Flycatcher Status Update 2014 The Good, the Unfortunate, and the Surprising

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Lower Colorado River
Multi-Species Conservation Program

Southwestern willow flycatcher
(*Empidonax traillii extimus*)

- Endangered subspecies of willow flycatcher
- Breed in AZ, NM, and adjacent portions of neighboring states
- Late migrants; arrive May—June

Empidonax traillii extimus

- Breed in dense, wet riparian habitats; strong affinity for surface water
- Select nest sites that are cool, humid, dense
- Use both native vegetation and tamarisk

Along Virgin River at Mesquite

Beaver Dam Wash at Littlefield

Study Components

Territory/nest monitoring

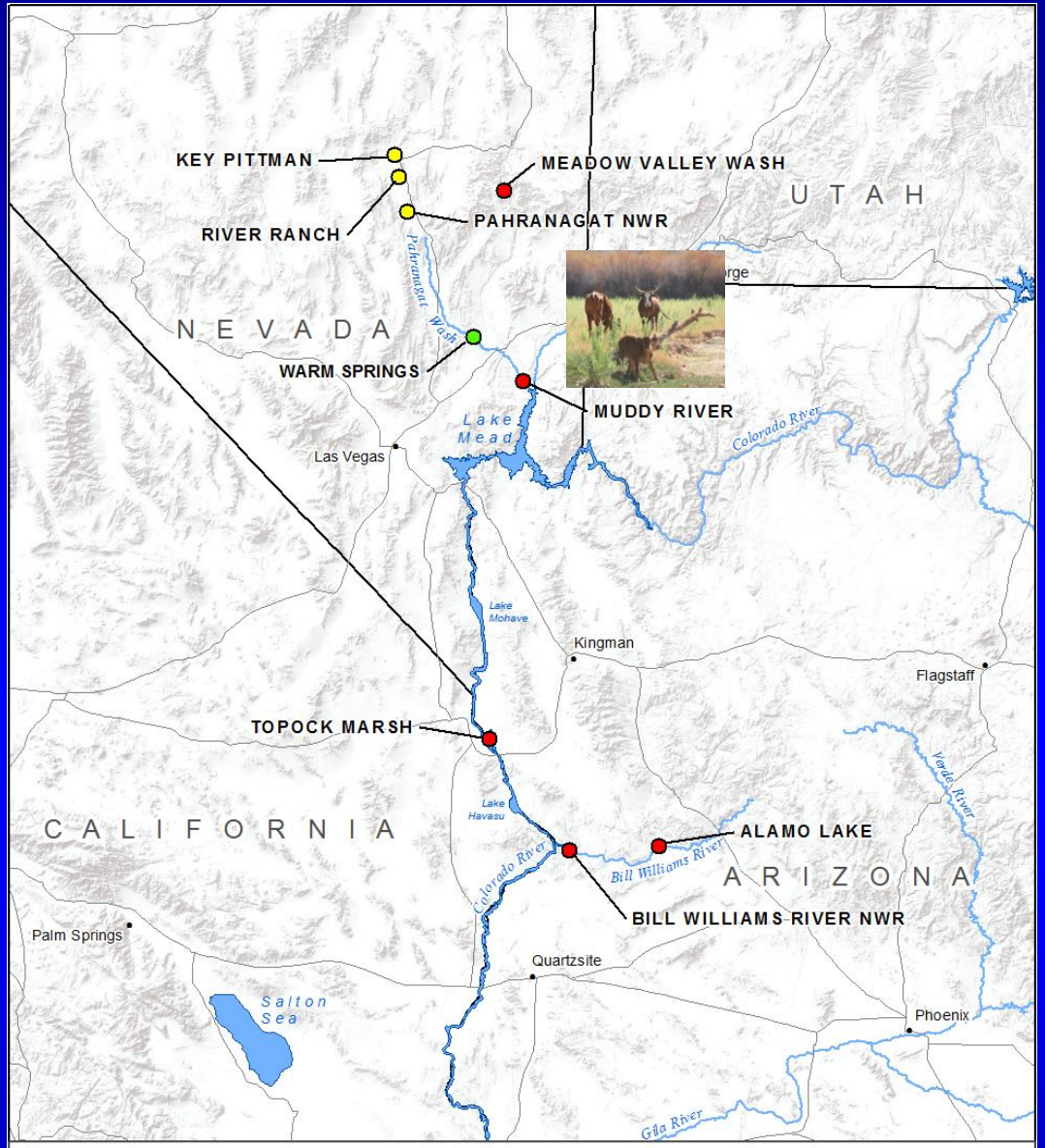
- nest success rates
- causes of failure

Banding/resighting

- survival
- site fidelity
- dispersal

Tamarisk beetle monitoring

- beetle numbers
- veg conditions
- temp/humidity
- light levels



Lower Colorado River Southwestern
Willow Flycatcher Study 2014

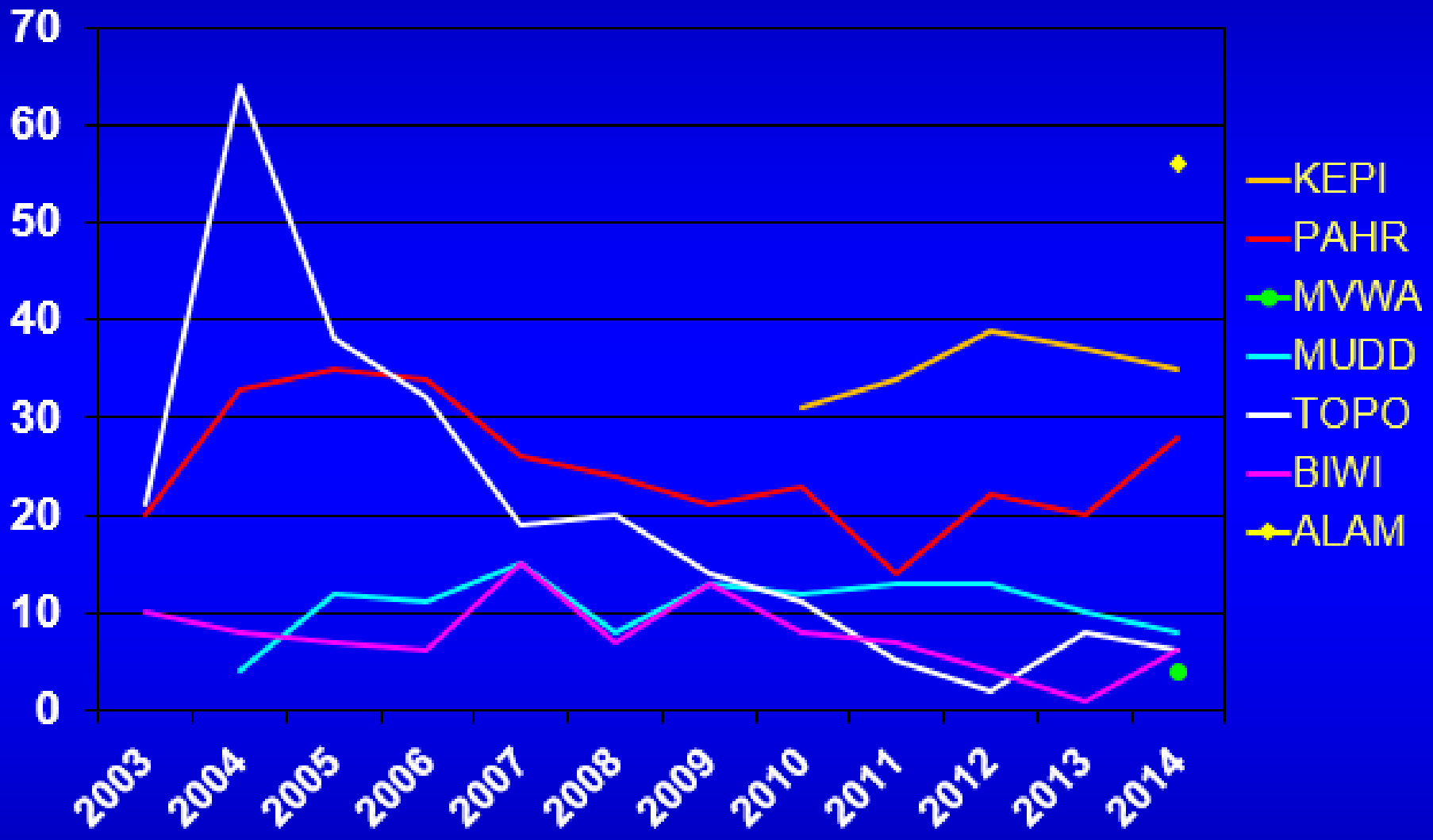
- SNWA Study Area
- Reclamation Study Area
- NDOW/Reclamation Study Area
- City/Town
- Highway
- River

