LIP PROGRESS REPORT 1

KRAUTMANN JEFFERSON FARM OAK AND PRAIRIE HABITAT RESTORATION PROJECT

Prepared by Lynda Boyer, Project Coordinator
February 12, 2007

Time Period Covered by Report: February 1st, 2006 – January 31st, 2007

All activities, problems etc. included below should have occurred in the period covered by this report.

Funding:

LIP Grant Fund Activities

- Brush/tree/weed removal
- Native seed and plants
- Bird survey

Cost-Share Activities [Heritage Seedlings' staff and volunteers]

- Brush/tree/weed removal
- Native seed and plants
- Bird survey

Summary of Significant Activities and Results as per LIP Statement of Work

Note: For reference while reading this report, **Appendix A** provides an air photo of the project site and table summarizing starting habitats as well as current and anticipated vegetation treatments. The photos illustrate the progress of the work per objective.

Objective 1: Control invasive and non-native plants in the project area.

Task 1.1: Use a combination of broadcast-sprayed herbicides, spot-sprayed herbicides, sheering, mowing, hand-cutting, and other appropriate techniques to reduce and control invasive and non-native grasses, forbs, shrubs, and trees in the project area.

Activities

- Spring: Heritage crew spot-sprayed thistles on 25 acres in Unit 2 thinned in 2004 [**Appendix A**].
    - Resulted in at least a 50% reduction of thistles in the area.
- Summer and fall: Heritage crew broadcast applied glyphosate on 55 acre Steiwer Hill (Unit 1), 7 acres just north of lake and southern part of Unit 2, Unit 7, and Unit 8.
    - Significant reduction in non-native vegetation which will ensure fall sown native seed has minimal competition.
- Summer: R-J Consulting was contracted for brush and tree removal and Heritage staff assisted. Heritage used their Takeuchi TL 150 rubber-tracked skid-steer with rotary mower and grapple forks, and R-J Consulting used two CAT 277 rubber-tracked skid-steers with a rotary mower, hydraulic tree sheers, and grapple forks to clear invasive brush fields and hawthorn thickets.
    - Finished clearing brush and non-native hawthorns in the south ravine and western edge of Unit 1. The above ground vegetation of non-native hawthorn, blackberry, and poison oak were substantially reduced.
    - Mowed all grasslands in the Unit 2 areas thinned in 2004 to reduce competition from thatch that can negatively impact native upland prairie species present [**Table 1, pg 9**]
    - Continued clearing brush in all areas of Unit 2.

Objective 2: Convert young oak woodland to oak savanna.

Task 2.1: Thin areas of young, skinny oaks to a density of approximately 2-5 trees per acre. Retain trees with lower branches.

Activities

- Late-summer and fall [post-nesting season]: Used Takeuchi, CAT, and chainsaws to thin trees and yard material.

- Finished thinning trees in the south ravine and western edge of Unit 1. Oak trees are now more openly spaced averaging 5-10 trees/acre in the treated areas.
- Continued thinning trees in Unit 2, retaining oaks with lower branches. Returned approximately 20 acres of dense oak thickets and brush fields to historic savanna density. The unit is now mostly thinned to a savanna density with only the most eastern ravine with maples to be cut and removed in 2007 and areas of blackberry too steep for machinery.
- Larger maple and cherry trees were cut with a chainsaw.
- Native shrubs retained (except poison oak).
- All species of trees large enough for firewood were laid in windrows, the tops cut and piled, and the logs transported off-farm to owner's home.
- Debris piles were burned late-fall after rainfall.
- Ravine areas and just below Unit 5 looked completely denuded from machine and yarding activity as well as removal of the dense overstory vegetation so were targeted for re-seeding (see Task 2.2).

Task 2.2: Establish native grasses and forbs in the newly formed oak savanna.

Activities

- Fall: native grasses and forbs were overseeded in areas disturbed by brush clearing and logging activities [**Table 2, pg 10**].
  - Native grasses and forbs were hydroseeded on 4 acres of denuded, steep ravine. The hydromulch was sprayed on in a thin layer no more than 1/4 inch deep to allow enough light for the native seed to germinate. The sowing rate was 10 lb/acre forbs, 12 lbs/acre grass, and 30 lbs/acre spring oats (as a nurse crop). It was hoped the tackifier in the hydromulch would help stabilize the soil and allow germination of the oats before winter rains. Preliminary surveys in December noted most of the soil held during the hard November rains and there was substantial vegetation growth either from seed that was sown or seed and/or plants on the site prior to augmentation.
  - Just south and east of Unit 5 native grasses and forbs were applied with a spinner spreader pulled by an ATV at the same sowing rate as the hydroseeded area. The seed was cut with fertilizer to help it to flow.
  - Native grass residue from seed cleaning that contained seed was hand broadcast over mowed blackberry areas east of the hydroseeded ravine [this will allow the use of broadleaf herbicide after surveying for natives].

Objective 3: Improve mature oak woodland habitat.

Task 3.1: Thin mature oak woodland.

Activities

- Late-summer [post-nesting season]: Used Takeuchi and CAT to thin trees and yard material.
    - The woodland was thinned of small diameter trees that could be mechanically sheered.
    - The area will be assessed in 2007 to see if hand-cutting is warranted to allow the native prairie species in the understory to persist.

Task 3.2: Place avian nest boxes in the oak woodland.

Activities

- February 2005: 3 nest boxes were placed at 15 ft in larger oak trees.

Task 3.3: Mow oak woodland understory to reduce thatch and encourage growth of native plants.

Activities

- Late-summer [post-nesting season]: Used Takeuchi to mow 20 acres of understory.
    - The Takeuchi disturbed the ground quite a bit due to its greater weight than the CAT.
    - By fall, the bare ground was quickly becoming revegetated by the invasive weed *Geranium lucidum* (already present in abundance). Since the natives in the woodland are dormant in the fall, some areas had a broadleaf herbicide applied to reduce the Geranium. The area was then overseeded with a spinner spreader with shade-tolerant native prairie species.
    - The area will be monitored in 2007 to see if the response of the endemic natives to the mowing was positive and to determine if hand-cutting of larger trees is warranted to allow the native prairie species in the understory to persist.

Objective 4: Increase habitat for wildlife that utilize snags and brush piles.

Task 4.1: Limb and top conifer trees throughout the project area. Leave some trees only partially limbed to provide replacement snags.

Activities

- November: Fauna and Flora Consulting was hired to create snags in Unit 2 areas brushed and thinned 2004 and 2006.
    - Twenty-one conifer trees deemed the proper size for a beneficial snag were limbed and topped and associated debris was piled.

- An additional six smaller diameter trees were girdled to reduce competition for oak trees.
- Some smaller diameter conifers were retained if not threatening oaks. These will be allowed to increase in size for snagging at a later date.
- In the Statement of Work, it was estimated there would be 60 conifers that could be snagged between 2006 and 2008, it is unclear if there are this many large conifers on-site. More will be sought as additional acreage is treated for brush removal and oak thinning.

Task 4.2: Create several wood piles on the edges of fields and roads using debris produced by Tasks 1.1, 2.1, and 4.1.

- There have not been opportunities to keep wood piles where they have been created (internally on the savanna). This task will be reassessed as the brush and wood removal work continues in order to find a happy-medium between habitat and the ability to manage for savanna conditions.

Objective 5: Reintroduce native plants on pre-existing savanna (*i.e.*, savanna that is not a product of Objective 2).

Task 5.1: Establish native prairie grasses and forbs on the savanna.

