

CSAC Challenge & Merit Program Nomination – Environmental – Urban

Overview – WPD completed a study that determined owls and hawks can be attracted to a flood-control levee and provide better protection from ground squirrels rather than rodenticides.

Challenge – The Raptor Pilot Study was initiated in response to a Ventura County Board of Supervisors directive to reduce the use of anticoagulant rodenticides and minimize the risk of secondary poisoning in the environment. This directive was a tremendous challenge to Watershed Protection District (WPD) because anticoagulant rodenticide bait has been the primary method of controlling burrowing ground squirrels and protecting Ventura County's 40 miles of levees and 55 earthen dams.

Innovative Steps – During Phase I of the study, a designated *Raptor Test Site* included fourteen raptor perches and two nesting facilities that were installed along a 6,000 foot reach of Revolon Slough levee in Oxnard, California. These enhancements were designed to attract owls and hawks in the vicinity to the levee. This reach was compared to a similar downstream reach, designated as the *Control Site*, where diphacinone bait was applied throughout bait stations. During Phase II, the Control Site was modified by replacing the bait stations with raptor perches which allowed WPD to analyze “before and after” results.

Originality – The Raptor Program utilizes the local raptors and natural ecological behaviors to control rodent populations at our flood-control facilities. This Raptor Pilot Study was the first of its kind to provide empirical data comparing rodent protection at levee reaches, where raptor perches were installed, with a traditional rodenticide bait program. A low-pressure bentonite-cement grouting machine is also used to fill the burrow holes, maintaining the structural integrity of the levees and dams.

Results – Observations and raptor pellet collection during the 17-month study found that Red-tailed Hawks, Great Horned Owls, and Barn Owls were actively hunting ground squirrels and gophers at the perches. Ground squirrel damage at the Raptor Test Site was about 50% less than damage at the Control Site, where anticoagulant bait stations were used. Bait was found to be ineffective when placed near agricultural fields growing more attractive berries and dark green leafy vegetables.

This study concluded that removing bait stations and installing raptor perches could result in significantly less damage to ground squirrels and elimination of rodenticides. The methods applied during the study have been expanded into a full program with eight miles of channels and levees, and ten dams now protected by raptors. Response to the program from environmental groups, regulators, and the public has been enthusiastic. Both, Riverside and San Bernardino counties have followed by installing perches based on the WPD program.

Cost Effectiveness – WPD's rodenticide program treated 55 dams and over 40 miles of levees and required weekly inspection of all facilities. The Raptor Program utilizes WPD's in-house maintenance staff to construct and install the raptor program perches and owl boxes, and grout rodent burrows. Our monitoring team includes one part-time Environmental Scientist and three trained student interns that inspect each site on a quarterly basis. An annual savings of greater than \$7,400 per levee mile was estimated due to a reduction in grouting-repair, inspection frequency, and rodenticide contractor costs.

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