

COLUMBIA RIVER STREAKED HORNED LARKS

A scenic view of the Columbia River with Streaked Horned Larks in flight and on the ground. The foreground shows a grassy dune with several larks on the ground. The middle ground features the river and a forested hillside. The sky is filled with more larks in flight.

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SUB-SPECIES IN PERIL

- Small population
- Unique & isolated
- Low genetic diversity
- In decline
- ESA Threatened



Photo: Randy Moore



*Streaked Horned Lark
Historic Range
and
Current Breeding Sites*

Legend
 ● Lark Occurrences
 ■ Historic Range



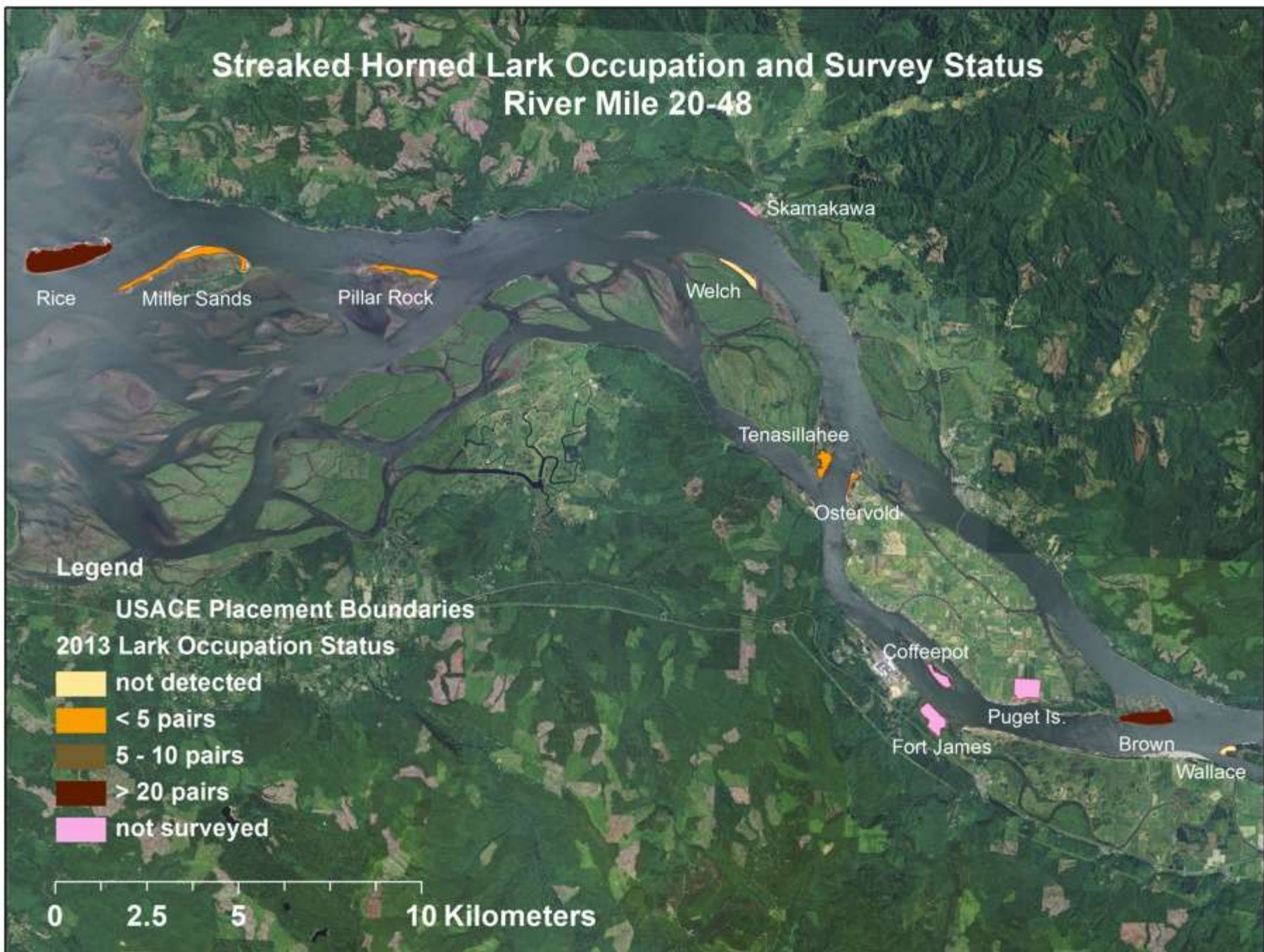
Area of Enlargement

Distribution

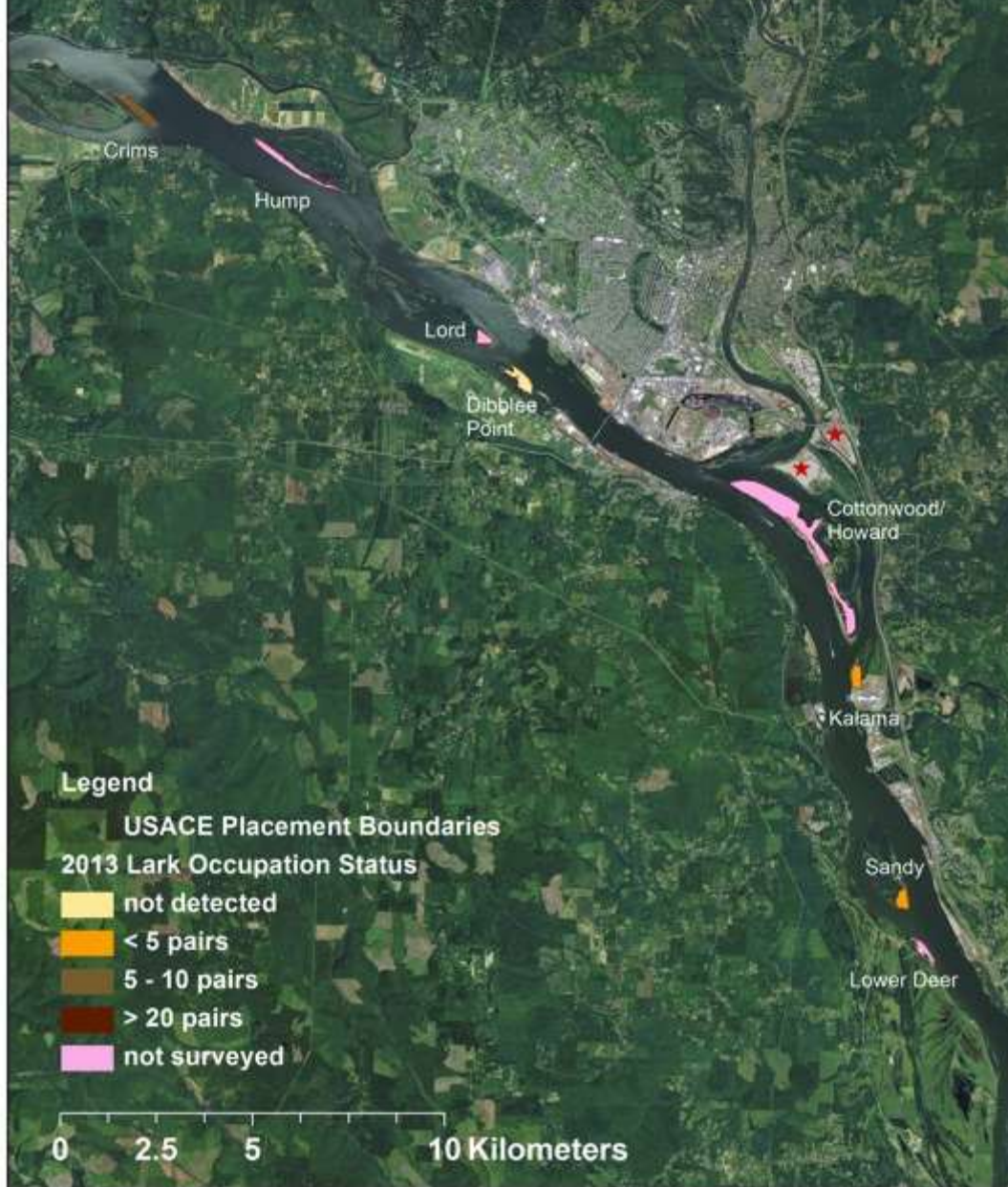
Larks occur on early successional habitats in open landscapes

- Lowland prairie
- Coastal uplands
- Dredged material deposition sites
- Agricultural lands
- Airports