0 25 50 Mi

0 50 100 Km

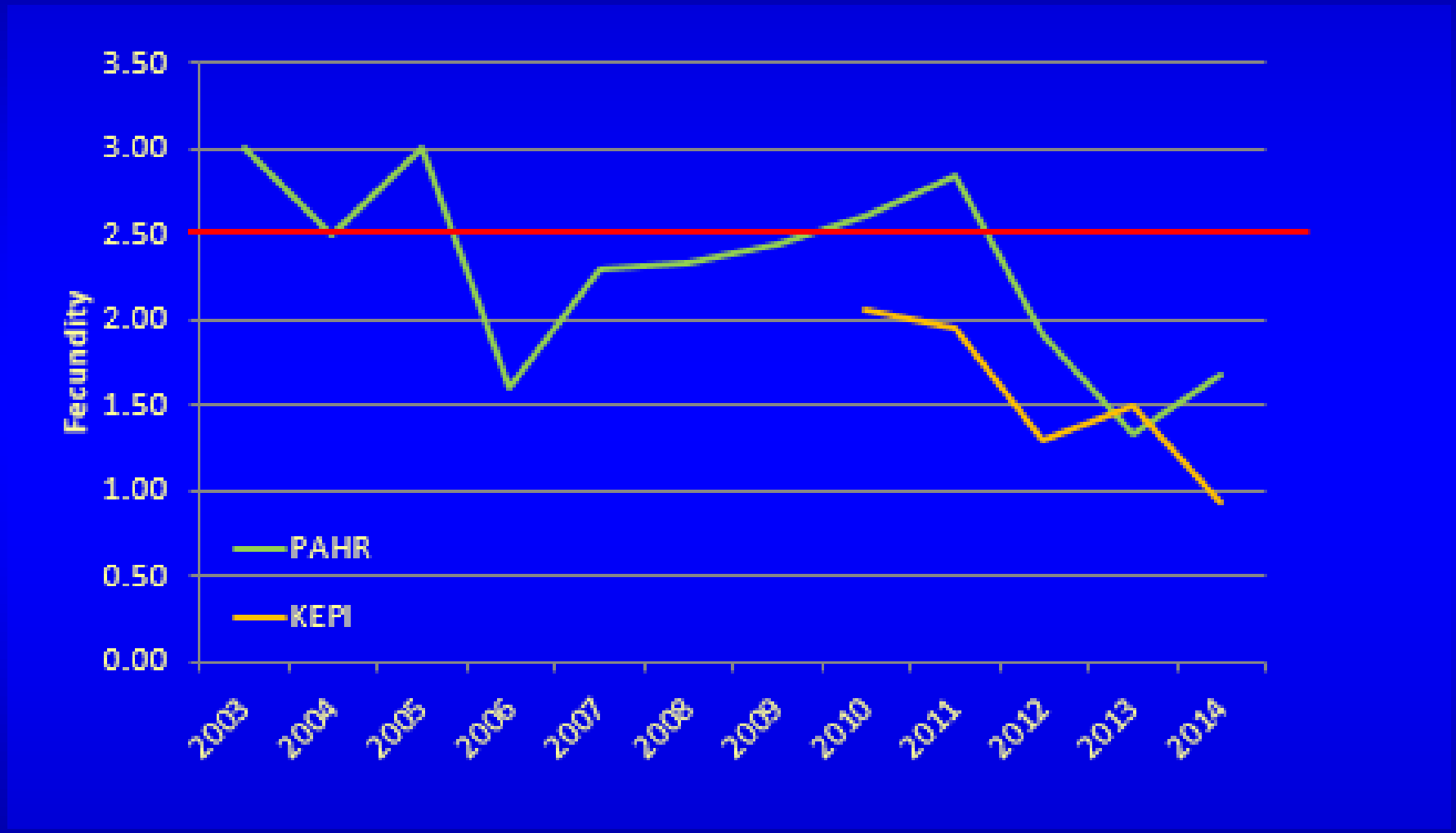
1:3,300,000

Resident Adult Flycatchers

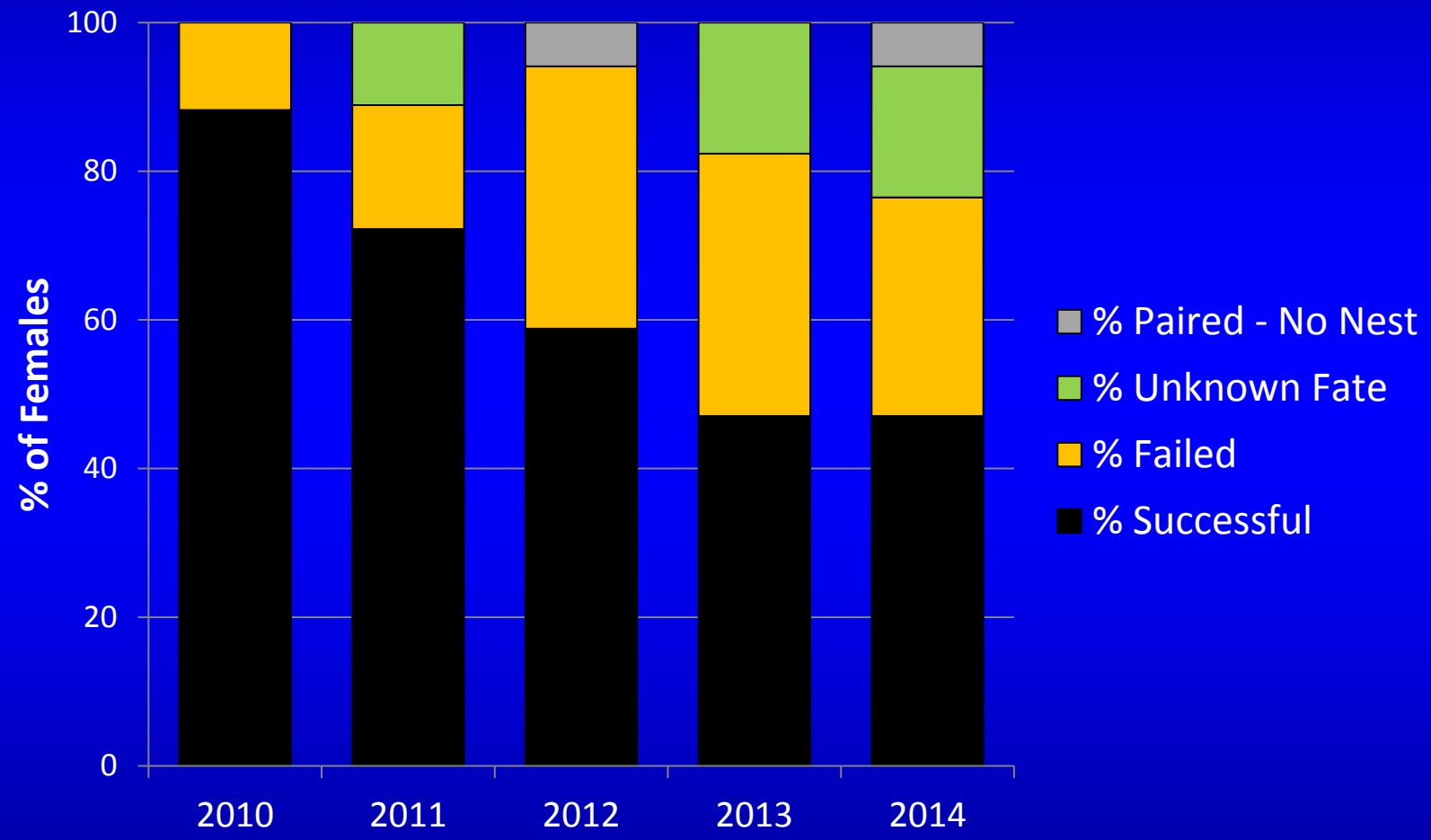


No resident willow flycatchers recorded south of Bill Williams

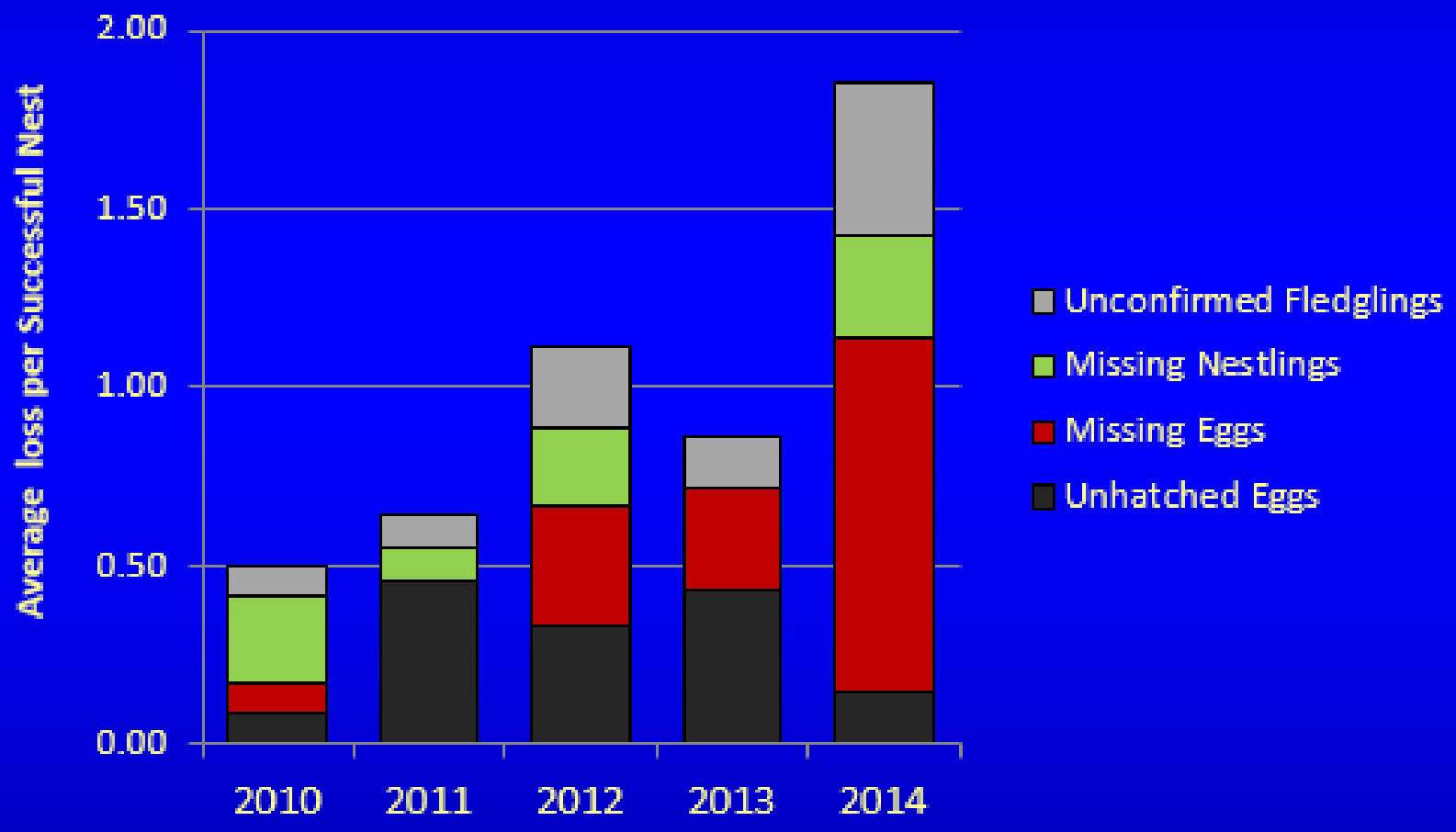
Pahranagat Valley



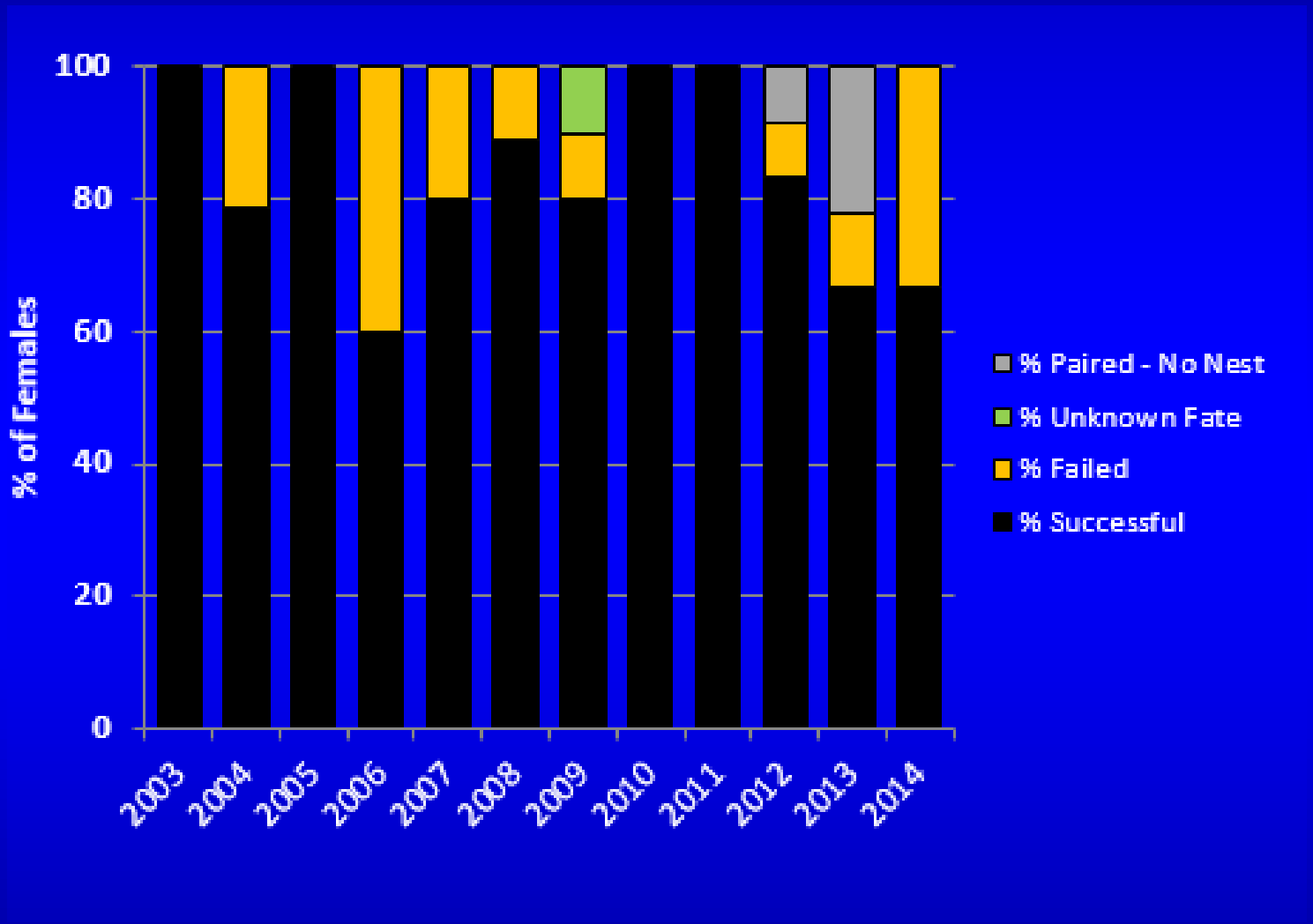
Key Pittman


100
80
60
40
20
0
% of Females
2010
2011
2012
2013
2014
% Paired - No Nest
% Unknown Fate
% Failed
% Successful

Key Pittman


Average loss per Successful Nest
2.00
1.50
1.00
0.50
0.00
2010
2011
2012
2013
2014
Unconfirmed Fledglings
Missing Nestlings
Missing Eggs
Unhatched Eggs

Pahranagat NWR



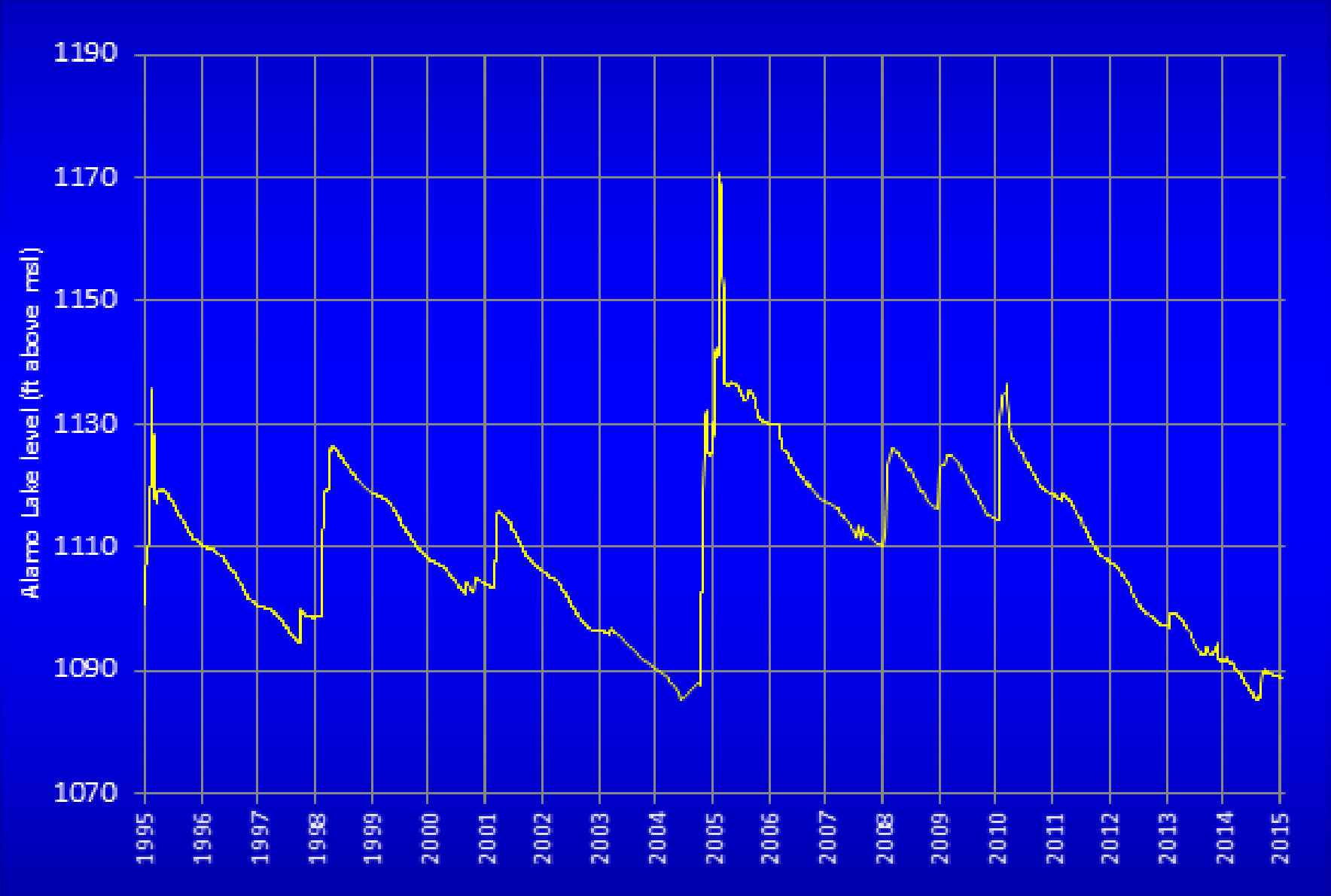
Topock Marsh / Bill Williams River NWR

