

Developing Habitat Models and Monitoring Techniques for Nine Bird Species of Clark County, 2008 - 2013

(2005-GBBO-581-P)

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Project Objectives

- Establish population baselines for nine species: distribution, abundance
- Model habitats for nine species
- Establish monitoring program for landbirds



Nine MSHCP Priority Species

Covered:

Willow Flycatcher

Vermilion Flycatcher

Phainopepla

Summer Tanager

Bell's Vireo

Blue Grosbeak

Evaluation:

Bendire's Thrasher

Le Conte's Thrasher

Gray Vireo



Vermilion Flycatchers at nest (photo by Jen Ballard)

Task 1: Developing Population Size Estimates

- Field Methods:
 - Point count based surveys (in distance intervals)
 - Double-sampling using intensive area searches
 - Some double-observer sampling
 - Multiple time intervals to allow for removal method

Task 1: Developing Population Size Estimates

- Draft Results:
 - Estimated populations without correction for detectability
 - Sample population estimates and inferential population estimates
 - Inferential population differed primarily for salt desert habitats (due to DoD lands)

Task 2: Model Distribution and Habitats of Each Species

- Methods:
 - Random habitat-stratified survey design
 - Restratification and drawing new sample in 2012
 - Inclusion of all Nevada Bird Count data for Clark County (2003 – 2013) for distributions
 - Predictive maps based on spatial habitat models
 - (additional spatial and field vegetation data analyses before final report)

Task 2: Model Distribution and Habitats of Each Species

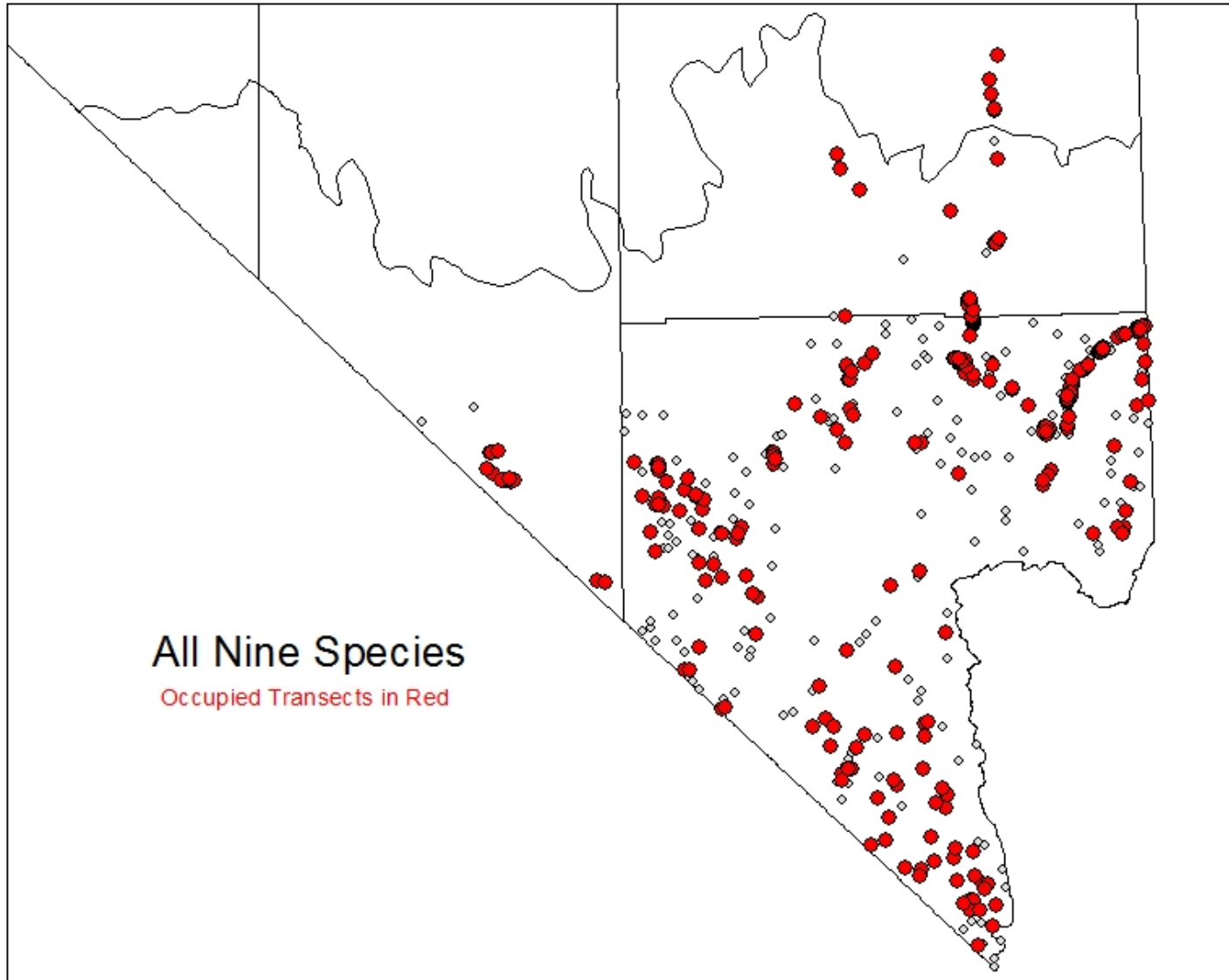
- Results:
 - Presence and absence maps for each species
 - Predicted distributions and densities

Task 3: Establish Landbird Monitoring Plan

- Methods:
 - Original random scatter from Heaton et al.'s 2004/05 Clark County spatial data
 - Restratification based on newly available layers from Clark County in 2012
 - Tests of additional survey methods for effectiveness on rare species (call-playback)
 - Testing various methods for detectability estimation

Clark County, 2008-13:

Sampling and Detection Sites of all 9 Species Combined



Draft Results

- Bell's Vireo

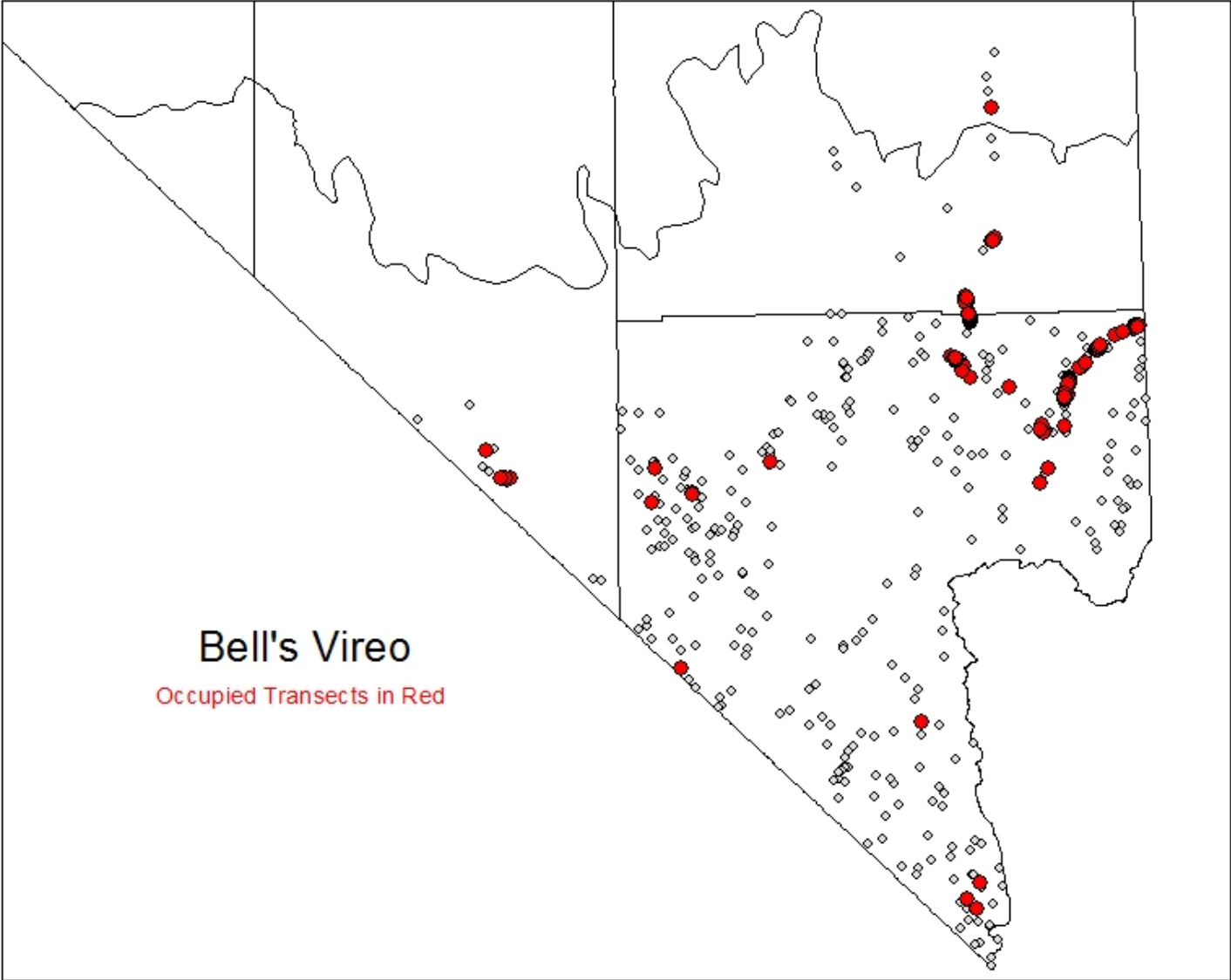


Photo by Martin Meyers

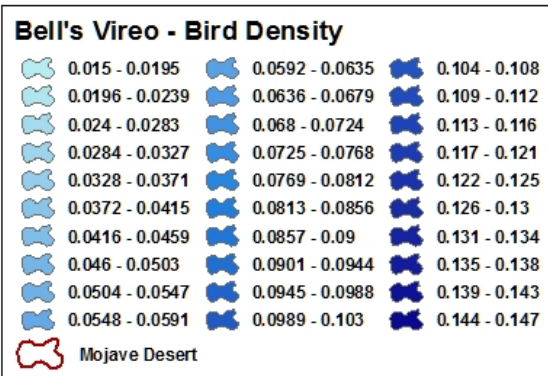
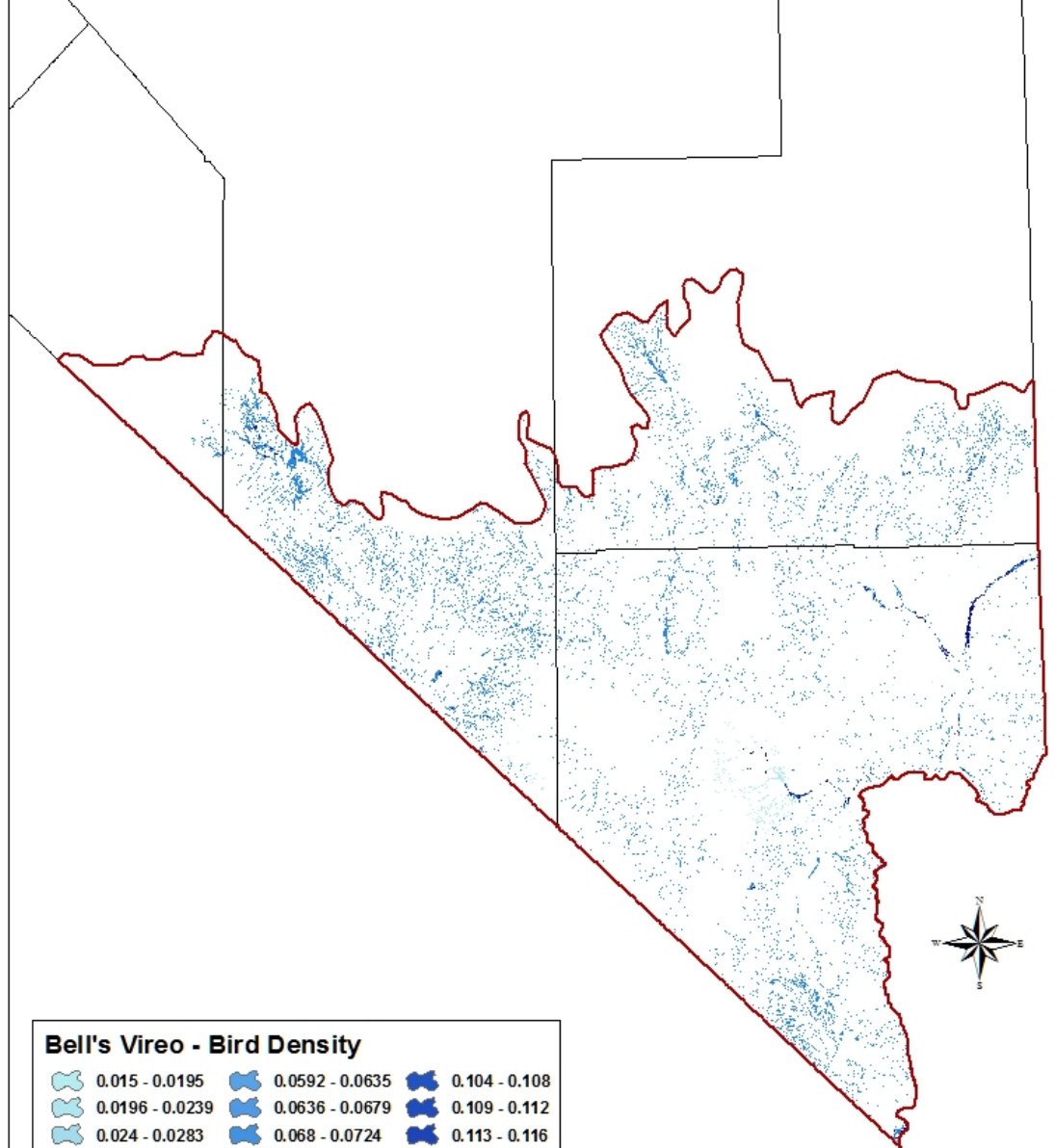
Population Size Estimates: Bell's Vireo

