

**2020 Annual Summary of Activities**  
**Pahrump Poolfish Safe Harbor Agreement**

By

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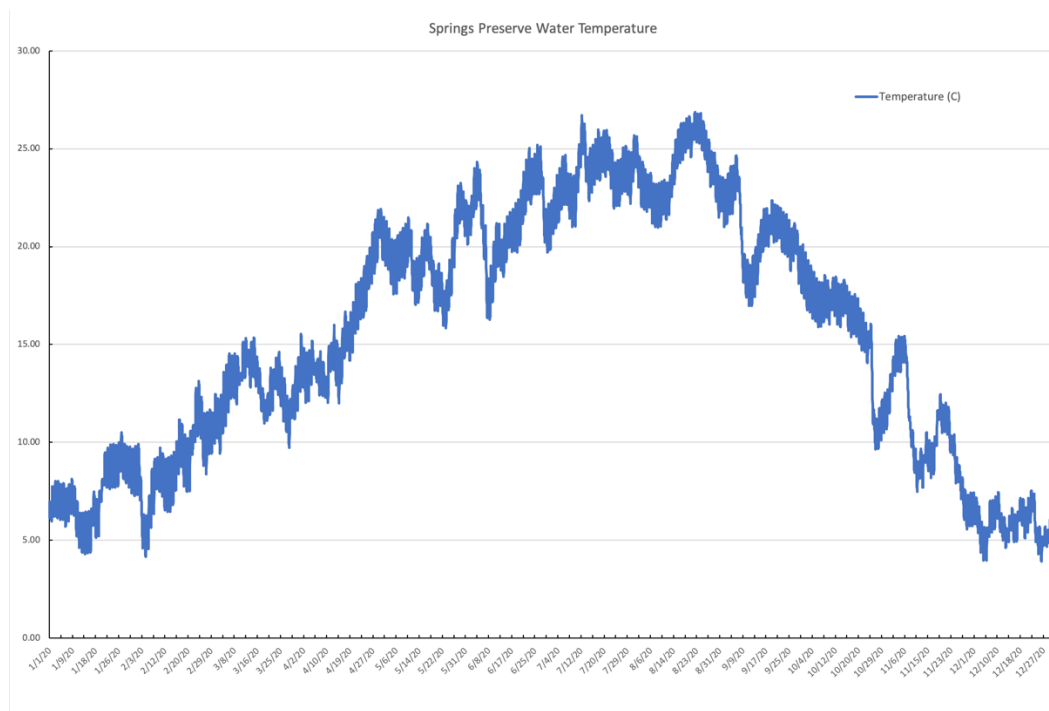
**Las Vegas Valley Water District**

The following report is an annual summary of activities under Enhancement of Survival Permit # TE17874C-0 issued to the Las Vegas Valley Water District. This permit was granted under the Safe Harbor Agreement for Pahrump poolfish at the 180-acre Springs Preserve (Enrolled Property) in Clark County, Nevada.

**Executive Summary** In 2020, Pahrump poolfish fry were first observed in May and new cohorts continued to be observed into September. The combined fall mark-recapture estimate for both ponds was 191 Pahrump poolfish, which is comparable to the estimate of 164 Pahrump poolfish for fall 2019. The population size appears to have stabilized.

**Environmental Conditions**

On September 18, 2019, a new In-Situ water quality datalogger was deployed to record hourly measurement for water temperature, pH, and conductivity. The probe records water quality data from the downstream pond (NF-1a) on an hourly basis and transmits it via the NOAA GOES geostationary satellite server system. Data can be viewed and downloaded from a secure web interface, a summary of which is presented below (**Fig. 1, Table 1**).



**Fig. 1.** Thermal profile (°C) for water in pond NF-1a at the Springs Preserve, Las Vegas, Clark County, Nevada, USA.

**Table 1.** Average, maximum, and minimum temperatures in degrees centigrade (°C) for pond NF-1a at the Springs Preserve, Las Vegas, Clark County, Nevada, USA.

Temperature	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	7.4	8.8	12.7	15.7	19.4	21.3	23.6	24.1	20.8	15.8	10.5	5.8
Maximum	10.5	13.1	15.4	21.9	23.2	25.2	26.7	26.9	24.6	19.7	15.4	7.5
Minimum	4.3	4.1	9.4	12.0	15.8	16.3	19.8	21.0	17.0	9.6	5.5	3.9

The pH of pond NF-1a averaged 8.6 in 2020, with maximum and minimum values of 9.4 and 8.0, respectively. The pH of pond water showed a daily cycle, tied directly to the photosynthetic cycle of submerged algae. Conductivity averaged 1,093, with maximum and minimum values of 1,211 and 997, respectively. Conductivity was fairly constant, with changes likely the combined result of evaporation, water changes, and seasonal changes in algal abundance, whether natural or removal during routine pond maintenance.

### Recruitment

Pahrump poolfish were observed regularly and several cohorts of fish fry were documented from May 19<sup>th</sup>, 2020 through September 3<sup>rd</sup>, 2020.

### Mortalities

No dead Pahrump poolfish were observed in 2020. Moreover, no signs of disease were noted on any of the fish observed in the ponds.

### Population Surveys

There were no official surveys of Pahrump Poolfish in spring 2020 because of access restrictions associated with the Covid-19 pandemic. Fall mark-recapture sessions were scheduled to estimate population size.

- **16 September 2020**

Captured and tail clipped 81 Pahrump poolfish; 8 from downstream (NF-1a) pond and 73 from upstream (NF-1b) pond.

- **23 September 2020**

Pahrump Poolfish recapture session conducted by NDOW. A total of 136 Pahrump poolfish were captured; 36 in the downstream pond and 100 in the upstream pond. None of these fish captured in the downstream pond were recaptures, however. Thus, a third session was conducted in the downstream pond in an attempt to recapture fish from the 1<sup>st</sup> session.

- **30 September 2020**

Pahrump Poolfish recapture session conducted by SNWA and Springs Preserve staff in the downstream pond. A total of 9 Pahrump poolfish were captured. Four of the nine fish were recaptures.

Fall population estimates and 95% Confidence intervals (CI) calculated by NDOW for the two ponds in 2018–2020 are presented (**Tables 2–3**).

**Table 2. Downstream Pond:** Fall population size estimates and 95% Confidence Intervals (CI) of Pahrump poolfish captured in North Fork Pond 1a at the Springs Preserve, Las Vegas, Clark County, Nevada, USA.

Year	No. Surveys	Population Size Estimate	95% CI
2018	3	134	63 – 310
2019	2	65	46 – 96
2020	3	93	41 – 232

**Table 3. Upstream Pond:** Fall population size estimates and 95% Confidence Intervals (CI) of Pahrump poolfish captured in North Fork Pond 1b at the Springs Preserve, Las Vegas, Clark County, Nevada, USA

Year	No. Surveys	Population Size Estimate	95% CI
2018	2	252	215 – 295
2019	2	99	74 – 136
2020	2	98	72 – 137