- Six breeding pairs (3 each)
- Nest success 100% (TOPO) & 50% (BIWI);
  First fledglings since 2010 (TOPO) and 2011 (BIWI)
- No parasitism (!) but low sample size
- TOPO pairs in recently expanded habitat on marsh edge
- Two of three BIWI pairs in relatively new coyote willow habitat near river delta

Alamo Lake

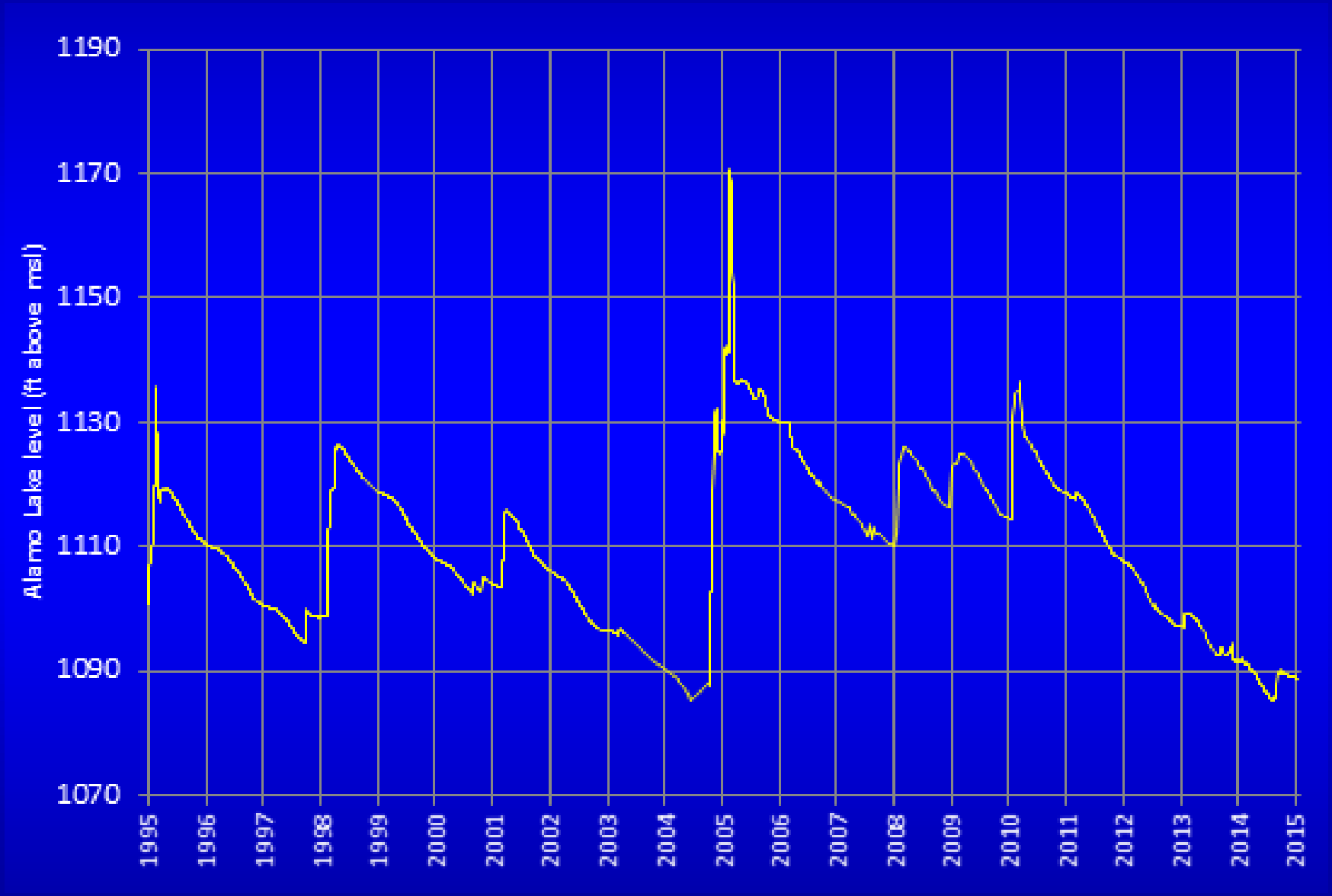
- Large number of resident flycatchers (56)
- Low nest success (25%)
- Low fecundity (0.42 fledglings / female)
- Poor habitat conditions:
  - Driest study area with breeding flycatchers in 2014
  - Early leaf abscission noted in some breeding areas
  - Microclimate noticeably hotter and less humid than TOPO/ BIWI

