

MAPS Station, Solstice Canyon
Santa Monica Mountains National Recreation Area

Annual Report of 2007 Activities
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A MAPS (Monitoring Avian Productivity and Survivorship) station was operated in Solstice Canyon in the Santa Monica Mountains in 2007 for the seventh consecutive year. This is one of more than 500 MAPS stations across the United States. The program was created by the Institute of Bird Populations (IBP) in 1989 and now supported by the National Audubon Society and the National Park Service among others. The goal is an effort to monitor the productivity, survivorship, and population trends of North American land birds. The attempt of the program is to use a standardized protocol of constant-effort mist netting and banding during the breeding season. This will allow for comparisons between stations and habitat types. Continuation of the station for at least five years is minimal to begin to assess productivity and survivorship of the birds, although IBP indicates ten to twenty years may be needed to begin to answer these questions.

The rationale for this effort comes from many fronts. Without using the benefit of citations, we have all heard of the decline of neotropical migrants. Long term monitoring in the form of Breeding Bird Surveys and Christmas Bird Counts indicate a trend of decline. Although it is agreed that the decline is real, the cause of this decline is highly debated. For example, is it the deforestation of the Tropics or the urbanization, pollution, and/or habitat fragmentation in North America that is the cause? Good data on productivity and survivorship will help answer these and other questions. We report here the effort and results of the 2007 season.

BANDING STATION

Solstice Canyon is located in Los Angeles County in the Santa Monica Mountains. It is located along the southern slope of the east-west oriented Santa Monica Mountains between two coastal landmarks, Point Dume on the west and Malibu Lagoon on the east. From the ocean, Solstice Canyon heads in an NNW direction for about a half km and then turns to the NE. The center of the bird banding station was located at this junction. It is located at 32d 02m 15.61s N Latitude by 118d 44m 46.38s W Longitude at an elevation of 34.8 meters.

Solstice Canyon is in the Santa Monica Mountains National Recreation Area. Part of the reason this site was selected was that there is a locked gate that limits access to the canyon during evening hours, although pedestrians can enter/leave the canyon. Limited access was desirable, since the hardware for each of the 10 net lanes are left hidden in the nearby shrubbery after each banding cycle. Ironically, a Steelhead Trout restoration project got underway as our second

Final draft 31 Jan 2008

season began. Construction of a new bridge spanning to creek for vehicular access to the upper reaches of the canyon is complete. Some of the debris basins were being removed during the MAPS season as part of the steelhead restoration project, and there has been some continued work on revegetation.

IMPACT

The initial impact of the Steelhead Restoration and associated projects is described in the 2003 report. In the central portion of the study site, where most of the vegetation was removed in 2004, revegetation work has begun. By 2007, some of the plants which had survived were quite robust; however, the sparseness of these plants in the revegetated area meant that large numbers of non-native plants (weeds) had recolonized the area. At the same time, there was continued removal of exotic vegetation. Outside the study site to the south, an expanded parking area, restrooms, and a new interpretive area is completed.

The 2006-2007 year was the driest on record with 3.21 inches [8.15 cm] (Downtown Los Angeles). There was very little in flower during the spring, and the vegetation looked like mid-October by mid-spring. Water continued to flow in the creek, but the levels were low. We continued to see the unexplained phenomenon of the water levels in the creek *rising* during the mid-morning hours. Consultations with geographers with hydrological background could not adequately explain the phenomenon, as the water table normally should drop).

PROTOCOL

Banding was conducted once every ten days beginning on the second cycle (see Table 1). There is, however, some flexibility in the protocol which allows banding to be conducted in the prior or later cycle to accommodate another activity during the scheduled cycle (May 4th for Cycle 2 and May 19th for Cycle 3). Banding was conducted for six hours beginning at sunrise. We did not band during the first cycle. Starting times are adjusted to climatic conditions. Stations to the south begin May 1st, while stations to the north start later as spring comes later. Ten nets were used. Each net was 12 meters long and 2.6 meters high with 30 mm mesh, and nets were held and supported by one half inch EMT conduit poles, reebars, and ropes.

