A scenic landscape photograph of Lake Havasu. The foreground is a rocky, gravelly slope with sparse green and brown vegetation. The middle ground is the calm, blue-green water of the lake. In the background, a range of rugged, brown mountains stretches across the horizon under a bright blue sky with scattered white clouds.

# A Survey of Spring Migration on Lake Havasu

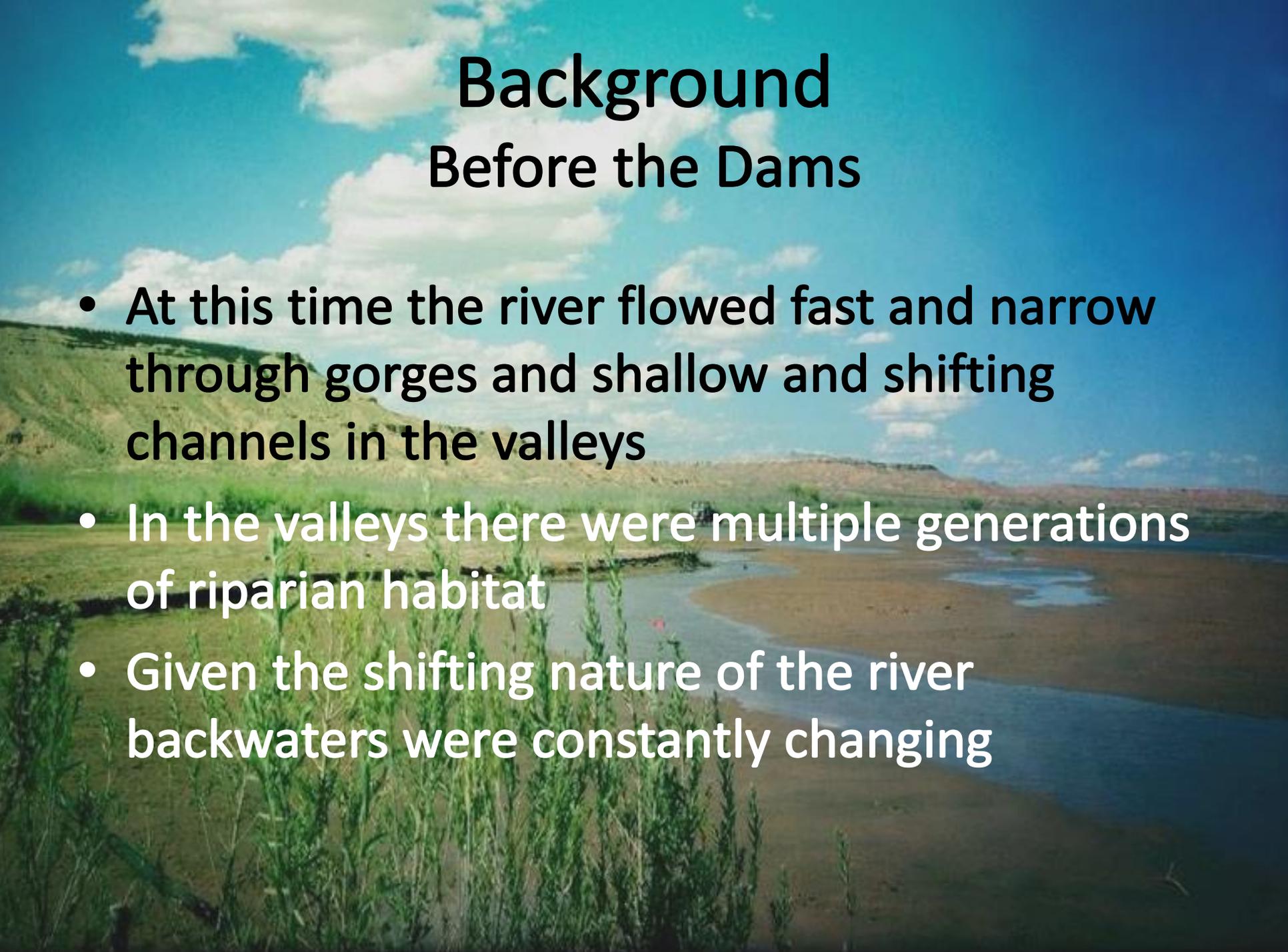
With an Emphasis on Waterbirds

David Vander Pluym

# Background

## Before the Dams

- At this time the river flowed fast and narrow through gorges and shallow and shifting channels in the valleys
- In the valleys there were multiple generations of riparian habitat
- Given the shifting nature of the river backwaters were constantly changing

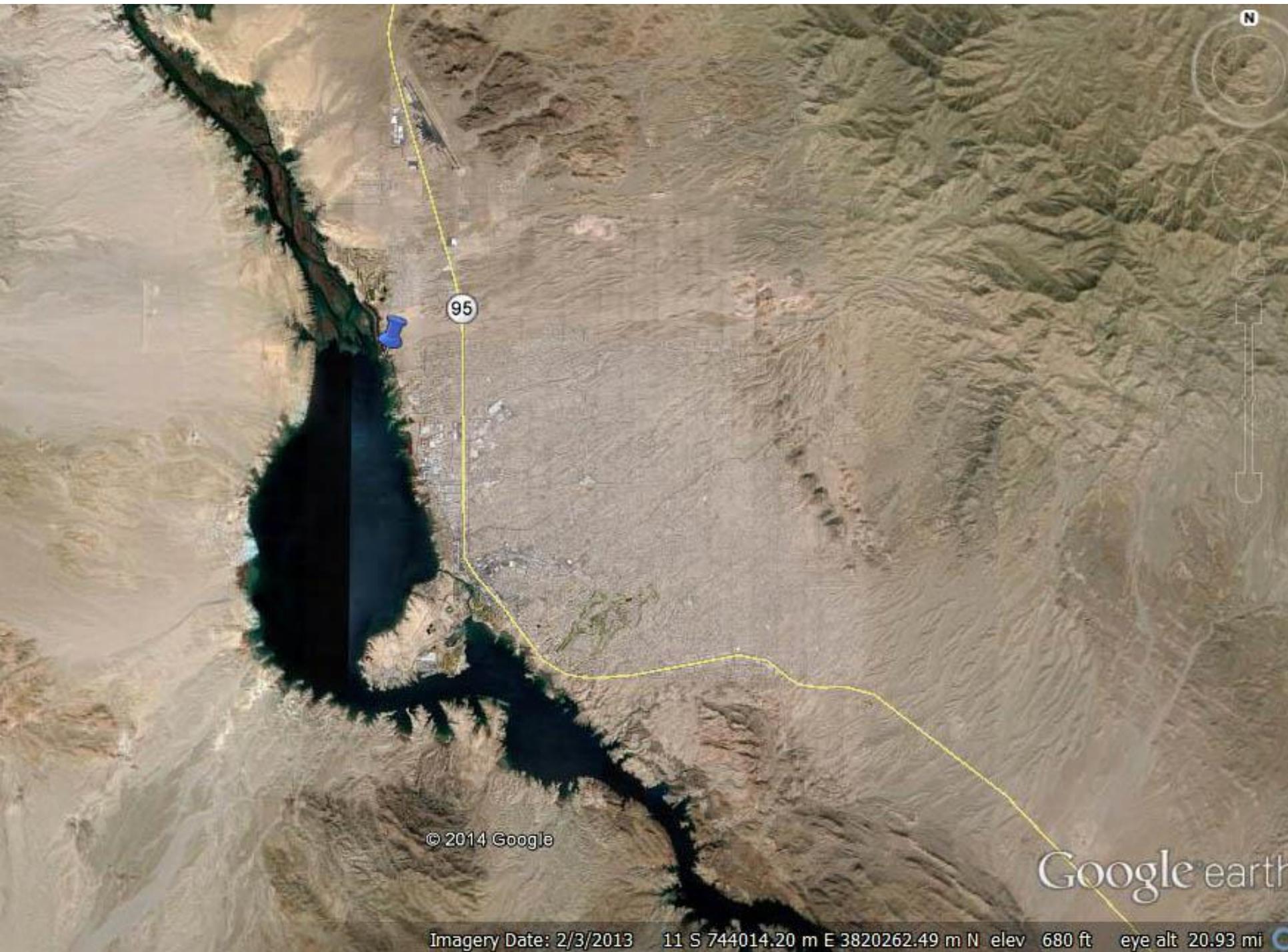


# Background Waterbirds

- 14 Feb to 15 May 1910 Joseph Grinnell led an expedition down the Colorado River (Grinnell 1914) to survey for birds and mammals
  - 19 species of migrant waterbird were recorded and one other species occurrence was noted
- Rosenberg et al. 1991 summarized the status of birds in the Lower Colorado River Valley.
  - Most information is based on landbird surveys in the 70s and 80s but some waterbird surveys (5 transects surveyed twice per month) were conducted
  - Also extensively used Gale Monsons notes
  - They found no significant movement of birds in the spring. Especially compared to the numbers that pass through the Salton Sea
- In 2008 Paul Lehman started and others continued regular scans of Lake Havasu and discovered several species in higher concentrations than expected. These were not systematic surveys for waterbirds

