

## **Assessing ovulation cycling and vaccine reversibility in American bison (*Bison bison*) treated with porcine zona pellucida (PZP)**

<sup>1,2</sup>Duncan, C. L., <sup>1</sup>King, J. L., <sup>2</sup>Stapp, P.

<sup>1</sup>Catalina Island Conservancy, Avalon, CA, USA; <sup>2</sup>California State University Fullerton, Fullerton, CA, USA.

**CONTACT:** Calvin Duncan, [clduncan84@gmail.com](mailto:clduncan84@gmail.com)

In late 2009 the Catalina Island Conservancy initiated the use of fertility control as a means of replacing periodic removals to manage an introduced population of American bison (*Bison bison*). Through the application of the immunocontraceptive vaccine porcine zona pellucida (PZP), population growth was halted within one year, and reduced over time. In response to lingering questions about the use of PZP to manage large, free-ranging wildlife populations, we sought to: 1) determine the reversibility of PZP by ceasing the annual application in a subset of cows and monitoring for subsequent calf arrival; 2) document changes in the timing and length of the breeding season in response to PZP by monitoring breeding behavior and assessing fecal progesterone (FP) levels in all 60 resident cows over a 13-month period; and 3) compare the costs of PZP administration with the estimated cost of periodic shipments of bison off-island. As of February 2017, no new calves had been observed on the island, suggesting that, following repeated applications of PZP, bison may not resume normal reproduction for at least three years. Based on behavioral observations and FP levels, cows consistently displayed estrous cycles throughout the study period, indicating that bison may ovulate continuously when conception is blocked. Because PZP was estimated to be less costly and more humane than shipping off-island, and because there is little evidence that an extended breeding season will negatively impact the health of bulls or result in large numbers of out-of-season births, PZP appears to be a highly effective tool for maintaining a stable population of bison on Catalina Island.