Distribution and Status of the Arroyo Toad (*Bufo californicus*) in the San Diego MSCP and Surrounding Areas, 2002-2003.

U.S. Department of the Interior
U.S. Geological Survey

Background- Arroyo Toad

- Approximately 40% of the estimated original habitat has been lost due to dam construction and related water management practices.
- Significant changes to riparian habitats downstream from dam structures include, the alteration of hydrologic regimes, reduction in coarse sediment, an increase in vegetation density, and the creation of favorable conditions for exotic predatory species.
- Listed as an Endangered Species in 1994 under the Endangered Species Act.
- Covered sp. under the San Diego MSCP.

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Background- Arroyo Toad (cont.)

Terrestrial amphibian that breeds aquatically

Upland Habitat characterized by:

- available refugia, usually sandy or friable soils, and sparsely vegetated foraging areas.

Breeding Habitat characterized by:

- quiet shallow pools of streams & rivers
- substrate of sand, gravel, cobble
- often with adjacent sandy terraces
- bordering vegetation low or set back

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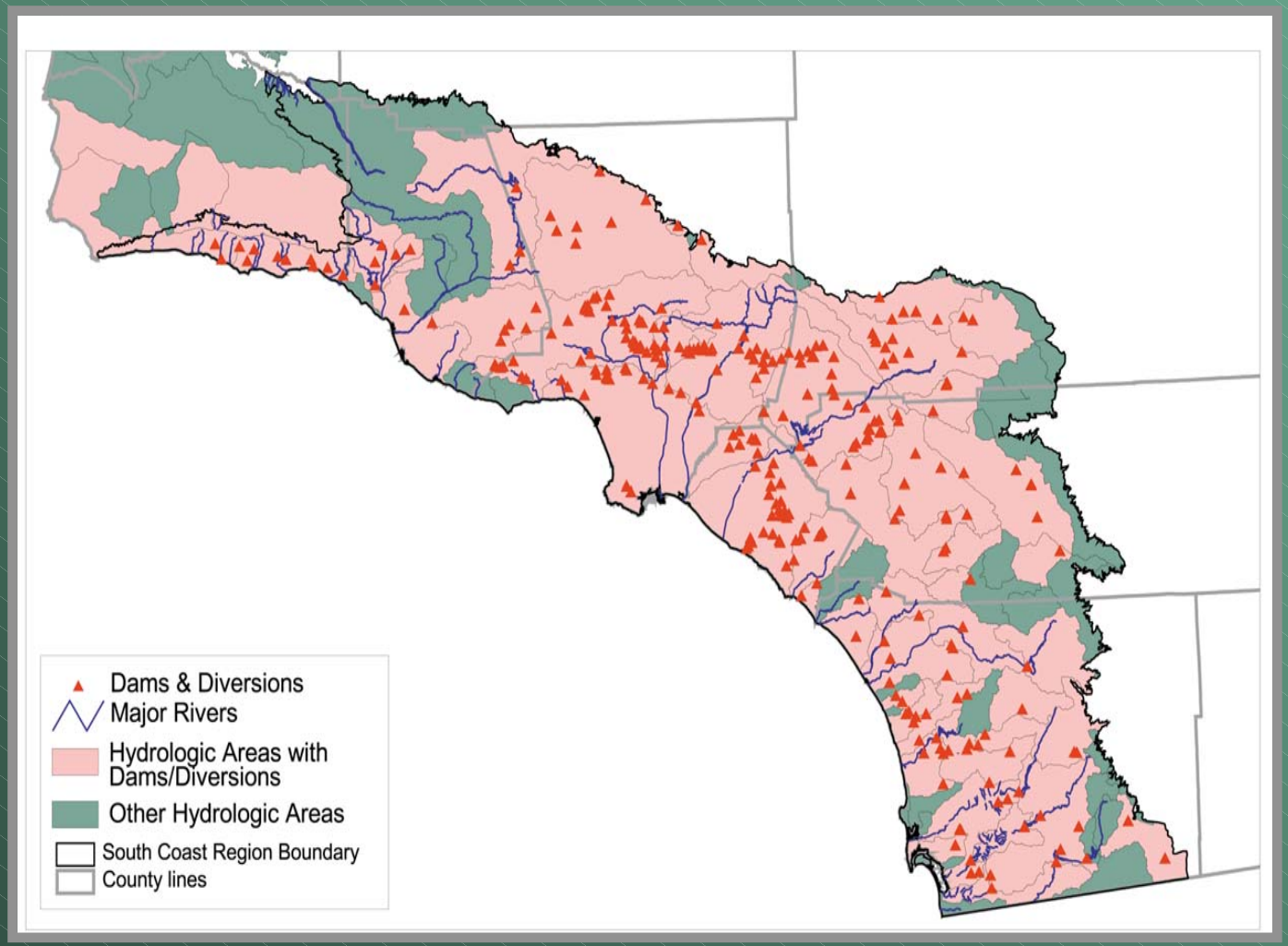
Distribution of Dams in Southern California



