

Western Riverside County MSHCP Biological Monitoring Program



Quino Checkerspot Butterfly
Surveys 2005 – 2010



Biological Monitoring Program

The overall goal of the Biological Monitoring Program is to collect data on the 146 covered species and associated habitats for the purpose of assessing the Western Riverside County Multiple Species Habitat Conservation Plan's (MSHCP) effectiveness at meeting conservation objectives and to provide information to Reserve Managers and the Adaptive Management Program.



Quino Checkerspot Butterfly (*Euphydryas editha quino*)

- Federally-listed endangered species
- Narrowly distributed at relatively few locations within the MSHCP Plan Area in suitable habitat
- Although they may occur in nearly any upland habitat that is relatively open, they are restricted by the distribution and availability of their host plants



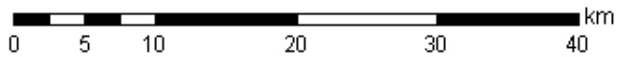
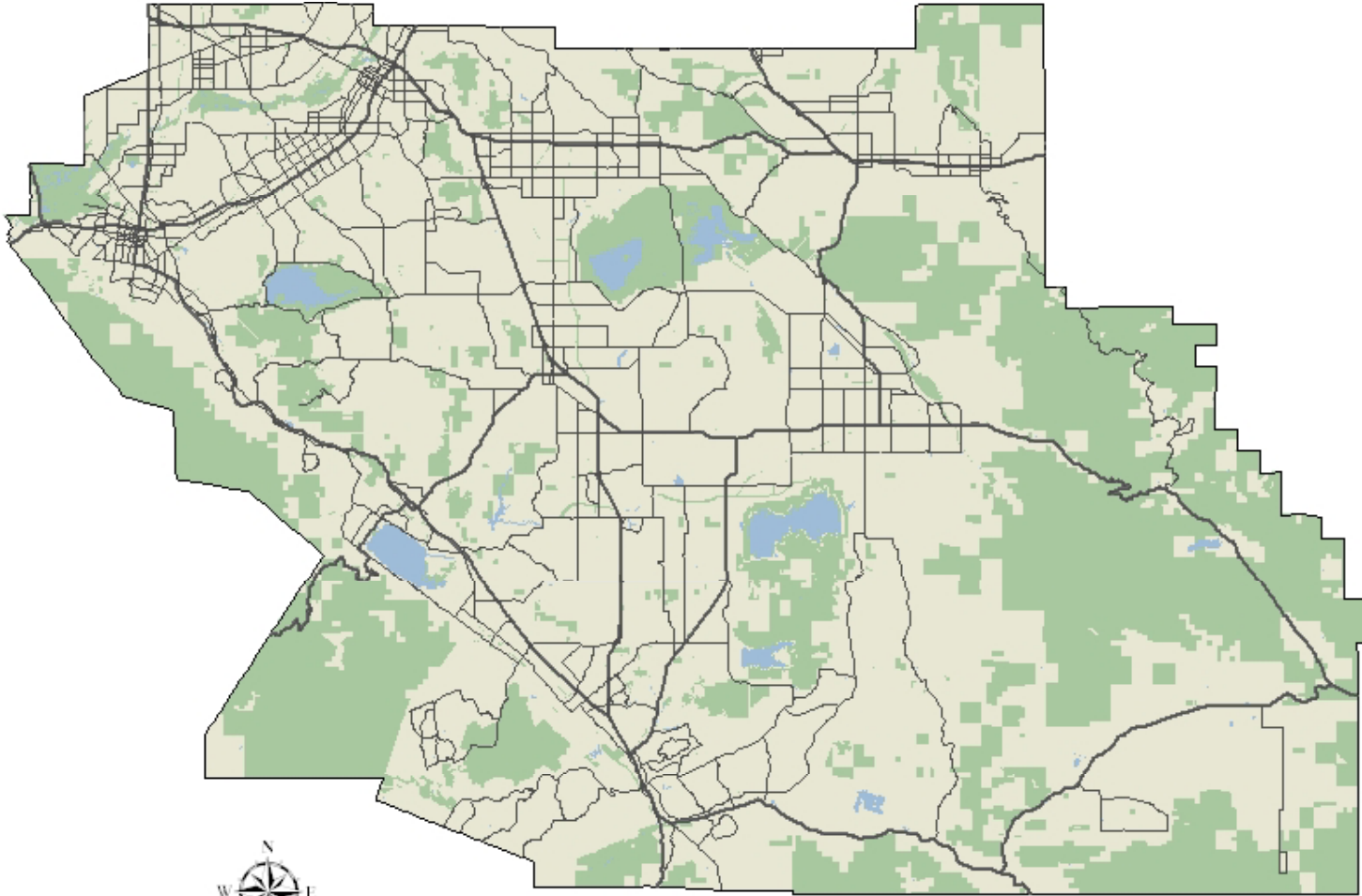
MSHCP Monitoring Objective

