



**WETLAND DESIGN TO PROVIDE FUTURE HABITAT FOR  
REMNANT POPULATIONS OF RED-LEGGED FROGS IN  
BAJA CALIFORNIA**

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**-ACTIVITY REPORT-**

**Prepared for Save The Frogs and  
The San Diego Natural History Museum**

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## GOALS OF THIS TRIP

- 1) Design a minimum of 10 wetlands in Baja California, including sites near CRLF populations and historical sites that will be used for reintroduction in the future.
- 2) Gather information through design forms, maps, and photographs, to estimate budgets for construction.



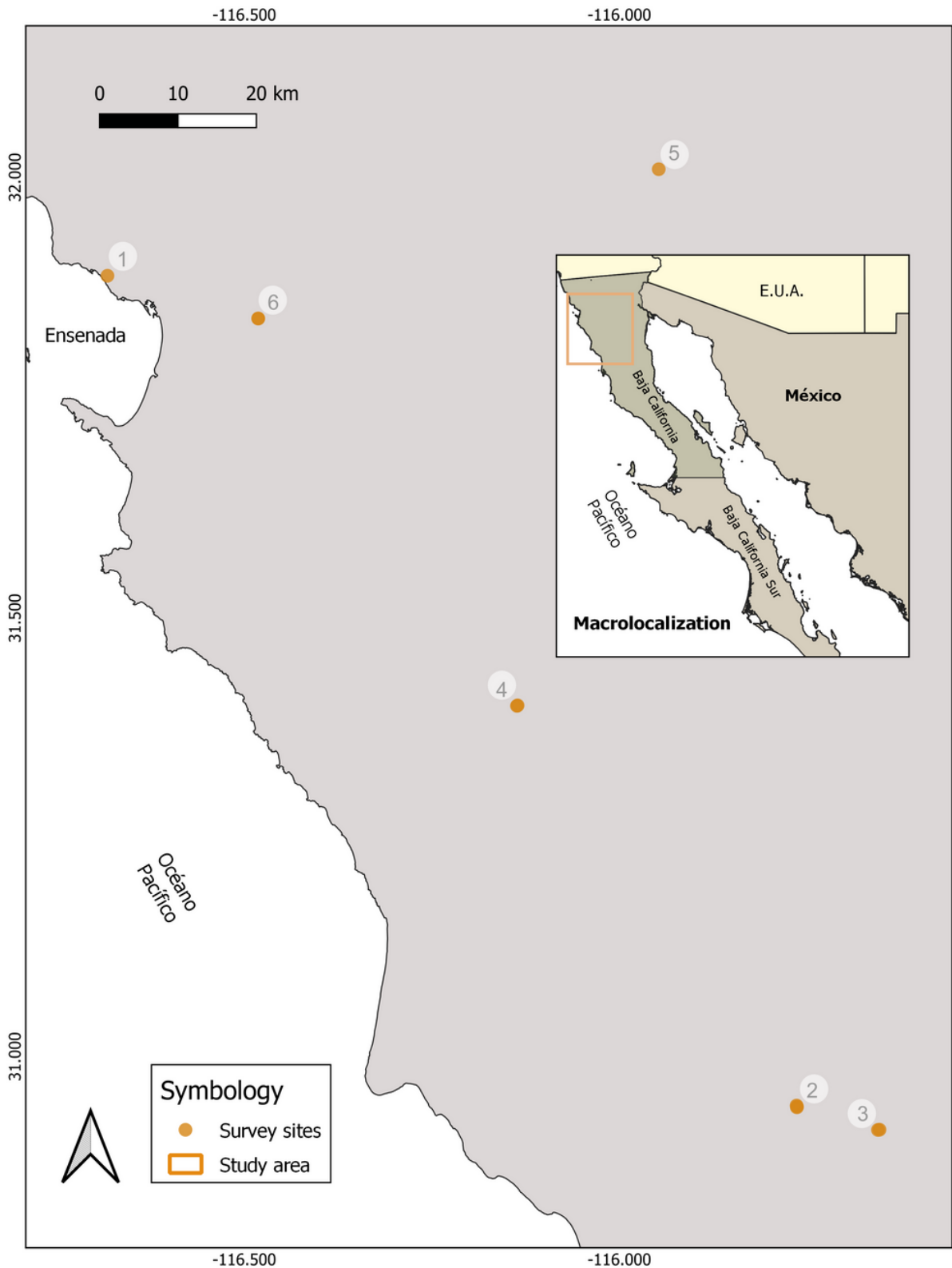
# METHODS

Before the field trip, we identified each site by examining satellite images of six ranches and then meeting in person or phone call with each landowner to discuss where wetlands may be built. We chose and designed wetlands on each visited site by walking over the land to identify signs of historic wetlands, including drainage ditches, irrigation ditches, diversions, patches of sedges, and altered springs. We selected places where wetlands would appear and function as natural wetlands, requiring little if any maintenance. We dug small diameter holes within each potential wetland site using a 3-meter-long soil auger and a 1.2-meter tile probe to determine whether groundwater was present and whether soil textures were high or low in clay. We also do the ribbon test to determine soil texture by layer. We measured slope and elevations using a laser level. The perimeter of each designed wetland was marked using colored plastic ribbons and wire survey flags. The center and the perimeter of each designed wetland were mapped using a GPS and photographed. A detailed Wetland Design Form was filled on each site that describes where the soil removed from building the wetland may be placed and the type and size of heavy equipment needed.



# RESULTS

The personnel in this trip included Anny Peralta and Jorge H. Valdez from Fauno, Daniel Taylor from Bat Conservation International, and the wetland construction expert Tom Biebighauser who has developed low-cost techniques for constructing restoring wetlands that the California red-legged frog currently uses for breeding. From December 5th to 9th, we visited a total of six locations listed below (Fig 1):



