

Letter to the Editor

Sir:

I do not normally work in the field of forensic biology but I recently was involved in a case that I believe may be of interest. It is my hope that the information reported here may contribute to the resolution of other cases based on botanical evidence.

Tuesday, 4 June 2002, two criminalists from the California Department of Justice called the Department of Biological Sciences at California State University Chico and the department secretary referred them to me. I am an associate professor of botany with regional, taxonomic, and ecological expertise in Northern California. The criminalists stated they were at a dead end in a case of a missing child and explained that they had found the father dead from a self-inflicted gunshot wound in his truck along a mountainous road (Highway 32) in Butte County, California. The father and daughter last had been seen in Las Vegas, Nevada and the only clue was some vegetation found in the truck. The criminalists came to visit me at the herbarium the same morning and presented me with some leaf litter collected from clothing of the missing girl, Jeanene Bonner. The clothing and associated leaf material were matted with blood.

I was presented with a sample of approximately 2 g of leaf litter contained in small clear plastic boxes. Based on leaf composition that ranged from whole to partially decomposed leaves, I estimated the sample to be from the top centimeter of leaf litter. The sample also contained, somewhat curiously, a whole leaf of greenleaf manzanita (*Arctostaphylos patula*) torn from a living shrub, as indicated by the freshness of the material. The bits of species material present (in order of abundance) were canyon live oak (*Quercus chrysolepis*) or interior live oak (*Q. wislizenii* var. *wislizenii*), white fir (*Abies concolor*), greenleaf manzanita, ponderosa pine (*Pinus ponderosa*), and black oak (*Quercus kelloggii*). I made preliminary identifications of these species and then compared the specimens with known samples from the California State University, Chico Herbarium. Each sample was examined for leaf venation characteristics, leaf margin characteristics, and general appearance. I was not able to positively identify the oak as either canyon or interior live oak based on the dried samples; oak species are notoriously variable and readily hybridize with one another.

I proceeded to eliminate possible sites based on known species distributions and ecological site requirements. The species identified do not occur together in Nevada nor on the eastern exposure of the Sierra Nevada. The live oak, in particular, indicated that the sample was most likely on the western exposure of the Sierra Nevada. Overlapping species distributions indicated the elevation of the sample to be from an elevation of 980 to 1380 m. The relative abundance of the species present was a bit unusual in that the dominants were live oak and white fir and indicated that the site had to have both slightly mesic (white fir) and slightly xeric (live oak) characteristics. It was unlikely that the site was on a north- or east-facing slope due to the presence of the live oak, and a south-facing slope was equally unlikely based on the presence of the white fir. I predicted that the sample was from a site on a west-facing slope with some available moisture. Further, the composi-

tion and dark color of the leaf litter sample indicated a high organic content, which placed the site under a fairly dense forest canopy. The notable occurrence of the greenleaf manzanita indicated that there must be some available light at the site, despite the dense canopy.

Detective Borgman of the Butte County Sheriff's department called me on Wednesday, 5 June and we agreed to survey possible sites that afternoon. As we drove the highway and climbed in elevation to the location where the father's body and truck had been found, I noted which species were present. It was not until we reached the location of the truck that the species composition appeared to match that found in the leaf sample. We drove a few miles past the truck location (the area already had been searched thoroughly) and stopped at sites that had a dominance of live oak and white fir, a fairly closed canopy, with some greenleaf manzanita nearby. As I surveyed the vegetation at each site, Detective Borgman took specific location readings with a Geographic Positioning System. At the fifth site and close to the location where the truck was found, the detective took his readings and I proceeded about 10 m down the hill to examine the leaf litter. I observed that the litter met the site criteria outlined when I simultaneously noted a strong odor of decay and a blanket near a log. I called to Detective Borgman to investigate further and he uncovered Jeanene Bonner's body under the blanket. The location of the body between the logs had hidden the body from earlier searches.

How close were my site predictions? The location of the body was on a west-facing slope with canyon live oak and white fir as the dominant species. A large canyon live oak was at the interface of the dirt highway turnout and a 30% west-facing slope dominated by a closed canopy of coniferous vegetation. The location of the body was within 3 m of a small patch of exposed chaparral with greenleaf manzanita as the dominant species. A species present at the site that I did not identify in the sample was douglas fir (*Pseudotsuga menziesii*).

I only can conjecture that the following events occurred. Based on the amount of blood found in the truck on the passenger side and the medical examiner's report, the father shot his daughter point blank in the head, removed her shirt to prevent blood flow (there was no blood at the location where the truck must have parked), and carried the body down the slope in the dark to hide it. As he wandered down the slope he crossed into the chaparral where the manzanita leaf was removed. He placed her body on the forest floor between two down logs, pulled the shirt from under her head where he picked up the leaf litter, and took the clothing back to the truck. It is unclear why he took the bloody clothing back to the truck. Perhaps as a message to her mother, he wanted to make clear that he had killed her but did not want the body to be discovered.

Although I am glad that I was able to contribute to closure for the family of Jeanene Bonner, this has been a sad and difficult experience. I have a newfound respect for law enforcement personnel and associated scientists who work in the field of forensics.

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