Within the MSHCP Conservation Area, Reserve Managers will document the distribution of Quino checkerspot on an annual basis.

–MSHCP Vol II-B, p. I-19



MSHCP Conservation Area (shaded green)



Quino Surveys (the fun part)!



1) Find the butterflies



2) Record the data
(where?, when?
how many? ...)



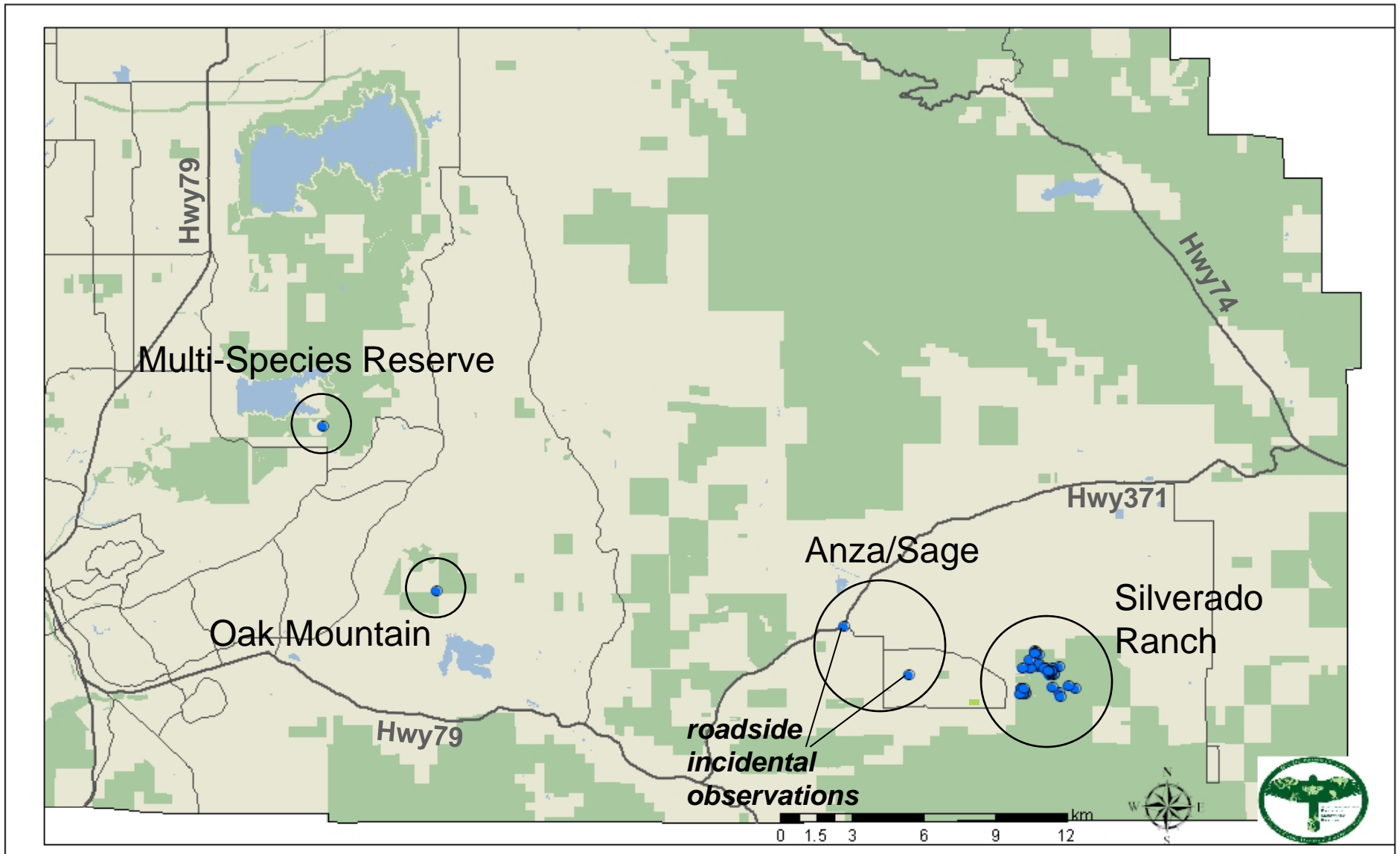
Monitoring Results Summary (2005 – 2010)