	# surveys (transect-year)	# transects	Sample Pop	Inferential Pop
Agriculture	15	5	65	65
Coniferous Forest	39	13	0	0
Joshua Tree	110	51	0	0
Lowland Riparian	75	31	287	291
Mesquite-Catclaw	40	32	0	0
Mojave Scrub	92	53	0	0
Montane Riparian	1	1	0	0
Pinyon-Juniper	80	37	0	0
Sagebrush	20	7	0	0
Salt Desert	18	13	0	0
Total	490	243	352	356

Actual Distribution

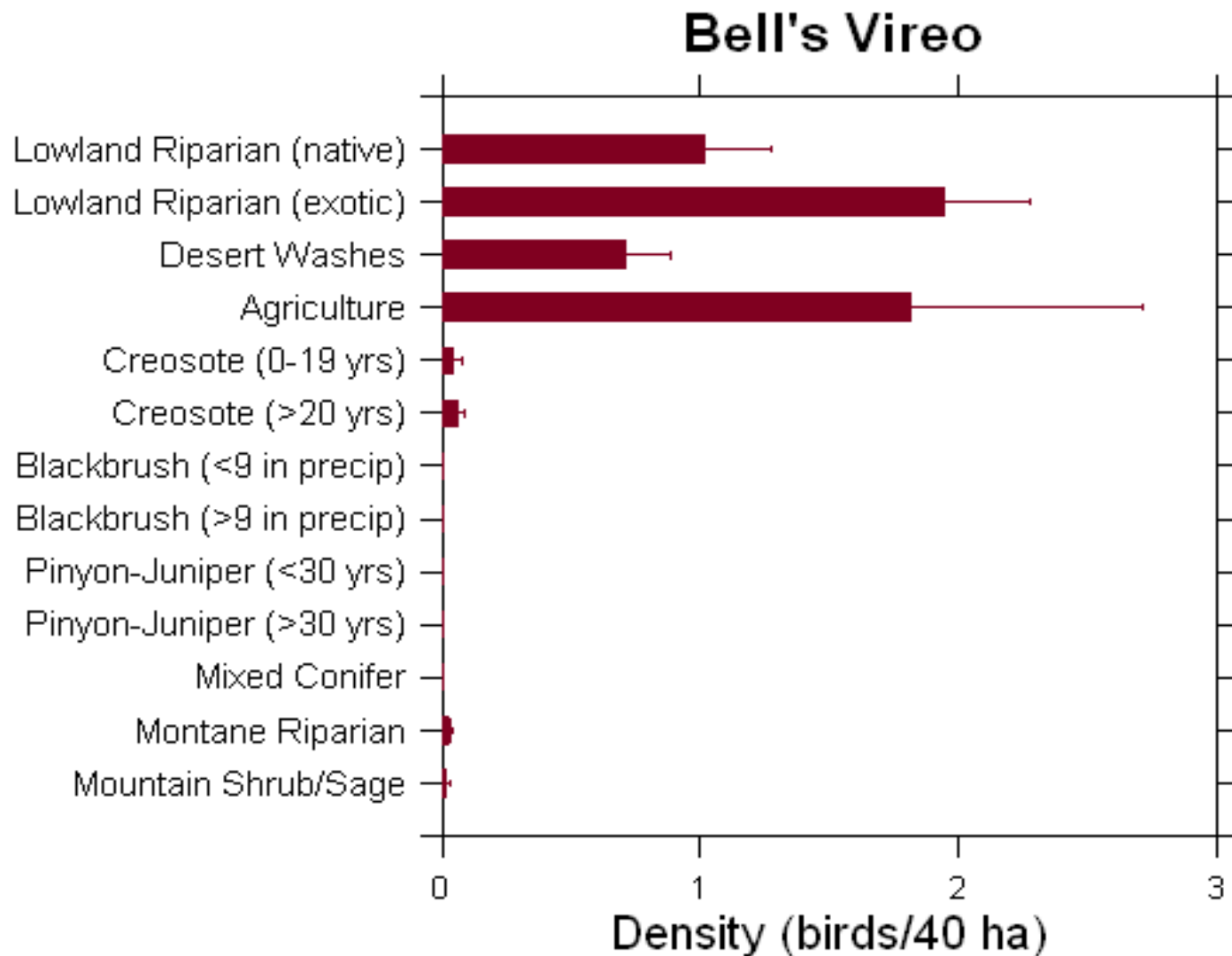


Predicted Distribution



(birds/3.14 ha)

Bell's Vireo Actual Habitat Use (from spatial data)