Activities

- Summer: In order to retain the unique genetics of the native plants on the site, certain native forbs were flagged in areas where no herbicide has been used and the seed collected [**Table 1***]. This seed was put into seed stock blocks for future use, given to Heritage's perennial plant propagator to produce plants for direct planting on site, or saved to be sown with a seed drill fall 2007.
- Fall: Native grasses were drilled with a Truax seed drill in Unit 1.
    - A grass mix of *Festuca roemeri*, *Koeleria macrantha* and *Poa secunda* was created and sown on 34 acres below the main Stewer Hill road. The sowing rate was 7 lbs/acre.
    - A monoculture of *Danthonia californica* was sown on 20 acres above the road at 8 lbs/acre. *Danthonia* does not germinate until spring so it was not sown with any of the other grass species which germinate in the fall.

Objective 6: Reintroduce threatened, endangered, and other federal-status plant species to the project site.

Task 6.1: Obtain a National Fish and Wildlife Foundation (NFWF) Native Plant Conservation Initiative Grant or similar grant to help fund the propagation of federal-status plant species.

Activities

- In March 2006, the North Santiam Watershed Council (NSWC) submitted an OWEB Small Grant application for a portion of the propagation and planting efforts.
    - The grant was awarded in late-March with a start date of January 2007 and completion date of December 2008.
    - The grant funds will be used as cost-share for the NFWF grant and will provide funds for the propagation of 8,900 plants
- In August of 2006, the North Santiam Watershed Council submitted a pre-proposal for a National Fish and Wildlife Foundation Native Plant Conservation Initiative Grant for a portion of the propagation and planting efforts.
    - A full proposal was requested in September, reviewers were chosen, and the full-proposal submitted in early-October.
    - The grant was awarded in January 2007 and we are waiting for the contract to be signed. The start date is January 2007 and completion date is December 2008.
    - The grant cash will be used as cost-share for the OWEB grant and to propagate 11,500 plants. The NSWC, Heritage staff, and student volunteers will provide additional cost-share for the NFWF grant funds.

Task 6.2: Propagate and plant plugs of 5-8 federal-status plant species.

Activities

- Seed of *Delphinium oreganum* was collected from numerous sites in Marion and Linn Counties and given to Heritage's perennial plant propagator to produce plants for both a seed stock block, which will provide future plants for this and other restoration projects, and the Jefferson site in 2008.
- Seed of *Aster curtus* was collected from 2 sites in Marion County (one was at the Jefferson Farm) in 2005 and will be grown to start a seed stock block for future restoration plugs. Additional seed will be collected summer of 2007.
- Seed of *Lathyrus holochlorus* was collected from 3 roadside populations in Marion County and will be grown to start a seed stock block for future restoration plugs. Due to low seed set of the wild populations, additional seed will be collected in 2007.
- Seed of *Erigeron decumbens*, *Horkelia congesta*, *Sidalcea nelsoniana,* and *Lomatium bradshawii* already in production blocks at Heritage was provided to

Heritage's plant propagator and is, currently, in cold-moist stratification [**Table 3, pg 11**].

- The seed in stratification will be sown in the greenhouse spring of 2007 to provide plants for fall 2007 [2008 for *Lomatium*].
- Corms of *Delphinium oreganum* will be harvested from a current production block late summer for fall 2007 planting.

Task 6.3: Reintroduce golden paintbrush to the project site in accordance with the federal golden paintbrush recovery plan.

- The Institute for Applied Ecology (IAE) is working on the Recovery Team effort for numerous Willamette Valley and Puget Trough at-risk species. IAE has been conducting outplanting studies with golden paintbrush plants grown from seed of Washington State populations to determine what type of conditions the paintbrush needs to be successful. The plantings, thus far, have done poorly (including the study conducted at another Heritage restoration site) but they want to keep trying. They have indicated that they would support putting golden paintbrush at the Jefferson site. Currently, they are working the USFW on the next steps to take in Oregon for pursuing reintroduction.

Objective 7: Create a Geographic Information System (GIS) for the project.

Task 7.1: Create a project GIS and use it to analyze and understand changes in the property's vegetation types over time.

- After consultation with the wildlife researchers conducting the breeding bird survey [see Task 9.2], it was determined that GIS maps would be inappropriate for a project site this small.
- Instead, air and site photos with the appropriate pre-and post-restoration habitat code, will be used to track the changes in habitat over time [**Appendix A**].

Objective 8: Conduct project education and outreach.

Task 8.1: Work with local schools to get young people involved in hands-on activities at the project site.

- This will occur starting fall of 2007. The North Santiam Watershed Council coordinator will assist in the recruitment of student volunteers to help with the planting of at-risk plant species.

Task 8.2: Conduct annual project site tours for natural resource agencies, non-profits, and private landowners.

Activities

- In September 2006, a tour of the restoration site was conducted in which 49 people attended [**Appendix B**].
- The background and affiliation of attendees was wide-ranging from agencies, educational institutions, and non-profits; to private landowners interested in learning what they could do to improve their oak and prairie habitat.
- The tour lasted 4 hours and was conducted by the project leader, Lynda Boyer, with presentations by the landowner, Mark Krautmann, and the owner of R-J Consulting Rich Owen.
- As luck would have it, they were even treated to a demonstration of hydroseeding by Heritage staff [see task 2.2].

Objective 9: Conduct project monitoring.

Task 9.1: Conduct annual post-planting botanical surveys.

- Implemented starting summer 2007 with plant establishment information and photo documentation of vegetation changes.

Task 9.2: Conduct avian point counts at 15-25 locations 3 times during the breeding season each year for at least 5 years.

Activities

- In December 2005, discussions began with wildlife researchers interested in designing studies and monitoring programs that address how wildlife respond to restoration efforts in Oregon white oak plant communities at both the scale of the individual study, and at larger landscape spatial scales. My need of bird surveyors came at an opportune time.
- The researchers are: Dan Rosenburg Ph. D, Oregon State University Department of Fisheries and Wildlife; Dave Vesely, Oregon Wildlife Institute, Corvallis; and Joan Hagar, U.G. Geological Survey, Forest and Rangeland Ecosystem Research Center.
- At there behest, I developed the habitat unit map and table [**Appendix A**] with starting conditions and vegetation treatments so they could decide the best way to survey the site.
- We met in March to review the LIP grant requirements and to see how they mesh with the realities of the site size and standard survey protocols.
- Due to a lack of initial funding, it was determined that the 2006 Jefferson survey would be a pilot study to get the effort initiated and to establish species nesting on the site. Hoping to expand the project scope, researchers sought funding through a Pacific Coast Joint Venture grant [**Appendix C**]. The grant was awarded and, with other monies procured and applied for, will help fund work in 2007 which will focus on detailed evaluation of the bird community and establishing a proto-type for monitoring efforts.

- A monitoring protocol was developed and implemented by Dave Vesely and Joan Hagar mid-May through late-June.
- The final report for the 2006 Jefferson Farm Survey for Breeding Birds and Western Gray Squirrels can be found in **Appendix D***.*

Task 9.3: Monitor avian nest box use.

