sparrows (Seamans et al. 2007). As grassland disappears, airports will become increasingly important for managing grassland birds (Vickery et al. 1994).

Streaked horned larks are known to occur on only a small number of sites in the Pacific Northwest, and those sites include the Olympia Regional Airport, Shelton Airport, Corvallis Airport, Portland Airport, and Joint Base Lewis McChord (including McChord Airfield).

2. Birds are a known hazard to aircraft

Much literature exists on the hazard that wildlife, especially birds, presents to aircraft. It generally falls into three categories: historic strike data, species' rankings according to their strike risk, and how wildlife can be managed to decrease aircraft strike risk.

a. Strike Data

Summary. Wildlife strike data is compiled from reports filed with the FAA through a voluntary reporting program. Globally, wildlife strikes killed more than 219 people and destroyed over 200 aircraft between 1988 and 2007 (Dolbeer et al. 2009). Most air crashes occur when a bird hits the windshield or is inducted into the engine (Sodhi 2002). Civil and military aircraft strike most birds near airports: on takeoff, climb, descent, and landing. However, military aircraft also strike birds during low-level flight at training routes and bombing ranges (Zakrajsek & Bissonette 2005).

The threat of strikes is increasing due to the increased incidence of some wildlife at airports (such as geese), the global increase in air traffic, and the advent of faster and quieter aircraft (Dolbeer et al. 2008).

Wildlife involved. For the 19-year period 1990-2008, 89,727 wildlife strikes were reported to the FAA. Birds were involved in 97.4 percent of the reported strikes, with terrestrial mammals, bats and reptiles making up the remainder (Dolbeer et al. 2009).

Damage. Almost 80 percent of bird strike reports from 1990-2008 reported as to whether any damage resulted from the strike. Of these reports:

- 86 percent indicated the strike did not damage the aircraft;
- 7 percent indicated the aircraft suffered minor damage;
- 4 percent indicated the aircraft suffered substantial damage;
- 3 percent reported an uncertain level of damage; and
- less than 1 percent indicated the aircraft was destroyed as a result of the strike (Dolbeer et al. 2009).

Economic losses. For the 19-year period 1990-2008, reported losses from bird strikes totaled 393,521 hours of aircraft downtime and \$308.3 million in monetary losses (Dolbeer et al. 2009).

Underreporting. Analysis of strike reports from USA airports and airlines indicated that less than 20 percent of all strikes were reported to the FAA. The information on the number of strikes and associated costs compiled from the voluntary reporting program is believed to severely underestimate the magnitude of the problem (Dolbeer et al. 2009).

Total estimated economic losses. Assuming a 20 percent reporting rate, the annual cost of wildlife strikes to the USA civil aviation industry is estimated to be in excess of 592,000 hours of aircraft downtime and \$614 million in monetary losses (Dolbeer et al. 2009).

b. Species risk

Not all birds are equally hazardous to aviation. Airports need to understand the relative risk of birds and other wildlife so that they can prioritize their management actions. (Dolbeer et al. 2000; Dolbeer & Wright 2009) Generally, heavier bird species such as vultures and geese are more hazardous to aircraft than lighter species such as sparrows and swallows (Dolbeer et al. 2000). Also, flocking birds pose a greater risk – an aircraft striking a flock of birds is more likely to sustain damage than if it strikes a solitary bird (Dolbeer et al. 2000).

Based on 18 years' worth of strike data at civilian airports, Dolbeer & Wright compiled a wildlife strike risk ranking table showing the 89 species most commonly represented in strikes in the United States. Horned larks were ranked as #69, with a risk categorization of "Low". Of 659 reported strikes by horned larks during that period, 2 strikes were reported to have caused damage. 27 of the reported strikes involved multiple birds. (Dolbeer & Wright 2009).

An earlier study analyzed the wildlife hazard to military aircraft, based on U.S. Air Force records of wildlife strikes (Zakrajsek & Bissonette 2005). In that study, several smaller birds appeared higher in the rankings than they appear in Dolbeer & Wright's 2009 rankings, with the horned lark ranked 6th. The authors noted that this ranking was higher than civilian rankings, and theorized that perhaps these relatively small species are under-reported by civilian pilots, or perhaps differences in military and civilian airfield operations account for the difference (Zakrajsek & Bissonette 2005). They also noted that horned larks have a habit of foraging in flocks in the open areas that airports provide, and flying back and forth across the runways (Zakrajsek, pers. comm.; Bissonette, pers. comm.).

A 2007 study found horned larks to be the bird species 4th most struck at an Air Reserve Base over an 8 year period, but did not rank the species according to damage like the Dolbeer and Zakrajsek studies. The author noted that the exact numbers of swallows and horned larks struck is uncertain because these species tend to collide with aircraft as flocks and there are times when it is not possible to collect sufficient, recognizable remains to count the numbers of individuals involved. (Milroy 2007)

The FAA Wildlife Strike Database reports that 10 strikes in Washington have involved horned larks. Of those, three incidents occurred in Puget Sound – at SeaTac in 2002 and 2003. No damage was reported. Two of the incidents involved one bird, and the other incident involved 3 to 4 birds.

The FAA Wildlife Strike Database also reports 10 strikes in Oregon involving horned larks. Of those, three incidents occurred in the Willamette Valley in 2004 and 2005– two at Portland International and one at Mahlon Sweet Field. None of them resulted in any damage. All incidents involved only one bird.

c. Wildlife hazard management

The FAA/USDA manual *Wildlife Hazard Management at Airports* (Cleary and Dolbeer 2005) provides guidance to airport personnel in developing and implementing wildlife hazard management plans. Importantly, plans must be tailored to the conditions existing at individual airports. The first step in developing a wildlife hazard management plan is to assess the hazards posed by wildlife at the airport. Then airport managers must take appropriate actions, under the guidance of professional biologists trained in wildlife damage management, to minimize the risks posed by wildlife (Dolbeer et al. 2008).

Note that these requirements generally apply to "certificated" airports – airports approved by FAA for scheduled flights of aircraft with more than 9 passenger seats or unscheduled flights of aircraft with more than 30 seats. However general aviation (GA) airports in the USA generally are not required by the FAA to address wildlife hazard issues. GA airports face considerable

challenges in managing wildlife hazards, as they often are located in rural areas with high densities of birds and other wildlife. Further, many GA airports have inadequate funding and few, if any, trained personnel available for wildlife hazard management. (DeVault et al. 2009)

Airports have experimented with many different management actions to deter wildlife. Generally, habitat alteration is believed to provide the most effective and lasting effect, but other more short-term actions are often used as part of an overall wildlife management plan. The following is a list of the more common wildlife management actions currently used at U.S. airports, along with their pros and cons.

Flight schedule alteration. Although not generally practical for regularly scheduled commercial traffic on larger airports, there may be various situations when flight schedules of some aircraft can be adjusted to minimize the chance of a strike with a wildlife species that has a predictable pattern of movement (Cleary & Dolbeer 2005).

Audiovisual Deterrents. Short term solutions generally rely on scaring birds with pyrotechnics, alarm calls, infrasound, and lasers. However, without direct association with an actual threat, birds rapidly habituate to scare techniques, reducing their effectiveness. (Anderson & Otter 2007)

Chemical Deterrents. Chemical deterrents that irritate birds have been used to deter birds from foraging on airports and croplands. However, their effectiveness requires that birds use the area for feeding, not just resting, and they also tends to be too costly for large-scale application. (Anderson & Otter 2007)

Infrared or Radar Beams. Infrared beams or modulation of high powered radar can cause birds to swerve out of the beam. However the power requirements for these systems, and their associated cost, make consideration of these as a feasible deterrent system somewhat prohibitive. (Anderson & Otter 2007)

Lethal Control. Shooting individual birds has been used effectively as a temporary measure. Without removal of the resources that initially attracted the animals, however, emigration of new individuals to replace those killed is likely. Thus, this technique is sustainable only with repeated culling of populations. Lethal control is usually not well accepted by the public, and it remains a reactive, short-term solution. (Anderson & Otter 2007)

Dogs. Dogs are perceived as a natural predator by terrestrial birds, which leave the area to seek more secure habitat elsewhere. Border collies have been used very effectively to scare birds off the runways because, unlike other scare tactics, they represent a real threat. Cost is the primary consideration in this technique, as specially-trained dogs can cost several thousand dollars, and require the assignment of permanent handlers and housing costs. (Anderson & Otter 2007)

Falconry. Falconry has also been used at airports to introduce a real threat to birds in a publicly acceptable matter. However, success of falconry programs appears to depend on a large number of uncontrolled variables, including airport layout, habitat, and weather, and success is not always directly correlated with effort. For this reason, it is generally recommended as part of a

comprehensive management program rather than as the sole method of dispersing problem birds. (Anderson & Otter 2007)

Habitat Alteration. Long term mitigation tends to focus on habitat alteration. Although this does not deter birds that fly over the airport, it provides a more permanent solution to managing birds that use the airfield. Since most bird strikes occur in the 0 to 500 feet above the ground airspace, the problem is mostly thought to be birds that are using the airfield itself.

Habitat alteration can include application of netting (especially around eaves of buildings), replacement of grass with boulder fields, replacement of cattail marsh with shrubby marsh, and removal of attractive crops and garbage dumps. Nest or roost trees may have limbs removed if raptors are a problem. Marshlands attract waterfowl, so removal of standing water is important. (Anderson & Otter 2007) One commonly used habitat alteration tool is managing grass height, discussed in the following point.

Grass height management. The management of an airport's airside ground cover to minimize bird activity is a controversial subject in North America. The general recommendation, based on studies in England in the 1960s and 1970s, has been to maintain a monoculture of grass at a height of 6-10 inches (Transport Canada) or 7-14 inches (U.S. Air Force). Tall grass, by interfering with visibility and ground movements, is thought to discourage many species of birds from loafing and feeding. (Cleary & Dolbeer 2005)

However, the limited studies conducted in North America have not provided a consensus of opinion on the utility of tall-grass management for airports (Cleary & Dolbeer 2005; Milroy 2007; DeVault et al. 2009). For example, a recent study found no difference in the number of birds using short- (9–15 cm) and tall-vegetation (15–30 cm) plots (Seamans et al. 2007).

In addition, maintenance of tall grass can result in increased rodent populations, a food source for raptors. Further, maintenance of monotypic, uniform stands of tall grass is difficult and expensive on many airports because of varying soil conditions and the need for fertilizer and herbicide applications. Arid regions in the western USA cannot maintain tall grass without irrigation. (Cleary & Dolbeer 2005)

The FAA/USDA Manual states that it will not issue general guidelines on grass height or vegetation type for airside ground cover until more research is completed (Cleary & Dolbeer 2005). Clearly, more work is needed to refine recommendations for grass height management in the U.S. (Milroy 2007; Seamans et al. 2007; DeVault et al. 2009)

3. Can airports manage for both wildlife hazard management and vulnerable species conservation?

Historic management for vulnerable species. Modifications in habitat management practices at military and municipal airports have already clearly benefited grassland birds. These practices include deferred mowing schedules and reduced vehicular traffic in grassland areas. For example, at a Massachusetts Air Reserve Base, populations of upland sandpipers and grasshopper sparrows have increased by more than 200% as a result of these management changes. (Askins et al. 2007) Similarly, a New Hampshire airport has altered its mowing regime

to both meet airport guidelines and protect the upland sandpiper during nesting periods. During that time the population has remained stable. (Hunt & DeLuca 2005)

The most comprehensive study on this topic is currently being completed by researchers with the New Jersey Audubon Society. Preliminary results have been released (Peters & Allen 2010), and the final report is due in 2012. (Ms. Peters will present separately on her work at this workshop.) The preliminary results found that conservation-value species increased with vegetation height (20-24 inches), while strike-risk decreased within the same range of vegetation height (Peters & Allen 2010).

Sink population? A 1996 study found a low level of nesting success on airports by grassland birds, suggesting that these areas are unproductive compared with most other grassland habitat. The study suggested that airports support sink populations, which are unable to sustain their populations (Kershner & Bollinger 1996). The study found that the primary disturbance contributing to low nesting success was mowing. It stated that adjusting mowing schedules would be an optimal management plan to conserve vulnerable species, but that that is realistic only for large airports. For small rural airports, the authors believed the best management practice may be to discourage birds from attempting to nest by mowing the grass low. They suggest that small airports do not have enough room to both comply with FAA safety regulations regarding grass length requirements surrounding runways, and enhance grassland bird breeding (Kershner & Bollinger 1996).