Draft Results

- Phainopepla

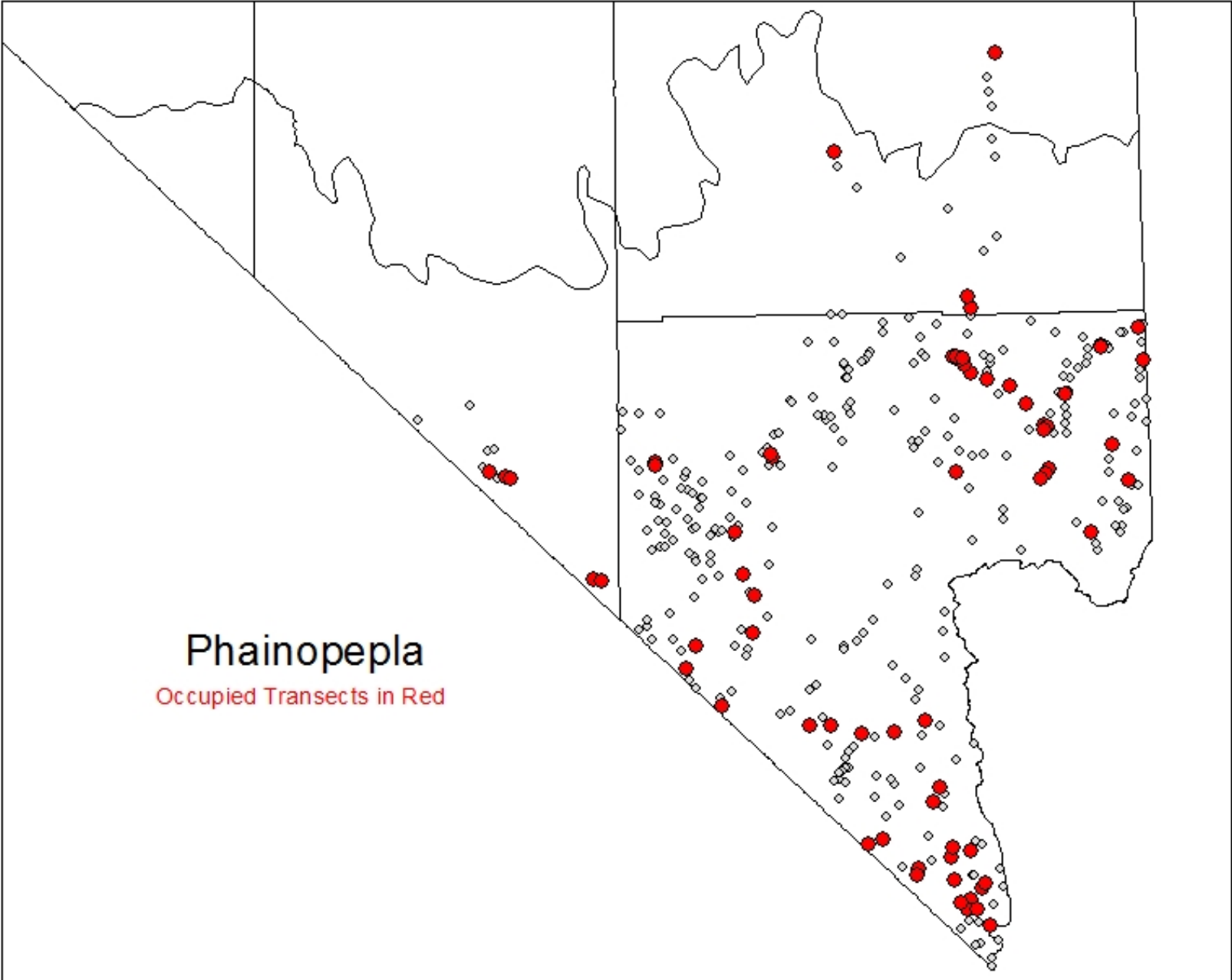


Photo by Scott Page

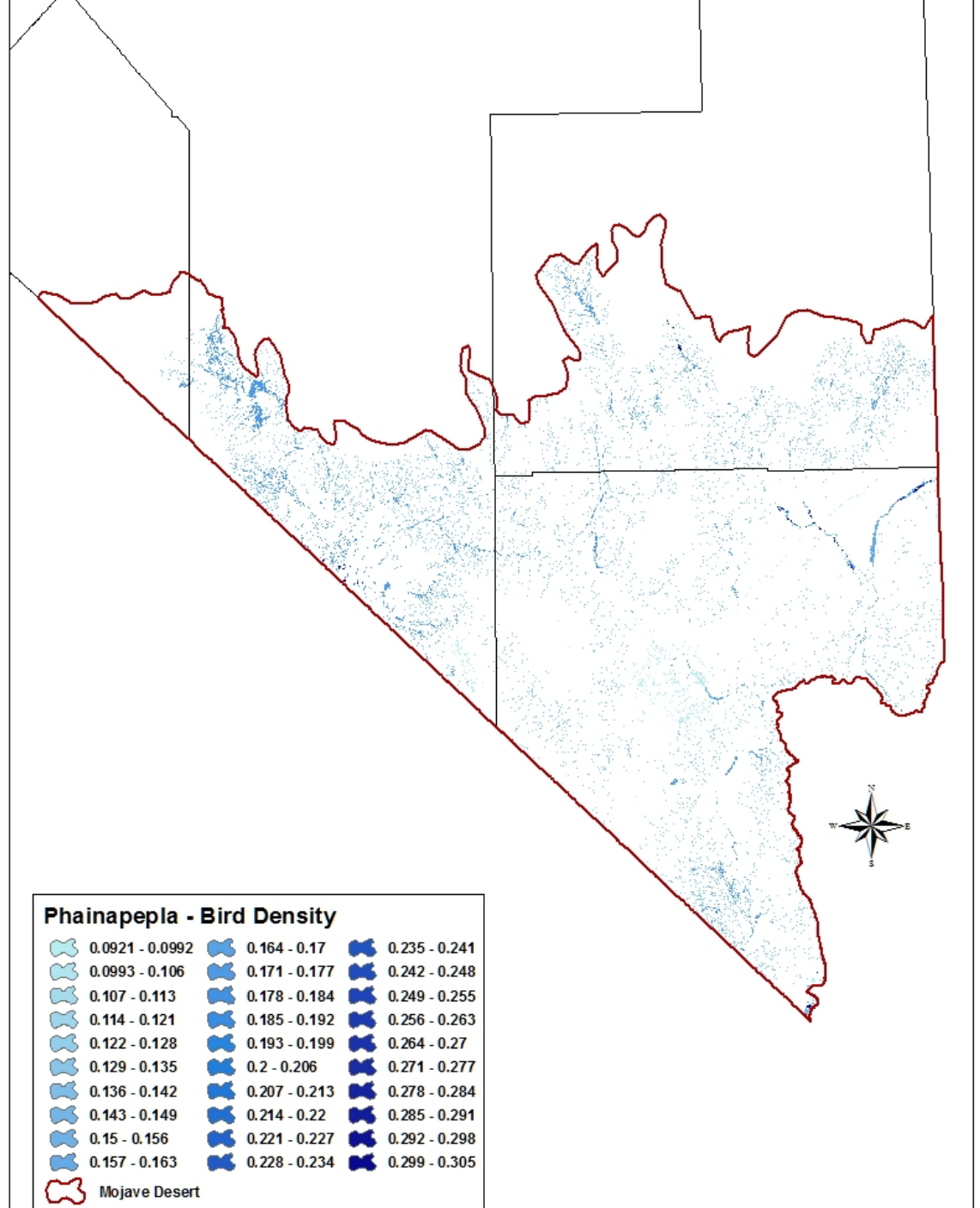
Population Size Estimates: Phainopepla

	# surveys (transect-year)	# transects	Sample Pop	Inferential Pop
Agriculture	15	5	183	183
Coniferous Forest	39	13	0	0
Joshua Tree	110	51	2062	2475
Lowland Riparian	75	31	530	538
Mesquite-Catclaw	40	32	465	470
Mojave Scrub	92	53	5102	5367
Montane Riparian	1	1	0	0
Pinyon-Juniper	80	37	0	0
Sagebrush	20	7	0	0
Salt Desert	18	13	113	483
Total	490	243	8455	9516

Actual Distribution

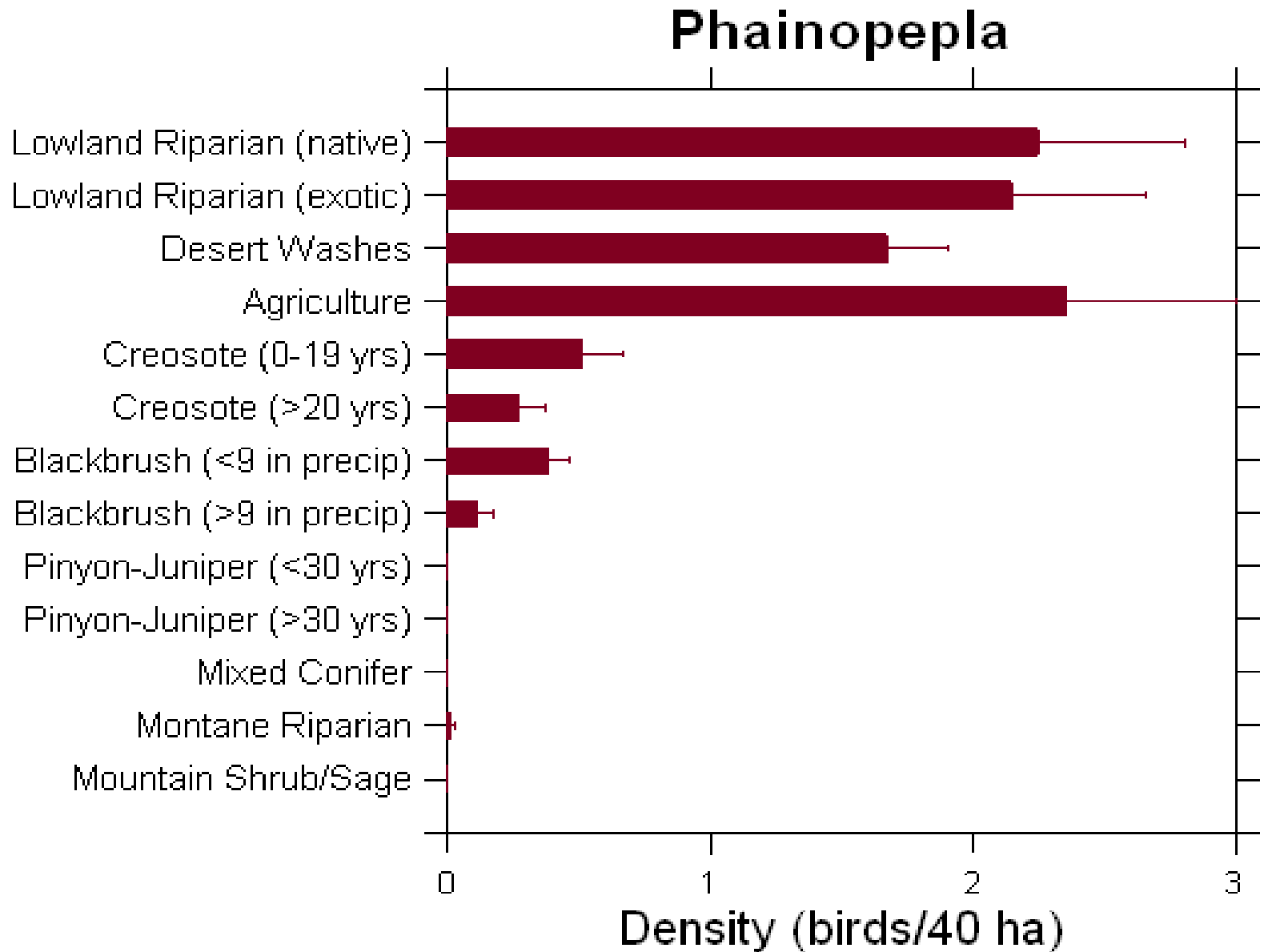


Predicted Distribution



(birds/3.14 ha)

Phainopepla Actual Habitat Use (from spatial data)



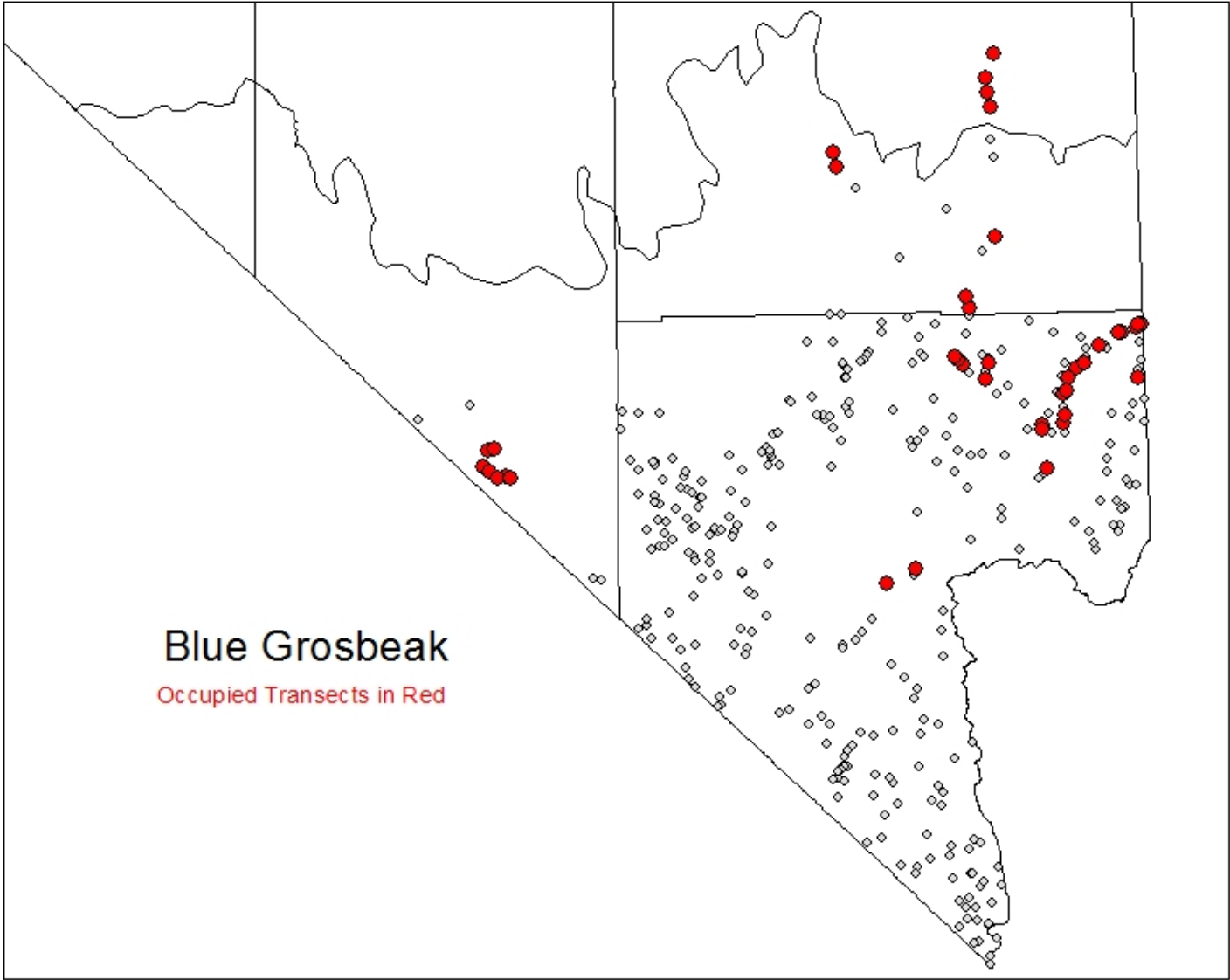
Draft Results

- Blue Grosbeak

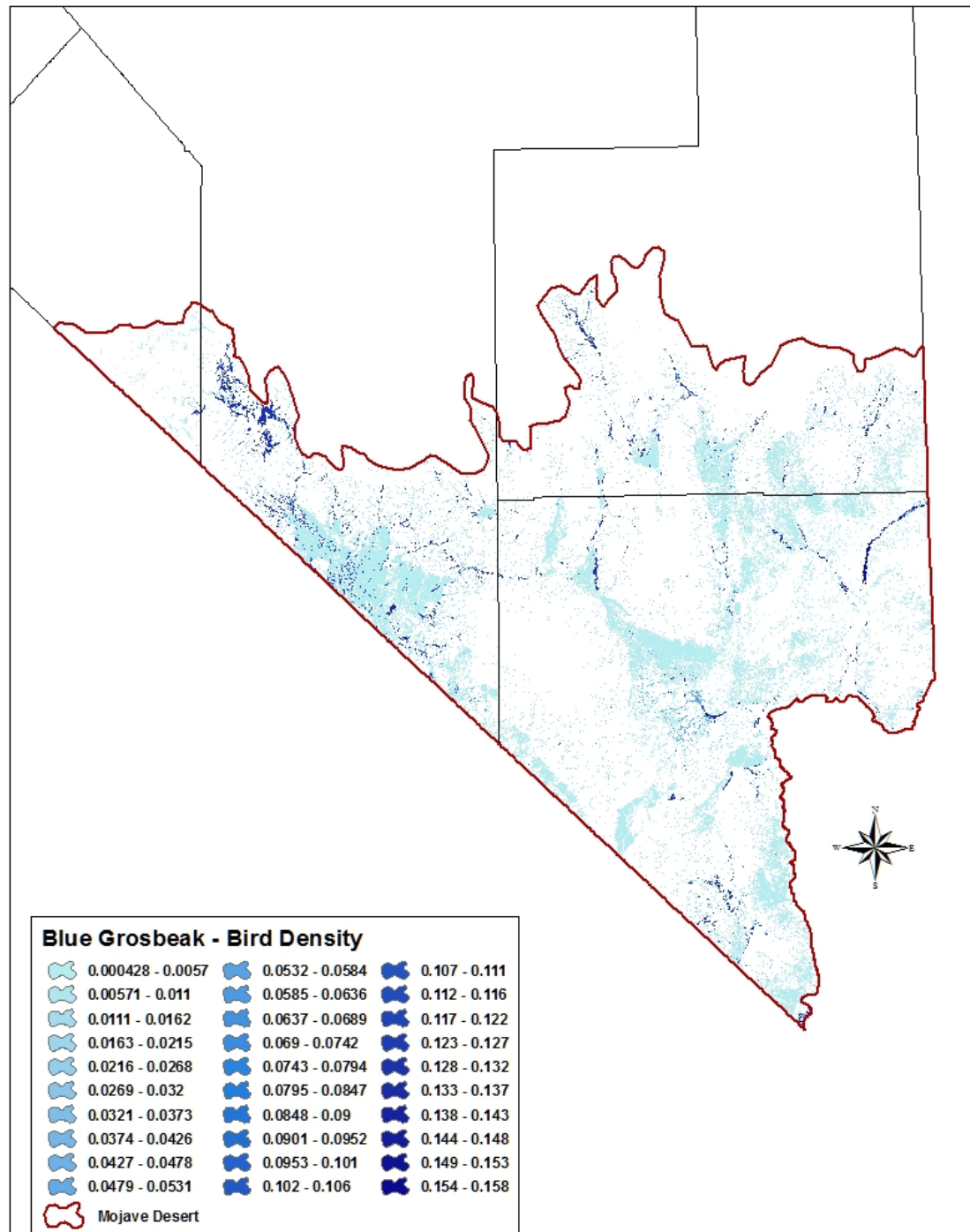
Population Size Estimates: Blue Grosbeak