- David Craig, Professor of Biology at Willamette University, was interested in having his students monitor the bird boxes we had placed throughout the farm.
- In 2005, Heritage crew and students from Jefferson grade school placed 47 swallow / blue bird boxes along the main farm road and around the lake. Kestrel / owl boxes were placed 15 ft high in trees along the riparian corridor and in the woodland of Unit 5.
- He and two student interns scouted the farm for the placement of the boxes and designed a survey protocol.
- Between late–May and early-July they visited the site 6 times. Each box was numbered and collected the following data: species using the nest, amount of nest material, number of eggs, number of chicks, notes about the boxes or birds. They students also banded both chicks and adults. The data was compiled and analyzed the results are in **Appendix E***.*
- One of the students, Jordan Aney, wrote about the importance of the swallow breeding survey:
    - "I am excited to fold (these data) it in with future years. I learned recently that swallow breeding data is a very big deal, evidently the birds are great indicators of pollution as well as global warming (a Stanford study showed that the average hatch dates are 9 days earlier than they were 40 years ago.)" This indicates the importance of not only including students in restoration projects, but the gathering of long-term data.
- The two bird species utilizing the small boxes were Tree swallows and Violet green swallows. The lack of Western blue birds using the boxes was disappointing. They have been sighted in the winter time and were noted as probably breeding (PR) during the survey conducted by Dave Vesely and Joan Hagar. The reason they may not be utilizing the boxes are two fold 1) There may be plenty of natural cavities and/or 2) the boxes were too low and too close together (low T-posts were used so the kids could pound them in). I have since learned that blue birds prefer to nest in boxes higher up and 50-100 yards apart. This winter, the boxes will be replaced on taller T-post and some of them placed at the desired distance.
- **Appendix F** is a compilation of all bird species noted since 2004.

Objective 10: Conduct project maintenance.

- Implemented starting 2008

Table 1 – Native Plants Found At Jefferson Farm

Surveys conduction 2004-2006 [* = seed collection 2005/2006]

Key: r = riparian; up = upland prairie; wp = wet prairie; w = woodland

Species	Habitat	Species	Habitat
Achillea millefolium*	up	Lomatium dissectum*	up
Adenocaulon bicolor	w	Lonicera ciliosa	up, w
Alisma plantago-aquatica	r	Lotus micranthus	up
Amelanchier alnifolia	w	Lotus pinnatus (w)	wp
Aster (Symphiotrichum) hallii	wp	Lupinus bicolor	up
Aster (Symphiotrichum) curtus* [at-risk]	up	Luzula comosa	up
Aster (Seriocarpus) oregonensis	w	Madia gracilis*	up
Aster (Symphiotrichum) radulinus	w, up	Madia sativa	up, wp
Berberis aquifolium	w	Marah oregana	up
Brodiaea coronaria	up	Mianthemum racemosum	w
Bromus sitchensis	up	Mimulus guttatus	wp
Calochortus tolmiei	up	Montia linearis	wp
Camassia lechtlinii*	up, wp	Myosotis laxa	wp
Cardamine penduliflora (w)	wp	Nemophilla parviflora	up, w
Carex obnupta (w)	wp	Oemleria cerasiformis	up, w
Carex stipata (w)	wp	Perideridea oregonum*	up, wp
Carex tumulicoloa*	up	Physocarpus capitatus	w, r
Comandra umbellata	up	Polystichum munitum	w
Corallorhiza striata	w	Potentilla gracilis	up
Cornus serciea	r	Prosartes smithii	w
Corylus cornuta var californica [key]	up	Prunella vulgaris var lanceolata*	up
Crataegus douglasii	w	Prunus virginiana	r
Cynoglossum grande	w	Ranunculus occidentalis*	up
Danthonia californica	up	Ranunculus orthorhyncus	wp
Delphiium menziesii*	up	Ranunculus uncinatus*	w, wp
Dichelostemma congestum (Brodiaea congesta)		Rhamnus purshianus	up
Downingia elegans (w)	wp	Ribes sanguineum	w
Eleocharis ovata (w)	wp	Rosa nutkana	wp
Eleocharis palustris (w)	wp	Salix sitchensis	r
Elymus trachycaulus	up	Salix scouleriana	up, w
Epilobium densiflorum*	wp	Salix melanopsis	r
Epilobium torreyi	up, wp	Sanguisorba occidentalis	up
Erigeron philadelphicus	up	Sanicula bipinnatifida*	up
Eriophyllum lanatum*	up	Sidalcea campestris*	up
Erythronium oregonum	w, up	Solidago canadensis	up
Fragaria virginiana	up	Sprianthes romanzoffiana	up
Fraxinus latifolia	r	Symphoricarpos albus	up, w
Frittilaria lanceolata	up	Sisyrinchium idahoense	up
Geum macrophyllum*	r, wp	Tellima grandiflora	w
Glyceria sp	r	Thalictrum fendleri*	w
Hieracleum lanatum*	up	Trillium albidum	w

Species	Habitat	Species	Habitat
Hydrophyllum tenuipes	w	Triteleia (Brodiaea) hyacinthina	
Iris tenax*	up	Trillium ovatum	w
Juncus effusus v pacificus (w)	wp	Urtica doieca	w
Juncus patens (w)	wp	Veratrum californicum	wp
Ligusticum apiifolium	up	Vicia americana	up
Lilium columbianum*	w	Viola praemorsa	up
Lithophragam parviflora*	up	Wyethia angustifolia*	wp. up

Table 2 – Native Prairie Species Introduced from Seed in Areas Disturbed by Machines and Removal of Overstory Vegetation Fall 2006

Species	Species
Achillea millefolium	Lomatium utriculatum
Agoseris grandiflora	Lupinus albicaulus
Aquilegia formosa	Madia elegans
Clarkia amoena	Madia gracilis
Clarkia purpurea	Madia sativa
Clarkia rhomboidea	Perideridia gairdneri
Collinsia grandiflora	Potentilla glandulosa
Collomia grandiflora	Potentilla gracilis
Elymus glaucus	Prunella vulgaris var. lanceolata
Elymus trachycaulus	Ranunculus occidentalis
Eriophyllum lanatum	Rupertia physodes
Gilia capitata	Sanguisorba occidentalis
Ligusticum apiifolium	Sidalcea campestris
Lomatium dissectum	Trifolium willdenovii
Lomatium nudicaule	

Table 3 – At-Risk Species Seed and Plants for Fall 2007 Planting

Species	Common	Number of plants
Delphinium oreganum	Willamette Valley larkspur	1,000
Erigeron decumbens	Willamette Valley daisy	4,500
Horkelia congesta	Shaggy horkelia	4,500
Lomatium bradshawii	Bradshaw's lomatium	3,000 (need 2 yr plants so these are 2008)
Sidalcea nelsoniana	Nelson's checkermallow	1,500

Appendix A

Starting and Anticipated Vegetation Treatments at Jefferson Farm

Created for wildlife survey team 12-19-05 [updated Jan 30th 2006, and January 14th, 2007]

Goals of Restoration Project

1) To restore savanna stand conditions to over 120 acres
2) To substantially increase native plant diversity
3) To improve the habitat for native fauna that, historically, thrived in open grassland and open oak habitat

Habitat Codes for Starting Vegetation [see map]

OS = Oak Savanna [grassland with scattered, very old open-growth oak trees]
YOW = Young Oak Woodland [Dense stands of young oak 30-40 years old with old growth oak trees and young conifer scattered throughout]
MOW – Mature Oak Woodland [Dense stands of older oak 100-200? years old with native and non-native shrub understory]
MWB – Mixed Woodland Brush [Mixed tree species with dense undergrowth of shrubs and blackberry]
MW – Mixed Woodland [Woodland with both mature and young conifer and oak as well as dense shrub understory]
BH – Bottomland Hardwood Riparian Forest [Woodland dominated by Oregon ash with oak on edges. Native shrub and forb understory]
WP – Wet Prairie [Areas where wet prairie species have been found but non-native vegetation overwhelming]

