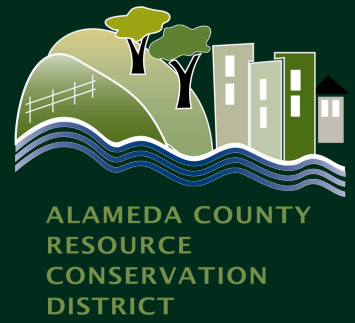


Using Scent Dogs to Detect Western Pond Turtle Nests



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PROJECT DURATION

March 2025 - December 2025



Background

The Alameda County Resource Conservation District (ACRCD) has partnered with Swaim Biological Inc., to investigate the use of trained scent detection dogs for locating nests of the Western Pond Turtle (WPT; *Actinemys marmorata*). The WPT is a native, semi-aquatic turtle species of conservation concern throughout California, where populations face pressures from habitat fragmentation, predation, and competition with non-native species.

Detecting WPT nests presents a persistent challenge for land managers and researchers. Nest sites are nearly impossible to locate without the use of radio telemetry or similar tracking methods. However, these tracking methods require substantial time, labor, and financial resources. Even under ideal conditions, nest detectability remains low due to cryptic nesting behavior and high depredation rates.

Wildlife scent detection dogs offer a promising tool to overcome these limitations. Trained dogs have demonstrated high accuracy and efficiency in locating a variety of wildlife, including other turtle species, even when these targets are concealed or sparsely distributed. Their ability to detect scent cues provides a potential advantage for locating WPT nests that may otherwise remain undetected.

The purpose of this project was to evaluate the feasibility and performance of scent detection dogs in locating known Western Pond Turtle nests at Patterson Ranch in Livermore, California. By working within an area where nest locations were already documented, the project team aimed to assess detection accuracy, search efficiency, and overall applicability of scent dogs as a monitoring tool for WPT conservation. The results of this assessment will help determine whether scent dog teams could be incorporated into future management strategies to improve nest identification, enhance reproductive monitoring, and support long-term conservation planning for the species.

Field Days

Following prior training using turtle urine as a target scent, the detection dog and handler, accompanied by researchers from the ACRC and Swaim Biological, conducted an initial field assessment at Patterson Ranch on March 24, 2025. The primary goal of this visit was to evaluate the dog's ability to locate any of the known nests from the previous summer's nesting season, particularly nests that contained overwintering hatchlings poised to emerge and disperse toward the pond or nearby stream systems in early spring.

During the subsequent June 2025 nesting season, the scent detection team operated in coordination with researchers actively monitoring gravid Western Pond Turtles. Field biologists tracked nesting females, documented nest excavation events, and recorded nest locations using GPS coordinates pinned in Google Maps. When a new, verified nest was identified, the research team immediately relayed the information to the handler. The handler then returned to the site the following day to test the scent dog's ability to independently locate the nest without visual cues, allowing for an evaluation of detection accuracy, reliability, and field performance under natural nesting conditions.



Results

During the March 2025 field assessment, the scent detection dog demonstrated encouraging success in locating overwintered hatchlings associated with Western Pond Turtle nests. In total, the dog detected three hatchlings originating from three separate nests. One hatchling was located beneath dense grass approximately six inches from its nest, the second was found roughly one meter uphill of the nest site, and the third hatchling was detected about one meter downhill from its associated nest. These findings highlighted the dog's ability to recognize and follow scent cues even when hatchlings had dispersed short distances from the original nesting locations.

However, the detection team also noted one missed juvenile located uphill of a known nest. This missed detection was likely influenced by several complicating factors, including overstimulation of the dog and the presence of a large number of researchers in close proximity. Additionally, while the scent dog typically indicated a detection by touching its nose directly to the target, the very small size of hatchlings prompted the handler to soften or modify the cue to avoid injuring them. This change in expected alert behavior introduced uncertainty for the scent dog, contributing to occasional confusion in how to properly signal a detection when it came to the juvenile WPT.

During the June 2025 nesting season, the scent detection work proceeded very successfully. Locating Western Pond Turtle nests at this site is inherently challenging due to their small size, cryptic placement, and dense vegetation, yet the detection dog performed exceptionally well under these conditions. The dog repeatedly confirmed the presence of turtle urine within the soil surrounding freshly made nests.

Overall, the dog continued to perform very well throughout the nesting season, offering valuable insights into both detection capabilities and the temporal limits of scent availability at new nests.



Plans and Next Steps

Spring–Summer 2026

The subsequent phase of this project will focus on advancing the use of scent detection dogs for identifying Western Pond Turtle (WPT) and Red-Eared Slider (RES) nests under both controlled and natural field conditions. Building on preliminary results from 2025, the project will refine experimental methodologies, enhance field coordination, and expand data collection to support more robust evaluations of scent persistence and detection reliability.

Urine Scent-Persistence Trials

- Conduct additional time-interval trials to quantify the duration of detectable urinary cues following deposition.
- Compare detection performance between species and across environmental conditions.
- Maintain strict controls for substrate consistency, randomized placement, and handler blinding.
- Use statistical modeling to estimate scent decay curves and define practical detection windows for field application.

Live Turtle Detection Trials

- Expand semi-natural trials with shallowly buried or surface-placed WPT and RES individuals.
- Assess species-specific and sex-specific detection reliability.
- Standardize trial structure while preserving randomization and control conditions.
- Evaluate detection accuracy, response latency, and dog-specific performance.

Field Implementation During the 2026 Nesting Season

- Coordinate closely with field biologists monitoring nesting activity to ensure rapid deployment following nest completion.
- Assess real-world detectability as a function of time since nesting, with emphasis on the first 6–24 hours.
- Document incidental detections of hatchlings, overwintering nests, or dispersing juveniles.
- Compare field performance with outcomes from controlled trials.

Data Acquisition and Documentation

- Continue high-definition video recording of all trials for behavioral review, quality assurance, and analysis.
- Standardize metadata collection to include environmental variables, trial type, dog ID, and time since scent deposition.
- Maintain a structured archive of video and trial data for long-term storage and future research use.

Dog and Handler Development

- Maintain routine training using turtle urine and live turtle scent sources.
- Further clarify and standardize alert behaviors.
- Ensure adherence to consistent operational protocols and unbiased handler operations.