Streaked Horned Lark Occupation and Survey Status River Mile 20-48

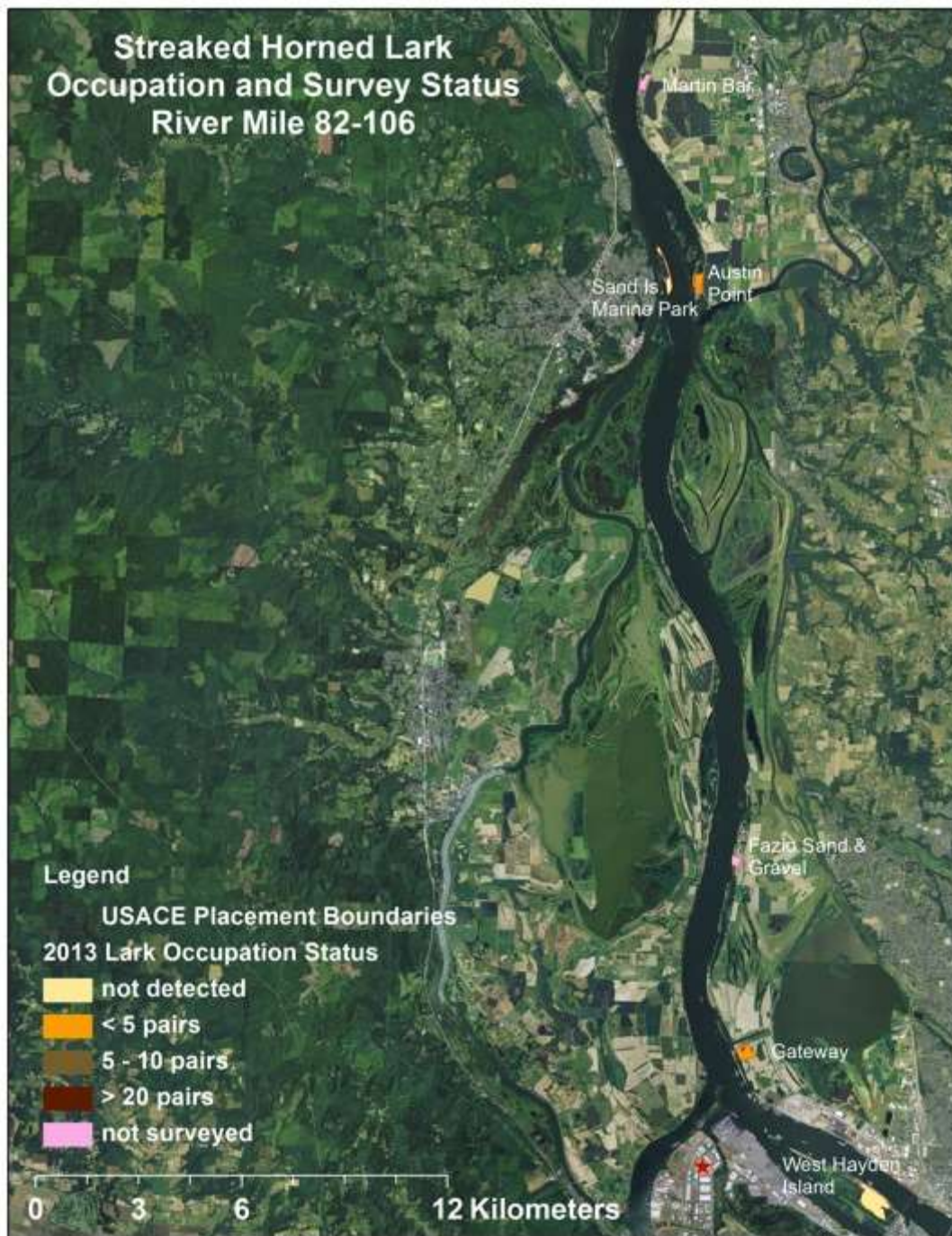


Streaked Horned Lark Occupation and Survey Status River Mile 55 - 79



Red stars indicates additional sites where larks have been documented

Streaked Horned Lark Occupation and Survey Status River Mile 82-106



Red stars indicates additional sites where larks have been documented

SUITABLE HABITAT COMPONENT I: OPEN LANDSCAPE CONTEXT



Brown Island
May 2012

SUITABLE HABITAT COMPONENT II: SHORT SPARSE VEGETATION



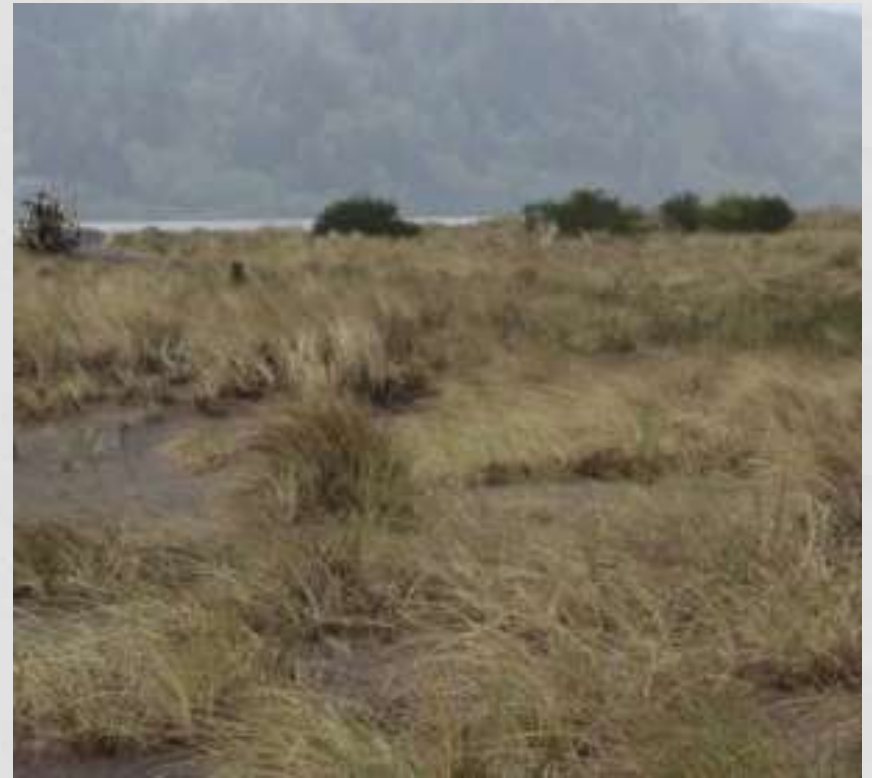
Photo: Randy Moore

UNSUITABLE HABITAT

**Enclosed or interspersed
with trees**



Dense or tall vegetation



UNSUITABLE HABITAT

Dense, rhizomatous grass



No Access to Bare Ground



DREDGED MATERIAL PLACEMENT

**Positive Effect of Habitat
Creation and Maintenance**



**Negative Impact to Suitable
Habitat and Breeding Birds**



SOLUTIONS FOR A WORKING LANDSCAPE



GUIDING PRINCIPLES



- Continue dredging and upland placement operations unhindered by larks
- Minimize negative dredging impacts to larks and habitat
- Maximize dredging benefits to larks and habitat
- Provide deposition recommendations to achieve purpose

HABITAT ANALYSIS OBJECTIVES



- Define time it takes material to become suitable and duration of suitability
- Determine a method for mapping suitable habitat
- Use results to guide deposition locations and provide operational recommendations

WHAT IS TIME TO, AND DURATION OF, SUITABLE HABITAT?