Alamo Lake


Alamo Lake level (ft above msl)
1190
1170
1150
1130
1110
1090
1070
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

Alamo Lake

Alamo Lake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1190
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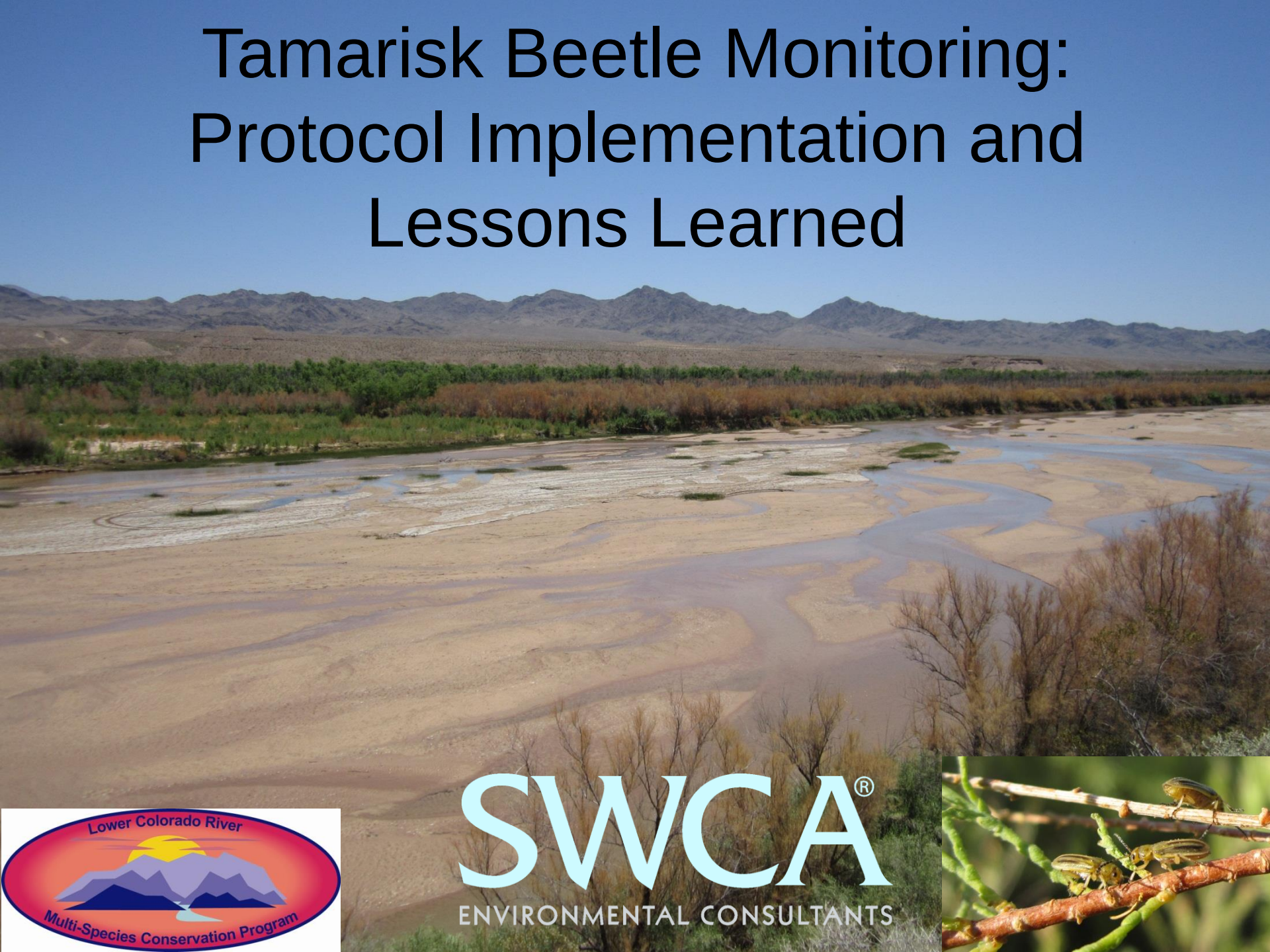
2010
2011
2012
2013
2014
2015

Tamarisk Beetle Monitoring: Protocol Implementation and Lessons Learned



Lower Colorado River Multi-Species Conservation Program

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Study Design

Permanent monitoring points located in recently occupied habitat at four study areas:

- ~~Mesquite (MESQ)~~ – Not monitored in 2014
- ~~Mormon Mesa (MOME)~~ – Not monitored in 2014
- Topock Marsh (TOPO)
- Bill Williams River NWR (BIWI)

Study Design

Points were randomly distributed among available vegetation types:

- Tamarisk (TASP)
- Tamarisk with emergent Goodding Willow (TASP_SAGO)
- Goodding Willow overstory with Tamarisk understory (SAGO_TASP)

Topock Marsh

- TASP ..... (10 points)
- TASP_SAGO ..... (10 points)

Bill Williams River NWR

- SAGO_TASP ..... (15 points)

5 photo points in each study area

- Each photo point strategically placed with view of tamarisk

Study Design

At each monitoring point, we monitored:

- Temperature and Relative Humidity
  using a Hygrochron iButton
- Light Intensity (lux)
  using a HOBO Pendant® temperature/light data logger
- Beetle Populations
  abundance estimates by life stage (adults, larvae, and egg clusters)
- Vegetation
  recorded visual estimations of foliar color (% green, % yellow, % brown) and % leafless stems. Also measured % total canopy closure using a Model-A spherical densiometer.

Monitoring schedule:

- Bi-weekly in the absence of beetles
- Weekly if beetles were detected

Results

NO BEETLES!

Lessons Learned in 2013

Observer Variation –

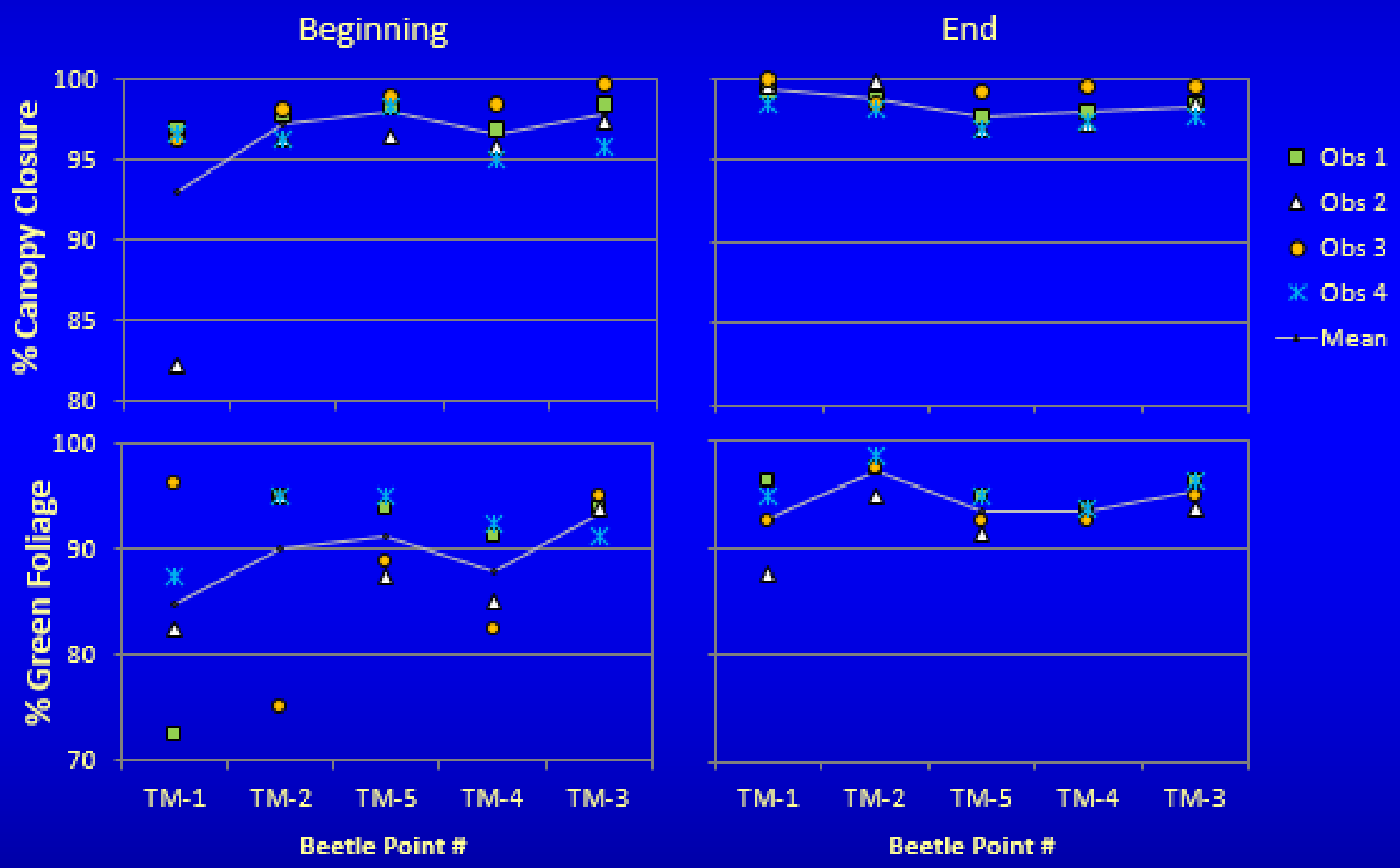
- Unknown amount present in data as well as possible seasonal drift
- reduced ability to draw conclusions on what is real change

