

## Amphibian decline in Yellowstone National Park

We conduct long-term amphibian monitoring in Yellowstone National Park (YNP) (1) and read McMenemy et al.'s article (2) with interest. This study documents decline in the extent of seasonal wetlands in the Lamar Valley of YNP during extended drought, but the conclusion, widely reported in the media, of "severe declines in 4 once-common amphibian species," is unsupported. This study wrongly defines sites occupied by one nonbreeding individual as "populations." Wetlands in the study were clustered. Distances within clusters were within dispersal distance for all species, indicating fewer true populations than were analyzed. Lumping observations across years and considering dry wetlands as available habitat obscures natural interannual variation in occurrence at sites. For example, Table S2 in McMenemy's article shows most species were detected at a higher proportion of available sites (those with water) in 2008 than 1992. Different methods were considered equivalent for detecting occupancy, but calling surveys, employed extensively in 1993 (3) but not in 2006–2008 (2), can result in more detections than visual searches. Study sites were a convenience sample (4) covering  $\approx 0.3\%$  of

YNP adjacent to roads and highways. It is inappropriate to infer species' status beyond the study area or speculate that species have been misclassified by the International Union for Conservation of Nature as "not threatened."

Wetland dynamics undoubtedly influence amphibian occurrence, but all species were found at multiple sites in 1992–1993 and 2006–2008. The data do not demonstrate loss of a single biological population, and analysis of the same data with different emphasis could have been titled "Amphibians persist despite drought."

**Debra A. Patla<sup>a</sup>, Charles R. Peterson<sup>a</sup>, and Paul Stephen Corn<sup>b,1</sup>**

<sup>a</sup>Department of Biological Sciences, Campus Box 8007, Idaho State University, Pocatello, ID 83209; and <sup>b</sup>US Geological Survey, Aldo Leopold Wilderness Research Institute, 790 East Beckwith Avenue, Missoula, MT 59801

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Author contributions: D.A.P., C.R.P., and P.S.C. wrote the paper.

Conflict of interest statement: The authors are funded by the National Park Service and US Geological Survey to conduct amphibian monitoring in Yellowstone National Park.

<sup>1</sup>To whom correspondence should be addressed. E-mail: scorn@usgs.gov.