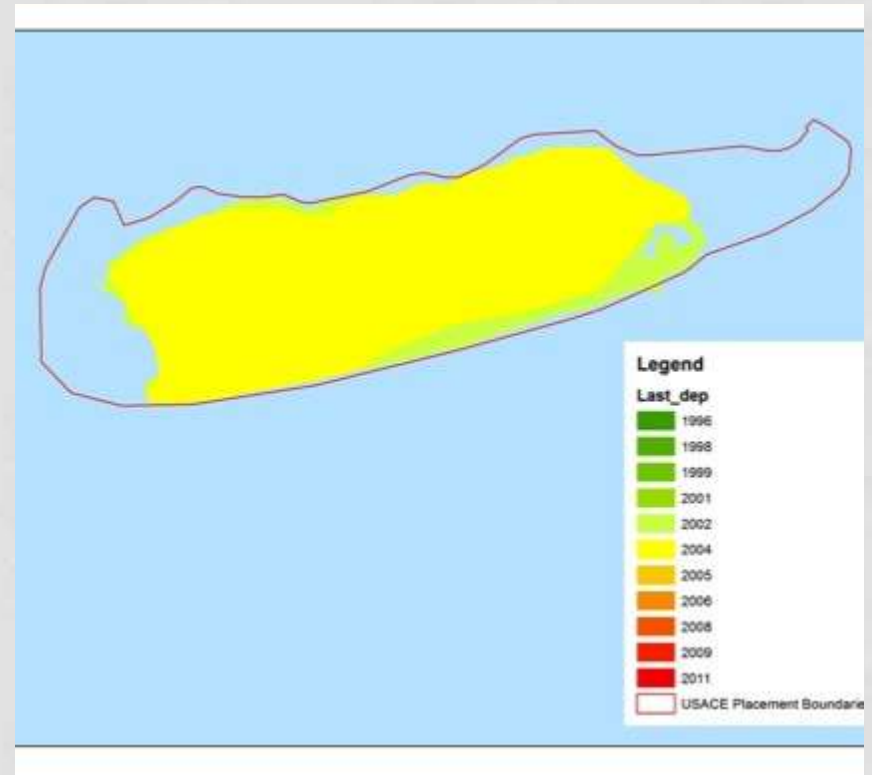


TIME TO SUITABILITY

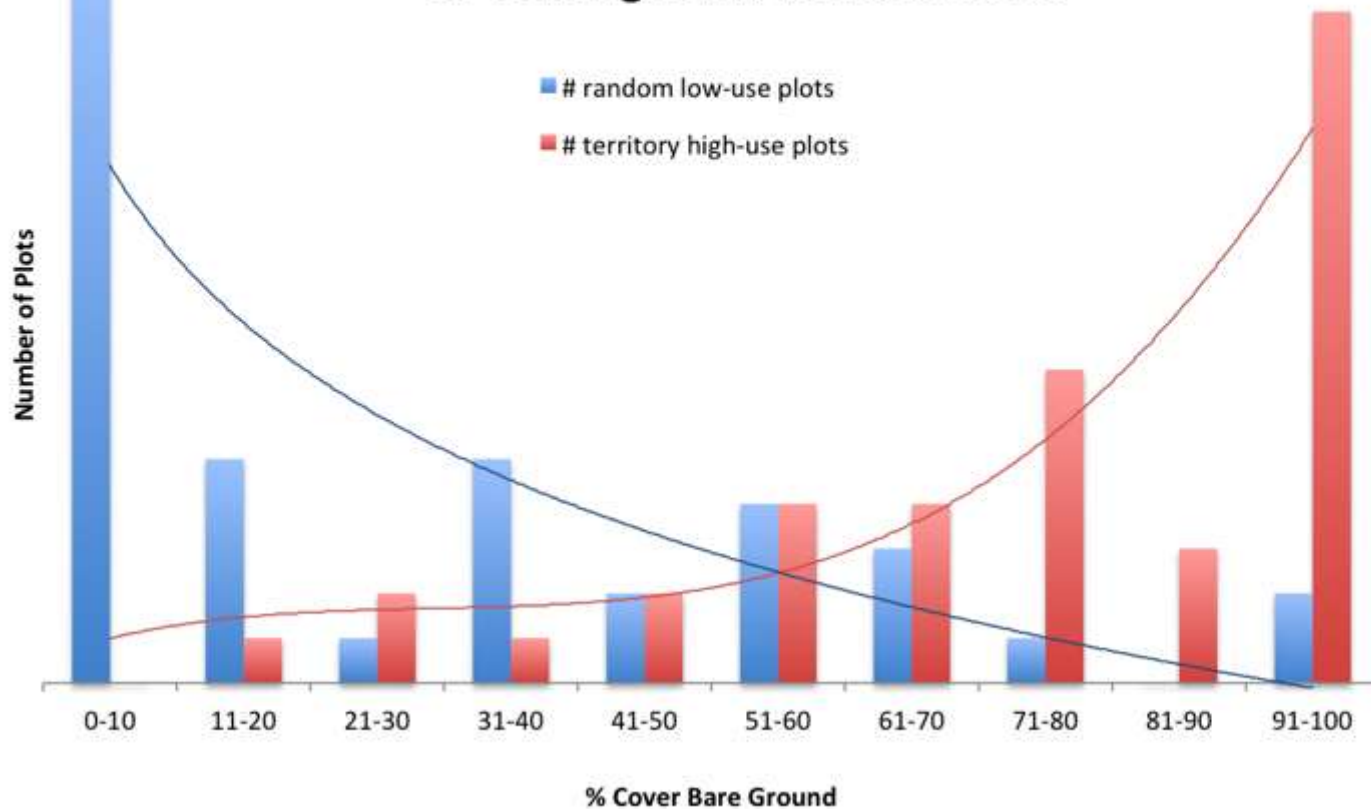
Digitized vegetation from
high resolution imagery