# Purpose of Waterbird Survey

- To gain an understanding of the extent of spring waterbird migration on Lake Havasu
- To provide baseline data on numbers and species using this migration corridor
- To see if some species previously thought to be rare were regular



95

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Google earth

Imagery Date: 2/3/2013 11 S 744014.20 m E 3820262.49 m N elev 680 ft eye alt 20.93 mi

# Background

## Landbirds

- As the LCRV was once a long corridor of riparian habitat migrants would frequently use it.
  - However as the habitat was continuous, no concentrating effect
- Rosenberg et al. 1991 stated that though good numbers of migrants passed through the valley most were in fall with only a few species being more common in spring.
  - However during rare spring storms good numbers were found indicating that many passed over the valley or were not concentrated in one area.
- In April 2012 Tom Johnson did a few nocturnal flight counts and had good numbers of migrants

# Purpose of Sound recording

- Lots of migrants overfly the LCRV. Magnitude of migration only noticed after rare spring storms.
- To see if the location would work for nocturnal recording.
- If the location worked could this be used as a way of low cost surveying for land bird migrants using the LCRV
- Way to survey for secretive migrants

# Location

## Advantages

- One of the narrowest points of the lake
- Birds are funneled through the gorge
- Birds often stage
- 221 species entered for this ebird hotspot

## Disadvantages

- One mile across at the narrowest point
- Birds can hide easily
- Species flying high up the east side easily missed
- Background noise associated with Urban setting.



# Sound Recording

- “Oldbird” 21c microphone
- Used Sony PCM-M10 recorder
  - Placed in tupper ware
- This setup generally worked very well
- Unfortunately the location was not ideal for recording
  - Too much background noise: traffic, frogs, grebes, insects!



# Methods for Waterbird Surveys

- **Started at dawn and would go for 1-3 hours depending on conditions and migration (138 mins avg)**
  - Conditions would deteriorate as the day progressed. Migrants also tend to fly higher later in the day and unlikely to be observed (Newton 2008)
- **Conducted between mid March and mid May with one survey in February and some in late May (36 days total)**
  - Wanted to capture birds migrating through from outside of the LCRV
- **All species were recorded and details on age and sex and if they were actively migrating**
- **Local weather conditions were taken using a Kestrel as well as visibility conditions**
- **Number of boats were recorded to quantify disturbance**

# Disturbance and weather effects on migrants

## Weather

- Waterbirds
  - Calm days little migration
  - Winds out of the south little migration
  - Winds out of the north saw the most movement
- Landbirds
  - Winds out of the south seemed to be best
  - Oddly most birds were moving south at this time

## Disturbance

- Single Kayaks were little disturbance, but groups would disturb them
- Fishing boats would only flush a few birds close to the boat
- Fast moving boats were very disturbing to birds, often flushing large numbers
  - California vs Arizona sides

# Totals for Waterbird Migrants

Gadwal	30	Greater/Lesser Scaup	334	Western/Clark's Grebe	1,472	Long-billed Curlew	99	Herring Gull	13
American Wigeon	79	<b>White-winged Scoter</b>	3	Double-crested Cormorant	40	Curlew/Whimbrel	3	gull sp	231
Mallard x Mexican Duck	1	Bufflehead	418	American White Pelican	1	Marbled Godwit	195	Caspian Tern	10
<b>Mexican Duck</b>	1	Common Goldeneye	37	Great Egret	4	<b>Sanderling</b>	20	Black Tern	16
Cinnamon Teal	18	Common Merganser	7	Snowy Egret	13	Least Sandpiper	5	<b>Least Tern</b>	1
Northern Shoveler	162	Red-breasted Merganser	117	<b>Cattle Egret</b>	3	peep sp	2	<b>Common Tern</b>	1
Northern Pintail	2	Common/Red breasted Merganser	2	White-faced Ibis	204	Long-billed Dowitcher	12	Forster's Tern	109
Green-winged Teal	15	Ruddy Duck	1,165	American Coot	13,314	Wilson's Snipe	6	Tern sp.	1
Teal Sp	2	duck sp	9	Black-necked Stilt	14	Wilson's Phalarope	4	<b>Totals</b>	
dabbling duck sp	10	<b>Red-throated Loon</b>	1	American Avocet	88	<b>Red-necked Phalarope</b>	44	<b>56 Species</b>	<b>43,070</b>
Canvasback	7	Common Loon	206	<b>Black-bellied Plover</b>	1	Shorebird sp	40		
Redhead	634	Horned Grebe	1	Spotted Sandpiper	2	Bonaparte's Gull	<b>81</b>		
Ring-necked Duck	5	Eared Grebe	17,380	Greater Yellowlegs	2	Franklin's Gull	<b>354</b>		
Greater Scaup	206	Western Grebe	3,614	Willet	42	Ring-billed Gull	1,165		
Lesser Scaup	113	Clark's Grebe	468	Lesser Yellowlegs	1	California Gull	399		



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# Totals for Landbird Migrants

Osprey	2	Gray Flycatcher	1	Cliff Swallow	88	<b>Palm Warbler</b>	1	Mountain White crowned Sparrow	11
Sharp-shinned Hawk	1	Pacific-slope Flycatcher	11	swallow sp	4,132	Myrtle Warbler	12	Gambel's White crowned Sparrow	40
Cooper's/Sharp shinned Hawk	1	Black Phoebe	4	House Wren	8	Audubon's Warbler	683	Sparrow sp	2
White-winged Dove	78	<b>Cassin's Kingbird</b>	1	Marsh Wren	13	<b>Audubon's x Myrtle</b>	1	Western Tanager	8
Lesser Nighthawk	28	Western Kingbird	26	<b>Cactus Wren</b>	1	Townsend's Warbler	3	Black-headed Grosbeak	3
White-throated Swift	1	Bell's Vireo	1	Blue-gray Gnatcatcher	1	Wilson's Warbler	115	Lazuli Bunting	45
Vaux's Swift	2	Cassin's Vireo	1	Ruby-crowned Kinglet	2	Warbler sp	5	Western Meadowlark	1
Costa's Hummingbird	2	Plumbeous/Cassin's Vireo	1	Swainson's Thrush	1	Green-tailed Towhee	11	Hooded Oriole	1
Rufous Hummingbird	1	Warbling Vireo	5	American Robin	1	Chipping Sparrow	8	Bullock's Oriole	3
Hummingbird sp	5	Horned Lark	2	American Pipit	15	<b>Clay-colored Sparrow</b>	3	Lesser Goldfinch	1
Belted Kingfisher	1	Northern Rough winged Swallow	407	Orange-crowned Warbler	23	Brewer's Sparrow	15	passerine sp	12
Merlin	2	Tree Swallow	35,124	Nashville Warbler	2	Spizella sp	1	<b>Total landbirds</b>	
Peregrine Falcon	1	Violet-green Swallow	10	MacGillivray's Warbler	5	Savannah Sparrow	18	<b>Species 58</b>	<b>41,401</b>
Western Wood Pewee	3	Bank Swallow	25	Common Yellowthroat	6	Lincoln's Sparrow	18		
Willow Flycatcher	3	Barn Swallow	206	Yellow Warbler	104	White-crowned Sparrow	22		