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Objectives

- Select sites that would most likely support AT populations within the MSCP preserve
- Perform daytime Habitat Assessment Surveys to assess actual habitat conditions (ground truthing)
- Conduct Nocturnal Presence Surveys to determine the current distribution of the AT within the MSCP preserve

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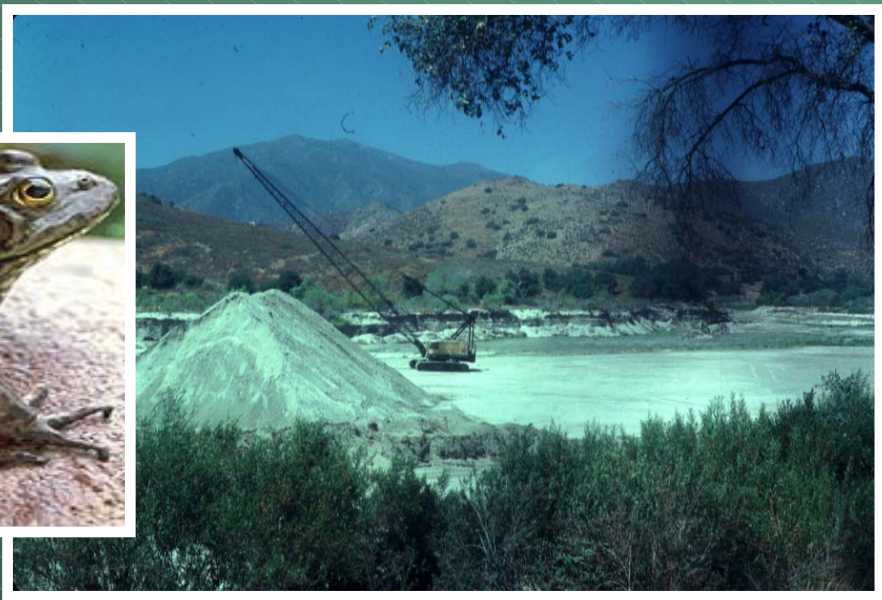
Objectives (cont.)

- Identify human disturbances and other negative impacts to ATs and AT habitat at each survey site
- Provide management recommendations based on our findings



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Initial Site selection

- Resources:
  - USGS 7.5’ topographic maps
  - TOPO© software
- Landscape Features:
  - Lotic habitat (river, creek, stream) regardless of hydroperiod
  - Drainage gradient ≤ 3%

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Habitat Assessment Surveys

- Record the presence of physical habitat characteristics that are known to be highly correlated with arroyo toads
    1. Sandy Substrate
    2. Adjacent Sandy Terraces
    3. Braided Channels

- Presence of these key habitat characteristics are highly dependant on a low gradient ($\leq$ 3%)