Conservation management techniques. Some techniques which may achieve both wildlife hazard prevention and rare grassland bird conservation are:

- Modifying aircraft flight times to avoid times of known bird movement
- Modifying the timing of mowing to avoid the breeding season (Milroy 2007)
- Using sickle-bar mowers or other equipment to reduce mower wheel “footprints”, and thus bird and chick mortality (Milroy 2007)
- Planting vegetation that does not require mowing (Milroy 2007)
- Detailed analysis of the inter-specific variations in some processes that can affect local populations, such as density-dependence, behavioral responses to aircraft or aversive methods (speed of reaction, sensitization, habituation, etc.), and movement between suitable patches within and surrounding an airfield. Once this is established, airports could create buffer areas based upon the analysis. (Blackwell et al. 2009)

4. What does management for a listed species actually look like?

California least terns – a state and federally listed endangered species – have nested at San Diego International Airport since at least 1969. In 1970 the airport supported the third largest colony in California, and nesting has been documented there in 28 of the years from 1970 to 2008. The number of tern nests fluctuates, but in 2006 there were estimated to be 131 nests and 114 breeding pairs. Terns have nested at several locations around the airport.

Various projects at the airport have obligated tern management efforts at the airport, and a Biological Opinion prepared by the US Fish and Wildlife Service requires reasonable and prudent measures for protecting terns. The Biological Opinion’s conditions/protective measures include:

- The FAA and the Airport Authority will maintain in perpetuity four ovals as nesting habitat for the California least tern.
- The FAA and the Airport Authority placed tern fledgling nest barriers/fencing around the perimeter of the above ovals to prevent the movement of fledglings outside these areas onto runways and taxiways. The fence is inspected and maintained by a qualified tern biologist with the appropriate endangered species permit issued by the US Fish and Wildlife Service.
- The FAA and the Airport Authority provide annual funding for a predator control program; however, no shooting of tern predators at the airport is allowed and non-lethal means are preferred.
- The FAA and the Airport Authority will prepare and maintain in perpetuity a minimum of 6.2 acres of contiguous supratidal habitat at the Chula Vista Wildlife Reserve in south San Diego Bay for tern nesting.
- The FAA and the San Diego Unified Port District are responsible for assuring ongoing monitoring of tern populations at the airport and at Chula Vista Wildlife Reserve by qualified tern biologists.
- Where construction crews are working on facility improvements, they must be educated on:
 - prohibitions to applying materials, storing equipment, or performing maintenance near the ovals,
 - constraining ingress and egress routes to specific locations during the nesting season (greater than 1,200 feet from the ovals),
 - lowering crane booms when not in use,
 - ensuring that trash would be properly disposed, and
 - not feeding potential tern predators in the area.

(San Diego County Regional Airport Authority 2008)

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FAA wildlife requirements for airports

Extracted from: Master Plan Update – Port of Olympia / Olympia Regional Airport, Appendix 2: Airport Critical Area / Priority Habitat & Species White Paper, December 2010

Federal Aviation Administration (FAA) Compliance Program

The primary role of responsibility for the FAA is ensuring the safe and efficient operation of airports within the national aviation system, and Federal law pre-empts local regulations on issues or conflicts related to aircraft safety, navigable airspace, flight operations, and noise control. However, the FAA has no statutory or regulatory authority for controlling land uses or zoning within the airport environs, but they do have some leverage with regard to Airport Sponsor grant assurances in conjunction with Federal funding participation for eligible airport projects. These obligations (or assurances), which are enforced by the FAA through the Airport Compliance Program, require the recipients to maintain and operate their facilities safely and efficiently and in accordance with specified conditions that are set forth in numerous Airport Advisory Circulars and Federal Aviation Regulations.

It should be noted that the Airport Sponsor grant assurances do not specifically reference the mitigation of wildlife hazards on airports; however, three of the grant assurances (i.e., No.'s 19, 20, and 21), which are presented in the following text, can be broadly interpreted to address the issue:

- **Grant Assurance No. 19/Operation & Maintenance:** The airport and all facilities shall be operated at all times in a safe and serviceable condition, and the airport sponsor will not cause or permit any activity or action thereon, which would interfere with its use for airport purposes. *Issue for consideration: Does the designation of priority wildlife habitat areas on airport property interfere with the safe operation of the airport?*
- **Grant Assurance No. 20/Hazard Removal and Mitigation:** The airport sponsor will take appropriate action to assure that such terminal airspace, as is required, to protect instrument and visual operations to the airport will be adequately cleared and protected by removing, lowering, relocating, marking, lighting, or otherwise mitigating existing airport hazards and preventing future airport hazards. *Issue for consideration: Does the existing wildlife within the designated priority wildlife habitat areas on airport property constitute an airport hazard?*
- **Grant Assurance No. 21/Compatible Land Use:** The airport sponsor will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to, or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. *Issue for consideration: Does the designation of priority wildlife habitat areas on airport property conflict with the compatible land use objectives of the airport sponsor?*

FAA's Safety Management System (SMS)

In addition to the safety compliance system that was described in the previous section, the FAA has recently embarked on a new program, designed to “raise-the-bar” of the U.S. aviation system to the next level of safety. This program is known as the Safety Management System (SMS) and applies to all lines of business within the FAA and throughout the aviation industry. According to information contained in FAA Order 5200.11 *FAA Airports (ARP) Safety Management System*, an SMS provides a consistent means of assessing safety risks through the establishment of an integrated Safety Policy, a functioning Safety Risk Management (SRM) approach, a Safety Assurance model that identifies performance targets and facilitates continuous improvement, and a program of Safety Promotion that includes clear communication.

- **Safety Policy.** Outlines the methods and tools for achieving desired safety outcomes and details management responsibility and accountability for safety.
- **Safety Risk Management (SRM).** Is a formalized approach to safety that ensures sound safety decisions by identifying and examining hazards early, while laying the groundwork for effective risk mitigations based on well-documented data. In simple language, SRM attempts to gauge how likely a hazard is to result in an incident, define the potential consequences, and determine how much risk (if any) is acceptable.
- **Safety Assurance.** Includes formalized processes that proactively identify hazards and risks. It provides tools that allow the FAA to track how the SMS performs, confirm the SMS is achieving intended outcomes, and continuously improve standards, operations and practices to increase safety.
- **Safety Promotion.** Promotion of a positive safety culture is essential to Safety Promotion in an SMS. It provides a method for sharing safety information to develop and apply lessons learned and best practices for hazard identification, Safety Assessments and mitigations, and other SRM responses.

Overall, SMS provides an opportunity to identify and address safety issues before they can become hazards, with the objective being to increase aviation system safety.

As presented in FAA Order 8000.369 *Safety Management System Guidance*, the FAA's statutory authority for SMS is derived in part from Title 49 of the United States Code (49 U.S.C.) and Title 14 of the Code of Federal Regulations (14 C.F.R.). Title 49 U.S.C. Chapter 401 of subpart I, part A, Section 40101 (d), establishes safety considerations in the public interest. In addition, 49 U.S.C. Chapter 447 of subpart III, part A, subtitle VII, prescribes the authority and powers of the FAA concerning safety regulations.

According to FAA Fact Sheet, dated November 4, 2010, the FAA is in the process of implementing SMS and system safety-based oversight. In October of 2010, the FAA issued a proposed rule that would require airports certificated under Part 139 to establish SMS for all airfield and ramp areas. Congressional action has mandated that the FAA develop a rule requiring all Part 121 operators to implement SMS, and the FAA is considering SMS regulations

for other groups of aviation service providers, including Part 135 operators and Part 145 repair stations.

FAA & Wildlife Hazards

In their continuing efforts to promote airport safety, the FAA has been proactive in the support of research and the preparation of guidance documents on the subject of wildlife hazards and airports (i.e., *Hazardous Wildlife Attractants On or Near Airports/AC No. 150/5200-33*). The FAA has also sponsored the preparation of a research document produced through the Airport Cooperative Research Program (ACRP) Report 32/*Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports*. In addition, the FAA has collaborated with other Federal agencies [i.e., the U.S. Air Force (USAF), the U.S. Army, the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (USF&WS), and the U.S. Department of Agriculture (USDA)], with the establishment of a *Memorandum of Agreement (MOA) to Address Aircraft-Wildlife Strikes*, which effectively addresses existing and future environmental conditions contributing to aircraft-wildlife strikes throughout the United States. The FAA and the USDA Wildlife Services (USDA WS) have also established a Memorandum of Understanding (MOU), No. 12-34-71-0003-MOU, to formalize continued cooperation in the mitigation of wildlife hazards to aviation.

Hazardous Wildlife Attractants On or Near Airports/AC No. 150/5200-33. Aircraft collisions with wildlife represent a serious economic and public safety concern, and Advisory Circular (AC) 150/5200-33 provides guidance on the various land uses that have the potential to attract wildlife on, or in the vicinity of, airports. Airports that have received FAA-administered airport financial assistance programs must follow these standards. Many airports ... have relatively large tracts of open and undeveloped land, which can be attractive to wildlife for feeding, loafing, reproduction, and escape. Any wildlife in these areas can present potential hazards to aviation, particularly within the airport's approach/departure airspace or air operations area. The AC also specifies the recommended separation criteria for hazardous wildlife attractants from airports (e.g., 10,000 feet for airports serving turbine-powered aircraft) and offers airport sponsors procedures for wildlife hazard management, which includes the preparation of Wildlife Hazard Assessments (WHAs) and Wildlife Hazard Management Plans (WHMPs). It should also be noted that in the Fall of 2009, the FAA's AIP funding and eligibility requirements for WHAs was modified to include general aviation airports with documented reports of wildlife hazards.

Airport Cooperative Research Program (ACRP) Report 32, Guidebook for Addressing Aircraft/Wildlife Hazards and General Aviation Airports. This guidebook is a useful resource to airport management and staff, offering techniques and strategies for addressing wildlife hazards at general aviation airports. The report includes information on the different species that can be found at airports, guidance for identifying and controlling these species, reference to the various wildlife attractants and best management practices that can be used to minimize wildlife activity on and around airports, wildlife control strategies and techniques that are best used at general aviation airports, and how to develop a wildlife control program.

Memorandum of Agreement (MOA) to Address Aircraft-Wildlife Strikes. This MOA between Federal resource agencies that was previously referenced was established in 2003 to acknowledge their respective missions in protecting aviation from wildlife hazards. These efforts are intended to minimize wildlife risks to human safety while protecting environmental resources. According to information presented in the Agreement, aircraft-wildlife strikes are the second leading cause of aviation-related fatalities, and approximately 97% of the reported civilian aircraft-wildlife strikes involve common, large-bodied birds or large flocks of small birds. In addition, about 90% of aircraft-wildlife strikes occur on or near airports when aircraft are at altitudes of less than 2,000 feet. Therefore, the signatory agencies will encourage stakeholders to promote land uses that comply with the siting criteria specified in AC 150/5200-33 (see Attachment A in the AC). Exceptions to these siting criteria will be considered (see Section 2.4.b of the AC) in conjunction with critical habitats for Federally-listed endangered or threatened species and ground water recharge. ...

When there is disagreement among the signatory agencies about whether a particular land use is attractive to wildlife, the FAA, USAF, or USDA WS will conduct a WHA to determine whether a WHMP should be prepared. The Plan, if required, should avoid adverse impacts to wildlife populations or other sensitive habitats (e.g., the existing critical habitat areas on the Airport) to the maximum extent practical, and unavoidable impacts will be fully compensated pursuant to all applicable Federal laws, regulations, and policies. ...

Memorandum of Understanding (MOU)/No. 12-34-71-0003-MOU. This MOU between the FAA and USDA WS was established in 2005 to promote the mitigation of wildlife hazards to aviation. According to the Understanding, it is agreed that the USDA WS “has the professional expertise, airport experience, and training to provide support to assess and reduce wildlife hazards to aviation on and near airports.” Technical support to the FAA or Airport Sponsor from USDA WS may include site visits and a WHA, as well as support in developing WHMPs and recommendations on control and habitat management methods designed to minimize the presence of hazardous wildlife on or near the airport.

Notes

Streaked Horned Lark Regional Working Group Meeting
12 March 2009



MINUTES

In Attendance

American Bird Conservancy: Bob Altman; City of Portland: Dave Helzer, Claire Puchy; McChord Air Force Base: Valerie Elliott (via conference call); OR Dept of Fish and Wildlife: Susan Barnes, Ann Kreager, Anne Mary Myers; Oregon State University: Randy Moore; Port of Portland: Nick Atwell, Dana Green; Portland Audubon: Mary Coolidge; Portland Metro: Paul Vandenburg; The Nature Conservancy: Hannah Anderson; US Army Corps of Engineers: Geoff Dorsey, Paul Schmidt; US Fish and Wildlife Service: Cat Brown, Jodi Bush, Kim Flotlin, Miel Corbet, Jeff Dillon; WA Dept of Fish and Wildlife: Derek Stinson, Michelle Tirhi.

Updates & Plans for 2009 Season

- Oregon Breeding monitoring – *Randy Moore*

2008 reproductive success information due out March/April for the southern Willamette Valley. The report will be submitted to the Oregon USFWS office, and posted on the USFWS STHL webpage or contact Randy Moore for a copy. The 2nd season of OR breeding monitoring work in the South Valley is still pending funding.