# Top 5 Waterbirds and Landbirds

## Waterbirds

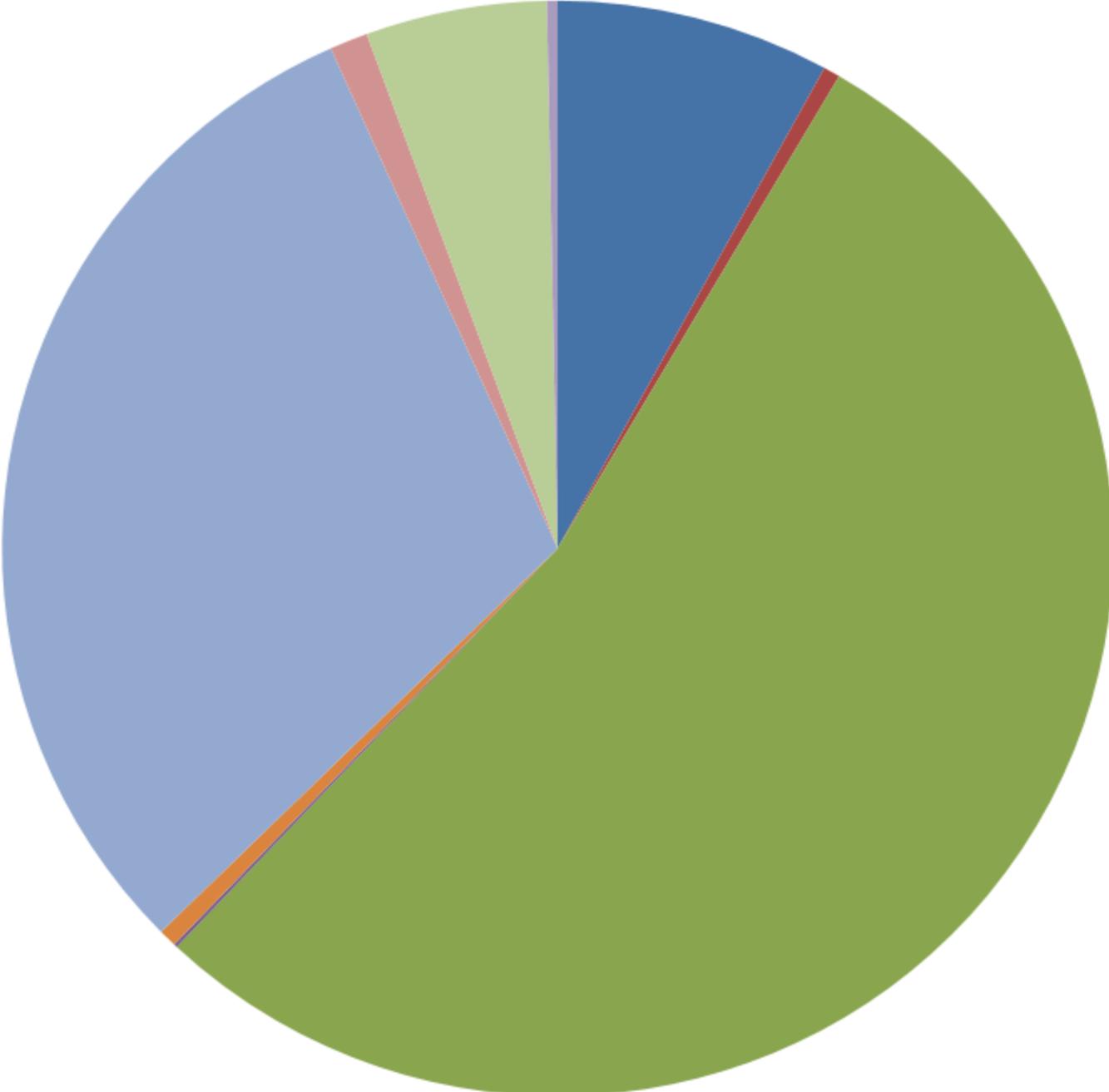
- Ruddy Duck
  - 1,165
- Ring-billed Gull
  - 1,165
- Western/Clark's Grebe
  - 1,472
- Western Grebe
  - 3,614
- Eared Grebe
  - 17,380



## Landbirds

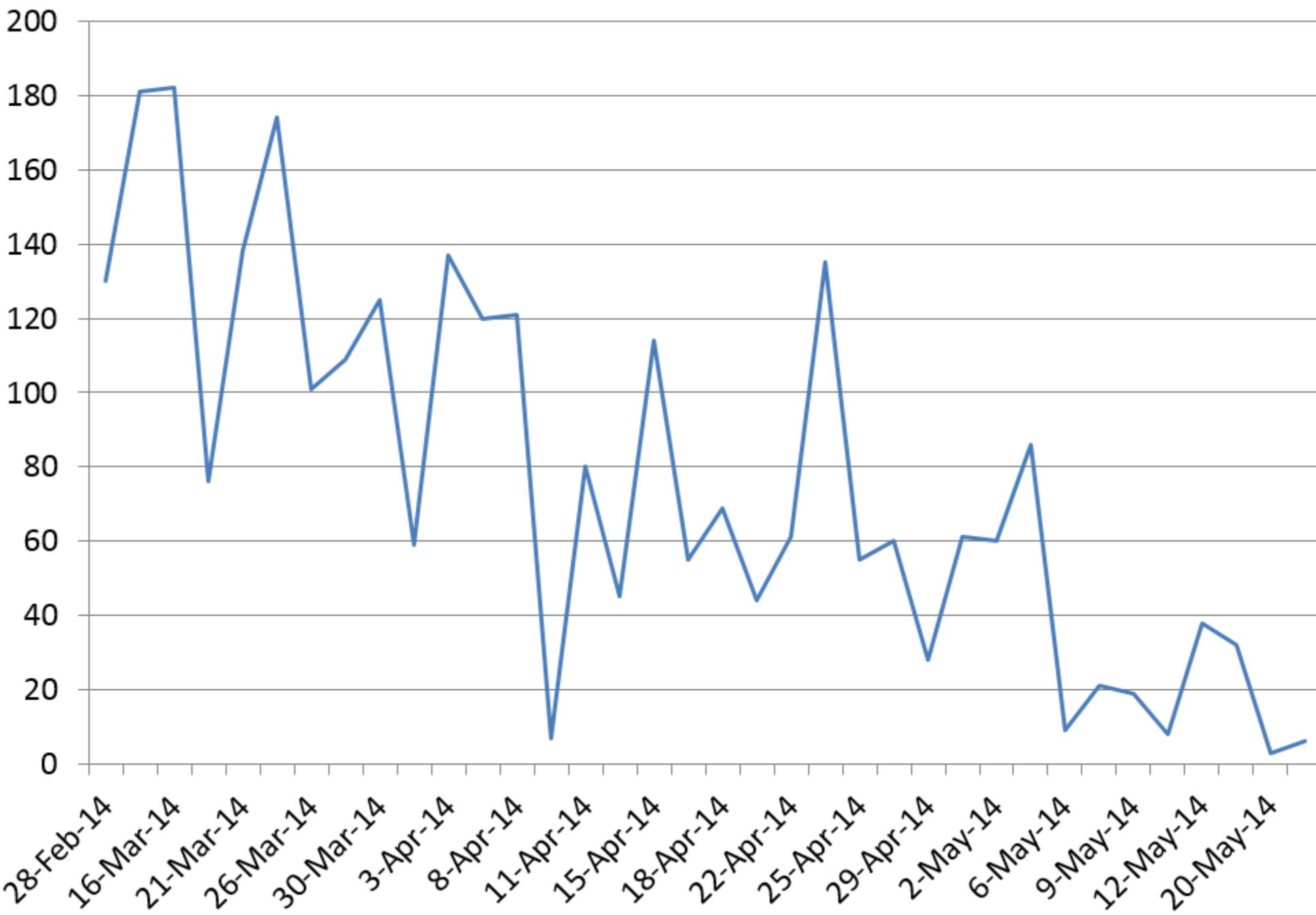
- Northern Rough-winged Swallow
  - 407
- “Audubon’s” Warbler
  - 683
- Yellow-rumped Warbler
  - 696
- Swallow sp.
  - 4,132
- Tree Swallow
  - 35,124