	# surveys (transect-year)	# transects	Sample Pop	Inferential Pop
Agriculture	15	5	15	15
Coniferous Forest	39	13	0	0
Joshua Tree	110	51	0	0
Lowland Riparian	75	31	320	325
Mesquite-Catclaw	40	32	0	0
Mojave Scrub	92	53	0	0
Montane Riparian	1	1	0	0
Pinyon-Juniper	80	37	163	172
Sagebrush	20	7	0	0
Salt Desert	18	13	0	0
Total	490	243	499	513

Actual Distribution

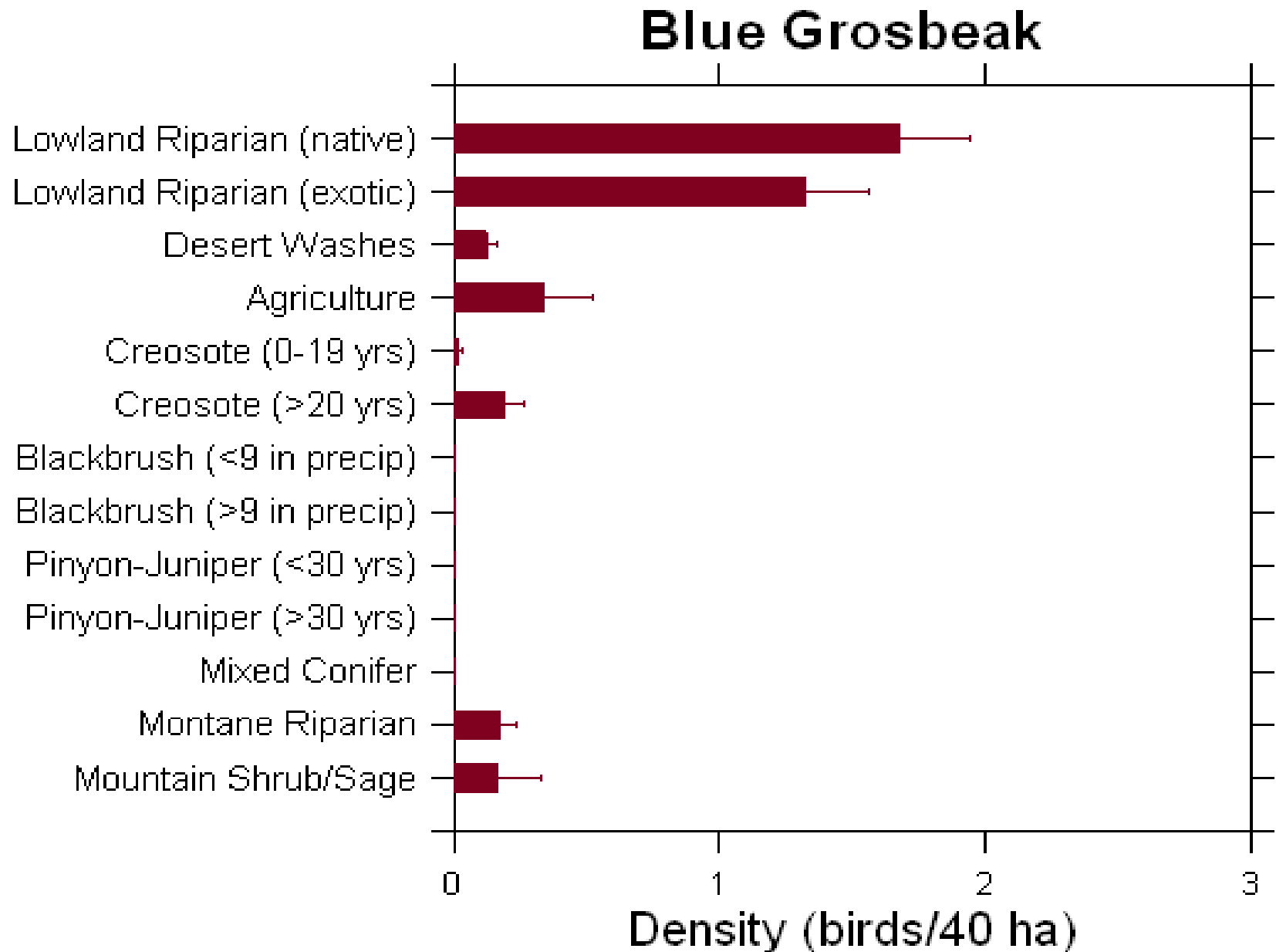


Predicted Distribution



(birds/3.14 ha)

Blue Grosbeak Actual Habitat Use (from spatial data)