A 2009 project has been funded by the City of Portland and USFWS to conduct surveys in Multnomah County and surrounding area and to monitor breeding of birds detected. This work is similar to the 2008 work in the South Valley. Originally the sites to survey included areas inside Portland and outside the city within the Multnomah boundary. The USFWS funds can be used to do the work outside Multnomah county in areas that make ecological sense, perhaps to the urban growth boundary. Historic information (Dave Marshall and 1929 report) has shown that STHL were once common in the county. Multnomah, Washington, and Clackamas counties are currently in the process to design reserves within Portland city limits. This work could inform those decisions, which are to be completed by December 2009.

****Action:** Randy Moore to send to group draft range-wide survey & monitoring protocol. Working group to review in next 6 months and finalize the protocol at next meeting.

- Nest Enclosures in OR & WA - *Randy Moore*

A range-wide experiment to increase nest success through the use of nest enclosures is currently pending funding. A question arose: Are we putting the cart before the horse with doing nest enclosure work before we know what the causes of nest failure are? Washington reproductive success research has shown that predators are the leading cause of nest failure. The research is not as advanced in Oregon, but that should not affect the proposed project as the aim of the project is to determine if nest enclosures work, period. It is experimental in nature and will, admittedly, not address all the causes of nest failure. However, STHL nest success is very low, even lower than most songbirds and anything tool we can use to reduce the population decline will be well worth establishing.

- Columbia River Island Habitat Analysis – *Hannah Anderson*

1st year of this work presented that analyzed the relationship of dredge material placement and it's succession to suitable streaked horned lark habitat. Through a GIS exercise it was determined that dredge material is suitable for 3.25 – 5 years after placement. Management guidelines to the Army Corps for dredge material placement are forthcoming, due out in June 2009.

- Restoration Trials along Columbia River Islands – *Hannah Anderson & Geoff Dorsey*

Using the habitat analysis to identify locations on the islands that are too densely vegetated for larks, TNC will be working with the Army Corps to conduct restoration trials aimed at creating early successional habitat preferred by larks by using a tractor and disc to turn up the vegetation. The treatments will be implemented by the Army Corps this month (March 2009). A question arose about the impact of creating more early successional habitat and Caspian terns. The Corps has permission to haze terns on the islands, and is working to shrink tern habitat, which is even more bare sand than what larks like. There is plenty of acreage available for terns now anyway, irrespective of the lark recommendations. The Corps are building islands for terns now and will be drawing birds from a long ways away, and hope to move the birds from Columbia River to the San Francisco bay. They will confine the hazing areas to the immediate areas where the terns are.

- Ledbetter HRA & Long Beach State Park – *Cat Brown*

The USFWS is continuing to do the restoration work that's been going on for years. There is a need for more law enforcement coverage. There is some conflict between the county and state regarding responsibilities.

- Finley Refuge – *Randy Moore*

Field 31 is the site the refuge has been doing restoration. There were 2 pairs in the area where the pooled winter rains have drowned out the prairie vegetation. Will be monitoring those birds this year. Ankeny FWS refuge, Field #5, 100 acres, and has been tossed up for grabs by the farmer who had been leasing it. Farmer gave up because it was hit so hard by the geese they weren't able to get anything out of it. That field will likely be taken over by the refuge staff. There have been some preliminary trials to create lark habitat using herbicide treatments, but they were not effective. The vegetation didn't die fast enough to do the larks any good mostly because the decision to do the trial was very late in the season. Also, the crop in the field was very dense, not good enough for the farmer, but just enough to make it unsuitable for larks.

Refuge staff have been conducting a refuge review plan and they have been going through planning and public comment period for the 3 mid-valley refuges. The outcome of this process may be quite important for larks. The possibilities run from maintaining status quo (with farmers) to keeping management all in the hands of the refuge managers. The more control the refuge has over those fields, the more lark habitat that could be potentially created in the field. Maintaining good goose habitat and good lark habitat are not mutually exclusive, as the birds don't use the site during the same time of year, and the geese make big disturbances that could create lark habitat. While there is public pressure for the refuges to maintain goose habitat the FWS is open to finding more compatible uses so that they can attract more diversity and more species.

**** Action:** There will be another opportunity for public review of the draft refuge management plans. Ann Kreager will pass info to group.

- St. John's Landfill – *Cat Brown, Paul Vandenburg*

Paul Vandenburg showed slide show of restoration project to create streaked horned lark habitat on the St. John's Landfill that is adjacent to the occupied Rivergate site, which is slated for development. The restoration project was initially conducted in 2007 when they placed 5 acres of dredge sand. In 2008 the site exploded in invasive vegetation. They disked the vegetation and it currently looks good for larks. Right now have no official systematic monitoring protocol. Metro and USFWS are developing a Candidate Conservation Agreement with Assurances for larks at the site. CCAA and associated management plan will have some directions for monitoring. The landfill would also be a good site to research patch and landscape dynamics.

**** Action:** This site will be included in the Portland/Multnomah survey work

**** Action:** This site would be perfect to conduct experimentation with vocal attraction to get the larks to move onto the. Work with Metro staff to fold that into the work this year.

- Oregon Field Guide – *Dave Helzer*

Dave Helzer is working with Jim Newman with Oregon Field Guide who is looking to do a story with streaked horned larks in the W. Valley this year. The program may air this year. Dave will keep the group informed

Policy

**** Action:** Find information regarding the DNR Aquatic Land HCP and coastal lark sites.

- Benton County HCP – *Anne Kreager*

Benton county is working on a Habitat Conservation Plan that addresses prairie species in Benton county and initially included STHL. However, largely because the lark doesn't occur on county lands they are no longer included in the county HCP. The planning team will be developing a prairie conservation strategy, that will be a separate document but included with HCP. The conservation strategy will be purely voluntary and will address a greater suite of prairie species, likely including the streaked horned lark. City of Corvallis will be developing a CCA for the airport. That will be incorporated into the HCP.

- NRCS Incentive Package – *Randy Moore, Hannah Anderson*

Conference call occurred in Dec 2008 with Jeremy Maestas, Randy Moore, Cat Brown, Hannah Anderson, Marty Chaney and Rachel Maggi about the first steps to get larks incorporated into NRCS incentive programs. Need a Technical Note on the bird outlining its basic biology and actions that can be implemented on private land to benefit the species. Randy is working on the initial draft of the technical note. Once the information is presented, the NRCS will work on incorporating that information into the incentive packages funded through the Farm Bill.

Airports

****Action:** Initiate a discussion regarding larks, airports, and management agreements throughout the range. Participants to include Ports, FAA, USFWS, TNC, ODFW, WDFW.

****Action:** Nick Atwell (or Randy Moore) will pull data for Jodi Bush regarding strike information about horned larks and airports. Civilian airports are not required to submit bird strikes, estimated that 20% of strikes are reported. Military are required to report strikes and their strikes are sent to DNA analysis at the Smithsonian.

- Corvallis airport mgmt recommendations – *Randy Moore*

The larks are on the site and will be staying there. Part and parcel of the management plan for Corvallis is to minimize the minimal threat larks pose to aircraft while at the same time minimizing the substantial danger of waterfowl interactions with aircraft. That management plan will pose that we move larks away from the runway in the winter when they are flocking. Larks do get hit most often, but they rarely cause substantial damage. Dual purpose of plan is to increase safety while also doing good things for birds.

- PDX and larks, opportunities – *Dana Green*

PDX is managing for a host of species that give them a problem at the airport. There are 1700 acres inside the fence that are managed in monotypic turfgrass. They do their best to minimize bare soil, due to the jet blast of airplanes. There are 1600 acres outside the airport fence that are managed for compatible land use: some are light industrial, some are commercial leased (IKEA), but everything has to fit FAA requirements (building heights) and then look at issues that might attract problem species (water, etc).

Most airports purchase lands with federal grant funds, to prevent incompatible development (noise issues), and to expand if they need. As airports are becoming more attractive to airports, there is more wildlife. They have a big chunk of land called the southwest quad that is outside the airfield fence. Prior to 1993 it was 73 acres that was a significant waterfowl attractant; in 1994 they put a bunch of dredge material that they keep well drained. These actions were all properly mitigated for.

In 3-5 years the sand became a Canada goose attractant. To deter Canada goose use, they disk the site every 2-3 years. So they seem to be creating a hospitable piece of land for larks. Randy Moore has surveyed the site; it was not occupied in 2006 or 2007, but there was a breeding presence in 2008.

Southwest quad fronts two active runways/taxiways, so it could be a place to develop and will likely be that in the future. If the species becomes listed, and it is on that site, then there could be significant management issues. Other issues include the predators that could be drawn in to eat larks.

PDX could be a good site for a Candidate Conservation Agreement.

- Olympia Airport – *Michelle Tirhi*

Olympia airport is drafting a 10-year wildlife management plan. The plan has a defined STHL management area and includes language that WDFW would continue to be allowed to do surveys. Olympia airport is supportive of those portions, although there was initially some confusion about mowing regime changes that is conducive to STHLs.

- McChord Air Force Base – *Michelle Tirhi*

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WDFW and TNC plan to do lark surveys on the airport this season. Airport pad widening on the airfield this summer. No comment by McChord.

Streaked Horned Lark Action Planning

The group spent the afternoon of the meeting working on refining the streaked horned lark draft action plan. Jodi Bush spoke to the group regarding the purpose of the action plan and defining a goal for the plan. **The group discussed and decided that the goal for the plan is to preclude the need to list through conservation, research, and direct recovery actions.** The action plan is designed to be a 3-5 year plan that outlines the next most important things we need to do to achieve that goal. The USFWS uses the plan to help guide their funding decisions. In addition to USFWS funding decisions and in the absence of a formal recovery plan, the action plan can help all entities involved to identify where their group can conduct or fund important actions.

The group was encouraged to work on the prioritization of the tasks on the plan and eliminate the repeated priority numbers present in the Sept 2008 iteration. There was a great and varied discussion about what a priority number means and how to assign those priorities. **The group decision was that the actions are to be prioritized using a biological ranking framed under a range-wide scenario.** There was also discussion about adding columns for each entity who would identify and then prioritize the actions that they could accomplish based on their individual goals and limitations, e.g. geography, research only, etc., i.e. Portland Metro implementing identified actions on the landfill; or the Army Corps conducting research on the Columbia River islands.

Attached is the updated version of the Draft STHL Action Plan. Jeffrey Dillon of FWS did some re-organizing of the document. His edits have clarified the actions and outlined them in a very sensible way. I have merged his organizational edits and the group's prioritization edits into one updated working draft. Note that not all actions are ranked with a priority number; this does not mean that it is not an important action. Rather it just means it is lower on the list than the ones with a ranked number (or an asterisk). **The working group asserts that if it is on the list at all, it IS a priority action.** The asterisks are tasks that had a ranking number in previous drafts of the plan and are in need of new ranking numbers, but the group ran out of time at this meeting.

**** Action:** Working group to review the document and provide edits, suggestions, comments. Please send your comments to Hannah Anderson to be put on the agenda for the next working group meeting.

Mark your Calendars: Next Streaked Horned Lark Regional Working Group Meeting currently scheduled for **Tuesday, September 15, 2009.**

Streaked Horned Lark Regional Working Group Meeting
16 September 2010



MINUTES

In Attendance

American Bird Conservancy: Bob Altman; City of Portland: Claire Puchy; McChord Air Force Base: Valerie Elliott; OR Dept of Fish and Wildlife: Susan Barnes, Laci Bristow, Andrea Hansen, Ann Kreager; Oregon State University: Randy Moore; Port of Portland: Carri Butler; Portland Audubon: Mary Coolidge; Portland Metro: Elaine Stewart, The Nature Conservancy: Hannah Anderson; US Army Corps of Engineers: Paul Schmidt; US Fish and Wildlife Service: Jock Beall, Cat Brown, Kim Flotlin, Bill Ritchie; WA Dept of Fish and Wildlife: Scott Pearson, Derek Stinson, Michelle Tirhi; WA State Parks: Lisa Lantz.