Calibration Exercise

- Group training in data collection techniques prior to calibration
- Beginning of Field Season:
  - Group calibration with one experienced observer prior to data collection
    - Five monitoring points (4 in TASP_SAGO; 1 in TASP)
    - Each technician collected data independently
    - Group discussion of results at each point with consensus before moving to next point
- End of Field Season:
  - Group calibration at same five monitoring points
  - Data collected independently
  - No discussion of results

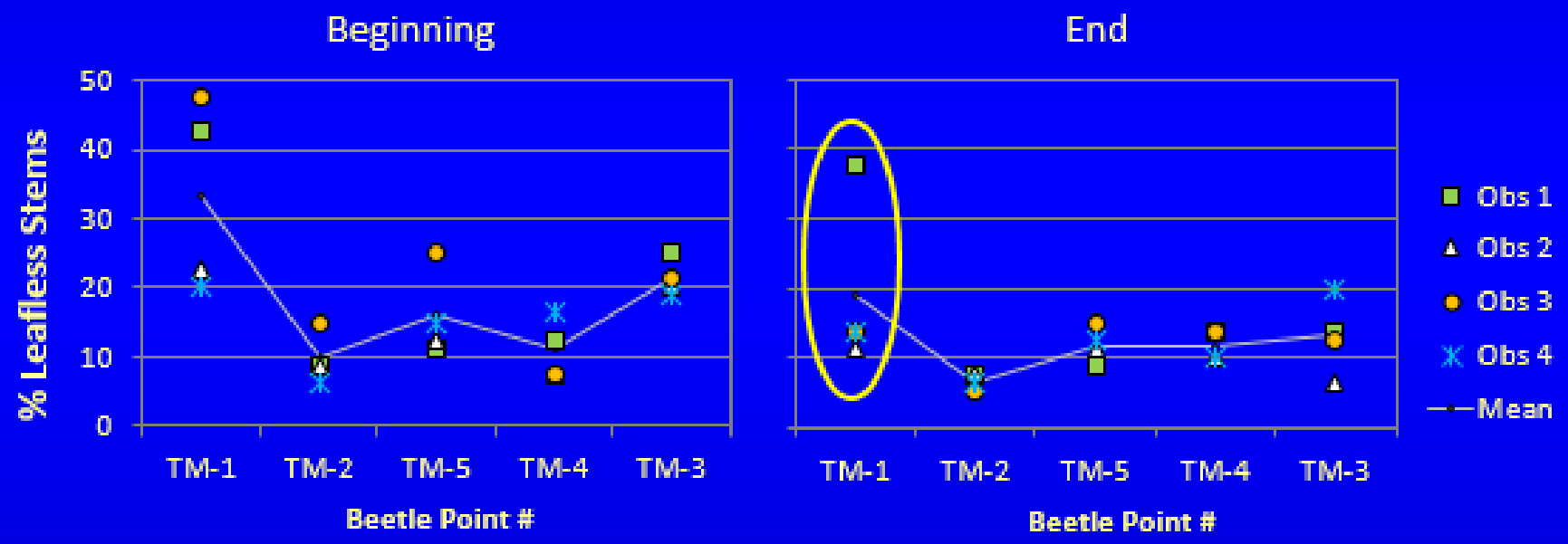
Results

Calibration Exercise



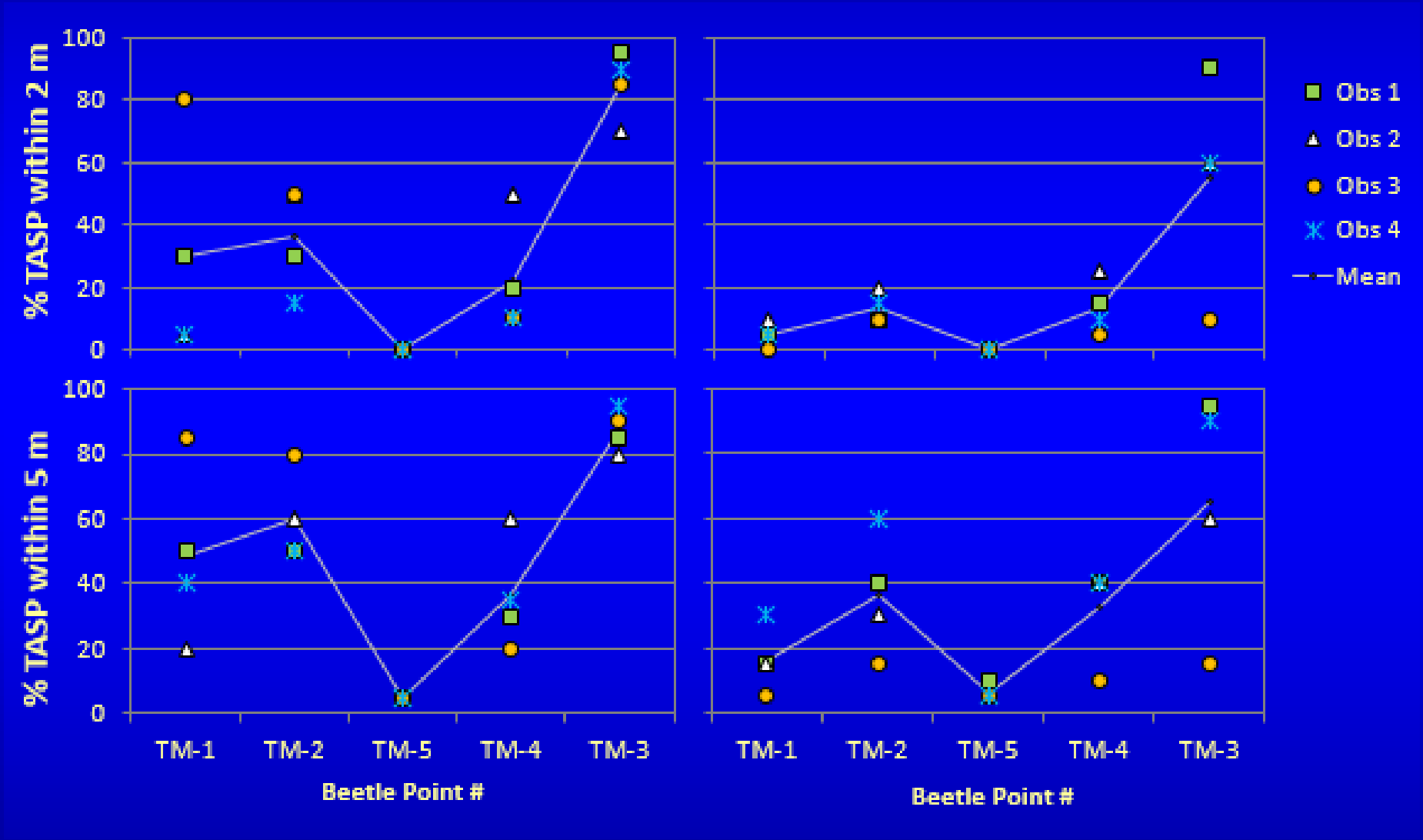
Results

Calibration Exercise



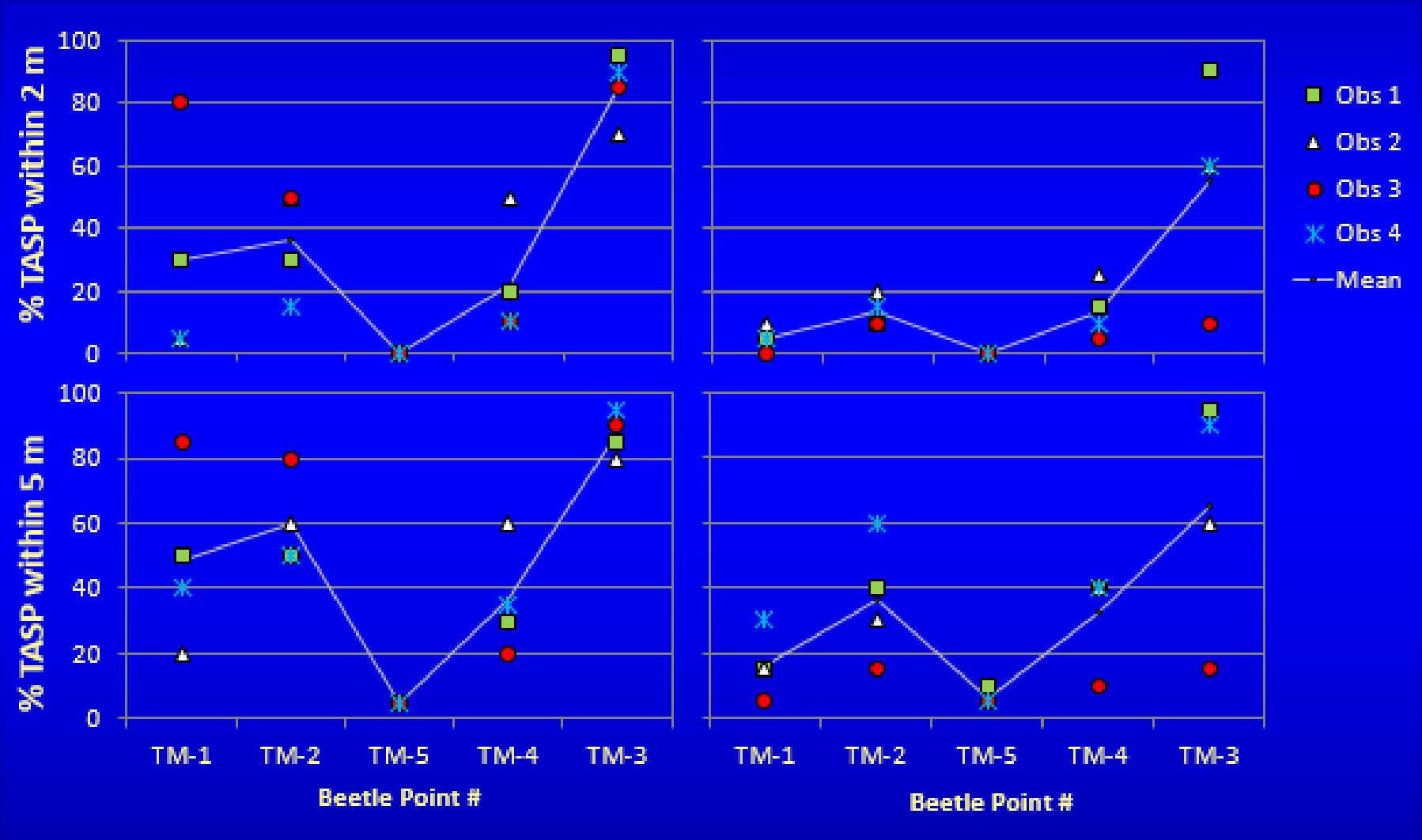
Results

