

A. MSHCP Conservation Area Description



Although 65% of the vegetation patches in the MSHCP Conservation Area are less than 10 acres in size, they comprise only 0.2% of the area of the proposed MSHCP Conservation Area. The vast majority of these small patches occur within areas heavily fragmented by urbanized areas in the Riverside Lowlands Bioregion. By contrast, only 28 (5%) of the patches are greater than 1,000 acres in size, but these comprise 94% of the proposed MSHCP Conservation Area. A single intact Habitat block comprises approximately 238,000 acres (50%) of the area.

3.5.3 Methods for Measuring Edge Effects

Edge areas were calculated using the vegetation data base, the Bioregions coverage, highways, the proposed MSHCP Conservation Area and existing Public/Quasi-Public Lands. These polygon-based data layers were converted to 100-foot pixel grids for the quantitative analysis. The Edge Effects analysis was conducted both for the existing conditions in the Plan Area and for the anticipated “buildout” scenario after assembly of the MSHCP Conservation Area. Lands were either classified as natural Habitat or urban/agricultural under the existing conditions and buildout scenarios. For the buildout scenario, it was conservatively assumed that all non-MSHCP Conservation Area lands, including Rural/Mountainous, would be converted to urban development or Agriculture. A distance function then was used to measure the distance from urban or agricultural lands to each cell supporting land mapped as Habitat. Lands were classified under one of the three following edge categories:

1. < 250 feet - high edge
2. 251 to 600 feet - moderate edge
3. > 600 feet - low to no edge.

Again, these edge intervals are somewhat arbitrary and are not meant to reflect the absolute Edge Effects in the Plan Area but are consistent with those used for the San Diego MSCP.

3.5.4 Results of Edge Effects Analysis

The results of the edge analysis are summarized in *Table 14*. This summary includes the existing conditions in the Plan Area and the potential future condition in the Plan Area assuming complete buildout in non-MSHCP Conservation Area lands. In addition, the table shows a comparison of existing conditions and buildout conditions with an idealized single circular block of Habitat as a Core Area that is the same size as the proposed MSHCP Conservation Area, and excludes any developed, disturbed and agricultural lands that would cause internal edge.

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**TABLE 14
RESULTS OF EDGE ANALYSIS**

Edge Category	Existing Plan Area		Plan Area after Buildout		Circle (theoretical shape)	
	Acres	%	Acres	%	Acres	%
Urban/Agricultural Land	420,671	--	779,293	--	--	--
< 250 feet (high edge)	114,260	14	51,645	11	2,576	< 1
251 to 600 feet (moderate edge)	126,005	15	72,107	15	4,316	< 1
> 600 feet (low or no edge)	597,812	71	355,703	74	481,467	99
Total Acres	1,258,748	--	1,258,748	--	488,359	--

Under existing conditions in the Plan Area, approximately 29% of the area is subject to high or moderate edge, and 71% has low or no edge. Under buildout of the MSHCP Conservation Area, the amount of high and moderate edge would be reduced to about 26% of the area, while the area with low or no Edge Effect would increase to 74% of the Plan Area. The reduction in high and moderate edge reflects the focus on developing currently fragmented Habitat and conserving existing areas with low or no current edge. In other words, it reflects the focus of Conservation on existing large, intact Habitat areas. Typically the ratio of edge-affected lands is lower with larger Habitat areas. However, because much of the urban portion of the Plan Area has many existing Habitat fragments, the Conservation of less fragmented Habitat in the MSHCP Conservation Area results in an improvement in the configuration of the MSHCP Conservation Area with respect to Edge Effects, even though the overall acreage of natural Habitats is reduced in the MSHCP Conservation Area buildout scenario.

As described above, an ideal reserve design for minimizing the edge-to-area ratio is a perfect circle. As shown in *Table 14*, a circle with roughly the same area as the proposed MSHCP Conservation Area would have almost 99% percent of its area unaffected by edge.

The spatial distribution and acreages of edge-affected lands under the MSHCP Conservation Area by Bioregion is shown in *Table 15*.

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TABLE 15. EDGE-AFFECTED LANDS BY BIOREGIONS (ACRES)

Bioregion		Urban/ Agriculture	< 250 Ft	251-600 Ft	> 600 Ft	Total Acres
Santa Ana Mountains	Acres	54,834	5,865	8,252	70,857	84,974
	%	--	7%	10%	83%	--
San Jacinto Foothills	Acres	42,735	9,490	6,203	53,325	69,018
	%	--	14%	9%	77%	--
Agua Tibia Mountains	Acres	2,568	541	927	8,551	10,019
	%	--	5%	9%	85%	--
Riverside Lowlands	Acres	549,572	27,196	33,490	79,419	140,105
	%	--	19%	24%	57%	--
San Jacinto Mountains	Acres	54,648	7,677	12,943	111,612	132,232
	%	--	6%	10%	84%	--
Desert Transition	Acres	55,419	2,622	4,645	26,058	33,325
	%	--	8%	14%	78%	--
San Bernardino Mountains	Acres	19,346	1,532	2,346	5,744	9,622
	%	--	16%	24%	60%	--

Although the MSHCP Conservation Area would have proportionally less edge than the existing Plan Area, it would still have a significant portion of edge-affected land. This primarily is due to Conservation of lands in the already fragmented Riverside Lowlands Bioregion. The San Bernardino Mountains Bioregion also has a high proportion of land subject to Edge Effects. The San Jacinto, Agua Tibia, and Santa Ana mountains, a large part of which are National Forest, would have the least amount of edge.

4.0 LITERATURE CITED

Alberts, A.A., A.D. Richman, D. Tran, R. Sauvajot, C. McCalvin and D.T. Bolger. 1993. Pages 103-110 in Keeley, J.E., editor. Interface Between Ecology and Land Development in California. Southern California Academy of Sciences, Los Angeles.

Andren, H. and T. Anglestam. 1988. Elevated predation rates as an edge effect in Habitat islands: experimental evidence. Ecology 69:544-547.