# Proportion of Migrants by Group



- Waterfowl
- Loons
- Grebes
- Cormorants
- Pelicans
- Herons, Egrets, and Ibis
- American Coot
- Shorebirds
- Gulls
- Terns

# Waterfowl Totals minus Redhead

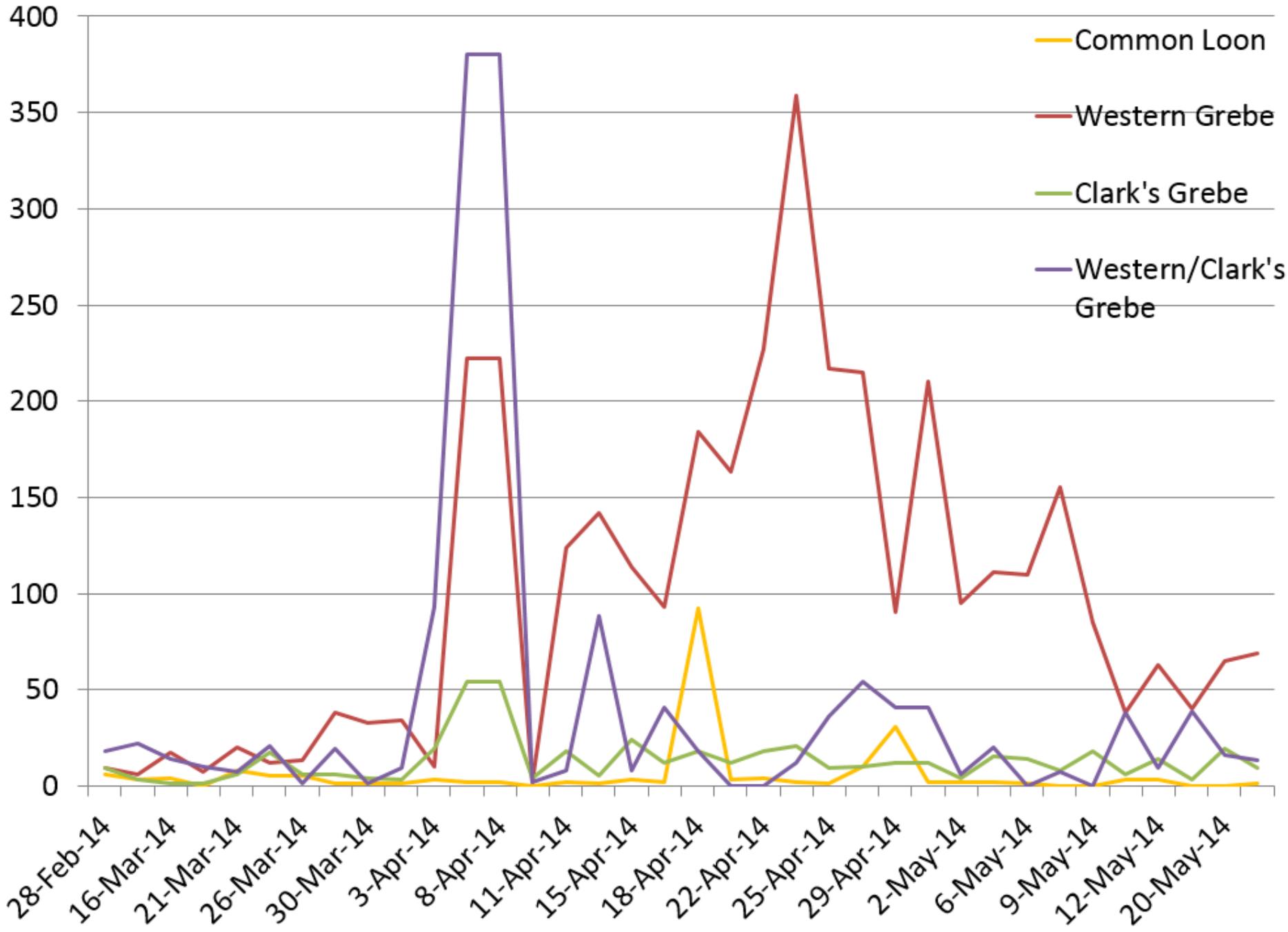


# Grebes and Loons

- Common Loon was recorded prior to the Grinnell expedition in spring.
- My survey high count of 92 on 18 Apr is one of the highest counts in the southwest.
- Western outnumbered Clark's by far



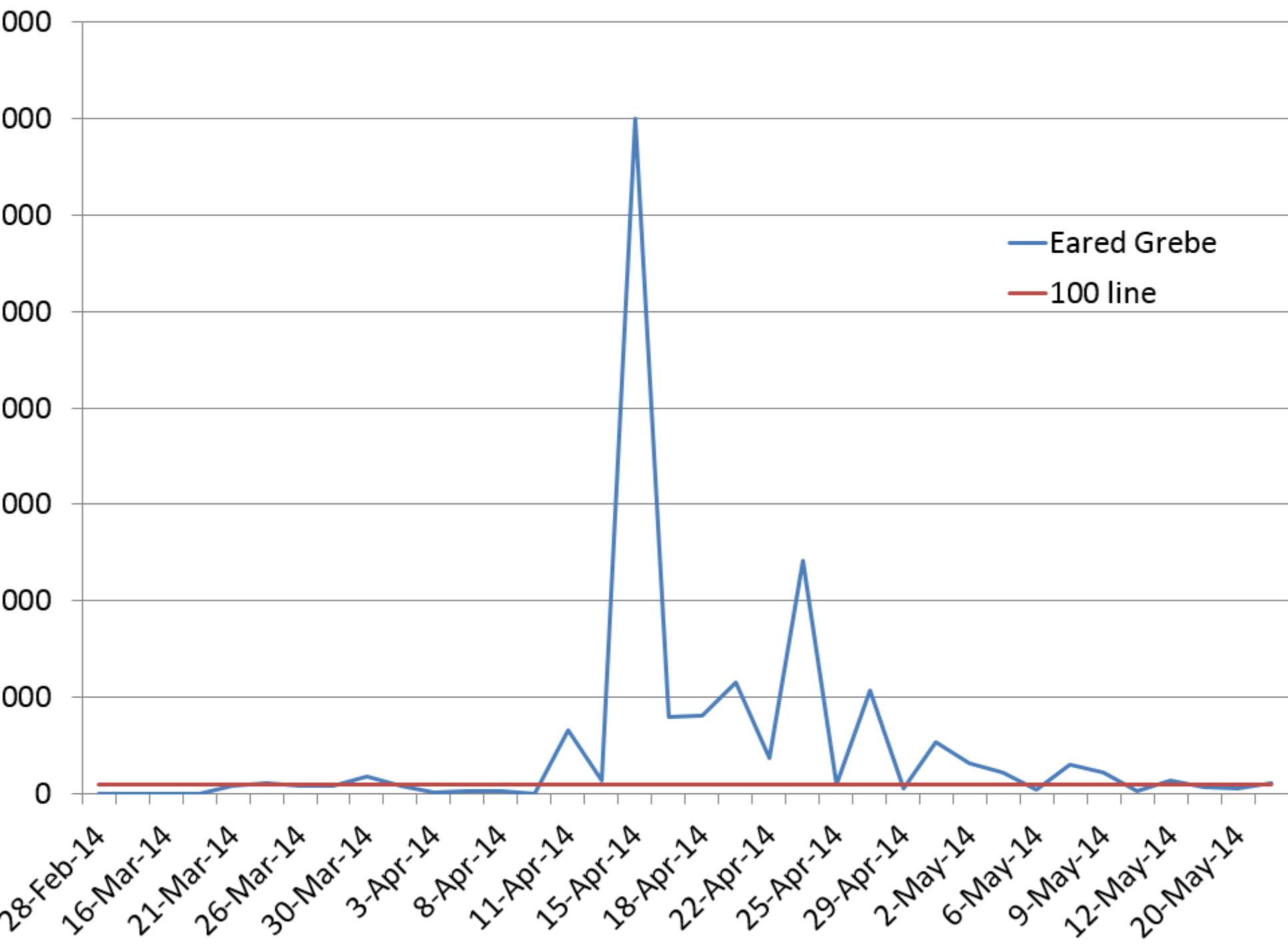
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# Eared Grebe