- Following are several maps representing confirmed Quino locations from 2005-2010. 2007 was an extreme drought year and no Quino were observed with the MSHCP Plan Area.
- Please note that these are presence-only data from within the MSHCP Conservation Area*. Lack of confirmed observations in an area should not be interpreted as true absence of the species in that area.

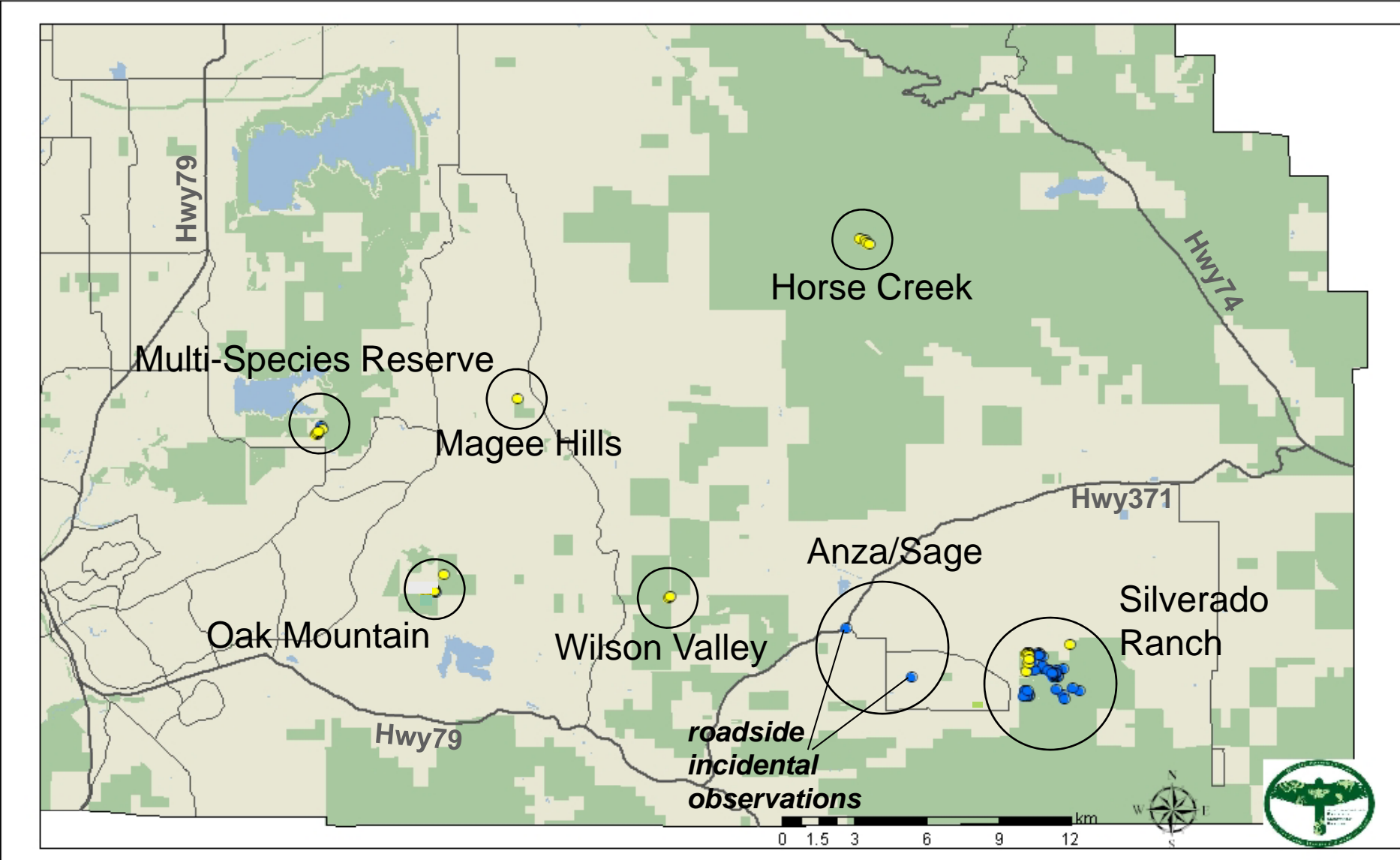
**2 exceptions noted*



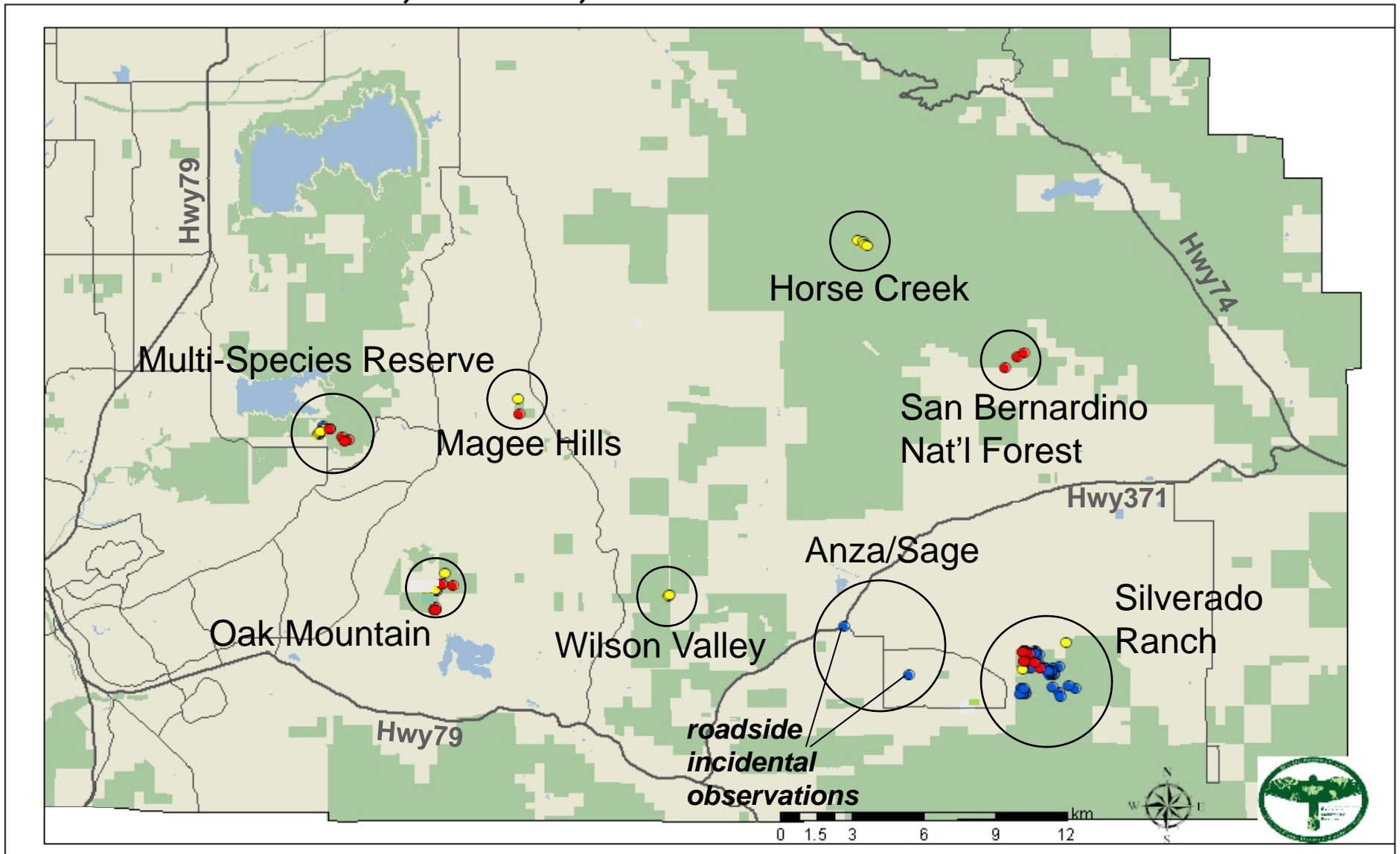