Draft Results

- Summer Tanager

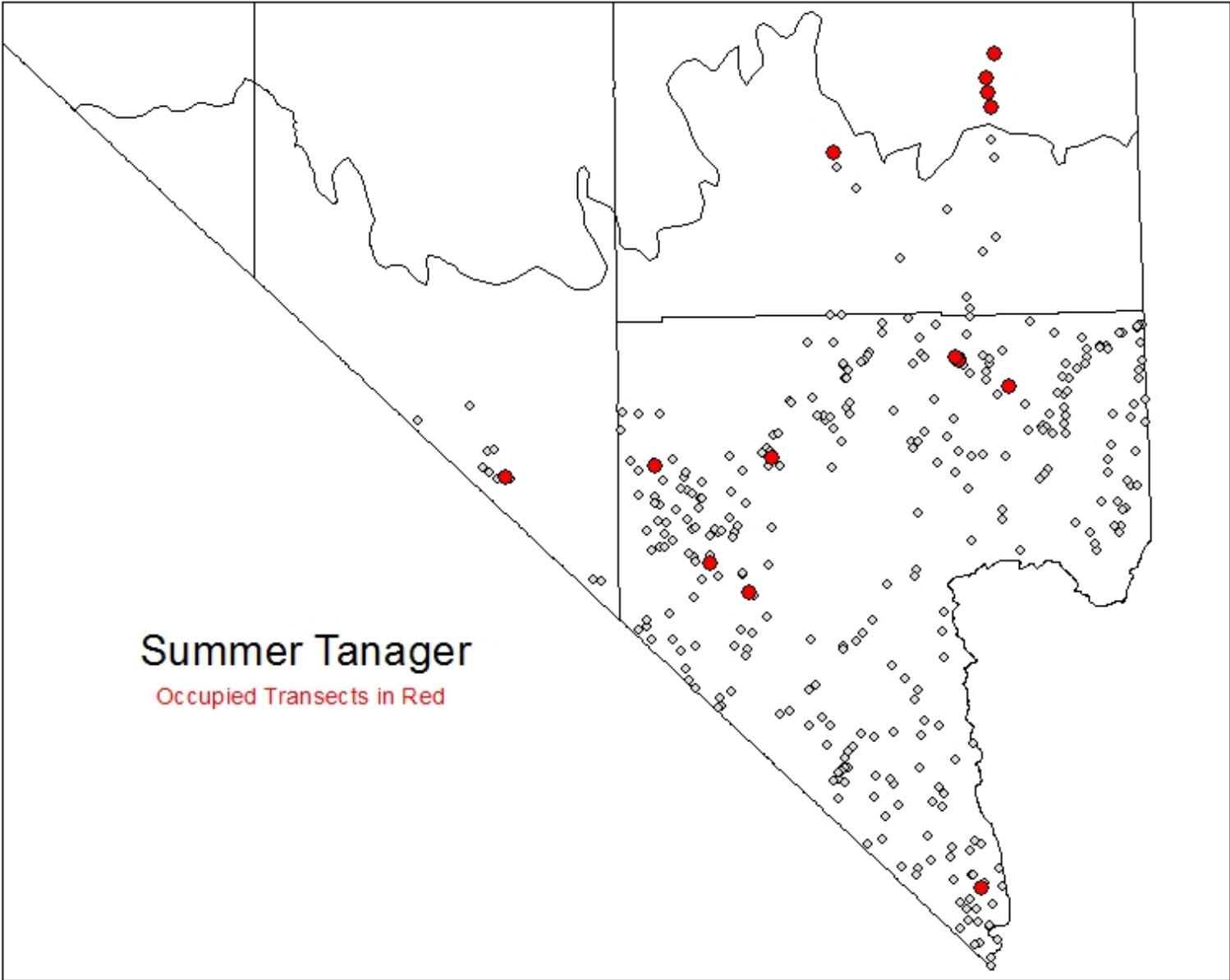


Photo by Jen Ballard

Population Size Estimates: Summer Tanager

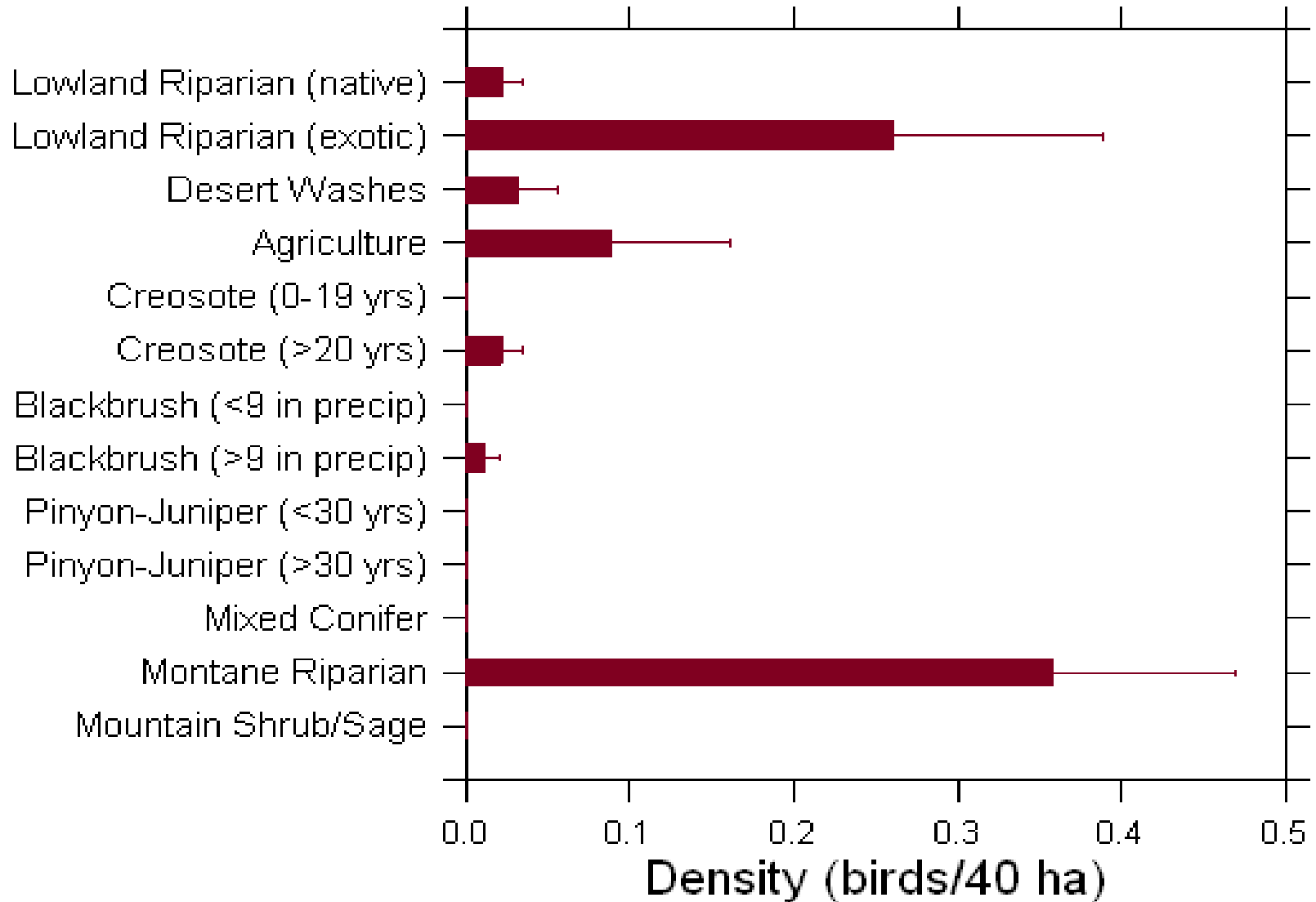
	# surveys (transect-year)	# transects	Sample Pop	Inferential Pop
Agriculture	15	5	0	0
Coniferous Forest	39	13	0	0
Joshua Tree	110	51	0	0
Lowland Riparian	75	31	37	38
Mesquite-Catclaw	40	32	0	0
Mojave Scrub	92	53	0	0
Montane Riparian	1	1	0	0
Pinyon-Juniper	80	37	22	23
Sagebrush	20	7	0	0
Salt Desert	18	13	0	0
Total	490	243	59	61

Actual Distribution



Summer Tanager Actual Habitat Use (from spatial data)

Summer Tanager



Draft Results

- Vermilion Flycatcher

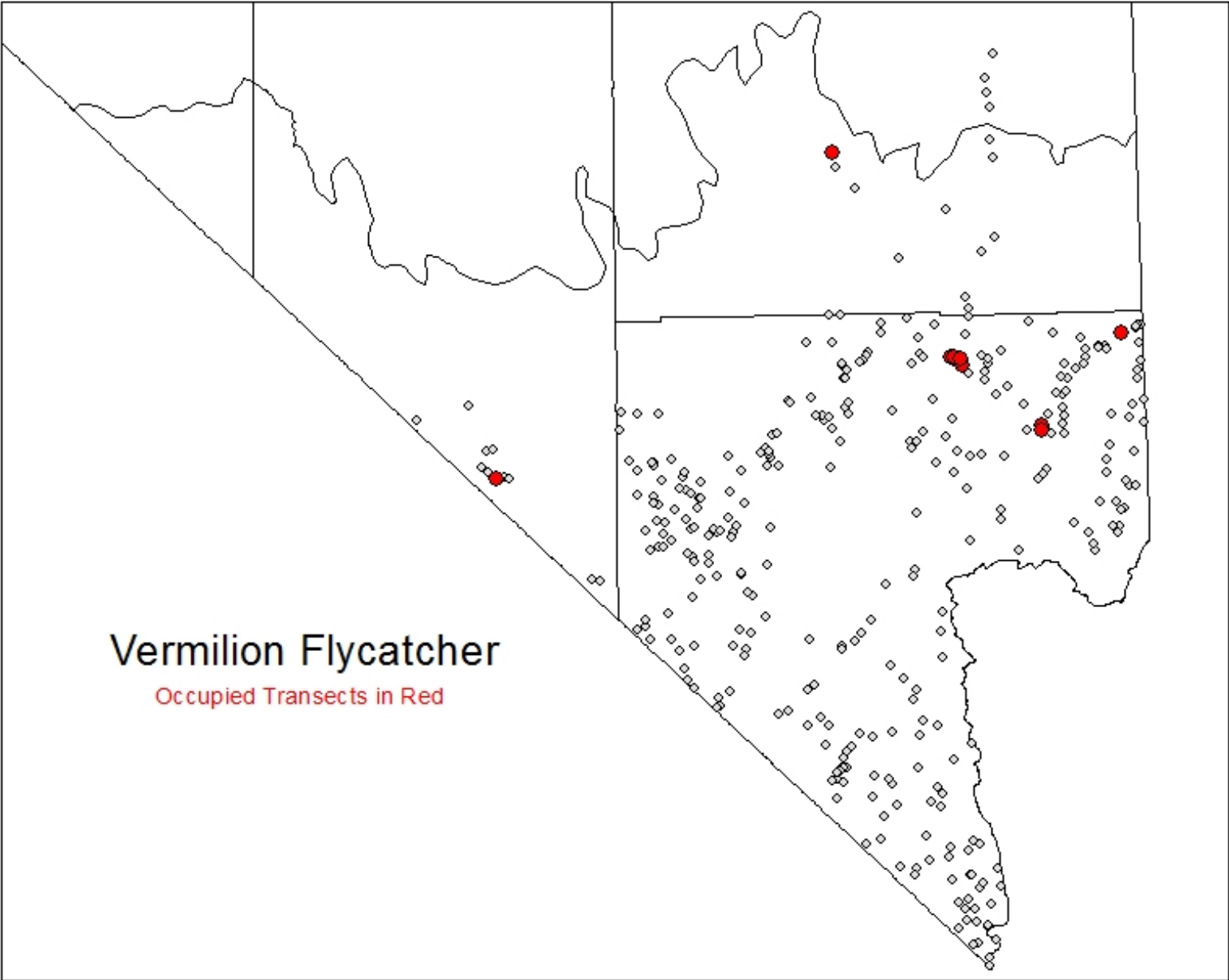


Photo by Jen Ballard

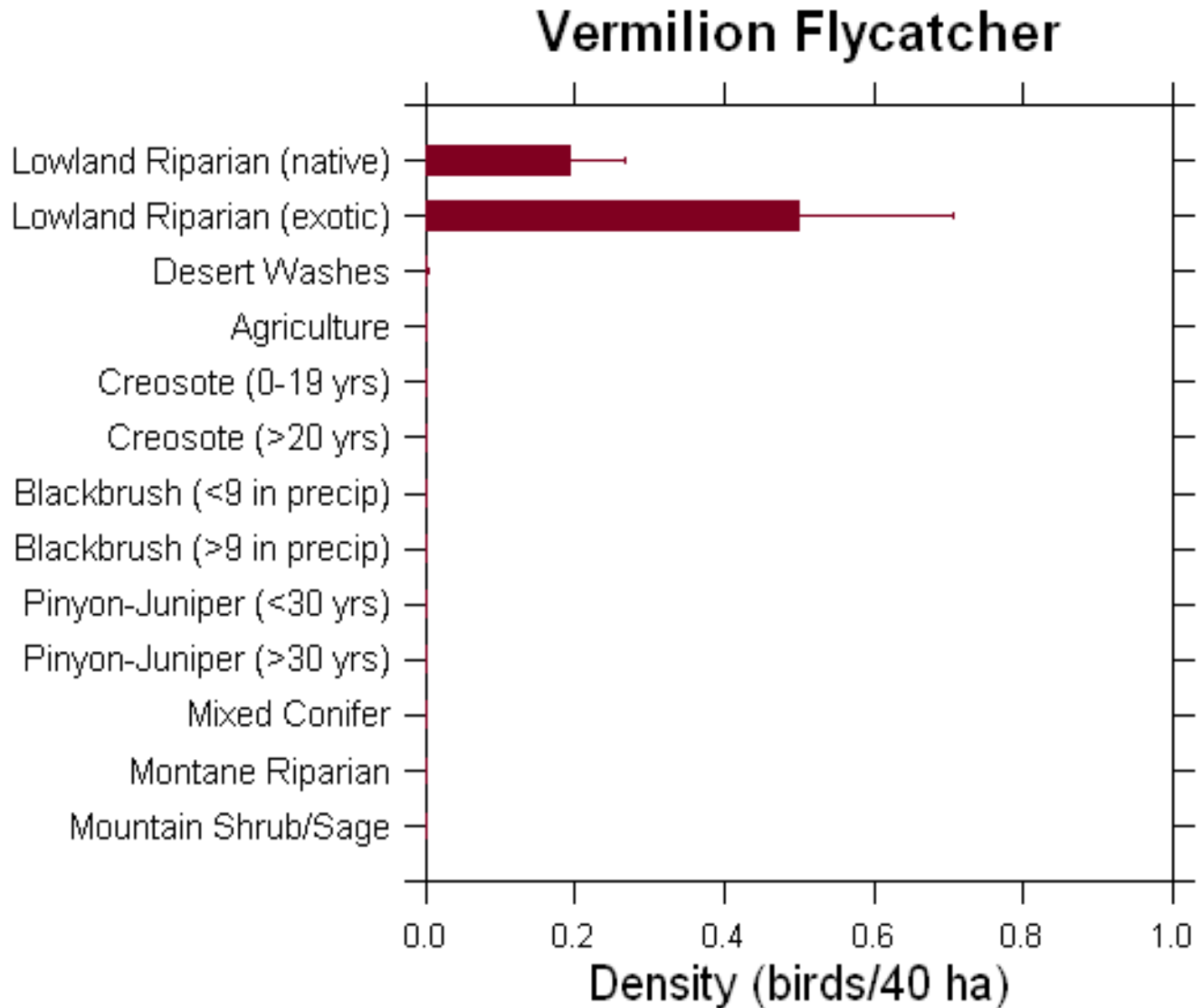
Population Size Estimates: Vermilion Flycatcher

	# surveys (transect-year)	# transects	Sample Pop	Inferential Pop
Agriculture	15	5	58	58
Coniferous Forest	39	13	0	0
Joshua Tree	110	51	0	0
Lowland Riparian	75	31	47	47
Mesquite-Catclaw	40	32	0	0
Mojave Scrub	92	53	0	0
Montane Riparian	1	1	0	0
Pinyon-Juniper	80	37	0	0
Sagebrush	20	7	0	0
Salt Desert	18	13	0	0
Total	490	243	105	105

Actual Distribution



Vermilion Flycatcher Actual Habitat Use (from spatial data)



Draft Results

- Willow Flycatcher
(may or may not
be Southwestern
subspecies)