- Large flocks previous recorded in spring on Lake Havasu with a high count of 3,375 (Rosenberg et al. 1991)
- Recent springs have seen a slight increase in numbers and duration

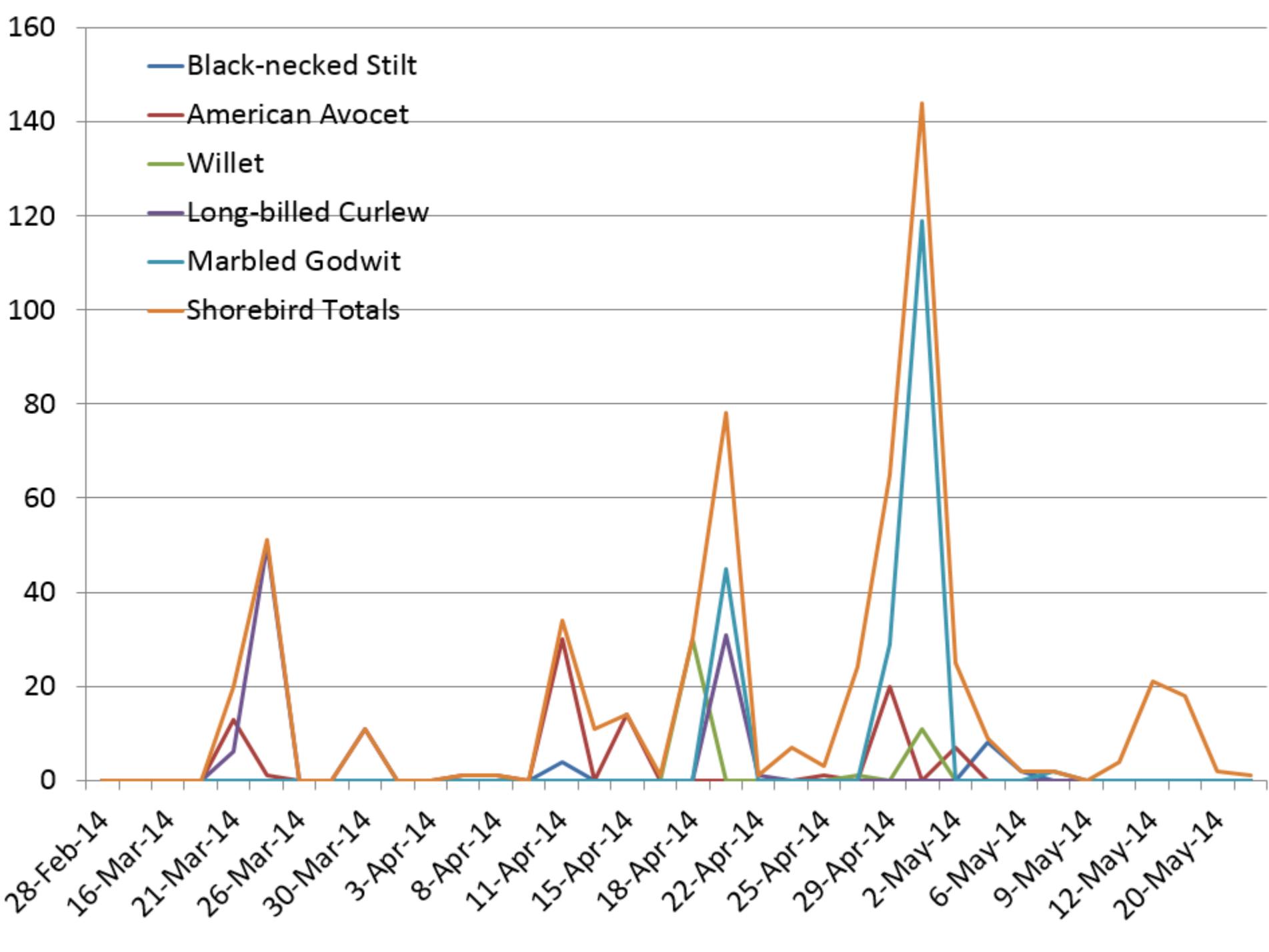




# Shorebirds

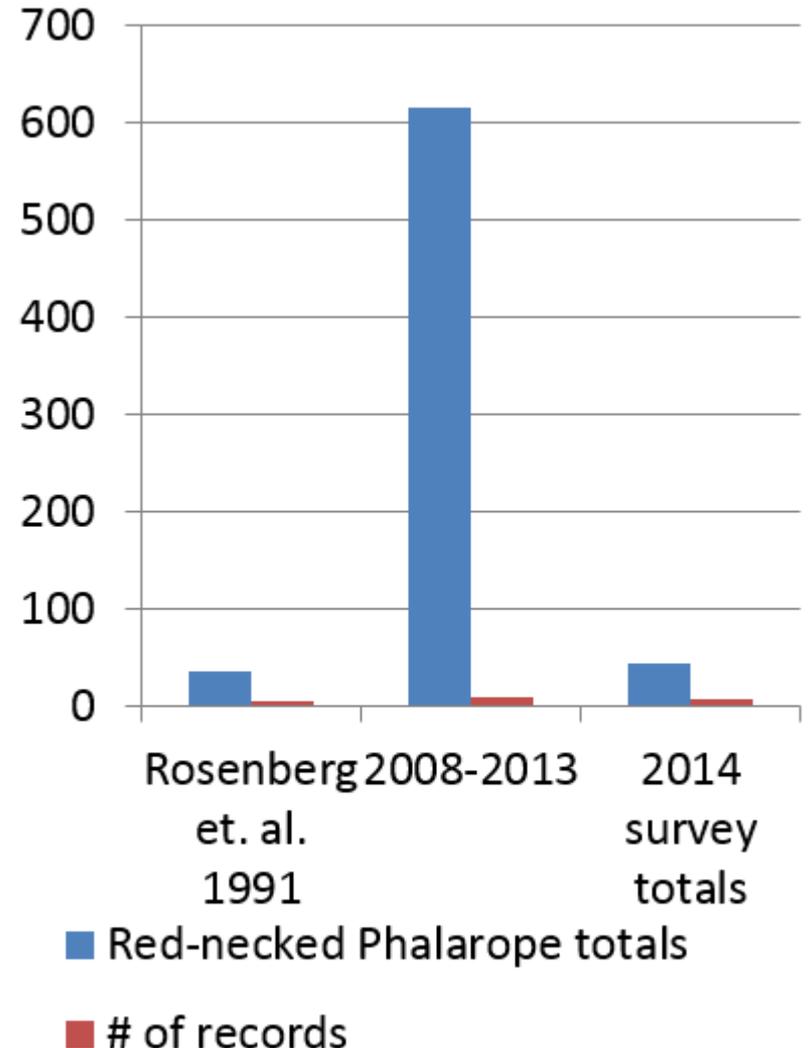
- Numbers far surpassed by those at the Salton Sea
- Numbers and diversity were below expected, but several species were above those presented in Rosenberg et al. 1991
- Marbled Godwit numbers were well above former average of 1-7 per spring in Rosenberg et. al. 1991