Collected Deposition history



Plot frequency of bare ground % cover classes in lark high and low use areas



PROXY FOR SUITABLE HABITAT = 50-90% BARE GROUND

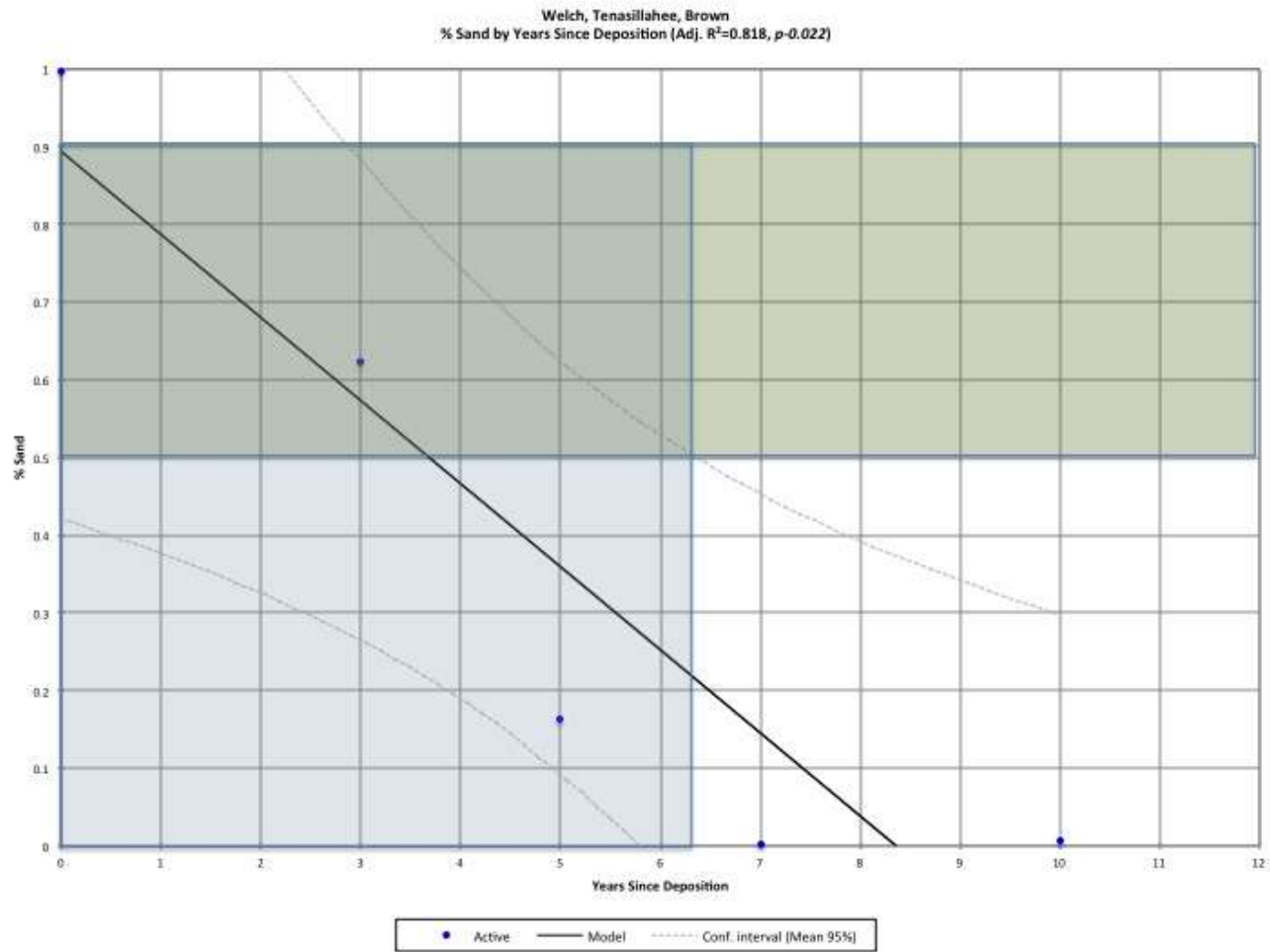