Calibration Exercise



Results

Calibration Exercise



Lessons Learned

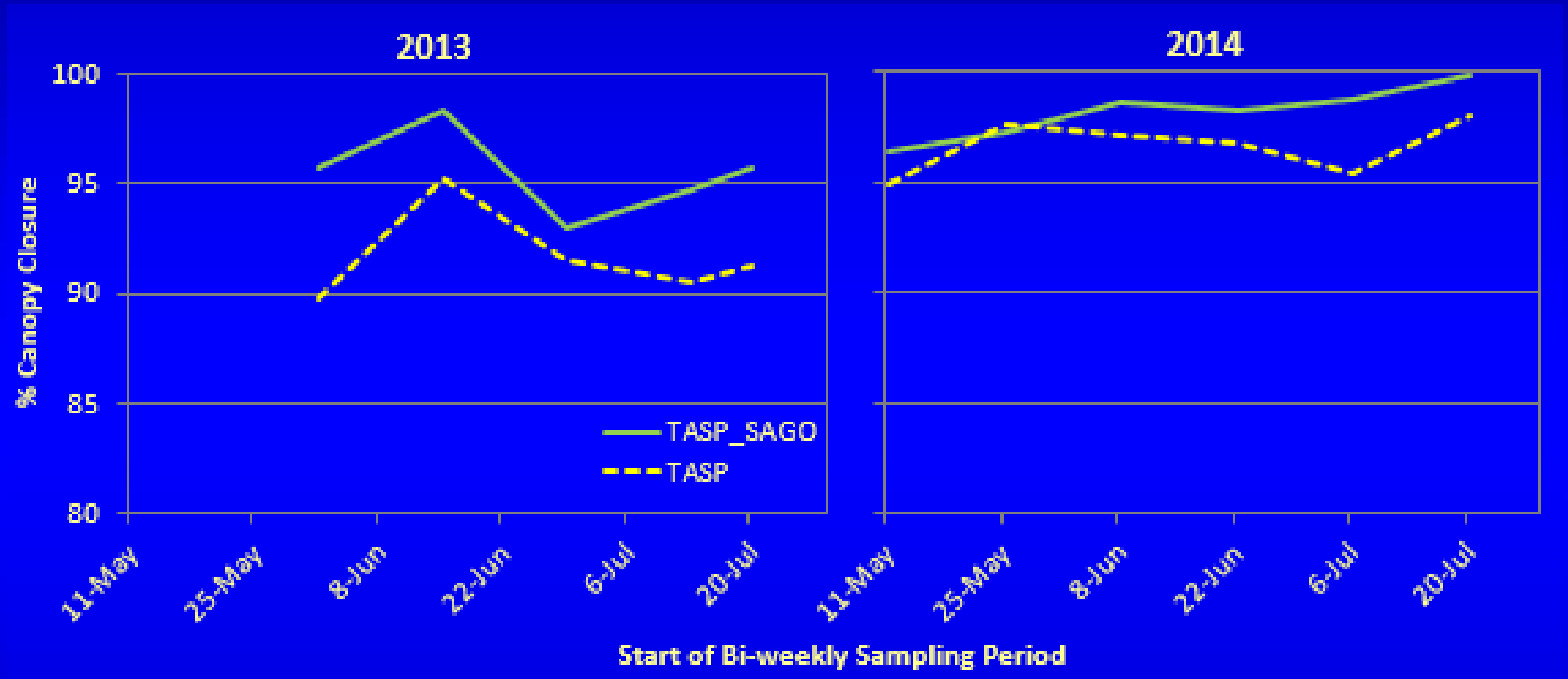
Calibration Exercise

- Initial pre-calibration training insufficient
- Calibration reduced observer variation
- Vegetation structure influences ability to estimate some measures
  - Need to expand calibration to include multiple vegetation types
- Percent tamarisk hard to estimate, especially at 5 m
- Unable to differentiate between seasonal drift and real changes in vegetation
- End calibration useful for identifying protocol-level errors

Results

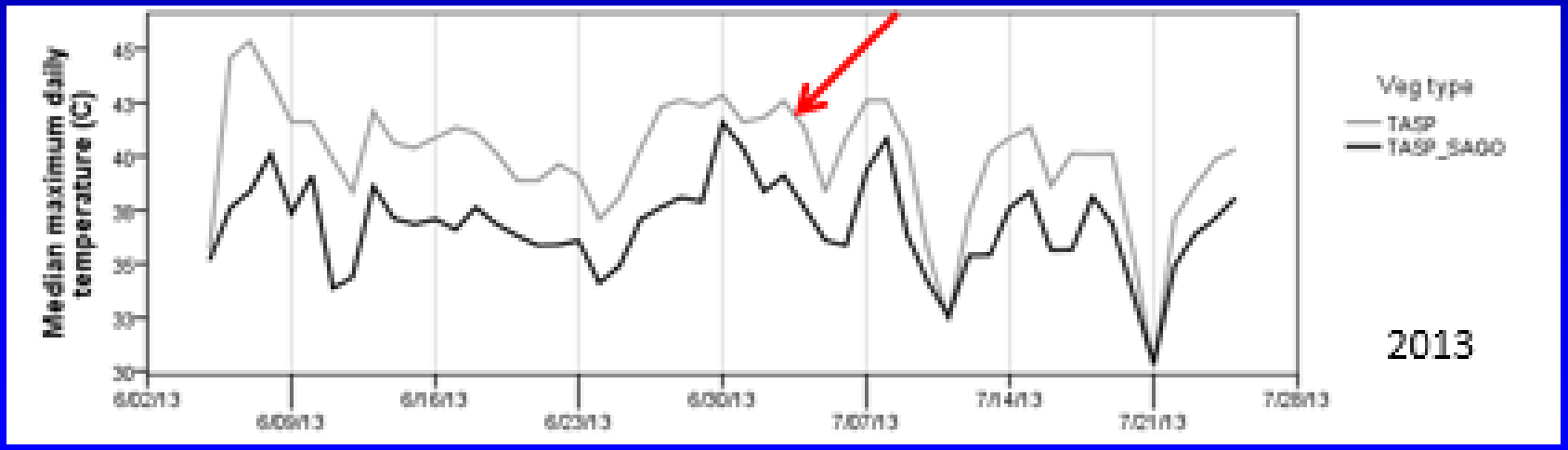
- 2013 - Evidence of vegetation damage presumed from weevils seen in several places in Topock Marsh.
- 2014 – damage not as evident