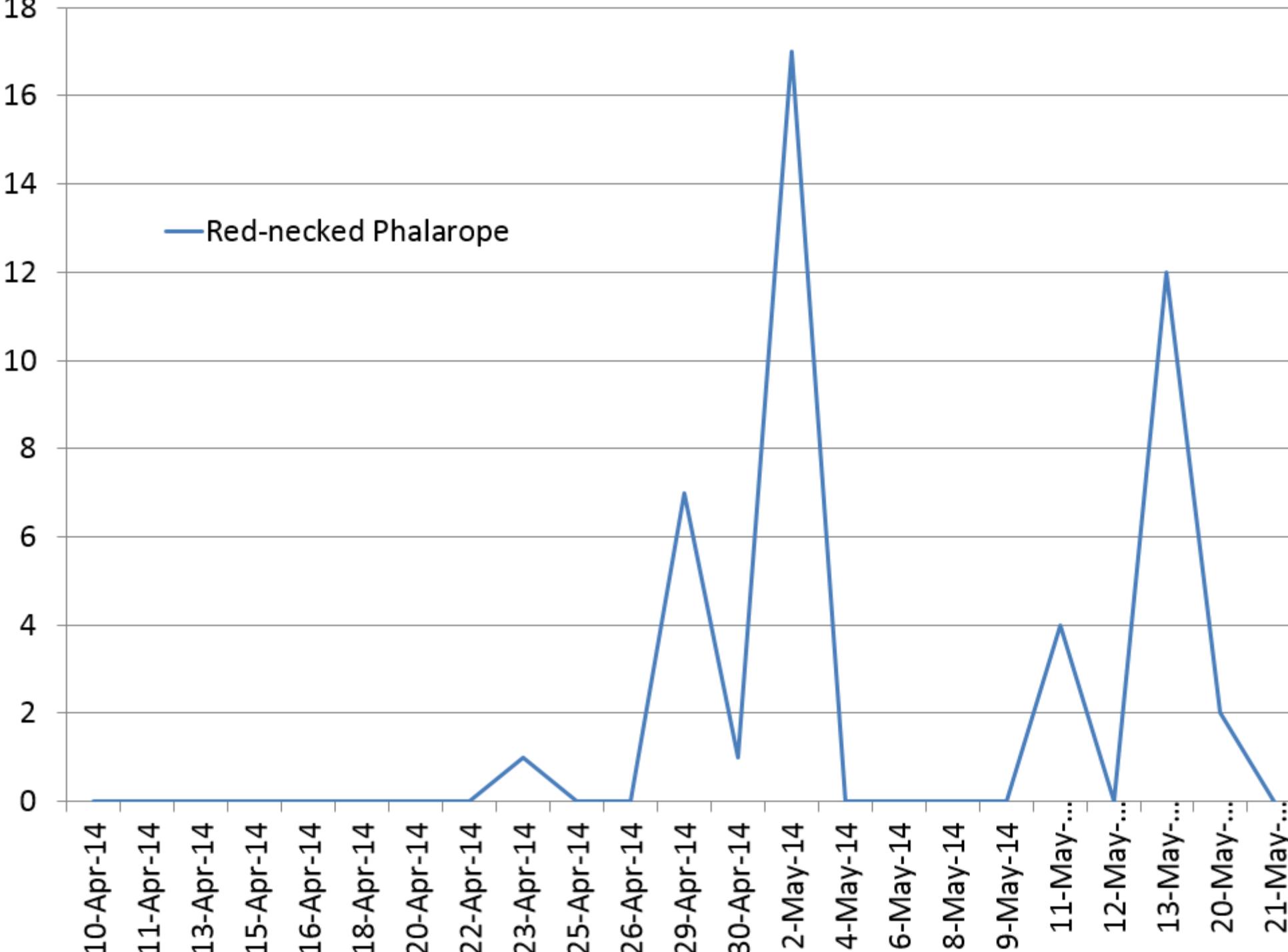




# Red-necked Phalarope

- Paul Lehman in mid May 2008 had 3000+ and 1100+ on Lake Havasu

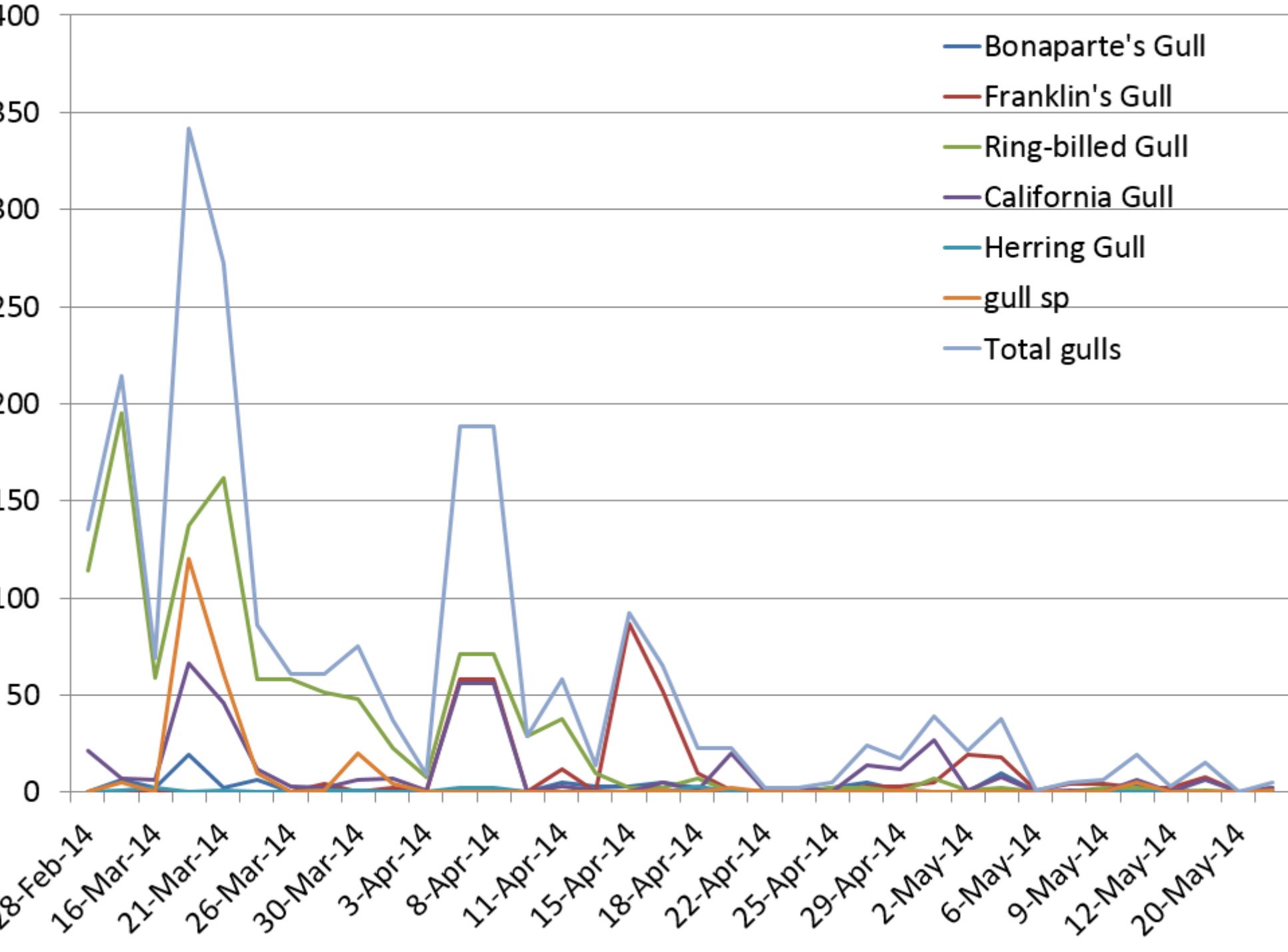




# Gulls and Terns

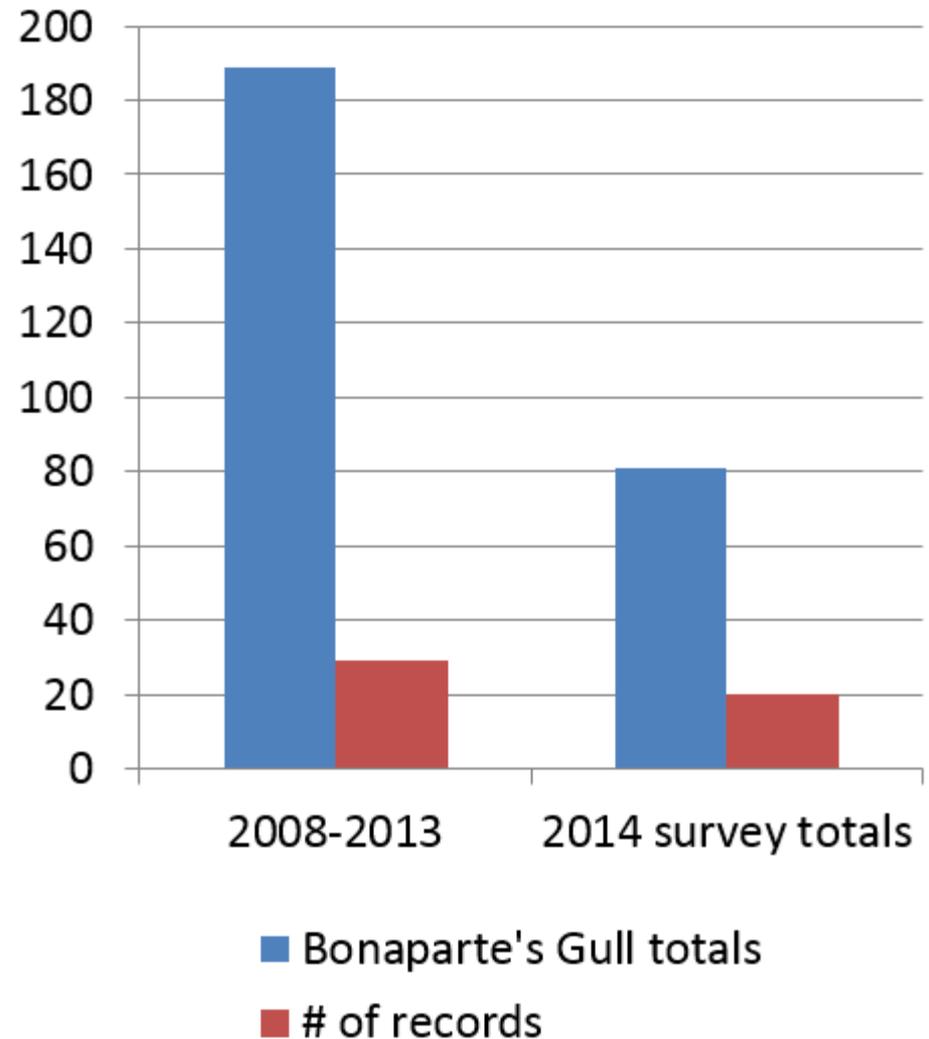
- Herring Gulls were detected in higher than expected numbers with 13. Others detected nearby.