WHAT IS TIME TO, AND DURATION OF, SUITABLE HABITAT?

Original Data: Pearson & Hoey 2005



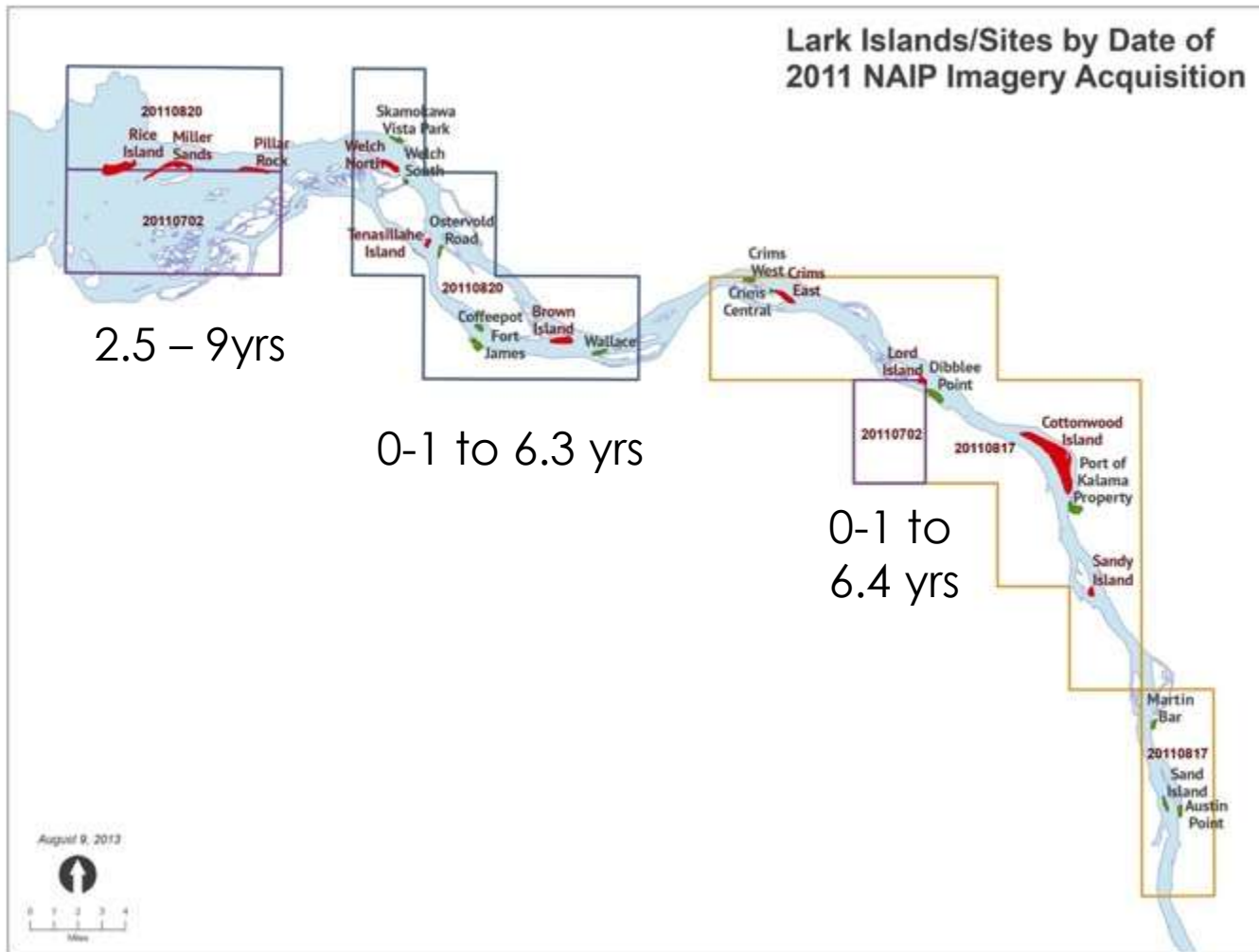
PROP BARE SAND AS A PROXY FOR SUITABLE HABITAT

