

# **Report of 2001 Brown-headed Cowbird Trapping Program For Mission Trails Regional Park**



**Biologist Thomas Myers Checking Cowbird Trap**

**Prepared for:**  
**City of San Diego**  
**Department of Parks and Recreation**  
**San Diego, CA**

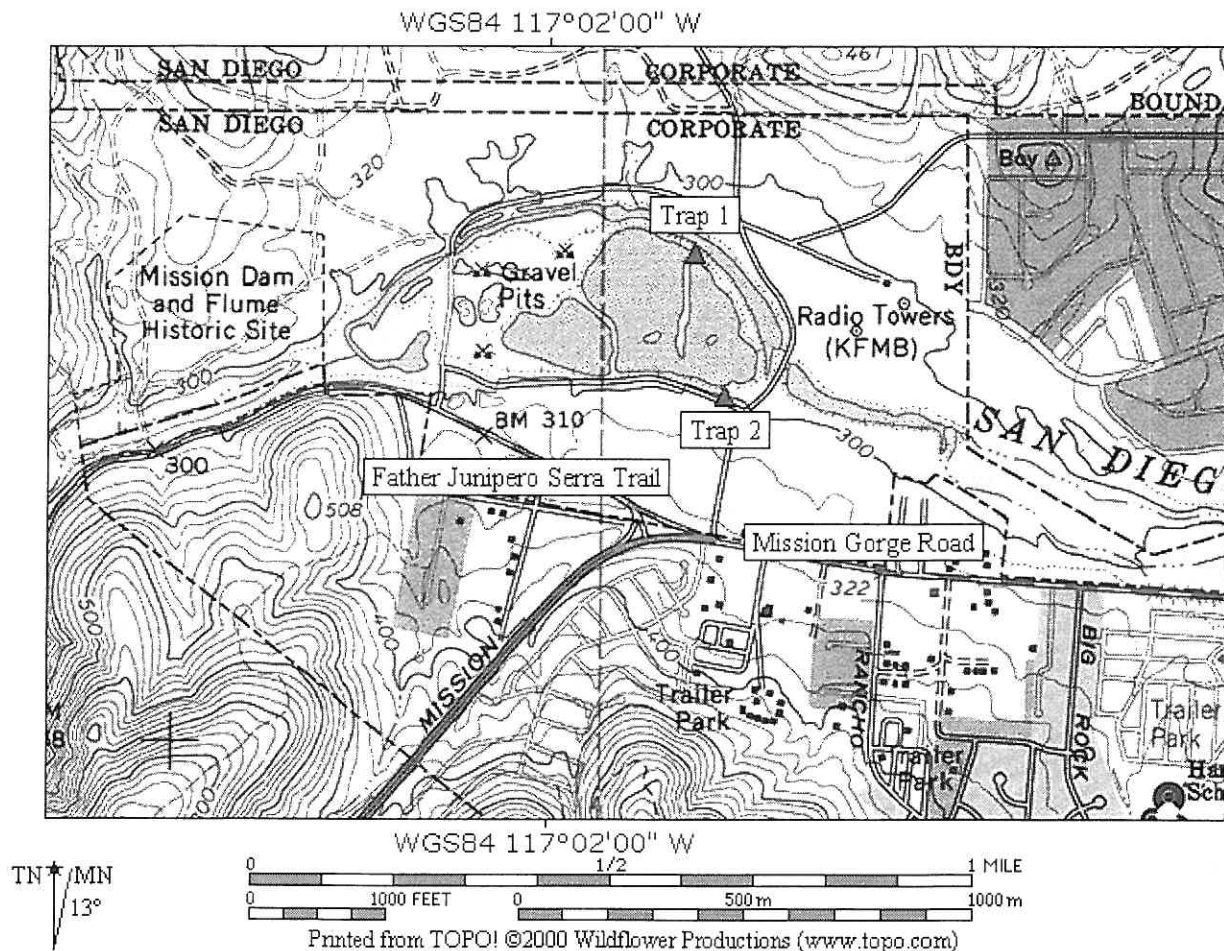
**Prepared by:**  
**Varanus Biological Services, Inc.**  
**7920 Silverton Avenue, Suite D**  
**San Diego, CA 92126**

**1 November 2001**

## INTRODUCTION

The City of San Diego (City) is required to implement a brown-headed cowbird (*Molothrus ater*, BHCO) trapping program at Kumeyaay Lake as required by the Biological Opinion issued for construction of the Kumeyaay Campground. The focus trapping area for the program in 2001 was Kumeyaay Lake, Santee, San Diego County, California. Varanus Biological Services (Varanus) placed traps adjacent to native riparian habitats (Southern Willow Riparian Forest and Southern Cottonwood-willow Riparian Forest) adjacent to the lake (Figure 1).