Table 1 - Banding Schedule

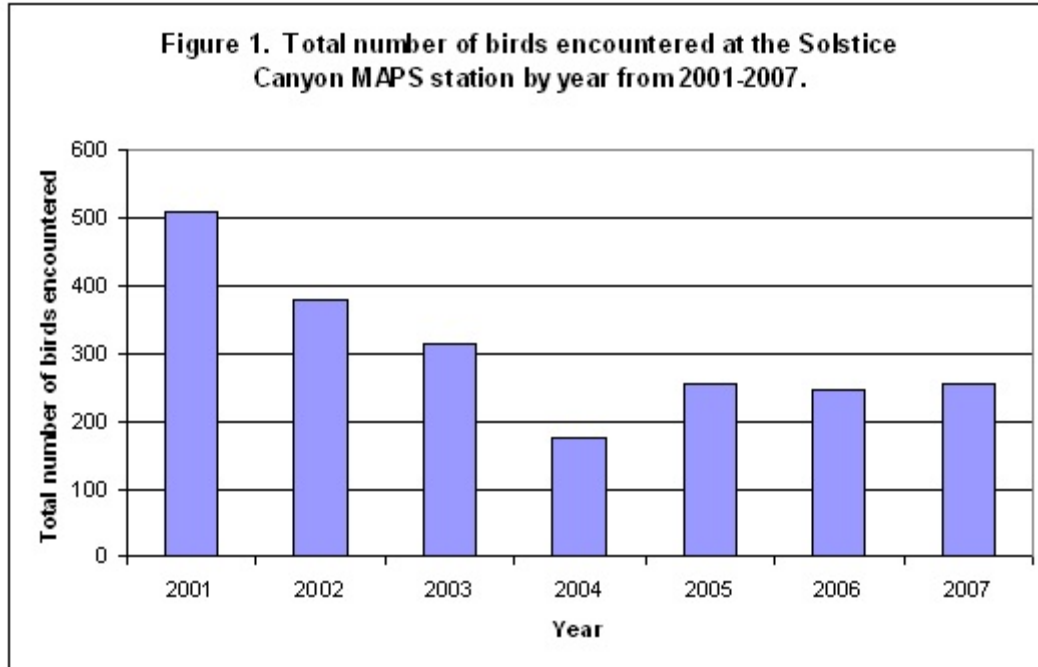
Cycle Number	Cycle Dates	Banding Dates
1	May 1 to May 10	no banding
2	May 11 to May 20	May 07
3	May 21 to May 30	May 19
4	May 31 to Jun 9	Jun 09
5	Jun 10 to Jun 19	Jun 16
6	Jun 20 to Jun 29	Jun 23
7	Jun 30 to Jul 9	Jul 07
8	Jul 10 to Jul 19	Jul 14
9	Jul 20 to Jul 29	Jul 28
10	Jul 30 to Aug 8	Aug 04

FLORA

The flora of the canyon is a mixture of riparian, along the creek, with some Black Walnut (*Juglans californica*) and Coast Live Oak (*Quercus agrifolia*) woodlands. As you move away from the drainage and the canyon sides, soft and then hard chaparral take over. There are some ruderal areas mostly associated with former homesteaders in the canyon. The riparian arboreal vegetation includes Western Sycamore (*Platanus racemosa*), White Alder (*Alnus rhombifolia*), and California Bay (*Umbellularia californica*). The woodland habitats consist mainly of Black Walnut (*Juglans californica*) and Coast Live Oak (*Quercus agrifolia*). The understory includes California Blackberry (*Rubus ursinus*), Poison Oak (*Toxicodendron diversiloba*), and Encelia (*Encelia californica*).

RESULTS

A total of 251 birds were encountered during the MAPS station 2007 season for an average of 27.9 birds per cycle. “Encountered” means birds that were banded, released unbanded, had escaped, or died . The high was 58 birds on the second cycle, and the low was 18 birds on the sixth cycle.



Eighteen birds were unbanded. Any bird that was at least touched by a bander before escaping, even from the net, is considered an unbanded bird. Fourteen unbanded birds were hummingbirds. We do not have a permit to band hummingbirds. We also could not “mark” the hummingbirds in any way (often done by clipping the tips of rectrices) to determine how many of the 14 hummingbirds were recaptured one or more times. There were four escapees, a Pacific-lope Flycatcher, a Spotted Towhee, and two Bushtits. There were no mortalities in 2007.

Forty-eight recaptures (19.1% of the encounters) were recorded. None of the birds were foreign recaptures (birds banded at another bird banding station). All were banded in Solstice Canyon. Nine birds were banded in 2006, three of the recaptures were banded in 2005, and two was banded in 2004. Three of the recaptures were banded in 2003, two was banded in 2002, and two birds were banded in 2001. This does not add up to 48 as some birds were captured several times, and others were banded in 2007.

Figure 1 shows the number of bird encounters at the MAPS station from 2001 to 2007. From an initial high of 510 in 2001, there has been a general decline through the six year history of this MAPS station. The rise in number in 2005 was hopeful, but the 2006 and 2007 totals indicate more of a leveling off.

Between our 7th and 8th cycle, there was an unplanned removal of non-native vegetation in

and around net lane #8. This alteration of the vegetation and habitat around this net lane led to an uncharacteristic rise in the number of encounters at this net lane. There were an average of 3.2 birds captured per cycle during the first six cycles; however, there were 12.67 birds captured during the last three cycles (after vegetation removal).

