Quino Reintroduction Planning

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with input from “Team Quino”
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K. H. Osborne, 2004

www.urbanwildlands.org
**Quino Checkerspot**
- Listed January 1997 as federally endangered;
- Recovery Plan, 2003;
- Final Critical Habitat, 2009;
- 5-Year review, 2009;

**Quino conservation is comparatively at the early stages.**

**We are still surveying to determine where populations/occurrence complexes are located.**
**Quino Populations**

- Naturally intermittent; may locally be always sparse; fluctuations may be more extreme than other ssp.
- Dispersal ability in km.; comparatively less site fidelity; potential multiple-year diapause.
- Metapopulation structure requires conservation of temporarily unoccupied habitat patches.
- Responding (by extirpation) to alteration/habitat loss through human encroachment (housing developments, associated services, parcelization), invasive species, catastrophic fire, effects of long-term drought.
- Are likely already experiencing range shifts in response to climate change (Preston, 2014).
**Quino Habitat**
- Large geographic area with diverse topography and microclimates;
- Coastal to inland southern California through Baja;
- Patchy vegetation: coastal sage scrub, open chaparral, juniper woodlands, remnant native grasslands;
- Discrete restricted habitat patches suggest potential biogeochemical associations with environmental factors that include specific geology, derivative soils, cryptogamic crusts, effects on host plant morphology (Osborne, 2014).
Historic and Recent Quino Checkerspot Butterfly and Host Plant Distribution
- **Habitat Components**
  - Critical “metapopulation resource base”:
    - Spatial mosaic, high-quality host plant patches
    - Open ground surrounding habitat
    - to facilitate dispersal
    - Hilltopping venues
    - Nectar resources

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Quino Checkerspot Butterfly Recovery Units and Recent U.S. Occurrences

Captive Propagation and Release Plan, Longcore & Bonebrake, 2012:

1. **Reintroduce** QCB to existing or restored habitat within the current species range that are not occupied.

2. **Augment existing populations** that are either near extirpation, or are recently extirpated and absence cannot be assumed.

3. **Create new populations** at locations not previously known to be within the subspecies range, but are now assessed to be suitable and likely to remain so.
• Captive Propagation and Release Plan, 2012:
  
  • Protection, management and enhancement of existing QCB populations should be top priority for conservation efforts.

  • Reintroduction should be a pathway to assist recovery but efforts to conserve existing populations should be continued and coordinated with reintroduction efforts.

  • Success rate for establishing Quino populations is unknown.
Captive Propagation and Release Plan, 2012:

- Understand factors that contributed to target population’s decline/extirpation/absence

- Release of butterflies to suitable habitats plus habitat management likely a part of ongoing management plan for species

- Reintroduction sites should be protected by a legal agreement extending into the future

- Develop site-specific release plan

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Captive Propagation and Release Plan, 2012:
Some elements of site-specific release plan:

Reasons site chosen
- Details – site size, access, ownership/protection
- Habitat characteristics – foodplant, nectar sources, basking sites
- Threat amelioration; existing disturbances
- Degree of protection; management plans

Landscape context
- Surrounding habitat; potential land use changes
- Locations of nearest extant/historical QCB populations

Release design – life stage, number/source, procedures
Monitoring plan
Long/short term site management/restoration + evaluation
Other strategies, priorities, suggestions:
First, augment existing sites with sparse populations to “make them better,” enhance their ability be more resilient. Reintroduce next at sites where butterfly has been extirpated, with suitable restored habitat.

Do it experimentally, in decent habitat, either post-diapause larvae or gravid females or both.

Post-diapause larvae at roughly the same stage are best, let them become habituated, encourage site-fidelity; pupae are fine; adults will all fly away.

Experiment: loss of some individuals outweighed by knowledge gained, leads to better decisions.

Spread the risk with reintroductions at multiple sites.

Reintroduction: Where?
More expert opinions:
“Just do it; conditions will never be perfect.”

Populations will never be viable/sustainable in small preserves set up for Quino conservation.

Will always require augmentation and essentially will be “zoo” populations, continually managed.

We have a moral obligation to reintroduce the butterfly to small preserves set aside for Quino.

Preserves can also function as refugia if other areas experience catastrophic fire, other issues, provide animals for reintroduction back into larger sites.

Reintroduction: Where?
Specific reintroduction site suggestions:

- Harford Springs Park, Gavilan Hills, Riverside County; very high densities 1930s-1983; population extirpated by disking (Mattoni et al. 1997); need acquisition (private). Extends current range north.

- Lake Mathews, N Riverside County; reintroduction; site failed with only one area of suitable habitat. Extends current range north.

- Orange County, N Santa Ana Mountains, Irvine Park. Consider that phenology is the limiting factor, and the unpredictability of climate change. Choose sites for climatological diversity that will improve long-term sustainability. Extends range north and west.
• **Specific reintroduction site:**

• San Diego County

Property will be transferred to San Diego National Wildlife Refuge.

San Diego Zoo butterflies augmenting a sparse population at a protected site.

**Reintroduction: Where?**
• “Team Quino” Take Home Messages ...

• Working Group?

• Action Plan?

• Take advantage of multi-disciplinary expertise, many regional strengths.

• Embrace monitoring opportunity.

• Partnerships, education, outreach = funding?
  • N-deposition mitigation = funding?

• Reintroductions 2014?

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References


- Osborne, K.H., 2014. Idiosyncratic Ecological, Biological, and Behavioral Aspects of the Quino Checkerspot (*Euphydryas editha quino*) Adapted to Diverse Environmental and Climatological Conditions within its Southern Range. Workshop presentation, Conservation and management of three imperiled West Coast butterflies.


• **Recovery Plan Needs:**
  ◦ Protection and management of landscape connectivity, habitat patches and dispersal areas.
  ◦ Habitat restoration and enhancement.
  ◦ Establishment of a formal captive breeding program.

• **Recovery Plan Objectives/Interim Goals:**
  ◦ Protect and manage habitat supporting known population distributions and landscape connectivity between them.
  ◦ Maintain or create resilient populations.
  ◦ Conduct research necessary to refine recovery criteria.
  ◦ USFWS, 2003