**Figure 1**  
**Mission Trail Brown-headed Cowbird Trap Locations**



Cowbird trapping is conducted in support of recovery of the federally listed endangered least Bell's vireo (*Vireo bellii pusillus*). Least Bell's vireos are small, insectivorous migratory songbirds of extremely limited range. Wintering in Baja California, Mexico, least Bell's vireos typically migrate northward to their breeding grounds in southern California between mid-March and mid-April. They breed almost exclusively in early succession willow-riparian habitats

characterized by the presence of dense understory vegetation. Other nesting habitat includes dense patches of herbaceous understory in Coast Live Oak Riparian Forest and Coast Live Oak Woodland, and occasionally in patches of non-native habitat that now commonly form intricate mosaics with native habitats throughout the coastal range of this species.

Once widespread in low-elevation riverine valleys as far north as Tehama County in northern California, least Bell's vireo population numbers declined dramatically between the 1940's and mid-1980's. Two factors are primarily responsible for this species' demise and hence have contributed to its status as an endangered species: habitat loss resulting from eradication, fragmentation and degradation of southern California riparian corridors, and brood parasitism by BHCO. The explosive increase in BHCO population outside its historic range has accompanied the decline of riparian habitat. In southern California, the increase in BHCO has paralleled the decline in numerous other songbird populations including yellow warbler (*Dendroica petechia*) and warbling vireo (*Vireo gilvus*) in San Diego County (Unitt 1984). Brown-headed cowbirds were historically associated with buffalo and possibly antelope herds, and subsequently livestock in the Great Plains of the United States. It is hypothesized that brood parasitism in BHCO evolved to accommodate the species' reliance on benefits gained foraging among herds of nomadic hoofed mammals. When, for instance, nomadic herds of buffalo moved, cowbirds followed suit. Female cowbirds depositing eggs in other species' nest would potentially achieve the equivalent of "nest success" at the expense of parasitized hosts while allowing the cowbirds to follow the buffalo herds.

Brown-headed cowbirds have been documented using at least 130 bird species as hosts (Friedmann et al. 1977). Brood parasitism of least Bell's vireo by BHCO has been well documented. The history of brown-headed cowbird/least Bell's vireo interaction is summarized in Franzreb (1989). Trapping of BHCO using modified Australian Crow Traps is an accepted method of reducing brood parasitism in least Bell's vireo (Ibid.) and other riparian and non-riparian species (for example, the southwestern willow flycatcher, *Empidonax traillii extimus* (e.g., Whitfield and Strong 1995) and California gnatcatcher, *Polioptila californica*). Cowbird trapping (and removal), and habitat restoration and preservation have contributed to recent population recovery in parts of this species' historic range. Studies along the Sweetwater River (RECON 1986), on Marine Corps Base Camp Pendleton, and the lower portion of the San Luis

Rey River in the vicinity of Oceanside (Jeff Wells, personal communication; W. Haas, personal observation) lend supportive evidence. At these sites, increases in the least Bell's vireo population have been documented after institution of extensive cowbird trapping programs and habitat restoration.

## **METHODS**

Varanus conducts all BHCO trapping programs under authorization issued by the FWS and California Department of Fish & Game (DFG). In 2001, Varanus was responsible for undertaking the City's cowbird trapping program at Kumeyaay Lake in Santee. A total of two traps were required. Prior to initiating the trapping effort, Varanus established a single cowbird trap at the Hollandia Dairy, San Marcos, San Diego County. Birds captured at the dairy were used as "bait" birds in the two Kumeyaay Lake traps. Activity and song of "caged" or "bait" birds (that is, cowbirds placed in the modified Australian crow traps) attract targeted free-flying cowbirds. Dairies, feedlots, livestock pastures, and horse stables are all excellent sources of cowbirds if bait trapping is done prior to cowbird dispersal into breeding habitat.