2005 Quino Locations



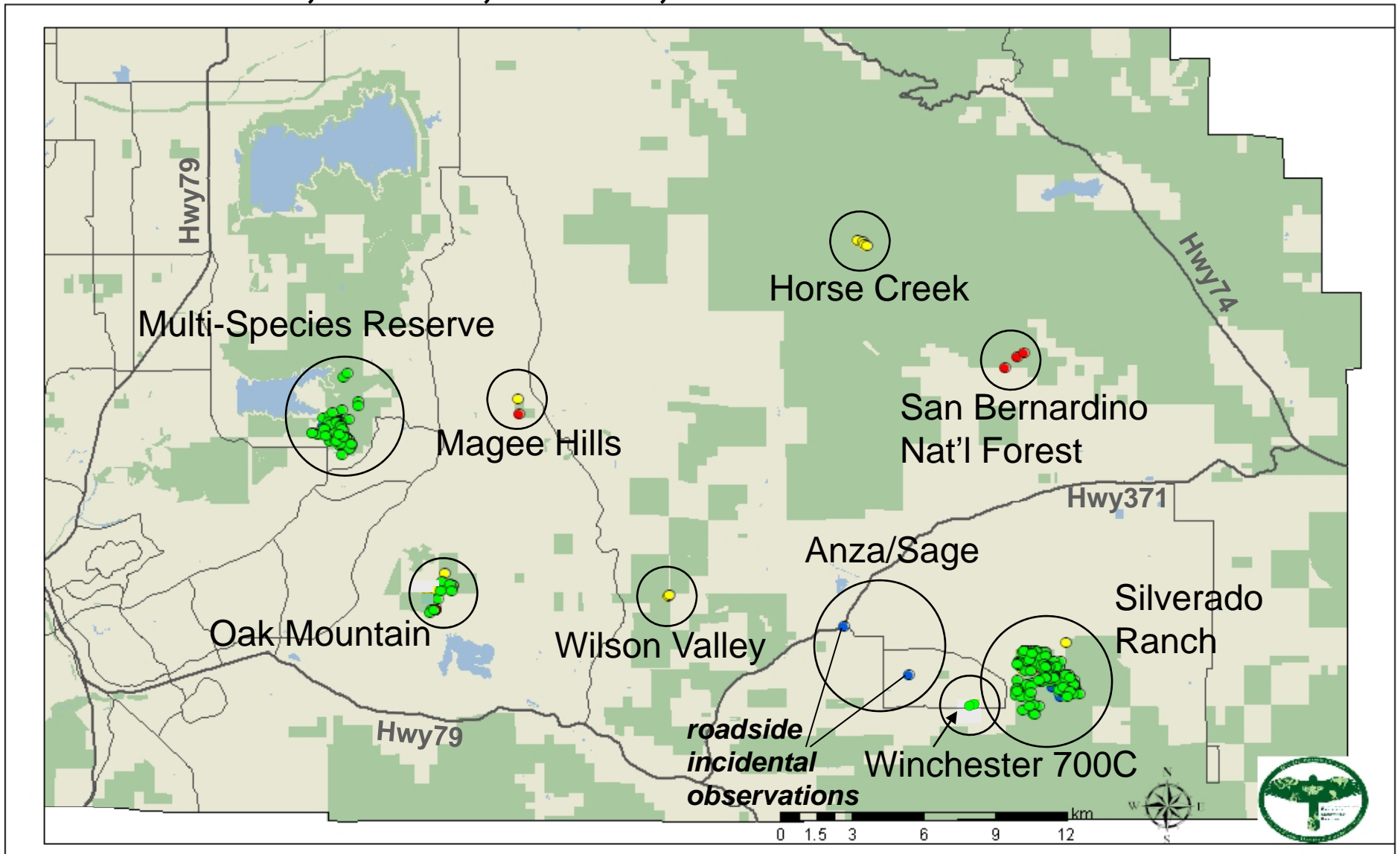
2005, 2006 Quino Locations



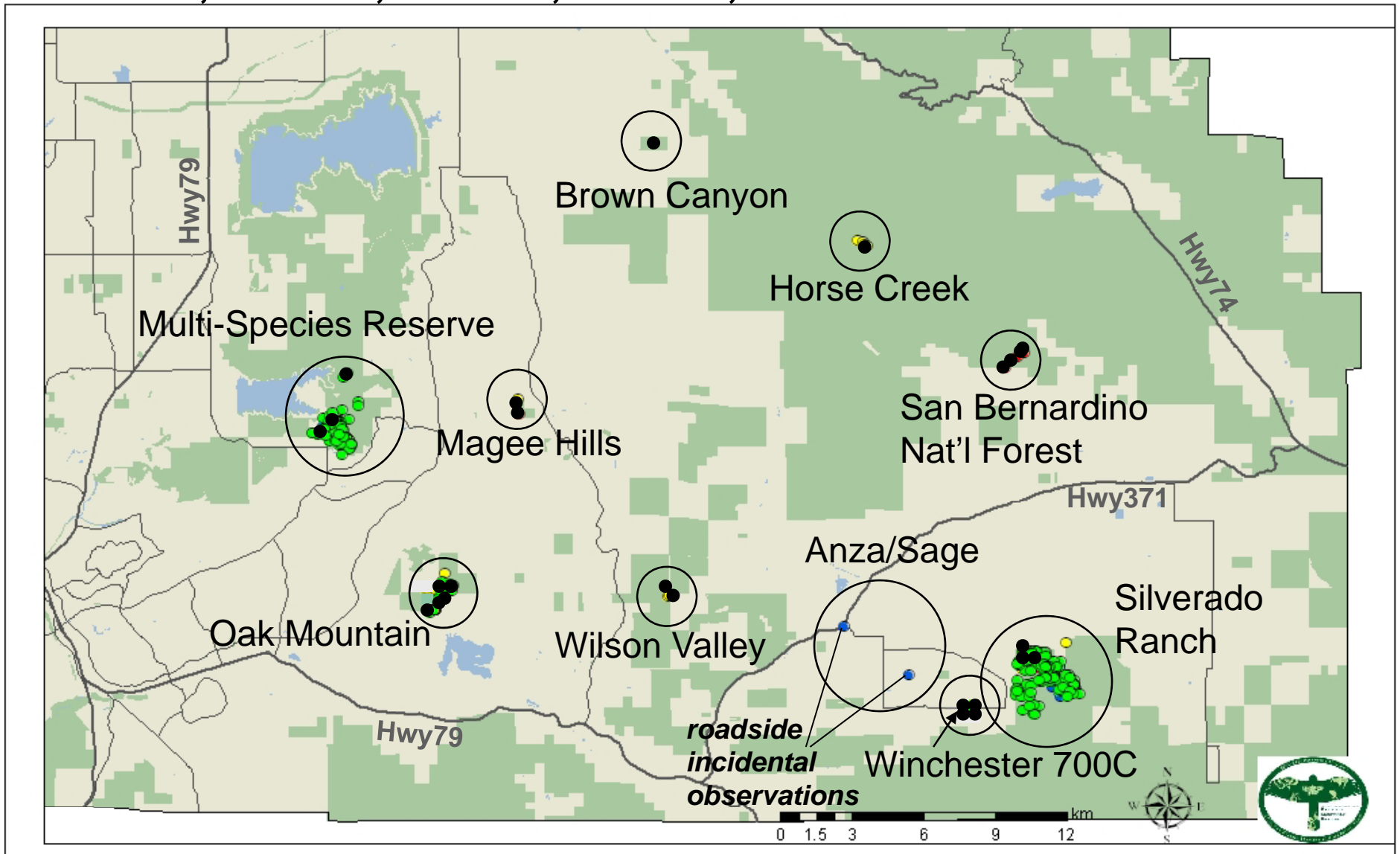
2005, 2006, 2008 Quino Locations



2005, 2006, 2008, 2009 Quino Locations



2005, 2006, 2008, 2009, 2010* Quino Locations



*Note that survey efforts in 2010 were spatially reduced compared to 2009 at the Multi-Species Reserve and Silverado Ranch so the reduced displayed occupied area is likely a result of survey effort, rather than actual occupancy reduction.

Results & Conclusions:

- 2010 was a great year for Quino!
- Well-established picture of Quino's distribution within Conservation Area in recent history
- Multiple-visit, time/area constrained survey design returns nice detection probability



Results & Conclusions:

- Quino require *Plantago erecta* or other host plants, open flowers for nectaring...
 - but the presence of what appears to be suitable habitat does not guarantee Quino's presence
- Quino populations are spatially and temporally variable, and can rebound from at least one year of complete absence



Future efforts...

- Continue building dataset of habitat attributes at occupied/unoccupied locations
 - explore host plant phenology effect (i.e., timing of host plant germination, length of time before desiccation...)



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