Unit & Habitat Code	Ac	Starting Vegetation	Vegetation Treatment	Time-line and Acres Treated
1 OS	45	*Steiwer Hill has very large, open-grown oak trees (some young oak as well) *Majority of herbaceous layer non-native grasses and forbs *Large areas of poison oak, blackberry, and non-native hawthorn *Few patches of native grasses and forbs; *Native shrubs scattered (Cascara, Indian	1. 43 (ravines where boom and gun do not reach not treated) acres broadcast treated with glyphosate, 2. Poison oak cut from base of trees, 3. Areas of denser young oak patches thinned 4. Reestablish native grasses	1. Winter 2004-Fall 2006 2. Spring 2005 3. Spring 2004 and summer 2006 4. Fall 2006 5. Fall 2007 and 2008 6. Fall 2008 (start)

Unit & Habitat Code	Ac	Starting Vegetation	Vegetation Treatment	Time-line and Acres Treated
		plum, Service berry) *Denser vegetation in ravines and in patches [marked “dense brush” on the map]	5. Reestablish native forbs 6. Establish burn units and maintain grassland with rotational burning (3-5 year cycles)	
2 - YOW	40	*Old growth oak trees with large areas of young, dog-haired stands of oak (about 30 years old) *Large areas of blackberry and scotch broom (east side) *Herbaceous layer ca 80% non-native grasses and forbs with some areas (mostly thin-soiled and ravines that host native grasses and forbs *Native shrubs scattered throughout. *One patch on the listed species *Aster curtus* (white-topped aster) found in far NE corner. *Young conifer throughout (30-40 years old)	1. Brush work and tree thinning started using a Takeuchi TL 150 skid steer and a CAT 277 skid steer (still need to cut larger trees by hand) 2. Complete the brush work and tree thinning to a density of 2-5 trees/acre [100 ft between trees] (maintain native shrubs in ravines) 3. Eastern most ravine east side, maples will be retained due to distinct habitat change from historic condition 4. Snag conifer trees by topping and partially limb some for replacement snags (some work done in area 4) 5. In blackberry areas, sow native grasses (first) and forbs (when resprouts dealt with) in areas disturbed by tree and brush removal sow both together. 6. Establish burn units and maintain grassland with rotational burning (3-5 year cycles)	1. 15 acres in the north and west part of the unit were started spring 2004 – [some trees still to be cut by hand] 2. 22 acres in the east part of the unit [including the area denoted on map as “brush” and south of the unit will be done late July 2006 [but this also includes the large trees that did not get cut in the area treated in 2004] 3. About 3 acres not treated (except brush removal) 4. Summer 2006-2008 - trees chosen throughout entire unit 5. Fall 2006-Fall 2011 – areas chosen throughout unit 6. Fall 2008 (start) – areas chosen throughout unit
3 - MWB	6	*North slope with brush, conifers, mixed hardwoods, native shrubs and oaks *Possible native forbs [survey]	1. Brush work and tree thinning using a Takeuchi TL 150 skid steer and a CAT 277 skid steer (retaining	1. Summer 2007 2. Fall 2007-Fall 2011

Unit & Habitat Code	Ac	Starting Vegetation	Vegetation Treatment	Time-line and Acres Treated
			native shrub species) 2. Sow native grasses and forbs in areas disturbed by tree and brush removal	
4 – YOW	5	*Dog-haired stands of young oak *Herbaceous vegetation mix of native and non-native grassland species [survey and collect seed after thinning]	1. Brush work and tree thinning to savanna density using a Takeuchi TL 150 skid steer and a CAT 277 skid steer 2. Sow native grasses and forbs in areas disturbed by tree and brush removal	1. Summer 2007 2. Fall 2006-Fall 2011
5 - MOW	4	*Dense, mature oak woodland *Non-native grass understory with abundant native forb species *Native and non-native shrubs	1. Thin oaks to a density of 50-100 trees/acre [20-30 trees/acre] by hand cutting 2. Mow grasslands to promote native understory species	1. Summer 2006-2009 2. Summer 2006-2009
6,7,8 [WP]	9	* Areas mostly non-native with patches of natives in very wettest areas	1. Area 7 and 8, treat with glyphosate, sow grasses first, use broadleaf to control weeds, then sow forbs 2. Area 6 treat entire area late-fall with glyphosate. Mark native patches following summer to avoid with herbicide, apply glyphosate to non-native vegetation, sow grasses only first year, use broadleaf herbicide to control weeds, sow forbs	1. 2005-2008 2. Fall 2006-2008
9 - MWB	7	*North slope is a mixture of brush, native shrubs and young conifer and oak. *Abundant native forbs [survey]	1. Non-native shrub removal by hand and machine 2. Brush work and tree thinning	1. Summer 2008 2. Summer 2008-2009

Unit & Habitat Code	Ac	Starting Vegetation	Vegetation Treatment	Time-line and Acres Treated
			using a Takeuchi TL 150 skid steer and a CAT 277 skid steer (retaining native shrub species). Density to be determined after initial brush work completed.	
10 – MW	18	*Western section dense thickets of non-native hawthorn, ash, oak, and conifer *Middle section, large savanna oaks with a mix of hardwoods and conifers *Eastern section (north slope) mixture of brush, native shrubs, conifer, and oak.	1. Non-native shrub removal by hand and machine 2. Brush work and tree thinning using a Takeuchi TL 150 skid steer and a CAT 277 skid steer (retaining native shrub species). Density to be determined after initial brush work completed.	1. Summer 2008 2. Summer 2008-2009
11-OS	15	*Savanna oaks with grassland infested with non-native hawthorn thickets *Scattered native forb species	1. Use Takeuchi to mow brush 2. Survey for natives 3. Monitor hawthorn for re-sprouts, treat as needed	1. Summer 2006 2. Summer 2007 3. Summer 2008-2011
12 – BH	18	* Riparian bottomland species (ash , cottonwood, oak, red-osier dogwood, willow) * Non-native cherry trees and blackberry/thistle issues on edges	1. Hand removal on non-native cherry and machine mowing of blackberry (possibly spraying berry with glyphosate in fall) 2. Flag young ash trees to retain before mowing 3. Planting of red cedar and ponderosa pine along edges.	1. Summer 2007 or 2008 2. Summer 2006 3. Winter 2006

Jefferson Farm Air Photo 2002

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Site Photos

Objective 1: Control Invasive And Non-Native Plants In The Project Area

Unit 1 pre-treatment

Unit 2 dense brush

Unit 1 CAT mowing brush

Unit 2 old-growth Scotch broom and blackberry

Unit 2 two year old Scotch broom

Unit 2 – same area as photo to left, post-mowing

Site Photos

Objective 1: Control Invasive And Non-Native Plants In The Project Area

CAT 277 Skid-steers with mower attachment

Unit 2 – Blackberry post-mowing

Spot spraying thistles (Note – different restoration site, same technique: cone tip on sprayer and broadleaf herbicide with chemical dye)

Canadian thistle 3 days after spraying

Unit 1 – Blackberry, summer after 1 mowing and first application glyphosate

Unit 1 – Boom application of glyphosate summer 2005

Site Photos

Objective 1: Control Invasive And Non-Native Plants In The Project Area

Unit 1 – Late-winter after first application of glyphosate

Unit 1 – spray gun application of glyphosate in steep areas summer 2005

Unit 1 – broadleaf weed infestation after 1 year of glyphosate

Unit 1 and 2 – Herbicide treated Unit 1 vs. no treatment Unit 2 (green)

Unit 1 – Blackberry dying after glyphosate treatment

Unit 1 – Hawthorn stump resprouts (only mowed, not cut and stump sprayed)

Objective 2: Convert Young Oak Woodland To Oak Savanna

CAT Sheer attachment with herbicide applicator (Takeuchi in background)