In 2001, Varanus maintained two operating cowbird traps at the Hollandia Dairy from 2 February to 30 April. The traps successfully removed cowbirds from the vicinity of the dairy throughout the trapping period and allowed us to respond to the requests from other researchers conducting cowbird trapping programs, and to (potentially) replace bait birds lost because of trap vandalism or depredation. Vandalism and the consequent bait bird loss from traps are initially presumed for most cowbird trapping efforts.

We deployed a total of two traps for the City program on 27 March. Activation of brown-headed cowbird traps requires baiting them with a minimum of two males and three female brown-headed cowbirds, and supplying each trap with fresh water and seed (Griffith Wildlife Biology 1994). We baited the traps with five male brown-headed cowbirds. We use five male cowbirds for several reasons, but especially to increase the attractiveness of the traps to free-flying cowbirds of both sexes (more noise, more activity = greater attraction). A second and possibly equally important reason is to eliminate the maintenance of females, thereby reducing the possibility that an escapee (often the result of vandalism to cowbird traps) could find and place an egg in a nearby passerine nest, including, possibly, a least Bell's vireo nest. There are no data



to suggest that having a 3/2 ratio, or that having female cowbirds in any ratio has any positive effect on cowbird trapping potential.

We also posted laminated signs on each trap that described the purpose and techniques of cowbird trapping as well as a contact number in case of problems or questions. We posted the information in English and Spanish. Following activation, traps were checked daily to wing clip and/or remove any new cowbirds and release any non-target species captured. During this time, seed pans and water dispensers were cleaned and fresh seed and water added. To discourage non-target species from entering the cowbird traps, white millet was used. Using millet that does not contain other seed types (such as sunflower seeds) reduces the traps' attraction for other non-target birds. Varanus maintained all BHCO traps in accordance with FWS and DFG required protocols (*Ibid.*).

The cowbird trapping regime ran for 132 calendar days for each of the two traps (27 March through 6 August). We removed the BHCO from the traps on 6 August, and dismantled and removed both traps from the project area on 7 August.

## RESULTS

In total, the two cowbird traps captured fourteen brown-headed cowbirds. Of the 14 captures, twelve were male, two were female (Table 1). We captured no juvenile BHCO in our two traps. Moreover we detected no free-flying juvenile BHCO, no juvenile BHCO being fed by other passerines, and infrequently detected adult BHCO in the vicinity of Kumeyaay Lake despite spending an average of 45 minutes, and walking along approximately 1.2 miles of trail, each day. We also found evidence (cowbird feathers wedged within the mesh of each trap on several occasions) that predators had probably removed several cowbirds from our traps.

During the trapping period, we had a total of four male cowbirds escape when Trap 1 was vandalized in early April. In response to the act of vandalism we changed the location of the vandalized trap and experienced no subsequent vandalism.

**TABLE 1**  
**BROWN-HEADED COWBIRD TRAPPING RESULTS**  
**KUMEYAAY LAKE, SANTEE, CALIFORNIA**  
**MARCH – AUGUST, 2001**

Age and Sex of BHCO Captured	Total Number Trapped (Deceased)	
	Trap 1	Trap 2
BHCO, Captured – Adult Female	1	1
BHCO, Captured - Adult Male	6	6 (2)
BHCO, Captured – Juvenile	0	0
<b>Total BHCO Captured per trap</b>	<b>7</b>	<b>7</b>
<b>NET CAPTURE OF BHCO</b>	<b>14</b>	

We recorded a total of 65 captures of non-target avian species, primarily house finches (*Carpodacus mexicanus*) and California towhees (*Pipilo crissalis*) with three incidents of deceased non-target species (Table 2).