Announcements

- Publications:
 - Camfield et al. 2010 – J. of Avian Biology. Compares high elevation alpine lark to low elevation streaked horned lark. The article demonstrates that STLH is doing poorly and provides some insights into decline. The analysis is based on WA and Col River sites only, and does not include WV population. If WV is a source, it could be providing new individuals to other areas in range. Interesting possibilities for sharing genetics between populations.
 - Moore reports – Willamette Valley STHL work by Dr. Randy Moore reported up through 2010 season. Reproductive success and monitoring through 2009 are done and available upon request. There will be a publications submitted regarding winter distribution in WV. Another paper is being prepared on distinctiveness of plumage characteristics in relation to surrounding subspecies.
 - Altman CPOP paper – As a follow up to the ecoregion wide conference of the Cascadia Prairie-Oak Partnership (CPOP), a special edition of the peer-reviewed journal *Northwest Science* will be published in 2011 focusing on prairie and oak habitats and species in the Willamette Valley – Puget Trough – Georgia Basin ecoregion (WPG). For this volume, Bob Altman has prepared and submitted a review paper for all bird species in prairie-oak habitats looking at historic and current distribution in the WPG, including population estimates.
- Lark/Airport Workshop Date and Location – *H. Anderson*
 - Working on defining date and location for the workshop.
 - Note that Eugene, McMinnville, and Salem Airports have STHL.
 - **Update Jan 24, 2011** – The workshop will be held March 9th, 2011 at the Water Resources Education Center in Vancouver, WA. **See Page 10 for invitation.**
- Wildlife Action Plan Grant Opportunity, deadline January 2011 – *D. Hays*
 - WDFW is interested in pursuing a multi-state wildlife action plan grant proposal (SWG) for prairie-oak species in Oregon and Washington.

- The project could include on the ground restoration projects, perhaps emphasizing cooperative projects at OR & WA, and within that could build in desired other components such as monitoring, research, education, collaboration
- **Update Jan 24, 2011** – A collaborative of partners submitted a proposal titled Birds and Butterflies in Prairie-Oak Habitats of the Pacific Northwest: Enhancing Bi-State Partnership for Conserving State Strategy Species. Award notification in June 2011.
- **Update Jan 24, 2011**- TNC WA has created a document that integrates the prairie-oak components from both the Washington and Oregon wildlife action plans.
- Mt Pisgah – A large parcel adjacent to Mt. Pisgah has transferred into conservation status. There may not larks there now, but perhaps there is potential for restoration or management. Lane County may be better for larks than we give it credit. Some agricultural areas that are managed for grass seed were well occupied by larks this year. The landscape structure is not the valley floor, and there are many tree rows in between agricultural plots, and it is pressed up against the foothills of the coast range. But, they are still there, probably 100 acres.
- **Update Jan 24, 2011** – ODFW report titled Declining and State Sensitive Bird Species Breeding in Willamette Valley Grasslands: 2008/09 Status Update is available. This is the roadside point count work that Bob Altman conducted in the 90s, repeated by ODFW in 2008/9.
http://www.dfw.state.or.us/conservationstrategy/docs/GrasslandBird_SummaryReport_Final2010_wit_h%20page%20numbers.pdf

Surveys and Monitoring

- 2010 Washington Survey Protocol - *H. Anderson, S. Pearson, M. Tirhi*
 - This year partners implemented a survey protocol and standardized data collection at most known occupied sites in Washington. Repeated visits with surveys on transects were conducted. Distance sampling is being considered for future surveys. Damon Point, Ledbetter, Midway Beach were not surveyed in 2010 and should be included in 2011. Should discuss how and when, what to connect with WV on at least some sites. How does territory mapping vs. transect surveys perform? Basically the same, although territory mapping gives a better picture. Trying to do 4 surveys per site, need to look at data to see if the surveys can actually detect a trend through time. Needs to be embedded into a sampling scheme. The protocol is only what you do when you hit the ground. Need a scheme that can tell us about what sites are occupied, and what change is occurring on sites and between sites. Seen lots of movement between sites. Col River islands more similar but not as extreme as populations in WV, where they can move between fields within a season.
 - Points to the need to develop a scheme that could be applied range-wide. Seems like a high priority since we are doing these surveys. Could integrate other prairie species into the scheme, vesper sparrows, w. meadowlarks.
 - In previous meetings we set a population goal of double the number of larks in 5 years. The purpose of the population goal is to stimulate further action in the way we want to go.

- Ledbetter HRA – *B. Ritchie*
 - Haven't implemented the same sampling in 2010, but will be working on that in 2011. For transect work, should include the mudpans adjacent to the HRA. WDFW surveyed in the state park to the south of the refuge, did not detect any larks in the five 1-acre locations surveyed.
 - Have done territory monitoring in the HRA and were implementing the exclosure study in 2010. They detected 8-10 territories with 8 assumed nests - found 5 actual nests, 3 YOY observed. They think 2 successful nests, one abandoned (exclosed), 3 predated (unexclosed), 2-3 unknown outcome. 2 of the birds banded as chicks in 2009 were breeding in the HRA this year. Larks numbers likely increasing since 2008.
 - Started developing a predator management strategy this year. Will have a program to document and record observations and data on predator use.
 - Maintained the existing HRA, not increased, but did remove another 65 acres of *Ammophila*. Herbicide and then bulldozed.
- 2010 OR Breeding Monitoring – *R. Moore*
 - Reduced effort field season this year. Did Reproductive success monitoring at Finley, moderately good success (haven't yet crunched numbers). This year there was some active management for larks in the course of trying to established grass for goose forage in the 2 fields where larks occur. 35-40 pairs (increased over last couple years) likely due to how there were managed.
 - Monitored the historically 2 largest popns – Corvallis airport and MDAC farms (WRP restoration). Corvallis airport 85 pairs staying steady. Banded about 150 chicks in 2009, at least 9 returned to breed in 2010. So getting some good data that will allow us to do some demographic analysis on adult and juvenile survivorship. Also still have some 2008 birds. Most birds breed along the runways and the ag land that is around the airport. This ag land is generally not very suitable for lark territories, but this year a great deal of that land was taken out of ag production in the preliminary steps of turning it into a different crop and so a great deal of lark habitat opened up. Birds did not respond to it directly, but appeared to expand their marginal territories along the gravel aprons.
 - MDAC surveys in 2008 and 2009 has had 75+ breeding pairs. We have expected prairie restoration to go through succession to a point where it was no longer attractive to larks. What we expected to happen in 2009 but didn't, did happen in 2010. This year, there is a gravel road that runs through the restoration project, the only lark territory in 2010 occurred here. Entire 600 acres is now no longer suitable for larks. There was one single lark male holding territory on a log floating in a lake very early in the season. In the past, vernal wetland flats appear in July where the water had receded enough to uncover previous territories. Total lark count in 2010 at MDAC was at most 6 territories. MDAC was scheduled to be burned last year, and may get burned this year. Will be important to monitor for larks. Higher priority to get this done, but rain is a problem. Tough year for burning... Some discussion of introducing a manual disturbance regime in the drawdown to set back succession on vernal wetland flats.
 - What is the management plan for MDAC? Larks don't drive the plan, but can benefit. NRCS who oversees the WRP has contracted with Jock Beall (FWS WV Refuge) and Partners to do the management at MDAC up to a certain point, which

will be ending sometime soon. Driven by NRCS concerned about establishing native habitat on former agricultural land. So mgmt for larks not built in, would fall on someone else to keep larks in the plan as long as they don't alter native plants. There are competing interests. Wouldn't put too much faith in burning. Burned habitat would provide winter and late spring habitat but once it takes off in the growing season, vegetation becomes thick very fast. One interesting thing we are learning from MDAC is that they will use thicker habitat than we thought before. So will matter how far apart the planted bunches are. So larks could perhaps get one nest in before it gets thick.

- NRCS and associated partnerships in that watershed. Action ** Get more info. – Ann Kreager? Elaine Stewart?
- So where did the MDAC birds go? Diamond hill road there is a gravel shoulder that borders MDAC, perhaps they are there? This year they were there, but also using little drowned out spots in the perennial ryegrass field. Territories were close together, shared a boundary. Who knows? In the surrounding ag land.
- Multnomah County – rep success monitoring at both Rivergate and PDX.
 - 5 pairs at Rivergate same as last year, very early breeding, first fledged 11th of May, can breed early because of well-drained dredge material. 100% success. Did have a predation event, a chick picked off by a Kestrel. Gave specimen to Smithsonian. Although there is 100% success, the population is not increasing there, and the whole site is not occupied. Brings us back to the question of juvenile survival.
 - PDX had 3 territories, up 1 from last year. Both nests detected successful.

Research

- 2009-10 Restoration Trials along Columbia River Islands – *H. Anderson*
 - Herbicide application will be an important tool, but on the islands in water.
 - ACOE did create some topography on Miller Sands to discourage terns. Not likely great for larks.
 - Final report of restoration trials forthcoming spring 2011.
- 2009-10 Nest Exclosures in OR & WA – *S. Pearson, B. Ritchie, R. Moore*
 - Results are forthcoming – report due out March/April 2011. First blush is maybe not a useful strategy, but data not yet analyzed. Is it minimal cost? Could have net negative effects, particularly if adults get predated. Don't use them early season when falcons are moving through. Predators key in and can perch. There is a meta-analysis of exclosures just published recently in Biological Conservation. In most recent snowy plover report outlined issues. Yes, we could use them with larks, but should be used very cautiously.
 - Questions what happened to the chicks after they leave the nest. Do the predation rates increase on juveniles once they leave the nest? Period between fledging and flying is a great unknown for passerines.
 - Harrier predation video clip from Randy's work available on YouTube.
- 2010 St. John's Landfill Vocal Attraction– *P. Vandenburg, E. Stewart, T. Mitchell*

- Late last summer Metro was interested in trying to attract larks to the landfill. Seems to have an appropriate landscape setting. The attempt was made with boom boxes, tapes with song, 2-d decoys. They were deployed in the fall, and no response from late season prospecting was detected. Started it up last week of February. The day after it was set up, there were 2-3 larks on the plot for almost a week and then never again through the season. Not sure if they were streaked. So no breeding there, but encouraged to try more vocal attraction and manage a site to make it more attractive. Encouraging first step. Goal was to see if we could bring birds from Rivergate, since it may not be viable in the long-term, which the landfill would be.
- When should we be moving birds, and under what conditions. What would happen if we let the Rivergate site go away? Would they move to the Columbia river? Or PDX? We need to think through all these steps.
- **Update January 24, 2011** – H. Anderson will be producing a paper, to answer some of the questions regarding when it is appropriate and with what mechanisms to attempt to move birds.

Restoration & Management

- St. John's restoration – *P. Vandenburg, E. Stewart, T. Mitchell*
 - Lots of variables that they need input on for that site. Heavy predator load - kestrels, harriers. Have spiked the well heads. Maintenance road runs right through the middle of the patch. How much disturbance and researcher attention is ok? Human presence definitely does bother larks in general, but not enough to exclude birds.
 - Still dealing with a really heavy weed load. Holds water, managing the soil.
 - Metro is updating the Smith and Bybee wetlands management plan (includes the landfill) and the lark is called out as a specific target for conservation.
- Multnomah County potentials – *C. Brown*
 - Northern WV lark conservation – are there larks now, where should there be larks? Rivergate, PDX SW quad, PDX north of runway and Lovejoy all have larks now or did historical. And 5 sites that are potentials – ODFW Sauvie island, Ridgefield Refuge, Gov't Island, Tualatin Refuge, Lovejoy Metro property.
 - Government Island. Port of Portland may be targeting restoration for grassland habitat. The place that will probably be most suitable for larks (dredge spoils) are not being targeted for grassland mgmt. Airport may be interested as using Gov't island dredge spoil as mitigation for SW quad. But that area does get a fair amt of human use, but humans may only be on the beach and larks may be inland. It may be manageable to have double use for humans and larks there. Dave Helzer is the person who has been following this. There is an agreement between the city and the port to do mitigation in advance (trial 50 acres) to determine the best way to do grassland enhancement. Have done baseline monitoring, looking at pollinator habitat. Potentially up to 300 acres of mitigation habitat. If the port wanted to develop 25 acres then they need to 50 acres of mitigation.

- FWS will work with Tualitin and Ridgefield Refuges to do some surveys in 2011. FWS would like to work with ODFW to do some Sauvie island surveys (there are Audubon citizen science oak folks doing bird surveys too).
 - **Action:** get together to discuss 2011 surveys. Connect with Elaine Stewart, Susan Barnes, Mary Coolidge. Randy would commit time to review larks with volunteers and take them to an occupied site. April is the time to do that, birds are singing, but before actual breeding. **Action:** Share the WA transect protocol. *Update January 24, 2011* – See Pages 11-14 for draft protocol and data form. The protocol and data form will be updated prior to survey implementation in spring 2011.
- Finley Refuge – *R. Moore*
- For the most part, have decided to manage larks in an Ag setting, not a native prairie setting, which is not suitable for larks in the WV except in the first year. Ag fields that are good for larks are basically crop failures or are fallow. Even creating a mosaic of habitat with prescribed fire may not be sufficient because in the WV the soil is so much richer that the vegetation grows in so much quicker than on glacial outwash. Plant community gets so robust in a short amount of time and growing season so much earlier.
 - Restoration project going on at Finley not aimed at larks but did host larks for the 1st 2 seasons and then did not.
 - Most exciting thing and important step – have started the discussion with refuge biologists of the possibility of managing refuge fields specifically for larks and geese at the same time. There was a meeting on 1st of Sept about refuges managing for larks and how to make that happen. Goal to create sustainable sites for larks in the Valley.
 - Geese are the mandate for the refuge. It has become clear as we have been working at the mid-valley refuges that there may be some significant difficulties in managing effectively for larks related to the historic management strategy for goose forage. Goal would be to provide a dual prescriptions that would feed geese in the winter (Oct – mid april) and make lark breeding habitat in the summer (mid april – mid august).
 - Traditional management at the refuge is to have the lands farmed cooperatively by local farmers who are responsible for creating goose forage when the geese are on the refuge and then can get a cash crop out of the refuge when the geese leave. They have been working with tweaking that system at the 2 fields at Finley that have larks. Have been working with the same farmer, but the cooperative farmer system may be problematic, since by providing good lark habitat in the summer it is difficult for the farmer get the good cash crop out of the field. So inherent tension in the system. Subsidizing the farmer could be a potential solution.
 - Need a core population to function as sources in any recovery strategy. How do we promote the resources necessary for the refuges to take on species specific management that have been taken out of cooperative farming.
 - Mid valley refuges finalizing their CCP, need to set the population goal that would equate to habitat acres that would be managed for suitable habitat for larks. **Action: Come up with a target numbers of birds and acres. Stated as “easy” in the group discussion.**
 - ODFW Sauvie Island ag land is managed for geese and could also be managed for larks like what is suggested for Refuge lands.

