

**City of San Diego
Multiple Species Conservation Program**

**Summary of Monitoring Results for
*Ambrosia pumila***

July 2001

Introduction

San Diego ambrosia (*Ambrosia pumila*) is a sensitive plant species whose northernmost distribution is in southern Riverside County. This perennial herb species was once more common in northern Baja California, Mexico but its distribution has been significantly reduced by expansion of agricultural land use. Modern land use within San Diego County has also greatly reduced the historic distribution of San Diego ambrosia. This plant species also appears not reproduce from seed but instead it grows off of a rhizome-like root structure below ground. If San Diego ambrosia only reproduces vegetatively and is limited in its ability to sexually reproduce, it may not be able to adapt to changing conditions. This may also be partially responsible for the limited distribution of San Diego ambrosia.

Monitoring for this plant in Mission Trails Regional Park (MTRP) was conducted on July 9 and 16, 2001 by Holly Boessow, Keith Greer, Jeanne Krosch, Mike Klein, Randy Rodriguez, Brett Williams, and Jim Harry. The largest patch of San Diego ambrosia in MTRP, which is located adjacent to the Kumeyaay Lake Campground, was surveyed. The patch surveyed is identified as patch C6 in the City of San Diego Mission Trails Regional Park San Diego Ambrosia Management Plan (Dudek & Associates, 2000). The goal of the effort was to establish baseline data for long-term monitoring of San Diego ambrosia under the Multiple Species Conservation Program (MSCP).

Methodology

Monitoring for this species was conducted in accordance with the Biological Monitoring Plan for the Multiple Species Conservation Program (biological monitoring plan), dated January 25, 1996. Previous surveys in MTRP were conducted by Dudek & Associates in 1998 (Dudek & Associates, 2000) and by MSCP staff in 2000. Although the biological monitoring plan requires that this plant be sampled every two years, the 2000 surveys did not sample 5% of the total population size. Therefore, additional monitoring was done in 2001 in order to sample 5% of the total population size in one season.

The largest patch of San Diego ambrosia at MTRP (patch C6) was chosen as a sampling area. An accidental fire burned the sampling area in 1999 and City of San Diego staff wanted to determine if the fire had effected the population in this area. Transect lines were randomly allocated along an east to west stratification line. This allowed staff to avoid problems with potential environmental gradients and the clumping distribution of San Diego ambrosia. Steel rods were installed to indicate the location of each transect. Transect post locations were mapped using a Global Positioning System (GPS). The total number of transects (N=13) and total number of quadrats (N=353) sampled approximately 5% of the total sampling area.

A one meter square (1 m²) quadrat was used to define the quadrat boundary and estimate population size. The 1 m² quadrat was placed along the transect so that the quadrat was on the west side of the string. Each plant located within the 1 m² quadrat was counted and the total

number for each quadrat was recorded. Quadrats were placed at 1 m intervals along each transect.

Results and Conclusions

Data from the monitoring effort are shown on the attached monitoring data forms. It is estimated from the results of the transects that approximately 178,624 adult individuals of San Diego ambrosia were found in patch C6 in MTRP adjacent to the Kumeyaay Lake Campground. In comparison, approximately 121,702 individuals were estimated in 2000 and 208,855 individuals in 1998 (Dudek and Associates, 2000). Flowering adults were not counted separately from non-flowering adults because the plant's seeds are not considered viable according to viability testing conducted in 1998 (Dudek & Associates, 2000). No seedlings or juvenile plants were observed. Every effort was made to locate juvenile and seedling plants. The surveyors were visually familiar with all stages of the plants' growth. Nevertheless, it is possible that the less obvious seedlings and juveniles were present but missed during the survey since these growth stages tend to be more cryptic than adults.

The fire may have temporarily impacted the plant species count and the plant species may be recovering from those impacts. Also, 1998 had much more rainfall and could have lead to additional plant germination that did not occur in 2000 and 2001. Finally, the survey effort in 2000 did not cover 5% of the sampling area as recommended. This may have resulted in lower estimated numbers during the 2000 and 2001 survey effort.

Recommendations

Additional surveys should be conducted on-site to determine the status of San Diego ambrosia. However, given the unique biology of San Diego ambrosia, the plant species might be better estimated through different sampling techniques, such as percent cover estimates. MSCP staff will pursue testing different sampling methodologies when the next survey is conducted in 2003.

Additional populations of San Diego ambrosia have been documented in Santee and San Diego National Wildlife Refuge. The City of San Diego should coordinate with any surveys that the City of Santee and U.S. Fish and Wildlife Service Refuges Division has conducted in order to determine the regional status of the species.

References

Dudek & Associates, Inc. May 15, 2000. City of San Diego Mission Trails Regional Park San Diego Ambrosia Management Plan. 34pp. + appendices.

DATA REDUCTION FORM **COVERED PLANT SPECIES MONITORING**

COVERED SPECIES	<u>Ambrosia pumila</u>		
MONITORING LOCATION	<u>Mission Trails Regional Park</u>		
TOTAL AREA SAMPLED	<u>7,372 m2</u>	TOTAL TRANSECT LENGTH	<u>706 m</u>
NUMBER OF TRANSECTS	<u>13</u>	TOTAL QUADRAT SIZE	<u>353 m2</u>
NUMBER OF QUADRATS	<u>353</u>		

TRANSECT NUMBER	NUMBER OF PLANTS	AGE CLASSES ¹			
		SEEDLING	JUVENILE	ADULT FL	ADULT NFL
1	1122				
2	1634				
3	1830				
4	1257				
5	851				
6	248				
7	160				
8	265				
9	324				
10	169				
11	0				
12	178				
13	484				
14					
15					
N	13				
SUM	852.2				
MEAN	655.54				
STANDARD DEVIATION	26.65				
VARIANCE	710.17				

¹ADULT FL = ADULT FLOWERING; ADULT NFL = ADULT NONFLOWERING

**FINAL SUMMARY FORM
COVERED PLANT SPECIES MONITORING**

COVERED SPECIES Ambrosia pumila
MONITORING LOCATION Mission Trails Regional Park
MONITORING DATE 7/9/01, 7/16/01

I. POPULATION DENSITY

NUMBER OF INDIVIDUALS SAMPLED = 8522
AREA SAMPLED = 353 m²
NUMBER OF QUADRATS = 353

DENSITY OF AREA SAMPLED = $\frac{\text{NUMBER OF INDIVIDUALS}}{\text{AREA SAMPLED}} = \underline{24.23 \text{ individuals/m}^2}$

II. POPULATION SIZE

POPULATION SIZE = TOTAL AREA OF POPULATION X DENSITY
= 7,372 X 24.23 = 178,624

III. AGE CLASS STRUCTURE

AGE CLASS STRUCTURE = $\frac{\text{NUMBER OF QUADRATS IN WHICH THE AGE CLASS OCCURS}^1}{\text{TOTAL NUMBER OF QUADRATS SAMPLED}}$

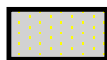
SEEDLINGS	<u> </u> %	
JUVENILES	<u> </u> %	N/A
FLOWERING ADULTS	<u> </u> %	
NONFLOWERING ADULTS	<u> </u> %	

NOTES: _____

¹Refer to field data collection form for number of quadrats in which each age class occurs and total the number of quadrats sampled.



● Transect Locations



MHPA



MTRP Campground

Ambrosia pumila

Survey Dates: 7-9-01, 7-16-01

Source: The Entire MSCP Staff