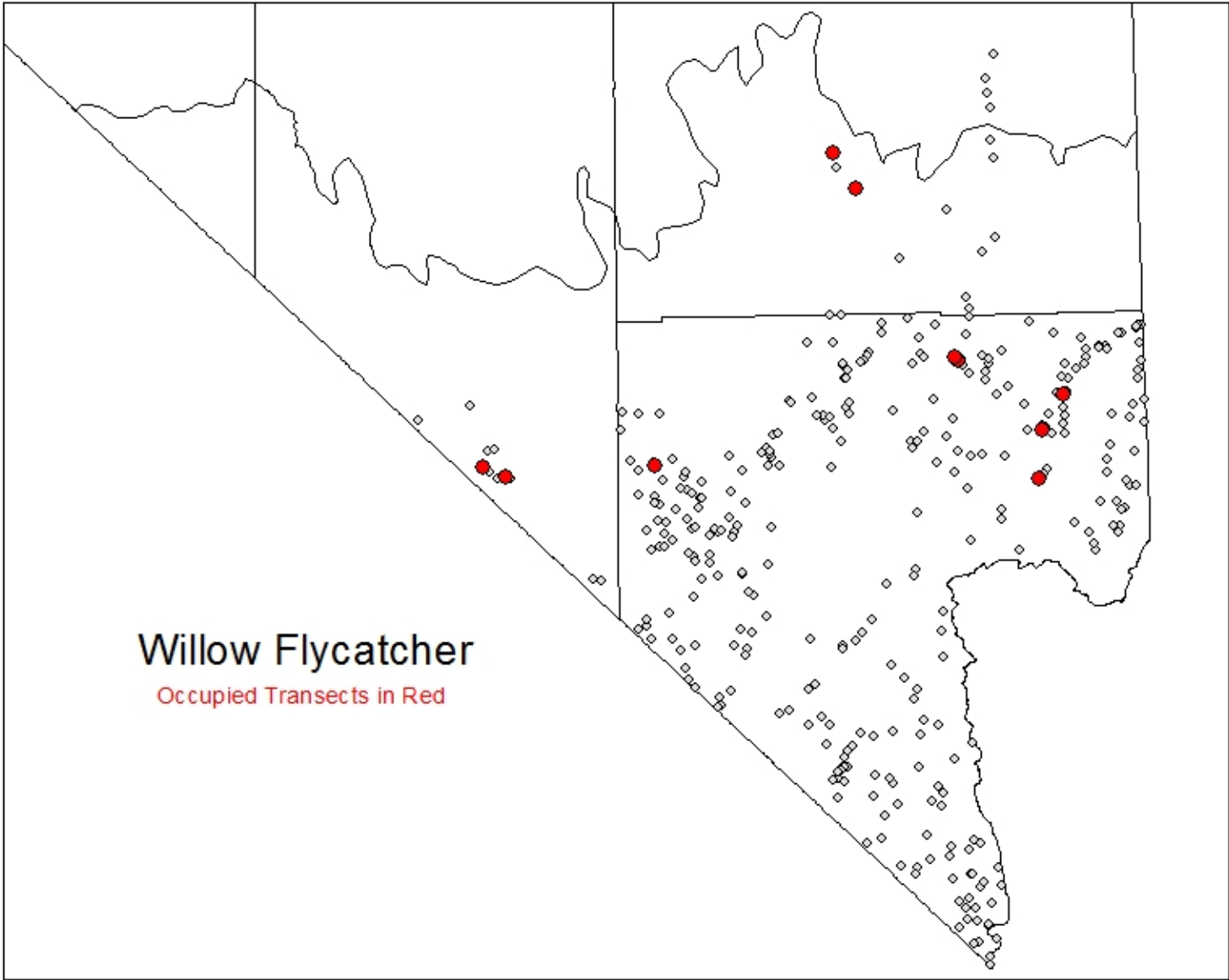


Photo by Martin Meyers

Population Size Estimates: Willow Flycatcher

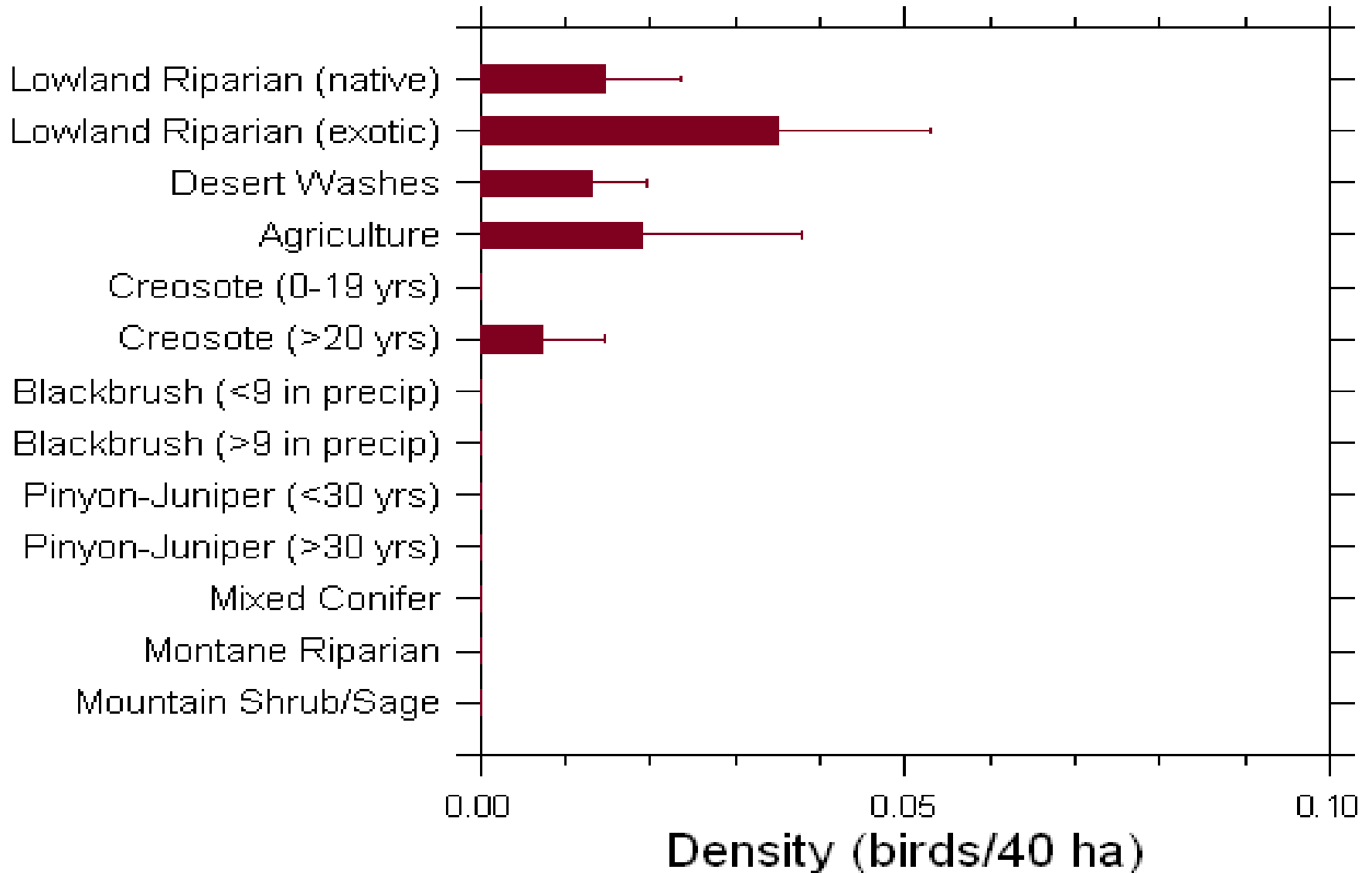
	# surveys (transect-year)	# transects	Sample Pop	Inferential Pop
Agriculture	15	5	0	0
Coniferous Forest	39	13	0	0
Joshua Tree	110	51	0	0
Lowland Riparian	75	31	3	3
Mesquite-Catclaw	40	32	0	0
Mojave Scrub	92	53	0	0
Montane Riparian	1	1	0	0
Pinyon-Juniper	80	37	0	0
Sagebrush	20	7	0	0
Salt Desert	18	13	0	0
Total	490	243	3	3

Actual Distribution



Willow Flycatcher Actual Habitat Use (from spatial data)