- South Sound Prescribed Fire – *H. Anderson*
 - Ramping up availability of fire in south sound. Seem to work excessively well on drained soils and effects seem to last for a few years after the fires. May be best to burn in August in September to get really hot fires, but really depends on the ecological objective being sought with each fire. Anecdotal observation at McChord that it has burned on the airfield and scorched it and then the grass has come back thicker than ever.

Policy

- NRCS Lark Technical Note, recommendations for agricultural land management
 - Dictate when and how they do their rotation when they change from one crop to another. Incentive payments to farmers in a strategic geographic format across the valley.
 - Will finalize something soon, but it will be a work in process.
 - *Update January 24, 2011* – Tech note scheduled for completion April 30, 2011, supported by DOD Legacy through WA TNC.

Working Group Structure

- The group discussed having one annual meeting for the full working group where we would come together as we have previously to update each other on progress on various projects as well as work to refine and update the action plan. The annual meeting will occur each September, convened by TNC Washington, hosted in Portland by USFWS.
- Throughout the rest of the year, there will be subgroups aimed at specific actions/targets. Two topics that have risen to the top are: monitoring and private lands. **Action:** Randy will lead the monitoring sub group.
 - Private Lands. **Action:** Cat will lead the private lands group.
 - WV and partners have a preliminary project plan to get approved for land protection to cover the entire valley. Regional director has directed agricultural easements for “wildlife purposes”. Thrust of this has been for Canada geese due to predation issues. Perfect opportunity to slide in something like streaked horned larks. Easement would include creating forage for geese and also some direction to benefit streaked horned larks. Create a dollar amount to subsidize the reduced yield. Still very early in the game. Land protection plan. Need a focus group to talk about private land issues. What are the tools, and what are the mechanisms we can use. FWS incentive program that is not unlike NRCS incentives, but would be focused on wildlife species. Cat and Steve Smith with work on the private lands group.

Action Planning

The group spent the remainder of the meeting updating the STHL wildlife action plan. The wildlife action plan is a fluid plan that documents the next best thing to do for the species. It is not a full-fledged recovery plan that outlines all steps, but rather an up-to-date plan that takes into account what has been accomplished. Relative rankings are given to a number of the tasks on the plan. Tasks are ranked in priority by number (#1 is highest priority), followed by those

asterisk, followed by those without any ranking. However, if a task shows up at all on the plan, it is considered a priority action.

The following are the ranked tasks in the plan. The full plan is available as a separate document.

1. Secure protection commitment on core occupied sites, e.g. management plans, CCA(A), mowing regime change, prescribed fire (range-wide)
2. Implement habitat restoration activities on breeding and wintering grounds (Col River and Coast).
3. Determine other factors limiting juvenile and adult survivorship
4. Determine the effect of habitat parameters on nest success in the WV – 2008-10 complete, continue and include private working lands, synthesize with WA data.
5. Evaluation appropriateness of egg-swapping between OR & WA
6. Develop management prescriptions to create breeding habitat and winter habitat in agricultural matrix, e.g. Finley.
7. Direct dredge material deposition to systematically create lark habitat
8. Implement strategy to control invasive beach grass and equisetum on islands
9. Finalize a standardized range-wide monitoring protocol that includes comparable survey protocol for occupied sites that addresses abundance, spatial distribution, reproductive success, wintering populations and unoccupied sites.
10. Implement habitat restoration activities on breeding and wintering grounds e.g. Corvallis airport, basket slough, Finley, PDX (WV).
11. Continue control measures to address invasive weeds on breeding grounds with limited negative impact to larks. Focus on invasives that change the structure of the habitat – ongoing (South Sound).
12. Implement prescribed fire program (South Sound).
13. Evaluate appropriateness and feasibility of population augmentation, relocation or reintroduction
14. Implement habitat restoration activities on unoccupied sites within the breeding and wintering range e.g. St. John’s landfill, Sauvie, Gov’t Islands.
15. Conduct larks and airports workshop series
 - * Determine attributes of high quality winter habitat including diet – need complete data set
 - * Evaluate the use of nest exclosures range-wide – analysis underway
 - * Develop winter habitat management prescription

Update January 24, 2011 – Task #5 has been undertaken by Scott Pearson and Derek Stinson, WDFW. They submit to the group the white paper Evaluation of the Need for Genetic Enhancement of Puget Lowland Streaked Horned Lark Populations (page 15-17).

The authors propose that the action is warranted and suggest it be experimentally implemented in the short term to avoid population loss at 13th Division prairie in south Puget Sound.

They suggest that language for priority #5 task (1.5.5. in the action plan) “*evaluate genetic enhancement of Puget lowland populations*” be replaced with, “*develop a proposal to conduct genetic enhancement of the Puget lowland population and conduct an experimental enhancement in the spring/summer of 2011*”.

Update January 24, 2011 – Comments from those using the Lark Action Plan have suggested that some refinement/definition of some of the language used in the plan would be helpful to make it clearer. Terms suggested for clarification include “restoration”, “management” and “protection.”

Streaked Horned Larks at Pacific Northwest Airports Learning – Understanding – Finding Solutions



Please join us for a one-day workshop to address the presence of the **streaked horned lark** at **Pacific Northwest airports**. The streaked horned lark is an extremely rare bird found only in isolated sites in Washington and Oregon, including many airports. It is a candidate for listing under the federal Endangered Species Act. Should it be listed as threatened or endangered, considerable restrictions could be placed on airports by the US Fish and Wildlife Service.

This workshop will address two potentially conflicting issues:

- Pacific Northwest airports contain some of the last remaining habitat for the rare and declining streaked horned lark.
- Birds are a known hazard to aircraft.



This will be a collaborative workshop between airport managers, aviation agency staff, wildlife agency staff, researchers and conservationists to seek solutions to this potential conflict.

Conservation of the streaked horned lark and the maintenance of airport safety do not need to be mutually exclusive. With participation by many partners and creative strategies for conservation planning, together we can reduce the likelihood of Endangered Species Act listing and find proactive, practical solutions to this difficult issue.

When: Wednesday, March 9th, 2011. 9am – 4pm. Registration opens at 8:30.

Where: Water Resources Education Center

4600 S.E. Columbia Way
Vancouver, Washington 98686

Recommended directions (internet site directions may be inaccurate):

<http://www.cityofvancouver.us/watercenter.asp?waterID=25038&waterSubID=27437>

What: Morning sessions will present nationwide research and experience regarding wildlife hazard prevention and species conservation at airports. The afternoon will focus on the streaked horned lark itself, and its occurrence and conservation efforts to date at Pacific Northwest airports. **Lunch will be provided for attendees at the Water Resources Education Center.**

Register: Please fill out and return the attached registration document (scroll down) to **Hannah Anderson at handerson@tnc.org by February 9th, 2011 so that we may appropriately prepare for attendance.**

For more information contact: Hannah Anderson – handerson@tnc.org – 360.701.8803

Support for this workshop is provided by the Department of Defense Legacy Program and the US Fish and Wildlife Service.



Washington
Department of
**FISH and
WILDLIFE**

PROPOSED METHODS FOR WILDLIFE DATA COLLECTION "FORM B"
(Consult instructions before completing this form)

This form should be attached to "Form A" when completed

Submitted by: Tammy Schmidt
Date: 3/25/2010

Mailing Address: **7801 PHILLIPS RD SE, LAKEWOOD, WA 98498**

Brief description of proposed activity (copy from Form A):

Conduct surveys to detect presence and acquire indices of abundance of the Streaked Horned Lark (*Eremophila alpestris*) by visual and/or auditory detection during the breeding season on known occupied habitat.

1. Species: **Streaked Horned Lark (*Eremophila alpestris*)**

2. Objectives:
- Confirm the presence of Streaked horned larks by conducting line transect surveys throughout occupied habitat at Joint Base McChord-Ft Lewis -- airfields, artillery impact area, 13th Division Prairie, Ranges 74/76/51; Olympia Airport; Shelton Airport, outer WA coast; Columbia R islands.
 - Acquire estimates of abundance
 - Provide a non-invasive method of inventory
 - Provide an efficient and repeatable survey design
 - Provide consistency among surveyors
 - Provide standardized protocol for survey and management

3. Describe in detail the methods that will be used to complete the above activity (Or attach description to this form):

Surveys to detect presence: Streaked horned larks are migrant, ground-dwelling passerines that have adapted to nesting on open grasslands, sparsely vegetated beaches and dredge spoil islands (Stinson 2005). They prefer bare ground and vegetation no more than several inches tall (Beason 1995, Altman 1999, Rogers 2000, Pearson and Hopey 2005). Streaked horned larks are loosely colonial nesters, with both males and females detectable during the breeding season, which occurs roughly from March through August. Survey timing is designed to coincide with clutch initiation curves – first clutches are initiated at the end of April at all sites and taper off dramatically in the Puget Sound area in early July; later on the coast and Columbia River (Pearson et al. 2005). Males are socially monogamous for the breeding season. Males are easier to detect because they sing on the ground and also perform aerial courtship displays.

Methods: Surveys should begin within ½ hour of sunrise and end by 12:00 noon on days when wind is less than 20 mph with little to no precipitation (light drizzle and brief showers are fine). Surveys should end by 11:00 a.m. or earlier on days when the predicted maximum temperature is 80 F or higher. Four surveys per location should be conducted between 19 April and the first week of July in the Puget lowlands and between 19 April and mid-July for the outer coast and Columbia River as follows:

Survey 1: last two weeks of April **Survey 2:** mid two weeks of May **Survey 3:** mid two weeks of June **Survey 4:** first week of July (Puget lowlands) through second week of July (outer coast and Columbia River). At sites where access is limited, priority should be given to May – July surveys.

Line transects – observers should be positioned 75 m from the survey boundary and 150 m apart (to avoid double-counting and to maximize detection ability) on predetermined transects/routes and should maintain a slow-moderate pace. Observers should stop every 150 m for approximately 1 minute to listen and scan for larks. Pausing to confirm a detection is allowed, however all observers should remain parallel. Transects should cover as much suitable habitat as possible in the allowed time window. Surveyors should familiarize themselves with vocalizations of male streaked horned larks, flight display behavior, and differentiating larks by sex and age. Young of the year birds look markedly different from adult birds. Every effort should be made to cover all areas with suitable habitat, preferably each time an area is surveyed. However, varying the area surveyed during each of the four surveys is acceptable for large expanses to ensure complete coverage. Observers should rotate between sites/transects and walk the survey route in the opposite direction on subsequent surveys.

Observers will independently record the approximate detection location of each bird on an area orthographic map, as well as the corresponding bird number from the field form. Environmental conditions, age, sex and behavior (see below). Observers may communicate with each other by radio or mobile if necessary. Waypoints should be verified at the beginning, end, and intermediate locations for each transect to verify observers remain on transect. Observers may briefly leave a line to avoid flushing birds or disturbing nests.

Data Recording: (field form attached)

- To avoid confusion between American (month/day/year) vs European (day/month/year) methods of writing dates with Arabic numbers, date should be written with a two-digit numeric for day first, the month using a three-letter abbreviation (e.g., Feb, Mar) second, and the year as a four-digit number last (ex. 26FEB2008).
- The lead observer should record surveyors' full names (not just initials), cloud cover, wind, precipitation, and air temperature at the beginning and end of the survey.
- Record the survey start/stop times. Time should be recorded on a 24-hour clock to avoid confusion with differentiating AM versus PM (e.g., 5:00 PM is 17:00).
- Each observer will receive an ortho map of the survey area, containing transect lines or routes and reference waypoints.
- Each observer will receive a data sheet for recording detections.
- Data to record for each detection include:
AGE – AD (adult), YOY (young of the year), U (unknown)
SEX – M (male), F (female), U (unknown and young of the year)
BEHAVIOR (when first observed; can use more than one code) – S = Song, C = call, F = Foraging, FD = flight display, FL = flight, A = agonistic behavior, Al = alert posture (**standing erect with neck extended and appearing vigilant but not singing or calling**), FC = food carry, CO = copulation, NM = carrying nest material.