- Black Terns: in 2008 only one was detected. However good numbers detected in 2011. None in 2009, 2012-2013



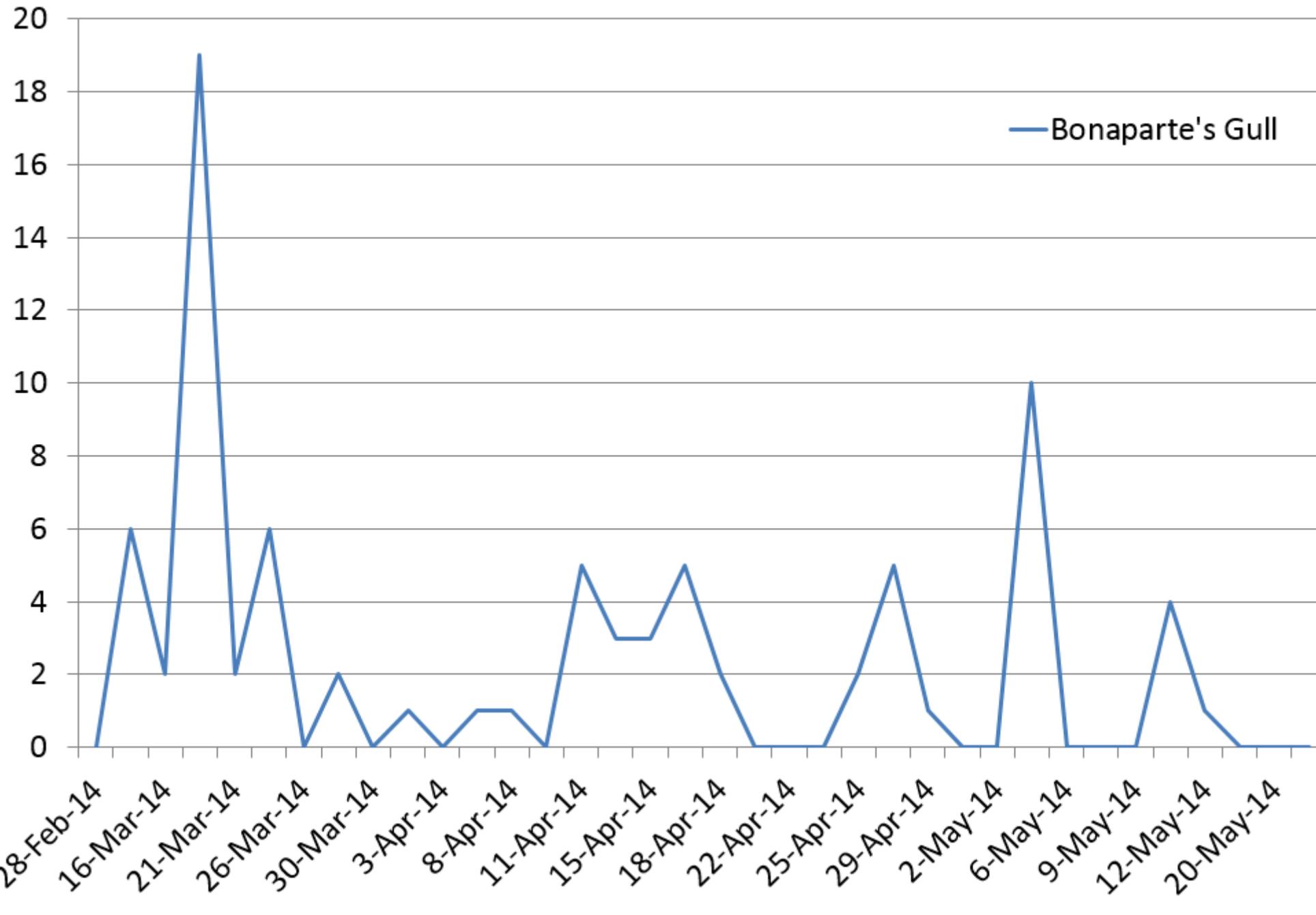


# Bonaparte's Gull

- Rosenberg et. al. 1991 doesn't give total numbers but says 1-10 reported per season with 30 in 1977 being a large flight
- Didn't have any large groups, I did see them consistently