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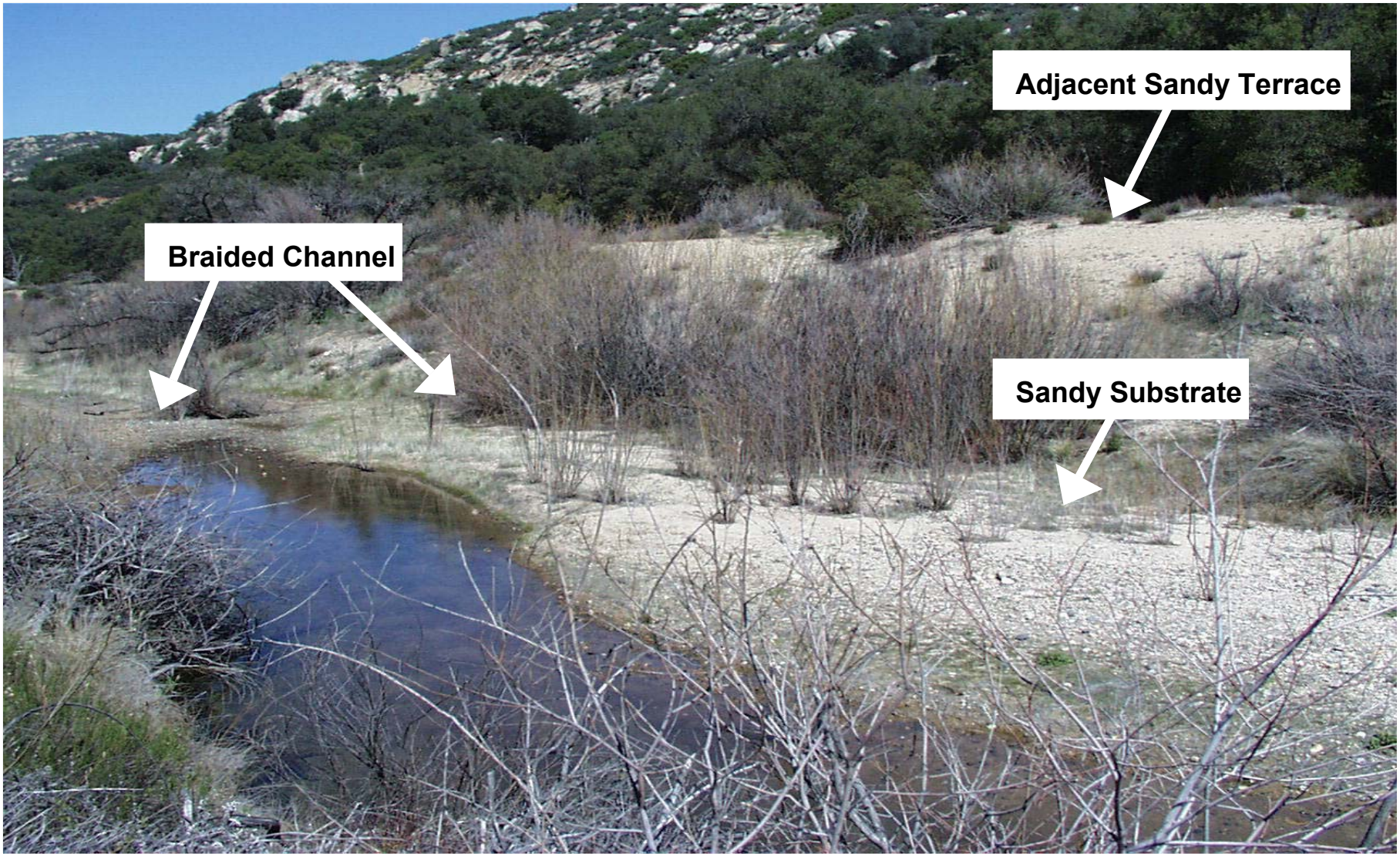

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A drainage reach exhibiting the three key habitat characteristics

Habitat Suitability Ratings

- High Quality: All *three* key physical characteristics (*sandy substrate, adjacent sandy terraces, and braided channels*).
- Good Quality: *Two* of the three key physical characteristics.
- Marginal Quality: *One* of the key physical characteristics
- Poor Quality: *None* of the three key physical characteristics.

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Habitat Assessment Survey Effort

- Habitat Assessment Surveys conducted at 37 sites within 6 watersheds
  - San Dieguito River (7)
  - Los Penasquitos Creek (1)
  - San Diego River (9)
  - Sweetwater River (5)
  - Otay River (10)
  - Tijuana River (5)