- Data will be entered digitally and submitted to Scott Pearson, WDFW along with copies of field forms and maps.
- Record any incidental nests found (mark location on ortho, coordinates and contents on data form in Notes section).

Streaked Horned Lark Field Survey Form (6 May 2010)

SITE: _____		Month: _____ Day: _____ Year: _____
	Full Name	Affiliation/Ph #
Observer 1		
Observer 2		
Observer 3		
Observer 4		

Cloud cover (%)			Cloud Cover: 0=0%, 1=33%, 2=66%, 3=100% Precip: N=None, R=Rain, F=Fog, D=Drizzle
Wind (ave mph)			
Temp (F)			
Precip.			
W. meadowlarks			Killdeer
Crows			
Ravens			Record est. abundance of negatively impacting bird species
Unknown corvid			
N. Harrier			

Start time		24 hr 24 hr hrs. min.
End time		
Total		

Bird number	Age	Sex	Perp. Distance (m)	Behavior	Notes	Bird number	Age	Sex	Perp. Distance (m)	Behavior	Notes
1						23					
2						24					
3						25					
4						26					
5						27					
6						28					
7						29					
8						30					
9						31					
10						32					
11						33					
12						34					
13						35					
14						36					
15						37					
16						38					
17						39					
18						40					
19						41					
20						42					
21						43					
22						44					

Age: A = Adult, YOY = young of the year, U = unknown **Sex:** M = Male, F = Female, U = unknown and YOY
Behavior (only when first observed; can use more than one code): A= agonistic behavior (chase or aggressive contact), AI = alert posture (standing erect w/ neck extended and appearing vigilant but not singing or calling), C = call, CO = copulation, F = Foraging, FC = food carry, FD = flight display, FL = flight, FS = flushed, NM = carrying nest material, R = resting, S = Song

Evaluation of the Need for Genetic Enhancement of Puget Lowland Streaked Horned Lark Populations

Scott Pearson and Derek Stinson

Washington Department of Fish and Wildlife
Science and Wildlife Diversity Divisions, Wildlife Program
Olympia, WA

Apparent Inbreeding Depression in Puget Lowland Populations of Streaked Horned Lark

Puget Lowland populations of streaked horned lark (*E. a strigata*, STHL) appear to be negatively affected by inbreeding depression which has resulted in reduced fecundity and is contributing to an overall and rapid population decline (Camfield 2010). Of particular concern is the very low hatchability of streaked horned lark eggs which is likely caused by inbreeding. When compared to the hatchability of alpine horned lark eggs, the hatchability of streaked horned lark eggs is significantly lower [$83\% \pm 0.03$ ($n = 61$) hatchability for STHL vs. $92\% \pm 0.02$ for *E. a. articola* ($n = 65$; Camfield et al. 2010)] and is lower than what would expect from birds in general (Koenig 1982). Sites in the Puget lowlands have particularly low hatchability compared to other localities. The hatchability of streaked horned lark eggs at 13th Division Prairie is $0.44\% \pm 0.09$ ($n = 17$). Hatch rates of less than 50% have been routinely observed in a suite of endangered bird species in New Zealand (Briskie and Mackintosh 2004, Congdon and Briskie 2010).

Potential explanations for low hatchability. Low hatchability can result from either a genetic factor, such as inbreeding depression, or environmental factors. Potential environmental factors include calcium deficiency, contamination from pollutants (DDT), and environmental changes which force large percentages of the population to alter typical behaviors (Congdon and Briskie 2010). This explanation seems unlikely because other ground nesting species at the same site and exposed to similar environmental conditions and diets have much higher egg hatchability; Anderson (2010) reported that hatchability was 96% for Savannah Sparrows, and 91% for all ground-nesting grassland birds present on 13th Division Prairie (vs. 44% for STHL) during the same time period. Hatchability could also be influenced by conditions on the wintering grounds but this seems unlikely because streaked horned larks from different breeding locals converge on the wintering grounds (Pearson et al. 2005), yet exhibit markedly different hatching rates among nesting sites.

Information suggesting that inbreeding depression is causing low hatchability include a study by Drovetski et al. (2006), who found that streaked horned larks have “remarkably low genetic diversity” relative to other subspecies – all 32 STHLs shared the same haplotype and, even with small sample sizes, all other localities had multiple haplotypes. Other information consistent with inbreeding include:

- Drovetski et al. (2006) found genetic support for a recent population bottleneck explaining the low genetic diversity in the STHL
- Local breeding populations are now extremely small (Stinson 2005) and there is high site fidelity (Pearson et al. 2008);
- Recent population contraction (Rogers 2000, Stinson 2005)

- 2 cases of observed mother /son STHL pairings(S.F. Pearson unpublished);
- We have only observed evidence of dispersal from the Puget lowland breeding sites and no dispersal into the Puget lowland breeding sites (Pearson et al 2008).

The existence of inbreeding depression suggests that Puget lowland populations may decline very rapidly, and 13th Division Prairie is likely to go extinct without intervention.

Recommended Action and Approach

The potential for the 13th Division Prairie (one of only two native prairie populations) to blink out seems likely given what we know about population demographics (see Camfield et al. 2010 and Schapaugh 2009). An effort to augment or enhance genetic diversity on the 13th Division Prairie seems to be a prudent and urgent action to prevent extirpation due to inbreeding depression. In the literature, attempts to increase the genetic diversity of highly inbred populations are known as “genetic rescue”. Perhaps the most efficient and least disruptive genetic rescue technique is to swap eggs from another population not exhibiting low hatchability. If the fledglings from the healthy population survive and breed at the new site, the local population should benefit from increased genetic diversity, and improved hatchability. Egg swapping has been used successfully between remnant populations of Lesser Prairie Chicken (Westemeier et al. 1991).

Egg swapping requires that nests at the source and receiving sites be monitored closely, so that clutches that are exchanged are at the same stage of incubation to minimize the potential for nest abandonment if adults incubated for an extended period. Another reason to initiate this action next season is the potential to take advantage of efforts by Rand Moore in the Willamette Valley to locate and monitor nests. There apparently are differences in vocalization between the STHL populations in Oregon and Puget Lowland (R. Moore, pers. comm.); this should not inhibit mating, because in most species song details are learned from the parents. However, if there is concern about preserving differences between the populations, the egg-swapping could be 1-way; that is, the eggs would be removed at 13th Division Prairie, but not installed in Oregon and are simply removed (or used to supplement other active clutches locally, if of the same incubation stage). Clutch removal early in the nesting season will likely result in re-nesting by the affected female. Alternatively, eggs could be moved from other sites within Washington (e.g., Columbia River).

Next Steps

We are recommending removing, “*evaluate genetic enhancement of Puget lowland populations*” from the species action plan and replacing this item with, “*develop a proposal to conduct genetic enhancement of the Puget lowland population and conduct an experimental enhancement in the spring/summer of 2011*”.

The proposal would provide the protocol for this action and would evaluate the relative risks and benefits of various alternatives.

Literature Cited

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MINUTES

In Attendance

American Bird Conservancy: Bob Altman; City of Portland: Dave Helzer, Claire Puchy; McChord Air Force Base: Valerie Elliott; OR Dept of Fish and Wildlife: Susan Barnes, Ann Kreager; Oregon State University: Randy Moore; Port of Portland: Nick Atwell, Dana Green; Portland Audubon: Mary Coolidge; Portland Metro: Elaine Stewart, Paul Vandenburg; Natural Resources Conservation Service: Rachel Maggi; The Nature Conservancy: Hannah Anderson; US Army Corps of Engineers: Paul Schmidt; US Fish and Wildlife Service: Cat Brown, Jodi Bush, Miel Corbet, Jeff Dillon, Kim Flotlin, Paul Meyers, Bill Ritchie; WA Dept of Fish and Wildlife: Mary Linders, Scott Pearson, Derek Stinson, Michelle Tirhi.

Announcements

- Scott Pearson announced that 2 **lark publications** will be out soon:
 - 1) Camfield, Martin, & Pearson – comparing vital rates of alpine vs streaked horned larks. They report a lambda of 0.6, suggesting a 40% decline per year, but actual observed decline is less than that, something like 10-20% decline. Population modeling is a useful tool that may not be the actual lambda rate, but the direction of decline perhaps.
 - 2) Journal of Wildlife Mgmt paper suggesting how to best affect lark survival rates and outlined management recommendations.
- Streaked horned larks were featured in **Oregon Field Guide** on Oregon Public Broadcasting. See our very own Randy Moore and Dave Helzer.
<http://www.opb.org/programs/ofg/videos/view/320-Streakedhorn-Lark>
- Mark Your Calendars for the Cascadia Prairie-Oak Partnership **Ecoregional Science Conference** – March 24-27, 2010, Centralia WA. We are partnering with Northwest Scientific Association for their annual meeting. There will be sessions and symposia focused on prairie/oak woodland topics spanning the entire ecoregion from Willamette to BC.

Action Items

Below are the action items identified during the meeting discussions and during the action planning process. These items are listed here to draw attention to them. They are also listed in the text of the minutes.

**** Action** – All leads for priority tasks in the plan will provide a ballpark estimate of needed funds to implement those tasks.

**** Action** - Smaller group led by Scott Pearson will decide where to focus 2010 lark exclosure work in WA. Potentials include Olympia airport, Ledbetter HRA, Damon Point, Fort Lewis.

**** Action** - Randy Moore is leading creation of draft technical bulletin for NRCS. There was a lot learned this year about what to do on agricultural land. The bulletin will be done by the end of the year.

**** Action** – Nick Atwell will coordinate with Scott Pearson and Burke museum to get tissue sample to Smithsonian.

**** Action** – Form a Monitoring Sub-Committee to finalize draft range-wide monitoring protocol and develop a comparable survey protocol for occupied sites.

**** Action** – Regarding surveying new and historic sites

- * Cat Brown and Jeff Dillon will talk with Tualatin FWS Refuge about having them include larks in their surveys.

- * Scott will coordinate with OR snowy plover people to see about larks on OR coast

- * Randy will provide information from Port of Portland regarding Longview deposition sites

**** Action** – Hannah will lead formation of an Airport Subcommittee to develop and structure the workshop series.

On-the-Ground 2009 Updates & Plans for 2010 Season

- Nest Enclosures in OR & WA - *Scott Pearson, Randy Moore, Bill Ritchie, Hannah Anderson*

Oregon – 20 nest enclosures at Finley and Corvallis airport, with some interesting and promising initial results. 9 enclosed nests fledged, 11 failed. 3 to 4 of that 11 failed due to weather and drowning. American kestrel predation inside enclosures seemed to be a problem. 1 enclosed nest with adults killed on the nests. One American kestrel male did go through the enclosure and go after nest. Do have it on film. No nests were abandoned due to enclosures. But several abandoned for “mystery” reasons. Likely was abandoned due to kestrel perching on enclosures. To resolve the problem they will be putting up anti-perching mesh.

Washington – 2 sites at Ledbetter HRA and 13th Division Prairie on Fort Lewis.

The Ledbetter restoration area is approximately 121 acres, historically occupied by larks, but they blinked out, then came back when it was restored with oyster shell for snowy plovers. At Ledbetter, 3 lark nests were located, every other was enclosed resulting in 2 enclosures. At the 1st enclosed nests there were 2 eggs, one hatched and one disappeared. Unknown what happened to the other. Have not quantified the problem yet, but the elk are licking the enclosures from the salt, which could explain lark and snowy plover abandonment. The unenclosed nest hatched 3 birds, and the 3rd enclosed nest had 3 nestlings. These were presumably successful. At the entire site, there were 10 or 12 territories, but only those 3 nests located. Did have some areas to investigate more next year that are in a matrix of vegetated beach grass with pockets of openings and there seem to be larks occurring there regularly, but has not been surveyed thoroughly. Did observe at least 2 hatch year birds where the nests were never found, but did know there were territories.