# Bonaparte's Gull

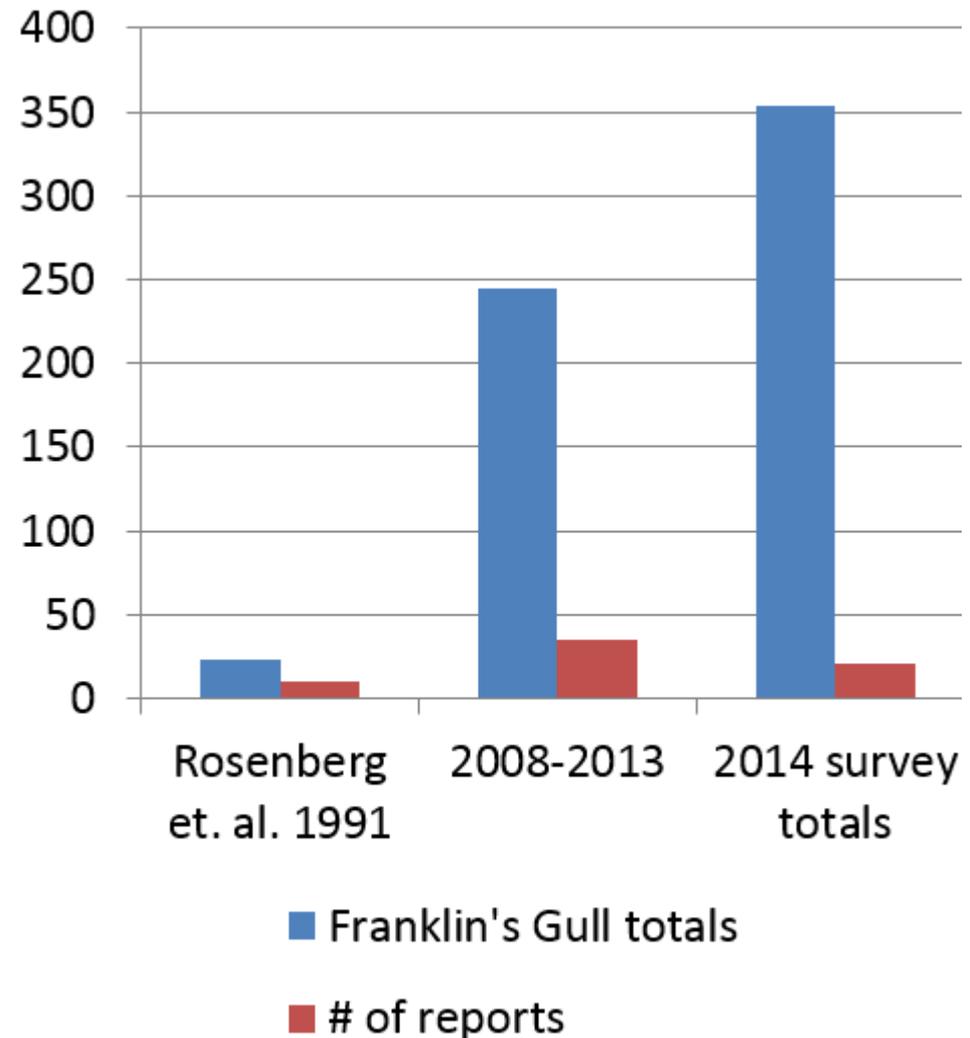


# Franklin's Gull

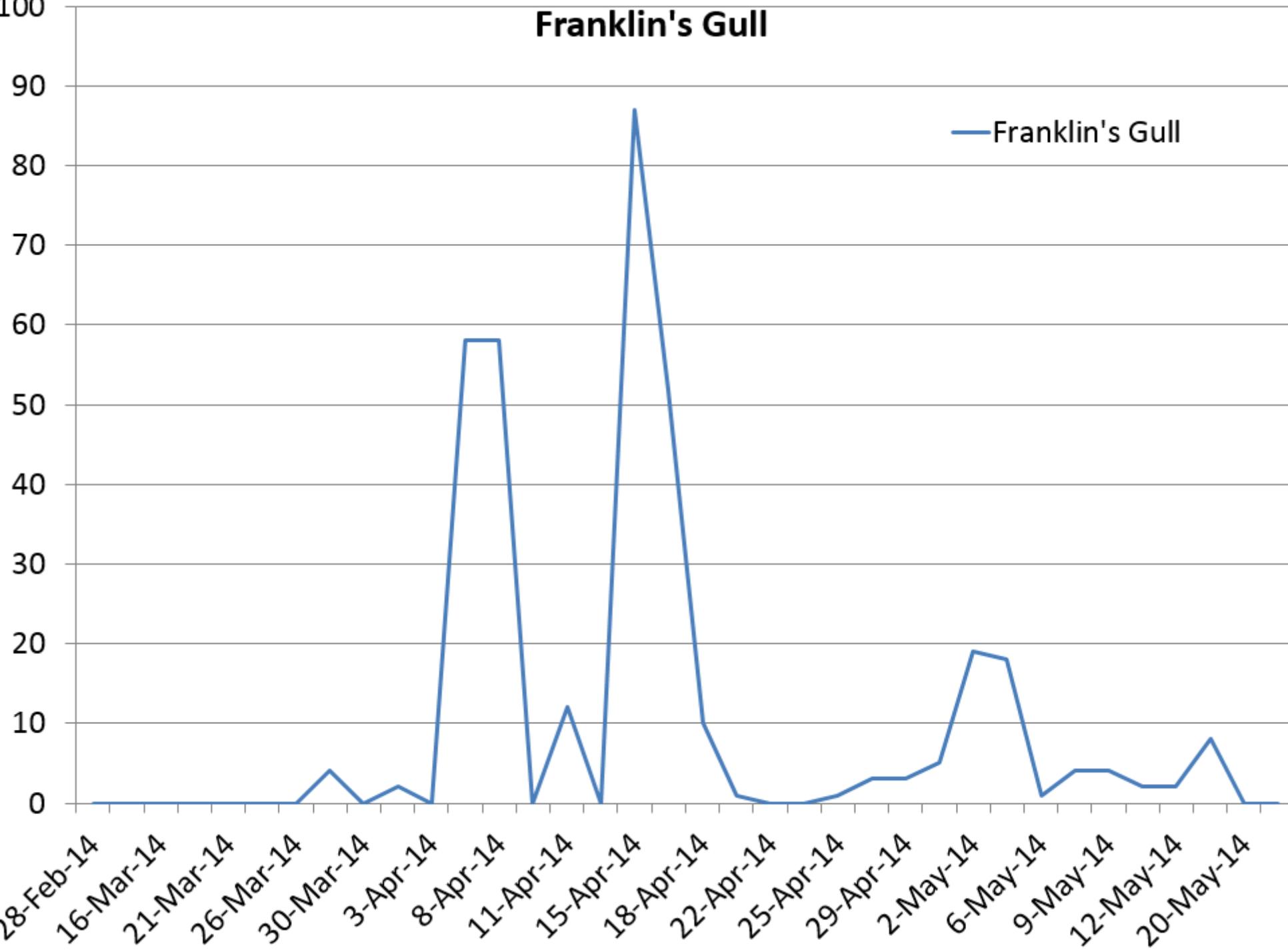
- High count is from 2008 of 135 by Paul Lehman and Barbara Carlson
- Mid April 2007 175 at the Salton Sea was considered unprecedented. Formerly considered uncommon in small numbers there (Patten et al. 2003)



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# Franklin's Gull



# Landbirds

- Lesser Nighthawk.  
Evening scans revealed large numbers on 17 Apr, 24 Apr, and 7 May had counts of 800-900 surpassing previous high counts
  - Given the similar numbers possible local birds
- Tree Swallow numbers were far down this year
- Audubon's Warbler
  - Good numbers moving later than expected



# Conclusions

- This year seemed to be lower than average for numbers and diversity.
  - Though some species occurred in large flocks, these were consistent with previous reports
  - Other species with prior reports of large flocks were not detected in large numbers
  - Comments from observers regularly checking the Salton Sea also noticed decrease in numbers
- Across families there were some peaks when species were moving
  - Very large array of migrants and numbers in April, though some species moved earlier
- Several species, such as Franklin's, Bonaparte's, and Herring Gull appear to be more regular than previously thought and possibly increasing.
- Other species such as Red-necked Phalarope appear to be irregular in numbers



# Acknowledgements

- Thanks to AZFO's Gale Monson Research Grant for providing funding for this project
- Alicia Arcidiacono provided the photo of the Virgin River
- Thanks to Paul Lehman, Lauren Harter, Alicia Arcidiacono, Dawn Fletcher and Tom Johnson for thoughtful discussion



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# Questions?