## LOCALITIES

- 1) Cuatro Milpas Botanic Garden, Ensenada
- 2) Rancho El Molino, Sierra San Pedro Mártir
- 3) Rancho El Potrero, Sierra San Pedro Mártir
- 4) Rancho Agua Caliente, Arroyo San Vicente
- 5) Rancho Bonanza, Sierra Juárez
- 6) Rancho Esperanza

Eleven wetlands of different sizes were designed that included four that will consist of a liner to hold water and seven that will fill with groundwater (Table 1).

Table 1. Locations were visited during the wetland design trip

Location	Wetland coordinates	Method	Wetland size (m <sup>2</sup> )
Cuatro Milpas Botanic Garden	31.88869, -116.68248	Liner	63
Rancho El Molino 1	30.94283, -115.76330	Groundwater	506
Rancho El Molino 2	30.94213, -115.76338	Groundwater	1,056
Rancho El Molino 3	30.944143, -115.76381	Groundwater	1,839
Rancho El Potrero 1	30.91625, -115.65529	Groundwater	1,493
Rancho El Potrero 2	30.91652, -115.65325	Groundwater	3,587
Rancho Agua Caliente 1	31.40026, -116.13655	Groundwater	846
Rancho Agua Caliente 2	31.40082, -116.13575	Groundwater	822
Rancho Bonanza	32.00927, -115.94757	Liner	278
Rancho Esperanza 1	31.84020, -116.48143	Liner	28
Rancho Esperanza 2	31.84031, -116.48155	Liner	82

For each designed wetland, a design form was completed that included detailed information on the access to the location, landowner names, construction notes, engineering drawings, pictures, wetland construction steps, and estimated budget (Anexo 1). The designs will be used to request funding for the wetlands' construction and guide the wetlands' actual construction.

Wetland construction completed in California and Baja California has successfully recovered populations; at our pilot site in Baja California, the frog population has tripled in numbers in only three years. This action will stop the continuous loss and extirpation of Baja California populations of Red-legged frogs and will also provide habitat to other native species. Once the agreements with landowners are achieved, the next step will be to proceed to secure funding for wetland construction and prepare historical sites for reintroductions in Baja, California.