13th Division – Eleven nests from 5 Streaked Horned Lark (STHL) pairs were found. In addition, another breeding pair was likely, but none of their nests were ever found. 14 STHL were banded and fledged from the 11 known nests with an additional 3-7 unbanded fledglings from undiscovered nests. Three of the pairs' territories were along the Pacemaker airstrip, one was in the recently burned southwest corner of the site, and one was west of the apron between Pacemaker and the western site boundary road. The undiscovered nesting location was hypothesized to be somewhere between these last two territories. 6 of the 11 nests found in the 2009 breeding season were exclosed. Although the experimental design called for exclosure of every other nest, this was not always possible. Nests that were built adjacent to roads or discovered in an advanced stage of brooding were not exclosed. Consequently, one pair (North Apron Pair) had three nests exclosed, while three other pairs had one nest apiece exclosed. Out of the two STHL nests predated, one of these was under an exclosure. Western Meadowlarks appeared to be the predators in both cases of depredated nests: eggs with 0.5cm holes were found and one small chick was killed but not eaten. Although full statistical analyses have not yet been performed, STHL predation rates for the 2009 breeding season are much lower when compared to other ground nesting species on the 13th Division Prairie. An even 50% (11 out of 22) nests of Savannah Sparrows, Common Nighthawks, Western Meadowlarks, and Killdeer were depredated, compared to just 2 out of 11 depredated STHL nests (18%). Egg Hatchability: Of the 28 STHL eggs that were not predated during incubation, only 18 hatched (64%). When compared to a hatch rate of 88% (38 of 43) for the other 4 species, it would appear that STHL egg hatchability is a serious concern at 13th Division Prairie.

Plans for next season include hiring a dedicated observer to do lark nest monitoring and exclosure placement in Washington.

**** Action Item** - Smaller group led by Scott Pearson will decide where to focus lark exclosure work in WA. Potentials include Olympia airport, Ledbetter HRA, Damon Point, Fort Lewis.

- **Habitat Restoration Trials on Columbia River Islands** - *Hannah Anderson*

In March 2009, the Army Corps of Engineers and TNC (funded by USFWS) initiated some trial restoration plots in unsuitable habitat at historic or occupied sites along the lower Columbia River. The plots were not all equal in shape / size, but are approximately 300m² each. A tractor pulling an 8-foot disk implemented 3 treatments and one control in areas that were identified through the previous habitat analysis as too dense. Most of these areas were covered by quite thick moss. The treatments included one pass with the disk, two passes of the disk, strip passes of the disk, and no disking. We surveyed the plots for larks three times each throughout the season. We did observe birds foraging in the plots. One of the observations was a hatch-year bird. Anecdotally it appears that the plots where we have observed lark use are adjacent to known suitable habitat. Adjacency may be a very important component.

We also took vegetation data in the plots for comparison with known lark suitability data. The data have not yet been analyzed.

In addition to the plot monitoring, we did occupancy surveys at 10 sites in the lower Columbia. We had a lot of help from volunteering partners, many from the working group, as well as boat assistance from Pat Miller at WDFW and Paul Meyers & Bill Ritchie at USFWS. Thank you All!

The occupancy and plot surveys are funded and planned to occur in 2010. The table below is an off-the-cuff summary of where we located breeding and wintering larks in 2009. A more thorough mid-project progress report is forthcoming.

Site	Feb / March 2009		May / June / July 2009	
	Surveyed	Larks Observed	Surveyed	Larks Observed
Rice Island	No	-	Yes	Yes
Miller Sands Spit	Yes	Yes	Yes	Yes
Pillar Rock Sands	Yes	Yes	Yes	Yes
Welch Island	Yes	Yes	Yes	No
Tenasillahee	Yes	Yes	Yes	No
White's (Brown's) Island	No	-	Yes	Yes
Wallace Island	Yes	No	Yes	Yes ¹
Crims Island	No	-	Yes	Yes
Cottonwood Island	No	-	Yes	No
Sandy Island	Yes	Yes	Yes	Yes

¹ Suspect that this was a flyover from White's island, and not breeding on Wallace.

- Oregon Breeding Monitoring - Randy Moore

Breeding monitoring in Oregon was conducted from top of the valley to almost the bottom. They monitored some specific sites in Multnomah, Polk, Benton and Lynn counties, and in the southern half of the Willamette. There were 310 nests monitored, which results in a very good sample size. They estimate approximately 260 pairs, so there are over 500 birds on those 5 sites. Interesting to note that they documented one pair to have 5 nesting attempts. Breeding started in the beginning of May and the last nest fledged on August 28th, which is late in the extreme. W. Valley birds have a similar phenology as those in WA, and are usually done in July.

Multnomah – apparently has 7 to 9 breeding pairs at sites that we already knew about - the SW quad of PDX and Rivergate industrial site. In addition they surveyed west Hayden island, Sauvie island, sandy river delta, and St. John's landfill. Did find one flyover lark on Sauvie Island, very likely a migrant. Also surveyed Government island. The Rivergate population had remarkably good breeding success, found all (minus 1 or 2) nests, had 100% nest success. Suspect that the industrial areas may be good because the predator community is undeveloped. Likely 2 pairs nesting at SW quad, did not find any nests, but did find 2 fledged young. Private land on Sauvie island agriculture may have good potential but not good grass habitat.

They monitored all 3 mid-Willamette refuges for rep success. There are 13 pairs at Ankney, 50 pairs at Basket Slough (about 20 2 years before), about 40 pairs at Finley. All 3 had a significant increase in the number of larks, which had to do with the way they are farmed. The farming varies greatly from year to year as all the refuges are managed for goose forage and turned over to local farmers during the growing season. Rep success at B-S poor, Finley was better where they were doing active mgmt. There were no birds in restoration site at wet prairie, apparently that field has undergone succession so that it is no longer suitable. They plan to burn this year.

Corvallis airport, about 80 pairs this year – success was higher than it was last year. Had a much more extensive video monitoring project going on this year. The suite of predators in WV is much greater than we had previously known. Last year all predation events were northern harriers, this year added great horned owl, red tail hawk, crows, a species of mouse, and kestrels. All avian predators. No meadowlark, and there is a robust population at Corvallis airport. Has fantastic great-horned owl predation.

Wetland Reserve Program in southern Linn county, called NDAC, hosted about 75 pairs of larks in its first year post-restoration, and about 75 pairs this year, which was surprising due to the succession that was occurring. Looking at it from the road, thought it was too thick, but once you got there, it was thin enough. But birds were abandoning by later in the season. As part of the restoration, they have created 8 big wetland impoundments. As these draw down, the birds move out of the “succeeded” upland prairie into the dried up areas, cracked clay. Have learned a lot this year and will inform the technical bulletin for NRCS. So birds will use wetlands themselves after there is no longer water in it. They plan to burn NDAC this year.

**** Action Item** - Tualatin National Wildlife Refuge may be a good place for surveys next year. Elaine from Portland Metro suggested that the Tualatin WRP complex of sites may be a good site to manage for streaked horned larks. Metro is looking to pull together and OF grant to manage their prairie habitat for larks.

Randy is interested in continuing the OR breeding monitoring in 2010 to ensure multiple years and multiple seasons.

- **St. John’s Landfill Restoration and Attraction - Paul Vandenburg**

St. John’s has a 5-acre lark restoration plot that is composed of dredge material, that is now quite green. They do have a large landscape effect on the small spot. They are very close to the Rivergate field where construction is progressing (about 55 acres left). Metro is actively managing the plot now for suitable nesting habitat. They disked the plot in September 2009, and had previously done some herbicide treatment. Hannah and Scott came down in late summer and discussed the potential to set up a vocal attraction. Many partners and volunteers collaborated to get the attraction project set up. Thank you to Americorps, Trevor’s Woodworking, TNC, WDFW, OSU, USFWS and Portland Metro. The assumption for the project is that the visual decoy is important but not too important how good they are, but just that the pattern is correct.

The attraction boxes and decoys were set up in early September. The current plan is to leave them out until mid-October and then put them back in February. Will do it at least through nest spring or go for another year. Vocalizations run 3 times per day for about an hour. The site is monitored for larks about 3 times per week.

Q: why are the boxes/decoys to be taken out of the field in October? The thought was that the birds would be prospecting in early autumn and then again moving through in the spring. Randy agrees those are productive times to be doing it, but adds that it would be worthwhile to leave it there over the course of the winter. There will be wintering birds very near by. When the sun comes out, they do sing throughout the winter. There is a propensity for birds to breed where they winter. So

attracting birds during the winter may be a good thing. Getting the Rivergate birds to find that place during the winter may be a key to getting them to establish. An alternative to leaving them out all winter would be to move the boxes out there during a sun breaks and good winter weather. Larks are known to sing even in the winter when the sun comes out.

Policy & Incentive Updates

- St. John's Landfill CCAA - Cat Brown

USFWS and Portland Metro are in the process of completing the CCAA (Candidate Conservation Agreement with Assurances), which they expect will be done in spring of 2010. The CCAA is like an HCP but for candidate instead of listed species. It is basically an agreement with USFWS where they outline management activities for the property. Should the covered species become listed in the future the landowner will not be required to do anything additional beyond what they had already agreed to. USFWS issues a take permit, which allows the signatory to do the beneficial actions for the species without being dinged for it later.

This CCAA is a good model that could be related other places. Randy has been in discussion with the City of Corvallis to create a CCAA for city property. The City is willing to discuss potentials. Cat and Randy had a discussion about creating a CCAA for the Corvallis Airport. This will be quite complicated because it will involve the FAA.

- NRCS Incentive Programs and STHL Technical Bulletin - Rachel Maggi

**** Action Item:** Randy Moore is creating the draft technical bulletin. There was a lot learned this year about what to do on agricultural land. The bulletin will be done by the end of the year.

Rachel explained that all NRCS incentive programs are based off of state payment schedules. NRCS has to get larks into the payment schedule, which is already complete in WA for 2010. They will need to develop a "practice scenario" that would tell landowners what to do.

The ephemeral nature of lark land use could be extraordinarily important as it wouldn't require landowners to permanently take their land out of production, but could just let it lie fallow for a year or two. Specifically, the EQIP program is directed to target organic producers, which would require a 2-5 year transition process from traditional agricultural production to organic production. Some of the practices that benefit larks could be perfect for that transition.

Portland Metro has a lot of agricultural property that could be a good link.

Rachel mentions that the new restrictions on WHIP have been relaxed. Under the new farm bill WHIP still only applies to private land, but instead of being only active agricultural land, the land can be suitable for agriculture or able to produce trees.

Airports

- **McChord - Valerie Elliott**

Surveys were conducted in 2009, but it is suspected that the observers were too inexperienced to create useful data. The past breeding stronghold area is no longer there. Valerie suspects that there are more crows out there than before. A falconer regularly hazes birds on runways. McChord is scheduled to join bases with Fort Lewis in 2010. McChord holds an air rodeo that often is held right in the middle of the breeding season.

- **Olympia Airport - Michelle Tirhi**

Consistent surveys were initiated in 2009. Surveys were conducted in May and June. The airport is estimated to be occupied by 20-some pairs. The population goal at the airport was set at 18-30 pairs with greater than or equal to 30% reproductive success. Rep success was not monitored, although one nest was discovered opportunistically while doing the surveys.

WDFW is in consultation with the Port of Olympia on both 5-year and 20-year management plans. The straw-dog plan includes directives to do lark surveys. All this is being run through the FAA, who has a very strong voice. One of the goals in the management plan is to get funding directed toward lark breeding monitoring.

- **PDX – Dana Green, Nick Atwell**

The issue for PDX is strategic land use planning. Do they dedicate a specific piece of property or create ephemeral habitat across the inventory. They are talking with the city, but cannot do anything until they have discussions at the federal level. PDX wonders how CCA discussions would go with the FAA.

- **Larks and Airports Workshop - Hannah Anderson**

Interested in conducting a workshop that will address airport specific issues for larks and work together to find positive solutions, dispel misconceptions, etc.

**** Action Item** – Hannah will connect with Dana and Nick to talk about topics, structure, agenda, and speakers for the workshop.

- **BASH information - Nick Atwell**

Between 1990 and 2009 in Washington and Oregon combined, horned larks account for 17 of 3088 (0.55%) reported strikes. See **Appendix A** for nationwide counts and details on Oregon strikes.

This topic led to discussion that the Smithsonian needs a tissue sample for STHL. Scott mentions that they can get samples on loan from the Burke museum. And Scott has some in his freezer.

**** Action Item** – Nick Atwell will coordinate with Scott Pearson and Burke museum to get tissue sample to Smithsonian.

Range-Wide Monitoring Protocol

Due to time limitations, rather than holding a discussion about the particulars of the draft range-wide monitoring protocol produced by Randy Moore, it was decided that better use of the group's time would be to discuss whether a range-wide monitoring is necessary.

The idea behind the draft monitoring protocol is that it would be a vehicle to estimate how many larks there are total, but also a repeatable protocol to monitor the population. It was written with the knowledge that you can probably get a decent idea of how the species is faring on public lands and in places where there is annually available habitat (sites that have a breeding presence each year) as opposed to ephemeral habitat within the rest of the Valley. We can monitor the stable sites, and then know how those birds are doing, but won't know what is happening other places.

It is likely that the populations of the core sites are going to be the highest populations in the valley. There are 500 point count stations that have been run in the valley (no systematic design) but did provide a substantial effort at roadside sites. Numbers of larks from that effort pales in comparison to "core" sites.