CAT grapple fork attachment

Unit 2 – pre-thinning 2004

Unit 4 – pre-thinning

Unit 2 – dense young oak pre-thin

Unit 2 – dense young oak pre-thin (note how shady)

Site Photos

Objective 2: Convert Young Oak Woodland To Oak Savanna

Unit 2 – post thinning 2004 and 2006

Unit 2 – post thinning 2004

Unit 2 – pre-thin 2006 (young oaks were left in 2004 for potential removal with tree spade)

Unit 2 – same area as photo to left after 2006 work (savanna density returned)

Unit 2 – Firewood size wood laid in windrows

Unit 2 – brush piles

Site Photos

Objective 2: Convert Young Oak Woodland To Oak Savanna

Young oak stump previously treated with stump killer while sheering (no resprouting)

Unit 2 – Young skinny oak steep area thinned by hand 2004

Sheered oak stumps

Unit 2 – Ravine previously so shady, supported ferns (non-savanna plant)

Unit 2 (just below Unit 5) – Ground disturbance due to machinery and yarding material

Unit 2 – Steep ravine denuded of most trees and disturbed by machinery and yarding

Objective 2: Convert Young Oak Woodland To Oak Savanna

Hydroseeding equipment

Grass, forb, and oat seed mix for hydroseeding

Unit 2 – Heritage employee hydroseeding steep ravine

Unit 2 – Ravine, post-hydroseeding (goes from green to brown)

Unit 2 – Heritage employee applying seed with a spinner spreader behind an ATV

Unit 2 – Heritage employee hand broadcasting grass seed mulch in mowed blackberry area

Objective 3: Improve Mature Oak Woodland Habitat

Unit 5 – Very dense thickets of hawthorn, poison oak, and young oak

Unit 5 – Takeuchi mowing woodland understory

Unit 5 – post mowing and thinning

Unit 5 – New *Geranium lucidum* plants germinated

Unit 5 – Applying seed on areas disturbed by logging and mowing

Lomatium nudicaule and *Elymus glaucus* seed

Objective 3: Improve Mature Oak Woodland Habitat.
Native Wildflowers Present in Unit 5

Delphinium menziesii (Menzie's larkspur)

Lithophragma parviflora (Prairie star)

Viola adunca (Prairie violet)

Iris tenax (Oregon iris)

Aster (*Seriocarpis*) *oregonensis* (Oregon white-topped aster)

Sidalcea campestris (Meadow Sidalcea)

Objective 5: Reintroduce Native Plants on Pre-Existing Savanna (*i.e.*, Savanna That Is Not a Product of Objective 2)

Eriophyllum lanantum (Oregon sunshine) - Collected seed from Jefferson population

Danthonia californica (California oatgrass) - Collected seed from Jefferson population and sowed production seed on Unit 1

Achillea millefolium (Western yarrow) - Collected seed from Jefferson remnant population

Camassia leichtlinii (Tall camas) - Collected seed from Jefferson remnant population

UFSW Truax no-till drill on Unit 1

Koeleria macrantha (Prairie junegrass) - Native grass sown in Unit 1

Objective 6: Reintroduce Threatened, Endangered, and Other Federal-Status Plant Species to the Project Site

Symphiotrichum (*Aster*) *curtus* (White-topped aster)

Delphinium oreganum (Willamette Valley larkspur)

Erigeron decumbens (Willamette daisy)

Horkelia congesta (Shaggy horkelia)

Lathyrus holochlorus (thin-leaved peavine)

Lomatium bradshawii (Bradshaw's lomatium)

Objective 6: Reintroduce Threatened, Endangered, and Other Federal-Status Plant Species to the Project Site

Sidalcea nelsoniana (Nelson's checkermallow}

Castilleja levisecta (Golden paintbrush)

Objective 8: Conduct project education and outreach.

2004 - Tour pre-restoration work

2006 - Rich Owen explaining the fine points of restoration brush and tree removal

2006 - Project leader presenting background information

2006 – "Restoration in action" portion of tour

Site Photos

APPENDIX B – 2006 TOUR ANNOUNCEMENT and SIGN IN SHEETS

(Removed)

Appendix C

PACIFIC COAST JOINT VENTURE DISCRETIONARY FUNDS APPLICATION

MONITORING BIRD RESPONSE TO RESTORATION OF OREGON WHITE OAK HABITATS: PARTNERSHIP WITH THE JEFFERSON FARM RESTORATION PROJECT

Applicant:
Daniel K. Rosenberg
Department of Fisheries and Wildlife
Oregon State University
Corvallis, OR 97331
Phone: (541) 757-9041
E-mail: dan.rosenberg@oregonstate.edu

State: OR
County: Marion

Project Category (coordination, planning, project seed, research/monitoring, or outreach):
Primarily: Research and monitoring; including: outreach, project seed

Priority Bird Species Benefited within your Bird Conservation Area
Restoration and management at the Jefferson Farm site is benefiting several priority bird species from the regional BCR 5 list including Band-tailed Pigeon, Mountain Quail, Rufous Hummingbird, Purple Finch, Hutton's Vireo, and Black-throated Gray Warbler. We will be able to provide density estimates and habitat relationships data for several of these species plus other oak priority birds such as White-breasted Nuthatch, Black-capped Chickadee, House Wren, Western Wood-pewee, Bushtit, and Chipping Sparrow

Project Description:

Oregon white oak habitats in the Willamette Valley of Oregon are an important bird habitat and have been reduced in extent and quality dramatically. This, in turn, has negatively affected numerous bird species. To reverse this trend, there has been increasing interest in restoring this habitat type on both public and private land, but there is a lack of effective monitoring to assess restoration success. Together with Heritage Seedling, Inc. (recipient of a Landowner Incentive Program Grant from ODFW

for restoration of oak savanna and prairies at their Jefferson Farm), we propose developing a coordinated monitoring program, establishing a prototype/demonstration site on Jefferson Farm.

Over 130 acres of oak woodland and former prairie habitats exist on the 388 acres of Jefferson Farm. Restoration at Jefferson Farm includes thinning, brushing, and burning, as well as areas of non-treated habitat both on and adjacent to Jefferson Farm, providing an opportunity to develop adaptive management-based monitoring designs. We will establish a stratified systematic variable-plot design to estimate bird densities using distance-based sampling and evaluate vegetation condition, including plant species composition and percent cover, vegetation structure, and resources such as cavities and acorn production.

Our proposal addresses the key goals of the Pacific Joint Venture of replacing opportunistic habitat conservation by improving restoration guidelines through evaluation of bird response and allowing coordinated strategies to be developed and linked with landowner incentive grant programming. Products from this study will include (1) assessment of habitat and bird resources on Jefferson Farm, (2) report of first year monitoring results with an emphasis on bird densities and habitat relationships, (3) monitoring plan for evaluating bird population response to Oregon white oak habitat restoration, and (4) participation at workshops for oak woodland restoration.

Appendix D

2006 Jefferson Farm Survey for Breeding Birds and Western Gray Squirrels

David Vesely, Oregon Wildlife Institute
PO Box 1061
Corvallis, OR 97330

Joan Hagar, U.S. Geological Survey,
Forest and Rangeland Ecosystem Research Center

Introduction

Jefferson Farm is 388 acre private, rural property in western Marion County, Oregon. For most of the last two decades, the farm has been in commercial grass seed and livestock production. In 2003, Jefferson Farm was sold to a new owner, who since then has begun an ambitious program of ecological restoration across much of the property.