Willow Flycatcher



Draft Results

- Bendire's Thrasher

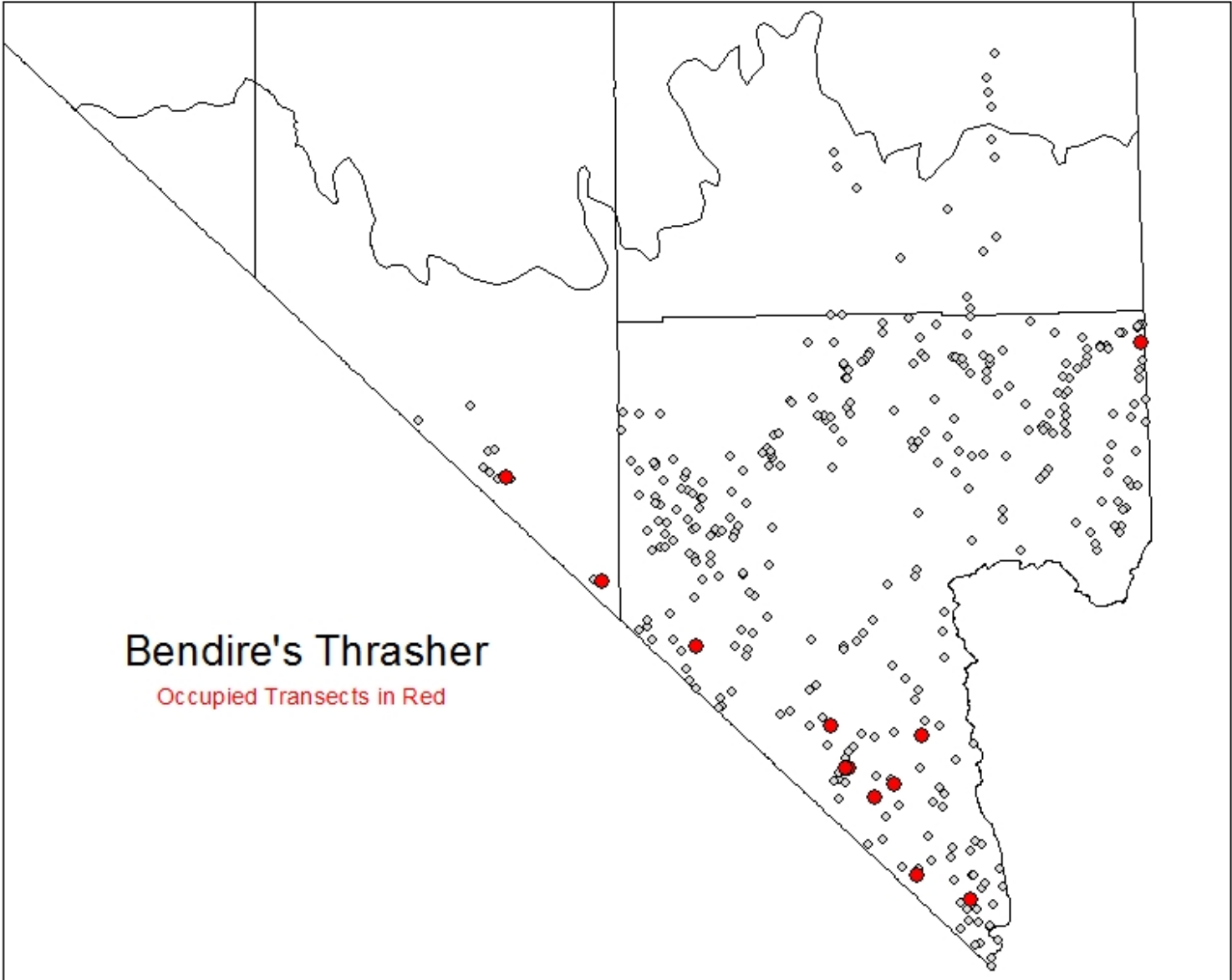


**Bendire's Thrasher
(photo by Martin Meyers)**

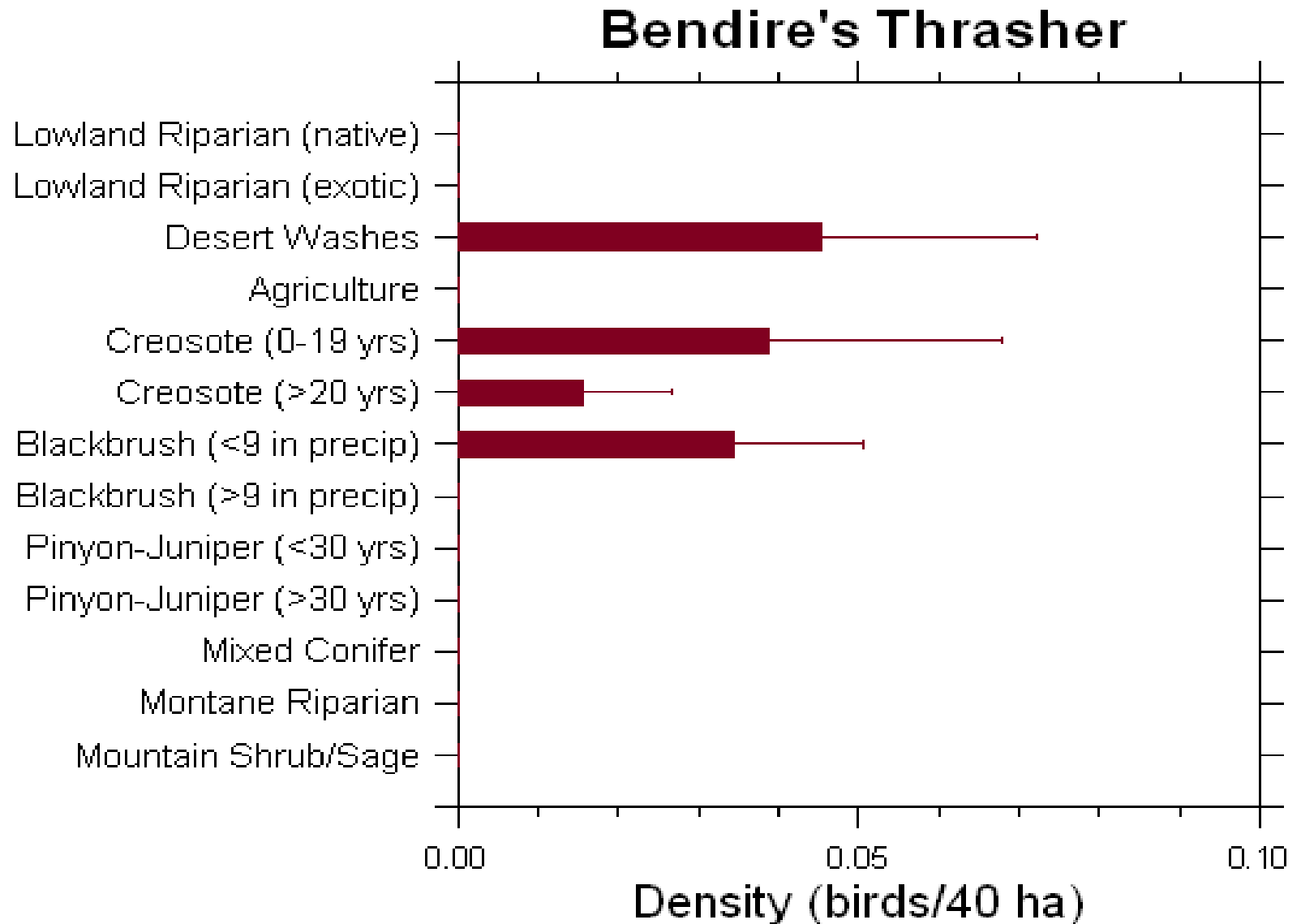
Population Size Estimates: Bendire's Thrasher

	# surveys (transect-year)	# transects	Sample Pop	Inferential Pop
Agriculture	15	5	0	0
Coniferous Forest	39	13	0	0
Joshua Tree	110	51	516	619
Lowland Riparian	75	31	0	0
Mesquite-Catclaw	40	32	20	20
Mojave Scrub	92	53	194	204
Montane Riparian	1	1	0	0
Pinyon-Juniper	80	37	0	0
Sagebrush	20	7	0	0
Salt Desert	18	13	0	0
Total	490	243	730	843

Actual Distribution



Bendire's Thrasher Actual Habitat Use (from spatial data)



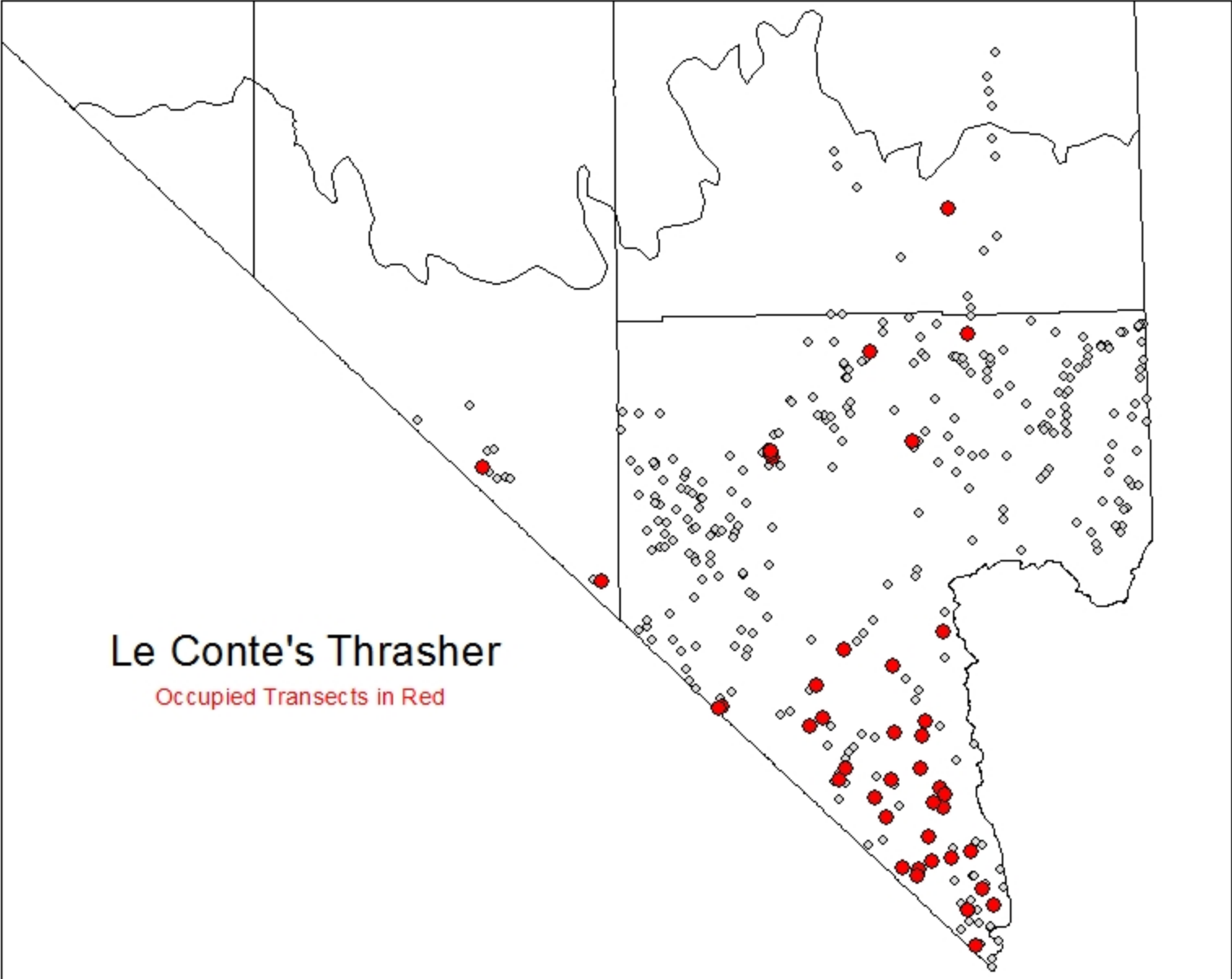
Draft Results

- Le Conte's Thrasher

Population Size Estimates: Le Conte's Thrasher

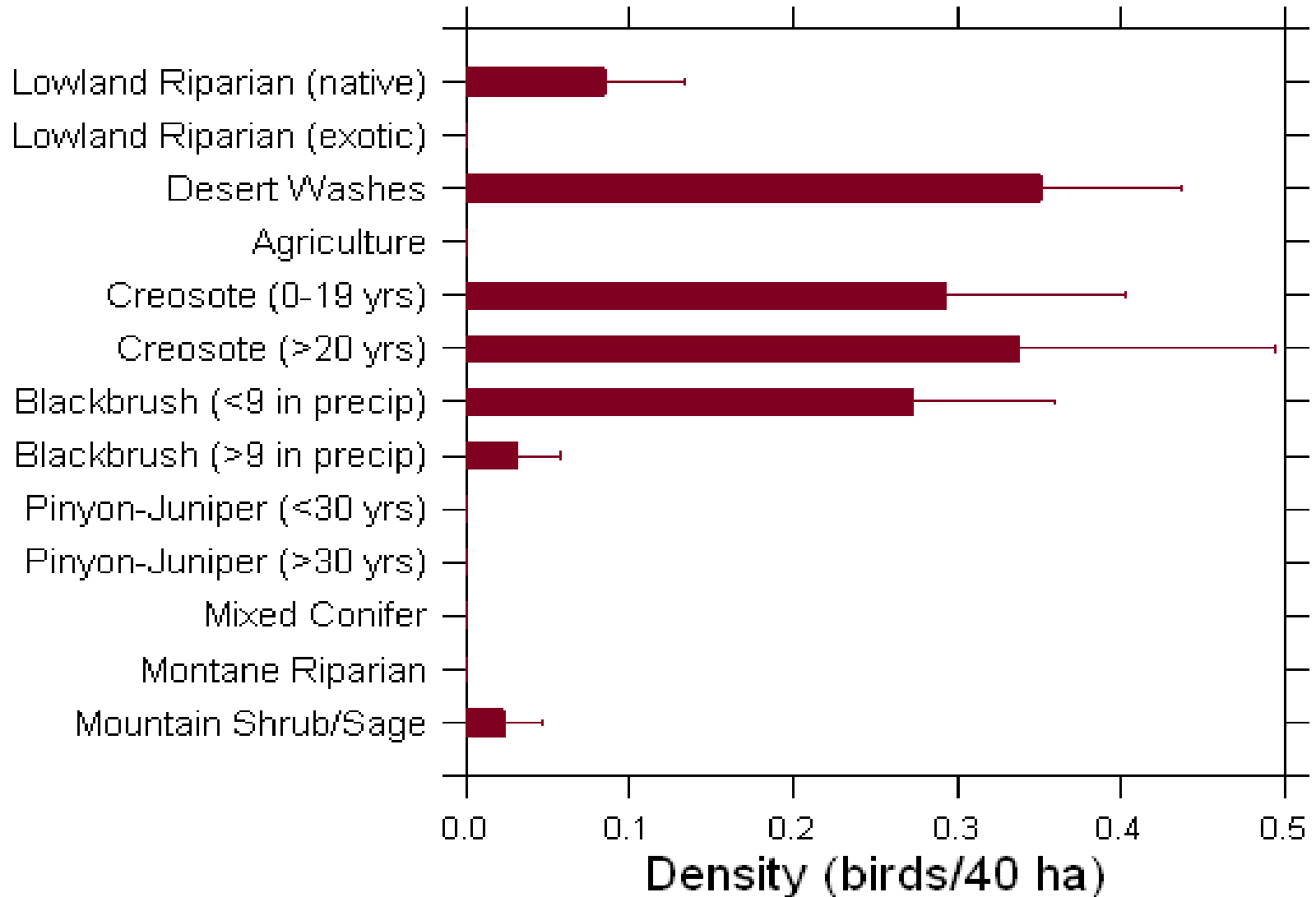
	# surveys (transect-year)	# transects	Sample Pop	Inferential Pop
Agriculture	15	5	0	0
Coniferous Forest	39	13	0	0
Joshua Tree	110	51	2320	2785
Lowland Riparian	75	31	0	0
Mesquite-Catclaw	40	32	170	172
Mojave Scrub	92	53	4567	4805
Montane Riparian	1	1	0	0
Pinyon-Juniper	80	37	8	9
Sagebrush	20	7	0	0
Salt Desert	18	13	136	584
Total	490	243	7202	8354

Actual Distribution



Le Conte's Thrasher Actual Habitat Use (from spatial data)