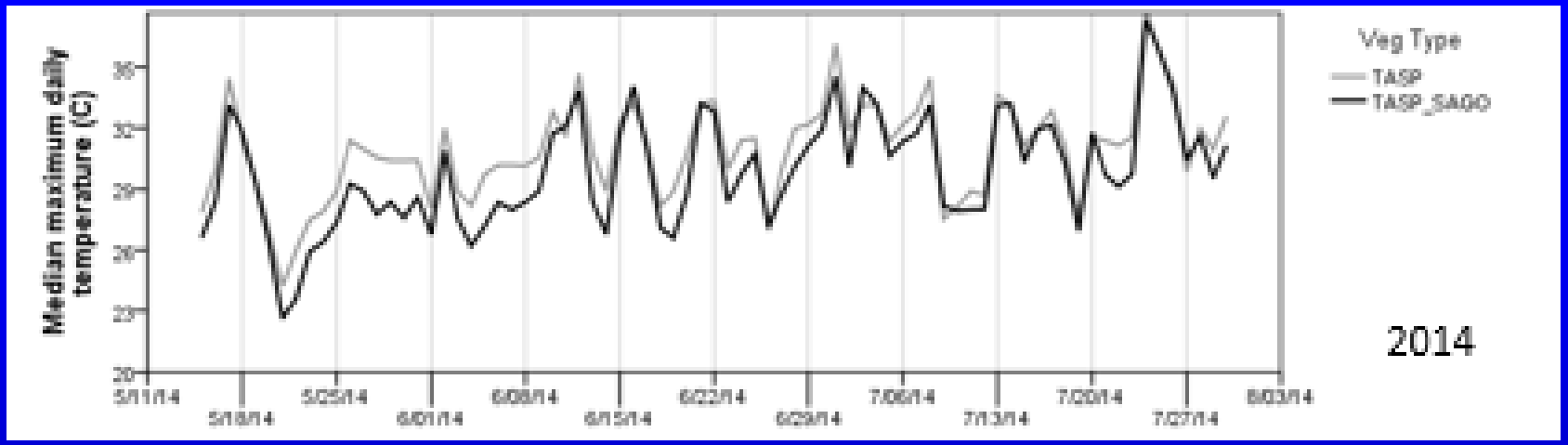
Results



- Canopy closure more similar between veg types in 2014

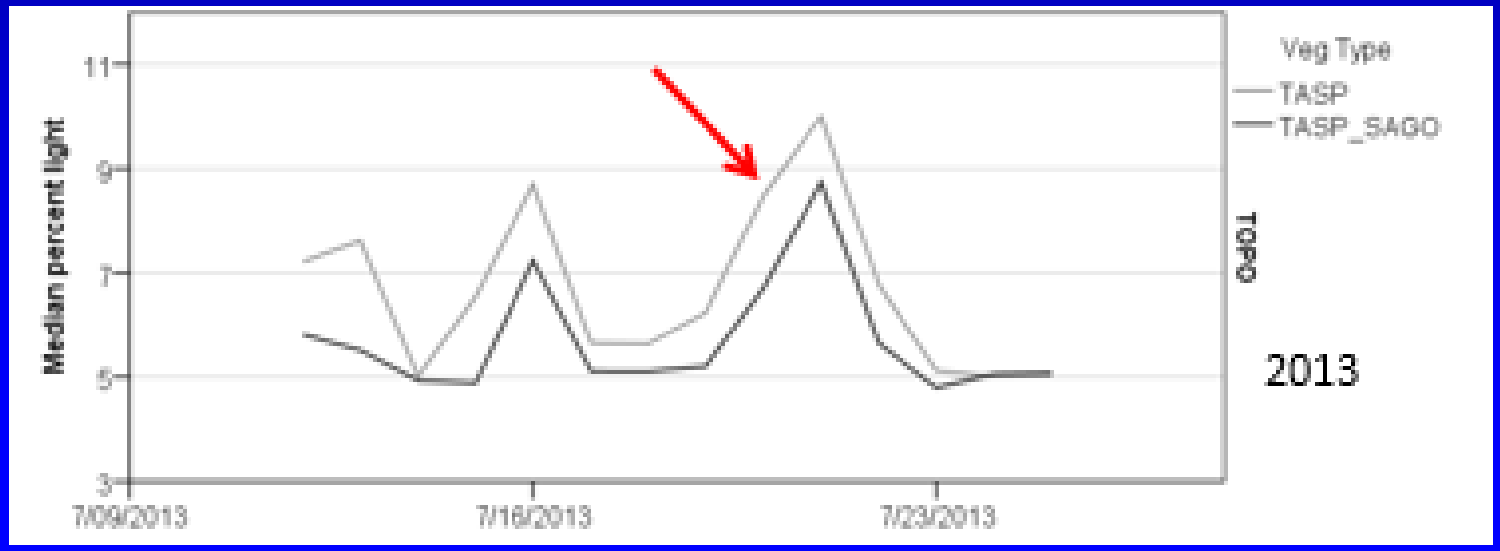
Results

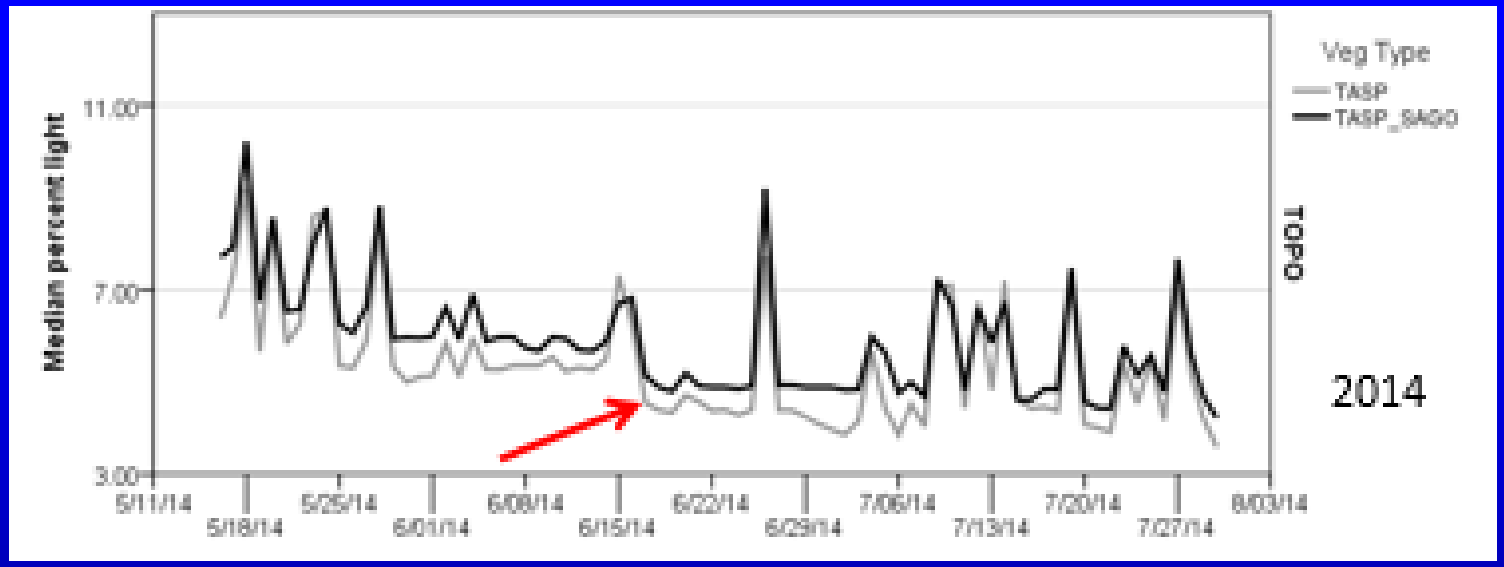




- Hotter in tamarisk in 2013
- Temperature more similar between veg types in 2014

Results





- Brighter in tamarisk in 2013

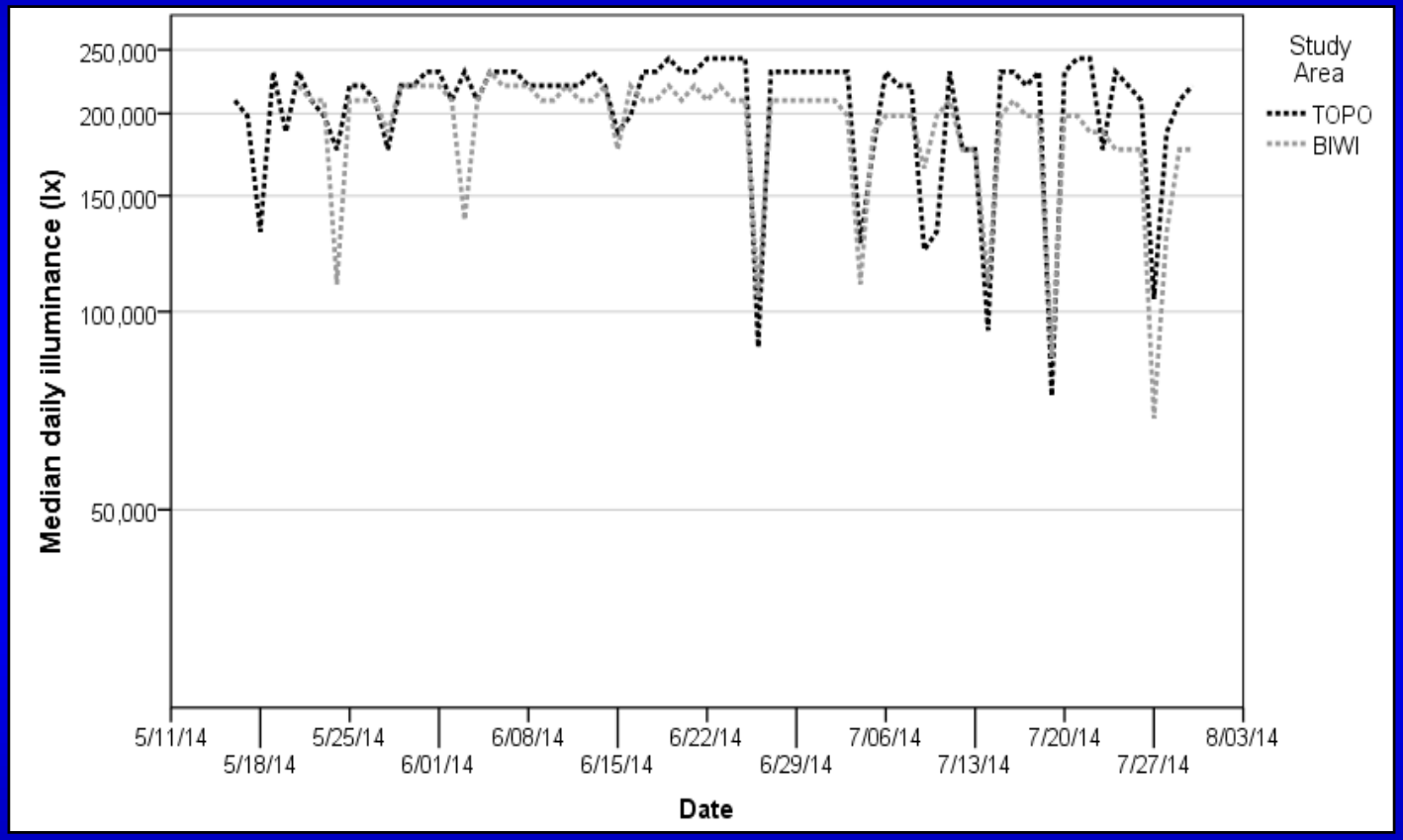
Light loggers

- 2013 was a pilot year:
  - our light loggers are not meant to be in direct sun…
- 2014 - control logger housing change monthly
  - Corrected the issue at Topock, but the Bill?