**TABLE 2**  
**NON-TARGET SPECIES CAPTURED DURING COWBIRD TRAPPING**  
**KUMEYAAY LAKE, SANTEE, CALIFORNIA**  
**MARCH – AUGUST, 2001**

Non-target Species (Scientific Name)	Total Number Trapped (Deceased)	
	Trap 1	Trap 2
Black phoebe ( <i>Sayornis nigricans</i> )	0	1
California towhee ( <i>Pipilo crissalis</i> )	2 (1)	19
House finch ( <i>Carpodacus mexicanus</i> )	5 (1)	23 (1)
Red-winged blackbird ( <i>Agelaius phoeniceus</i> )	1	14
<b>Non-target Captures (Total)</b>	<b>8 (2)</b>	<b>57 (1)</b>
<b>Percent Non-target Mortality (Total)</b>	<b>0.05%</b>	

## POTENTIAL PROBLEMS

Two problems typically affect cowbird trapping programs, vandalism and depredation. Both problems are expected while trapping cowbirds. We address both problems individually and suggest solutions or minimization strategies for each problem.

### Depredation

Observation of known avian predators was an occasional event throughout this trapping period. In Mission Trails during the 2001 field season we observed several known cowbird predators in the vicinity of our traps. These include Cooper's hawk, American kestrel (*Falco sparverius*), long-tailed weasel (*Mustela frenata*), California ground squirrel (*Spermophilus beecheyi*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), and Argentine ant (*Linepithema humile*). Of these, only the Argentine ant is a non-native taxon.

We occasionally found cowbird feathers wedged into the wire mesh at Mission Trails, however we never had direct evidence of depredation. We have observed Cooper's hawks removing cowbirds or parts thereof, from our traps at other locations (Varanus Biological Services 2000). It is difficult to avoid impacts from this highly aggressive predator that can often be seen atop or near BHCO traps, even upon close approach by the trap attendant. The species typically breeds in willow and oak riparian habitats as well as eucalyptus groves, and is a year-round resident in coastal San Diego County. Adults are capable of removing birds from within BHCO traps by pulling them through the wire mesh sides, leaving evidence similar to what we found in our Mission Trails traps. Ground squirrels are also a potential problem because they dig under traps or crawl through the slat board opening to obtain bird food. Although we found ground-squirrel furrows under our traps, we could not document certain squirrel-caused mortality of trapped cowbirds.

To dissuade rodents, including deer mice (*Peromyscus* spp.) and black rats (*Rattus rattus*) from entering BHCO traps to steal seed and possibly injure or kill the trapped birds, we placed seed in pans with 4-inch sides to avail the food source to the entrapped birds while minimizing spillage. This apparently reduces the interest level of scavenging rodents by minimizing the availability of a much sought-after food resource. Ground squirrels are persistent scavengers of scattered seed and may have to be trapped out when they have adverse impacts to target and non-target species.

This was not necessary in 2001 at Mission Trails.

We attempted to discourage Argentine ants by avoiding direct contact of the traps with tree branches or trunks. While reducing the level of access, it is virtually impossible to avoid impacts to wildlife from Argentine ants in southern California riparian systems, especially when providing a ready source of water necessary for sustaining target and non-target bird species. Despite the species' omnipresence, Argentine ants were not a problem during the 2001 trapping program.

### **Vandalism**

Vandalism is often a significant problem during cowbird trapping. Impacts may include destruction of traps and/or releasing trapped target and bait birds. We placed traps in areas of relatively high security and low accessibility to the general public. We avoided areas with high visibility, evidence of foot traffic, and in the vicinity of regularly traveled roads. Signage in both English and Spanish may additionally reduce loss or damage to traps and birds. The information we posted visibly on each trap describing the purpose of and authority by which trapping activity was carried out may further reduce vandalism by explaining the need and legal authority by which trapping is carried out. These signs remained intact throughout the trapping period.

Wing clipping all captured cowbirds, that is, cutting wing feathers to hinder their flight capabilities, reduces their potential for nest parasitism and increases the possibility that a predator upon escape will catch them. Wing clipping also helps distinguish those already resident within a trap from new captures.

We documented one incident of vandalism at Trap 1 on 8 April 2001. Each of the escaped birds had been wing-clipped; thus we knew that all four birds that had escaped ultimately returned to the trap, as new captures would not have had clipped wings.