Table 2 shows the number and species of birds encountered by cycle at Solstice Canyon during the 2007 MAPS season. Only twenty-two species of birds were encountered during the nine weeks. The Wrentit was numerically the most abundant bird encountered. We had large numbers of Bushtits thanks to several large flocks that hit our nets. We also had large numbers (n=26) of Pacific-slope Flycatcher. Although we see and hear woodpeckers in Solstice Canyon, we generally do not encounter woodpeckers, as they normally stay high up in the trees, but we managed to capture six in 2007. The Purple Finch is interesting, as we continue to capture them every year. It is usually thought of as more of a montane bird.

Part of the MAPS protocol is to be vigilant for other birds in the area, especially those that would not normally be caught in our nets, such as birds of prey, canopy birds, aerial hunters, and larger birds. In addition to the 22 species of birds we encountered in the mist nets in 2007, 15 other species of birds were observed in Solstice Canyon. From 2001 to 2007, we have observed 78 species of birds in Solstice Canyon.

Table 3 shows the overall encounters of birds for the six years of this MAPS station. Overall, from 2001-2007 we have had 2138 bird encounters and 54 species. Wrentits are the numerically dominant bird accounting for almost a quarter (23.1%) of the birds we encounter. Wrentits were followed by Song Sparrows, Common Yellowthroats, Spotted Towhees and Black-headed Grosbeaks; all are common chaparral resident and breeding birds.

DISCUSSION

The last several years of drought have been the dominant factor of concern in the Santa Monica Mountains. Rainfall has been below average for four of the last six years before 2007. In 2006-07, rainfall was the lowest ever recorded at the Los Angeles Basin weather station.

The consistent decline in the number of birds encountered at Solstice Canyon is disturbing. It is unclear if this decline is due to the several years of drought the Santa Monica Mountains has been suffering. Yet the constant effort station in Zuma Canyon, a few miles away, has not shown a similar decline (Zuma Canyon banding records available at www.homepage.smc.edu/sakai_walter). Bird encounters at Zuma Canyon for 2005 and 2006 were above average with 2006 having the second highest average number of birds in the 12 years of this station. The decline in birds encounters at Zuma Canyon in 2007 was mostly due to fewer days of banding.

Final draft 31 Jan 2008

Another factor is the restoration work, which laid much of the central portion of the study site to parent material. A preliminary study conducted in Zuma Canyon seems to indicate that revegetated areas have significantly fewer birds compared to adjacent mature chaparral (see Zuma Canyon report available on the Principal Investigator's homepage). Revegetation has begun, but the work is incomplete. Invasive weeds continue to overwhelm the native vegetation in this area. An attempt to remove some of these weeds around net #3 seems to have affected the 2007 data. During the last three cycles, there were almost 10 more birds captured/cycle after the vegetation removal. If this did not occur, there may have been some 30 fewer birds caught in 2007, which would better reflect the 2006-07 drought.

Of course, the other way to look at these numbers is that the numbers over the last few years are a more accurate representation of the avian fauna of the canyon, and our initial year (2001) was a super-abundant year. Possibly the bird population has now stabilized to its "normal" numbers.

This MAPS station also participated in the Center for Tropical Research - UCLA's Neotropical Migrant Conservation Genetics Project. As a participant, we collected the outer rectrices (r6), or outer tail feathers of each bird that we encountered. We collected outer feathers from all newly banded birds. The bases of the feathers have enough cells of the bird, so that researchers using DNA technology can amplify the DNA. Among the things they have been able to determine is that by characterizing the DNA of certain population of birds (in a certain geographic area), researchers have been able to learn where these birds migrate to in Central/South America. We learned that we were the only banding station in California to take feathers from the Western Scrub-Jay and thus provided valuable data to a dissertation project by a graduate student at U.C. Davis.

None of the bird banders are accomplished bird watchers, so we probably miss observing a lot of species during our banding cycles. We miss many of the canopy species, which are rarely caught in mist nets. We can always use the help of Audubon members who would be willing to spend a few hours to bird the site for us to note birds that are seen/heard but not caught in our mist nets.

It now appears that this will be our last year of banding in Solstice Canyon. A number of factors come into play on this decision. It has become increasingly difficult to resolve the conflict between the goals of the NPS restoration program vs maintenance of the MAPS protocol. I have also found it more and more difficult to gather up personnel to maintain the station.

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Final draft 31 Jan 2008

Others who came out regularly include Marty Reedy, Minah Kim, Darolyn Striley, and Peggy Mueller. Avinet, Inc. provided an assortment of bird banding materials such as bird banding pliers, band removal pliers, wing rulers, and other materials at a substantial discount. P. Mueller also edited earlier drafts of this report.

Respectfully submitted,

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