In 2006, the landowner received a Landowner Incentive Program (LIP) grant from the Oregon Department of Fish and Wildlife (ODFW) to support restoration activities on Jefferson Farm. The LIP grant agreement identified 15 priority bird species that could potentially benefit from habitat improvements implemented on the property (Table 1). Several other non-avian wildlife species were also identified in the LIP agreement, including the western gray squirrel, which is listed by ODFW as a “Sensitive-undetermined” species in the state. Restoration activities being conducted with LIP funds include: reducing conifer encroachment in Oregon white oak woodlands, decreasing tree densities to create savanna habitat for rare plants and priority wildlife species, increasing native plant diversity, and controlling invasive weeds.

As part of the LIP grant agreement, the landowner agreed to monitor the occurrence of priority bird species on Jefferson Farm for five years following implementation of habitat restoration. The Oregon Wildlife Institute (OWI) provided donated professional services to design and conduct the monitoring program. The project is providing the OWI an opportunity to assess avian survey methods that will be used in a more extensive 2007 research effort funded by the Pacific Coast Joint Venture.

Table 1.Priority avian species and their federal and state status that potentially may occur on Jefferson Farm, Marion County, Oregon.

Species	Scientific Name	Federal Status	State Status
Acorn woodpecker	*Melanerpes formicivorus*	SOC	
Band-tailed pigeon	*Columba fasciata*	SOC	
Lewis' woodpecker	*Melanerpes lewis*	SOC	SC
White-breasted nuthatch	*Sitta carolinensis*	SOC	
Grasshopper sparrow	*Ammodramus savannarum*		SP
Oregon vesper sparrow	*Pooecetes gramineus affinis*	SOC	SC
Western bluebird	*Sailia mexicana*		SV
Western meadowlark	*Sturnella neglecta*		SC
Streaked horned lark	*Eremophila alpestris strigata*	C	SC
Bald eagle	*Haliaeetus leucocephalus*	LT	LT
Olive-sided flycatcher	*Contopus cooperi*	SOC	
Pileated woodpecker	*Dryocopus pileatus*		SV
Willow flycatcher	*Empidonax traillii brewsteri*		SV
Yellow-billed cuckoo	*Coccyzus americanus*	C	SC
Yellow-breasted chat	*Icteria virens*	SOC	SC

Status Codes: Federal: LT= ESA listed Threatened, C= Candidate for listing, SOC= USFWS Species of Concern; State: LT= listed Threatened, SC= Sensitive-critical, SP= sensitive-peripheral, SV= sensitive-vulnerable.

Survey Methods

Methods of bird observation and data recording generally followed that of the Breeding Bird Atlas program (http://www.bsc-eoc.org/norac/atlascont.htm). Bird observations were performed by the authors during three visits to the survey area on May 20, June 16, and June 30, 2006. Observations were conducted between sunrise and 9:00 am to coincide with the peak of bird activity. We walked throughout each management unit (oak savanna, 45 ac; young & mature oak woodlands, 55 ac; and wet prairie, 9 ac) in a manner most likely to maximize the probability of detecting all diurnal bird species in the unit aurally or visually. For each bird observed, we categorized the likely breeding status based on behavior according to a protocol developed by the Breeding Bird Atlas Program. Three levels of breeding probability are defined: Possible (PO), Probable (PR), and Confirmed (CO). Appendix I identifies a number of observable behaviors that indicate the probability of breeding. We considered the sum of evidence collected across all three visits to determine breeding status for each species for the 2006 breeding season.

We also were observant for sightings and calls of western gray squirrels while conducting bird surveys.

Results

We detected a total of 45 bird species during the survey; 41 species were determined to be probable or confirmed breeders on Jefferson Farm (Table 2) based on Breeding Bird Atlas protocols. Five of the species we observed were identified by the landowner as being a conservation priority for purposes of the LIP grant. The areas we observed each of the priority species were as follows:

- **Pileated woodpecker**- Observed near the young oak/mixed woodland and conifer interface near the east property boundary. Also at the bottomland hardwood riparian forest area near the south property boundary.
- **Olive-sided flycatcher**- Observed in the young & mature oak woodland.
- **Willow flycatcher**- Observed in openings within the young & mature oak woodland.
- **White-breasted nuthatch**- in the oak savanna management area and young & mature oak woodland.
- **Western bluebird**- a single observation in the fallow field west of the oak savanna management area.

No western gray squirrels were observed during the survey.

Conclusions

We observed five of the 15 species identified by the landowner as having conservation priority in the LIP grant agreement. Our survey likely detected all species that were breeding on the property, although we may have missed some species that only foraged (*e.g.,* accipiters), roosted (*e.g.*, crows, owls) or dispersed across the property. Because the management units are small relative to the territory size of most bird species, it is difficult to assess the effect of each management unit individually on bird community composition. Many species likely are responding to the collective suite of habitats available at Jefferson Farm, as well as being influenced by habitats and management activities on adjacent properties.

Our frequent observations of more common prairie- and savanna-associated birds (*e.g.*, savanna sparrow, white-crowned sparrow, lazuli bunting) in the wet prairies and oak savanna management unit suggest that these areas are functioning as open, grassland habitats, as the landowner intended. The oak savanna management area appears to be providing nesting habitat for savanna and open woodland species, such as white-breasted nuthatch and northern oriole. However, competition with European starlings for nest sites may be limiting nest success of native cavity-nesting species.

Table 2. Observed bird species and their breeding status in 2006. Priority species indicated in **bold** typeface.
Breeding status codes: CO= confirmed breeding; PO= possible breeding; PR= probable breeding.

Common Name	2006 Breeding Status
Red-tailed hawk	CO
California quail	PR
Killdeer	CO
Spotted sandpiper	PO
Mourning dove	PR
Rufous hummingbird	PR
Downy woodpecker	PR
Hairy woodpecker	PR
Northern flicker	PR
	PR
Pileated woodpecker	
Olive-sided flycatcher	PR
Western wood-pewee	PR
	PR
Willow flycatcher	
Barn swallow	PO
Violet-green swallow	PR
Tree swallow	PR
Cliff Swallow	PO
Steller's jay	PR
Scrub jay	PR
Black-capped chickadee	PR
	PR
White-breasted nuthatch	
Brown creeper	PR
House wren	CO
Bewick's wren	PR
	PO
Western bluebird	
Swainson's thrush	PR
American robin	CO
Cedar waxwing	PR
European starling	CO
Hutton's vireo	PR
Orange-crowned warbler	CO
Common yellowthroat	PR
Western tanager	PR
Black-headed grosbeak	PR
Lazuli bunting	PR
Spotted towhee	PR
Savanna sparrow	PR
Song sparrow	PR
White-crowned sparrow	PR
Dark-eyed junco	PR
Brown-headed cowbird	PR
Red-wing blackbird	PR
Northern oriole	PR
Purple finch	PR
American goldfinch	PR

Appendix I Breeding Codes

There are three breeding categories defined under Breeding Bird Atlas Protocols (http://www.bsc-eoc.org/norac/atlascont.htm): Possible (PO), Probable (PR), and Confirmed (CO). Within each of these categories are descriptive behaviors that indicate the likelihood of breeding occurrence. These codes are listed here and on the Field Card in order of increasing certainty.

POSSIBLE BREEDING - Enter behavior code "X" in the "PO" column of the Field Card.

X Species observed in breeding season in possible nesting habitat, but no other indication of breeding noted. Singing male(s) present (or breeding calls heard) in breeding season.

PROBABLE BREEDING - Enter appropriate behavior code in the "PR" column of the Field Card.

S Singing male present (or breeding calls heard) on more than one date in the same place. This is a good indication that a bird has taken up residence if the dates are a week or more apart.