In the shade

In the sun

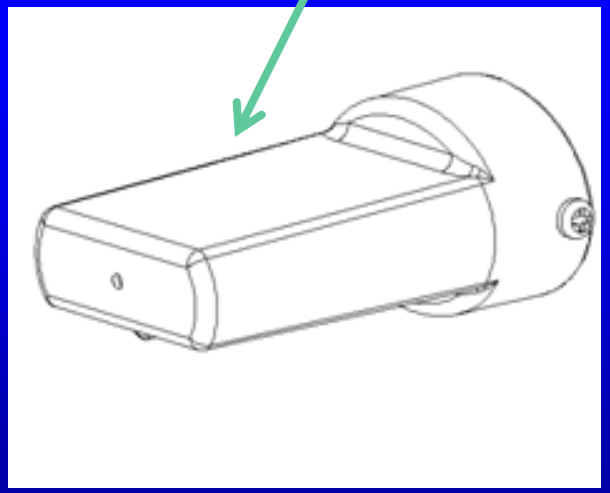
Light loggers



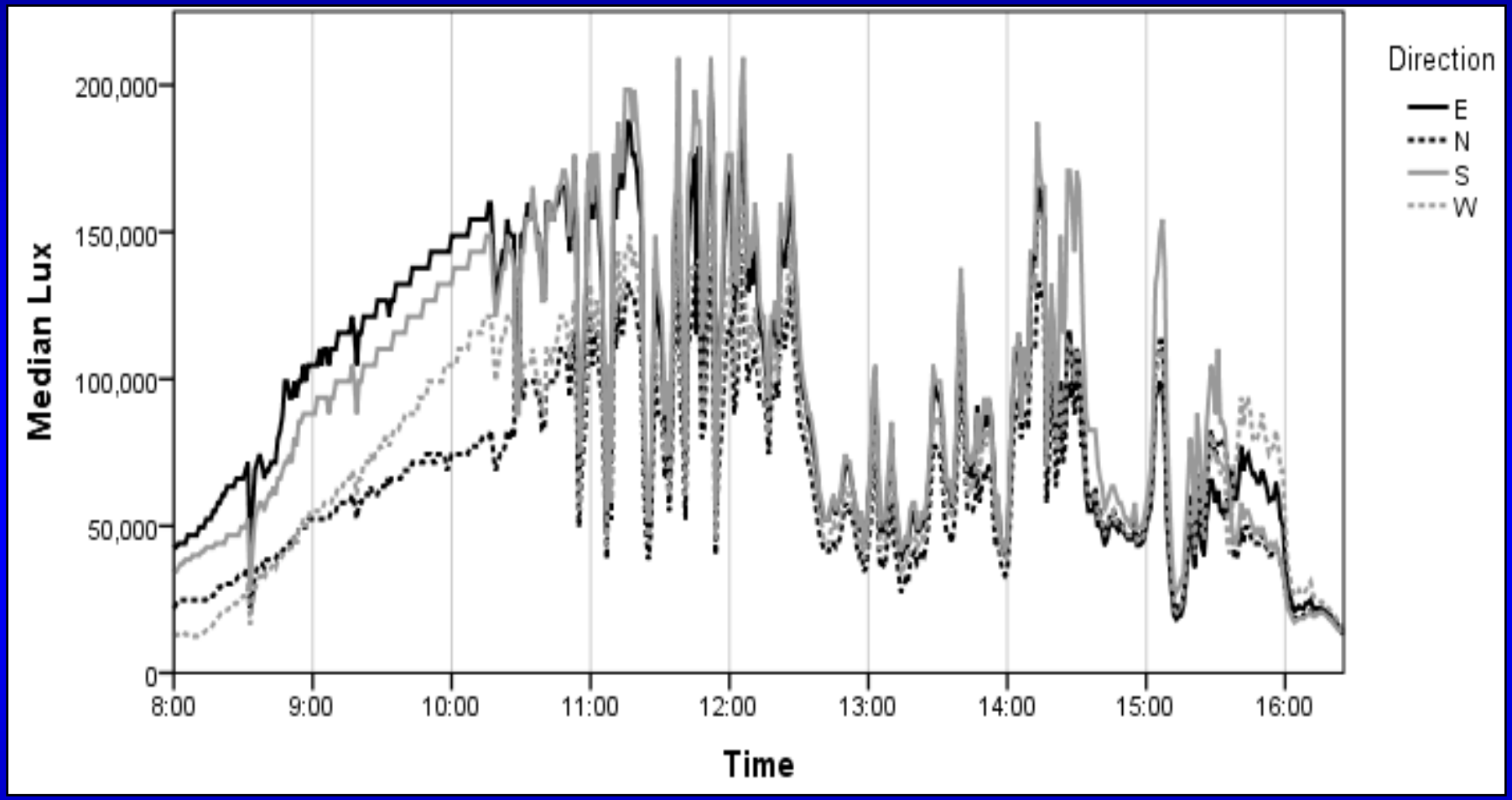
Light loggers

- Potential causes of change in recorded light levels:
  - Deviation of the logger from horizontal
  - Accumulation of dirt / debris on logger housing

6 degree angle



Light loggers

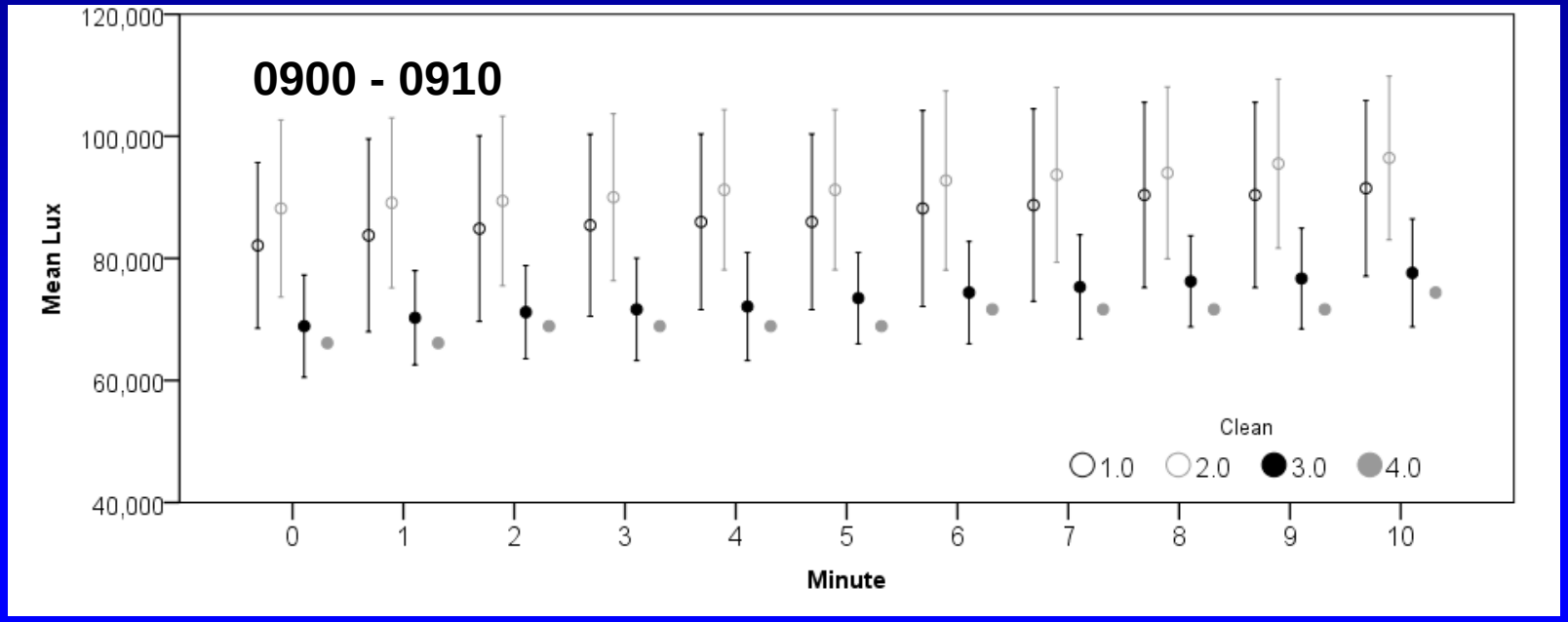


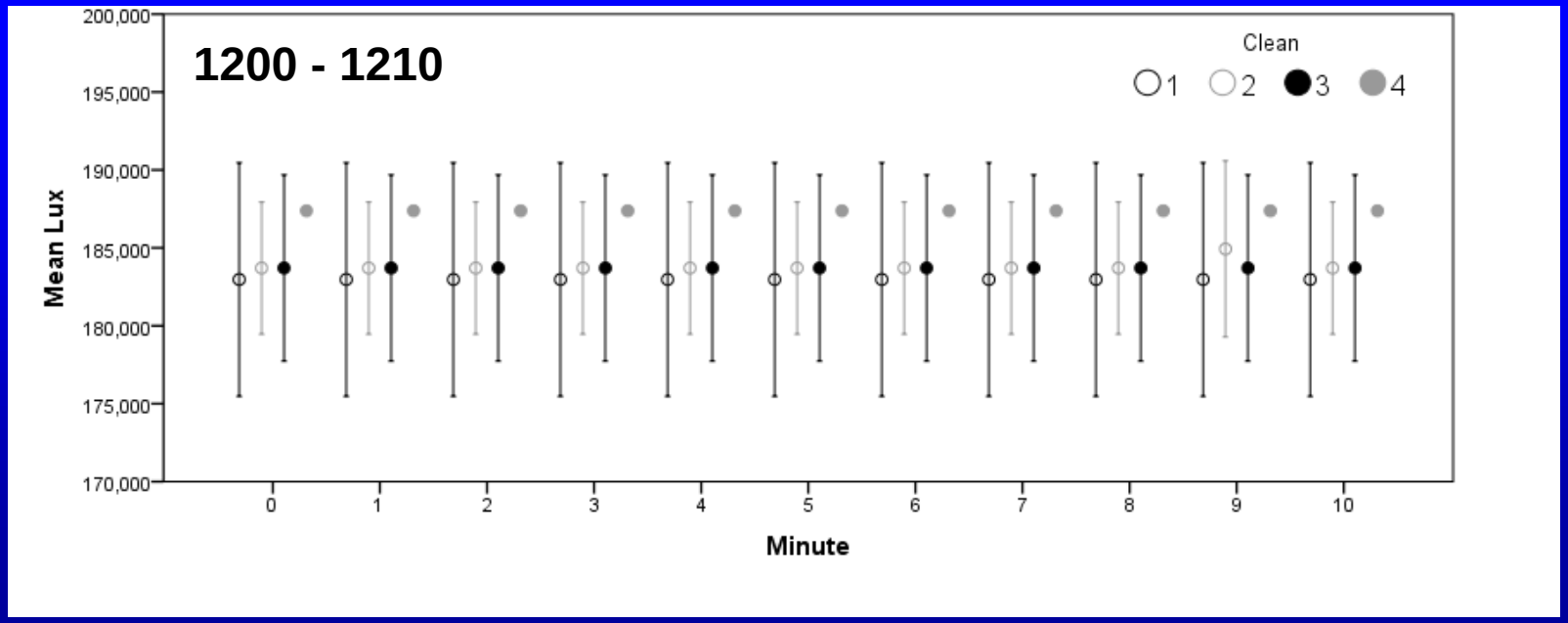
- 6 degree deviation from horizontal makes a difference
- This difference most pronounced in sunny conditions
- Need to use levels in 2015 to ensure loggers are horizontal

Light loggers

- Logger cleanliness might affect readings early / late in the day, but only if REALLY dirty.
- Mildly dirty loggers indistinguishable from each other
- Will clean loggers at each visit in 2015, regardless

Light loggers





Questions?