Le Conte's Thrasher



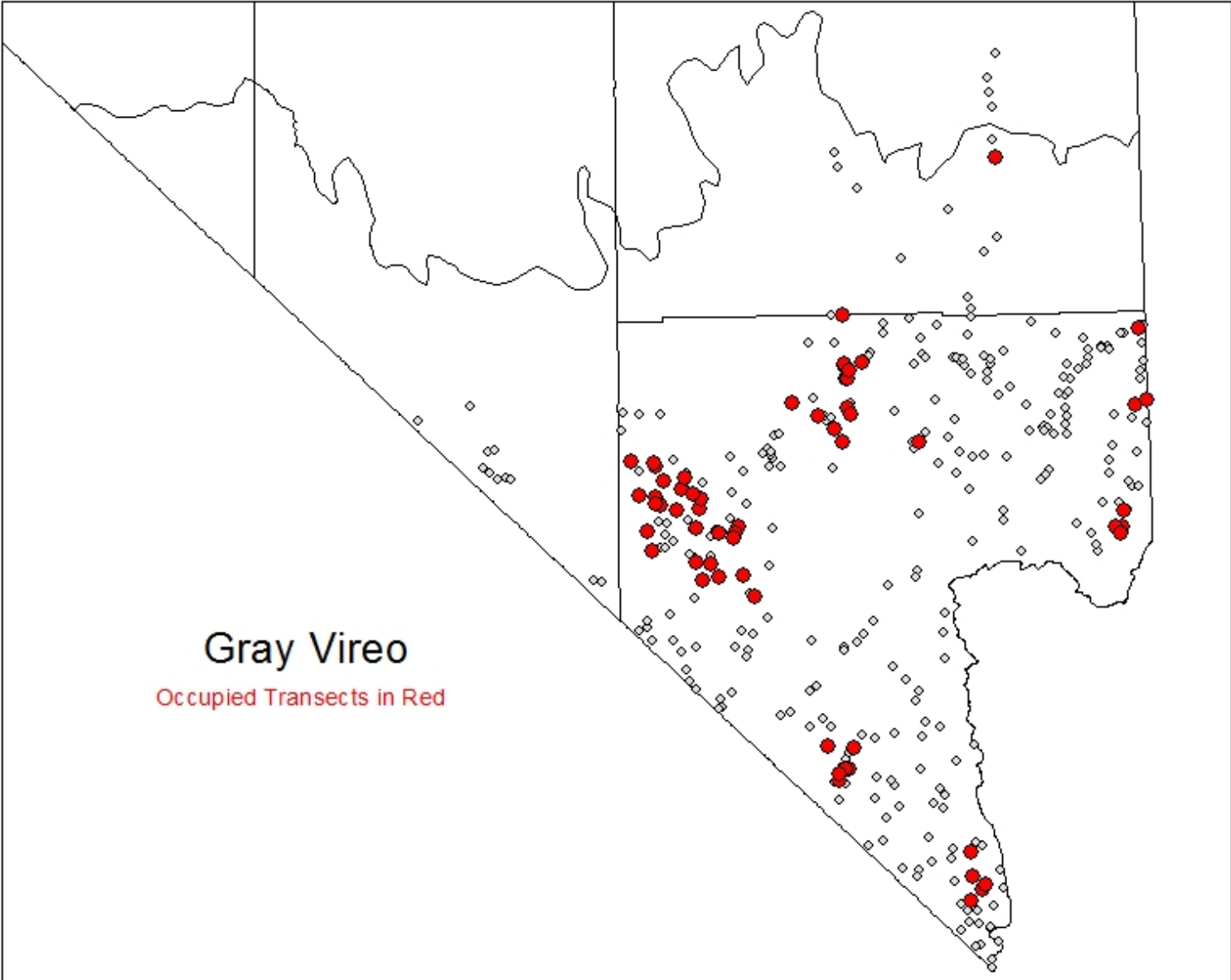
Draft Results

- Gray Vireo

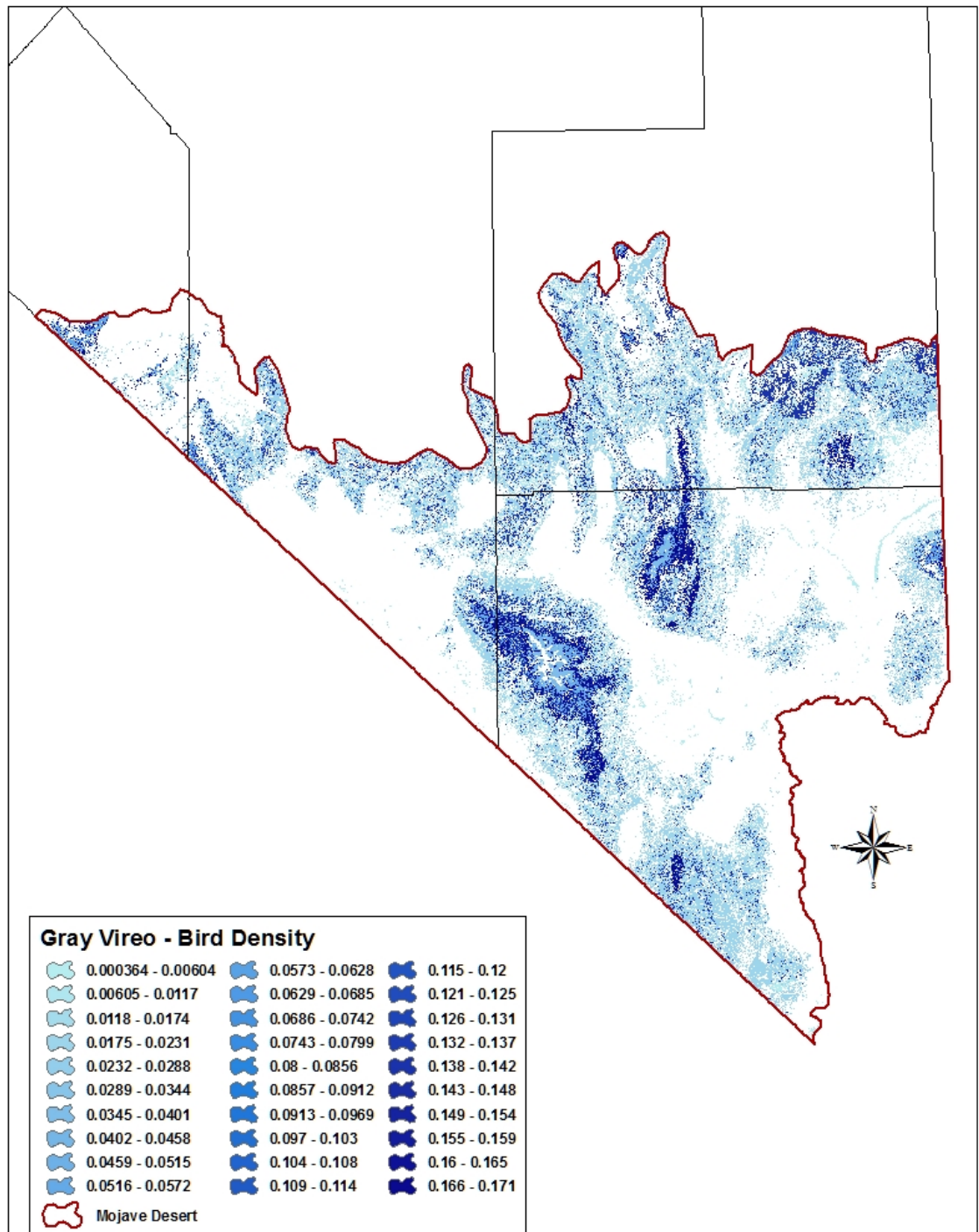
Population Size Estimates: Gray Vireo

	# surveys (transect-year)	# transects	Sample Pop	Inferential Pop
Agriculture	15	5	0	0
Coniferous Forest	39	13	769	872
Joshua Tree	110	51	1665	1998
Lowland Riparian	75	31	0	0
Mesquite-Catclaw	40	32	0	0
Mojave Scrub	92	53	737	775
Montane Riparian	1	1	0	0
Pinyon-Juniper	80	37	4797	5065
Sagebrush	20	7	189	209
Salt Desert	18	13	0	0
Total	490	243	8157	8920

Actual Distribution

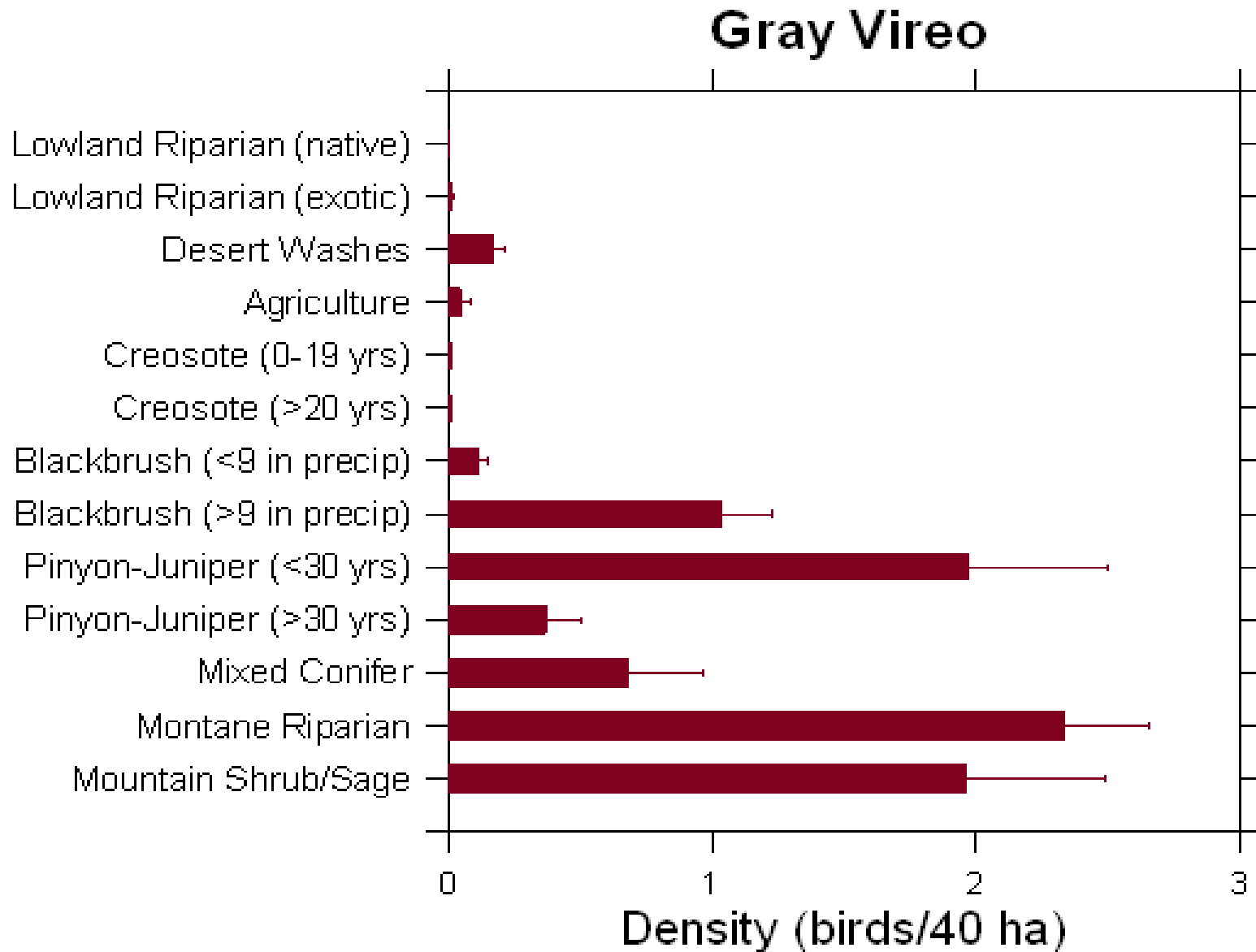


Predicted Distribution



(birds/3.14 ha)

Gray Vireo Actual Habitat Use (from spatial data)



Take-Home Messages

- Distributions and predictive models are important for planners! Where to do/not do things on the landscape
- Site-specific habitat models are important for implementers! What to do/not do in a particular location
- Monitoring is important for all partners! Do Clark County land uses have a net impact or benefit on bird populations and bird distributions; does a particular project benefit a priority species

Next Steps (before draft report due date October 15, 2013)

- Statistical habitat models
- Predictive model refinement using different spatial data sets (2013)
- Formalization of final monitoring plan (2013)

Next Steps – cont'd

- Invitation to a **½ day meeting at Clark County offices in mid - late January, 2014**
- You are all invited
- We will discuss specific applications of these data for land managers

Acknowledgments

- Clark County Desert Conservation Program
- The Nature Conservancy, Nevada Field Office
- U.S. Fish and Wildlife Service
- National Park Service
- Bureau of Land Management
- U.S. Forest Service
- Bureau of Reclamation
- Southern Nevada Water Authority
- USGS Snake River Field Station
- Nevada Department of Wildlife
- Otis Bay Ecological Consultants
- University of Nevada, Las Vegas
- Many other Nevada Bird Count partners
- GBBO field crews and volunteers
- Ralph Phenix