WHAT IS TIME TO, AND DURATION OF, SUITABLE HABITAT?



WELCH/TENASILLAHEE/BROWN: ~1 - 7YRS POST-DEP

WHAT IS TIME TO, AND DURATION OF, SUITABLE HABITAT?



TIME TO ~ 0-2.5 YRS; DURATION ~ 7 YRS

WHAT IS TIME TO, AND DURATION OF, SUITABLE HABITAT?

MAPPING SUITABLE HABITAT





NORMALIZED DIFFERENCE VEGETATION INDEX (NDVI)

MAPPING SUITABLE HABITAT

THE SHIFTING MOSAIC

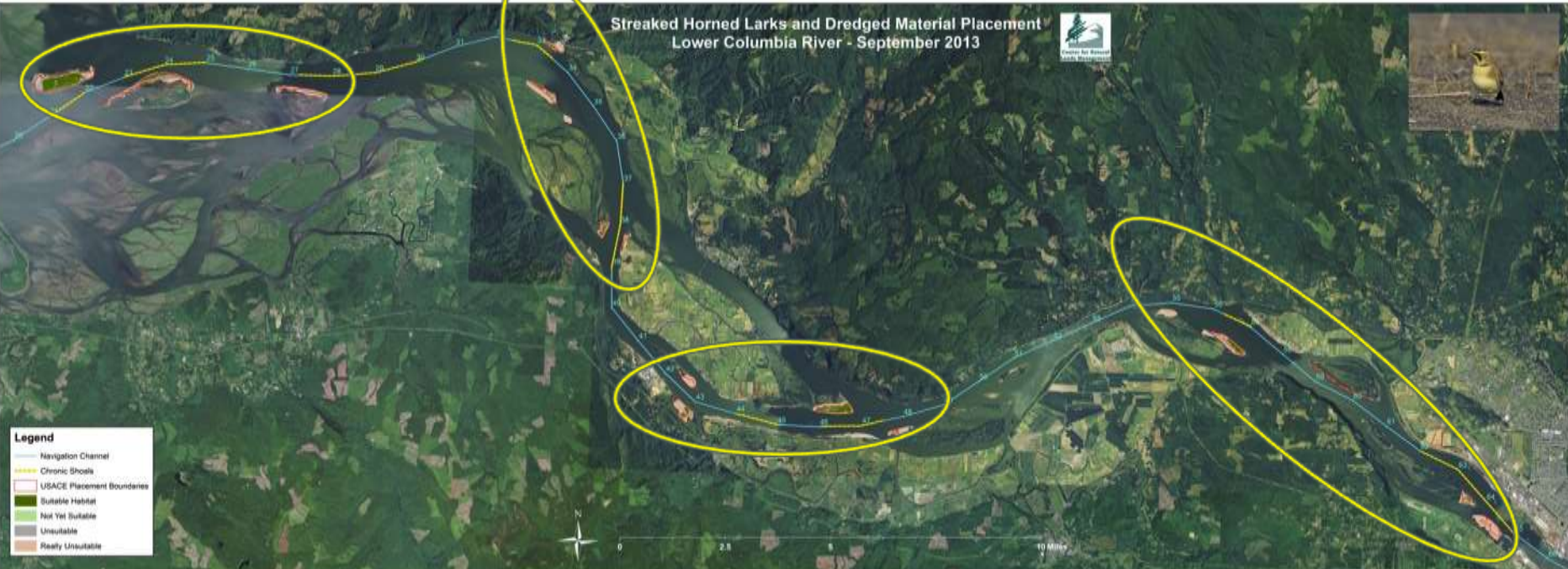


SHIFTING MOSAIC STRATEGY

- Use successional timing and habitat distribution to inform plans
- Maintaining an adequate number of acres in suitable condition at any one time
- Complement placement with other actions, e.g., tilling, scraping, herbicide, fire, to achieve target acreage



Streaked Horned Larks and Dredged Material Placement
Lower Columbia River - September 2013



Use placement and complementary actions to maintain X acres in suitable condition in each unit at any one time.