P Pair observed in suitable habitat in breeding season. Pair refers to a male and a female together, not just any two members of the same species. To use this code you must be able to determine that one bird is male and the other is female, because of differences in plumage or size, or pairing must be clearly indicated by the birds' behavior. Two birds of the same species does not make a pair unless there are discernable indications of pairing between them.

T Bird (or pair) apparently holding territory. In addition to territorial singing, chasing of other individuals of same species often marks a territory.

D Courtship and display, agitated behavior or anxiety calls from adults suggesting probable presence nearby of a nest or young; well-developed brood-patch or cloacal protuberance on trapped adult. Includes copulation.

N Visiting probable nest site. Nest building by wrens and woodpeckers. Wrens may build many nests. Woodpeckers although they usually drill only one nest cavity, also drill holes just for roosting.

B Nest building or excavation of a nest hole.

CONFIRMED BREEDING - Enter appropriate behavior code in "CO" column of the Field Card.

DD Distraction display or injury-feigning. Agitated behavior and/or anxiety calls are Probable-D.

UN Used nest found. Caution: These must be carefully identified if they are to be counted as evidence. Some nests (*e.g.* Baltimore Oriole) are persistent and very
characteristic. Most are difficult to identify correctly.

FE Female with egg in the oviduct (by bird bander).

FL Recently fledged young (including downy young of precocious species - waterfowl, shorebirds). This code should be used with caution for species such as black birds and swallows, which may move some distance soon after fledging. Recently fledged passerines are still dependent on their parents and are fed by them.

ON Adult(s) entering or leaving nest site in circumstances indicating occupied nest. NOT generally used for open nesting birds. It should be used for hole nesters only when a bird enters a hole and remains inside, makes a change-over at a hole, or leaves a hole after having been inside for some time. If you simply see a bird fly into or out of a bush or tree, and do not find a nest, the correct code would be Probable-N.

FS Adult carrying fecal sac.

FY Adult(s) with food for young. Some birds (gulls, terns, and raptors) continue to feed their young long after they are fledged, and even after they have moved considerable distances. Also, some birds (*e.g.* terns) may carry food over long distances to their young in a neighboring block. Be especially careful on the edge of a block. Care should be taken to avoid confusion with courtship feeding (Probable-D).

NE Identifiable nest and eggs, bird setting on nest or egg, identifiable eggshells found beneath nest, or identifiable dead nestling(s). If you find a cowbird egg in a nest, it is NE for Cowbird, and NE for the identified nest's owner.

NY Nest with young. If you find a young cowbird with other young, it is NY for cowbird and NY for identified nest owner.

Appendix E

BIRD BOX SURVEY SUMMARY

Written by: Lynda Boyer, Jefferson Restoration Project Manager

Study conducted by:

David P. Craig, Ph. D - Willamette University Biology professor

Jordan J Aney - student

Christopher G Hooper - student

Summary data:

Nest Boxes on T-posts

Boxes available: 47

16 boxes with eggs and/or chicks by June 21st (35% use)

8 boxes with new nest and eggs or chicks early July 3rd

11 bird banding events

Student comment about the project:

Jordan Aney Wrote:

You are welcome to the data, I hope it is useful. I am excited to fold it in with future years. "I learned recently that swallow breeding data is a very big deal, evidently the birds are great indicators of pollution as well as global warming (a Stanford study showed that the average hatch dates are 9 days earlier than they were 40 years ago.)"

Nest boxes in trees
5 boxes surveyed
1 used by wood duck [old eggs found]

Too many real cavities? [my comment]

Species List: Swainson's Thrush, Barn Swallow, Tree Swallow, Violet-Green Swallow, Pied-Billed Grebe, Killdeer, Hairy Woodpecker, Western Wood-Pewee, Red-Winged Blackbird, Ret-Tailed Hawk, Songsparrow, Savannah Sparrow, Western Scrub Jay, Black-Capped Chickadee, Mourning Dove, European Starling, American Robin, Common Yellowthroat, Lazuli Bunting, Black-Headed Grosbeak, American Goldfinch, House Finch, Brewer's Blackbird, California Quail, Cedar Waxwings.

Survey Data
Species: TRSW = Tree swallow; VGSW = Violet green swallow;

5/28/2006							6/6/2006				
Nest Box #	**Species**	**Nest Material Amount**	**Egg #**	**Chick #**	**Notes on Box and Birds**	**Nest Box #**	**Species**	**Nest Material Amount**	**Egg #**	**Chick #**	**Notes on Box and Birds**
1		0%	0	0	TRSW nearby	1	Unknown	100%	0	0	
2		100%	6	0		2	TRSW	100%	0	6	Banded
3		0%	0	0		3		0%	0	0	Wasps
4		100%	5	0		4	TRSW	100%	5	0	
5		0%	0	0	empty	5		0%	0	0	
6		0%	0	0	empty	6		0%	0	0	Broken
7		0%	0	0	empty	7		0%	0	0	
8		0%	0	0	empty	8		0%	0	0	
9		0%	0	0	empty	9		0%	0	0	
10		0%	0	0	empty	10		0%	0	0	
11		0%	0	0	5 feathers	11	VGSW	100%	5	0	
12		0%	0	0	empty	12		0%	0	0	
13	TRSW	100%	5	0		13	TRSW	100%	0	5	4 Chicks Banded
14		0%	0	0	traces of grass	14	Unknown	10%	0	0	grass?
15	TRSW	100%	6	0		15	TRSW	100%	5	0	
16		0%	0	0	empty	16		0%	0	0	Wasps
17		0%	0	0	empty	17		0%	0	0	Wasps
18		0%	0	0	empty	18		0%	0	0	
19		0%	0	0	empty	19		0%	0	0	Wasps
20		0%	0	0	empty	20		0%	0	0	
21	TRSW	100%	7	0		21	TRSW	100%	0	6	Banded
22		0%	0	0	empty	22		0%	0	0	
23		0%	0	0	empty	23		0%	0	0	
24		0%	0	0	empty	24	Unknown	20%	0	0	
25	TRSW	100%	6	0		25	TRSW	100%	0	5	4-5 days to fledge

5/28/2006							6/6/2006				
Nest Box #	**Species**	**Nest Material Amount**	**Egg #**	**Chick #**	**Notes on Box and Birds**	**Nest Box #**	**Species**	**Nest Material Amount**	**Egg #**	**Chick #**	**Notes on Box and Birds**
26	TRSW	100%	5	0		26	TRSW	100%	1	4	
27		0%	0	0	empty	27		0%	0	0	Dead adult male VGSW inside
28	N/A	N/A	N/A	N/A	Post, no box	28	N/A	N/A	N/A	N/A	Post but no box
29		0%	0	0	empty	29		0%	0	0	
30	TRSW	100%	3	2		30	TRSW	100%	0	3	Banded
31		0%	0	0	empty	31	Unknown	1%	0	0	
32		0%	0	0	empty	32	TRSW	100%	6	0	
33		100%	2	0		33	TRSW	100%	5	0	
34		0%	0	0	empty	34		0%	0	0	Wasps
35	VG?	100%	5	0		35	VGSW	100%	5	0	
36		0%	0	0	empty/wasp	36		0%	0	0	
37		0%	0	0	empty	37		0%	0	0	
38	TRSW	100%	5	1		38	TRSW	100%	0	6	Banded
39		0%	0	0	empty	39		0%	0	0	
40		0%	0	0	empty	40		0%	0	0	
41		0%	0	0	empty, loose lid	41		0%	0	0	
42	VGSW	100%	4	0		42	VGSW	100%	5	0	
43		0%	0	0	on ground	43		0%	0	0	
44		0%	0	0		44		0%	0	0	
45		0%	0	0		45		0%	0	0	
46					deep in blackberries	46		0%	0	0	
47		100%	3	0		47	Unknown	100%	3	0	??????
48	TRSW	100%	6	0		48	TRSW	100%	3	3	

