

**Translocation of Relict Leopard Frogs
from the existing refugia ponds
to the Cienega wetland at the Springs Preserve**

by

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In 2017, the Las Vegas Valley Water District (LVVWD) ratified a 15-year landowner Cooperative Agreement (CA) under the Programmatic Relict Leopard Frog Candidate Conservation Agreement with Assurances (CCAA) between the Nevada Department of Wildlife (NDOW) and the United States Fish and Wildlife Service (USFWS). This agreement covered the 180-acre Springs Preserve, including the newly constructed refugia ponds for the Pahrump poolfish (*Empetrichthys latos*) and relict leopard frogs (*Rana onca*) in the North Fork of the historic Las Vegas Creek.

To expedite the increase of relict leopard frog numbers, a proposal was put forward by SNWA to translocate tadpoles from the North Fork refugia ponds to the much larger Cienega wetland (Fig. 1) in the Meadows Detention Basin at the Springs Preserve.

This proposal was approved by the multi-agency Relict Leopard Frog Conservation Team, which includes NDOW, USFWS, and University of Nevada, Las Vegas (UNLV). Translocation participants included Aaron Ambos, Audrey Bennett, and Raymond Saumure of the Southern Nevada Water Authority (SNWA), Thomas O'Toole from the Springs Preserve, and James Harter and Jessica Zehr of the US Fish and Wildlife Service (USFWS).

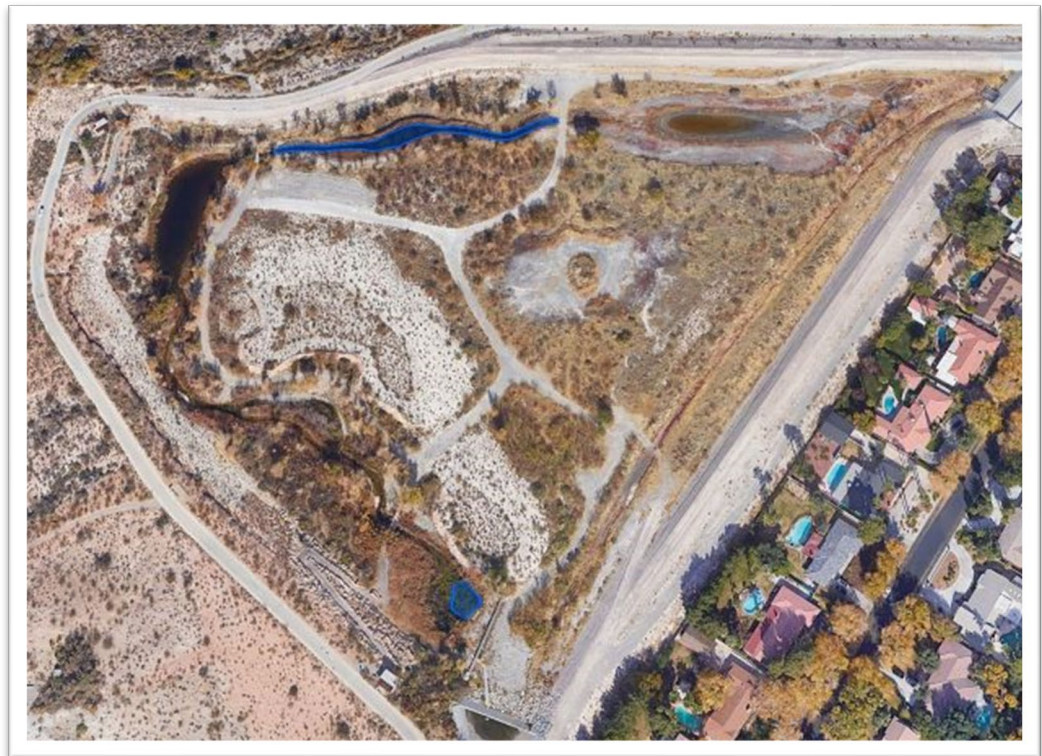


Figure 1. Cienega wetland within the Meadows Detention Basin at the Springs Preserve. Northern and southern translocation sites indicated with blue polygons.