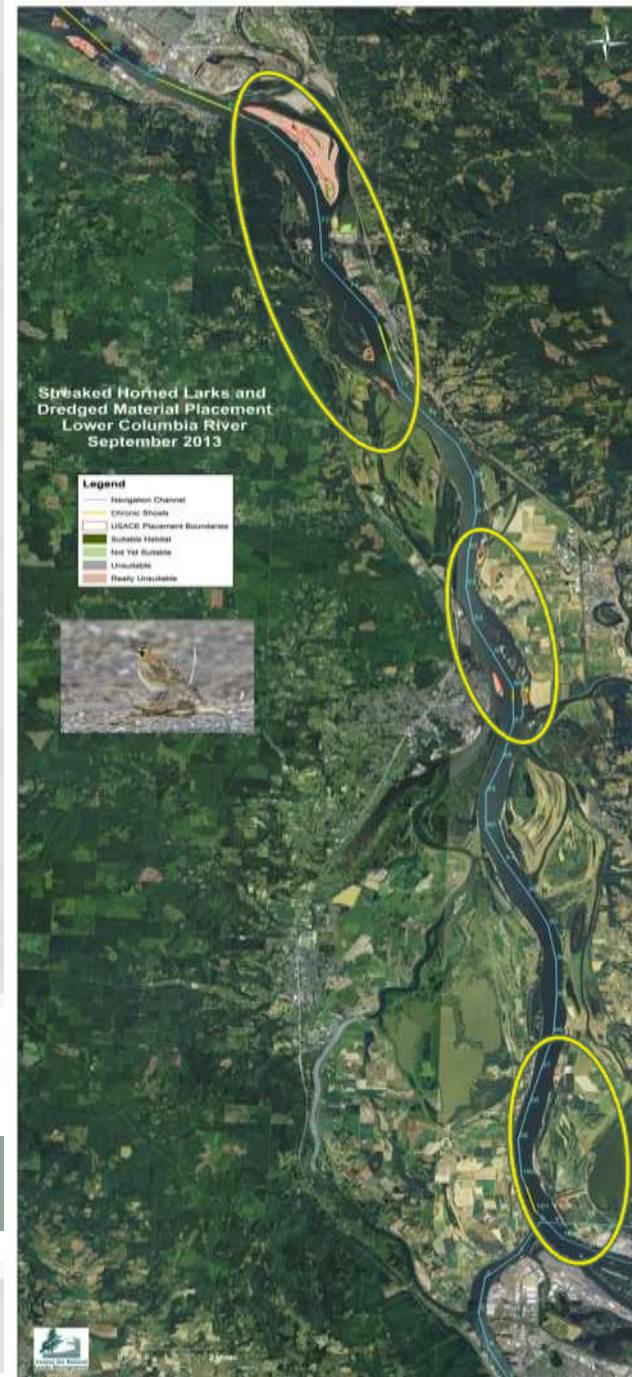
PLANNING IN HABITAT UNITS

THE SHIFTING MOSAIC

- Habitat units currently defined by geography.
- Do not include areas impacted by human use in calculation
- Establish one core area per unit
- Use 2011 mapped suitable habitat to initially guide # acres
- Expand units to include sites beyond USACE boundaries

PLAN IN HABITAT UNITS

THE SHIFTING MOSAIC





RICE/MILLER/PILLAR = 177 OF 414 ACRES SUITABLE IN 2011

THE SHIFTING MOSAIC

STEPS IN 2014 AND BEYOND

- USACE incorporated a shifting mosaic strategy into their recent Biological Assessment for dredging activities.
- CNLM conducting comprehensive lark surveys (occupancy and/or abundance) at all dredge material deposition sites
- Continue lark response monitoring as deposition occurs
- Re-assess habitat conditions through time



FURTHER CONSIDERATIONS

- Impact to other species – e.g., tern, salmon, geese, pelicans
- Outstanding questions and needed refinement
 - Lark movement and colonization
 - Larks in buffered refugia
 - Habitat based plan, but larks may not be habitat limited
 - Potential lark limitations – e.g., food resources, genetics?



FUTURE CONSERVATION STRATEGY



- Sites become “full” and can no longer be used for deposition
- Many are in public ownership
- Establish those sites as lark preserves
- Maintain in suitable lark condition with management

QUESTIONS?