### **OTHER RECOMMENDATIONS**

To effectively trap cowbirds, it is strongly recommended that prior to inception of a trapping program an adequate supply of bait birds be accumulated. We have noted that the greater the



number of bait birds placed in a trap (even beyond the minimally prescribed total of 5), the more enticing the trap becomes to other cowbirds. Adequately supplying bait birds at trapping onset results in more rapid onset of target capture. Our bait bird trapping is typically conducted at a dairy or ranch where cowbirds congregate. Cowbird capture/removal at some dairies and ranches has become so regular that some dairies are experiencing a sharp decline in the number of cowbirds (Varanus field notes).

Another helpful practice is to place seed for trapped birds in a tray or other receptacle making for more sanitary trap conditions and reducing the impetus for ground squirrels and other rodents (for example, deer mice and exotic rats (*Rattus* spp.)) to enter traps. It also helps reduce seed germination (weed growth) in the vicinity of traps. Varanus used 4-inch tall galvanized aluminum, zinc, or plastic pans (that is, 4" high X 14" diameter) with great success and recommend their use.

## CONCLUSION

There are several compelling reasons to continue a cowbird-trapping program in and near Mission Trails Regional Park. First, extremely high parasitism rates can occur in the absence of effective cowbird trapping programs. A single female cowbird can deposit up to 40 or more eggs per season into host nests for two years (Ehrlich et al 1988). This suggests that even brief interludes of reduced trapping may have serious impacts on parasitized species. Therefore, the removal of even a small number of female cowbirds may have a serious negative impact on BHCO breeding success.

Second, least Bell's vireos may be particularly vulnerable to parasitism during the second half of their breeding season because many other sympatric species are past the egg-laying stage and thus there are fewer potential hosts (Salata 1983). BHCO are vigilant and have evolved a keen ability to detect behaviors perceived to be associated with nest-building activity. With reduced activity of sympatric species, BHCO may concentrate on this relatively late-nesting endangered species.

Third, it has been shown (O'Connor, 1984) that species with long associations with brood parasites are able to recognize parasite eggs. Since least Bell's vireo have only recently been

exposed to cowbird parasitism it is possible they do not recognize parasite eggs and have not yet evolved behaviors to counteract acts of parasitism.

## LITERATURE CITED

- Ehrlich, P.R., Dobkin, D.S., Wheye, D. 1988. The Birder's Handbook. Simon & Schuster Inc., New York. 785 pp.
- Franzreb, K. E. 1989. Ecology and conservation of the endangered least Bell's vireo. U. S. Fish and Wildl. Serv., Biol. Rep. 89(1). 17 pp.
- Friedmann, H., L. Kiff, and S. Rothstein. 1977. A further contribution to knowledge of the host relations of the parasitic cowbirds. *Smithson. Contrib. Zool.* 235:1-75.
- Griffith Wildlife Biology (GWB) 1994. Brown-headed cowbird trapping protocol. Unpublished document prepared by Jane C. Griffith and John T. Griffith, Griffith Wildlife Biology, Calumet, Michigan.
- O'Connor, R. J. 1984. The growth and development of birds. John Wiley & Sons, New York. 315 pp.
- Regional Environmental Consultants (RECON). 1986 (revision 1988). Draft comprehensive species management plan for the least Bell's vireo (*Vireo bellii pusillus*). Prepared for San Diego Association of Governments, San Diego. 120 and 212 pp., respectively plus appen.
- Salata, L. 1983. Status of the least Bell's vireo on Camp Pendleton, California. U. S. Fish and Wildlife Service, Laguna Niguel, CA. 62 pp. Unpublished report.
- Unitt, P. 1984. The birds of San Diego County. Memoir 13. San Diego Society of Natural History.
- Varanus Biological Services. 2000. Report of 2000 Brown-headed Cowbird Trapping Program for Jamacha-Campo Road Widening Project Sweetwater River, Bonita, San Diego County, California, Project No. REQ 905269. Prepared for County of San Diego Department of Public Works.
- Whitfield, M. and C. M. Strong. 1995. A brown-headed cowbird control program and monitoring for the southwestern willow flycatcher, South Fork Kern River, California, 1995. California Department of Fish and Game. Bird and Mammal Conservation Program Report 95-4. 17 pp.