Methods: On July 22, 2021, 11 Gee minnow traps were set in both the upstream (NF-1b) and downstream (NF-1a) refugia ponds, for a total of 22 traps. Traps were baited with a mixture of Fromm's Game Bird cat food and Farmina Lamb & Blueberry dog food. The first trapping session began at 08:20 and ended at 09:43. Tadpoles were held temporarily in two 30-quart insulated Engel live bait coolers, each with a Marine Metal Quiet Bubbles™ external battery-powered water-resistant aerator. Tadpoles were transferred to 5-gl buckets to facilitate their release.

Translocation: A total of 192 tadpoles (72 and 120 from upstream and downstream ponds, respectively) were captured and translocated from the two North Fork refugia ponds to the Cienega wetland (Fig. 1) at the Springs Preserve. These 192 tadpoles were comprised of 72 tadpoles trapped in the 1st upstream pond trapping session (Table 1), 26 tadpoles trapped in the 1st downstream pond trapping session (Table 2), 6 dip netted tadpoles from

the downstream pond (**Table 3**), and 88 tadpoles from the westernmost skimmer in the downstream pond (i.e., 72 + 26 + 6 + 88 = 192). All tadpoles captured in the 2nd trapping session were released back into their respective ponds to avoid depleting the North Fork refugia ponds of the 2021 recruitment cohort.

The 192 tadpoles to be translocated were split into two groups and released in two separate areas of the Cienega. The first group was released into the northernmost channel, which flows from west to east, between the two hiking trail bridges (**Fig. 1; top**). The second group was released in the area surrounding the cauldron pool, the southernmost point of the Cienega system (**Fig. 1; bottom**).

Tadpole development: Tadpoles captured by trap or dip net were grouped into four general developmental categories: (1) No limbs – the development of posterior limbs had not begun; (2) small posterior limbs – posterior limbs present but small and poorly developed; (3) large posterior limbs – posterior limbs well developed; (4) and anterior limbs – anterior limbs and tail present. Five times more tadpoles without limbs were captured in the upstream pond.

Table 1. Relict leopard frog (*Rana onca*) tadpoles captured (n = 103) with Gee minnow traps in the upstream refugia pond (Pond NF-1b) on 22 July 2021 at the Springs Preserve, Clark County, Nevada, USA.

	No Limbs	Small Posterior Limbs	Large Posterior Limbs	Anterior Limbs
1 st Trap Set	25	29	18	0
2 nd Trap Set	5	25	1	0
TOTALS	30	54	19	0

Table 2. Relict leopard frog (*Rana onca*) tadpoles captured (n = 63) with Gee minnow traps in the downstream refugia pond (Pond NF-1a) on 22 July 2021 at the Springs Preserve, Clark County, Nevada, USA.

	No Limbs	Small Posterior Limbs	Large Posterior Limbs	Anterior Limbs
1 st Trap Set	4	13	9	0
2 nd Trap Set	2	20	15	0
TOTALS	6	33	24	0

Table 3. Relict leopard frog (*Rana onca*) tadpoles captured (n = 17) by dip netting in the downstream refugia pond (Pond NF-1a) on 22 July 2021 at the Springs Preserve, Clark County, Nevada, USA.

	No Limbs	Small Posterior Limbs	Large Posterior Limbs	Anterior Limbs
Dip Netting	1	3	2	11

All tadpoles with anterior limbs were released back into their pond. These advanced-stage tadpoles were released because they may have been part of the tadpoles provided by UNLV earlier in the spring to increase genetic diversity in the population. Interestingly, Gee minnow traps deployed to the bottom of the ponds did not capture tadpoles with anterior limbs, but dip netting did.

Mortality: One dead metamorphosing relict leopard frog was removed from the western skimmer. Two dead metamorphosing frogs and one tadpole were removed from the settling basin.

Pahrump poolfish: A total of 117 Pahrump poolfish were captured during the first trapping session. Of these, 62 (46 adults and 16 juveniles) were captured in the upstream pond. Another 55 (44 adults and 11 juveniles) were captured in the downstream pond. All were released without being marked or measured. Since these fish were released prior to the second sampling session, fish were not counted in the second trapping session. No dead Pahrump poolfish were observed.