6/21/2006						7/3/2006					
Nest Box #	**Species**	**Nest Material Amount**	**Egg #**	**Chick #**	**Notes on Box and Birds**	**Nest Box #**	**Species**	**Nest Material Amount**	**Egg #**	**Chick #**	**Notes on Box and Birds**
1		100%	0	0		1		100%	0	0	
2	TRSW	100%	0	3	banded 944,45, 1 fledged	2	TRSW	100%	0	0	
3		0%	0	0		3		0%	0	0	
4						4		100%	0	0	
5		0	0	0		5		0	0	0	
6		0	0	0		6		0	0	0	
7		0	0	0		7		0	0	0	
8		0	0	0		8		0	0	0	
9		0	0	0		9		0	0	0	
10		0	0	0		10		0	0	0	
11	VGSW	100%	0	5	stage 5	11		100%	0	5	5 banded
12		0	0	0		12		0	0	0	
13		100%	0	0		13		100%	0	0	
14		1%	0	0		14		0	0	0	
15		100%	4	0		15		100%	0	0	
16		0	0	0		16		0	0	0	
17		0	0	0		17		0	0	0	
18		0	0	0		18		0	0	0	
19				0		19		0%	0	0	
20		0	0	0		20					
21		100%	0	0	fledged, box on ground	21		100%	0	0	
22		0	0	0		22		0	0	0	
23		0	0	0		23		0	0	0	
24	VGSW	100%	4	0	banded adult VG #938	24	TRSW	100%	5	0	
25	TRSW	100%	0	0	fledged, #10966,969	25		100%	0	0	

6/21/2006						7/3/2006					
Nest Box #	**Species**	**Nest Material Amount**	**Egg #**	**Chick #**	**Notes on Box and Birds**	**Nest Box #**	**Species**	**Nest Material Amount**	**Egg #**	**Chick #**	**Notes on Box and Birds**
26	TRSW	100%	0	3	banded #970, 971, 972	26		100%	1	0	
27		0	0	0		27		0	0	0	
28	N/A	N/A	N/A	N/A	Post but no box	28	N/A	N/A	N/A	N/A	Post but no box
29		0	0	0		29		0	0	0	
30		100%	0	0		30		100%	5	0	
31		0	0	0		31		0	0	0	
32		100%	0	6	#974-979	32		100%	2	4	banded 4, stage 4
33		100%	2	4	hatch day	33		0%	0	0	
34		0	0	0		34		0	0	0	
35	VGSW	100%	0	5	stage 3	35		100%	0	3	banded
36		0	0	0		36		0	0	0	
37		0	0	0		37		0	0	0	
38		100%	0	0	fledged	38		0%	0	0	
39		0	0	0		39		0	0	0	
40		1%	0	0		40		0	0	0	
41		0	0	0	box fell to ground	41		0	0	0	
42		100%	0	5		42		100%	0	5	4 banded, 1 fledged
43		0	0	0		43		0	0	0	
44		0	0	0		44		0	0	0	
45						45		0	0	0	
46	VGSW	100%	0	3		46	VGSW	0%	0	0	
47	TRSW	100	0	3	980,981,982, another fledged	47		100%	2	0	
48						48		0%	0	0	

Appendix F

Jefferson Farm Bird Species

Data compiled February 2007 by Lynda Boyer, Restoration Project Leader
1) Survey conducted by OSU grad student Karen Sparkman (KS) April and July 2004
2) Survey conducted by Dave Vesely (DV/JH) and Joan Hagar May-June 2006
3) Survey conducted by Willamette University Biology students and professor (WU) May-June '06

Key:

Habitat Associations: r = riparian edge, woodland, shrubland; s = savanna; ow = oak woodland; p = prairie; mw = mixed woodland opw = open woodland; f = forest, sh = shrubland; su/a suburban/agricultural; u = urban

Breeding status: Breeding status codes: CO= confirmed breeding; PO= possible breeding; PR= probable breeding.

Priority Focal species for Conservation (according to" Conservation Strategy for Landbirds in Lowlands and Valleys of Western Oregon and Washington" by The American Bird Conservancy present for particular habitat in *italics*

Federal and/or State listed avian species in **bold**

Species	Habitat	KS	DV/JH	WU	Breeding status 06
America crow	u, su/a	x			
America robin	u, su/a	x	x	x	CO
American goldfinch	su/a	x	x	x	PR
Barn swallow	su/a	x	x	x	PO
Bewick's wren (ow)	ow, r,	x	x		PR
Black-capped chickadee	u, su/a	x	x	x	PR
Black-headed grosbeak	mw, r, su/a		x	x	PR
Brewer's blackbird	su/a, r			x	
Brown creeper	ow, mw, f, r		x		PR
Brown-headed cowbird	su/a, mw	x	x		PR
Bullock's oriole (nest 04)	r, sh, su/a	x			
Bushtit (ow)	ow, su/a, u	x			
California quail	sh, su/a	x	x	x	PR
Canada goose	r, su/a	x			
Cedar waxwing	opw	x	x	x	PR
Cliff swallow	su/a, r		x		PO
Common yellowthroat	r		x	x	PR
Dark-eyed Junco	sh, su/a	x	x		PR
Downy woodpecker (ow) (r)	ow, r	x	x		PR
European starling	u, su/a	x	x	x	CO

Golden-crowned sparrow	sh, r	x			
Hairy woodpecker	ow, f	x	x	x	PR
House finch	su/a			x	
House wren (ow)	ow, su/a, sh	x	x		CO
Hutton's vireo	ow, mw, r		x		PR
Killdeer	su/a, r	x	x	x	CO
Lazuli bunting	ow, mw, r		x	x	PR
Lesser Goldfinch	su/a, sh	x			
Mallard	r	x			
Mourning dove	ow, p, su/a	x	x	x	PR
Northern flicker	opw, su/a, u	x	x		PR
Northern oriole	mw, su/a		x		PR
Olive-sided flycatcher	r		x		PR
Orange-crowned warbler	ow, sh, r				CO
Pied-billed grebe	r			x	
Pileated woodpecker	r		x		PR
Purple finch	f, opw, su/a	x	x		PR
Red-tail hawk	opw, su/a	x	x	x	CO
Red-winged blackbird	r	x	x	x	PR
Ruby-crowned kinglet	ow, opw	x			
Rufous hummingbird	f, sh	x	x		PR
Savanna sparrow	s, p, su/a		x	x	PR
Song sparrow	sh, su/a		x	x	PR
Spotted sandpiper	r	x	x		PO
Spotted towhee	ow, sh, su/a		x		PR
Steller's jay	f, su/a	x	x		PR
Swainson's thrush (r)	r, f	x	x	x	PR
Tree swallow	r, su/a	x	x	x	PR
Violet-green swallow	r, opw, su/a	x	x	x	PR
Western bluebird	s, p		x		PO
Western meadowlark (s)	s, p	x			
Western scrub-jay	all	x	x	x	PR
Western tanager	mw		x		PR
Western wood-pewee (ow)	ow	x	x	x	PR
White-breasted nuthatch (nest 04) (ow)	ow, s	x	x		PR
White-crowned sparrow	sh, su/a		x		PR
Willow flycatcher	r		x		PR
Wood duck	r	x			