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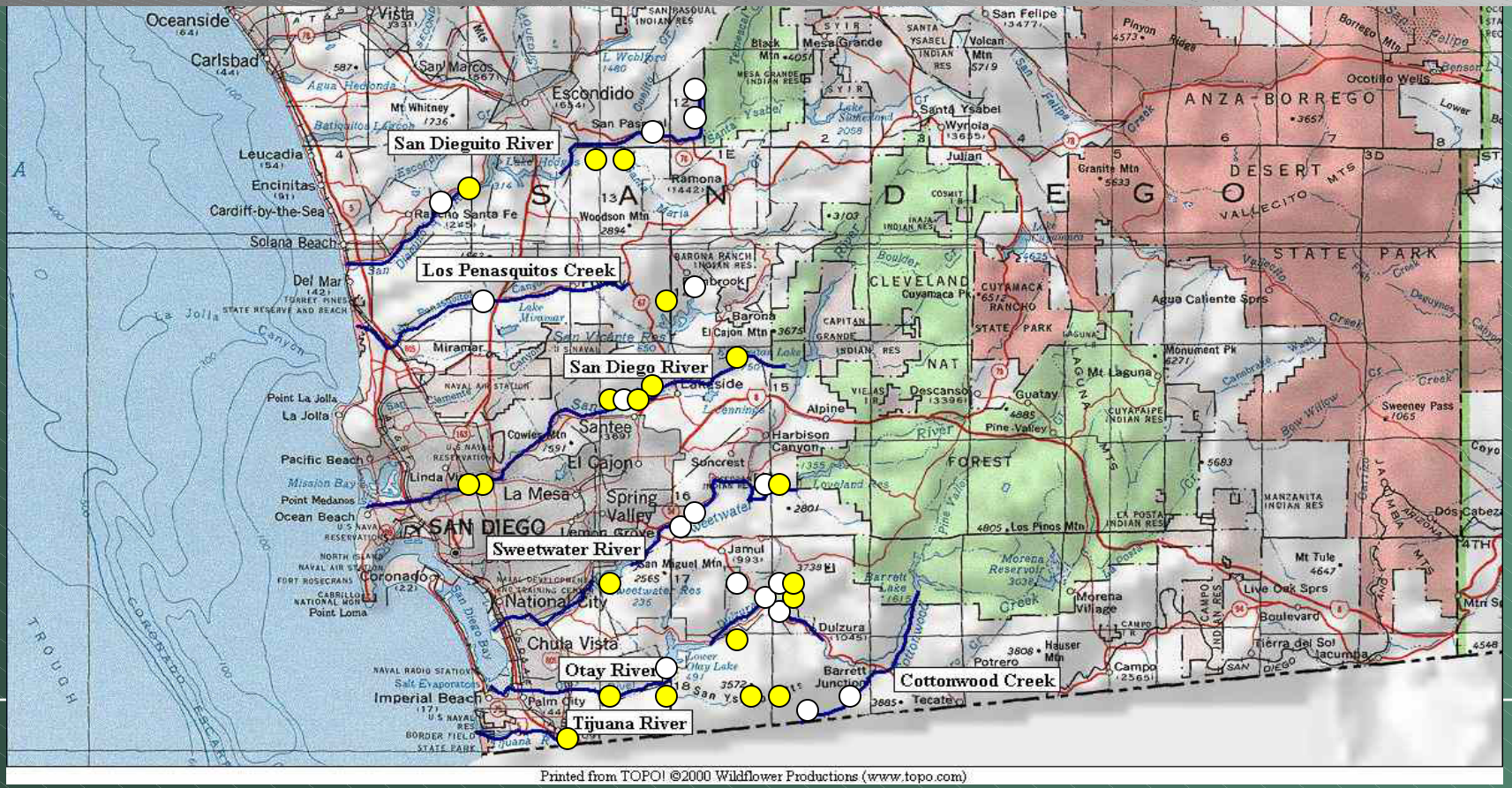
17 of the 37 sites were identified as potentially containing AT populations



Nocturnal Survey Effort

- Follow-up Nocturnal Presence Surveys were conducted at the 17 of the 37 sites
  - San Dieguito River (4 of the 7 sites)
  - Los Penasquitos Creek (1)
  - San Diego River (2 of the 9 sites)
  - Sweetwater River (3 of the 5 sites)
  - Otay River (5 of the10 sites)
  - Tijuana River (2 of the 5 sites)

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Arroyo Toad Detections

Arroyo Toads were only detected in 3 of the 6 watersheds

- San Dieguito River
  - Boden Canyon Ecological Reserve (2 sites)
  - San Dieguito River Park, San Pasqual Valley
- San Diego River
  - San Vicente Creek, Kimball Valley
- Tijuana River
  - Cottonwood Creek, Marron Valley