While the group agreed that knowing absolutely the number of birds in the population would be good, it may not be the best use of limited conservation dollars. What we do know is that no matter what the final count would be, it would be too low.

Q: what does FWS need to support the listing decision making process? They use the best available knowledge. There is always limited funds, and limited qualified people to do the work. A certain population number will not likely influence listing priority of likelihood of listing.

**** Action Item:** It was decided that because the protocol was close to completion and would not take too much effort to finalize it, a subcommittee of the working group, the Monitoring Subcommittee, would finalize the protocol so that if funding becomes available it would be ready to implement.

Lark Population Target

Bob Altman brought up the topic of setting a population target for STHL that will stimulate greater conservation action. The value of setting the target is not necessarily for every audience, but would provide context to have a better understanding of the value of their actions. A 5-year objective gives people and entities something to reference in that their actions contribute toward achieving a goal.

A lively discussion ensued, resulting in the group agreeing to set the goal to **double the number of larks in 5-years.**

Action Planning

The group worked to focus and refine the draft action plan, which is attached as a separate document and embedded here as **Appendix B**. Some specific action items resulting from the discussion are listed below.

**** Action Item:** All leads for priority tasks in the plan will provide a ballpark estimate of needed funds to implement those tasks.

**** Action Item:** Form a Monitoring Sub-Committee to finalize draft range-wide monitoring protocol and develop a comparable survey protocol for occupied sites.

**** Action Item:** Regarding surveying new and historic sites

- * Cat Brown and Jeff Dillon will talk with Tualatin FWS Refuge about having them include larks in their surveys.

- * Scott will coordinate with OR snowy plover people to see about larks on OR coast

- * Randy will provide information from Port of Portland regarding Longview deposition sites

**** Action Item:** Hannah will lead formation of an Airport Subcommittee to develop and structure the workshop series.

Appendix A

Species	State	Strikes	Total State Strikes	% of total
HORNED LARK	ALABAMA	8	910	0.88%
HORNED LARK	ARKANSAS	5	532	0.94%
HORNED LARK	ARIZONA	53	1638	3.24%
HORNED LARK	CALIFORNIA	66	8341	0.79%
HORNED LARK	COLORADO	384	3231	11.88%
HORNED LARK	CONNECTICUT	36	964	3.73%
HORNED LARK	DISTRICT OF COLUMBIA	4	2026	0.20%
HORNED LARK	DELAWARE	1	184	0.54%
HORNED LARK	FLORIDA	3	6156	0.05%
HORNED LARK	GEORGIA	5	1617	0.31%
HORNED LARK	IOWA	13	782	1.66%
HORNED LARK	IDAHO	7	285	2.46%
HORNED LARK	ILLINOIS	8	4373	0.18%
HORNED LARK	INDIANA	16	1263	1.27%
HORNED LARK	KANSAS	6	401	1.50%
HORNED LARK	KENTUCKY	6	2282	0.26%
HORNED LARK	LOUISIANA	9	2545	0.35%
HORNED LARK	MASSACHUSETTS	39	1465	2.66%
HORNED LARK	Maryland	8	1168	0.68%
HORNED LARK	Maine	7	402	1.74%
HORNED LARK	Michigan	38	2347	1.62%
HORNED LARK	MINNESOTA	24	1037	2.31%
HORNED LARK	MISSOURI	103	2156	4.78%
HORNED LARK	MISSISSIPPI	4	570	0.70%
HORNED LARK	MONTANA	9	163	5.52%
HORNED LARK	NORTH CAROLINA	1	1540	0.06%
HORNED LARK	NORTH DAKOTA	5	399	1.25%
HORNED LARK	NEBRASKA	23	1200	1.92%
HORNED LARK	NEW HAMPSHIRE	9	688	1.31%
HORNED LARK	NEW JERSEY	26	2717	0.96%
HORNED LARK	NEW MEXICO	14	367	3.81%
HORNED LARK	NEVADA	6	465	1.29%
HORNED LARK	NEW YORK	39	5239	0.74%
HORNED LARK	OHIO	46	3577	1.29%
HORNED LARK	OKLAHOMA	6	1088	0.55%
HORNED LARK	ONTARIO	1	102	0.98%
HORNED LARK	OREGON	7	1604	0.44%
HORNED LARK	PENNSYLVANIA	5	3054	0.16%
HORNED LARK	RHODE ISLAND	15	438	3.42%
HORNED LARK	SOUTH CAROLINA	3	1238	0.24%
HORNED LARK	SOUTH DAKOTA	8	259	3.09%
HORNED LARK	TENNESSEE	6	2825	0.21%
HORNED LARK	TEXAS	95	7533	1.26%

Species	State	Strikes	Total State Strikes	% of total
HORNED LARK	UNK	22	11193	0.20%
HORNED LARK	UTAH	75	1180	6.36%
HORNED LARK	VERMONT	4	129	3.10%
HORNED LARK	WASHINGTON	10	1484	0.67%
HORNED LARK	WISCONSIN	10	986	1.01%
HORNED LARK	WEST VIRGINIA	4	356	1.12%
HORNED LARK	WYOMING	1	102	0.98%

Selected Search Criteria:

From: Jan 1990 To: Apr 2009

State: ALL

Species: HORNED LARK

Source: FAA National Wildlife Strike Database (Level IIIA) - Version 2009.4-P dated 9-25-2009

Downloaded - Mon Sep 28 2009 16:38:14 MST

Oregon Only Details

Incident Date	Airport	State	FAA Region	Operator	Aircraft	Damage Code*	Species
02-06-2002	KLAMATH FALLS INTL (KLMT)	OR	ANM	MILITARY	F-15C	N	HORNED LARK
10-03-2004	MAHLON SWEET FLD (KEUG)	OR	ANM	AMERICA WEST AIRLINES	A-320	N	HORNED LARK
11-09-2005	PORTLAND INTL (OR) (KPDJ)	OR	ANM	SKYWEST AIRLINES	EMB-120	N	HORNED LARK
08-28-2007	KLAMATH FALLS INTL (KLMT)	OR	ANM	UNKNOWN	UNKNOWN		HORNED LARK
02-26-2008	KLAMATH FALLS INTL (KLMT)	OR	ANM	UNKNOWN	UNKNOWN		HORNED LARK
04-23-2008	KLAMATH FALLS INTL (KLMT)	OR	ANM	UNKNOWN	UNKNOWN		HORNED LARK
05-06-2008	KLAMATH FALLS INTL (KLMT)	OR	ANM	UNKNOWN	UNKNOWN		HORNED LARK

Appendix B. Streaked Horned Lark DRAFT Action Plan for Washington, Oregon, and BC

Strategic Action	Tasks Synopsis	State, Province	Priority	Implementing Party	Schedule			
					2010			
					Resource needed	Resource secured	Resource requested	
1	Determine population status, current distribution and limiting factors	1.1 Finalize a standardized range-wide monitoring protocol	OR, WA	8	monitoring sub-committee			
		1.2 Develop comparable survey protocol for occupied sites that addresses abundance, spatial distribution, reproductive success, wintering populations	OR, WA	7	monitoring sub-committee			
		1.3 Conduct annual monitoring at occupied sites	OR, WA					
		1.4 Survey new and historic sites. Potentials: Chehalis coal mine, Mt. St. Helens blast zone and pumice plain, Rogue River valley, Roger's Washington townships, Tualatin FWS Refuge, Ridgefield FWS Refuge, OR Coast, Cowlitz River, Port of Longview industrial area & coast	OR, WA		Cat and Jeff will talk to Tualatin. Scott will talk to Snowy Plover folks, Randy will provide Longview deposition sites from Port of Portland			
		1.5 Identify important habitat features						
		1.5.1 Determine the effect of habitat parameters on nest success in the Willamette Valley - 2008&9 complete, continue and include private working lands, synthesize with WA data	OR	5	OSU			\$35k
		1.5.2 Determine attributes of high quality winter habitat, including diet - need more complete data set	OR, WA	*	WDFW, OSU			
		1.6 Identify threats to population viability						
		1.6.1 Determine whether contaminants are limiting hatchability of eggs or survival of nestlings	OR, WA		WDFW, OSU, USFWS, TNC			
		1.6.2 Examine genetic variability and population structuring	OR, WA					
		1.6.3 Evaluate the role of disturbance (e.g., predation, recreation, industrial uses) in nest failure	OR, WA	*	WDFW, OSU			
		1.6.4 Determine other factors limiting juvenile and adult survivorship	OR, WA	9	WDFW, ODFW, OSU, TNC			
		1.6.5 Determine factors limiting reproductive success in Willamette Valley	OR					

2	Protect Existing Populations and Habitat	2.1 Secure protection commitment on core occupied sites, e.g. management plans, CCA(A), mowing regime change, prescribed fire		1				
		2.1.1 Corvallis Airport - CCA in discussion	OR		IAE, OSU, City of Corvallis, FWS			
		2.1.2 MDAC in south Willamette Valley	OR		OSU, Portland Metro, USFWS			
		2.1.3 Columbia River Islands - CCA with Army Corps	WA,OR		TNC, USACE, FWS			
		2.1.4 Willamette Valley NWRs - in process	OR		USFWS NWR			
		2.1.5 Fort Lewis / McChord	WA		TNC, Fort Lewis / McChord			
		2.1.6 South Puget Sound regional airports	WA		Port of Olympia, Shelton, WDFW			
		2.1.7 Washington Coast	WA		FWS			
		2.2 Develop land protection prioritization scheme - in process in WA	OR, WA		ODFW, FWS, WDFW, TNC			
		2.3 Identify existing jurisdictional authority and apply all jurisdictional codes to protect habitat	OR, WA		ODFW, WDFW			
		2.4 Address identified threats range-wide: Initiate protection measures, reduce predator impacts, redirect recreation	OR, WA		OSU, WDFW, FWS Refuges, TNC, Ft. Lewis			
		2.4.1 Redirect incompatible land uses, e.g. McChord rodeo, dog trials, model airplane use	OR, WA		OSU, WDFW, FWS Refuges, TNC, Ft. Lewis/McChord			
		2.4.2 Implement nest exclosures range-wide, coordinate and use experimental approach - 2009 complete, continue in 2010	OR	2	TNC, Ft. Lewis, WDFW, ODFW, OSU	Needs funds for 2010		
3	Enhance viability of extant populations and habitats	3.1 Enhance existing habitat and increase amount of available habitat in the Willamette Valley						
		3.1.1 Develop management prescriptions to create breeding habitat and winter habitat in agricultural matrix	OR	6	OSU, USFWS, NWR, NRCS			
		3.1.2 Implement habitat restoration activities on breeding and wintering grounds e.g. Corvallis airport, Basket Slough, Finley, PDX	OR	10	NRCS, Private, Refuges, USFWS			
		3.1.3 Create new habitat in Multnomah County, e.g. St. John's Landfill	OR	12	City of Portland, Portland Metro, OSU, USFWS			
		3.1.4 Implement habitat restoration on private lands through existing incentive programs such as CRP, WRP GRP	OR		NRCS			
		3.2 Attract birds to areas outside the airport runways through habitat management	OR, WA		OSU, WDFW			

		3.3 Columbia River and Coast habitat restoration					
		3.3.1 Develop strategy to control invasive beach grass	OR, WA	*			
		3.3.2 Develop winter habitat management prescription	OR, WA	*			
		3.3.3 Develop habitat restoration activities on breeding and wintering grounds - 2009 complete, continue in 2010					
		3.3.4 Implement habitat restoration activities on breeding and wintering grounds	OR, WA	4	TNC, USACE, FWS, WDFW		
		3.3.6 (Coast) Bulldoze beach grass (use Ledbetter plover restoration HRA as demo project) -ongoing	WA				
		3.4 South Puget Sound habitat restoration					
		3.4.1 Implement prescribed fire program - explore espansion and coordination with OR	WA	13	TNC, Ft. Lewis		
		3.4.2 Continue control measures to address invasive weeds on breeding grounds. Focusing on invasives that change the structure of the habitat - ongoing	OR, WA	*	TNC		
		3.5 Evaluate feasibility of population augmentation or reintroduction	OR, WA		WDFW, OSU		
		3.5.1 Conduct vocal attraction experiment at St. John's Landfill	OR		Portland Metro, FWS		
4	Education and outreach	4.1 Conduct larks and airports workshop series	OR, WA	3	airport subcommittee		
		4.2 Maintain working group and coordination		*	TNC, FWS		
		4.2.1 Develop STHL informational webpage					
		4.2 Develop education and outreach for landowners, particularly for degraded ag land.					
		4.3.1 Conduct private landowner and farm bureau field visit / lark workshop					
		4.2 Encourage federal & state agencies to promote incentive programs	OR, WA		WDFW, FWS		
		4.3 Develop outreach materials on habitat management and restoration for land managers	OR, WA				
		4.4 Develop outreach programs for additional partners, promoting regional recovery and habitat management	OR, WA				