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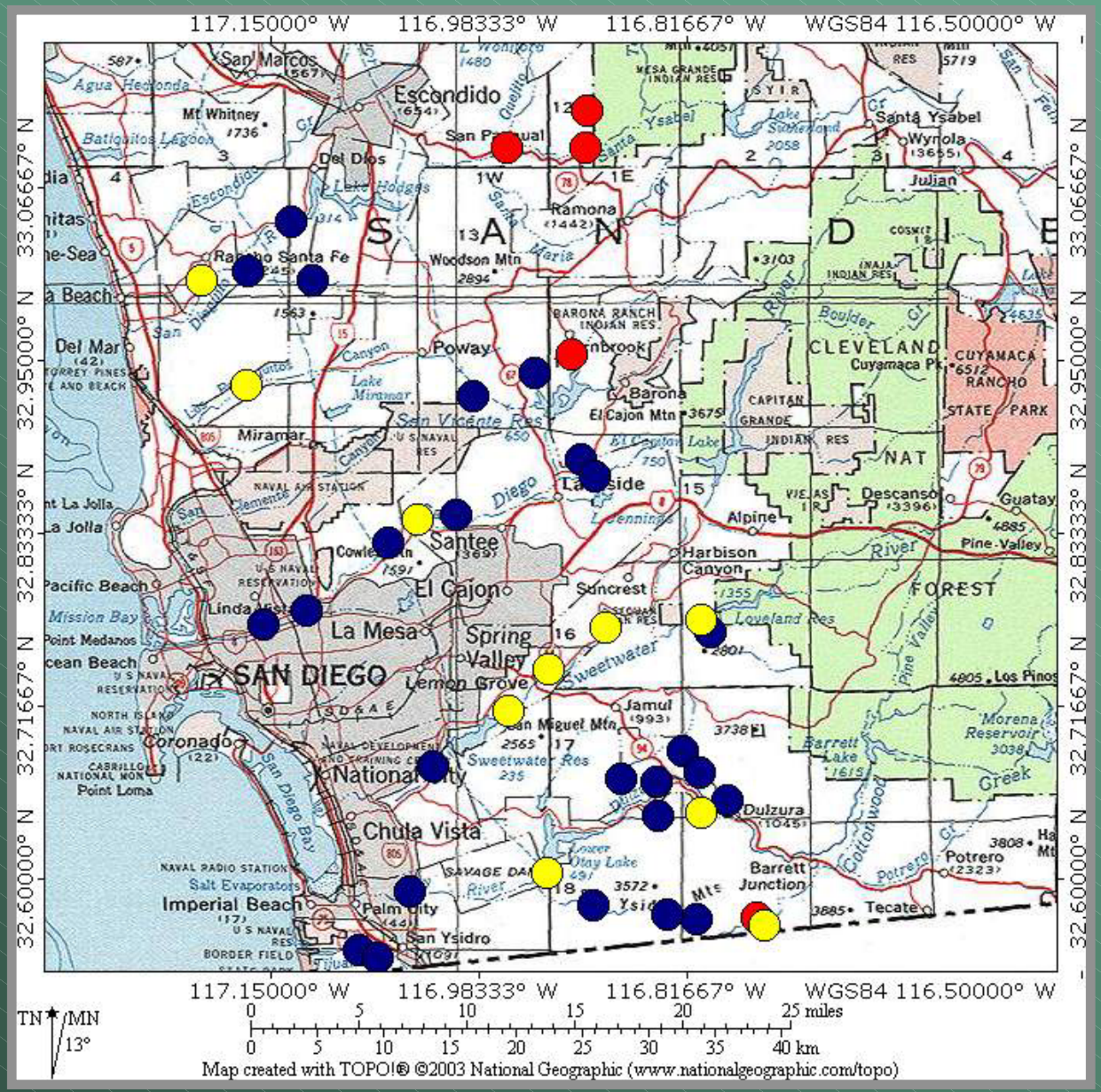
Arroyo Toad Survey Locations

- **Arroyo Toads**
- **Nocturnal Surveys- No Arroyo Toads**
- **Daytime Suitability Surveys Only**



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Other Native Species Detected

- Western Spadefoot Toad
- Western Toad
- Pacific Treefrog
- California Treefrog
- Two-striped Gartersnake
- Western Pond Turtle

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Non-Native Species Detected

- Crayfish
- African Clawed-Frog
- Bullfrog
- Sunfish (Green and Bluegill)
- Large-mouth Bass
- Mosquitofish
- Goldfish
- Red-eared Slider
- Wild Turkey

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Threats to Arroyo Toad Populations

- Introduced species
- Habitat loss & degradation
- Dam building / Reservoirs
- Groundwater pumping
- Sand & gravel mining
- Livestock grazing
- Agriculture
- Roads
- OHV use
- Fire

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Monitoring and Land Management Recommendations

- Preserve both upland and aquatic habitats.
- Maintain connectivity of the upland and aquatic habitats.
- Plan for compatible land use: prevent / restrict activities in drainage and upland habitats where AT are known to occur.
- Reduce the abundance of deleterious non-native aquatic fauna before the AT breeding season.

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Monitoring and Land Management Recommendations (cont.)

- Restrict grazing cattle from AT habitats
- Restrict public access to areas occupied by arroyo toads. Install unobtrusive information signs informing public of restrictions
- Coordinate with other agencies that have access to areas occupied by ATs informing them of avoidance measures

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Monitoring and Land Management Recommendations (cont.)

- Further research investigating breeding and recruitment within each AT population within the MSCP.
- Develop an education program for parties having access to habitats occupied by ATs.

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